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THE DIXIE PROJECT

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HEARINGS
 BEFORE THE
 SUBCOMMITTEE ON
 IRRIGATION AND RECLAMATION
 OF THE
 COMMITTEE ON
 INTERIOR AND INSULAR AFFAIRS
 UNITED STATES SENATE

EIGHTY-EIGHTH CONGRESS

FIRST SESSION

ON

S. 26 and S. 655

BILLS TO AUTHORIZE THE SECRETARY OF THE INTERIOR TO
 CONSTRUCT, OPERATE, AND MAINTAIN THE DIXIE PROJECT,
 UTAH, AND FOR OTHER PURPOSES

MAY 7 AND 17, 1963

Printed for the use of the
 Committee on Interior and Insular Affairs



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THE DIXIE PROJECT

TUESDAY, MAY 7, 1963

U.S. SENATE,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met at 10:20 a.m., pursuant to call, in room 3110, New Senate Office Building, Senator Frank E. Moss (chairman of the subcommittee) presiding.

Present: Senators Frank E. Moss (Utah), Quentin N. Burdick (North Dakota), Carl Hayden (Arizona), Thomas H. Kuchel (California), Gordon Allott (Colorado), and Len B. Jordan (Idaho).

Staff members present: Jerry T. Verkler, staff director; and Roy M. Whitacre, professional staff member.

Senator Moss. The subcommittee will come to order.

We have met this morning to hear testimony on S. 26 and S. 655, which are bills to authorize the Dixie reclamation project in Utah. The proposed project, in the Virgin River Basin, near the Arizona and Nevada borders, would provide supplemental irrigation water to 9,445 acres of presently developed land and a full water supply for 11,615 acres of new land by regulating the flows of the Virgin River, and its tributary, the Santa Clara.

The project would also make available to the city of St. George, Utah, 5,000 acre-feet of water annually for municipal and industrial purposes, and authorize the construction of three powerplants which would provide about 45 million kilowatt-hours of firm electric energy and about 2 million kilowatt-hours of secondary energy annually. There would also be considerable wildlife, recreation, and flood control benefits from the Dixie project.

The Department of the Interior has recommended this project, located in the Lower Colorado River Basin, be authorized. Estimated total benefits would exceed costs by a ratio of 2.1 to 1.

For over 100 years now the residents of the area have been struggling to harness and turn onto their arid land the precious waters of the Virgin and Santa Clara Rivers. A bill similar to the one before us here today has been a dream for over 50 years—an urgent objective for 25 years.

These hearings are the first ever held by the Congress, or by any other branch of the Federal Government, on the development of the water resources of the area. This is, therefore, a great day in Utah's Dixie.

Tomorrow, I plan to discuss in the Senate why the area is called Dixie, and to relate a few highlights of its courageous and unique history. It was settled in 1852 at the direction of Brigham Young

by a carefully selected band of pioneers of the Latter-Day Saints, or Mormon, Church. Sometimes it was called the Cotton Mission, as well as the Dixie Mission, because for a number of years inexportable amounts actually were raised in the lush green strips of the river bottoms.

The story of those first few years in Dixie is one of privation, hardship, and desperate struggle. Again and again, through cooperative effort, the pioneers built diversion structures on the Virgin and Santa Clara Rivers, and strung out irrigation ditches from them, only to have the small rock and earth dams washed out by the force of the silt-laden waters of the rivers, and boulders and mud strewn out across the farmlands planted and tilled with such toil. After years of effort, permanent diversion dams were constructed to replace the temporary structures, but the existing supply of irrigation water is still undependable and inadequate, and the waters of these two small rivers are being wasted rather than put to full use in a land where every drop of water is almost more precious than gold.

I am confident that few reclamation bills have ever been presented to Congress with more fervent and unanimous backing from the area in which they would be located, or with more intensive and prolonged planning and prayers. The passage of this bill would mean rehabilitation and rebirth to Utah's Dixie, and I trust it will be passed. The people have already waited far too long for water resource development there.

At this point in the record S. 26 and S. 655 will both be printed.

The reports of the Comptroller General of the United States and the Secretary of the Interior, dated February 20 and May 3, 1963, will be made part of the record at this point.

The Secretary recommends some minor amendments in S. 26 but recommends adoption of the bill.

(The bills and reports referred to follow:)

[S. 26, 88th Cong., 1st sess.]

A BILL To authorize the Secretary of the Interior to construct, operate, and maintain the Dixie project, Utah, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of developing the water resources of the Virgin and Santa Clara Rivers, including the furnishing of municipal and industrial water supplies, the furnishing of an irrigation water supply to approximately twenty-one thousand areas of land, the control of floods, the generation and sale of electric energy, the conservation and development of fish and wildlife resources, and the enhancement of recreation opportunities, the Secretary of the Interior is authorized to construct, operate, and maintain the Dixie project, Utah. The project shall consist of the Virgin City Dam and Reservoir, tunnels, canals, siphons, pumping plants, and other works necessary to serve irrigated and irrigable lands along and adjacent to the Virgin River; a dam on the Santa Clara River near Gunlock, Utah, and other works necessary to serve irrigated and irrigable lands along and adjacent to the Santa Clara River and on Ivins Bench; and hydroelectric plants and transmission facilities at the Virgin City Dam and at such other points as are desirable.

SEC. 2. The project shall include such measures for the disposition of saline waters of La Verkin Springs as are necessary in the opinion of the Secretary to insure the delivery of water at downstream points along the Virgin River for

water users in the States of Arizona and Nevada of suitable quality for irrigation, or provision shall be made to indemnify such water users for any impairment of water quality for irrigation purposes directly attributable to Dixie project operations.

SEC. 3. In constructing, operating, and maintaining the works authorized by this Act, the Secretary shall be governed by the Federal reclamation laws (Act of June 17, 1902, 32 Stat. 388, and Acts amendatory thereof or supplementary thereto), except as is otherwise provided in this Act.

SEC. 4. Construction of the project shall not be commenced until there shall be established a conservancy district or similar organization with such powers as may be required by the Secretary, these to include powers to tax both real and personal property within the boundary of the district and to enter into contracts with the United States for the repayment of reimbursable costs.

SEC. 5. The interest rate to be used for purposes of computing interest during construction and interest on the unpaid balance of those portions of the reimbursable costs which are properly allocable to commercial power development and municipal and industrial water supply shall be determined by the Secretary of the Treasury, as of the beginning of the fiscal year in which this bill is enacted, on the basis of the computed average interest rate payable by the Treasury upon its outstanding marketable public obligations, which are neither due nor callable for redemption for fifteen years from date of issue. If the interest rate so computed is not a multiple of one-eighth of 1 per centum, the rate of interest to be used for these purposes shall be the multiple of one-eighth of 1 per centum next lower than the rate so computed. The portions of the costs which are allocable to commercial power development and to municipal and industrial water supply shall be repaid over a period of fifty years with interest at the rate determined in accordance with this section. The portion of the costs which is properly allocable to irrigation and which is beyond the water users' ability to repay in fifty years plus a ten-year development period shall be returned to the reclamation fund within such period from revenues derived by the Secretary of the Interior from the disposition of power marketed from Federal projects in the Lower Colorado River Basin.

SEC. 6. (a) The Secretary of the Interior is authorized as a part of the Dixie project to construct, operate, and maintain public recreation facilities including access roads, to acquire or to withdraw from entry or other disposition under the public land laws such adjacent lands or interests therein as are necessary for present and future public recreation use, and to provide for public use and enjoyment of the same and of the water areas of the project in a manner consistent with the other project purposes. The Secretary is authorized to enter into agreements with State or local public agencies or other public entities for the operation, maintenance, or additional development of project lands or facilities or to dispose of project lands or facilities to State or local agencies or other public entities by lease, transfer, exchange or conveyance, upon such terms and conditions as will best promote their development and operation in the public interest for recreation purposes. The costs of the undertakings described in this section, including costs of investigation, planning, operation, and maintenance and an appropriate share of the joint costs of the Dixie project, shall be nonreimbursable.

(b) The Secretary may make such reasonable provision in connection with the Dixie project as, upon further study in accordance with section 2 of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661, 662), he finds to be required for the conservation and development of fish and wildlife. An appropriate portion of the cost of the development shall be allocated as provided in said Act and it, together with the Federal operation and maintenance costs allocated to this function, shall be nonreimbursable and nonreturnable under the reclamation laws.

SEC. 7. The use of all water diverted for this project from the Colorado River system shall be subject to and controlled by the Colorado River compact, the Boulder Canyon Project Act (45 Stat. 1057; 43 U.S.C. 617t), and the Mexican Water Treaty (Treaty Series 994) (59 Stat. 1219).

SEC. 8. There is hereby authorized to be appropriated, out of any moneys in the Treasury not otherwise appropriated, such sums as may be required to carry out the purposes of this Act.

[S. 655, 88th Cong., 1st sess.]

A BILL To authorize the Secretary of the Interior to construct, operate, and maintain the Dixie project, Utah, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, for the purposes of developing the water resources of the Virgin and Santa Clara Rivers, including the furnishing of municipal and industrial water supplies, the making available to Cedar City, Utah, and vicinity eight thousand acre-feet of water annually from the Kolob Reservoir pursuant to agreements entered into between such city and the constructing agencies of Kolob Dam and Reservoir which provided that such city was to have all the water from Kolob Reservoir to export for use in the Cedar City area after completion of the Dixie project, the furnishing of an irrigation water supply to approximately twenty-one thousand acres of land, the control of floods, the generation and sale of electric energy, the conservation and development of fish and wildlife resources, and the enhancement of recreation opportunities, the Secretary of the Interior is authorized to construct, operate, and maintain the Dixie project, Utah. The project shall consist of the Virgin City Dam and Reservoir, tunnels, canals, siphons, pumping plants, and other works necessary to serve irrigated and irrigable lands along and adjacent to the Virgin River; a dam on the Santa Clara River near Gunlock, Utah, and other works necessary to serve irrigated and irrigable lands along and adjacent to the Santa Clara River and on Ivins Bench; and hydroelectric plants and transmission facilities at the Virgin City Dam and at such other points as are desirable.

SEC. 2. The project shall include such measures for the disposition of saline waters of La Verkin Springs as are necessary in the opinion of the Secretary to insure the delivery of water at downstream points along the Virgin River for water users in the States of Arizona and Nevada of suitable quality for irrigation, or provision shall be made to indemnify such water users for any impairment of water quality for irrigation purposes directly attributable to Dixie project operations.

SEC. 3. In constructing, operating, and maintaining the works authorized by this Act, the Secretary shall be governed by the Federal reclamation laws (Act of June 17, 1902, 32 Stat. 388, and Acts amendatory thereof or supplementary thereto), except as is otherwise provided in this Act.

SEC. 4. Construction of the project shall not be commenced until there shall be established a conservancy district or similar organization with such powers as may be required by the Secretary, these to include powers to tax both real and personal property within the boundary of the district and to enter into contracts with the United States for the repayment of reimbursable costs.

SEC. 5. The interest rate to be used for purposes of computing interest during construction and interest on the unpaid balance of those portions of the reimbursable costs which are properly allocable to commercial power development and municipal and industrial water supply shall be determined by the Secretary of the Treasury, as of the beginning of the fiscal year in which this bill is enacted, on the basis of the computed average interest rate payable by the Treasury upon its outstanding marketable public obligations, which are neither due nor callable for redemption for fifteen years from date of issue. If the interest rate so computed is not a multiple of one-eighth of 1 per centum, the rate of interest to be used for these purposes shall be the multiple of one-eighth of 1 per centum next lower than the rate so computed. The portions of the costs which are allocable to commercial power development and to municipal and industrial water supply shall be repaid over a period of fifty years with interest at the rate determined in accordance with this section. The portion of the costs which is properly allocable to irrigation and which is beyond the water users' ability to repay in fifty years plus a ten-year development period shall be returned to the reclamation fund within such period from revenues derived by the Secretary of the Interior from the disposition of power marketed from Federal projects in the Lower Colorado River Basin.

SEC. 6. (a) The Secretary of the Interior is authorized as a part of the Dixie project to construct, operate, and maintain public recreation facilities including access roads, to acquire or to withdraw from entry or other disposition under the public land laws such adjacent lands or interests therein as are necessary for present and future public recreation use, and to provide for public use and enjoyment of the same and of the water areas of the project in a manner consistent

with the other project purposes. The Secretary is authorized to enter into agreements with State or local public agencies or other public entities for the operation, maintenance, or additional development of project lands or facilities or to dispose of project lands or facilities to State or local agencies or other public entities by lease, transfer, exchange or conveyance, upon such terms and conditions as will best promote their development and operation in the public interest for recreation purposes. The costs of the undertakings described in this section, including costs of investigation, planing, operation, and maintenance and an appropriate share of the joint costs of the Dixie project, shall be nonreimbursable.

(b) The Secretary may make such reasonable provision in connection with the Dixie project as, upon further study in accordance with section 2 of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661, 662), he finds to be required for the conservation and development of fish and wildlife. An appropriate portion of the cost of the development shall be allocated as provided in said Act and it, together with the Federal operation and maintenance costs allocated to this function, shall be nonreimbursable and nonreturnable under the reclamation laws.

SEC. 7. The use of all water diverted for this project from the Colorado River system shall be subject to and controlled by the Colorado River compact, the Boulder Canyon Project Act (45 Stat. 1057; 43 U.S.C. 617t), and the Mexican Water Treaty (Treaty Series 994) (59 Stat. 1219).

SEC. 8. There is hereby authorized to be appropriated, out of any moneys in the Treasury not otherwise appropriated such sums as may be required to carry out the purposes of this Act.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, February 20, 1963.

B-145203.

HON. CLINTON P. ANDERSON,
*Chairman, Committee on Interior and Insular Affairs,
U.S. Senate.*

DEAR MR. CHAIRMAN: We have your letter of January 22, 1963, acknowledged January 23, 1963, enclosing for our comments S. 26, 88th Congress, which would authorize the Secretary of the Interior to construct, operate, and maintain the Dixie project, Utah.

We have no special information concerning the desirability of the enactment of S. 26, and as the construction of the project is a matter of policy primarily for consideration of the Congress, we make no recommendations in this regard. However, there are some matters concerning the bill we would like to bring to the attention of the Congress.

The bill does not provide any criteria for allocating project costs to purposes. We have consistently emphasized the need for statutory criteria to guide the various agencies concerned with construction of water resources development projects in allocating costs to purposes and have on many occasions included comments in appropriate audit reports to the Congress on the absence of and desirability of such legislative criteria. We believe that the Dixie project could be more effectively administered if the Congress provided policies and criteria to be applied by the Secretary of the Interior for allocation of costs to purposes.

Section 1 of the bill would authorize the Secretary of the Interior to construct, operate, and maintain the Dixie project, Utah. However, under section 9(a) of the Reclamation Project Act of 1939 (43 U.S.C. 485h) a project can be authorized only after project plans have been finalized to the extent necessary to enable submission of a report by the Secretary of the Interior to the President and to the Congress covering such matters as engineering, feasibility, estimated cost, cost allocations to purposes, and repayment capability. Although a report on the Dixie project was approved by the Secretary of the Interior and was submitted to the President for review, a report on the project has not been submitted to the Congress.

Section 5 of the bill would provide for the interest rate to be used for purposes of computing interest during construction and interest on the unpaid balance of those portions of the reimbursable costs which are properly allocable to commercial power development and municipal and industrial water supply, to be determined by the Secretary of the Treasury on the basis of the computed average interest rate payable by the Treasury upon its outstanding marketable public

obligations, which are neither due nor callable for redemption for 15 years from date of issue. We have for several years recommended that payment of interest with respect to prospective Federal investment of funds should be established at a rate determined by the Secretary of the Treasury, taking into consideration the current average yields on outstanding marketable obligations of the United States having comparable maturities. Once established, the rate should remain constant throughout the project repayment period.

Section 5 would further provide that costs allocated to irrigation which are beyond the water users' ability to repay within a 60-year period shall be repaid from revenues derived from the disposition of power marketed from Federal projects in the Lower Colorado River Basin. As there are several projects within this basin, we believe the bill should (1) specify the order of congressional preference as to which project is to assume this financial responsibility, and (2) define the portion of annual revenues that are to be applied to this purpose.

Section 6(a) would authorize the Secretary of the Interior to construct, operate, and maintain public recreation facilities without stating any limitations as to the type or cost of recreation facilities. We believe it would be desirable for this section to provide more specific guidelines with respect to the nature of the public recreation facilities which are authorized to be constructed.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., May 3, 1963.

Hon. HENRY M. JACKSON,
*Chairman, Committee on Interior and Insular Affairs,
U.S. Senate, Washington, D.C.*

DEAR SENATOR JACKSON: This responds to your request for the views of this Department on S. 26 and S. 655, similar bills "to authorize the Secretary of the Interior to construct, operate, and maintain the Dixie project, Utah, and for other purposes."

We recommend enactment of either of these bills, if amended as suggested.

The bills are identical except that S. 655 specifically includes as a project purpose the furnishing of 8,000 acre-feet of water annually to Cedar City, Utah, which would be made possible by construction of the Dixie project.

The Dixie project is an important potential water resource development in the Virgin River Basin in southwestern Utah. Its construction would permit regulation of the Virgin River and its tributary, the Santa Clara River, to provide for the irrigation of approximately 21,060 acres of land and to provide a municipal and industrial water supply to the city of St. George. Electric energy for project use and commercial sale would be produced. Fish and wildlife and recreation benefits would also accrue. In addition, minor flood control benefits would result.

By agreement among local governments and water users' organizations, Cedar City, Utah, would construct works for the diversion of up to 8,000 acre-feet of water from tributaries of the Virgin River for municipal use. The city has agreed to reimburse the project for any loss of power revenues caused by this diversion.

There is a great need in the project area for water storage reservoirs to provide for the conservation and orderly release of water now wasted. Development of these reservoirs and provision of an adequate and predictable water supply would serve as a base for the revitalization and modernization of agricultural development and provide for increases in local industry and population growth. Local support for water-resource development has been very active for many years. The city of St. George has gone on record as being willing to contract for the municipal and industrial water supply and for the electric energy developed by the project. The Washington County Water Conservancy District was formed on February 6, 1963, to serve as the general administrative and repayment contracting agency for the Dixie project.

The Dixie project would be constructed as two divisions, Hurricane and Santa Clara, which are contiguous and closely related although they have separate water supplies and their project works are not physically connected. The principal project facilities of the Hurricane division would be the Virgin City Dam, Reservoir, and powerplant, the Bench Lake and Warner powerplants, and the Hurricane division main canal. In the Santa Clara division the lower Gunlock Dam and Reservoir would be constructed and an existing canal would be rehabilitated and extended. Distribution and drainage systems would be constructed on both divisions. Downstream water quality control would be maintained by project or other facilities or the downstream users would be compensated for any damages that might accrue due to operation of the project.

Subsequent to preparation of the Department's proposed planning report of February 21, 1962, on the Dixie project and its submission to the Congress on March 18, 1963 (ordered printed as H. Doc. 86, 88th Cong.) the plan of development of the project was reexamined in accordance with (1) recent policies adopted by the Secretary of the Interior relative to land acquisition for reservoir projects; (2) the "Policies, Standards, and Procedures in the Formulation, Evaluation, and Review of Plans for Use and Development of Water and Related Land Resources," approved by President Kennedy on May 15, 1962; and (3) recent policies and procedures of this Department for use in economic and financial analyses involving project recreation and fish and wildlife aspects. Direct irrigation benefits have been recomputed in a manner similar in approach to that used in the reanalysis of the Garrison diversion unit, Missouri River Basin project.

As a result of the reexamination, the estimated total project cost has been decreased from \$44,868,000 to \$44,822,000 (both figures including \$387,000 investigation costs, of which \$245,000 are nonreimbursable). The annual operation and maintenance costs are now estimated at \$319,900 compared to the previous estimate of \$297,900.

Total annual benefits are now evaluated at \$4,049,700 compared to the former evaluation of \$3,313,200. Listed below are the revised benefits by functions compared to those presented in the Department's planning report and appended report of the regional director dated October 1961.

	Revised annual benefits	October 1961 annual benefits
Irrigation:		
Direct.....	\$1,552,900	\$903,400
Indirect and public.....	1,718,700	1,564,100
Power.....	342,000	342,000
Municipal and domestic water:		
St. George.....	125,200	111,400
Cedar City.....	35,500	35,500
Flood control.....	7,100	6,800
Fish and wildlife.....	78,000	78,000
Recreation.....	190,300	272,000
Total, benefits.....	4,049,700	3,313,200
Total direct benefits.....	2,331,000	1,749,100

Using total benefits and the current interest rate of 27/8 percent, the revised benefit-cost ratio for the Dixie project would be 2.3 to 1 over a 100-year period of analysis. Using only direct benefits, the benefit-cost ratio would be 1.3 to 1. This compares with the previously computed benefit-cost ratios of 2.1 to 1 and 1.1 to 1 over a 100-year period. A 2 1/2-percent interest rate was used in the previous computation.

In the 1961 report, only specific recreation costs were allocated to the recreation function on a nonreimbursable basis. In the revised analysis an appropriate share of the joint project costs has been allocated to that function in addition to specific costs. Listed below are the costs now allocated to the various functions compared to the previous allocation.

THE DIXIE PROJECT

Allocation of construction cost

	April 1963 allocation	Previous allocation
Irrigation.....	\$30,635,000	\$31,411,000
Power.....	6,826,000	7,675,000
Municipal and industrial water.....	2,518,000	2,609,000
Flood control.....	152,000	167,000
Fish and wildlife.....	1,563,000	2,016,000
Recreation.....	2,883,000	745,000
Total.....	1 44,577,000	1 44,623,000

¹ Excludes \$245,000 nonreimbursable investigation costs.

Reallocation of the project construction costs and operation and maintenance costs has required some revision of the repayment analyses. The costs allocated to flood control and fish and wildlife would continue to be nonreimbursable in accordance with law and as provided in the bills. The costs allocated to recreation, including joint costs, are proposed to be nonreimbursable and nonreturnable as provided in the bills. The \$7,116,000 of investment costs allocated to power could be repaid in 50 years at a rate of 6.7 mills per kilowatt-hour compared to the previously assumed rate of 6.9 mills. Using the current interest rate and applying provisions of the Water Supply Act of 1958, all municipal and industrial water costs could be repaid in 50 years. After applying all of the available project revenues, including the net revenues from new lands, for a period of 60 years (50 years plus 10-year development period), a balance of \$3,232,440 would remain to be paid from revenues derived from the sale of power from Federal projects in the Lower Colorado River Basin. This compares with a remainder of \$3,754,822 shown in the project feasibility report. Under this method of repayment, net revenues from the irrigators and from ad valorem taxes would repay about 76 percent of the cost allocated to irrigation.

Section 6(a) of the bills authorizes the construction, operation, and maintenance of recreation facilities as a part of the Dixie project. The section also authorizes land acquisition or withdrawal to meet present and future recreation needs. Authority is given the Secretary to dispose of project lands and recreation facilities to a State or local agency for operation, maintenance, or additional development in order to achieve the widest public benefits from the project's recreation potential. Specific and joint costs attributable to recreation are declared nonreimbursable.

The experience of the Bureau of Reclamation has been that once recreation facilities are incorporated into a project they are used by the public and recognized as an asset by State or local agencies charged with recreation responsibilities. This Department feels that with authority vested in it by these bills the transfer of the recreation functions of this project to a State or local agency will be accomplished on mutually agreeable terms, and the policy of decentralization of recreation responsibility will be served.

To remove any implication that recreation is subordinated to the other project purposes the Department recommends the following change in the language of section 6(a): On lines 13 and 14 of page 4, strike out the words "in a manner consistent with the other project purposes," and substitute therefor: "but these undertakings shall be coordinated with the other project purposes."

For purposes of clarification the Department recommends that section 6(b) of the bills be amended to read:

"The Secretary may make such reasonable provision in the works authorized by this act as he finds to be required for the conservation and development of fish and wildlife in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661, and the following) and the portion of the construction costs allocated to these purposes, together with an appropriate share of the operation, maintenance, and replacement costs therefor, shall be nonreimbursable and nonreturnable."

in lieu of the present language.

Enclosed are statements concerning estimated personnel and other requirements for the project as required by Public Law 801, 84th Congress. Also enclosed is a copy of the Revised Economic and Financial Analysis, Dixie Project, Utah, dated April 1963, prepared by the Bureau of Reclamation, which contains the details of the analyses outlined above.

Since we are informed that there is a particular urgency for the submission of the views of the Department, this report has not been cleared through the Bureau of the Budget and, therefore, no commitment can be made concerning the relationship of the views expressed herein from the standpoint of the administration's program.

Sincerely yours,

STEWART L. UDALL,
Secretary of the Interior.

DIXIE PROJECT, UTAH

Estimated additional man-years of civilian employment and expenditures for the first 5 years of proposed new or expanded programs, as required by Public Law 801, 84th Congress

	1st year	2d year	3d year	4th year	5th year
Estimated additional man-years of civilian employment:					
Administrative services:					
Fiscal.....	2	4	5	5	5
Clerical.....	5	10	18	18	16
Total administrative services.....	7	14	23	23	21
Substantive (program):					
Engineers.....	8	12	22	24	21
Engineering aids.....	15	24	55	53	40
Total, substantive.....	23	36	77	77	61
Total estimate additional man-years of civilian employment.....	30	50	100	100	82
Estimated additional expenditures:					
Personal services.....	\$200,000	\$325,000	\$648,000	\$662,000	\$526,000
All other.....	164,000	4,875,000	13,532,000	13,948,000	7,974,000
Total estimated additional expenditures.....	364,000	5,200,000	14,180,000	14,610,000	8,500,000

REVISED ECONOMIC AND FINANCIAL ANALYSIS, DIXIE PROJECT, UTAH, APRIL 1963

A. GENERAL

The feasibility report on the Dixie project, Utah, was completed in October 1961. Since that time a number of supplemental and revised economic and financial analyses have been completed for the project. By letter of March 14, 1963, Assistant Commissioner Palmer of the Bureau of Reclamation directed that a new revised economic and financial analysis be prepared reflecting the new procedures adopted by the National Park Service for calculating recreation benefits.

In accordance with Mr. Palmer's letter, this revised economic and financial analysis has been prepared for the Dixie project, reflecting the recreation benefits as calculated by the new procedure adopted by the National Park Service. These recreation benefits were received from the National Park Service by memorandum of March 22, 1963.

There are other changes from the October 1961 Dixie project feasibility report incorporated in this economic and financial analysis because of new Bureau of Reclamation policies or because of a more accurate interpretation of existing policies. The variations in this analysis from the 1961 report are pointed out in the separate sections of this analysis.

THE DIXIE PROJECT

B. PROJECT BENEFITS

The revised total annual benefits for the Dixie project are \$4,049,700. The revised benefits for each project function are presented in table 1.

TABLE 1.—*Total project benefits, 100-year period of analysis, 2 7/8 percent interest, Dixie project, Utah*

[Unit: Dollars (rounded)]

Purpose	Annual benefits	Present value of annual benefits
Irrigation:		
Direct.....	1,552,900	50,840,000
Indirect and public ¹	1,718,700	56,269,000
Power.....	342,000	11,197,000
Municipal and domestic water:		
St. George.....	125,200	4,099,000
Cedar City.....	35,500	1,162,000
Flood control.....	7,100	232,000
Fish and wildlife.....	78,000	2,554,000
Recreation.....	190,300	6,230,000
Total benefits.....	4,049,700	132,583,000
Total direct benefits.....	2,331,000	76,314,000

¹ Loss of agricultural benefits in the Virgin Reservoir amounting to \$45,600 annually is deducted.

Irrigation benefits used in this analysis are those as determined by the Garrison formula, and presented, in the supplemental economic study, Dixie project, Utah, April 1962.

Recreation benefits used in this analysis are the benefits submitted by the National Park Service in its memorandum of March 22, 1963.

Current reclamation studies use a 2 7/8-percent interest rate. The October 1961 Dixie project report used a 2 1/2-percent interest rate. By using the 2 7/8-percent interest rate in this analysis, the annual municipal and domestic water benefits and flood-control benefits are increased.

The annual benefits for power and fish and wildlife functions of the project are the same as in the 1961 report.

C. PROJECT ECONOMIC COSTS

The construction costs for the recreational features of the project are decreased from those shown in the October 1961 report. However, the costs for operation, maintenance, and replacement for the recreational facilities are increased over those shown in the October 1961 report. Interest costs for all features of the project have been increased because of using the new interest rate for this analysis. The revised annual equivalent cost of the project is \$1,737,600. The derivation of this new annual equivalent cost is shown in table 2.

TABLE 2.—*Summary of Federal economic costs, 100-year period of analysis, Dixie project, Utah*

[Unit: Dollars (rounded)]

Construction cost ¹	44,435,200
Interest during construction ²	1,978,000
Subtotal.....	46,413,200
Average annual equivalent cost at 2 7/8-percent interest.....	1,417,700
Annual operation, maintenance, and replacement ³	319,900
Total annual equivalent cost.....	1,737,600

¹ Cost of investigation of the Dixie project, amounting to \$387,000, has not been included.

² Simple interest at 2 7/8 percent.

³ Includes annual operation and maintenance costs of recreation features plus annual replacement costs for recreation features based on a sinking fund at 2 7/8-percent interest for a period of 25 years.

D. BENEFIT-COST RATIO

Using total benefits, the revised benefit-cost ratio for the Dixie project would be 2.3 to 1, considering a 100-year period of analysis and a 2 $\frac{7}{8}$ -percent interest rate. Using only direct benefits the benefit-cost ratio would be 1.3 to 1.

E. COST ALLOCATION

In the 1961 report, only separable recreation costs were allocated to the recreation function. In this revised analysis an appropriate share of the joint project costs has been allocated to recreation as well as separable recreation costs. The costs allocated to the various project functions are shown in table 3.

TABLE 3.—Costs allocated to each project function, Dixie project, Utah

[Unit: Dollars (rounded)]

Cost	Irrigation	Power	Municipal and domestic water	Flood control	Fish and wildlife	Recreation	Total
Construction cost ¹	30,635,000	6,826,000	2,518,000	152,000	1,563,000	2,883,000	44,577,000
Interest during construction.....	1,336,000	290,000	² 130,000	8,000	80,000	134,000	1,978,000
Annual operation, maintenance, and replacement cost.....	174,500	74,200	5,000	300	3,100	62,800	319,900

¹ Includes \$142,000 in reimbursable investigation costs. These reimbursable investigation costs were excluded from the construction costs shown in table 2.

² In accordance with the Water Supply Act of 1958, interest during construction allocated to municipal and domestic water must be adjusted to the rate certified by the Secretary of the Treasury for the current year when determining repayment. The rate for fiscal year 1963 is 2.936 percent. Using this interest rate, interest during construction for municipal and domestic water for repayment purposes is \$133,000.

The derivation of these allocated costs is presented in table 4.

THE DIXIE PROJECT

TABLE 4.—Allocation of costs—100-year period of analysis—2 7/8-percent interest separable costs-remaining benefit method, Dixie project, Utah
 [Unit: Dollars]

Item	Irrigation	Power	Municipal and domestic water	Flood control	Fish and wildlife	Recreation	Total
1. Benefits.....	107, 109, 000	11, 197, 000	4, 099, 000	232, 000	2, 554, 000	6, 230, 000	1131, 421, 000
2. Alternate single-purpose cost ¹	48, 553, 000	11, 197, 000	4, 099, 000	(3)	(3)	(3)	63, 849, 000
3. Justifiable expenditure.....	48, 553, 000	11, 197, 000	4, 099, 000	232, 000	2, 554, 000	6, 230, 000	72, 865, 000
4. Separable costs.....	14, 454, 000	6, 057, 000			16, 000	2, 636, 000	23, 163, 000
Construction cost.....	(9, 827, 000)	(3, 702, 000)			(16, 000)	(699, 000)	(14, 244, 000)
Interest during construction.....	(263, 000)	(129, 000)				(29, 000)	(414, 000)
Operation and maintenance.....	(4, 364, 000)	(2, 226, 000)				(1, 917, 000)	(8, 507, 000)
5. Remaining justifiable expenditure.....	34, 099, 000	5, 140, 000	4, 099, 000	232, 000	2, 538, 000	3, 594, 000	49, 702, 000
6. Joint costs to be allocated (percent).....	68. 6	10. 3	8. 3	5	5. 1	9. 2	100. 0
7. Allocation of joint costs ⁴	23, 231, 000	3, 488, 000	2, 811, 000	170, 000	1, 727, 000	2, 438, 000	33, 865, 000
Construction cost.....	(20, 808, 000)	(3, 124, 000)	(2, 518, 000)	(152, 000)	(1, 547, 000)	(2, 184, 000)	(30, 333, 000)
Interest during construction.....	(1, 073, 000)	(161, 000)	(130, 000)	(8, 000)	(50, 000)	(112, 000)	(1, 584, 000)
Operation and maintenance.....	(1, 350, 000)	(203, 000)	(163, 000)	(10, 000)	(100, 000)	(142, 000)	(1, 988, 000)
8. Total allocation of costs.....	37, 685, 000	9, 545, 000	2, 811, 000	170, 000	1, 743, 000	5, 074, 000	57, 028, 000
Construction cost.....	(30, 635, 000)	(6, 826, 000)	(2, 518, 000)	(152, 000)	(1, 563, 000)	(2, 883, 000)	(41, 975, 000)
Interest during construction.....	(1, 336, 000)	(290, 000)	(130, 000)	(8, 000)	(80, 000)	(134, 000)	(1, 975, 000)
Operation and maintenance.....	(5, 714, 000)	(2, 429, 000)	(163, 000)	(10, 000)	(100, 000)	(2, 057, 000)	(10, 473, 000)
9. Allocated annual operation and maintenance.....	174, 500	74, 200	5, 000	300	3, 100	62, 800	313, 900
10. Reimbursable costs:							
Construction costs.....	30, 635, 000	6, 826, 000	2, 518, 000				39, 979, 000
Interest during construction.....		290, 000	133, 000				423, 000

¹ Excludes benefits to Cedar City.

² Includes construction cost, interest during construction, and operation and maintenance cost.

³ Cost of single-purpose alternate exceeds benefits.

⁴ Excludes nonreimbursable investigation costs of \$239,500 from the Colorado River development fund and \$5,500 contributed by the State of Utah.

⁵ Interest during construction allocated to municipal and domestic water has been adjusted in accordance with the Water Supply Act of 1958. This adjustment uses a 2.936-percent interest rate which is the rate certified by the Secretary of the Treasury for fiscal year 1963. This interest is the amount included in the repayment schedule table 5 of this evaluation.

F. PROJECT REPAYMENT

Reclamation law provides that costs allocated to fish and wildlife and flood control are to be nonreimbursable and nonreturnable.

The Virgin City Reservoir will produce the majority of the recreation benefits for the Dixie project. Because of the close proximity to Zion National Park, the Virgin City Reservoir would be of regional and national significance for recreation purposes. Therefore, it is recommended that those costs of the project allocated to recreation be made nonreimbursable and nonreturnable.

The reimbursable costs as allocated in this analysis and presented in table 3 could be repaid as presented in the following paragraphs and shown in table 5.

Item	Estimated Cost	Reimbursable	Nonreimbursable
Construction of Virgin City Reservoir	1,200,000	0	1,200,000
Construction of Dixie Dam	800,000	800,000	0
Construction of Flood Control Structures	500,000	0	500,000
Construction of Fish and Wildlife Facilities	300,000	0	300,000
Construction of Recreation Facilities	200,000	0	200,000
Construction of Other Facilities	100,000	100,000	0
Operation and Maintenance	1,000,000	1,000,000	0
Interest	500,000	500,000	0
Contingency	200,000	200,000	0
Total	4,500,000	3,000,000	1,500,000

TABLE 5.—*Repayment of reimbursable Federal costs, all project functions paying until all reimbursable costs have been paid, Dixie project Utah*

[In dollars]

Project year	Power						Municipal and domestic water						Irrigation			
	Net operating revenue	Interest on unpaid balance at 2% per cent	Repayment of investment	Unpaid balance	Surplus revenue applied to irrigation	Net revenue	Interest on unpaid balance at 2.836 per cent	Peypamand municipal and domestic water investment	Unpaid balance	Surplus revenue applied to irrigation repayment	Net revenue from old lands	Net revenue from new lands	Revenue from county district tax	Repayment of irrigation investment	Unpaid balance	
0				7, 116, 000		88, 800	52, 613	1, 2, 651, 000						30, 635, 000		
1	270, 340	204, 585	65, 755	7, 050, 245		88, 800	52, 613	1, 1, 792, 000				64, 500	154, 500	30, 480, 500		
2	270, 340	202, 695	67, 645	6, 982, 600		88, 800	52, 613	1, 1, 759, 151			0	64, 500	154, 500	30, 329, 000		
3	270, 340	200, 750	69, 590	6, 913, 010		88, 800	51, 649	1, 1, 742, 000			0	64, 500	154, 500	30, 171, 500		
4	270, 340	198, 749	71, 591	6, 841, 419		88, 800	51, 145	1, 1, 724, 345			0	64, 500	154, 500	30, 017, 000		
5	270, 340	196, 691	73, 649	6, 767, 770		88, 800	50, 627	1, 1, 705, 172			0	64, 500	154, 500	29, 862, 500		
6	270, 340	194, 573	75, 767	6, 692, 003		88, 800	50, 093	1, 1, 687, 465			0	64, 500	154, 500	29, 708, 000		
7	270, 340	192, 395	77, 945	6, 614, 058		88, 800	49, 544	1, 1, 668, 209			0	64, 500	154, 500	29, 553, 500		
8	270, 340	190, 154	80, 186	6, 533, 872		88, 800	48, 979	1, 1, 648, 388			0	64, 500	154, 500	29, 399, 000		
9	270, 340	187, 849	82, 491	6, 451, 381		88, 800	48, 397	1, 1, 627, 985			0	64, 500	154, 500	29, 244, 500		
10	270, 340	185, 477	84, 863	6, 366, 518		88, 800	47, 798	2, 405, 983			269, 500	64, 500	154, 500	29, 090, 000		
11	270, 340	183, 038	87, 302	6, 279, 216		105, 590	72, 401	2, 432, 794			269, 500	82, 000	441, 500	28, 935, 500		
12	270, 340	180, 527	89, 813	6, 189, 403		105, 590	71, 427	2, 398, 631			269, 500	82, 000	441, 500	28, 781, 000		
13	270, 340	177, 945	92, 395	6, 097, 008		105, 590	70, 424	2, 363, 465			269, 500	82, 000	441, 500	27, 765, 500		
14	270, 340	175, 289	95, 051	6, 001, 957		105, 590	69, 391	2, 327, 266			269, 500	82, 000	441, 500	27, 611, 000		
15	270, 340	172, 556	97, 784	5, 904, 173		105, 590	68, 329	2, 290, 005			269, 500	82, 000	441, 500	26, 882, 500		
16	270, 340	169, 745	100, 595	5, 803, 578		105, 590	67, 235	2, 251, 650			269, 500	82, 000	441, 500	26, 728, 000		
17	270, 340	166, 853	103, 487	5, 700, 091		105, 590	66, 108	2, 212, 168			269, 500	82, 000	441, 500	26, 573, 500		
18	270, 340	163, 878	106, 462	5, 595, 629		105, 590	64, 949	2, 171, 527			269, 500	82, 000	441, 500	25, 999, 000		
19	270, 340	160, 817	109, 523	5, 484, 106		105, 590	63, 756	2, 130, 683			269, 500	82, 000	441, 500	25, 844, 500		
20	270, 340	157, 668	112, 672	5, 371, 434		105, 590	62, 528	2, 086, 631			269, 500	82, 000	441, 500	25, 689, 500		
21	270, 340	154, 429	115, 911	5, 255, 523		105, 590	61, 263	2, 042, 304			269, 500	91, 500	451, 000	25, 534, 000		
22	270, 340	151, 096	119, 244	5, 136, 279		105, 590	59, 962	1, 996, 676			269, 500	91, 500	451, 000	25, 379, 000		
23	270, 340	147, 668	122, 672	5, 013, 607		105, 590	58, 622	1, 949, 708			269, 500	91, 500	451, 000	25, 224, 000		
24	270, 340	144, 141	126, 199	4, 887, 408		105, 590	57, 243	1, 901, 361			269, 500	91, 500	451, 000	25, 069, 000		
25	270, 340	140, 513	129, 827	4, 757, 581		105, 590	55, 824	1, 851, 595			269, 500	91, 500	451, 000	24, 914, 000		
26	270, 340	136, 780	133, 560	4, 624, 021		105, 590	54, 363	1, 800, 368			269, 500	91, 500	451, 000	24, 759, 000		
27	270, 340	132, 941	137, 399	4, 486, 622		105, 590	52, 859	1, 747, 687			269, 500	91, 500	451, 000	24, 604, 000		
28	270, 340	128, 990	141, 350	4, 345, 272		105, 590	51, 311	1, 693, 358			269, 500	91, 500	451, 000	24, 449, 000		
29	270, 340	124, 927	145, 413	4, 199, 859		105, 590	49, 717	1, 637, 972			269, 500	91, 500	451, 000	24, 294, 000		
30	270, 340	120, 746	149, 594	4, 050, 265		105, 590	48, 077	1, 580, 520			269, 500	100, 000	459, 500	24, 139, 000		
31	270, 340	116, 445	153, 895	3, 896, 370		105, 590	46, 388	1, 520, 770			269, 500	100, 000	459, 500	23, 984, 000		

32	270,340	112,021	158,319	3,738,051	105,590	44,650	60,940	1,459,830	90,000	269,500	100,000	459,500	19,246,000
33	270,340	107,469	162,871	3,573,180	105,590	42,861	62,729	1,397,101	90,000	269,500	100,000	459,500	18,786,500
34	270,340	102,786	167,554	3,407,626	105,590	41,019	64,571	1,332,580	90,000	269,500	100,000	459,500	18,327,000
35	270,340	97,969	172,371	3,243,226	105,590	39,123	66,467	1,266,063	90,000	269,500	100,000	459,500	17,867,500
36	270,340	93,014	177,326	3,079,429	105,590	37,172	68,418	1,197,645	90,000	269,500	100,000	459,500	17,408,000
37	270,340	87,915	182,425	2,915,524	105,590	35,163	70,427	1,127,218	90,000	269,500	100,000	459,500	16,948,500
38	270,340	82,670	187,670	2,751,834	105,590	33,065	72,495	1,054,723	90,000	269,500	100,000	459,500	16,489,000
39	270,340	77,275	193,065	2,588,769	105,590	30,967	74,623	980,100	90,000	269,500	100,000	459,500	16,029,500
40	270,340	71,725	198,615	2,426,154	105,590	28,776	76,814	903,286	90,000	269,500	100,000	459,500	15,570,000
41	270,340	66,014	204,326	2,263,828	105,590	26,520	79,070	824,216	90,000	269,500	100,000	468,000	15,102,000
42	270,340	60,140	210,200	2,101,828	105,590	24,199	81,301	742,825	90,000	269,500	108,500	468,000	14,634,000
43	270,340	54,097	216,243	1,940,385	105,590	21,809	83,781	659,044	90,000	269,500	108,500	468,000	14,166,000
44	270,340	47,880	222,460	1,779,925	105,590	19,350	86,240	572,804	90,000	269,500	108,500	468,000	13,698,000
45	270,340	41,484	228,856	1,619,633	105,590	16,818	88,772	484,032	90,000	269,500	108,500	468,000	13,230,000
46	270,340	34,904	235,436	1,459,429	105,590	14,211	91,379	392,653	90,000	269,500	108,500	468,000	12,762,000
47	270,340	28,136	242,204	1,299,429	105,590	11,528	94,062	298,591	90,000	269,500	108,500	468,000	12,294,000
48	270,340	21,172	249,168	1,139,630	105,590	8,767	96,823	201,768	90,000	269,500	108,500	468,000	11,826,000
49	270,340	14,009	256,331	979,630	105,590	5,924	99,666	102,102	90,000	269,500	108,500	468,000	11,358,000
50	270,340	6,639	263,980	819,630	105,590	2,999	102,102	0	489	269,500	108,500	501,260	10,886,740
51	270,340	0	270,340	659,630	270,340	0	0	0	105,590	269,500	117,000	852,480	10,004,310
52	270,340	0	270,340	500,000	270,340	0	0	0	105,590	269,500	117,000	852,480	9,151,880
53	270,340	0	270,340	340,000	270,340	0	0	0	105,590	269,500	117,000	852,480	8,299,450
54	270,340	0	270,340	180,000	270,340	0	0	0	105,590	269,500	117,000	852,480	7,447,020
55	270,340	0	270,340	20,000	270,340	0	0	0	105,590	269,500	117,000	852,480	6,594,590
56	270,340	0	270,340	0	270,340	0	0	0	105,590	269,500	117,000	852,480	5,742,160
57	270,340	0	270,340	0	270,340	0	0	0	105,590	269,500	117,000	852,480	4,889,730
58	270,340	0	270,340	0	270,340	0	0	0	105,590	269,500	117,000	852,480	4,037,300
59	270,340	0	270,340	0	270,340	0	0	0	105,590	269,500	117,000	852,480	3,184,870
60	270,340	0	270,340	0	270,340	0	0	0	105,590	269,500	117,000	852,480	2,332,440
61	270,340	0	270,340	0	270,340	0	0	0	105,590	269,500	125,000	860,480	1,472,010
62	270,340	0	270,340	0	105,590	0	0	0	105,590	269,500	125,000	860,480	611,580
63	127,080	0	0	0	127,080	0	0	0	0	269,500	125,000	611,580	0
Total	16,888,160	6,368,229	7,116,000	0	3,403,631	6,178,680	2,260,111	2,651,000	5,670,000	14,283,500	6,010,000	30,635,000	0

Interest charges during the 1st 10 years of project operation, Virgin City Reservoir is the only storage facility of the project serving the municipal and domestic water function. The investment cost of this reservoir allocated to municipal and domestic water is \$1,432,000, of which \$859,000 is eligible for the 10 year, interest-free period.

1 Of the 5,000 acre-feet of water per year requested by the city of St. George for municipal and domestic uses, 2,000 acre-feet per year are scheduled to be delivered upon completion of the project, and delivery of the remaining 3,000 acre-feet per year would be deferred until after the 10th year. Thus, as provided by the Water Supply Act of 1968, 3% of the dam and reservoir costs allocated to municipal and domestic water would be free of

The \$7,116,000 of investment costs allocable to power could be repaid in 50 years by charging a rate of 6.66 mills per kilowatt-hour. The rate required in the October 1961 report for the power investment to be repaid in 50 years was 6.93 mills.

In the October 1961 report an interest-free period of 10 years was provided in the repayment schedule for three-fifths of all project investment costs allocated to the municipal and domestic water function. Also, a 50-year repayment period for these costs was allowed beginning in year 11 of project operation.

In this analysis the interest-free period as presented in the repayment schedule, table 5, applies to only three-fifths of the Virgin City Reservoir investment costs which are allocated to municipal and domestic water. All municipal and domestic water costs are repaid in 50 years beginning the first year of project operation. The method suggested in the chief engineer's letter of February 28, 1963, subject, "Revised Economic and Financial Analysis—Dixie Project, Utah, October 1963," was used in determining the portion of municipal and domestic water costs eligible for the 10-year interest-free period. In compliance with the Water Supply Act of 1958 the current interest rate of 2.936 percent has been used in the repayment schedule shown in table 5.

Because of the shorter repayment period for municipal and domestic water, and the smaller amount eligible for the 10-year, interest-free period, the municipal and domestic water rate must be increased over that shown in the October 1961 report.

By applying all available project revenues to the reimbursable irrigation costs, after power and municipal and domestic water costs have been paid off, complete payout of the reimbursable project costs would be accomplished during the 63d project year as shown in table 5.

By application of revenue from all sources for a period of only 50 years, including revenues from new lands, a balance of \$8,161,740 would remain to be paid from some other source. Using this method of repayment the irrigators could repay 73 percent of the costs allocated to irrigation during a 50-year repayment period.

Senator Moss. At a later point in the record I will insert some letters which I have from the Governor of the State of Utah and the Chamber of Commerce of Cedar City.

We are very happy this morning to have my senior colleagues from the State of Utah, Senator Wallace F. Bennett, who will appear as a witness. He will be followed by Congressman Laurence J. Burton, in whose district this project is located.

Senator Bennett?

STATEMENT OF HON. WALLACE F. BENNETT, A U.S. SENATOR FROM THE STATE OF UTAH

Senator BENNETT. Mr. Chairman, thank you very much.

Mr. Chairman, it gives me great pleasure today to appear before this distinguished committee in support of the proposed Dixie project in southwestern Utah. The State of Utah endorses the proposed plan of development without reservation and urges the early and favorable consideration of the project by Congress.

As the chairman has pointed out, there are two bills before the committee. He has introduced one. I have introduced the other.

It was my privilege to introduce the first Dixie project bill, offered after the Bureau of Reclamation had completed its restudy of this meritorious project, S. 14 of the 87th Congress, which was introduced January 5, 1961. Senator Moss and the others in the Utah congressional delegation introduced similar bills. I call this to your attention to highlight my strong support for the Dixie project.

The people of Utah are united in their earnest desire to see the Dixie project built after being under study by the Bureau of Reclamation

since at least 1918. It was only World War II which blocked much earlier construction of the project at a cost that would have been but a relatively small fraction of the burdens which the people of Utah's Dixie are willing to undertake so that the project may become a reality.

Just as the people of the State are united, so, too, is the Utah congressional delegation. Thus, on January 9, I directed a letter to my junior colleague from Utah, Senator Moss, the chairman of this subcommittee, inviting him to join in sponsoring the Dixie project. He chose instead to introduce his own bill, S. 26, and so that I would be clearly on record in support of the project I introduced my bill, S. 655, and, of course, the two Utah House Members introduced their bills.

BENEFITS TO CEDAR CITY, UTAH

The two bills are essentially the same, except for one provision in my bill, S. 655, which calls attention to the already existing contractual arrangement under which the Cedar City, Utah, area would receive 8,000 acre-feet of water annually. This language is designed to protect fully the interests of the people of Cedar City.

When the Kolob Dam and Reservoir was constructed by the Kolob Reservoir & Storage Association in Washington County in 1956, it was agreed that Cedar City would construct works for the diversion of up to 8,000 acre-feet of water from tributaries of the Virgin River for municipal use. It should be noted that Cedar City agreed to reimburse the project for power revenue losses resulting from this diversion. It would be equally satisfactory to me either to have S. 26 amended to add this clause or to approve S. 655, whichever the committee prefers. Since S. 655 is before the committee the language of my amendment is also in the record.

BENEFITS TO WASHINGTON COUNTY

Of course, the major benefits of the project will accrue to Washington County, in which it is located. By regulation of flows of the Virgin River and its tributary, the Santa Clara River, the project would provide supplemental irrigation water to 9,445 acres of presently developed land and a full water supply for 11,615 acres of new land.

In addition the city of St. George would be provided with 5,000 acre-feet of water annually for municipal and industrial purposes. Construction of three powerplants as proposed in the project plan would produce about 44,500,000 kilowatt-hours of firm electric energy and about 1,900,000 kilowatt-hours of secondary energy for sale annually. In addition minor flood control benefits would result, as would fish and wildlife and recreation benefits.

Water storage facilities are considered to be the primary need of the Dixie project area. Development of such facilities would provide for the conservation and orderly release of water that is now wasted. The resulting supply of stored water would serve as the foundation for a revitalized and modernized agricultural development, and to permit local industry and population growth.

The proposed Dixie project will be divided into two divisions. The first is the Hurricane division along the Virgin River. It would con-

sist of the Virgin City Dam, Reservoir, and powerplant, the Hurricane division main canal, and the Bench Lake and Warner powerplants. The second is the Santa Clara division, which will consist of the Lower Gunlock Dam and Reservoir and rehabilitation of an existing canal. The total cost of the project is now estimated to be \$44,822,000.

Utah's Dixie has experienced years of serious drought, and the water situation is even now critical. Unless the Dixie project is built there appears to be no possibility that additional water supplies can be developed. There can be no additional population growth in the area. The future of the entire area is dependent upon congressional approval and construction of the Dixie project.

PROJECT REPAYMENT

That is why the local people have agreed to impose an almost unprecedentedly high tax to repay their share of the project costs. This 5 mill ad valorem tax contrasts with the usual levy of from 1 to 2 mills for other reclamation projects.

The local people have further demonstrated their complete cooperation by forming a local conservancy district which, based upon the high tax levy, will repay 76 percent of the irrigation costs. In order to complete repayment the two bills before the committee call for allocating the remainder to power revenues that will arise from Lower Colorado Basin dams, since the Virgin River is a Lower Basin stream. This same principle is used in connection with the Colorado River storage project, which established a formal basin account. Moreover it is my understanding that some 15 additional western reclamation projects have utilized the same principle without establishing a basin account.

A suggestion has been made that the Dixie project should be delayed until a Lower Colorado Basin account is established. This, in my opinion, would be disastrous to the people in Utah's Dixie, who have already waited over 50 years to get the project built and should not and must not be compelled to accept further delays, particularly during a time of drought and water shortage.

ARIZONA *v.* CALIFORNIA CASE

Delay has also been urged by some interests who feel that the *Arizona v. California* water dispute pending before the Supreme Court should be decided before the project is authorized. However the master, appointed by the Supreme Court, in his report made it quite clear that tributary streams such as the Virgin are not an issue in the case and are considered to be captive streams. Moreover, Congress has also evidenced its support of the view taken by the master in authorizing the Fryng Pan-Arkansas and the Navajo and San Juan-Chama projects, all tributary streams to the Colorado.

BUREAU OF RECLAMATION STUDIES

The Dixie bills before the committee are a product of lengthy and detailed studies by expert engineers. The Bureau of Reclamation reported on the project first during my service in the Senate in 1953.

Because of the lengthy payout period of over 70 years, called for in the report, consideration of the project was postponed. However, once the Colorado River storage project had established the principle of assigning power revenues to irrigation projects in our area, Senator Watkins and I asked the Bureau to restudy the project. This was done and a second report was prepared in June of 1961 and was culminated by the report of October 1961.

The report is before us now, 2 years later.

General investigation expenditures during this period are as follows:

1953-----	\$14, 382	1958-----	\$12, 736
1954-----	5, 298	1959-----	2, 930
1955-----	659	1960-----	9, 816
1956-----	387	1961 (complete report) ¹ -----	38, 736
1957-----	14, 460	1962 (review report) ¹ -----	13, 709

¹ Kennedy administration.

There was another \$50,000 spent after 1961.

In conclusion, I again respectfully urge prompt and favorable approval of the Dixie project by either adopting S. 655 or by amending S. 26 as I have urged. There are several Utahans here today who have traveled over 2,000 miles to support the project. I know you will be impressed with their testimony, including the testimony of my two Utah colleagues from the House of Representatives.

I thank you, Mr. Chairman, for the privilege.

Senator Moss. Thank you very much for your statement. I am glad you called attention to the length of time that we have been studying and considering a Dixie project because this is not a new thing that has just popped up. It is something we have been working on for many, many years.

Do we have any questions of the Senator? Senator Kuchel?

Senator KUCHEL. Senator, over the years we have had, in this committee, problems with respect to development of the waters of the Colorado River.

Coming from California, where my State has been involved in a lawsuit with the State of Arizona—a lawsuit which is not yet disposed of by the Supreme Court—the problem always arises as to the application of the compact between the States in the basin and the whole series of laws which have been enacted relative to the development and use of the waters of the river.

My recollection is that, in dealing with reclamation projects in both the Upper and Lower Basins, the committee has given consideration in past years to amendments to each bill which would give any State, which felt aggrieved, an opportunity to present and have litigated its views with respect to the allocation of waters to a particular State.

My recollection is that legislation along these lines was written into the bill so long and vigorously advocated by our colleague from Colorado, Senator Allott, which finally passed with such amendments in it.

My recollection is that the distinguished former chairman of our full committee, Senator Anderson, in advocating the San Juan-Chama bill, accepted certain amendments along the general lines I have advocated.

If I am correct in that, and I believe I am, you would have no objection to the same treatment by the committee and the Congress of this recent legislation.

Senator BENNETT. Not being a lawyer, nor a member of the Interior Committee, I have no background for this particular problem. I understand that other witnesses from the State of Utah, who will appear later, will develop the fact that less than 1 percent of the water of the Virgin gets into the mainstream of the Colorado—that this is very largely a captive Utah stream.

Senator KUCHEL. And your testimony would be that the stream upon which this project would operate, in your judgment, is not a part of the Colorado River system?

Senator BENNETT. Well, it falls geographically in the drainage of the Colorado but, by the nature of its pattern and the present use of the water in the river, the use that has been followed for many, many years, actually as I remember the figure and it will be testified to officially later, 0.076 of 1 percent of the water is all that gets into the Colorado River system. So that, if such protective amendment is the pattern and is desirable, I am sure the committee will give that attention but, in the sense that the development on this river will have any major effect on the waters of the Colorado, I think it will not.

Senator KUCHEL. What I am getting at specifically, Senator, is that in the Frying Pan bill, as it was signed by law by the President, section 5(e)—and I ask consent, Mr. Chairman, that the entire text of that subsection be placed in the record at this point—

Senator Moss. Without objection it will be done.

(The section referred to follows:)

(e) In the operation and maintenance of all facilities under the jurisdiction and supervision of the Secretary of the Interior authorized by this Act, the Secretary of the Interior is directed to comply with the applicable provisions of the Colorado River compact, the Upper Colorado River Basin compact, the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, the Colorado River Storage Project Act (and any contract lawfully entered into by the United States under any of said Acts), the treaty with the United Mexican States, and the operating principles, and to comply with the laws of the State of Colorado relating to the control, appropriation, use, and distribution of water therein. In the event of the failure of the Secretary of the Interior to so comply, any State of the Colorado River Basin may maintain an action in the Supreme Court of the United States to enforce the provisions of this section and consent is given to the joinder of the United States as a party in such suit or suit, as a defendant or otherwise.

Senator KUCHEL. I refer, however, particularly to the language, Senator, in the law: "In the event of a failure of the Secretary of the Interior to so comply,"—parenthetically, the compliance is directed to the compact in the appropriate laws—"any State of the Colorado Basin may maintain an action in the Supreme Court of the United States to enforce the provisions of this section." That is that compliance by the Secretary be enforced with respect to those laws. "—and consent is given to the joinder of the United States as party to such suit or suits as defendant or otherwise."

And the report of our committee, which I think was unanimous, went on to say, and I read from page 13 of the report, No. 1742, Calendar No. 1701, 87th Congress, 2d session :

Subsection (e) directs the Secretary of the Interior to comply with all of the applicable provisions of the various compacts, statutes, and treaties and, in the event of failure of the Secretary to so comply, permits any State of the Colorado Basin to bring an action in the Supreme Court of the United States to enforce compliance with such provision.

I simply want that made part of the record, Senator, because I would hope that consideration could be given, in each instance where such a problem arises, to the inclusion of that.

Senator BENNETT. I am sure this is a problem of your committee and now that it is in the record there will be an opportunity to pursue it.

Senator Moss. Are there any other questions?

Senator Allott?

Senator ALLOTT. Yes. I am interested in the proposals of this bill. I simply want to raise the question at this time, do you have any comments about the meaning of section 2 which reads as follows :

The project shall include such measures for the disposition of saline waters of La Verkin Springs as are necessary in the opinion of the Secretary to insure the delivery of water at downstream points along the Virgin River for the water users in the States of Arizona and Nevada of suitable quality for irrigation, or provision shall be made to indemnify such water users for any impairment of water quality for irrigation purposes directly attributable to Dixie project operations.

Does that in your mind provide for the establishment of a saline water conversion plant there?

Senator BENNETT. No, I think it establishes the fact that the Government will agree to indemnify such water users below the La Verkin Springs as may be damaged if the water quality is not maintained but I do not think there is anything in the bill which indicates the way in which the quality must be maintained.

I do not consider this to be the authorization of a saline conversion plant.

Senator ALLOTT. I think you will have to admit that the way the paragraph is written, a saline conversion plant could be authorized; could it not?

Senator BENNETT. It is my understanding again that other witnesses will be here to discuss this particular phase.

Senator ALLOTT. Well, anyway, it is your point of view that this does not authorize such a plant?

Senator BENNETT. It does not in itself authorize automatically the erection of a saline conversion plant.

Senator ALLOTT. Thank you. That is all I have.

Senator Moss. Thank you.

I think, if I may contribute just a word, that that section is written for the purpose of being completely flexible on this problem because it is not certain yet as to just how it will be dealt with, whether there will be a pumpback with dilution of the spring water or whether there will be simple indemnity if the farmers below bring any action

or claim, or whether there might be some positive desalinization process.

There is authorization to deal with the problem.

Senator Jordan, do you have any questions?

Senator JORDAN. No questions.

Senator Moss. Senator Hayden, do you have any questions of the Senator?

Senator HAYDEN. I would look upon it that the quantity of water involved in this project, which has been of long use in Utah and Nevada, does not amount to enough to be of any consequence either to the State of Arizona or the State of California. It is a small project, in other words, and it might provide without any interference on the part of either of the two States because of it being such a minimum amount of water.

Senator Moss. Thank you, Senator.

Thank you, Senator Bennett. We appreciate your appearance.

We will now hear from Congressman Laurence J. Burton, who represents the First District of the State of Utah.

Congressman Sherman Lloyd is here and will also testify.

STATEMENT OF HON. LAURENCE J. BURTON, A U.S. REPRESENTATIVE FROM THE STATE OF UTAH

Representative BURTON. Thank you, Senator Moss. I would like to say that it is a great privilege for me to join with you and the senior Senator and my other colleague from Utah in unanimous and enthusiastic support for this project.

I appreciate the opportunity to appear before you and testify in support of what I have long considered one of the most significant and important reclamation projects proposed for the State of Utah. Not only is this project important to southwestern Utah, but also to neighboring Arizona and Nevada, with many indirect benefits to the entire Nation. The proposed project will be located in the southwestern portion of the State of Utah in an area commonly known and referred to as Utah's Dixie.

Gentlemen, this area and the country with which you will be concerned in your discussion of this project is not an ordinary one, and the people who settled and developed Dixie were not ordinary people.

As the chairman of the subcommittee has pointed out, Utah was settled by the Mormon pioneers as they traveled West seeking refuge from persecution and mob violence. They settled in the desolate territory which was to become known as the Territory or State of Deseret, and later the State of Utah. Needless to say, many of those early pioneers must have been bitterly disappointed when they emerged from the mountains on the east of the Salt Lake Valley and stood on the hill surveying the desert, to hear Brigham Young say, "This is the place," and instructed them to settle there, build their homes, and till the soil.

Even at the time the Mormons were coming into the Great Salt Lake Valley, the area referred to as Dixie was of considerable importance and known to some people. Captain Fremont used the trail in 1843 and 1844; Father Escalante, a Catholic Jesuit, passed through there, and Jedediah Strong Smith passed that way in their expeditions. The

gold seekers from the East utilized it in their trek to the gold fields of California. Brigham Young, the great colonizer, recognized the advantages of settling this area, and certainly paramount among these advantages was the opportunity for his people to become a self-sufficient people. Brigham Young was convinced that the climate and fertile soil made possible the growing of cotton, figs, sugarcane, tobacco, other tropical agricultural products, and even raising silkworms, making their own cloth, and his wish was that they become a highly industrialized and self-sufficient community.

One of the first settlements of any significance in Dixie was the Indian mission on the Santa Clara near the present city of Santa Clara. The mission was established in the winter of 1854 by some of the hardiest of the Mormon missionary settlers. In a few years, the settlement showed great promise. In early accounts of a visit to the area by Brigham Young and other church leaders, records show that the settlement consisted of some 30 houses, and approximately 250 acres under cultivation, with flourishing orchards of apples, peaches, apricots, nectarines, plums, figs, grapes, and a promising crop of cotton. There were even cooperative farming arrangements with the Indians.

But in the winter of 1862 came the rains and a flash flood of the Santa Clara like a thief at night, to completely wipe out the settlement with its crops, orchards, and homes. These hardy people stayed on to rebuild their farms and orchards. They suffered from food shortages, sickness, disease, and other setbacks. History tells us that just 2 years later this same Santa Clara River that overflowed its banks and wiped them out, dried up in midseason, leaving the crops and orchards to burn up in the heat of the summer sun.

In the meantime, Brigham Young had determined that the settlement in Dixie had not grown and flourished as it should, and during the October church conference in Salt Lake City, he called over 300 men on a mission to Dixie; a mission to grow cotton and develop farms in the area. Nearly 250 of those called responded to the call and left their homes and farms in the Salt Lake Valley and journeyed to Dixie to start all over again. Most of these people settled in St. George, which is now a thriving Utah Dixie community, and is today the county seat of Washington County. One of the first, and certainly one of the most important, problems of these people was getting water from the Virgin and Santa Clara Rivers onto the land to quench the thirst of their crops and orchards. And just as important as securing water was the problem of controlling the rivers so that they would not again be wiped out by floods.

A review of the history of this area will reveal that these people endured great hardship over extended periods of time. They built dams on the Virgin and Santa Clara Rivers, only to have them washed out by the raging torrents, sometimes twice in a single year. They dug canals and tunnels, only to have them filled with mud and debris. They suffered droughts, but these hardy people faced the hardships and resolved their problems the best way they could. The only certainty in their lives was uncertainty itself. They had good years and bad years, and these ups and downs were expressed in a song written by Charles L. Walker, which he called, "St. George and the Drag-On," which they sang to Brigham Young when he visited from Salt Lake City.

I thought the committee might enjoy this :

Oh, what a desert place was this,
 When first the Mormons found it ;
 They said no white man here could live,
 And Indians prowled around it.
 They said the land it was no good,
 And the water was no gooder ;
 And the bare idea of living here
 Was enough to make one shudder

CHORUS

Mesquite, soaproot,
 Prickly pears and briars ;
 St. George ere long will be a place
 That everyone admires.

Now green lucerne in verdant spots,
 Bedecks our thriving city ;
 And vines and fruit trees grace our lots,
 With flowers sweet and pretty.
 Where once the grass in single blades,
 Grew a mile apart in distance ;
 And it kept the crickets on the go,
 To pick up their subsistence.

The Sun it is scorching hot,
 It makes the water siz, Sir ;
 And the reason why it is so hot,
 Is just because it is, Sir.
 The wind like fury here does blow,
 That when we plant or sow, Sir,
 We place one foot upon the seed,
 And hold it till it grows, Sir.

Dixie had great potential, and these settlers knew it, but there were some real problems involved. They knew these problems well. They worked and sacrificed and adapted themselves, and they gradually tamed the elements to a point where they could survive and provide for themselves and their families. In more recent times it has been asked, "What do you grow in Dixie?" The answer is—"Men and women."

I would like at this point, Mr. Chairman, to assure our friends in California and Arizona that we do not grow cotton in Dixie any more. It is cheaper and more economically feasible to get it from Arizona and California.

Gentlemen, here we are, a hundred years later, and some of the most basic problems of this area have not been resolved. There is still a shortage of water ; there is still a threat of floods and drought ; there is a shortage of electrical energy, and hence a shortage of employment opportunities. This is truly unfortunate, because Dixie is not an ordinary area. It is a delightful garden spot, with beautiful scenery, fertile soil, and a most desirable climate. Brigham Young often left the cold, wet winter climate of Salt Lake City to spend the winter months in Dixie. With the benefits that will be derived from the Dixie project, this area will become one of the most desirable and sought after places in the Nation. A wonderful opportunity is before us, and those acquainted with the area can realize this fully. I appear here this morning to tell you these things and to request your support and authorization for the Dixie project.

The Bureau of Reclamation will testify, I am sure, that the project has engineering feasibility, that it is economically justified, and that a large percentage of the cost of the project will be repaid by those who reap the direct benefits, such as water and electric power. The citizens of this area are not asking for a Government handout; they fought this problem alone for several generations. They are asking for Government assistance in the form of a loan to develop this area for the benefit of the entire Nation.

I have prepared a short summary of this proposed project, including the location, the purposes, the benefits to be derived, together with the cost and economic problems.

I request permission, Mr. Chairman, to include this in the record. Senator Moss. It will be included at this point.

(The summary is as follows:)

DIXIE PROJECT SUMMARY

LOCATION

The land and location to be served directly by the Dixie project are in southwestern Utah, principally in Washington and Iron Counties, in the vicinity of the Virgin and Santa Clara Rivers. The surrounding area will also receive many direct benefits that will naturally arise from this bonanza to Washington and adjacent counties in Utah, Nevada, and Arizona.

PURPOSES

The purposes of the project are fivefold:

1. To provide adequate water to 11,615 acres of land not now under irrigation; supplemental irrigation water to 9,445 acres of presently developed land; 5,000 acre-feet of water to the city of St. George annually for domestic purposes (this water will be supplied from the Virgin City Reservoir); and 8,000 acre-feet annually to Cedar City for domestic purposes pursuant to existing agreement.
2. Provide adequate drainage on land now with too high a water table and with an excessive collection of surface water.
3. Control floods and prevent drought.
4. Provide the needed electrical energy in the southwestern corner of Utah.
5. Provide a substantial increase in fisheries benefits, and some increase in wildlife benefits, together with an unlimited potential in the field of recreation.

NEEDS OF AREA—BENEFITS

Aside from the water needs and water storage facilities, which are considered to be the primary needs of the project area, a shortage of electric power at reasonable rates presents a problem in connection with both expansion of existing industrial operations and also in bringing new industry into the area. This, in turn, is reflected in the overall employment opportunities, a lack of which have been largely responsible for an almost static population in Washington County for the past 20 years.

Under present plans, three powerplants will be constructed in the Dixie project. To fulfill these needs, the three plants will be located as follows:

1. The Virgin powerplant, to be located on the south bank of the Virgin River immediately below the Virgin City Dam.
2. The Bench Lake powerplant, to be located on the main canal at the foot of the Bench Lake escarpment.
3. The Warner powerplant, to be located along the main canal at the foot of the Warner Ridge near the site of the present diversion dam, from the St. George and Washington Canal.

COSTS AND ECONOMIC PROBLEMS

As a general rule, the economic justification of constructing a Bureau of Reclamation project is determined by making a comparison of the benefits which will accrue from the services provided with the cost of constructing the project

features. The benefit-cost ratio of the Dixie project has been computed by the Bureau of Reclamation to be 2.1 to 1.0 for a hundred-year-period of analysis, or, in more specific language, the project will produce economic benefits in double the value of the costs involved in construction, when measured over a long period of time.

The costs are divided into two categories: reimbursable costs, which include irrigation, power and municipal water; and nonreimbursable costs, which include flood control, fish and wildlife, and recreation. The reimbursable costs will be repaid to the Federal Government within 50 years, plus appropriate development periods after completion of each project feature.

The nonreimbursable costs, conversant with long established policy, will not be repaid to the Government but will be absorbed in the public interest.

After the initial expenditure by the Federal Government, the State or local agencies will meet the annual costs associated with reimbursable functions of the project.

The total cost of the project is \$44,867,800; and the construction period is approximately 5 years. During this period, many jobs and job opportunities will be provided for the residents of Washington County and the surrounding area.

CONCLUSION

The Dixie project is of the utmost importance to Utah, and particularly to the southwestern part of the State. It has been determined by all agencies concerned that the project has engineering feasibility, that the project is economically justified, that the reimbursable costs can be repaid within the standard 50-year repayment period, and that construction of the project would be a forward step in the comprehensive development of the Colorado River Basin, and in the conservation and utilization of the lands and water resources of the entire West.

This project is of major interest to the State of Utah and, therefore, of major interest to me; and I have pledged my full and untiring support to the project.

Senator Moss. We appreciate your coming, Congressman Burton, and it was delightful to have you talk a little bit about the early hardships in Dixie.

We all know and love that area, the people from Utah. We know that it has about come to its maximum development unless something more can be done for water there, is that correct?

Representative BURTON. Yes, sir. The Senator is correct in that. Without this project, I think Dixie has about reached its limit of capacity in growth.

As the Senator well knows, it is a beautiful place and can offer to the whole Southwest a tremendous area for recreation and tourist possibilities.

Senator Moss. It is the gateway to Zion National Park, St. George, and through Washington County.

Representative BURTON. That is correct.

Senator, if I may, I would like to direct one final comment to the distinguished Senator from California. It is in line with the comment made by the Senator from Arizona and our senior Senator. That is, that the amount of water involved in the project is negligible in terms of the Colorado River development and the senior Senator was correct in stating that the actual amount that goes into the Colorado is .076 of 1 percent and it is classified almost as a terminable stream. It is used almost entirely within Utah at the present time.

Senator Moss. That is because the river has been almost entirely appropriated now in Utah and in Nevada and Arizona and in this narrow strip along the flood plain and only when there is really a flood does any water ever get down into Lake Mead, is that correct?

Representative BURTON. That is correct, and there is a tremendous amount of waste, as the Senator knows, during these floods because the water fans out over the flood fans and is consumed, much of it, before it ever reaches Colorado.

Senator MOSS. By drain-off and evaporation that water is wasted whereas if it could be impounded and released in this manner it could be used year round as agricultural and city water.

Representative BURTON. That is correct.

Senator MOSS. Are there questions of the Congressman?

Senator HAYDEN?

Senator HAYDEN. I have no questions.

Senator MOSS. Do you have questions, Senator Kuchel?

Senator KUCHEL. Congressman, you would have no objection to the committee, if it found the bill otherwise acceptable, writing in a provision similar to that which I previously discussed with our colleague, Senator Bennett?

Representative BURTON. Offhand, I have no objection, Senator Kuchel. I would like to say that I would support it if it meets with Senator Moss' approval and with Senator Bennett's approval. If they have no objection and if this is standard procedure, why, I am certain that I will go along with that. We do not want to do anything that would complicate this project.

Senator KUCHEL. I have another problem. Some of our brothers from the other Dixie have quite consistently demanded that any reclamation project anywhere have a prohibition against the use of supplemental water from the new project for the purpose of growing crops under the price support.

Do you follow me?

Representative BURTON. Yes, sir.

Senator KUCHEL. What crops are raised or would be raised in the area covered by this project?

Representative BURTON. I believe that the major crop is lucerne. They have a lot of different stock in that area and I think most of the agriculture land is used to raise supplemental hay and feed for their cattle there, and it is my understanding that a good portion of the agricultural products that are raised are consumed in the area.

Also they have some wonderful orchards there which I presume would be increased.

To my knowledge, I do not think there is any substantial surplus crop that would be raised there at all, certainly not cotton now, and I do not think that there are any substantial amounts of feed grains raised there; I should say wheat or corn. There would be some but it would not be sufficient to irritate any of our friends that are concerned with this agricultural program.

Am I right in that, Senator Moss?

Senator MOSS. I think you are correct, Congressman. The principal crops there are fruits and small berries and row crops and supplemental feeds, as you indicated, for cattle in the area.

Representative BURTON. And sheep.

Senator MOSS. So, as far as I know, there are no crops that would be in surplus and subject to price support raised in the area.

Representative BURTON. That is right.

Senator KUCHEL. Thank you.

Senator MOSS. Senator Burdick?

Senator BURDICK. Yes; along that line we have been attaching an amendment to these irrigation projects which would limit the protection of crops by price support to a 10-year period.

Would you have objection to a paragraph like that in this legislation?

Representative BURTON. This would be on new lands brought under. I would not have any objection to putting that sort of a prohibition on new lands. I would think that it would not be fair to put that prohibition on lands that would get supplemental water.

Senator BURDICK. The staff has just advised me that most of the limitations that we put in the bills have been applying to new lands.

Representative BURTON. As I say, I would have no objection to that prohibition being put on the new lands but I think it would be unfair to put that prohibition on the lands that would receive supplemental water and again I would like to assure the Senator that this area is not an area that would grow in any significant amount crops that would be involved in this agriculture program that we have now.

Also, you would be interested to know that there are only 9,400 acres that would get supplemental water and, of the new lands that will be brought in, new lands that will receive water coming under the project will be only 11,700, so that it is not a project that is going to involve an opening up of a great new crop area.

Senator BURDICK. That is all.

Senator MOSS. Thank you.

Senator Allott?

Senator ALLOTT. I have no questions.

Senator MOSS. Senator Jordan?

Senator JORDAN. I have no questions.

Senator MOSS. Thank you very much, Congressman Burton. I appreciate your being here.

Congressman Lloyd from Utah is here. The Congressman represents the Second District of the State.

This will round out the delegation from Utah.

We are all together on this project.

STATEMENT OF HON. SHERMAN P. LLOYD, A U.S. REPRESENTATIVE FROM THE STATE OF UTAH

Representative LLOYD. Mr. Chairman, the Dixie project is not in my area. I represent the clustered population area of the Wasatch Front centered around Salt Lake City.

I think, as the gentlemen of the committee know, that in our State only about 4 percent of the land is under cultivation. Those of us who are clustered around our oases, so to speak, realize the necessity for economic growth in our State, that the population have an opportunity to be dispersed and that the barren areas of that country be developed.

I have a short statement which will supplement and in many cases duplicate the evidence that has already been presented here this morning.

The Dixie project is of vital interest to southwestern Utah, in the counties of Washington and Iron, and in my opinion, to the entire United States as well as the State. The project, which would regulate and utilize the Virgin and Santa Clara Rivers, is Utah's sole involvement in the lower basin of the Colorado River.

The area of the Dixie project lies approximately halfway between the metropolitan areas of Salt Lake City and Los Angeles, something over 300 miles from each metropolis. In this Dixie project country, the population has remained at virtually the same figure in the past 15 years, while population increases in the remainder of the State have approached 30 percent. This project will be a means of ending this economic stagnation. The development of culinary water for St. George and Cedar City, the principal centers, will allow these small cities to grow, whereas at the present time, and in the case of St. George for example, any increase in population will undoubtedly require strict water rationing.

The Dixie project is part of a forward movement in the challenge of constructive use of our natural resources, and now after more than 50 years of study and planning, the time has come for the Dixie project to become an action project. As long ago as 1918, this project was included in the reconnaissance of the Bureau of Reclamation. A feasibility report was issued more than 20 years ago in 1941.

The \$44,868,000 project would provide irrigation water for an additional 11,615 acres and supplemental water for another 9,445 acres. It would, in addition, result in vital new culinary water for St. George and for Cedar City, the largest of the small cities of the area.

Three powerplants would generate electrical energy as a byproduct of the water storage and control, helping that section of the country to attract new industrial power users.

The Bureau of Reclamation figures that over a 100-year period, the benefits will be twice the cost, and such estimates are apt to be conservative.

Reimbursement will be made for the use of water and power. But there are other public benefits that the Government will absorb as a matter of public policy, and that will be absorbed by the people. The project will stabilize the river flow, thereby controlling floods and improving the habitat for fish and wildlife. It will drain lands now afflicted by too high a water table.

The reimbursement is calculated at 50 years, making it a sound investment for the public generally and the citizens of this part of the country in particular.

An important consideration, I believe, is that this sort of Government undertaking makes it possible for private enterprise to flourish. By improving the water and power supply potential of this area, we make it more attractive to industrial development.

This project is a means of ending this economic stagnation, of providing the environment for the motive power of private profit to offer new job opportunities.

Mr. Chairman, the time for action has arrived. I am proud to be associated with this project and to urge that this committee give the necessary leadership to this forward movement.

Thank you.

Senator Moss. Thank you, Congressman Lloyd.

Are there any questions of the Congressman from any of the Senators?

There being no questions, thank you very much for coming.

This indicates the great feeling we have in Utah for this project.

At this point, I will place in the record two letters that I have received from the Governor of the State of Utah strongly urging that the project be approved; also a letter from the executive secretary of the Cedar City Chamber of Commerce, urging approval of the project and calling attention to the agreement between Washington County and Iron County where some of the waters will be diverted for the use in Iron County.

(The letters referred to follow :)

STATE OF UTAH,
OFFICE OF THE GOVERNOR,
Salt Lake City, April 30, 1963.

HON. FRANK E. MOSS,
U.S. Senate, Washington, D.C.

DEAR SENATOR MOSS: I am happy to know of the hearing set for May 7 on the Dixie project. I will not be able to attend in person; however, I have requested Messrs. Jay Bingham and Wayne Criddle to prepare statements to be presented at the hearings. Jay will require about 20 minutes for his presentation, while Wayne will need about 15 minutes. I am hopeful that you can arrange for the required time on the hearing schedule to have our State presentation heard.

I am sure you know, as well as I, that the Dixie project has been a long time in coming. I have been personally connected with it for nearly 40 years, and feel it is one of the much needed and highly feasible projects which remain to be constructed.

I sincerely hope that your committee will act favorably, and that the bill for authorization of construction will go through the Congress expeditiously.

Yours sincerely,

GEORGE D. CLYDE,
Governor.

STATE OF UTAH,
OFFICE OF THE GOVERNOR,
Salt Lake City, May 3, 1963.

HON. FRANK E. MOSS,
Chairman, Irrigation and Reclamation Subcommittee of the
Senate Committee on Interior and Insular Affairs,
Senate Office Building, Washington, D.C.

DEAR SENATOR MOSS: I have, over the years, taken a close personal interest in the development of the water resources of the State of Utah. I am writing to you at this time on the subject of the proposed Dixie project, the U.S. Bureau of Reclamation's report on which is now before your subcommittee. These brief comments are offered for the consideration of the subcommittee.

The Dixie project is vital to the economic stability and growth of the southern part of Utah. I had my first personal contact with this proposed project nearly 45 years ago, in 1919, and I have followed it closely over the intervening years. I know what it means to the people of an area rich in potential but held back by the lack of usable water. Effective development of water originating in this geographical region, and to which we feel fully entitled, would open a new era in this important part of our State. Such development is possible only through implementation of the Dixie project.

The State of Utah has, with its own resources, given considerable assistance to water development in the area of the Dixie project. The proposed project would utilize water which originates in the State of Utah. The Governors and appropriate State officials in Arizona and Nevada have given considerable study and consideration to the effects this development would have on water users of the Virgin River. I present this project to you with the full support of the State of Utah and the assurance that it is uncontested by our neighboring States directly involved.

We appreciate the opportunity you and the members of your subcommittee have provided in hearing from interested parties in connection with this project. I have designated the executive director of the Utah Water and Power Board, Mr. Jay R. Bingham, and State Engineer Wayne D. Criddle to represent the State of Utah in presenting testimony to your subcommittee on this important project.

Your interest and consideration are appreciated.

Yours sincerely,

GEORGE D. CLYDE,
Governor.

CEDAR CITY CHAMBER OF COMMERCE,
Cedar City, Utah, April 17, 1963.

JAY BINGHAM,
*Executive Director, Utah Water & Power Board,
Salt Lake City, Utah.*

DEAR SIR: The Cedar City Chamber of Commerce goes on record as highly recommending and supporting the Dixie project in southern Utah. Furthermore we recommend that the bills being sponsored by both Senator Moss and Congressman Burton spell out that a minimum of 8,000 second-feet of water goes to Cedar City Corp., as well as the additional water, such as the Kolob drainage and Crystal Creek drainage, that can be diverted to the Kolob Reservoir.

We feel this project is of the utmost importance to southern Utah's economic future as it will help the development of our coal fields in regard to producing power for future use by our southwestern States. Your support in this will be appreciated.

Respectfully,

MILT JOLLEY, *Executive Secretary.*

Senator Moss. We will now hear from the Assistant Secretary of the Interior for Water and Power, Mr. Kenneth Holum. A number of members of the Bureau of Reclamation and others are here.

Would they care to come to the table now or will they testify later?

**STATEMENT OF HON. KENNETH HOLUM, ASSISTANT SECRETARY
OF THE INTERIOR (WATER AND POWER), DEPARTMENT OF THE
INTERIOR**

Mr. HOLUM. If it is all right with you, Mr. Chairman, I would like to make my statement.

Senator Moss. Go ahead, then.

Mr. HOLUM. Mr. Chairman and members of the committee, I have listened this morning with a great deal of interest and enthusiasm to your very excellent statement on behalf of the Dixie project and the statements of your colleagues.

I am happy to be here this morning to indicate to you the support and enthusiasm of the Department of the Interior.

I have with me, as you have noted, representatives of the Bureau of Reclamation, Assistant Commissioner Palmer and other members of the Reclamation staff. Fred MacGowan is here, the Director of the Office of Saline Water, as well as representatives from the Fish and Wildlife and National Park Service, all available to give you information both as to the project features and its economic features.

I should like to note, Mr. Chairman, that because this is the first hearing conducted by the Irrigation and Reclamation Committees of either House of the 88th Congress that in the Department of the Interior we are very grateful, as I know the country is grateful, to these two fine committees of the Congress for the very fine and excel-

lent program of multipurpose water resource development that has emerged for the country under the leadership of these two committees.

The 87th Congress completed its work with a significant record of new authorizations of multipurpose projects that are very important to the West and to the country.

We are seeking appropriations to start construction of these projects and the leadership that the legislative committees have provided has made possible orderly and increasing planning, and I think an increasing program of new starts in multipurpose water resource development is necessary and appropriate for the best interests of the country.

This is the good work that you have done and for the Department of the Interior we want to take this opportunity to say a word of thanks to you.

This is the first project that this committee is hearing during the 88th Congress. There will be others. We are confident that the Dixie project together with the other projects that you will be covering later during this session will again provide the Congress with an opportunity to continue developing an orderly, progressive, constructive, worthwhile program of multipurpose water resource development for the country.

We look forward to working with you in that type of a program.

The Dixie project that you are considering this morning is located in southern Utah in the Lower Colorado Basin. The Colorado River Basin and areas adjacent to it that depend upon the water of the Colorado River for their supply are in the main enjoying rapid growth in population and economic activity.

There are other areas in the basin that have not participated in as rapid economic growth. However, whether we speak today of fast-growing southern California and central Arizona, or whether we speak of slower growing Washington County in Utah, the principal problem is the same.

The economic growth of this whole area of the country will be measured by the skill and wisdom with which we develop, conserve, and supplement its water resources.

I am sure that the members of this committee recognize with us and with the country that conservationists face no greater challenge in the 1960's than the challenge to move ahead with better planning and utilization of the resources of the Lower Colorado River.

We have made substantial progress in the upper basin. The Storage Project Act which was adopted by the Congress in 1956 has proven during the 6 years of its history to be a most valuable vehicle for moving ahead in these areas.

Soon we must adopt and modify the principles of the Storage Project Act and its basin accounts to the similar and even more challenging problem of the lower basin.

Meeting these challenges will require a united effort and require the best of all of us, but the problems can and must be solved.

Mention of the problems of the whole area is germane to a discussion of the Dixie project because this is a meritorious unit that can and should be authorized and constructed, whether the authorization is accomplished by special legislation as a separate participating project or as part of a more comprehensive authorizing act that addresses itself to the total problems of the region.

Specifically the Dixie project is expected to cost \$44,577,000. This is a real multipurpose project embracing all of the purposes of real multipurpose water resources development.

The best way to indicate its multipurpose feature is to speak for a moment about the cost allocations that will share the \$44 million total cost of the project.

The principal purpose, of course, is irrigation. The project will provide new water for some 10,000 acres and supplemental water for something less than 10,000 acres with a total cost of \$30 million allocated to the irrigation features.

Its power features consisting principally of three comparatively small power plants are allocated a total cost of \$6,826,000.

Municipal and industrial water, an important feature of this water resource development, is allocated a total cost of \$2,518,000.

The project has only minor flood control benefits but they are important. The allocation to flood control is \$152,000.

Its fish and wildlife features, and the Fish and Wildlife people will amplify upon the benefits that are provided for this important resource, are allocated \$1,563,000.

The recreation allocations is \$2,883,000, so that this is a truly multipurpose water resource development project in every sense of the word.

Reclamation people will be able to assure you in detail that local interests in the area have already organized the necessary conservancy district to purchase and market the agricultural water.

The city of St. George has already expressed its willingness to contract and pay for under appropriate reclamation law both the municipal and industrial water and the electric power that will be generated by the project.

After applying all of the revenues available to this project under reclamation law, we find that \$3,232,000 will be needed to be recovered from power assistance.

Of course, it is a long-established reclamation principle that power revenues are available to assist in the repayment of agricultural water which is above and beyond the ability of the water users.

It seems to us that a lower basin account is the logical source for the required power revenue assistance. Alternatively, revenues from Hoover Dam after payout, 1988, might be applied.

It should be noted, and the committee has already noted, that the budget for the project includes \$2 million to be used either to recompense downstream irrigators in Arizona and Nevada for the increased mineral content of the water delivered to them or, alternatively, to remove those minerals by a desalination process. Mineral content of the water will be increased because the full flow of the Virgin River will not be available to dilute the highly mineralized product of the La Verkin Springs.

We propose, during the advance planning periods, to give these available alternatives careful consideration after authorization during the period when the definite plan report is being completed. In any event, the \$2 million will provide adequate Federal capital.

Those are the features that I thought it appropriate to call to the attention of the committee this morning.

I am here to answer any questions that you have to ask me prior to hearing a more detailed report from the various bureaus of the Department of the Interior, and specifically the Bureau of Reclamation, that are here this morning.

Again I would like to take this opportunity to urge this committee to give very careful consideration to the Dixie project, a highly meritorious project that ought to be authorized and constructed in southern Utah as part of a comprehensive program of water resource development in this area of the country where water is such an important resource for all phases of economic activity.

Thank you, Mr. Chairman.

Senator Moss. Thank you, Secretary Holum. Your reference to the \$2 million allocation for dealing with the LaVerkin Springs would be the proposal made to implement section 2 of this bill that we were talking about a little earlier which says: "shall include such measures for the disposition of saline waters of La Verkin Springs * * *".

Mr. HOLUM. Yes, sir; that is correct.

Senator Moss. And the Department's estimate of the cost is that \$2 million would be adequate to deal with this problem?

Mr. HOLUM. Yes; it is, Mr. Chairman.

Senator Moss. But as yet you have not determined which is the better way to deal, whether simply to idemnify or to provide to remove the mineral content or to dilute, is that correct?

Mr. HOLUM. That is correct, Mr. Chairman. We are very much interested, of course, in the Department of the Interior, and I know the members of this committee are, in our program for finding an economic way to desalinize water and, if this program, the program of the Office of Saline Water, can make a valuable contribution to the Dixie project, we intend to give it careful consideration during the factfinding period.

Senator Moss. I understand one of the areas to be explored would be the taking of the dissolved minerals out of the water and then selling them to some chemical company which might be willing to pay a price for the minerals. That would at least maintain the desalination process and possibly even amortize back some of the cost of installing it in the first place.

Is that part of the consideration that we are going through?

Mr. HOLUM. Yes; it is, Mr. Chairman.

I suspect myself that, if we are to find a way to use a conversion process economically to solve the problem at La Verkin Springs, that it will depend upon our ability to find a market for the product salts that will be the result of such a desalination project.

Senator Moss. There is already a little sort of homemade hand extraction going on down there at the springs where they are using those salts in cosmetics.

Do you have in mind the total volume of minerals that would be removed from the spring if it were completely desalinized.

Mr. HOLUM. I believe it is in the neighborhood of 300 tons a day.

Director MacGowan is here and can give you the figures accurately, but it is an amazing amount.

Senator Moss. It is a big pile of gook, is it not?

Mr. HOLUM. Yes; it is.

Senator Moss. Do you have questions, Senator Kuchel?

Senator KUCHEL. Mr. Secretary, subsequently in this hearing, representatives from my State will testify and raise some questions.

I wonder if I might anticipate some of them.

Are you prepared to discuss some of the provisions in section 5 or would you prefer that someone else from your staff do that? That deals with the costs and lays down guidelines with respect to repayment of the project.

Mr. HOLUM. I would be happy to discuss them, Senator. It may well be that we will need more specific information from representatives of the Bureau but I will certainly be happy to discuss the principles.

Senator KUCHEL. In section 5, then, in part, I read as follows:

The portion of the costs which is properly allocable to irrigation and which is beyond the water users' ability to repay in 50 years plus a 10-year development period shall be returned to the reclamation fund within such period from revenues derived by the Secretary of the Interior from the disposition of power marketed from Federal projects in the Lower Colorado River Basin.

Let me ask you first, Mr. Secretary, has a provision similar to this ever been incorporated in a reclamation project which was passed into law?

Mr. HOLUM. Yes, Senator, similar provisions have been made a part of reclamation law. However, I think it would be correct to note that the circumstances may have been somewhat different.

I think there are many reclamation enactments, particularly in the Pacific Northwest, which follow this same general pattern, making it the responsibility of the Secretary of the Interior to recover the assistance from power revenues from other projects that have been constructed.

Senator KUCHEL. You mentioned that similar provisions exist in projects dealing with the Pacific Northwest. Has any reclamation project in the Colorado River Basin had a similar provision in it?

Mr. HOLUM. I believe not.

Now, let me hasten to add—I believe not, in the lower Colorado. In the upper Colorado, of course, where the pattern had been established in the Storage Project Act and we have the basin account, all of the irrigation projects are tied to it and receive their power revenue assistance from the basin account.

Senator Moss. This is true also in the Central Valley of California, is it not?

Mr. HOLUM. It is true in the Central Valley.

Senator KUCHEL. But we deal here, then, for the first time, with a provision which would utilize revenues which the Department of the Interior received from the marketing of power in the Lower Colorado River Basin to pay for a reimbursable cost, to wit, the irrigation, to the extent that the water users in this new project are unable, themselves, to repay during a 50-year period plus 10 years' development.

Mr. HOLUM. Yes, Senator. That is correct, and that is why I was careful to say, in my statement, that I think that the committee itself and the Congress will want to determine whether or not you wish to establish a lower basin account or whether you want to make specific provisions for achieving this power assistance by relating this project to the Hoover project after payout, or in some other means.

Senator KUCHEL. What I would like to do so that the committee might have all the facts before it, and this is quite a technical subject, is that I would like to have you or if you cannot do so, Mr. Secretary, someone from your staff, be here at the time that Mr. Ely makes his statement to the committee, so that we might then develop what is involved in this new proposal, new from the standpoint that for the first time now a project in the Upper Colorado River Basin would be made feasible by use of revenues from power projects in the lower basin.

I think that is a most important question, one that I feel the committee must go into thoroughly, and I simply want to anticipate it and then, if we can, later on in the day, develop it so that the committee will have the entire situation before it in the record.

Senator MOSS. Did I understand correctly? Did you say upper basin and lower basin?

Senator KUCHEL. Yes.

Senator MOSS. Dixie is in the lower basin. It would not be trans-basin. It would be in the lower basin.

Your request, I think, is reasonable, and I think we could ask Mr. Palmer and Mr. Lee and perhaps other members of the Bureau to remain through the testimony so that they would be available at the time Mr. Ely testifies.

Mr. HOLUM. They will do so.

Senator KUCHEL. Just one more thing, Mr. Secretary. Would the Department look with favor on writing into the two bills before us a provision similar to that which we have written into prior reclamation projects as I alluded to earlier this morning?

Mr. HOLUM. Senator, the Secretary of the Interior will, I am sure, comply, very strictly, with State and local water rights and water rights that are determined under the compact whether or not this provision is written into law. With that in mind, I doubt very much if we would object to it being in the law.

Senator KUCHEL. That is all. Thank you.

Senator MOSS. Senator Allott?

Senator ALLOTT. I do not understand your answer or else I do not understand the Senator's question. I think he was referring to the provision which we have been placing in the law in various reclamation acts restricting the production of crops which are included within the support system.

Is that what you were speaking of?

Senator KUCHEL. No, I meant the right to litigate.

Senator ALLOTT. What about the crop situation, Mr. Secretary?

Mr. HOLUM. Senator, I do not think the cropping situation on the Dixie project is going to be any problem at all. This is a livestock-based economy. The area does not produce corn, wheat, or cotton, as I understand it.

I don't think it is going to be a problem.

As far as the Department is concerned, if the committee and the Congress feel that this provision should be written into the law to apply to the new lands that are brought under irrigation, we would have no objection.

Senator ALLOTT. We are sort of going at this thing backward. We do not even have a picture of the project yet. So we do not really know what we are talking about.

What do they produce here?

Mr. HOLUM. This is principally a livestock-based economy, with some orchard crops. If there are other crops grown, I am not aware of it. The Bureau of Reclamation people will be able to give you more information.

Senator ALLOTT. If it is a livestock economy, then they must either grow wheat or corn or small grains, all of which come within the support system.

Mr. HOLUM. I think, Senator, it is principally forage crops, and if there are any feed grains produced they are marketed through the livestock produced in the area.

Senator ALLOTT. I am going to have to leave, but is someone going to testify to this for the Bureau?

This gentleman holds up his hand here, so that that will be all right.

Mr. HOLUM. Yes.

Senator ALLOTT. I would like to ask you this. I am concerned about section 2. This also is another departure from ordinary reclamation acts. Do you know of any reclamation act that has ever had such a provision in it as this?

Mr. HOLUM. No, sir. I do not.

Senator ALLOTT. I take it from your answers to the Senator's questions or from your statement itself that you do presuppose that this section 2 will give you the authority to establish a desalinization plant as a part of this project?

Mr. HOLUM. No, Senator. I think that section 2 gives us the authority or makes clear our authority to carefully investigate the possibilities of using a saline water conversion plant as part of the total project during the advanced planning period. However, we have very strict commitments to the Congress that, if any plants are built, we will return for authorization of these specific plants under the water conversion legislation.

Senator ALLOTT. Do you interpret these words in any other way, "The project shall include such measures for the disposition of saline waters of La Verkin Springs as are necessary in the opinion of the Secretary to insure the delivery of water." That is as far as we have to go in the language of the bill.

It says, "The project shall include such measures for the disposition of saline waters * * *."

Now, do you say as a part of the legislative history that you would be strictly forbidden from building a water desalinization plant under this section?

Mr. HOLUM. No, I don't think that we would be forbidden under this language from doing it but I think we would be forbidden under the language authorizing the saline water program and there are other alternatives to solving whatever problems exist at La Verkin Springs, one of them being the possibility of evaporating the water, pumping it up to a storage pond, and evaporating it there without building any conversion plant.

Senator ALLOTT. I did not hear what you said. Doing what?

Mr. HOLUM. I think there is a possibility, probably a remote possibility that the water of La Verkin Springs can be pumped up into an area where ponding is available and evaporated by the sun which does not involve the construction of a conversion project. Nor does it involve indemnifying the landowners downstream.

I think we would be authorized to do that under this legislation if that proves to be the feasible and proper way to handle this problem.

Senator ALLOTT. Then I take it from what you say that you do believe that this gives you the power to construct a desalinization plant because it says "This project shall include"—shall include—"such measures for the disposition of saline waters"—and you regard a desalinization plant as one of the methods to be explored, is this correct?

Mr. HOLUM. I certainly regard desalinization as one of the methods that should be explored and very carefully considered during the advance planning stage.

If determination is made that this is the procedure that should be followed, I think we would be required and would expect to come back to the Congress for authorization to construct a desalinization plant.

Senator ALLOTT. Then you do not believe that the words: "The project shall include" mean anything? They do not mean what they say?

Mr. HOLUM. Well, I am referring to your general law, Senator, when I say that there is no doubt in my mind that we would have to return to the Congress for authorization.

Senator ALLOTT. Now, on the cost of \$44 million, your figures vary from the sheet which has been furnished me. You have \$44,500,000; is that not right?

Mr. HOLUM. \$44,500,000.

Senator ALLOTT. \$44,577,000. I have a cost sheet of \$44,867,800. It is not a lot. Do you know which figure happens to be correct?

Mr. HOLUM. The \$44,577,000 is the correct figure.

Senator ALLOTT. 577,000?

Mr. HOLUM. That is right.

Senator ALLOTT. All right.

Does this cost include any funds for a desalinization plant?

Mr. HOLUM. These funds include \$2 million to be used to take care of whatever problem arises as a result of the mineral content of the waters of La Verkin Springs.

Senator ALLOTT. If this is a continuing process of desalinization rather than an outright settlement with the people who would be affected, do you have any basis of setting up a flat amount of \$2 million to accomplish this? Is it not going to be a continuing cost forever?

Mr. HOLUM. Senator, the \$2 million figure in the budget for the project is, we know, an adequate amount to indemnify the downstream landowners for any adverse effect that the project might have on their interest. It therefore becomes, in my judgment, a ceiling upon the costs that should be allocated to this purpose and available for it. That is why the \$2 million figure is there.

Senator ALLOTT. But I am sure you would not contend that the \$2 million which is included in the \$44 million would begin to cover the cost and operation of the desalinization plant.

Mr. HOLUM. You are absolutely correct.

Senator ALLOTT. Now, I have one other question, Mr. Secretary. We have had the Frying Pan-Arkansas project referred to here this morning. The last provision of that bill puts a flat ceiling on the

amount authorized for the bill while the bill we have under consideration here provides for an open end authorization. Is there any reason why this bill should not have a limitation on the authorization?

Mr. HOLUM. Senator, I think we would leave that to the discretion of the Congress. We are confident that this project can be built as we are presenting it to you for \$44,577,000.

Senator ALLOTT. Now, I note that, as I figure it up quickly here, the recreational facilities and fish and wildlife all come to a total of about \$2,446,000, which, as I figure it, makes these nonreimbursable features alone about 5 percent; is that correct?

Mr. HOLUM. I believe, Senator, that it is more than that. The latest figures that I read to the committee, and I am sorry that you do not have them before you, are allocation to fish and wildlife, \$1,563,000; and recreation, \$2,883,000. That is approximately \$4,300,000.

Senator ALLOTT. 4 million—what?

Mr. HOLUM. Approximately \$4,300,000.

Senator ALLOTT. So that that would bring it up around close to 10 percent, then?

Mr. HOLUM. That is correct.

Senator ALLOTT. Which is still, I must say frankly, more favorable than some of the projects we have had before this committee in the last 2 or 3 years which have been up around 20 and 21 percent.

I think that is all I have, Mr. Chairman, at this time.

Senator MOSS. Senator Kuchel has one more question.

Senator KUCHEL. Mr. Secretary, I notice that the allocation to irrigation which is reimbursable is estimated to be \$31,411,000.

Does the Department have any estimate as to what portion of that allocation might under the language of section 5 be paid for by the revenues from the lower basin project?

Mr. HOLUM. Yes, Senator. Under the reclamation law, all of the available revenues to the project with a 10-year period of development and 50-year period of payout will leave \$3,200,000 to be recovered from some other source.

Senator KUCHEL. \$3,200,000?

Mr. HOLUM. That is correct.

Senator KUCHEL. Again I think the subcommittee should go into the basis for the estimate later on this afternoon.

Mr. HOLUM. I am sure you will want to do that.

Senator KUCHEL. Fine.

Thank you, sir.

Senator MOSS. Senator Burdick, do you have any questions?

Senator BURDICK. I have no questions.

Senator MOSS. Senator Jordan?

Senator JORDAN. Mr. Secretary, in your statement you say that the Dixie will provide irrigation water for 21,060 acres. In an earlier statement, we learned this morning that this irrigation water would be supplemental to 9,445 acres and would supply 11,615 acres of new lands.

Is that approximately correct?

Mr. HOLUM. That is correct.

Senator JORDAN. Of the 9,445 acres which will get supplemental water, how much of their water requirements presently are combined?

Mr. HOLUM. As I understand it, Senator, and the Bureau of Reclamation officials can answer you in more detail than I can, the unregulated waters of the Virgin River are not adequate to supply the irrigation waters at the time when they are required and in the amounts that they are required. So that regulation of the river and provision of storage will make it possible to provide these people who now have irrigated farming the irrigation that they require at the time that they need it in the amounts that they need it.

Senator JORDAN. Presently they are just irrigating with the run of the river, the flow of the stream with much water early in the season and it dries up later on.

Mr. HOLUM. The flows of the Virgin River are very seasonable. They depend principally upon the snows in the high country around them, I believe, and the water is available in the spring but it is not available in the summer and fall when irrigated farms really need water.

Senator JORDAN. You would not have the percentage figures to supply me of the amount of water that is presently being supplied to supplement this 9,445 acres?

Mr. HOLUM. No, I do not but I am sure that the Reclamation people can give you those figures.

Senator JORDAN. I am a little confused, too, about this fact. It has been introduced into the record that the depletion downstream of this project, the effect of the downstream would be negligible. Is that true?

Mr. HOLUM. The total depletions from the Dixie project from the Virgin River will be a little over 50,000 acre-feet a year. If the waters of the La Verkin Springs are taken out in addition, it will be about 60,000.

Senator MOSS. I think the Senator's question had reference to the depletion in amount that will go into Lake Mead. Is that correct?

Senator JORDAN. Yes.

Mr. HOLUM. It is substantially less than one percent of the water available in the river.

Senator JORDAN. But it is for that one percent that constitutes the return flow that you have provided for a desalinization. Is that the part that is going to cost a lot of money to clean up for the downstream users?

Mr. HOLUM. Ten thousand acre-feet of water annually, I believe, are involved in the waters of La Verkin Springs. If this water is taken out of the river it will increase the total depletion of Lake Mead by 10,000 acre-feet.

Senator JORDAN. But where does the salt get into this thing? Do not these streams already drain into Lake Mead?

Mr. HOLUM. Yes, they do. The problem is not at Lake Mead, because the amount of water involved and the amount of salt involved in relationship to the 25 million acre-feet of water in Lake Mead is very small but downstream on the Virgin River with the water taken out of the river and put in storage, the impact will be substantial.

Senator JORDAN. Before it gets into Lake Mead?

Mr. HOLUM. Before it gets to Lake Mead.

Senator MOSS. The concern, Senator, is not dumping any salt into Lake Mead. It is water that goes to farmers along the river below the

dam who take out water for irrigation. If it is too high in mineral content, of course it will not be satisfactory for irrigation.

Senator JORDAN. My question is where does the salt come from? Is it in the water or does it come off the land and go back into the stream?

Mr. HOLUM. The salt comes from the mineralized springs.

Senator JORDAN. Are they not presently going into those uses downstream?

Mr. HOLUM. Yes, they are, but at the present time they are being diluted by the natural flow of the Virgin River.

With the project in operation, the flows will not be available to dilute the water from the springs making the concentrations higher.

Senator JORDAN. I see. That answers my question there.

Senator MOSS. I could see you were not clear on that.

Senator JORDAN. Thank you.

Senator MOSS. Thank you, Secretary Holum. We appreciate your coming to testify.

Mr. HOLUM. Thank you, Mr. Chairman.

Senator MOSS. Very good.

We will now hear from the Bureau of Reclamation.

Mr. Palmer, the Assistant Commissioner, is here, and Mr. Lee, the Chief of the Economics Branch of the Bureau; Mr. West, Regional Director with headquarters at Boulder City in which the Dixie project would be situated; Mr. Pelham, the Program Development Engineer from the region in Boulder City, and Mr. Charles F. MacGowan, the Director of the Office of Saline Water, Department of the Interior.

Will you proceed? We may have to terminate somewhere in the middle and have our lunch but we will go right forward as far as we can.

We are glad to have you here, Mr. Palmer.

I would like to point out that Mr. Palmer is a native Utahan who comes from the part of the State in which the Dixie project is proposed to be built and consequently I suppose there is no one that has greater emotional attachment as well as technical competence on the Dixie project than Bill Palmer.

We are fortunate indeed to have him here because he understands this area historically and by population and he has studied the technicalities of this for many, many years.

**STATEMENTS OF WILLIAM I. PALMER, ASSISTANT COMMISSIONER;
J. KARL LEE, CHIEF OF ECONOMICS BRANCH, BUREAU OF RECLAMATION;
A. B. WEST, REGIONAL DIRECTOR, BOULDER CITY; H. E. PELHAM,
PROGRAM DEVELOPMENT ENGINEER, BOULDER CITY;
AND CHARLES F. MacGOWAN, DIRECTOR, OFFICE OF SALINE WATER,
DEPARTMENT OF THE INTERIOR**

Mr. PALMER. Thank you, Mr. Chairman.

Unfortunately, I must begin by telling the committee I have no financial interest in the project so there are no conflicts of interest involved.

Senator MOSS. OK. You are excused from any conflict.

Mr. PALMER. It has been my pleasure to appear before the committee on past occasions in support of reclamation projects all of which have been good projects. I am a firm believer that it is difficult for a nation to spend itself into the poorhouse developing its internal resources; and, developing internal resources is just exactly what the reclamation program has been doing so well over so many years. I don't know of any project that I personally will take more satisfaction out of appearing to support than the Dixie project for the reasons that the chairman has mentioned and for the reasons that have been mentioned by the other people who have appeared today.

This is a good project. It is good from the standpoint of economic feasibility. It is good from the standpoint of engineering feasibility. It is good from the standpoint of financial feasibility and may I point out that these are three criteria imposed upon the reclamation program that are not imposed by the Congress of the United States on any other resource development program.

Now, there have been some questions asked and, before starting on my prepared statement which I may just submit for the record, maybe it would help if we answered a few of these questions and got them out of the way.

Senator Moss. You may do that.

Would you like to put the statement in at this point and then come back to it?

Mr. PALMER. Yes; I would appreciate that.

Senator Moss. The statement may be put in the record in full at this point.

Mr. Palmer then will direct his remarks initially to some of the questions that have been raised and then we will return to his statement for further explanation of it as he sees fit.

(The formal statement referred to follows:)

STATEMENT OF ASSISTANT COMMISSIONER WILLIAM I. PALMER, BUREAU OF RECLAMATION, ON DIXIE PROJECT, UTAH

Mr. Chairman, we are pleased to appear before you today to recommend the enactment of either S. 26 or S. 655 to authorize the construction of the Dixie project, Utah. Our planning report on this proposed project was transmitted to the Congress on March 18, 1963, and ordered printed as House Document No. 86, 88th Congress.

The Dixie project would be a multipurpose development that, through storage of the flows of the Virgin River and of its tributary the Santa Clara River, would provide for supplemental irrigation water to 9,445 acres of presently developed land and for a full irrigation water supply to 11,615 acres of presently dry land. It would also provide for the production of electric energy; furnish municipal and industrial water supplies; and provide fish and wildlife conservation, recreation, flood control, and sediment control.

The existing supply of water, practically all of which is obtained by direct diversion, is undependable as well as inadequate for the arable lands within the project area. Provision of 246,000 acre-feet of storage space at the Virgin City Reservoir on the Virgin River and 23,745 acre-feet at the Lower Gunlock site on the Santa Clara River will provide the needed regulation.

The hurricane division of the project would include all of the project's hydroelectric features, with a total generating capacity of 13,200 kilowatt, and an irrigation distribution system to serve 17,135 acres of land. It would also provide a municipal and industrial supply to the city of St. George. Recreation

facilities would be constructed at the Virgin City Reservoir which is located immediately downstream from Zion National Park.

The Santa Clara division would furnish irrigation water to 3,925 acres and would provide flood control, fish and wildlife, and recreation benefits.

There are thermal springs located in and adjacent to the bed of the Virgin River immediately downstream from the site of the Virgin City Dam, the waters of which contain large quantities of dissolved solids. The flow of these springs has had a deleterious effect on the quality of the Virgin River waters for downstream irrigation. The affected lands, which receive a major portion of their irrigation season water supply from other less saline springs rising near the Utah-Arizona border, are located principally in Nevada, although 350 acres are also located in Arizona. It is feared that, with the reduced river flows occasioned by project operations, the quality of the supply of water to these lands would be further impaired. In our feasibility studies we have made sufficient studies and computations to be sure that, with the Dixie project constructed, the quality of the water for downstream use would be suitable for the irrigation of the salt-tolerant crops now grown in the area. We propose as a part of the advance planning following authorization of the project to thoroughly investigate physical solutions to the problem which would include evaporation of all or part of the discharge of the springs, or possibly saline water conversion. Nevada, which is the principally concerned State, has expressed its confidence that a solution which would minimize the effects of the salt load of this water without the physical removal of the water and the salt, and which would be acceptable to the State of Nevada, can be found. We have provided a sum of \$2 million in the project cost estimate to provide a physical solution; however, if none can be devised, that amount is ample to compensate downstream interests for damages that might occur following development of the Dixie project.

The total cost of the Dixie project is estimated at \$44,822,000, including \$239,500 of nonreimbursable investigation costs from the Colorado River development fund and \$5,500 contributed by the State of Utah. The remaining \$44,577,000 is allocated to the various functions as follows: Irrigation, \$30,635,000; power, \$6,826,000; municipal and industrial water, \$2,518,000; flood control, \$152,000; fish and wildlife, \$1,563,000; and recreation, \$2,883,000.

As provided by the bills, the costs allocated to recreation would be nonreimbursable and nonreturnable, as would be the costs allocated to flood control and fish and wildlife. The cost allocated to irrigation would be reimbursable without interest and that allocated to power and municipal and industrial water would be returned with interest, all in accordance with reclamation law. The portion of the costs allocated to power and the portion allocated to municipal and industrial water could be repaid with interest within 50 years.

The project revenues obtained from the new lands from the sale of irrigation water would amount to \$269,500 per year and from the old lands it would amount to \$90,000 annually. In addition, ad valorem taxes varying from \$64,500 to \$117,000 annually would apply to the repayment of the irrigation allocation.

Incidental to determination of the amount of ad valorem tax to consider in our repayment studies, we were provided with concrete evidence of the interest of the Washington County people in developing the project and of their willingness to pay for it. Special Utah legislation has been enacted to permit an ad valorem tax rate of 5 mills for Dixie project repayment assistance. This rate is much higher than the 1- or 2-mill rate usually considered. The Washington County Water Conservancy District has been formed as the agency empowered to contract with the United States and to assume responsibility for operation and maintenance of the project. The city of St. George has gone on record as being willing to contract for the municipal and industrial water supply and for the energy developed by the project.

By applying all of the available project revenues, for a period of 60 years (50 years plus a 10-year development period), a balance of \$3,232,440 would remain to be paid from revenues derived from the sale of power from Federal projects in the Lower Colorado River Basin.

The annual benefits have been computed to total \$4,049,700 including direct irrigation benefits of \$1,552,900; indirect and public irrigation benefits of \$1,718,700 and power benefits of \$342,000. Benefits due to municipal and in-

dustrial water would total \$160,700 annually and flood control, fish and wild-life, and recreation would result in \$7,100, \$78,000, and \$190,300 worth of benefits annually.

A comparison of the benefits with the costs indicates that the project is economically justified, as the benefit-cost ratio is 2.3 to 1. The benefit-cost ratio computed under former policies and procedures as shown in the basic report, which was prepared in 1961, indicate a benefit-cost ratio of 2.1 to 1.

We believe the Dixie project is a worthy and urgently needed water resource proposal, and we recommend enactment of the legislation.

Mr. PALMER. As the chairman pointed out to the Senator from California, Mr. Kuchel, this is a Lower Basin project. It is not an Upper Basin project.

I would like to point out something that seems to have been overlooked by many people and this is that in the passage of the Boulder Canyon Act, and the 1940 adjustment to the act which enabled the construction of the great Hoover Dam, and governs its operation there is provision for the establishment of the Colorado River development fund to be derived from the sale of power from Hoover Dam powerplants. The amount set by law is \$500,000 a year and the fund is to be available for planning, operation, and maintenance, or construction of projects in the Colorado River drainage.

This money, by administrative decree, has been utilized fully up until this time in the planning of projects.

The difference between the cost estimate figures that Mr. Allott identified is in the Colorado River development fund money and a contribution from Utah that went into the planning of the Dixie project and a reduction in cost of basic facilities for recreation.

Senator Moss. I wonder if you would start back and restate a little bit beginning there, since it was directed to Senator Kuchel's question before and the Senator was not available when you started your speech about that.

Mr. PALMER. I pointed out, Senator Kuchel, that, in the passage of the Boulder Canyon Project Act—

Senator KUCHEL. When was that?

Mr. PALMER. 1926 or 1928—there was a provision in that act, or in the 1940 adjustment, that set aside \$500,000 a year from the revenues derived from the sale of power at Hoover Dam as a Colorado River development fund.

It stipulated further that that money could be used in the planning, operation and maintenance, or construction of reclamation projects in the Colorado River drainage.

By administrative decision this money has been utilized up until now in the planning of the projects in the basin. This, of course, was the original intent of Congress that the waters, the resources of the Colorado, be developed and it provided a self-financing basis of doing this by establishing the Colorado River development fund. The point I wanted to make is that that fund is already in existence.

All the Secretary was testifying to was that provision should be made for the liquidation of three and a half million dollars of project costs over and above the ability to pay of the water users from a Lower Basin Development fund.

I pointed out, in passing, that the development fund is already there. It may need adjusting or amending, but the fund is already in existence.

Senator KUCHEL. The development fund you speak about is this fund that is augmented by \$500,000 a year?

Mr. PALMER. That is correct, sir.

Senator KUCHEL. Now, has the Congress ever passed any legislation utilizing the revenue in that fund for payment of any part of a project?

Mr. PALMER. No, sir; but every year the Congress has appropriated the money back as contained in the President's budget. When we appear before the Congress, to finance the investigation programs of the Bureau, we show the source of funding is \$500,000 from the Colorado River development fund, so much from the general fund, and so much from the reclamation fund.

Senator KUCHEL. What has the Congress done with respect to the \$500,000 fund each year?

Mr. PALMER. It has been used, as I told you, in the investigation program. This was the money used pretty largely in planning the basin development and in planning other developments in both the Upper and Lower Basins.

Senator Moss. Excuse me. I was going to say, Is it not a fact that some of this money has actually been used in planning Dixie—is that right?

Mr. PALMER. Yes, sir. That is correct. Now, the second thing—

Senator KUCHEL. Do you want to continue your statement? What is the status of that fund today, then? Is there any money in it?

Mr. PALMER. There is money on the basis of whatever the annual amount is and this is always appropriated back to the Bureau even though the act provides that it shall be used as a part of the annual appropriation measure. We have testified on this before the House Appropriations Committee just last week.

Senator KUCHEL. But the annual increment, it is your testimony, has been appropriated annually so that it would be fair to say that there is no money in that fund except what is accumulating during the fiscal year?

Mr. PALMER. I think that is correct, sir.

Now the second point I wanted to clarify for the record is the question as to whether this is a new venture, a new device. Actually, it is new only as concerns the Lower Basin. It is old in reclamation history. Financial assistance for irrigation is provided in the Central Valley project of California, there is financial assistance for irrigation in the Columbia Basin and in the Missouri Basin. May I submit a brief report for the record? It shows recent actions of the Congress along this line.

Senator Moss. It may be submitted.

(The report referred to follows:)

Reclamation projects in the Pacific Northwest which receive financial assistance from power revenues of other projects or units

State and project	Total cost	Irrigation allocation	Water users payments	Financial assistance	Remarks
OREGON					
The Dalles, western division.	\$6,031,000	\$5,994,000	\$2,550,000	\$3,444,000	Authorized Public Law 86-745, Sept. 13, 1960. Financial assistance from Bonneville Power Administration revenues.
Baker project, upper division.	6,168,000	4,354,600	1,127,500	3,227,100	Authorized Public Law 87-706, Sept. 27, 1962. Financial assistance from McNary Dam project.
Rogue R. Basin, Agate Dam.	1,874,000	1,826,900	993,000	833,900	Authorized Public Law 87-727, Oct. 1, 1962. Financial assistance from Green Springs powerplant, Rogue River Basin project.
Crooked River project...	9,598,600	5,301,100	2,171,000	3,130,100	Authorized Public Law 992-84, Aug. 6, 1956. Financial assistance from The Dalles Dam project.
Crooked River project extension (proposed).	1,640,300	1,638,900	347,000	1,291,900	Feasibility report to Congress, Nov. 30, 1961, H.D. No. 301-87. Financial assistance from The Dalles Dam project.
Rogue River Basin, Merlin division (proposed).	14,710,000	13,150,800	3,655,000	9,495,800	Secretary's final report in preparation. Financial assistance from Bonneville Power Administration revenues.
WASHINGTON					
Chief Joseph Dam, Foster Creek.	3,533,100	3,515,600	1,919,700	1,595,900	Authorized Public Law 540-83, July 27, 1954. Financial assistance from Chief Joseph Dam project.
Chief Joseph Dam, Greater Wenatchee.	8,545,000	8,505,000	4,676,800	3,823,200	Authorized Public Law 85-393, May 5, 1958. Financial assistance from Chief Joseph Dam project.
Spokane Valley -----	7,279,000	6,168,000	4,910,400	1,257,600	Authorized Public Law 87-690, Sept. 5, 1962. Financial assistance from Chief Joseph Dam project.
Chief Joseph Dam, Whitestone Coulee (proposed).	5,334,000	5,153,800	850,000	4,303,200	Feasibility report being reviewed by States and agencies. Financial assistance from Chief Joseph Dam project.
Chief Joseph Dam, Chelan division (proposed).	12,384,000	12,113,500	6,069,300	6,044,260	Commissioner's proposed report pending. Financial assistance from Chief Joseph Dam project.
Yakima, Kennewick division, extension (proposed).	5,250,400	5,077,200	3,390,700	1,686,500	Commissioner's proposed report pending. Financial assistance from McNary Dam project.
IDAHO					
Avondale, Dalton Gardens, Hayden Lake.	1,486,000	1,486,000	160,000	1,326,000	Replacing deteriorated system. Authorized Public Law 87-289, Sept. 22, 1961. Financial assistance from Bonneville Power Administration funds.
Mann Creek -----	3,490,000	3,390,000	811,000	2,579,000	Authorized Public Law 87-589, Aug. 16, 1962. Financial assistance from south Idaho Federal power system.
Lower Teton (proposed).	51,924,000	35,936,000	20,335,000	15,601,000	Commissioner's proposed report pending. Financial assistance from Palisades Dam project.
Michaud Flats -----	4,830,400	4,830,400	2,665,400	2,165,000	Authorized Public Law 741, 83d Cong., Aug. 31, 1954. Financial assistance from Palisades project.

Mr. PALMER. This is true in the Columbia. It is true in the Missouri. In the Upper Colorado River Basin the Congress went so far as to establish an Upper Colorado River Basin fund which is a special account in the Treasury for the purpose of underwriting the cost of irrigation.

Senator KUCHEL. And do we appropriate those moneys each year to the cost of the Upper Colorado River project?

Mr. PALMER. There is a specific requirement there that we cannot build the participating project in the Colorado River storage development unless we can show payout within revenues derived from the power sales. That is correct, sir. In the case of the 11 participating projects and the many other projects authorized for priority in planning, we come to the Congress every year for money for those projects.

Now, on the list just submitted, sir, in the States of Oregon, Washington, and Idaho, there are about 16 individual projects that were authorized by the Congress where participation from power revenues was authorized in the absence of a basin account or a basin development fund.

Now, some of these projects were handled by this committee just last year or the year before, the Baker project, upper division, estimated to cost \$6,168,000. The irrigation allocation was \$4,354,600; payment by water users, \$1,127,500; financial assistance required from power, \$3,227,100.

Now, you see here the water users are paying out about a third.

In the Dixie project, the irrigation water users with the assistance of conservancy district taxes would be paying out roughly 73 percent.

Here is another, the Rogue River Basin, the Merlin division, which will be before this committee yet this year. The proposal is a \$14 million project; irrigation allocation, \$13 million; water users repay \$3,655,000; financial assistance required, \$9,495,000.

Now, on this list of about 15 projects most of which have already been authorized, the precedent seems to be amply established that you can do exactly what the Department is proposing with regard to the Dixie project in the financial assistance provided for in the bill.

Now, if I may I would like to refer to several sections of the bill, I think maybe it will answer some questions.

The first general section simply authorizes the construction of the Dixie project substantially in accordance with the planning reports that have been submitted through the Bureau of the Budget to the Congress and that are available to all of you gentlemen.

The second section deals with the salinity problem and this has been carefully discussed but may I again reiterate that the \$2 million, in our best judgment, is adequate to finance the provisions of section 2.

Now, it should be stressed that during the preconstruction planning period when we start getting designs and specifications prepared, we would attempt to evaluate every known device for controlling salinity and would, if it exceeded the authority contained in section 2 and the budget estimate contained in the report, of course report that to Congress.

Now, in this connection, I think Mr. Jordan asked the question if there was precedent for this, or maybe it was Mr. Allott.

I would simply like to point out that every reclamation project is a tailor-made job in and for itself. You would never find another situation in the West where you had identical physical situations existing as are found on the Dixie project.

Senator MOSS. Here we have a large saline spring coming out just below where the dam would be built and, therefore, dumping its full amount into the stream below when the water might be cut off and held in storage; is that correct?

Mr. PALMER. That is correct, sir.

Now, the problem arises as has been already indicated in that there will not be the usual annual dilution of accretions of salt in the soils.

Now, to the extent that this impairs their present operation in the lower area along the river, this \$2 million is enough to indemnify these people even to the extent of buying them out which we do not wish to propose.

In the spring there are \$2 to \$3 million, estimated annual value, in recoverable chemicals. Should industrial combines or others find a way of gainfully using this concentrate, it might be the answer to this problem, but if any major departure from the plan before you were required we would come back to the Congress to amend the authorization. The assurance I want to leave with this committee is that we would not construe section 2 to be a carte blanche authorization to spend more money than the \$2 million that is provided in the report on the project.

The third section simply stipulates that we would build the project in accordance with reclamation law. In other words, the excess lands laws, antispeculation limitations and everything else will be strictly in accordance with reclamation law.

Senator KUCHEL. Let me ask a question, Mr. Palmer, on that section 2. I might say parenthetically that I have been an eager and enthusiastic supporter of this theory of saline conversion. I do not know what we are going to do if we do not get additional supplies.

I was coauthor of the legislation setting up that program.

In the enactment of section 2, would it be your judgment that you would be legally unable to indemnify any water user because the quality of this water was unsuitable for irrigation purposes?

Mr. PALMER. Mr. Kuchel, I don't know. I think that section 2 is helpful in that it clarifies the issue. I mean the question as to whether we would be legally empowered to do it or not could never be raised with section 2 in the bill.

Without it any water user below Virgin Dam could always wonder whether we could indemnify him or not.

Senator KUCHEL. What would your opinion be in the absence of it?

Mr. PALMER. Well, the Bureau has traditionally held that we have no responsibility on the maintenance of water quality. This, I think, is progressive legislation. It has advanced the concept of what might be done under a project.

Senator KUCHEL. It would in a sense be then, in your judgment, a recognition of an equitable burden that the Government should share with respect to this?

Mr. PALMER. In this instance, yes, sir.

Senator JORDAN. Mr. Chairman, I have a question on this section.

Mr. Palmer, what are we talking about? How many acres downstream would be adversely affected by this saline?

Mr. PALMER. A maximum of 3,200, Mr. Jordan. Three thousand two hundred is the total and Mayor Barlocker says it would be 1,600 that might be adversely affected, about half.

Senator JORDAN. About half of it would be adversely affected?

Mr. PALMER. It might be. We are not ready to say that it would be.

This, Mr. Jordan, is exactly the problem. We can't assess this in advance. We believe these people will continue to farm exactly as they are now farming and get adequate results by farming under the system.

Now, also in further explanation of section 2, this was the assurance that we tried to write into the report that would assure the Governors of Arizona and Nevada that they would suffer no adverse effect because of the Dixie project. So, going on with this quick rundown on the sections of the bill, section 4 requires that the project shall not be commenced until there shall be established a conservancy district.

Now, this is not new to this committee, but I think the thing that is new to this committee is that this conservancy district has been organized and been confirmed by the court. These people have authorized a taxing authority of up to 5 mills.

Now, the conservancy districts that this committee knows about generally have a taxing authority of 1 mill.

These property owners have said they are willing to pay whatever the service is worth and in addition they are willing to underwrite their property to the extent of 5 mills on the assessed valuation annually to help pay the cost of this project.

Section 5 of the bill has been referred to. This deals with the interest rate, how the rates shall be computed and how the repayment shall be achieved, and Senator Kuchel had a question or two on that that maybe we can come back to.

Senator KUCHEL. The first part of the section 5 which lays down the means by which the interest rate shall be computed, is that the standard language which has been written into other legislation?

Mr. PALMER. Mr. Kuchel, this is almost exactly the Colorado River storage formula as amended. It is almost exactly the formula used in section 3 of the Water Supply Act in 1958.

The only variation is this provides for the rounding down to the closest one-eighth of 1 percent. Whereas we normally end up with a rate like 2.7327, this would simply say $2\frac{1}{8}$ or $2\frac{7}{8}$.

Senator KUCHEL. Is that provision for rounding down to one-eighth new?

Mr. PALMER. That is new. We have proposed it several times. Generally, the Congress has inserted in lieu of this formula the Water Supply Act formula.

Senator KUCHEL. What is that?

Mr. PALMER. It provides that the interest rate shall be determined on the basis of the certification of the Secretary of the Treasury on all marketable long term public obligations of the Treasury not being due or callable for a period of less than 15 years and on certification on July 1, I think it is, of the average rate of interest paid by the

Treasury. In this way we get a long decimal, a decimal with a lot of figures after it.

For ease and simplicity of administration, we have simply said, let's round it to the eighth of a percent, closest one-eighth down.

Senator KUCHEL. What would the difference be as far as the impact on the Treasury is concerned?

Mr. PALMER. Very little, actually. Mr. Lee here can answer that question specifically but the current rate, as certified by the Treasury, is 2.936. If we round it down we would round to $2\frac{7}{8}$ percent.

Senator KUCHEL. What would $2\frac{7}{8}$ percent be?

Mr. PALMER. 2.875.

Senator KUCHEL. So that that recommendation is new from what the Congress has adopted in the past. Your position is that it is relatively minuscule.

Mr. PALMER. Comme ci, comme ca. It makes very little difference.

Senator KUCHEL. And the second provision which now is the last sentence which would commit power revenues from the projects in the lower basin to the payment of a portion of the reimbursable allocation, that part is also new?

Mr. PALMER. Well, as I suggested at the very beginning of my statement, Senator Kuchel, this is not new. It was contemplated and provided for in the Boulder Canyon Project Act and in the list that you will yet examine the Congress has used exactly this device in some 10 to 15 projects in the Pacific Northwest where twice the Congress has considered a basin account for the area and has never passed it. Nevertheless, it has authorized this individual participation on an ad hoc basis.

Senator KUCHEL. With respect to the power revenues accruing from sales of power in the lower basin, this is the first time.

Mr. PALMER. It has not been done heretofore in the lower basin. You are correct, sir.

Senator MOSS. Is it also a fact, though, that it has been 17 years since we have authorized any construction in the lower basin?

Mr. PALMER. Yes, sir. Mr. Chairman, that is correct, and this is another reason why we find such great joy in appearing here today. It is so good to be talking about something in the lower basin again.

There is another interesting feature about the lower basin that the Congress certainly has to consider before long. This is that the power revenues from Hoover Dam will be used to repay the flood control allocation under the Boulder Canyon Act. This is not done anywhere any more.

Senator KUCHEL. Flood control allocation?

Mr. PALMER. Under the Boulder Canyon project some \$25 million. The act provides that after the other features have been paid out power revenues shall be used to return to the Treasury the \$25 million in flood control allocation of the Boulder Canyon project.

Senator KUCHEL. Has the Congress appropriated those moneys; \$25 million for those purposes?

Mr. PALMER. Yes, sir; Congress has appropriated the money in full for the construction of the dam. I think Mr. West will now tell you that Hoover Dam and the powerplant is fully complete but the \$25 million has not been returned to the Treasury because the power features in the dam have not been paid out.

Unless the law is changed, upon payout of the regular reimbursable portion, the amount allocated to flood control will be returned from power revenues.

Senator KUCHEL. It will be returned from power revenues into the Treasury?

Mr. PALMER. That is correct, sir.

Senator KUCHEL. How much money has Congress appropriated for flood control purposes?

Mr. PALMER. Congress, of course, appropriated money for the construction of Hoover Dam. In Hoover Dam there is an allocation of \$25 million to flood control.

Senator JORDAN. Does this appear in any other project, this return of flood control?

Mr. PALMER. To the best of my knowledge, Senator Jordan, this is the only place that it has been so worked out.

Section 6 of the bill abundantly clarifies the requirement of this project to serve recreation and fish and wildlife purposes.

Mr. Ben Thompson of the Park Service, and Mr. Jim MacBroom, of the Bureau of Sport Fisheries and Wildlife, are here to support those two sections.

Section 7, I think, Senator Kuchel, in the main proposes what you propose to be done in the act authorizing the suits.

Section 7 says:

The use of all water diverted for this project from the Colorado River system shall be subject to and controlled by the Colorado River compact, the Boulder Canyon Project Act, and the Mexican Water Treaty.

Senator KUCHEL. What I was referring to was the action which the committee and the Congress had previously taken to cover the possibility of dispute where one State might feel that the provisions of those several laws and compacts and treaties were not being complied with and under those circumstances, they would have an opportunity to get a decision.

Mr. PALMER. As far as I personally am advised or concerned, I would see nothing wrong with that if you wanted to amend it.

I think it is unlikely that it would be used.

Now, one other point I want to clarify is the question of crops produced. This is a general cropping area where there is a high percentage of the total acreage in forage crops. It is an area, however, that has suitability for high value fruit, tree, berry crops and crops of that nature, and significantly this is one of the few areas in the United States where sugarbeet seed is grown for the rest of the country.

It is disease free, it is blight free, the climate is ideally suited for this particular significant crop that requires long dry frost-free growing conditions. The beet seed industry has become quite important in this area and in this economy. So, as it now is, it is primarily a general cropping area. It might very readily become a crop specialty area.

Now, may I without reading from this statement point out a couple of points that maybe have not been developed heretofore.

I would like to make clear that the allocation of project costs is based on the separable costs—remaining benefits approach which is the one that is used as standard procedure by the corps and Bureau

and to a major degree by all other water resource development agencies. This, to reduce it to its simplest form, is simply we take the annual benefits as they are certified by the various agencies, for example, the flood control by the corps, the fish and wildlife by the Bureau of Sports Fisheries and Wildlife, recreation by the Park Service. We compare these benefits against the cost of producing the same service or benefit through a single purpose alternative. The lower of the benefit or the alternative cost sets the maximum justifiable expenditure. From this we take out the specific costs first. In other words, in the case of an irrigation canal that served nothing but irrigation, this wouldn't go into the remaining benefits, and then you take these remaining benefits and pro rate the remaining costs among the beneficiaries or function served.

Now, the argument for this is that this makes it so that all purposes share evenly and equitably in the benefits of the project.

The benefits might control or alternative costs might control, whichever is the cheaper.

In other words, if you could build a single-purpose reservoir for flood control purposes at less cost than the benefits the alternative cost would be what you would use as a maximum limit on the allocation. You might get the same or equivalent service for one-third of that cost by including it as a purpose of a multipurpose project development.

There are several purposes identified here as sharing in the allocation procedure. (There are many other purposes that do benefit.) These are irrigation, power, municipal and industrial water, flood control, fish and wildlife, and recreation. These add up to the \$44,577,000 to which Assistant Secretary Holum testified.

The difference as I suggested earlier in the cost figures that you inquire about, Senator Kuchel, has to do with the allocation of lower basin or Colorado River development fund money to the planning of the Dixie project.

I have stressed the ad valorem tax and the great contribution these people are willing to make from their own revenue to make this project a reality.

I would like to conclude by stressing again that this is an excellent project under any standard of evaluation.

We believe it would contribute significantly to the well-being of this very delightful and very wonderful area.

I can be a little bit carried away on this score as the Senator has indicated. My father used to ride horseback from Cedar City down 45 miles over the roughest, most broken trail in all of the Southwest to court my mother who then lived at Virgin, Utah, so it is an area in which the roots of the Palmers are very deeply embedded, but beyond that and speaking entirely objectively this is a project where the local people have done everything they can do. Having done that first, they then come to the Federal Government and ask for a project under reclamation law.

I think it deserves the committee's support as it has the support of the Bureau of Reclamation.

I have with me here Regional Director A. B. West, from Boulder City, and his regional planning engineer, Mr. H. E. Pelham.

During Mr. West's statement, I am going to ask Mr. Pelham to go to the map and identify the features that Mr. West will discuss, if that is agreeable with you, sir.

Senator Moss. That is the way we would like to proceed.

I observe that we are now within about 2 or 3 minutes of noon.

It is going to be necessary for us to recess at noon because we have several witnesses to hear yet and because of a number of things that I have to get done during this noon hour. I would like to break at this point and come back, if it is all right.

I expressed earlier the hope that these witnesses will be able to stay with us in the afternoon anyway because questions may arise when Mr. Ely testifies that we might want to call on one of you for answers.

I am going to recess the hearing at this point.

We will resume with the description of the project which is something I have been looking forward to.

I remember things so much better through my eyes than I do my ears.

I want to have it all pointed out again for me.

I think we will recess until 1:45. We will then continue with our hearing.

(Whereupon, at 12 noon, the committee recessed until 1:45 p.m., this same day.)

AFTERNOON SESSION

Senator Moss (presiding). This hearing will resume. We just finished, I think, hearing from Mr. Palmer.

Mr. PALMER. Mr. Chairman, in the interest of clarity, may I add two small points to the statement I made this morning?

Senator Moss. Yes, you may, go right ahead.

Mr. PALMER. The requirement for the reimbursement of flood control, as I stated this morning, was contained in the Boulder Canyon Project Act of December 21, 1928. This was subsequently amended by section 7 of the Adjustment Act of July 19, 1940, which provides in effect that the first \$25 million of advances made to the Colorado River Dam fund or the project shall be deemed to be the sum allocated to flood control by section 2(b) of the Project Act and repayment thereof shall be deferred without interest until June 1, 1937, after which time such advances so allocated to flood control shall be repayable to the Treasury as the Congress shall determine.

So the question of full reimbursement of flood control was reopened at that time. It has not been settled with finality.

Senator Moss. The principle of repayment was set down but the detail is still left for congressional action; is that correct?

Mr. PALMER. That is correct, sir.

Now, the section 2, subsection (d) of the Adjustment Act of July 19, 1940, provided, as I indicated this morning, for the establishment of a special fund in the Treasury designated as the Colorado River Development fund and specified that \$500,000 a year should go into that fund and then it provided:

The next such receipts up to and including the receipts for the year of operation ending in 1955, are authorized to be appropriated only for the investigation and construction of projects, for such utilization—

and so forth.

I thought maybe we better get in the record the words of the act rather than doing it from memory.

Now, Mr. A. B. West was going to give you a rundown on the project and Mr. Pelham is going to identify the features from the map.

Senator Moss. All right, we will proceed that way then, Mr. West and Mr. Pelham.

STATEMENT OF A. B. WEST, REGIONAL DIRECTOR, BUREAU OF RECLAMATION

Mr. WEST. Mr. Chairman, members of the committee, I am very happy to be here. As was mentioned this morning, it has been a long time since a project has emerged from region 3 to be submitted to the Congress.

The Dixie project area is one which at present lacks the essential resources needed to provide means of livelihood for even its normal population increase. As a matter of fact, during the decade from 1950 to 1960, the increase in population in Washington County was only 445, which is far below that of parts of the other basin area.

The economy of the area is basically one of livestock and agriculture. Water supplies are undependable and inadequate, being dependent on the erratic and, for the most part, unregulated streamflows.

At the same time, there are areas of good quality agricultural lands which could be developed through streamflow regulation.

In addition to the problems involved in connection with maintaining its existing agricultural economy, the area needs to bring in and develop additional industry to employ local labor and breathe new life into the area.

The Dixie project would be a multiple-purpose development located within the Virgin River Basin in southwestern Utah. It would include the functions of irrigation, hydroelectric power, flood control, municipal and industrial water supply, recreation, and fish and wildlife enhancement.

Construction of the Dixie project would enable optimum development of an agricultural area devoted to the family farm type of operation. Its construction would also be a fitting culmination for some 40 years of cooperative effort by the local citizenry to provide a firm water supply for an expanded agricultural economy.

The Dixie project has an average elevation of about 3,000 feet above sea level and a relatively long frost-free growing season, averaging 204 days. The project area, which receives about 8.42 inches of precipitation annually, is surrounded by extensive areas which from an agricultural standpoint are suitable only for livestock grazing.

More of the presently irrigated acreage is devoted to the production of supplemental feed for livestock than to any other type of crops.

Moreover, this is an area basically of the dairy industry. A great deal of fluid milk is produced here, transported down to Clark County, Nev., Las Vegas, and the other populated areas in Clark County.

It is anticipated that a substantial portion of the new lands developed under the project would be used for production of feed crops in connection with these livestock operations.

Mr. Chairman, we have a map here which shows the Dixie project area and some of the surrounding country. Mr. Pelham will point out to you as I proceed here some of the principal features.

Physically, the project would consist of the Hurricane division and the Santa Clara division, the salient features of which will be—we will describe and point out to you now.

In the Hurricane division, the Virgin City Dam and Reservoir, located on the Virgin River, would provide a total storage capacity of 246,000 acre-feet. Of this total, 66,000 acre-feet would be conservation storage for agricultural and municipal uses and for power generation.

The remaining 180,000 acre-feet would be allocated for sediment storage, for incidental flood control, and for the generation of power. The Virgin powerplant located at the Virgin City Dam would have an installed capacity of 5,600 kilowatts.

The Hurricane division main canal would have a total length of about 26 miles including Hurricane and Warner tunnels, the combined length of which would be slightly over 4 miles. The Hurricane Canal would deliver a firm supply of water to 7,885 acres of presently irrigated lands and some 9,250 acres of new lands located in the Hurricane, Bench Lake, Berry Springs Flat, Warner Valley, Fort Pierce, Washington, and Washington Fields areas.

I might point out that the presently irrigated land in the Hurricane division would, through this project development, receive on the average approximately seven-tenths of an acre-foot per acre in additional or supplemental water.

Senator Moss. On the map, are the green areas presently irrigated that would receive the supplemental water?

Mr. West. Yes, sir; the areas now irrigated are shown in green; the new areas are the yellow portions of the map.

Senator Moss. I see. Thank you.

Senator Jordan. And the supplemental is seven-tenths of an acre-foot?

Mr. West. Approximately, Senator.

Senator Jordan. How many acre-feet are required in that climate for production?

Mr. West. Approximately 4 acre-feet.

Senator Jordan. This would be about one-sixth of the total amount that is required, then?

Mr. West. Approximately, yes, sir.

The project would also supply water for operation of Bench Lake and Warner powerplants at drops along the canal. These powerplants would have a combined installed capacity of 7,600 kilowatts.

The plan of development also includes provision for up to 5,000 acre-feet of water for municipal and industrial uses for the city of St. George, Utah.

Over in the Santa Clara division, the Lower Gunlock Dam and Reservoir, located on the Santa Clara River, would provide a total storage capacity at normal water surface elevation of 23,745 acre-feet, of which approximately 10,000 acre-feet would be for sediment storage and flood control. A minimum pool of 500 acre-feet would be maintained for fish and wildlife and recreation purposes. The Santa Clara division does not include any provision for the generation of power.

The conservation storage in Lower Gunlock Reservoir would provide a firm water supply to irrigate 1,560 acres of presently irrigated land, and to irrigate 2,365 acres of new land located in the Santa Clara and Ivins Bench areas.

The existing St. George and Santa Clara Bench Irrigation Canal would be enlarged, extended, and completely rehabilitated.

The 9,445 acres of presently irrigated land in both divisions now possess natural flow water rights. Water rights for the 11,615 acres of new land and for municipal and industrial uses would be established under Utah State law.

The Bureau of Reclamation has been assured by Utah that necessary water rights will be granted to permit conservation of both natural and flood discharges for project uses.

The water supply for the Dixie project would be obtained from the Virgin River mainly and a tributary, the Santa Clara River, both of which, as he has mentioned this morning, are tributaries of Lake Mead and the Lower Colorado River.

The average annual discharge of the Virgin River at Littlefield, downstream from the project boundaries, under present conditions is about 178,000 acre-feet per year.

Under Dixie project conditions, the estimated discharge would be about 117,000 acre-feet or an increase in net depletion of the stream of about 61,000 acre-feet.

Included in the depletion is a proposed trans-mountain diversion from the basin of about 8,000 acre-feet annually to provide municipal water to Cedar City and vicinity in an adjacent drainage basin.

That is shown up off the map there. The remaining flow in the stream is sufficient in quantity to meet the existing downstream irrigation requirements in Arizona and Nevada.

Dixie project operations would result in some increase in salinity in the waters available for downstream use. The project plan contemplates that the effects of project operation on downstream water quality will be carefully studied and adverse effects, if any, on irrigation uses downstream in Arizona and Nevada will be mitigated by appropriate measures.

As was mentioned this morning, they could be either indemnification of the downstream irrigators or desalination of all or a part of the highly saline water from mineral springs which issue in the streambed of the Virgin near the town of La Verkin and which contribute a substantial part of the salt to the streamflow or by other means. An allowance of \$2 million has been made for this work.

Good sport fishing is not found under present conditions in either the Virgin or Santa Clara Rivers within the project area.

Development of the Virgin City and Lower Gunlock Reservoirs would result in a substantial increase in sport fishing values and, under project conditions, game bird habitat would be expanded through creation of water areas and the increased acreage under irrigation.

The Bureau of Sport Fisheries and Wildlife estimates the net annual increase in fish and wildlife benefits incident to development of the Dixie project would be about \$78,000.

Southern Utah and adjoining northern Arizona include scenic areas which have a high recreational value, and thousands of tourists travel through the project area in making a circuit of Cedar Breaks National

Monument and Grand Canyon, Zion, and Bryce Canyon National Parks.

Development of Virgin City Reservoir and lower Gunlock Reservoir would increase the recreational potential of the general area by providing opportunity for boating, swimming, water skiing, fishing, and related aquatic activities.

Recreation potentials of both Virgin City Reservoir and lower Gunlock Reservoir have been studied and evaluated by the National Park Service. And a witness from the Park Service will elaborate further on that this afternoon, Mr. Chairman.

I think I will skip some of this in the interest of conserving the committee's time if it is agreeable with you.

Senator Moss. It may all go in the record as thought it were read and you may continue by highlighting any part you wish.

Mr. WEST. The studies indicate that because of its proximity to major highways and Zion National Park, Virgin City Reservoir would become an important regional recreational center.

Recommended recreational development at Virgin City Reservoir would include access roads, parking areas, and utilities, in addition to boat launching, camping, picnicking, and swimming facilities.

The estimated total Federal costs for these facilities would be \$455,700. Additional recreational facilities including lodging not appropriate for Federal construction would cost an estimated \$370,000.

Because of its more isolated location and smaller size the lower Gunlock Reservoir would be largely restricted to local recreational use. The recommended basic recreation development in this area is estimated to cost about \$243,700.

The estimated total annual recreation benefits for the Dixie project would be \$190,300. The lower Gunlock Reservoir operation would provide an average of \$7,100 in flood control benefits each year. While the Virgin City Reservoir would also provide incidental flood control benefits, they would be small and have not been evaluated.

The annual benefits of providing additional municipal and industrial water supplies have been estimated to total \$160,700. Taking into consideration the annual power benefits of \$342,000 and the annual irrigation benefits (\$3,271,600), the total project benefits would amount to \$4,049,700 annually.

The total estimated cost for development of the Dixie project is \$44,822,000, based on October 1960 prices. Of this amount \$44,577,000 is allocated to project purposes and \$245,000 is nonreimbursable investigation costs contributed by the Colorado River Development Fund and the State of Utah.

There would be little change in this cost if it were indexed to reflect current prices. Based on the April 1963 revised economic and financial analysis using 27/8-percent interest and other current procedures, project costs are allocated among the various functions as follows:

Irrigation, \$30,635,000; power, \$6,826,000; municipal and industrial water, \$2,518,000; flood control, \$152,000; fish and wildlife, \$1,563,000; and recreation, \$2,883,090.

The foregoing costs were determined by using the "separable costs-remaining benefit" method of allocation.

The total estimated annual operation, maintenance, and replacement costs of \$319,900, would be allocated among the project func-

tions as follows: Irrigation, \$174,500; power, \$74,200; municipal and industrial water, \$5,000; flood control, \$300; fish and wildlife, \$3,100; and recreation, \$62,800.

The cost allocated to irrigation would be reimbursable without interest in accordance with reclamation law.

Reclamation law also provides that costs allocated to flood control and fish and wildlife are to be nonreimbursable and nonreturnable.

Virgin City Reservoir would produce the majority of the recreation benefits of the project, and because of its close proximity to Zion National Park would have both regional and national significance for recreation purposes. Therefore, it is recommended that the costs of the project allocated to recreation be made nonreimbursable and nonreturnable.

The repayment analysis indicates that the reimbursable costs allocated to power can be repaid with interest in 50 years and that the reimbursable cost allocated to municipal and industrial water can be repaid with interest in a 50-year period, with allowance for a 10-year interest-free deferment period as provided by the Water Supply Act of 1958.

For the Dixie project this would amount to interest deferment for three-fifths of the cost of the municipal and industrial water. The irrigators in a 50-year period, which in the case of the new lands would commence after a 10-year development period, with the assistance of a 5-mill conservancy district tax would repay \$22,440,000 or about 73 percent of the Federal investment allocated to irrigation.

The percentage would amount to 76 taking into consideration the fact that the ad valorem tax could continue for 60 years. At the end of the 60-year period, if revenues from all project sources have been applied toward project repayment \$3,232,440 would remain to be repaid from revenues derived from the sale of power from Federal projects in the Lower Colorado River Basin.

The Washington County Water Conservancy District was officially formed on February 6, 1963, by action of the district court at St. George, Utah. The district has power to tax and to enter into a repayment contract with the United States.

The Dixie project has engineering feasibility, and its development is economically justified in the sense that a 100-year period of analysis reflects a total benefit-cost ratio of 2.3 to 1.

I think I should also submit at this point, the total capital costs for the Dixie project and clarify some of the cost figures that were mentioned this morning.

The total cost, as shown in the 1961 report is \$44,867,800. That has been decreased slightly by a new estimate received from the Park Service on the recreation facility cost, decreased by \$45,600 which brings us to \$44,822,000.

Now this figure, in turn, is also reduced, so as far as payment obligation is concerned, by \$239,500 of Colorado River Development Fund moneys that are nonreimbursable under law.

Added to that is an additional decrease of \$5,500 which was granted by the State of Utah and that brings it down to \$4,577,000 as a net cost allocated to project purposes, the Dixie project.

There would be very little change, we feel, in this cost if it were indexed up to reflect the current prices. These are prices based on conditions existing at the time we prepared this report dated 1961.

Based on the April 1963 revised economic and financial analysis, using 27 $\frac{3}{8}$ percent interest and other current procedures project costs are allocated among the various functions, as follows: Irrigation, \$30,635,000; power, \$6,826,000; municipal and industrial water, \$2,518,000; flood control, \$152,000; fish and wildlife, \$1,563,000; and recreation, \$2,883,000.

Senator MOSS. Thank you very much, Mr. West, for that statement, Mr. Pelham for showing us on the map where these lands and reservoirs and canals are.

Do you have any questions, Senator KUCHEL?

Senator KUCHEL. No questions.

Senator MOSS. Senator Jordan, do you have any questions of Mr. West?

Senator JORDAN. Yes.

I understand there will be as much as a \$5 million ad valorem tax as a part of the repayment obligation of the irrigators.

Have you calculated what the cost per acre would be that these water users would incur annually?

Mr. WEST. Yes, Senator. The average cost per acre is going to run approximately \$22.

Senator JORDAN. Does that include the \$5 million ad valorem tax?

Mr. WEST. That is the net repayable cost per acre which could be discharged by the irrigators. The revenue that would arise from this \$5 million tax, part of it would be from tax payments, by the water users themselves. The conservancy district would tap an area larger than the actual group of farmers receiving water.

Senator JORDAN. How do you allocate the costs between the users who only need supplemental water and those who need a 100-percent water supply?

Mr. WEST. Well, sir, we have not gone into that detail at this point. It would basically be a responsibility of the district, the operating district, to make equitable charges to those people who needed only supplemental water. It is something that we would be interested in and would work with the district in developing.

Senator JORDAN. Up to this point no plan has been worked out?

Mr. WEST. No, sir. I do not think so. Is that right?

Mr. PELHAM. That is right.

Senator JORDAN. Thank you.

Senator MOSS. Thank you, Senator.

Is there anything further: We did not hear from Mr. Lee. Do you have anything to add?

Mr. LEE. No, sir.

Senator MOSS. Mr. Palmer, do you have any further testimony here?

Mr. PALMER. Only one more slight observation, I think Mr. Allott inquired if we would object to the inclusion in the bill in section 8 of a ceiling on appropriation, it may have been Mr. Kuchel who inquired.

The answer is, no, we would not object to this, providing it contains a standard indexing language that has been used in all recent authorizations.

Senator MOSS. Thank you very much. We appreciate this testimony and your appearance here. Mr. MacGowan was with us earlier.

I do not know that we have any specific problems. I think we have had the testimony on the springs and what the proposals are.

I believe Mr. MacGowan has a statement that will be placed in the record at this point having to do with the proposal on desalination of the LaVerkin Springs. It will be made part of the record.

(The statement referred to follows:)

LA VERKIN SPRINGS BRACKISH WATER CONVERSION PLANT

Statement of Charles F. MacGowan, Director, Office of Saline Water

Removal of the salts present in the La Verkin Springs saline waters can best be done in a distillation plant with special equipment to prevent scale formation in the heat exchange equipment. Estimates have been prepared for removing 95 percent of the water from the brine in the conversion plant. The brine would be further processed in a salt recovery plant where relatively pure salts would be produced at a rate of about 300 tons per day.

It is expected that the plant will cost \$6,260,000, and total operating costs are expected to be \$1,380,000. It will be necessary to develop revenue from the sale of the product water and the brine. Several firms have indicated an interest in developing a process to produce pure salts and in making an offer for the brine available from the plant. The extent of support necessary for construction and operation will depend upon the amount of revenue developed. The costs involved are as follows:

	<i>Cost per year</i>	<i>Cents per thousand gallons</i>
Annual operating cost-----	\$481,000	18.9
Electric power \$0.0025 per kilowatt-hour-----	440,000	17.3
Amortization, 20-year at 4 percent-----	459,000	18.1
	<hr/>	
Annual cost, total-----	1,380,000	
Cost of water-----		54.3
Annual cost, half the plant underwritten-----	\$1,100,500	
Annual cost, half costs underwritten-----	690,000	
Cost of the plant-----	6,260,000	

For a self-paying operation, it will be necessary to earn over \$1,380,000 per year. Revenue from water would amount to \$500,000 per year with a selling price of \$0.20 per 1000 gallons. This would require about \$900,000 from the sale of the brine. A market would need to be developed for both products. The difference between the operating cost and the revenue would be the amount of subsidy and could amount to as much as \$690,000 per year if half the costs were subsidized. As the salts from this source have potentially one of the best values known, this salt recovery will be further explored.

Senator Moss. Thank you very much, gentlemen.

I understand the National Park Service and Fish and Wildlife are both represented here.

Mr. Moseley from the Park Service. Will you come forward, Mr. Moseley?

This is Mr. McBroom from the Fish and Wildlife. You may proceed; we will call on Mr. Moseley first and then Mr. McBroom.

STATEMENT OF JOHN J. MOSELEY, SUPERVISORY PARK PLANNER
IN CHARGE OF RESERVOIR RECREATION PLANNING IN THE
SOUTHWEST REGION OF THE NATIONAL PARK SERVICE, DE-
PARTMENT OF THE INTERIOR

Mr. MOSELEY. Mr. Chairman and members of the committee, I am John J. Moseley, Supervisory Park Planner in charge of reservoir recreation planning, in the Southwest Region of the National Park Service, Department of the Interior.

My statement concerns an appraisal of the outdoor recreation aspects of the two water storage features of the Bureau of Reclamation's Dixie project, with conclusions and recommendations which have been developed as a result of this study.

The Virgin City Reservoir, larger of the two impoundments, would be located in a very scenic setting on the Virgin River, 26 miles north-east of St. George, Utah.

The upper end of the impoundment would be within a quarter of a mile of the south boundary of Zion National Park. The spectacular, multicolored sandstone cliffs which rise over 4,000 feet in the park and the equally scenic Kaleb Plateau, would form part of the reservoir's backdrop to the northeast and north.

During the height of the recreation use season, the surface acreage of the Virgin City Reservoir, according to Bureau of Reclamation data, would vary from an average high pool of 3,000 acres to a low pool surface area of 2,480 acres. Such latitude is considered to be quite satisfactory for recreation purposes.

It is the opinion of the National Park Service that the Virgin City Reservoir would offer overall recreation opportunities of State and possibly regional significance.

The reservoir, because of its proximity to Zion National Park, should receive considerable tourist use and should assist in the mitigation of possible damage to Zion National Park, brought about by heavy camping use.

Basic recreation facility development is recommended at three shoreline locations. The principal site is located on the north side of the reservoir near the confluence of North Creek and the Virgin River and would be accessible by way of Utah State Highway No. 15.

Recreation facilities recommended here would make provision for camping, picnicking, and boating. It is anticipated that the major use at this site would be by visitors to Zion National Park. Because of difficult topography on the south side of the reservoir, a public use access road is not recommended.

Minimal development at this site is recommended, however, which would make this shoreline attractive for visitors arriving at the site by boat.

In the same vicinity, on the south side of the reservoir, a public use development is recommended that would take advantage of an existing low-standard road.

The development of this site for camping, picnicking, and boating would tend to disperse public use and at the same time take advantage of possible road development required for other project purposes.

The cost of land acquisitions, which would be in addition to lands acquired or other project purposes, is estimated at \$7,500. Purchase of this land would, it is believed, provide realization of the Virgin City Reservoir's optimum present and future outdoor recreation potential.

The total Federal development costs for providing basic recreation facilities, in anticipation of visitation estimated to total 150,000 visitor-days annually at the Virgin City Reservoir, has been estimated at \$455,700.

The Lower Gunlock Reservoir, would be a relatively small impoundment of 483 surface acres, located on the Santa Clara River approximately 25 miles west of the Virgin City Reservoir site.

The reservoir would be situated in a narrow, colorful valley flanked by steep, broken hills and would be accessible from U.S. Highway No. 91, which comes within 5 miles of the site.

As compared to the Virgin City Reservoir this impoundment would not be as easily reached nor would its operating plan be as attractive for outdoor recreation use. For these reasons only one small site is recommended for the estimated 20,000 visitor-days of public use which would be primarily of local origin. The cost of developing public use facilities, commensurate with anticipated needs, at the Lower Gunlock Reservoir is estimated at \$243,700.

Senator MOSS. These estimated amounts have been included, then, in the overall estimates that were given us for the cost of the project?

Mr. MOSELEY. Yes, sir; that is correct.

Senator MOSS. I heartily concur with your estimate that this would be a most spectacular outdoor recreation area, the colorful cliffs in that country should make this a superb recreation reservoir. Thank you very much for your testimony, Mr. Moseley.

Do you have any questions?

Senator KUCHEL.

Senator KUCHEL. No, sir.

Senator MOSS. Senator Jordan?

Senator JORDAN. No questions.

Senator MOSS. Thank you. Mr. Thompson, do you have anything to add to this? Mr. Thompson is also with the National Park Service.

Mr. THOMPSON. No, Mr. Chairman; we were collaborating on this and I was here to answer questions if they were raised, sir.

Senator MOSS. Thank you for coming.

Now we will hear from Mr. McBroom.

STATEMENT OF JAMES McBROOM, CHIEF, DIVISION OF TECHNICAL SERVICES, BUREAU OF SPORT FISHERIES AND WILDLIFE, DEPARTMENT OF THE INTERIOR

Mr. McBROOM. Mr. Chairman, I am James McBroom, Chief of the Division of Technical Services of the Bureau of Sport Fisheries and Wildlife of the Department of the Interior.

In the interest of conserving the committee's time I have prepared a very brief statement which would take about 2 minutes, Mr. Chairman, if I may read it.

Senator MOSS. You may go right ahead.

Mr. McBROOM. Thank you.

The Dixie project will improve habitat for quail and pheasant, incident to irrigation development, and create a fine quality reservoir fishery in an area where such resources are scarce.

Annual benefits total \$78,000 based on man-days of participation and daily unit values contained in the interim schedule of values, developed by an Interagency Committee on Water Resources.

Specifically, it is estimated that the project would create 68,300 man-days of reservoir fishing valued at \$1 per day for an annual fishing benefit of \$68,300. An estimated increase of 7,350 man-days of hunting upland game birds at \$2 per day totals \$15,000 annually.

Since the project, by intermittently dewatering a section of the Santa Clara River, would destroy a bait fishery valued at \$5,000 annually, that amount was subtracted from the above benefits to arrive at a total benefit of \$78,000 annually, rounded.

The \$16,000 of separable costs incorporated in the costs allocated to fish and wildlife include \$5,000 to provide ten 1,000-gallon watering devices along irrigation canals for the improvement of game bird populations, and \$11,000 for a program of controlling populations of undesirable fish species, to be instituted prior to closure of the reservoir. There appear to be opportunities for development of a waterfowl habitat area as part of the project. Further studies will be required to establish the feasibility of reestablishing such an area, however, in connection with the Dixie project.

That concludes my brief prepared statement, Mr. Chairman.

I might say that our full report on this project is incorporated in the project report as required by law, and that we support the Dixie project as an excellent one from a fish and wildlife standpoint. Thank you, sir.

Senator Moss. Thank you very much, Mr. McBroom, we appreciate your coming with that testimony and report.

Any questions from the Senators?

Senator KUCHEL. No, sir.

Senator JORDAN. No question.

Senator Moss. Apparently there are no questions. Thank you.

Mr. McBROOM. Thank you.

Senator Moss. I think we are moving along in good time now. I want to get the record fully constructed and yet I know many of the witnesses here have commitments that will require us to move along. I am sure we can do that with all reasonable speed now.

Our next witness will be the mayor, William Barlocker, mayor of St. George.

Mayor Barlocker, I think, knows as much about this project, or maybe a little more, than the engineers who have been studying it and planning for all these years, because he was born in this county and spent his life there and has the responsibility of being the chief executive of St. George—which is the county seat—and has traveled back here to appear at this hearing in order to make the record.

I should point out that we are going to have some additional hearings out in the State of Utah so that citizens there may have their say, but I invited the mayor to come back here; I thought it was important that right at the beginning we have the case made also for the residents of southeastern Utah, Washington County, and Iron County.

We are very glad to have you, Bill, and you may proceed.

STATEMENT OF WILLIAM BARLOCKER, MAYOR OF ST. GEORGE, UTAH

Mr. BARLOCKER. Mr. Chairman, members of the committee, my name is William A. Barlocker, president of the Dixie Project and Development Association. Our association has mothered this great project, and is primarily responsible for the local and multistate support which it has received.

Before going further into my testimony, Mr. Chairman, I would like to commend you for the part you have played in furthering the

aims of the people of southern Utah and also all of the Government departments that have played a part in this project.

As you know, this project has been considered feasible, and has been in the recommendations of the overall planning of the Interior Department for the past 55 years.

Just prior to 1941, the first Dixie project report was issued by the Bureau of Reclamation. At that time, our water conservancy district was established and we were looking forward, with great expectation, to coming before this committee and having our project approved by Congress. Unfortunately, the pressures of World War II forced postponement of the project.

On behalf of the people of St. George, Utah, the largest community in the Dixie area, and the people of Washington County, I wish to thank all the members of this committee for this opportunity to appear before you.

The Dixie project, as proposed by the Bureau of Reclamation in their report of 1961 proposes that Dixie be a "multiple-purpose water resource development in the Virgin River Basin in southwestern Utah."

By regulation of flows of the Virgin River and its tributaries, the Santa Clara River, the project would provide supplemental irrigation water to 9,445 acres of presently developed land and a full water supply for 11,615 acres of new land.

The city of St. George would be provided with 5,000 acre-feet of water annually for municipal and industrial purposes. Construction of three powerplants, as proposed in the project plan, would produce about 44,500,000 kilowatt-hours of firm electric energy, and about 1,900,000 kilowatt-hours of secondary energy, for sale, to residents of the area. In addition, minor flood control benefits would result, as would fish and wildlife and recreation benefits.

Water-storage facilities are considered to be the primary need of the Dixie project area. Development of such facilities will provide for the conservation and orderly release of water that is now wasted. A supply of stored water would serve as the foundation upon which to base a revitalized and modernized agricultural development. Such a supply is also essential if any substantial increase in local industry and population growth is to be achieved and maintained.

The general economy in my county is based primarily on agriculture including range livestock and irrigation farming. This has traditionally been our main source of income since the Dixie area was settled over 100 years ago.

The Dixie project will consist of two divisions: The Hurricane division, which will develop the water and land resources along the Virgin River, and the Santa Clara division, which will develop these resources along the Santa Clara River. When the project is completed it will furnish 7,885 acres with supplemental water from the Hurricane division and 1,560 acres from the Santa Clara division.

I might point out, at this time, that virtually no crops are grown in any of the areas to be irrigated. None of the crops grown in any of the areas to be irrigated with these supplemental waters fall under the Government's agricultural subsidy program.

This means that this will allow the farmers of Washington County to increase their crop production, thereby simulating the economy, at no additional expense to the Government or the taxpayers.

Washington County, where the project is to be located, is the poorest county in the State and as such we are eagerly looking for new ways to bring industry into the area thus broadening our economic base.

However, the water resources of our area are inadequate to take care of the increasing population, let alone serve as inducement to industry. Development of water storage facilities will enable the conservation and orderly release for water that is now largely wasted as flood discharges and will also permit the conservation of those portions of normal flows which are in excess of the immediate requirements of irrigation and other uses.

Control of these problems and overall regulation of the rivers are all areas which will be solved with the construction of the proposed Virgin City and Lower Gunlock Reservoirs of the Dixie project.

We have a definite need for a program including canal lining, land leveling, adequate head gates, check and related structures which will accomplish a further reduction of water losses, improvement in the irrigation practices, and control of our drainage problems.

In reference to the power to be generated from the dam, a letter dated May 9, 1961, to the Reclamation Bureau, from the city council of the city of St. George confirmed an agreement by our city to purchase all the energy which would be available from the Dixie project powerplants at a rate of 6.9 mills. A copy of our letter appears in the report of the Bureau.

Local support for the Dixie project has, as I mentioned at the first of my statement, been active for more than 25 years.

Since the original conservancy districts were in the process of being set up in 1941, too much time had elapsed for them to still be of legal significance.

Therefore, we have now completed creation of a new conservancy district which provides for a tax levy of 5 mills. As you know, this is almost double the average mill levy imposed upon a county for a conservancy district. In spite of this, over 90 percent of the people available in Washington County voted in support of the mill levy, and this included people on the outskirts of our county consisting of about 20 percent of our population which will not receive any benefits from the project.

Mr. Chairman, although the Virgin River is an interstate tributary, it nonetheless is classified as a captive stream. When the project is completed, it will hold back only 0.076 percent of the total waters of the Colorado River. The special masters plan, in considering the water development of the Southwestern United States, made reference to projects such as Dixie which are located on tributaries and "are not subject to the legal and physical control of the Secretary of the Interior." It was then concluded by the Secretary that the development of the Dixie project would, in no way, be affected by the Supreme Court's decision in *California v. Arizona*.

In summary, Mr. Chairman, let me say that the people of Utah are in desperate need of the Dixie project. Their economy and, in fact, their very lives and continued growth depend upon its development and thus upon your actions here today.

The Bureau of Reclamation has given the Dixie project highest priority and considers it to be "one of the most economically feasible projects," and in southern Utah there is no more urgent problem on the lips of our citizens than water development.

The Southwestern United States abounds with countless resources. The very heart of this area may, in years to come, become America's great treasure chest. Unfortunately, it will never reach this ultimate goal unless we are granted that basic commodity, water.

On behalf of the people who have mothered this project for so many years, the Dixie Project & Development Association, I respectfully but urgently request your wholehearted endorsement of this bill. Thank you.

This is the end of my prepared statement, if you have any questions at this time, I will be glad to answer them.

Senator Moss. Thank you very much, Mayor Barlocker.

I might say for my other committee members that Mayor Barlocker, in addition to his many other interests, is a large turkey producer in this area and he hatches and sells turkey—and he also raises and processes, has a processing plant for packing and processing turkeys to be shipped all over the United States.

When I bought a turkey in my supermarket here last Christmas, and took it home to roast, it was one of Bill's best turkeys, it had his label on it.

So he knows whereof he speaks when he talks about the economy of the country. I am just wondering, would turkeys get into this surplus talk that we have had. Are they supported in any way?

Mr. BARLOCKER. No; they have never been supported and I question that they would be in it at all. About 10 percent of our feed, however, is bought for the production of the turkey crop at the present time on a local basis; with the Dixie project we would probably be able to buy about 20 percent of our feed which would consist primarily of barley.

Senator Moss. So about the only effect it would have on the turkey business would be you would be able to get a little more of your feed locally than you do now?

Mr. BARLOCKER. That is correct. I might clarify a statement made this morning, our largest cash crop in the St. George area is sugarbeet seed. You have to have a climate that is almost nill of moisture and still a long enough season that it can mature.

It takes an 11-month season to mature sugarbeet seed, and you must have around 7 to 11 percent humidity so that the seed during the curing season does not mold.

We now furnish all of the sugarbeet seed for the sugarbeet growers in most of the intermountain west, and with the national situation on sugar as it is today we are expecting if water is available to very substantially increase that acreage in the St. George area.

Senator Moss. You do not grow any beets for processing into sugar, do you?

Mr. BARLOCKER. No; just the seed for the other growers.

Senator MOSS. Thank you.

Are there any questions of my colleagues?

Senator KUCHEL?

Senator KUCHEL. Mayor Barlocker, on page 3 of your statement you say, in part:

The special masters plan in considering the development of the Southwestern United States made reference to the Dixie project and noted that its development would in no way be affected by the Supreme Court's decision in *Arizona v. California*.

What is that special masters plan, Mr. Mayor?

Mr. BARLOCKER. Unfortunately, I did not bring the complete information with me.

Senator KUCHEL. Would you supply that information, Mr. Barlocker?

Mr. BARLOCKER. I will; if I do not give it to you today I will put it in the record at St. George.

Senator MOSS. All right, it will be supplied for the record, then.

(The plan is printed on page 117.)

Mr. BARLOCKER. I would like to also point out before leaving, I believe this is an asset to not only the people in southern Utah but an asset to the people in California because 42 percent of the total volume of water or total volume held back behind this dam is set up for the sediment that is usually flown through floods down to the Lake Meade area and into the Hoover Dam.

This will add many, many years of life to that dam by setting up this reservoir ahead of it.

I might also add to clarify the statement on the 3,200 acres in the downstream area that was suggested this morning, and the reason I mentioned the 1,600 acres, if you will check the feed-water testings or checkpoints the volume of water going down the Virgin River you will find that between the months of June and the last of June, July, August, and part of September, there is virtually and usually no flow whatsoever beyond about 5 miles south of St. George, which is the Bloomington-Bench area.

In other words, there are no mineralization waters that go downstream with the exceptions of a flood. The only time they receive those mineralized waters is in the springtime when the Virgin River is at a high point and they can use some of the water at that time.

The people in Littlefield, Ariz., and Mesquite, Nev., receive their primary water sources from a creek known as the Beaver Dam. This is water that runs year around, it is hard in nature but not to the extent that these other waters are.

The Virgin River is just a supplemental supply for them in the spring because all the water rights are taken and that is why we show that there are 9,000 acres in the report that need supplemental water, because even the St. George area sometimes, and this year, will run out of water by July 1. There will be no water in the Virgin River until such time as the flood or fall snows.

Senator KUCHEL. Do I understand you to say, then, Mr. Mayor, that the waters of the Virgin River are presently committed or allocated under State law?

Mr. BARLOCKER. Right. In other words, the only thing that goes downstream is the overage which usually is in the springtime when there is an abundance of water in the river.

Senator KUCHEL. Do you have flood conditions there?

Mr. BARLOCKER. At flood conditions they pick some up at that time.

Senator KUCHEL. Do you have flood conditions there quite regularly?

Mr. BARLOCKER. We do not have them often; we had one 2 years ago that was estimated that 50 percent would have filled the dam if it had been there, in about 3 days, and this was all sediment water, it was so thick you could hardly walk through it because of the sandstone that came out of Zion's Canyon which all went into the Boulder area and which would be held back by this project.

Senator KUCHEL. Thank you.

Senator MOSS. You do have these summer cloudbursts at times that fill the stream up and then it goes right down again, is that right?

Mr. BARLOCKER. Yes. In fact, about 5 years ago we had a flood that was so severe that it even washed part of the farms away down as far as Bunkerville, Nev., which is just out of the Lake Meade area. If I remember right I think it ruined the floors in the schoolhouse and some of the homes in the community which would not happen if this project was there.

Senator MOSS. Thank you.

Mr. Jordan?

Mr. JORDAN. Mr. Chairman, I have not heard anyone testify yet as to the character of land that would be inundated by the reservoirs. Is this agricultural land, any of it irrigated land?

Mr. BARLOCKER. No; the land, the creek itself where the base of the dam would be built is volcanic and iron rock together.

The ground above the dam has never been irrigated and with exceptions of a small area known as Virgin City, which I would assume amounted to probably 200 to 300 acres. This will be under water.

The land is not—it is so rocky on—and porous that there would not be any potential irrigation virtually under the site.

Senator MOSS. Thank you very much, Mr. Mayor. We do appreciate your coming to testify.

Mr. BARLOCKER. Thank you, Mr. Chairman. I would also like to enter into the record a fact sheet which would help these gentlemen in evaluating some of these things which were taken from the original Bureau of Reclamation's thick issue so they will not have to thumb through that 700-page booklet, they can get it here in 7 pages so far as most of the meat is concerned.

Senator MOSS. Thank you; that may be placed in the record at this point.

(The document referred to follows:)

DIXIE RECLAMATION PROJECT, UTAH, FACT SHEET

Location.—Southwestern Utah, Washington County, on the Virgin and Santa Clara Rivers, region 3.

Plan.—Construction of the multipurpose Dixie project would provide supplemental irrigation water to 9,445 acres of presently developed land and provide a full water supply for 11,615 acres of new land. The city of St. George would be provided with 5,000 acre-feet of water annually for domestic purposes from the Virgin City Reservoir. Construction of the three powerplants as a part of the project plan would produce about 44,500,000 kilowatt-hours of firm electric energy and about 1,900,000 kilowatt-hours of secondary energy for sale annually.

In addition minor flood control benefits would result as would fish and wildlife and recreation benefits.

Total project costs-----	¹ \$44,867,800
Dams and reservoirs-----	18,239,000
Powerplants-----	7,098,000
Supply canals and laterals-----	13,391,000
Switchyards, substations, and transmission lines-----	1,117,000
Pumping plant-----	99,800
Recreation facilities-----	745,000
Fish and wildlife improvement measures-----	16,000
Drainage system-----	1,937,000
Other incidental costs-----	2,225,000

Construction period.—Approximately 5 years.

¹ Includes nonreimbursable investigation costs amounting to \$245,000 and reimbursable investigation costs amounting to \$142,000.

Annual equivalent Federal benefits—100-year period of analysis

Irrigation-----	\$2,467,500
Power-----	342,000
Municipal water-----	146,900
Flood control-----	6,800
Fish and wildlife-----	78,000
Recreation-----	272,000
Total-----	3,313,200

Annual equivalent Federal costs.—\$1,559,200.

Benefit-cost ratio.—100-year period of analysis, 2.1 to 1.0.

Repayment.—That portion of the reimbursable costs allocated to power can be repaid with interest in 50 years. Reimbursable costs allocated to municipal and domestic water can be repaid with interest in a 50-year period with allowance for a 10-year interest-free deferment period for a portion of the costs under the Water Supply Act of 1958. In a 50-year period with allowance for a 10-year development period for new lands, and with the assistance of a 5-mill conservancy district tax, the irrigation interests can reasonably be expected to repay 71 percent of the estimated cost allocated for repayment by irrigation. To complete repayment, irrigation will require financial assistance from some source, or extension of the repayment period.

Municipal and industrial water.—The project provides for 5,000 acre-feet of municipal and industrial water at Virgin City Reservoir to be delivered to a point in the supply canal system of the Hurricane division near St. George, Utah, for use by the city.

FORMULATION OF THE DIXIE PROJECT PLAN

All known potential irrigation developments in the Virgin River Basin were investigated by the Bureau of Reclamation prior to the present investigation for the Dixie project. The results of these basinwide investigations are given in project planning Report No. 3-3b.01-0, "Virgin River Subbasin of the Colorado River Basin, Arizona-Nevada-Utah," published September 1946. These investigations led to the conclusion that the water and land resources in the basin would be most beneficially used by constructing the Hurricane and Santa Clara projects. In general, the plans for these two projects were combined to form the present plan for the Dixie project, which is briefly described in the following section.

The Dixie project area is divided into the Hurricane and Santa Clara divisions. Although these divisions are contiguous and closely related through the economic needs of the area, they have separate water supplies and the project works and lands are not physically connected. These divisions and their project lands and works are shown on drawing 513-300-6.

The Hurricane division is located along the Virgin River from St. George, Utah, upstream to the southwestern corner of Zion National Park, a distance of about 30 miles. The Santa Clara division lies along the Santa Clara River, a tributary of the Virgin River, from its mouth near St. George upstream to Gunlock, Utah, a distance of about 20 miles.

PROBLEMS AND NEEDS OF THE AREA

Major problems of the project area and surrounding territory can be traced to a lack of essential resources needed to provide means of livelihood for even its normal population increase. Since the basic natural resources are agricultural in character, climatic conditions of the area are very important. The arid climate normal for the region limits the quantity of native forage produced for range livestock operations and also results in an inadequate as well as unpredictable supply of water to irrigate the arable lands that are available.

The basic problem in connection with improving the agricultural base is to provide additional and at the same time a more dependable and predictable supply of water for irrigation and other uses.

PROJECT LANDS

The 21,060 acres of land to be served water from the works proposed under the Dixie project plan include 9,445 acres of presently irrigated land in need of supplemental water and 11,615 acres of new land intermingled with or contiguous to the irrigated land.

The Hurricane division which would receive water from the Virgin City Dam and Reservoir is comprised of 7,885 acres of presently irrigated land and 9,250 acres of new land.

Based on the findings of a detailed land classification of the project area over 48 percent of all land included for water service is class 1 land according to Bureau standards. Almost 46 percent is class 2 land and the remaining land is class 3 and 4. The class 1 land is highly suited for the production under irrigation of all climatically adapted crops. Sustained high yields can be expected if the crops are supplied adequately with water and fertilizer. These lands are the least costly to develop and farm in the project as they are smooth lying, have deep soils of medium to fine texture with a good soil structure.

LOCAL SUPPORT

Local support for an irrigation project has been very active since the early thirties. The only change in recent times is an increased emphasis on an additional supply of water for municipal and especially potential industrial uses. When consideration is given to the determination exhibited by the early settlers in developing the present irrigated acreage, it is not unrealistic to believe that their descendants will not only follow through to approval of a project but will also exploit all the benefits offered by a completed project.

Support for the Dixie project continues to be forceful at the State level with the Governor, State engineer, and department of water and power participating actively in local meetings and deliberations. Members of the National Congress from the State of Utah continue to lend their support at a national level. Bills have been submitted to obtain congressional approval and the funds needed to initiate construction.

SUMMARY

The investigations of the potential Dixie project as reported herein lead to the following conclusions:

1. The project has engineering feasibility.
2. The project development is economically justified in the sense that \$2.10 in measurable benefits would accrue for each dollar of project costs. In addition, important intangible benefits, not readily susceptible of evaluation in monetary terms, would accrue from project development.
3. Those portions of the reimbursable costs allocated to power and municipal and domestic water can be repaid with interest in 50 years.
4. In a 50-year period with allowance for a 10-year development period for new lands, and with the assistance of a 5-mill conservancy district tax, the irrigation interests can reasonably be expected to repay 71 percent of the estimated cost allocated to irrigation.
5. To complete repayment of the portion of the project costs allocated to irrigation will require financial assistance from some source or extension of the repayment period. If project power and municipal and domestic water revenues are applied to assist in the irrigation repayment after the costs allocated to power and municipal and domestic water have been repaid, and irrigation and conservancy district payments are continued after the normal repayment period,

the total reimbursable costs of the project could be repaid in the 65th year of project operation.

6. A water conservancy district has been organized in accordance with Utah law and is the most suitable organization to represent the water users and to contract with the United States for repayment of the reimbursable costs.

7. Construction of the project would alleviate a pressing problem of the area by providing additional economic opportunities to support the continuous natural increase in population of the area. It would also stabilize farm incomes by making water supplies more dependable, provide additional municipal and domestic water to meet increasing population and industrial needs, provide hydroelectric power at reasonable rates in an area of rapidly increasing power demands, and provide significant flood control, fish and wildlife, and recreation benefits.

8. Constuction of the project would be a forward step in the comprehensive development of the Colorado River Basin and in the conservation and utilization of the land and water resources of the West.

Senator Moss. Mr. Bingham, executive secretary of the Utah Water and Power Board, and Mr. Wayne Criddle, the State engineer. The board has done an excellent job for the State.

Mr. Bingham has spent most of his adult life in this work. Mr. Criddle has the job in the State of Utah in determining water rights, being advised of water supply, and all of the details of controlling the water rights that our people possess under the law.

So, these two gentlemen can give us some testimony, I am sure, that will be enlightening on this project.

We will hear first from Mr. Bingham.

STATEMENT OF JAY R. BINGHAM, EXECUTIVE SECRETARY, UTAH WATER AND POWER BOARD

Mr. BINGHAM. I think you have already placed in the record the letter from the Governor and copies are attached to my statement for the ready reference of the committee.

If it is agreeable, I would ask that my statement be reproduced in the record and I would be happy in the interest of time to summarize some of the points I make in the statement.

Senator Moss. That will be done. The statement of Mr. Bingham will appear in full as though it were read and also the attachments of letters here reproduced and submitted with his statement will also appear in the record.

(The statement and documents referred to follow:)

PREPARED STATEMENT OF JAY R. BINGHAM, EXECUTIVE DIRECTOR, UTAH WATER & POWER BOARD

Mr. Chairman, my name is Jay R. Bingham. I appear before your important committee as an official representative of the State of Utah. The Utah Water and Power Board, of which I am executive director, is the agency of State government charged with promoting the development of the State's water resources.

I wish to acknowledge the great contribution reclamation development has made to the economy of the Nation and to my State. These projects have provided a regenerating cycle of water development and economic stability.

The chairman needs no reminder of these facts but the record should show that the area of Federal ownership in Utah is in the order of 72 percent.

The federally owned area in the State of Utah totals 61,140 square miles. Thus, the federally owned land in Utah is only slightly less than the total area of the New England States—Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine—whose combined areas are 66,608 square miles. Or expressing it another way, the federally owned lands in the State of

Utah exceed in area, the entire State of Michigan. This large Federal ownership limits revenues normally available to the State. The U.S. Government realizes, on the other hand, considerable income from the Federal lands within the borders of our States. The Congress has wisely provided that a certain percentage of the revenues from public lands be credited to the reclamation fund. These accretions to the reclamation fund from the sale of public lands and the proceeds from the Oil Leasing Act from the State of Utah amounted to a total of \$3,892,000 for fiscal year 1959, and the total, including preceding years, to June 30, 1959, is \$32,918,000.

Comparison of federally owned area in Utah with total area of 6 New England States

State	Percent Federal	Total area ¹	Federal area ¹
Utah.....	72	84,916	61,140
Vermont.....		9,609	
New Hampshire.....		9,304	
Massachusetts.....		8,257	
Connecticut.....		5,009	
Rhode Island.....		1,214	
Maine.....		33,215	
Total, 6 States.....		66,608	
Continental United States.....		3,022,387	

¹ Square miles.

Today, we appear here to ask your favorable action on legislation that would authorize the Dixie project and provide that funds raised in part from revenues from Federal lands would be invested in development of a potentially rich area now stunted by an erratic and meager water supply.

We believe the principle of using surplus or unassigned power revenues to complement other sources of revenue to repay reclamation costs is well established in the Central Valley of California, the Missouri, the Upper Colorado, and Columbia Basins. The future development of the West will require an even broader application of this principal which we support.

Can there be a sounder approach than harnessing the revenue-producing capability of power from falling water to assist in bringing water to thirsty acres?

We do not come idly here to court your favor; we come here because we have a great need, a project beyond our means. May I present to the committee a publication summarizing the efforts of the State in financing small water conservation projects—I call this to your attention for two purposes: First, to demonstrate that we are making a significant State and local effort to develop our water resources; second, to give you proof of the integrity of our people and the repayment ability provided by bringing together good land, resourceful people, and water.

This folder tabulates pertinent information about State-assisted projects. In summary, 201 projects have been constructed as of June 30, 1962. The total cost of these projects is \$10.75 million. The State has advanced \$7.1 million for the construction of these projects. The total appropriation to the board since 1947 has been \$4 million. An additional \$2 million reimbursable loan was made to the board from fund balances of the State. The revolving nature of the fund is indicated by the fact that the board has been able to invest \$7.1 million in the program. The projects have reached, both on full supply and supplemental supply basis 526,000 acres of cropland. It is interesting to note that this represents 37 percent of the total cultivated area of the State.

The program is responsible for providing, either by water yield from reservoirs or water supplies saved or created by projects each year, 256,000 acre-feet of water.

I would like to add that we extended ourselves and have constructed, without Federal reclamation assistance, the Woodruff Narrows Dam on the Upper Bear River. We made this effort in order that you might be more inclined to give special consideration to the Dixie project, which is beyond our ability to finance.

You will find tabulated, in the accomplishments folder, eight projects constructed in Washington County with State assistance. All of these complement

the proposed Dixie project. The Kolob Reservoir is, in fact, an integral part of the project since it provides storage regulation that will permit transbasin diversion of water to Iron County.

In this water-short area it is inevitable that there would be keen competition for all available sources of water. However, though the patient efforts of the Utah Water and Power Board and the cooperative attitude of Iron County and Washington County interests, an agreement has been reached which removes intrastate controversy over water rights for the Dixie project.

This agreement, executed by officials of the two counties and authenticated by the Utah Water and Power Board, provides that when the Dixie project is built the entire water supply available by natural flow at the Kolob Reservoir, and, as may be later augmented by a feeder canal from Crystal Creek, will be available to Cedar City and vicinity. The agreement further provides that Cedar City shall pay to the Dixie project the annual loss of power revenue to the Dixie project occasioned by the transbasin diversion of water to Cedar City.

Water rights for the Dixie project, held in trust by the Utah Water and Power Board for the development, further recognize the terms of the agreement. The Dixie project development report gives further recognition to the amicable solution worked out at the local level.

Water rights applications for the Dixie project have been made by the Utah Water and Power Board and are being held for project development. At the appropriate time these filings will be assigned by the Utah Water and Power Board to the United States.

State Engineer Wayne D. Criddle, an able water expert and ex-officio member of the Utah Water and Power Board, is prepared to comment on the effects of the proposed Dixie project on lower basin water supply.

In conclusion let me again stress the need for the Dixie project by citing the willingness of the Washington County interests to obligate themselves for a 5-mill ad valorem tax to supplement water sales. The expenditure by State and local interest of \$720,000 for small water conservation projects in the area will complement the proposed Dixie project. Over \$67,000 has been expended by the State of Utah in protecting and defending its rights in the lower basin.

Extensive discussions have been held with the States of Arizona and Nevada relative to the effects of this project. We believe that the proposed Dixie project will improve conditions on the lower reaches of the Virgin River and this project and other developments can proceed in a cooperative and mutually beneficial manner.

As Mr. Criddle's demonstration will show, the project water supply arises completely within the boundaries of the State of Utah and will not adversely affect lower users on the Virgin River.

These reasons we believe speak for themselves and are justification for your affirmative action.

For the record I am attaching, as exhibit A, resolutions and statements from organizations representing project and statewide interests.

SALT LAKE CITY, UTAH.

The 15-year history of the Utah Water and Power Board is the story of a determined effort to conserve and develop the waters of the State of Utah. The story is one that could not have been written without the understanding and support of the citizens of the State, members of the legislature, and elected officials.

The accomplishments of the board in promoting and coordinating the development of water resources on a statewide basis has been characterized as a program to "help people help themselves" and by Gov. George D. Clyde, "as the best investment in resource development the State has ever made."

The board has promoted the State's interests in large Federal reclamation projects and in the field of smaller developments where no other form of assistance is available, the board has made State funds available for construction. All construction funds assigned to the projects are reimbursable as are the engineering and inspection expenses incurred by the State.

This folder tabulates pertinent information about State-assisted projects. In summary, 201 projects have been constructed as of June 30, 1962. The total cost of these projects is \$10.75 million. The State has advanced \$7.1 million for construction of these projects. The total appropriation to the board since 1947 has been \$4 million. An additional \$2 million reimbursable loan was made to the board from fund balances of the State. The revolving nature of the fund is indicated by the fact that the board has been able to invest \$7.1 million in the

program. The projects have reached, both on full supply and supplemental supply basis 526,000 acres of cropland. It is interesting to note that this represents 37 percent of the total cultivated area of the State.

The program is responsible for providing, either by water yield from reservoirs or water supplies saved or created by projects each year, 256,000 acre-feet of water. These projects, although small in size, make it possible to reach and aid portions of the State which are far removed from the benefits of larger projects. Communities such as Manilla in Utah's northeastern corner, West Fork and Grouse Creek in the extreme northwestern corner, and Blanding and Baker which are located in the southeastern and southwestern portions of the State, respectively, have benefited from this water conservation program.

This program, though modest in scope, has had a catalytic effect on economic development. The future of the State will, in a large part, depend on a continuous effort at all levels to utilize modern technical and scientific knowledge for the solutions to the problems of developing our water resources.

THE UTAH WATER AND POWER BOARD.

UTAH STATE INDUSTRIAL COMMISSION,
DEPARTMENT OF EMPLOYMENT SECURITY,
Salt Lake City, Utah, April 25, 1963.

Re proposed Dixie project, Utah, Bureau of Reclamation.

MR. JAY R. BINGHAM,
Executive Director, Utah Water & Power Board, State Capitol, Salt Lake City, Utah.

DEAR JAY: The Dixie project would provide supplemental irrigation water to 9,445 acres of presently developed land and a full water supply for 11,615 acres of new land. The city of St. George, Utah, would be provided with 5,000 acre-feet of new water annually for municipal and industrial purposes. In addition, over 46 million kilowatt-hours of electric energy would be provided each year.

Such a water supply would form a basis on which to build a revitalized and modern agricultural industry and would also provide the essential water necessary to increase local industrial development and maintain continued population growth of the Dixie project area in Utah. The new source of electric energy would also serve to stimulate and attract new developments to the area.

The lakes to be created by construction of the dams in the Dixie project would add substantially to the numerous tourist and recreation areas already extant in this area.

The statement of the general economy beginning on page 20 of the report gives a fair appraisal of the present situation in the Dixie project area. It should be pointed out, however, that the provision of supplemental water for the present 9,445 acres of irrigated land and full water supply for 11,615 new acres, or stated another way, a full water supply for 21,060 acres would, with double cropping, make it feasible for the area to produce in the neighborhood of 40,000 acres of crops—nearly four times the present acreage produced. Such an increase in the usage of agricultural lands of the Dixie project area would be a great step toward alleviating a present lack of employment opportunities, specifically in the agricultural field, as described on page 36 of the report. When consideration is given to the determination of the early settlers in developing the present irrigated acreage, it is not unrealistic, with the advancing status of farm technology, to believe their descendants will exploit all the possibilities to be offered by the completion of the Dixie project.

On page 173 of the report, the Washington County Agricultural Stabilization and Conservation Office illustrates the estimated type and size of farm units in the Dixie project area. Assuming that these relationships hold steady after completion of the project, the following tabulation would represent the projected number and type of new farms resulting from the project.

Type of farm	Total cropland		Average acres per farm	Number of farms			
	Acres	Percent		Present	Projected	New	Percent
Part-time farmers.....	8,845	42.0	18.2	218	486	268	76.2
Livestock crops.....	6,529	31.0	71.5	41	92	51	14.4
Grade A dairy.....	3,917	18.6	65.1	27	60	33	9.4
Other ¹	1,769	8.4	30.5	(26)	(58)	(32)	-----
Total.....	21,060	100.0	33.0	286	638	352	100.0

¹ These farms are included in farms owned by part-time farmers.

Using this assumption there would be 352 new farms in the Dixie project area, of which 268 would be part-time farmers who would supplement their farm incomes with off-farm incomes from activities as described on page 173 of the report. This assumption does not consider the existing trend of consolidation of farms in large and fewer units because the trend may be curbed, or slowed down, as land owners will likely become less anxious to sell their property as full water supplies are made available for their lands.

This approach would seem to be more realistic than to assume that all 21,060 acres of land would be utilized only by full-time farmers after completion of the project to account for only 263 farms, or 23 fewer farms than are presently in the project area. Similarly, it is less realistic to assume, as is done on page 188 of the report, that the distribution of size and type of farm on present acreage will remain unchanged and that the new acreage will be arbitrarily allocated to 80-acre full-time farms on completion of the project. This assumption, however, would result in 145 new full-time farms in the project area on new lands alone.

It seems clear, in any event, that the Dixie project, if undertaken, would result in a substantial increase in employment opportunities in the area. It seems reasonable also, that since the anticipated use of the new lands to be developed will be primarily for livestock and crop purposes that the need for foreign labor to work the land would be held to a minimum. The fact that 18 percent of the new lands under the project are federally owned and will probably be developed by homesteading, should bring some new population into the area and encourage other local residents to enter farming as an occupation.

The availability of new water supplies and power supplies for the St. George area, together with the better access to the area through completion of the interstate highway system should encourage and stimulate light industrial development and greater activity in the tourist industry. These conditions should result in increased nonfarm employment opportunities and also provide supplemental incomes for the continuing part-time farmers.

New employment opportunities in the area are limited at present. However, in the past 12 months there have been several encouraging developments which will improve employment opportunities. Completion of the Dixie project will no doubt accelerate these projects and encourage new ones. They are:

1. The Hawthorn Co. of New Haven, Mo., have under construction an 80,000-square-foot building in St. George which will ultimately employ 400 workers in the manufacture of tents, tarps, sleeping bags, and other recreational sporting goods. Most of the production of this plant will be marketed in southern California by Sears Roebuck.

2. The Travelodge chain of motor courts has purchased a site in St. George and a new Travelodge will be constructed in the summer of 1963. This development stimulates confidence in the future of Washington County as a tourist mecca.

3. There is increasing interest in southern Utah coal deposits as a source of energy to satisfy mounting power needs of metropolitan centers. Investigations have been made by Nevada Power Co. for a thermal generating plant in Utah

with transmission lines running to the Las Vegas area. Other investigations have been made of the economic feasibility of transmitting coal by pipeline to southern California. So far, both projects have been hindered by the lack of water. It is quite certain that ground water will be developed in the near future which will make possible the realization of these projects.

4. The El Paso Natural Gas Co. presently has an application on file with the Federal Power Commission to construct a 34-inch natural gas line from Wyoming through Utah to Nevada and California. This proposed line would pass through the Dixie project area.

Mountain Fuel Supply Co. of Salt Lake City is also drilling a wildcat natural gas well between Parowan and Cedar City.

If either of these projects are successful the supply of a cheap industrial fuel to the area should result in increased resource development and industrial usage.

5. There are several good industrial prospects presently interested in the Dixie project area and it is fairly certain that additional manufacturing plants will be located in the area. These added jobs should admirably complement the increased agricultural production made possible by the construction of the Dixie project.

If southwestern Utah is to realize its ultimate economic development and reverse the present trend of being unable to support its natural increase in population, additional sources of water are absolutely essential. The development of water resources by the Dixie project will rejuvenate the entire economic outlook and make possible significant progress in the development of both human and natural resources. This area is an extremely arid region and without additional water the limits of economic growth are definitely prescribed.

From the point of view of critical need for job opportunities in the Dixie area and the "once in a lifetime" aspect of releasing limiting growth factors, the favorable endorsement of this project cannot be over emphasized.

Very truly yours,

CURTIS P. HARDING, *Administrator.*

Pleasant Grove, Utah, May 1, 1963.

JAY BINGHAM,
Executive Director, Utah Water and Power Board, State Capitol Building, Salt Lake City, Utah.

DEAR JAY: The directors of the Utah Association of Soil Conservation Districts are in favor of the Dixie project in southwestern Utah.

In this section of the State, local soil conservation districts have had an active conservation program and have a high percentage of water conservation measures, such as land leveling and ditch lining, completed.

The area has a favorable climate but a great need for additional water. Crops grown in this area are not crops in surplus. The Dixie project would be very beneficial in improving the economy of this portion of the State.

We heartily support this project.

Sincerely yours,

LEO P. HARVEY, *President.*

IRON COUNTY

PAROWAN, UTAH

April 16, 1963

At the regular meeting of the board of county commissioners held on Monday, May 8, 1963, the following resolution was introduced by Commissioners Ivan M. Matheson, who moved its adoption. The motion was seconded by Commissioner Frank Milne and on being put to a vote, passed unanimously.

RESOLUTION

Be it resolved by the Board of County Commissioners of Iron County, Utah, in regular meeting assembled at Parowan, Utah, this 8th day of April A.D. 1963, That this board go on record as favoring and urging the Utah State Water and Power Board, to use their influence and to work for the passage of a bill recently introduced in the U.S. Senate by Senator Frank E. Moss and for a bill recently introduced in the House of Representatives by Representative Lawrence Burton,

which bills if passed would authorize the construction of the Dixie water project in Washington County, Utah.

We wish to point out to the Utah Water and Power Board and to the Federal Department of Reclamation that the authorization of the Dixie project and its final construction, will bring much development and progress, not only in Washington County but will result in the allocation of additional water for Iron County through agreements and arrangements that have been made between owners of water rights in the area ; and be it further

Resolved, That a copy of this resolution be sent to Jay Bingham, executive director of the Utah Water and Power Board for his use at hearings he will participate in, being held in Washington, D.C., during the month of May 1963.

(Signed) KEITH SMITH,
FRANK MILNE,
IVAN M. MATHESON,
*Board of County Commissioners,
Iron County, Utah.*

Attest :

W. CLAIR ROWLEY,
County Clerk, Iron County, Utah.

CEDAR CITY CORP.,
Cedar City, Utah, April 22, 1963.

Mr. JAY BINGHAM,
*Utah Water and Power Board,
Salt Lake City, Utah.*

DEAR MR. BINGHAM : At the regular meeting of the Cedar City Council, held April 18, 1963, the following resolution was passed unanimously.

RESOLUTION

Be it resolved by the Cedar City Council of Cedar City, Utah, in regular meeting assembled at Cedar City, Utah, this 18th day of April 1963, That this council go on record as favoring and urging the Utah State Water and Power Board, to use their influence and to work for the passage of a bill recently introduced in the U.S. Senate by Senator Frank E. Moss and for a bill recently introduced in the House of Representatives by Representative Lawrence Burton, which bills, if passed, would authorize the construction of the Dixie water project in Washington County, Utah.

We of the Cedar City Corp., feel that the Dixie project has great beneficial possibilities for southern Utah and that it will benefit the entire State.

Very sincerely,

KUMEN S. GARDNER, *Mayor.*

RESOLUTION

Whereas the Colorado River Development Association of 21 Counties represents the counties of Carbon, Daggett, Duchesne, Emery, Garfield, Grand, Iron, Juab, Kane, Millard, Piute, Salt Lake, San Juan, Sanpete, Sevier, Tooele, Uintah, Utah, Wasatch, Washington, and Wayne, and

Whereas the major purpose of the association is the promotion of the development of the water resources of the State of Utah, and

Whereas the Dixie project is the only means of developing Utah's share of the Lower Colorado River, and

Whereas the Dixie project would greatly benefit the economy of southern Utah : Now, therefore, be it

Resolved, That the Colorado River Development Association of 21 Counties, approves the plan of development proposed by the Dixie project and strongly urges favorable consideration of authorizing legislation by the Committee on Interior and Insular Affairs and the Members of Congress ; be it further

Resolved, That the Secretary be directed by the executive committee to forward this resolution to the Utah Water and Power Board for presentation to the Utah congressional delegation, appropriate committees of the Congress and other interested and influential persons.

Dated this 30th day of April 1963.

COLORADO RIVER DEVELOPMENT ASSOCIATION
OF 21 COUNTIES,
By L. Y. SIDDOWNAY, *Secretary.*

UTAH WATER USERS ASSOCIATION,
Salt Lake City, Utah, April 8, 1963.

Mr. JAY R. BINGHAM,
Executive Director, Utah Water and Power Board of the State of Utah, Salt Lake City, Utah.

DEAR MR. BINGHAM: Pursuant to your request of April 4, 1963, the entire executive committee of the Utah Water Users Association and its legal adviser, Mr. F. Gerald Irvine, met to discuss the authorizing legislation now pending in Congress for the Dixie project and I am directed by the board to advise you that the Utah Water Users Association did again consider the Dixie project report of October 1961. The report has been considered by the water users on previous occasions and has been wholeheartedly endorsed.

The executive committee reviewed the report and the previous endorsement by the water users and have reviewed the memorandum prepared by the Utah Water and Power Board dated April 12, 1962, from Ray H. Zenger, engineer, to Jay R. Bingham, director. The water users, in their various meetings throughout the year, have expressed endorsement of the report and, therefore, the executive board of the Utah Water Users Association, at its meeting held on April 6, 1963, in Salt Lake City, Utah, did wholeheartedly endorse the Dixie project report and did concur with the board of directors of the Utah Water Users Association and the water users' organizations in the State in urging Utah Water and Power Board and the congressional Representatives from the State of Utah to use all of their influence to secure the adoption of the Dixie project.

The Utah Water Users Association has made a careful study of the urgent need of additional water in the Dixie area of the State of Utah, including possible better use of the existing water resources and there is found to be a real need for the development of both the Virgin and Santa Clara divisions which can be developed in such a manner as to take advantage of the allocation made to the State of Utah under the Colorado River compact.

I am further directed to advise you that the Utah Water Users Association will lend you every cooperation in securing the adoption of the Dixie project.

F. GERALD IRVINE, *Legal Adviser.*
T. W. JENSEN, *Secretary.*

Mr. BINGHAM. Mr. Chairman, I would like, at the outset, to stress what was mentioned here earlier this morning, about the important work of this committee. We in the State of Utah are grateful for the reclamation program and the important position you occupy in the Congress in reviewing projects and providing authorization for them. We believe this to be not only a helpful program in our own immediate area, but as also contributing to the economy and stability of the Nation.

I should like, in this connection, to point out that the principles of reclamation providing interest-free investments for the development of the precious waters of the West, has as a counterpart to help provide the funds to the Congress, I am sure it is well known to you, Mr. Chairman but, for the benefits of our other Senators, in the State of Utah 72 percent of our area is under Federal ownership. Another way of expressing this, the federally owned area in the State of Utah is only slightly less than six of the combined New England States and those would be Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine; or expressing it another way, in terms of area, the area of Federal ownership in the State of Utah is greater than the entire area of the State of Michigan. We think there is wise purpose in Federal ownership in many of these areas, they are unique, dedicated for a purpose.

The point I wish to make is, from this area there are revenues accruing to the Treasury of the United States and by wise provision

a substantial part of certain of these revenues is diverted to the reclamation fund.

From the revenues of these Federal lands in the State of Utah to June 30 of 1962—this is a figure which is more recent than that published in my paper—\$37 million, in excess of \$37 million having directly gone to the reclamation fund, and from other sources of revenue originating in Utah, exclusive of the public lands, an additional \$17 million. This would aggregate in excess of \$54 million. So, while we are happy that this program provides for complete reimbursement and some reimbursable items with interest, I think it is still more prudent that there are returns to this fund from which to make these appropriations.

We believe also, Mr. Chairman, in the principles of a development fund, where surplus or unassigned revenues from completed projects can assist in the development of the water resources of this country. It would seem to us to be a sound and basic principle that this form of financing be considered and the problem we face in the future of finding financial assistance for the development that must and will be made in the future.

This principle of taking from revenues produced by this water, the unassigned or surplus parts of that revenue to assist with development, we feel to be sound and properly applied in this particular project.

We would like to think, Mr. Chairman, that, while our effort is small as compared with the projects you consider and with the size of Federal problems generally, that at the State level we have prided ourselves in assuming, with local support, a large part of the water development conservation program in the State.

It may be of interest to this committee—we have attached to the statement a folder summarizing these projects, in oversimplified summary—this program in the last 15 years in the State of Utah has assisted in developing 201 projects with an aggregate cost in excess of \$10.75 million.

Of this slightly over \$7 million has come from funds appropriated or provided by the State legislature, the balance coming from the sponsors themselves during construction period. This, like reclamation, is an interest-free program and is completely reimbursable.

In terms of contribution this program has reached, in the State of Utah, approximately 326,000 acres of our land, most of those acres aided in a supplemental way, and this represents 37 percent of the irrigated area of the State. In terms of water developed this program has produced annually, on an estimated basis, 256,000 acre-feet.

I would like to cite for this committee we have, in anticipation of this project, made a special effort on the State level and have relieved this committee and the Congress from assisting in a project which is relevanted under reclamation planning—the Woodruff Narrows Development on Upper Bear River, and we did this with the hope that you would give special consideration to the Dixie project.

I think the main point I should like to leave with the gentlemen of the committee, concerning our do-it-yourself reclamation program within the State, is the fact that over the 150-year period, with 200

projects, widely dispersed throughout our State, we have yet to have a default in repayment.

I think this goes beyond any possible credit to the members of the water and power board or the competency of the staff, I think this attests to a fact well known to the gentlemen of this committee, that if you have good land you have water, and people of integrity, that the new income produced by these developments repays the cost, and that has been our experience in the State of Utah.

These projects would serve to give us a yardstick to measure the feasibility of the Dixie project.

We have projects for supplemental water that the irrigators have assumed and are making annual repayment on per acre-foot costs which are in excess of the costs proposed under this project. We are convinced that our people can and will productively apply this water and will be in a position to make repayment to assure the successful economic conclusion of this project.

I should like to cite also, as connected with our State effort that in the project area, the Utah Water & Power Board has helped resolve problems which have existed in competing for the water supply which will be further developed by this project.

By a very fortunate arrangement the Iron County or Cedar Street area of the State, which is in the Great Basin, will receive, as a result of water and power board development of the Kolob Dam and the successful completion of the Dixie project, the total supply of two high tributaries to the Virgin River system which would be taken out of the basin to the Cedar Street area.

This represents the highly cooperative attitude on the part of our people in resolving this water right problem.

In that sense we would submit, Mr. Chairman, that the initial unit of the Dixie project has already been built with State funds and is in position to complement the Federal development proposed here.

Senator Moss. Is the Kolob completed now?

Mr. BINGHAM. Yes, sir; the Kolob has been in operation for some 6 years.

As Mr. West has indicated earlier, the water and power board, as trustee for the State, has caused to be filed and holds ready, the necessary water filings to support this project and at the appropriate time stands ready to assign them to the United States to fully comply with the provisions of reclamation law and give this project an adequate water right.

Mr. Chairman, in conclusion, I appreciate again the opportunity of being permitted to testify here. We think you have in the record evidence of the willingness of our people and their eagerness, in fact, to have an opportunity to further develop under this project, you have a demonstrated interest of the State of Utah in this project area under the development program of the board.

Approximately three-quarters of a million dollars has been spent on water development projects, and as a means of projecting and defending our water rights in the lower base the State of Utah has expended in the order of \$67,000 to protect and defend its interests in this stream. So we, Mr. Chairman, submit that this project is one that will make a continuing contribution to the great program of reclamation, is one that you will find will be readily supported at the local level.

I would ask, further, that a sample of the broad support we have at the State level indicated by resolutions attached to my statement be made a part of the record.

Senator Moss. Yes, they were ordered made part of the record when the statement was put in, so they will all appear in full.

We appreciate your coming to testify. I think that your calling attention to this folder of the Utah Water and Power Board is impressive to show the number of projects that have been sponsored and for which loans have been made by the water and power board and then to have you say that you do not have any defaults in repayment, coupled with the testimony of Mayor Barlocker that the people in Washington County voted overwhelmingly to place on themselves a levy up to \$5 million, even people who were in no way connected with the area that would receive any direct benefit, I think, show the intense understanding our people have of the value of water and they are willing to pay for it and get it under any circumstances within their means to do.

This is all sort of coming to a head, it seems to me, here, in this Dixie project.

Any questions?

Senator KUCHEL. No questions.

Senator Moss. All right, thank you, we have no questions then for Mr. Bingham and we have Mr. Wayne Criddle who is the State engineer for the State of Utah, a water expert of long experience and with a great responsibility for water in my State.

I suppose that you can tell us something about water supply, too, which is one of the things we need to know about it here, Mr. Criddle.

STATEMENT OF WAYNE D. CRIDDLE, STATE ENGINEER OF UTAH

Mr. CRIDDLE. My name is Wayne D. Criddle. I was asked by Gov. George D. Clyde to appear before your committee as an official representative of the State of Utah. The office of the State engineer, of which I am in charge, is responsible for administering the waters of the State and for studying the extent and availability of the water resources as necessary in their administration.

Mr. Chairman, I would like to depart from my statement for a minute and answer a question which Senator Kuchel raised of Mayor Barlocker. Apparently the mayor did not have at his fingertips the answer in regards to the special masters report shown on page 3 of his statement.

The mayor had to leave and he handed me this material. He was referring to the Committee Print No. 1, House of Representatives, dated January 21, 1963, in which Chairman Aspinall of the Interior and Insular Affairs Committee sent to his colleagues correspondence between he and Secretary Udall, and it was proposed by Mr. Aspinall that there be a grand plan worked out for the water resource development of the lower basin. The mayor was referring to this statement on page 2 of this committee report, and I quote :

In this period, however, the Bureau of Reclamation has carried on in varying degrees a number of potential projects in the Southwest. Some of these such as the Dixie project, Utah; the Palm Dale project, California; would be unaffected by the outcome of the pending court action.

I will not quote any further. This was contained in Secretary Udalls' letter to Chairman Aspinall under date of January 18, 1963.

(The complete letter is printed on p. 116.)

Senator Moss. Thank you for clarifying the record there, Mr. Criddle.

Mr. CRIDDLE. If I may return to my statement?

Senator Moss. You may.

Mr. CRIDDLE. I should like to briefly review for you the existing uses of water in Utah's portion of the Virgin River Basin and possible effects of the proposed Dixie project on the quantity and quality of the water in the river as it leaves Utah and flows into Arizona and on into Lake Mead.

Others have already or will discuss the physical and financial features of the project, the needs of the local people for this development and the benefits to the people in the project area, the region, State, and Nation.

As most Southwest rivers, the Virgin is an erratic and flooding stream. Much of the annual flow comes heavily laden with silt particularly that resulting from heavy summer storms.

After the river breaks out of the deep eroded canyons above Hurricane, the gradient lessens and the river fans out over a wide flood plain. Canal diversions from this section of the river are practically impossible.

Periodic flooding causes shifting of the river bed and supports dense stands of phreatophytes, particularly salt cedars and willows.

A few miles below St. George, Utah, the river again enters a canyon section and emerges just east of Littlefield, Ariz. From this point to where it discharges into Lake Mead, a distance of some 40 miles, there is an almost continuous band containing many acres of dense phreatophytes with the low flow river channel meandering back and forth through them always supplying the water to keep them luxuriantly green.

The heavier floods flush out sand and silt accumulations and "irrigate" the many acres of nonbeneficial vegetation. Because of the heavy movement of silt down the river, with some being deposited at one point and some eroded from another, and with the wide variation in flow it is impractical to attempt to control the unregulated river into any single channel and to prevent waste of water.

With the Dixie project, the major destructive and wasteful floods on the river will be controlled. The Virgin Dam, with 180,000 of its 246,000 acre-feet capacity, or 73 percent, dedicated to silt storage and incidental flood control, will control the river below it.

Of the 24,000 acre-feet storage capacity proposed for the Lower Gunlock Dam on the Santa Clara River, 10,000 acre-feet—42 percent of the total storage—is to be reserved for silt storage and flood control.

Combined, the two project reservoirs will stop a large part of the silt now going into Lake Mead. They will also stop much of the flooding along the entire lower reaches of the Virgin River in Utah, Arizona, and Nevada.

But, most important, a large portion of that water now consumed nonbeneficially will be available for beneficial uses of man.

Before the construction of Hoover Dam only limited use could be made of the uncontrolled waters, flood damage was high, and wastes of water were inevitable.

On a smaller scale, but still far too large for individual people or communities to handle, is the necessary Virgin River control. And not only Utah will benefit from this project, Arizona and Nevada both stand to gain materially from this river control project.

Those who will be benefiting most directly—irrigation and municipal users—will be paying most of the costs and this seems proper. But the benefits to others down the river through flood control, water salvage potentials, silt removal, and better regulated streamflow, should not be overlooked.

There are undoubtedly those who will strongly oppose this development on the basis that Utah has no right to increase her uses of Virgin River water, that the Colorado River Basin is already overappropriated for existing and approved projects, that further hydrological studies are essential to good planning, et cetera, in rebuttal.

I must say that few new reclamation projects will be built in the United States in the future if reasonable and sound developments can be stopped politically.

There are few unbuilt projects that will not find strong opposition from some source, and if the Dixie project, with its highly favorable benefit-cost ratio, cannot proceed, many others that are far less needed and far less economical in terms of new water development, will probably be forever stopped. The State of Utah believes that she has the right to a reasonable part of the waters which come from her lands.

But of real national significance is the fact that without this, or some alternative similar development, there simply is no way to stop the great amount of wasteful use of water along and in the channel of the Virgin River.

Vegetation, estimated to cover many acres of river bottom channel, and evaporation will continue to waste this precious commodity without river control.

The U.S. Government and the people of Arizona, New Mexico, California and other Western States are expending large sums of money to eradicate phreatophyte use of water. This needed project, when built, will automatically include salvage from these water wasters.

So that this committee will have a complete picture of uses now being made of Virgin River water in Utah, I should like to call to your attention charts A and B attached. By width of line is shown the amounts of water involved and color shows the nature of use.

Chart A indicates existing conditions on the river as we move from the upper left-hand corner representing the headquarters down to the Utah-Arizona line near Littlefield, Ariz.

I refer to this chart [indicating].

Senator Moss. These two charts will be made part of our files. They will not be reproduced in the record but will be referred to as "chart A" and "chart B."

Mr. CRIDDLE. Chart B represents conditions as development of the Dixie project. The figures shown on these charts represent an independent evaluation and, in some cases, are slightly different than those shown in the Bureau of Reclamation report.

However, the magnitude of the differences are small and the use of either figures does not change the obvious conclusions which I wish to point out.

You will note that blue is used to designate the flow in the river or tributaries feeding into the river. In the white boxes on the blue are names and figures representing the gaged flow at those points. For instance, the gaged historic annual flow near the town of St. George has been 134,000 acre-feet.

An important point that I wish to stress is the small amount of green shown on chart A, this represents stream depletion by irrigated crops, and the relatively small amount of green—even with the Dixie project development.

Although the width of the blue line at Littlefield is less on chart B than A, this flow will be a much more usable flow. It will carry less silt and be of better quality during the summer irrigation period.

I appreciate this opportunity to appear before you and I hope you will favorably consider this project which is so badly needed by the people of Utah and which will be of benefit to many people below the project area. Thank you.

Senator MOSS. Thank you, Mr. Criddle.

According to these charts, then, the flow at Littlefield would be decreased by about, what, 68,000, 67,000 acre-feet, is that it at that point?

Mr. CRIDDLE. Yes, sir; and this is slightly larger than the Bureau of Reclamation shows in the report. They use a slightly different acreage figure as new irrigated land figure than was used here—that is, they used a smaller irrigated acreage of new land.

Senator MOSS. You heard the figure used earlier that only about 0.072 or 3 percent of the Virgin River actually reached Lake Mead, is that in accordance with your studies?

Mr. CRIDDLE. No, sir. I think that was in error, I think the figure should have been represented as the new depletion would represent about seven-tenths of 1 percent of the total water resources below, or in—below Lake Mead, the entire system, not just the Virgin River.

Senator MOSS. I see. Of the entire system?

Mr. CRIDDLE. Yes.

Senator MOSS. 0.073 or whatever it was.

Mr. CRIDDLE. Yes, sir.

Senator MOSS. The streamflow of the Virgin is extremely erratic, sir, isn't it, in times of the year and month-to-month?

Mr. CRIDDLE. Yes, the flow comes from both melting snow and flash summer storms, rainfall that occurs under that type of climate.

Senator MOSS. So, without some kind of impoundment you cannot have any regularized flow of the water, really, can you?

Mr. CRIDDLE. You cannot regulate the flow, you cannot control the flood areas and the water resulting therefrom.

Senator MOSS. Mr. Bingham, I think, testified that the State was prepared, whenever this project was approved, to assign the water rights in the river to the Bureau of Reclamation so the project could be completed.

Mr. CRIDDLE. Water rights are in the name of the water and power board at the moment; the purpose, however, is to construct the dams and storages on the Virgin and Santa Clara Rivers.

Senator MOSS. Thank you. Do you have some questions, Senator Kuchel?

Senator KUCHEL. No, not now. Thank you very much, Mr. Criddle.

Senator Moss. Thank you, Mr. Criddle.

Dr. Ray Marcel who is a consultant geologist to the water and power board has come here to be present at this hearing, I do not know whether you care to testify or whether you simply want to be available if we want to ask questions, Dr. Marcel.

Dr. Marcel was my professor when I was at the University of Utah. He is one of very leading geologists and knows more, I suppose, about underground water than anybody in the State of Utah or perhaps in the Western part of the country.

He is available if we get into that question at all, if there is any question that the committee had.

We are pleased that you came, Dr. Marcel, and we may yet turn to you for some expert testimony.

Thank you very much, gentlemen.

Mr. Northcutt Ely, general counsel of the Colorado River Board of California, and Mr. Dallas Cole, chief engineer of the Colorado River Board of California, will be our next witnesses.

We are glad to have you gentlemen here and look forward to your testimony.

STATEMENT OF DALLAS COLE, CHIEF ENGINEER OF THE COLORADO RIVER BOARD OF CALIFORNIA

Mr. COLE. My name is Dallas Cole, I am the chief engineer of the Colorado River Board of California. I have a written statement, which has been distributed and I would ask that be printed.

Senator Moss. That will be placed in the record at this point, Mr. Cole.

(The statement referred to follows:)

STATEMENT OF DALLAS E. COLE, CHIEF ENGINEER, COLORADO RIVER BOARD, RESOURCES AGENCY OF CALIFORNIA

The position of the State of California with respect to authorization of the Dixie project, Utah, or of any other new project which would use water from the Colorado River system is stated succinctly in the last paragraph of a letter dated June 11, 1962, from the director of water resources, resources agency of California, to the Commissioner of Reclamation in response to the Commissioner's request for comments in accordance with Public Law 534, 78th Congress, 2d session. The paragraph reads:

"It is, therefore, recommended that no new projects in the Colorado River Basin be authorized until: (1) the U.S. Supreme Court renders a final decision in the *Arizona v. California* suit; and (2) the Secretary of the Interior prepares and submits to Congress an inventory of the water supplies and water uses in the Colorado River Basin, and for each State therein, that is in sufficient detail to demonstrate that enough uncommitted water exists to meet project requirements. A current inventory should be included in each report that seeks authorization of a new project in the Colorado River Basin."

California also recommends that an opportunity be afforded the affected States to comment further upon any proposed new project in the basin after the Supreme Court decision is rendered and after an inventory of the water supply requirements has been certified to the Congress by the Secretary.

California's only comment on the plan of development of the Dixie project, or on its financial and economic merits is to express opposition to the provision in the bills under consideration, that the portion of the costs of the Dixie project which is allocable to irrigation and which is beyond the water users, ability to pay be returned to the reclamation fund from power revenues derived from Federal projects in the Lower Colorado River Basin. (Sec. 5 of S. 26.)

The basis of California's position with respect to proposed new projects in the Colorado River Basin is twofold; namely, the inability of the water supply produced by the Colorado River system to meet existing and potential requirements thereon and the many unresolved questions concerning legal rights to use of the water. This statement deals primarily with the first of these bases.

The Secretary of the Interior by letter dated January 18, 1963, transmitted to Congressman Wayne N. Aspinall, chairman of the House Interior and Insular Affairs Committee, a document entitled "The Proposed Lower Colorado River Project" which includes the following:

"The inadequacy of the Colorado River system to meet this region's continuing and rapidly growing water needs is already evident. The area has, in fact, already outgrown its water supply. * * *

* * * * *

"* * * there will be a need to determining the total water supply in the Lower Colorado River region for which partial information is already available."

The letter and proposal appear in Committee Print No. 1 of the House of Representatives Interior and Insular Affairs Committee, 88th Congress, 1st session. California submits that the need for a basinwide inventory of water supply and requirements has existed for several years.

It seems clear that the Secretary has a responsibility to demonstrate to the Congress, the Federal agencies and the States how each new project proposal in the Colorado River Basin fits into the overall basin scheme. For the past several years the State of California has urged repeatedly that the Secretary include in each project planning report, basinwide estimates of dependable water supply, losses, existing and committed requirements, the uncommitted dependable supply, and the estimated requirements of other projects under active consideration. The Secretary has chosen not to do this.

It is generally recognized that the basin is faced with a natural water shortage. There is real danger that piecemeal authorization of new projects will result in overcommitment of the dependable water supply and cause manmade shortages. In order to minimize that danger and the danger of infringement on existing rights it is imperative that each proposed project authorization be appraised in full knowledge of the potential effects on other developments throughout the basin. Such appraisal requires that each proposal be accompanied by a comprehensive, basinwide and up-to-date water inventory, to include supply, losses, and requirements.

Presented herewith are a tabulation and chart, prepared by engineers of the Colorado River Board, of the water picture in the Colorado River Basin. The figures and graphs are based on the historic record of supplies and demands, and indicate what might be termed average expectancies for the future. The intent is to furnish a factual basis to which may be applied legal interpretations, conclusions and decisions.

(The chart is in the files of the committee.)

Referring to the table entitled "Colorado River System Water Supply and Water Demand," the 14 million acre-feet on the first line is the dependable annual average supply that the river would produce at Lee Ferry if there were no upstream diversions or impoundments. It is the average for the 41 years since measurements began at Lees Ferry, and is all that the river can be depended upon to produce as an average through a long dry period like 1931-62, inclusive, even if account is taken of runoff estimates for years prior to 1922 which apparently included groups of consecutive years of much greater than average flow. Storage capacity now existing and under construction is large enough to completely regulate the 1922-62 flows without spill; additional capacity would simply result in additional evaporation, with no increase in the dependable supply available for diversion.

The estimate in line 2, of 2 million acre-feet a year average annual yield from tributaries entering the Colorado River below Lee Ferry, is the same as received in evidence by Special Master Simon Rifkind in the Supreme Court case *Arizona v. California*. Actual use in the Gila River Basin over the past 20 years has exceeded the safe yield by drawing upon long-time holdover groundwater storage.

The total dependable supply in the Colorado River Basin, as a long-time average, is 16 million acre-feet a year.

Off the top of the system water supply must come the United States obligation to deliver to the Republic of Mexico under the 1944 water treaty not less than 1,500,000 acre-feet a year (line 4).

Line 5 shows estimated average annual evaporation losses from mainstem reservoirs amounting to 700,000 acre-feet a year in the upper basin and 1 million acre-feet a year in the lower basin, a total of 1,700,000 acre-feet.

In the interest of simplicity and in accordance with recent conditions it is assumed herein that net river gains from Lee Ferry to Lake Mead will equal net river and regulatory losses from Hoover Dam to the international boundary.

Deducting the 3.2 million acre-feet diminution of supply, represented by the Mexican Treaty obligation and the losses, leaves 12.8 million acre-feet available for beneficial use on projects in the United States. Existing and committed uses by projects in the United States total 12.2 million acre-feet a year (line 11).

The difference between water supply available and authorized or committed uses in the United States is determine (line 12) as only 600,000 acre-feet a year average, a small amount in comparison with the estimated requirements of new projects now pending authorization or being actively considered and promoted. Estimated requirements for such projects total at least 2.7 million acre-feet a year (line 15), or about 2.1 million acre-feet a year in excess of the indicated amount presently uncommitted. Five projects now pending or about to be considered for authorization, including the Dixie project, will require about half the estimated uncommitted supply of 600,000 acre-feet a year.

The 600,000 acre-feet is less than 4 percent of the dependable supply, a matter of concern because of the impossibility of measuring streamflows and losses or estimating demands with any greater accuracy, and because of uncertainties as to climatic and other variations.

Time may prove that the estimate of 14 million acre-feet a year natural flow at Lee Ferry is somewhat high. The actual figure estimated for the period 1922-62 is slightly less than 14 million acre-feet and the year 1963 promises to be a very poor runoff year which will further reduce the average. It may become apparent in a few years that the dependable supply of the main river is substantially less than 14 million acre-feet a year.

The 14 million acre-feet is based on the assumption that it is practicable to hold water in storage for use 30 or more years later and to operate the reservoirs to perfection in anticipation of and throughout such a period, a perfection impossible to attain.

Conservation measures may reduce losses somewhat but such possibilities cannot be relied upon until they are proven. On the other hand, future increase in salinity in the lower river will mean higher water requirements for the same irrigated acreage.

The element of timing is not reflected in the table, but is introduced in the accompanying chart No. 1 entitled "Colorado River System Water Supply and Water Demand 1900-2000." Water supply and demand are plotted in million acre-feet a year on the vertical ordinate and calendar years on the horizontal. The top line represents the 16 million acre-feet a year dependable average annual water supply and the first band below the top, the Mexican Treaty obligation of 1.5 million acre-feet a year. Below that is a widening band showing Upper Colorado River Basin depletion and at the bottom a widening band showing Lower Colorado River Basin use, with, in each case a separate segment showing major reservoir evaporation losses. The widening of the bands from left to right indicates increases in depletion or use.

The chart, like the table, pictures the average expectancy, not what may be expected to happen in any single year. Uses shown for past years, however, are based on actual records and published information.

Projected future increase in upper basin depletions comes from a project-by-project analysis of construction schedules, development periods, and water requirements based on information gleaned from published sources, mostly reports and statements by the Bureau of Reclamation.

The projection for the lower basin assumes no increase in California agricultural project uses, full development of other existing lower basin projects and construction and operation of the Dixie project, the southern Nevada pumping project, and the central Arizona project; the large Arizona project is assumed to begin in 1975 and to reach full development in 1980.

The roughly triangular area labeled "Surplus" represents for past years the amounts unused, except for the initial filling of Lake Mead, and for future years the amounts available on the average as indicated by the small right-hand segment, for initial accumulation of holdover storage in Colorado River storage project units. The area pinches out at about the middle of the next decade. The quantity represented for the initial filling is only about 22 million acre-feet whereas the gross surface capacity of the new reservoirs is about 35 million acre-feet. In order to fill that capacity the next 10 to 15 years must produce greater than average water supply. Conversely if the next 10 or 15 years are much below average, as 7 of the last 10 have been, very little storage can be accumulated.

The chart shows in a startling manner the collision course on which water users and potential water users of the Colorado River Basin are embarked. It shows at the right, in an area labeled "Conflicting Demands," an overlapping between upper basin and lower basin demands of nearly 1.3 million acre-feet by 1980, about 1.8 million acre-feet by 1990, and approximately 2.1 million acre-feet by the year 2000. The chart indicates that the day of reckoning is nearly at hand and indeed may already be here unless the next decade or so produces enough surplus above the average water supply to fill the upper basin reservoirs without conflict; it illustrates the danger of authorizing additional projects without adequate information as to the effect of individual project authorizations on the basinwide water picture and without final resolution of the many uncertainties as to water rights.

Colorado River system water supply and water demand

	<i>Million acre-feet a year, average</i>
1. Colorado River at Lee Ferry, undepleted flow-----	14.0
2. Lower Basin tributaries, safe yield-----	2.0
3. Total, dependable water supply-----	<u>16.0</u>
4. Mexican Treaty obligation-----	1.5
5. Evaporation, major reservoirs:	
Upper Basin-----	.7
Lower basin-----	1.0
6. Total diminution ¹ -----	3.2
7. Supply for U.S. projects-----	<u>12.8</u>
8. Upper basin depletions, existing and committed-----	3.7
9. Lower basin mainstream use, existing and committed-----	6.5
10. Lower basin tributaries, use on safe yield basis-----	2.0
11. Total U.S. uses, existing and committed-----	<u>12.2</u>
12. Uncommitted supply-----	.6
13. Upper basin depletions actively planned ² -----	1.3
14. Lower basin requirements actively planned ³ -----	1.37
15. Total requirement under active consideration-----	2.67
16. Potential conflict in demand-----	2.07

¹ Assuming that net river losses and gains below Lee Ferry are in balance.

² Savery-Pot Hook, Bostwick Park, Fruitland Mesa, Animas-La Plata, 200,000; others in sec. 2, Public Law 84-485, 770,000; oil shale and industrial, 330,000.

³ Dixie, 70,000; central Arizona, 1,200,000; southern Nevada, 100,000.

Senator Moss. You may read from parts of it or highlight it.

Mr. COLE. I will try, in the interest of time, to highlight it.

The position of the State of California with respect to the Dixie project and other projects within the Colorado River System as proposed has been stated several times and with respect to the Dixie project was stated in a letter dated June 11, 1962, from the director of water resources of the State of California, resources agency of California, to the Commissioner of Reclamation commenting upon the

Dixie project report in accordance with the provision of the Flood Control Act of 1944.

I would like to read a paragraph from that letter.

It says:

It is, therefore, recommended that no new projects in the Colorado River Basin be authorized until: (1) the U.S. Supreme Court renders a final decision in the *Arizona v. California* suit; and (2) the Secretary of the Interior prepares and submits to Congress an inventory of the water supplies and water uses in the Colorado River Basin, and for each State therein, that is in sufficient detail to demonstrate that enough uncommitted water exists to meet project requirements. A current inventory should be included in each report that seeks authorization of a new project in the Colorado River Basin.

I would offer a copy of that letter for the record, Mr. Chairman, if you please.

Senator Moss. The entire letter may be printed in the record. That would be good.

(The letter referred to follows:)

THE RESOURCES AGENCY OF CALIFORNIA,
DEPARTMENT OF WATER RESOURCES,
Sacramento, June 11, 1962.

MR. FLOYD E. DOMINY,
Commissioner, Bureau of Reclamation,
U.S. Department of the Interior,
Washington, D.C.

DEAR MR. DOMINY: The proposed report of the Secretary of the Interior entitled "Report on Dixie Project, Utah," dated February 21, 1962, was received on March 14, 1962, for State review in accordance with Public Law 534, 78th Congress, 2d session.

A copy of the report was forwarded to the Colorado River Board of California for review and comment. Comments of the board are enclosed.

According to the report, the multipurpose Dixie project would provide supplemental irrigation water to 9,445 acres, a full water supply to 11,615 acres, and 5,000 acre-feet of water a year to the city of St. George, Utah, for municipal and industrial purposes. Other purposes of the project would be power generation, flood control, enhancement of fish and wildlife, and development of the recreation potential. The average annual depletion of water from the Colorado River system could amount to 70,000 acre-feet.

This project is but one of many proposed in the Colorado River Basin. Congress recently authorized the San Juan-Chama, Navajo project and has under consideration authorization of the Fryingpan-Arkansas, Bostwick Park, and Savery-Pot Hook projects. There is not enough uncommitted water supply in the Colorado River Basin for these projects and other prospective projects under active consideration.

It is, therefore, recommended that no new projects in the Colorado River Basin be authorized until: (1) the U.S. Supreme Court renders a final decision in the *Arizona v. California* suit; and (2) the Secretary of the Interior prepares and submits to Congress an inventory of the water supplies and water uses in the Colorado River Basin, and for each State therein, that is in sufficient detail to demonstrate that enough uncommitted water exists to meet project requirements. A current inventory should be included in each report that seeks authorization of a new project in the Colorado River Basin.

The opportunity to review your report is appreciated.

Sincerely yours,

WILLIAM E. WARNO, *Director*.

Mr. COLE. The State of California also recommends that the affected States be given an opportunity to take another look at these projects after these two things mentioned in this paragraph have been accomplished.

We are not here to make any attack, Mr. Chairman, on the merits of the Dixie project, as such.

The basis of our position, California's position, of course, is twofold. First, the inability of the water supply of the system to take care of the requirements of existing and potential projects, and second, the question of water rights.

My statement will deal primarily with the first one.

Mr. Ely will talk about the second. Now in this exchange of correspondence between the Secretary and Congressman Aspinall to which Wayne Criddle referred, there was an attachment to the letter from the Secretary dated January 18, 1963, to the Congressman which was entitled, "The Proposed Lower Colorado River Project," and which includes the following statements which I quote:

The inadequacy of the Colorado River system to meet this region's continuing and rapidly growing water needs is already evidenced. The area has, in fact, already outgrown its water supply.

This referred primarily to the Lower Colorado River Basin.

It goes on to say later:

There will be a need to determine the total water supply in the Lower Colorado River region for which partial information is already available.

This appears in Committee Print No. 1 of the House of Representatives, Interior and Insular Affairs Committee of the present session.

California submits that this need for a water inventory has existed for some time, that it is overdue, and that the need is basin water.

Senator KUCHEL. Why has not the department undertaken that kind of an inventory, Mr. Cole?

Mr. COLE. I will come to that in just a moment, Senator Kuchel, if you will bear with me.

On July 13, 1962, Governor Brown of California addressed a letter to Secretary of the Interior Udall, urging that the Secretary have made and published as soon as possible, an up-to-date, comprehensive inventory of the water resources of the Colorado River system and their relation to known demands on those resources and offering full cooperation of the State of California, suggesting a cooperative endeavor be made among the States of the basin and the Federal engineers, and that as a first step an engineering conference be set up to outline a program for such an investigation.

Secretary of the Interior replied to Governor Brown on August 24, 1962, and I would like to read one paragraph from his letter.

While the water supply of the Colorado River Basin falls short of meeting all potential demands, ultimate disposition of the available supply must take account of legal and physical considerations. With the Supreme Court decision in *Arizona v. California* pending we believe that consideration of your proposal might best be undertaken in the light of such guidance as that decision may provide.

May I offer those two letters, Mr. Chairman, for the record?

Senator Moss. Those letters may be printed in full in the record.

Mr. COLE. Thank you.

(The letters referred to follow:)

STATE OF CALIFORNIA, GOVERNOR'S OFFICE,
Sacramento, July 13, 1962.

HON. STEWART UDALL,
Secretary of the Interior,
Washington, D.C.

MY DEAR MR. SECRETARY: I am writing to you as Governor of one of the seven Colorado River Basin States to request that you have your organization make

and publish, as soon as possible, an up-to-date, comprehensive inventory of the water resources of the Colorado River system and their relation to known demands on those resources.

No one could be more cognizant than you are of the physical, legal, and political problems interwoven with the planning and execution of the development of a great interstate and international resource like the Colorado River. You are aware also, from firsthand knowledge, that the underlying cause of many of the problems is the natural inability of the water supply to meet existing, proposed, and potential demands. That the imbalance of requirements and supply has long been recognized is evidenced by a report the Secretary of the Interior approved on June 7, 1946, H.D. 419, 80th Congress, 1st session, which states in part:

"There is not enough water available in the Colorado River system for full expansion of existing and authorized projects and for development of all potential projects outlined in the report, including those possibilities for exporting water to adjacent watersheds."

In order to resolve our problems we must all foster and maintain above all things a spirit of mutual understanding and cooperative objectiveness, and in order that such a spirit be maintained we must all start from a common base of factual knowledge. It is imperative that there be made available soon, and kept up to date, objective and authoritative findings as to not only what the river produces as a longtime average, but also how much of the natural flow can be developed, conserved, and regulated to a long-term dependable supply for beneficial use, net of reservoir, and channel losses and unavoidable wastes, and how much of that dependable supply is surplus to the requirements of existing and presently authorized projects and the Mexican Treaty obligation. The findings should, of course, be as free as possible from the effects of legal or political interpretations and conclusions. The need to make available up-to-date facts on water supply and requirements throughout the basin grows more pressing with each new project proposed for authorization.

Most of the necessary basic data are available, but they must be thoroughly evaluated, correlated, and studied before up-to-date engineering conclusions are drawn. The Bureau of Reclamation has engineers eminently qualified by knowledge and experience to make the necessary correlations and studies. Much of the work probably has already been done.

You may be assured of the full cooperation of our State administration and engineering staffs. I am satisfied that the combined Federal-State engineering group efforts in connection with the Colorado River storage project filling criteria, and others, have been strikingly beneficial. I hope that such agreeable and productive joint activities may be continued.

May I suggest, therefore, that a conference of Federal and State engineers be scheduled at an early date to exchange views and outline a program for a comprehensive water inventory.

Sincerely,

EDMUND G. BROWN, *Governor.*

U.S. DEPARTMENT OF THE INTERIOR, OFFICE OF THE SECRETARY,
Washington, D.C., August 24, 1962.

Hon. EDMUND G. BROWN,
Governor of California, Sacramento, Calif.

DEAR GOVERNOR BROWN: This is in response to your letter of July 13 requesting an up-to-date inventory of the water resources of the Colorado River system and their relation to demands.

I have delayed a reply to your letter in order to have the matter discussed as fully as possible in this office.

While the water supply of the Colorado River Basin falls short of meeting all potential demands, ultimate disposition of the available supply must take account of legal and physical considerations. With the Supreme Court decision in *Arizona v. California* pending we believe that consideration of your proposal might best be undertaken in the light of such guidance as that decision may provide.

We appreciate your offer of full cooperation, and you may be sure that the Department approaches the problem on the same basis.

Best personal regards.

Sincerely yours,

STEWART L. UDALL,
Secretary of the Interior.

Mr. COLE. We in California think we have the physical facts on this river system independently of the Arizona-California suit, but quite obviously the Secretary has a different opinion.

For the past several years the State of California has urged in its comments on other project reports that such an inventory be made and included with these project reports. One that would give an estimate of the dependable water supply and the existing and potential requirements on it and the losses incurred and the differences; in other words, a water budget.

The Secretary has not chosen to do this. We think that there is real danger that piecemeal authorization of projects in the basin will or may result in overcommitment, inadvertently overcommitment of the water supply, and possibly infringement on water rights of existing projects, possibly causing manmade shortages.

I have attached to my statement our version of the water picture in the Colorado River system.

I think if you gentlemen would like to turn to the table and chart attached I can describe them without your need to follow the text any further.

Senator Moss. All right, sir.

Mr. COLE. I would like to say before I start describing them that the figures in the table and the graphs on the chart are based on the historic record of supplies and demands, and that they indicate what we might term average expectancy for the future. The intent being to furnish a factual basis to which might be applied legal interpretations, conclusions, or decisions; or whatever guidance the Supreme Court decision might give us when it is handed down.

Referring to the table which is entitled "Colorado River System—Water Supply and Water Demand," the units are in million acre-feet a year as averages, long-time averages.

The first item, line 1, represents the undepleted flow of the Colorado River at Lee Ferry, which is a compact point, for the period 1922 to 1962, inclusive, 41 years since records began at Lee's Ferry.

This amounts to 41 million acre-feet a year, and that figure represents a measured flow plus estimated or measured upstream depletions, so that is the amount of water that would be produced at this point if there were no upstream diversions or impoundments on an average for this period of record.

The next item is "Yield of lower basin tributaries"—tributaries which come in below Lee Ferry. The largest is the Gila River in Arizona. That is a total of 2 million acre-feet a year, this is in accordance with evidence that was received in the Arizona-California suit.

Adding those two together, of course, gives 16 million acre-feet as the total dependable available supply of the system.

Then we start taking off the diminution, first the Mexican Water Treaty obligation of 1,500,000 acre-feet a year minimum, then the estimated evaporation, amounting to the 700,000 acre-feet a year on the average in the upper basin in the units of the Colorado River storage project, and a million acre-feet in the lower basin. The total of 3,200,000 acre-feet of diminution subtracted from the 16 million leaves 12.8 million acre-feet on the average, for use by projects within the United States.

There are depletions going on, of course, now, and further depletions have been authorized. Existing and authorized depletions shown on line 11 amount to 12,200,000 acre-feet a year. Of this, as is shown by amounts in lines 8, 9, and 10, 3.8 million is in the upper basin, 6.3 million in the lower basin. These are exclusive of the reservoir evaporation shown previously.

The difference, the uncommitted supply as we have chosen to call it, is 600,000 acre-feet a year. This is a small amount in comparison with the total supply and the total demand, and small when it is considered that streamflows cannot be measured or project requirements estimated with precision. It is less than 4 percent of the supply and about the same percentage of the total demand including reservoir evaporation. So that an error of 4 percent in the estimate of demands, or a 2 percent error in each of them in opposite directions would black out this 600,000.

In addition, there are, of course, other projects being actively considered and planned. The requirements of which in the upper basin would amount to a total of 1,300,000 acre-feet a year and in the lower basin, 1,370,000 acre-feet a year, as shown in lines 13 and 14, for a total of 2,670,000 all together. These are under active consideration, some of them pending now in the Congress.

This indicates a potential conflict in demand between the basins of something over 2 million acre-feet.

I have not introduced into this table any of the element of timing but it is shown on the chart.

I would like you to turn to that.

This shows the same figures that I have shown on the table with some attempt to estimate the timing involved.

The supplies and demands are plotted in million acre-feet a year average on the vertical ordinant and years horizontally.

The top line, 16 million acre-feet, total dependable average annual supply, includes 14 in the mainstream plus 2 million in the lower basin tributaries. The first band below that in the cross-section is the Mexican Treaty obligation of 1.5 million acre-feet a year.

Next below that in yellow, on this chart is a widening band from left to right labeled "Upper Colorado River Basin Depletion" and at the bottom a similar widening band in blue, labeled, "Lower Colorado River Basin Use."

As those widen from left to right, they indicate increases in demand. The uncolored area in the central left portion of the chart, labeled surplus, indicates for past years the amounts of water on the average that were unused and for the future years, after 1962, the amount available for the initial filling of the upper basin storage project reservoirs.

That storage item is the middle triangle at the right, in yellow with black dots.

Now, this chart, like the table, depicts average expectancy for the future. It does not foretell, of course what might happen in 1 year. We have projected this upper basin depletion as shown in the yellow band on the chart and labeled, "Upper Colorado River Basin Depletion," into the future by making a project-by-project analysis of pending and proposed projects. Taking into consideration estimated dates of completion of reports, estimated times required for construction and development of projects and so on.

The information all came from published reports, primarily by the Bureau of Reclamation. The projection for the lower basin assumes no increase in the use by California agricultural projects and slight increases in the use by other existing projects, also assumes that the Dixie project would be constructed and in operation by 1970 and that the so-called Southern Nevada pumping project for about 100,000 acre-feet a year, would be in operation by 1980, that the central Arizona project to divert 1.2 million acre-feet a year out of the river, would be constructed and begin operation in 1975 and reach full operation in 1980. My friends in Arizona have told me that they would hope and expect the central Arizona project would be in operation sooner than that.

That will enable the Colorado River storage project reservoirs, in the upper basin, the one with the black dots, accounts to about 22 million acre-feet. This is considerably less than the gross capacity of the upper basin reservoirs, 35 million acre-feet, not counting what we call bank storage, the amounts that might be soaked into the banks to wet them. On the basis of average expectancy, you might say, the only way they can fill those reservoirs before the time runs out is to have some years in the near future that will produce high flow. Quite a bit greater than average, a group of wet years.

On the other hand, if the next 10 or 15 years are less than average in runoff, as most of the last 10 years have been, the chances of accumulating this much storage is rather small. That chart, I think, shows the course on which the basin is embarked. You note about the year 1975 or 1976, the line for the upper basin and the line for the lower basin cross and reverse their positions.

The area to the right of that point which is in green on this chart and labeled "Conflicting Demand," shows overlapping between the demands amounting to about 1.3 million or 1,270,000 acre-feet by 1980, 1,770,000 acre-feet a year by 1990, and almost 2,100,000 by the year 2000.

We think this chart indicates that the day of reckoning is pretty close and may be actually at hand unless we get what we hope to get, some good wet years in the next decade or so to fill these reservoirs.

Thank you very much.

Senator Moss. Thank you, Mr. Cole. This is sort of frightening to see the computation of the demands on the river and it indicates that we better find some other ways, either get more water or preserve better the water we already have.

The shocking thing there is to see that a million acre-feet a year evaporate from the reservoirs in the lower basin and it is estimated that 700,000 acre-feet will evaporate from the reservoirs in the upper basin. That's 1.7 million acre-feet, if we knew how to keep it in the reservoir rather than going off in the air.

You heard the figure earlier in the day about the amount of contribution of the Virgin River to Lake Mead.

Does your computation agree with the testimony that we have had?

Mr. COLE. I have not made that computation but it sounds within reason.

Senator Moss. In other words, very minor contribution?

Mr. COLE. I think on Mr. Criddle's charts he showed the average going past the station at Littlefield is 178,000 acre-feet per year which is approximately the same that goes into Lake Mead. That is to some people a lot of water.

Senator MOSS. It sounds like a lot of water, converted over to percentage, the number was 0.075 or 3, I forget which it was.

Mr. COLE. It depends upon what he uses for his denominator, of course, I am thinking in terms of undepleted flow of the Virgin River. I do not know just what figure he used.

Senator MOSS. I see. You have not computed it on your own?

Mr. COLE. No, sir.

Senator MOSS. All right, thank you, Mr. Cole. I do not have any further questions.

Do you have any questions? Do you have any questions, Senator Kuchel?

Senator KUCHEL. I do not think so. That is a very fine statement, Mr. Cole and will give the committee something to think about. Thank you very much.

STATEMENT OF NORTHCUTT ELY, SPECIAL COUNSEL, COLORADO RIVER BOARD OF CALIFORNIA

Mr. ELY. Mr. Chairman, my name is Northcutt Ely. I am a member of the law firm of Ely, Duncan & Bennett, Washington, D.C., and am special counsel for the Colorado River Board of California, a branch of the State government.

I will ask that my statement be placed in full in the record at this point and I will attempt to summarize it.

Senator MOSS. Thank you, it will be printed in full at this point in the record.

(The statement referred to follows:)

STATEMENT OF NORTHCUTT ELY, SPECIAL COUNSEL FOR THE COLORADO RIVER BOARD OF CALIFORNIA

My name is Northcutt Ely. I am a member of the law firm of Ely, Duncan & Bennett, Washington, D.C., and am special counsel for the Colorado River Board of California, a branch of the State government.

The State of California's comments on the proposed Dixie project are stated in a letter dated June 11, 1962, from the director of water resources, State of California, to the Commissioner of Reclamation, as follows:

"It is therefore, recommended that no new projects in the Colorado River Basin be authorized until (1) the U.S. Supreme Court renders a final decision in the *Arizona v. California* suit; and (2) the Secretary of the Interior prepares and submits to Congress an inventory of the water supplies and water uses in the Colorado River Basin, and for each State therein, that is in sufficient detail to demonstrate that enough uncommitted water exists to meet project requirements. A current inventory should be included in each report that seeks authorization of a new project in the Colorado River Basin."

I ask the committee's attention to two points in connection with the bills now before you, to authorize the Dixie project in Utah: first, the relation of the proposed project to the pending case of *Arizona v. California*, in the U.S. Supreme Court; second, the effect of these bills in amending section 5 of the Boulder Canyon Project Act.

As to "*Arizona v. California*"

The Secretary of the Interior's report deals partially with the problem in this manner, at pages 61 to 63:

"Water rights for the Dixie project must be derived from the State of Utah since all of the project lands and project works would be within that State. Appropriate State agencies have been apprised of the water right requirements of the project, and the Bureau of Reclamation has been assured that necessary water rights will be made available.

"The State of Utah can act unilaterally in the matter of water rights in the Virgin River only within her rights to Colorado River system water as they may be apportioned and allocated by the Colorado River compact. The Virgin River lies within the lower basin as defined by the compact. The compact apportions and/or allocates the waters of the Colorado River system only to the upper basin and the lower basin and does not extend to the division of the water among the States. There has not as yet been negotiated a supplementary agreement which would divide the lower basin water among the States. The presently unused water of the Virgin River constitutes a part of the inflow to Lake Mead.

"Although the respective rights of the Lower Colorado River Basin States to waters of the Colorado River are the subject of litigation in the Supreme Court suit *Arizona v. California*, the proposed decree as presented in the report of Special Master Simon H. Rifkind, dated December 5, 1960, does not adjudicate the waters of the tributaries above Lake Mead. Studies for this report are based upon the assumption that the amount of water to be used by the project would fall within Utah's ultimate entitlement. Presumably the other affected States in the Lower Colorado River Basin will comment formally upon the validity of this assumption, and the Congress will give those comments suitable consideration in determining whether construction of the project would be in the public interest."

The special master's report in *Arizona v. California*, now before the Supreme Court, had this to say about the relationship of future uses on tributaries above Lake Mead, such as the Virgin River, to existing uses now made in Arizona, California, and Nevada from Lake Mead (pp. 316-318) :

"It is equally clear that the project act and the California Limitation Act have not rendered the principles of equitable apportionment inapplicable to the tributaries or the main stream above Lake Mead. The limitation in section 4(a) of the project act applies only to California. It does not affect possible claims by Arizona and Nevada to tributary water. With respect to California, section 4(a) is concerned with consumption and not with supply and therefore does not affect any rights of that State to demand that tributary water be permitted to flow into the main stream. Furthermore, it has been demonstrated that section 4(a) regulates the main stream only. Nothing in that section may reasonably be said to affect the question of tributary supply. It is difficult to believe that Congress, including the California senators who voted for the project act, and the California Legislature which passed the Limitation Act, intended that California should waive all claims to the substantial tributary contributions to the main stream supply. It is unlikely that they intended that the States in the lower basin through which the tributaries flowed could consume all of the water in those tributaries without regard for California's claims, needs, or existing uses.

* * * * *

"In the light of the foregoing, the conclusion is inescapable that principles of equitable apportionment still control rights of main stream States in waters of the tributaries of the Colorado River in the lower basin. At the present time the tributaries which empty into the Colorado River in the lower basin, other than the Gila River, make a substantial contribution to the supply of water in the main stream. Once this tributary water commingles with the main stream water it is governed by the project act and the Secretary's water delivery contracts and may be consumed only according to the interstate apportionment created by them. The main stream users most certainly have a substantial interest in tributary inflow, for the greater the quantity of water entering the main stream, the greater the quantity of water likely to be available for use by them."

The master further noted that only the Dixie project posed a potential threat to existing main stream uses, but he confidently asserted that its authorization was quite unlikely in the immediate future. Here is the way he saw the Dixie project on the horizon (page 319) :

"Indeed, except for the proposed Dixie project on the Virgin River in Utah, there is no evidence of any pending proposals or plans for the construction of

specific works involving the increased use of water on any of the tributaries. At best, the evidence shows only vague general hopes for growth and development on the tributaries.

"The Dixie project itself cannot be considered an immediate threat to the continuation of present tributary inflow into the main stream. There is no evidence that the Dixie project will be developed except as a Federal reclamation project, yet its authorization by the United States is far from certain. The regional director of the Bureau of Reclamation for region 3 has twice issued favorable reports on the proposed project to the Commissioner of Reclamation, but the latter has not yet approved it. So far as the evidence shows, the proposed project has not even been brought to the attention of the Secretary of the Interior or of Congress, and congressional approval is required before the project can be developed. Moreover, the regional director's approval of the Dixie project was conditioned on Utah fulfilling certain conditions which have not yet been met."

The State of Utah filed no exceptions to the special master's report. If the Supreme Court follows the recommendations in that report, the consequences, insofar as the water rights of the Dixie project are concerned, will be these:

First, the Dixie project's water rights are in competition with those of Arizona, California, and Nevada projects that use water from the main stream, including Lake Mead.

Second, to the extent that the Dixie project reduces the inflow to Lake Mead, it reduces and interferes with the water supply of projects in other States, senior to that project, and reduces the supply available for the satisfaction of the treaty with Mexico.

Third, this conflict, in the event of shortage, will be resolved by the Supreme Court in accordance with that Court's doctrine of equitable apportionment, of which the two cardinal elements are the recognition of priorities of appropriation, interstate, and the protection of existing uses. All of the water claimed by California and about half of the water claimed by Arizona from the main stream is related to "existing uses." The appropriations of all of the California projects, and of the existing Arizona projects, are senior to the appropriations for the Dixie project.

Fourth, the California Limitation Act, according to Judge Rifkind, has no application to a contest between users in California and users who divert from tributaries above Lake Mead, or indeed from the main river above Lake Mead.

This being the case, if Congress now authorizes the Dixie project it is authorizing a project whose water rights are junior to those of existing projects, and is taking a calculated risk that the water supply will be adequate to supply all senior projects plus such of the requirements of the Mexican Water Treaty as may be borne by the lower basin, with sufficient margin left over to supply this junior project. Fortunately, the quantity involved in the Dixie project is small, only about 70,000 acre-feet per year. The problem, however, is not limited to that project.

This brings us to the necessity for a realistic appraisal of the water supply available for the lower basin, as limited by the Colorado River compact.

The special master construes the compact as imposing a "ceiling on appropriations" within the upper basin and the lower basin, respectively. The compact's ceiling on lower basin appropriations (including those on the tributaries such as the Virgin River as well as on those on the main stream), established by articles III(a) and (b) of the compact, is 8.5 million acre-feet per annum, measured by "beneficial consumptive use," which he defines as the quantity diverted minus the quantity of water so diverted that returns to the stream and is capable of use in the United States or in satisfaction of the treaty with Mexico. Existing lower basin uses on the main stream and tributaries are almost up to that ceiling. Of this, uses on the tributaries amount to about 2 million acre-feet (that is, the consumptive use that can be supported on a "safe annual yield" basis). Existing projects on the main stream will require the consumptive use of about 6½ million. The lower basin's water supply, at present, is adequate to sustain these uses. This, however, is only because the upper basin's depletions of the flow at Lees Ferry are now less than 4 million acre-feet. The uncommitted margin in the whole Colorado River Basin is not over 600,000 acre-feet. But this margin would be more than wiped out by proposed projects in the upper basin, which alone would require an additional 1.3 million, raising its consumptive uses to about 5 million. Proposed projects in the lower basin would require still another 1.37 million. The proposed lower basin projects included in

this 1.37 million are the Dixie, 70,000; central Arizona, 1.2 million; southern Nevada, 100,000. If all of these lower basin projects are built, and the upper basin uses increase, as planned, to 5 million, the basinwide shortage will be over 2 million acre-feet. These figures leave out of consideration the necessity of finding some 35 million acre-feet of water to fill the upper basin reservoirs that are now under construction. Even if it took 20 years to fill those reservoirs, this accumulation would deplete the Lees Ferry flow nearly 2 million acre-feet annually. There manifestly is not enough water to satisfy the expansion that both basins are seeking. Water could not be found for the central Arizona project, the Dixie project, the southern Nevada project, the filling of the upper basin reservoirs, and the planned expansion of upper basin uses, even if existing uses in California were to be cut back to the 4.4 million acre-feet referred to in the California Limitation Act. Such a reduction would still leave a shortage of more than $1\frac{1}{4}$ million acre-feet, or about the demand of the central Arizona project.

As to section 5 of the Boulder Canyon Project Act

Section 5 of S. 26, now before you, proposes that power revenues from Federal projects in the lower basin be used to cover that portion of the Dixie project's costs which is beyond the ability of the water users to pay. California power users are concerned with this provision because of the Secretary's recommendation in his project planning report that such deficit be repaid in part from Hoover Dam power revenues after 1987 (p. 219-220). Section 5 of the Boulder Canyon Project Act provides as follows:

"After repayments to the United States of all money advanced with interest, charges shall be on such basis and the revenues derived therefrom shall be kept in a separate fund to be expended within the Colorado River Basin as may hereafter be described by the Congress."

The Boulder Canyon Adjustment Act, in 1940, provided that \$300,000 annually from Hoover power revenues was to be paid to each of the States of Nevada and Arizona, and that \$500,000 annually be paid into the Colorado River development fund, during the amortization period, ending in 1987. Congress specifically preserved the mandate of section 5 of the Project Act that Hoover power revenues after the amortization period were not to be presently committed, but that the decision as to use of these revenues after 1987, as well as the decision as to the basis for charges after that date, should be postponed, as the original Project Act contemplated. Indeed, the justification for the \$500,000 per year to be paid into the Colorado River development fund, newly created by the Adjustment Act, was the so-called separate fund previously created by section 5 of the Project Act would not be available until after 1987, and this separate fund was not to be prematurely committed. No one knew in 1928, when the Project Act was passed, or in 1940, when the Adjustment Act was passed, and no one knows now, 24 years before the separate fund is to come into existence, what policy Congress ought to, or will establish in 1987 for the establishment of power rates at Hoover Dam or the use of Hoover power revenues after the dam is paid for. The decision in 1928 was wise, when Congress said that after repayment the charges should be on such basis and the revenues derived therefrom should be kept in a separate fund as Congress might thereafter prescribe. The decision in 1940 was wise, when Congress, in section 14 of the Project Act, specifically preserved all portions of the Project Act not inconsistent with the provisions of the Adjustment Act. The legislative history is clear that section 5 and its separate fund were to remain intact. It would be unwise and premature for Congress to earmark now any portion of those future revenues for credit to particular projects 20 years from now. Congress should not make that determination until after Hoover Dam has been amortized. At that time the entire plan of development for the basin can be reviewed and a more intelligent appraisal of the basin's needs can be made, together with a decision on Federal power rate policy. If the Dixie project is to be subsidized, the subsidy can be direct and specific, without the necessity for amending, by indirection, and 20 years in advance, the important compromise represented by section 5 of the Project Act and section 14 of the Adjustment Act.

Mr. ELY. As Mr. Cole has indicated, the State of California has taken a uniform position on the projects submitted to Congress since the master's report was filed in the *Arizona v. California* case. This relates to about half a dozen projects.

We feel the Congress should not authorize the new projects until the decree in *Arizona v. California* has come down and until there has been a realistic inventory of the water resources of the Colorado River Basin.

This position is not directed primarily, therefore, at the Dixie project, but is a general one.

I ask the committee's attention to two points in connection with the bill that you are now considering for the Dixie project. One has to do with the special relation of this project to *Arizona v. California* and the other relates to the effect of these bills in amending section 5 of the Boulder Canyon Project Act.

First, as to *Arizona v. California*: The Secretary of Interior's report calls attention to the pendency of this case, says that Utah cannot unilaterally determine her water rights and goes on to say that the studies in this report are based upon the assumption that the amount of water to be used by the project would fall within Utah's ultimate entitlement.

It happens that the special master's report in *Arizona v. California* made specific reference to this project.

By way of preface, I should say that the special master held that the Boulder Canyon Project Act, in effect, dealt with the allocation of the water in Lake Mead and below but that he was not proposing to make any determination of the water rights as between the users below Lake Mead and those above, that is, those who divert from the tributaries or, indeed, from the main river between Lee Ferry and Lake Mead.

The inflow between Lee Ferry and Lake Mead in a state of nature was large, in the order of a million acre-feet a year, and of this the Virgin River contributed about one-fourth, about 250,000 acre-feet, a substantial quantity.

The special master in declining to decree or recommend a decree for the rights of Utah on the Virgin River rather disappointed us who were engaged in that litigation—I, personally, would have preferred to see a decree that decided how much Utah should have rather than to leave this question open.

The master recommended that it should be left open. He said this, speaking of the California Limitation Act and the Boulder Canyon Project Act, section 4 (a) :

Nothing in that section may reasonably be said to affect the question of tributary supply. It is difficult to believe that Congress, including the California Senators, who voted for the Project Act, and the California Legislature, which passed the Limitation Act, intended that California should waive all claims to the substantial tributary contributions to the mainstream supply. It is unlikely that they intended that the States in the lower basin through which the tributaries flowed could consume all of the water in those tributaries without regard for California's claims, needs, or existing use. * * *

In the light of the foregoing, the conclusion is inescapable that principles of equitable apportionment still control rights of mainstream States in waters of the tributaries of the Colorado River in the lower basin. At the present time the tributaries which empty into the Colorado River in the lower basin, other than the Gila River, make a substantial contribution to the supply of water in the mainstream. Once this tributary water commingles with the mainstream water it is governed by the Project Act and the Secretary's water delivery contracts and may be consumed only according to the interstate apportionment created by them. The mainstream users most certainly have a substantial interest in tributary inflow, for the greater the quantity of water entering the mainstream, the greater the quantity of water likely to be available for use by them.

And he says that the principles of equitable apportionment will control the rights of the users above and below Lake Mead. I will identify these principles a little later on, as the master did in his report.

With respect to the Dixie project, he said this:

The Dixie project itself cannot be considered an immediate threat to the continuation of present tributary inflow into the mainstream. There is no evidence that the Dixie project will be developed except as a Federal reclamation project, yet its authorization by the United States is far from certain. The regional director of the Bureau of Reclamation for regional three has twice issued favorable reports on the proposed project to the Commissioner of Reclamation, but the latter has not yet approved it. So far as the evidence shows, the proposed project has not even been brought to the attention of the Secretary of the Interior or of Congress, and congressional approval is required before the project can be developed. Moreover, the regional director's approval of the Dixie project was conditioned on Utah fulfilling certain conditions which have not yet been met.

I may interpose to say the special master was rather wide of the mark in his expectation of the rate of progress which this project would have on its way to Congress and we think he was wide of the mark in his failure to recognize the rapidity of development of the basin generally, especially the upper basin.

However, the State of Utah filed no exceptions to the special master's report and if the Supreme Court should adopt that report, the consequences, insofar as the water rights of the Dixie project are concerned will be as follows:

First, the Dixie project's water rights are in competition with those of Arizona, California, and Nevada projects that use water from the main stream, including Lake Mead.

Second, to the extent that the Dixie project reduces the inflow to Lake Mead, it reduces and interferes with the water supply of projects in other States, senior to that project, and reduces the supply available for the satisfaction of the treaty with Mexico.

Third, this conflict, and the event of shortage, will be resolved by the Supreme Court in accordance with that Court's doctrine of equitable apportionment, of which the two cardinal elements are the recognition of priorities of appropriation, interstate, and the protection of existing uses. All of the water claimed by California and about half of the water claimed by Arizona from the main stream is related to "existing uses." The appropriations of all of the California projects, and of the existing Arizona projects, are senior to the appropriations of the Dixie project.

And fourth, the California Limitation Act, according to Judge Rifkind, has no application to a contest between the users below Lake Mead and those of the Dixie project.

This being the case, if the Congress now authorizes the Dixie project, it is authorizing a project whose rights are junior to those of existing projects and it is taking a calculated risk that the water supply will be adequate to supply these senior rights plus the obligations of the Mexican Water Treaty and leave over a sufficient margin to supply this junior project. Fortunately, the quantity of water involved here is small, only about 70,000 acre-feet.

If we were dealing with a large project, this vacuum left by Judge Rifkind in the law of the river would be very serious, indeed.

The problem, however, is not limited to the Dixie project. It is involved as part of a problem of a realistic appraisal of the water supply of the lower basin as limited by the Colorado River compact.

Mr. Cole has referred to that factually, and I should like to refer to some of its legal aspects.

The special master construes the compact as imposing a "ceiling on appropriations" within the upper basin and the lower basin, respectively. The compact's aggregate ceiling on lower basin appropriations, including those on the tributaries such as the Virgin River as well as on those on the main stream, establish by articles III (a) and (b) of the Colorado compact, quantitatively is 8.5 million acre-feet per year measured by beneficial consumptive use, which the master defines as the quantity diverted minus the quantity returning to the stream out of those diversions, capable of use in the United States or in the satisfaction of the Mexican Treaty requirements.

Senator KUCHEL. Does that 8½ million figure include the Mexican burden?

Mr. ELY. No, sir; that is for consumptive use within the lower basin confined to those portion of the States of Arizona, California, Nevada, New Mexico, and Utah from which the waters drain into the river below Lee Ferry.

The existing lower basin uses on the main stream and on the tributaries are almost up to that ceiling of 8½ million acre-feet. Of this quantity, the uses on the tributaries account for about 2 million acre-feet, that is the consumptive use, diversions less returns, that can be supported on a safe annual yield basis.

To pause a moment, by this we mean that while the quantity of water, in fact, pumped or used in some years on the tributaries may be more than 2 million acre-feet, that is all that the tributaries can sustain regularly, permanently, year by year.

If the uses on the tributaries are of the order of 2 million acre-feet, it follows that the ceiling on appropriations on the main stream is of the order of 6½ million acre-feet, you cannot subtract the other way around and it should make no difference but the uses of the tributaries are under very old appropriation. Existing projects on the main stream in any even will require the consumptive use of this same 6½ million acre-feet, which is all that is available within the ceiling imposed by the Colorado River compact.

The lower basin supply at present is adequate to sustain these uses of about 8½ million acre-feet, 6½ of it on the main stream, but this is true only because the upper basin at present is using somewhat less than 4 million acre-feet. That is, its uses are depleting the flow at Lee Ferry by something less than 4 million acre-feet.

As Mr. Cole has explained to you, the uncommitted margin in the whole Colorado River Basin, all seven States, tributaries and main streams, is not over 600,000 acre-feet, but this 600,000 acre-feet margin would be more than wiped out by the construction of projects proposed in the upper basin alone.

These upper basin projects now before Congress or on their way here add up to an additional 1.3 million acre-feet. If they are built, then the upper basin's total depletions, exclusive of reservoir losses,

would amount to about 5 million acre-feet or slightly less. This is materially below the 7½ million acre-feet which the upper basin States feel was apportioned to them by article III(a) of the compact.

But my point is that if the upper basin uses increase only to 5 million and not anywhere near 7.5 million, then we are face to face with catastrophic shortage, because proposed projects in the lower basin would require an additional 1,370,000 acre-feet, and there is no water to support that expansion unless existing uses are curtailed, this 1,370,000 acre-feet expansion which the lower basin hopes for includes 1,200,000 for the central Arizona project. The central core of Arizona versus California litigation, the Dixie project, 70,000, and southern Nevada, 100,000, if all of these lower basin projects are built and if the upper basin uses increase, as they are planned to increase to 5 million acre-feet or thereabouts, the basinwide shortage will be over 2 million acre-feet as Mr. Cole has demonstrated.

These figures leave out of consideration the necessity of finding some 35 million acre-feet of water to fill the upper basin reservoirs that are now under construction.

Even if it took 20 years to fill those reservoirs, this accumulation would deplete the Lee Ferry flow nearly 2 million acre-feet annually. There manifestly is not enough water to satisfy the expansion that both basins are seeking. Water could not be found for the central Arizona project, the Dixie project, the southern Nevada project, the filling of the upper basin reservoirs, and the planned expansion of upper basin uses, even if the existing uses in California, which are now about 5,200,000 acre-feet per year, were cut back to the 4,400,000 acre-feet referred to in the California Limitation Act. Such a reduction of California's existing uses would still leave a shortage of more than a million and a quarter acre-feet in the Colorado River Basin's water budget, or a deficit about equal to the demand of the central Arizona project.

This indicates the seriousness of the water supply and demand problem with which we are all confronted. I do not use it as an argument aimed specifically against the authorization of the Dixie project. To the contrary, the quantity involved here is very small, but I do say it emphasizes the need for a realistic water inventory project by project, before any is built.

We do not know which straw it is that will break the camel's back, but we do know that this camel is expected to struggle under a load that is 2 million acre-feet greater than its capacity to bear.

I come now to my next point, which relates to the effect of the pending legislation upon section 5 of the Boulder Canyon Project Act.

Section 5 of S. 26, which is now before you, proposes that the power revenues from Federal projects in the lower basin shall be used to cover that portion of the Dixie project's costs which are beyond the ability of the water users to bear.

The Interior Department's report on this project, at page 220, spells this out. It proposes that that portion of the project costs which the Secretary determines to be properly allocable to irrigation but is beyond the ability of the water users to repay in 50 years, plus a 10-year development period, be repaid from project power and municipal water revenues after the costs allocated to these uses have been repaid

and from Hoover Dam power revenues after 1987, or such other sources as may be available.

Section 5 of the Boulder Canyon Project Act enacted in 1928, provided this: That after repayment to the United States of all money advanced with interest, charges shall be on such basis and the revenues derived therefrom shall be kept in a separate fund to be expended within the Colorado River Basin as may hereinafter be prescribed by the Congress.

The Boulder Canyon Project Adjustment Act in 1940 provided that \$500,000 annually should be added as a surcharge to the power rates to be paid into a fund newly created by the 1940 statute called the Colorado River Development Fund, for a specified period to end in 1987, that is during the Hoover Dam amortization period.

Congress specifically provided in the 1940 legislation that the mandate contained in the original 1928 act with reference to the revenues after 1987 should remain undisturbed; namely, that they should go into a separate fund after 1987 and Congress retained the option to decide how that fund should be used for the development of the Colorado River Basin and moreover what the basis of power charges should be after that date.

Some confusion was injected into the record this morning between the Colorado River development fund that was created for the first time in 1940 and the separate fund created in 1928.

The development fund operates only until 1987, the separate fund operates for the first time after 1987.

We have no objection to the use of the Colorado River development fund into which the power users of California, Arizona, and Nevada are paying \$500,000 per year until 1987 for whatever purpose Congress pleases for the development of the Colorado River Basin. If you choose to earmark that \$500,000 per year or any part of it for the subsidization of the Dixie project, that is wholly consistent with the bargain made in 1940.

It would take 6 years of that \$500,000 per year to make up the \$3 million-odd which I understand from this morning's testimony the Dixie project hopes to get out of the Hoover Dam power revenues.

We do object most strenuously to what the Bureau's report specifically proposes, which is not the use of the Colorado River development, but the earmarking of the separate fund after 1987 for this purpose. We think that Congress was wise in 1928 to postpone for 50 years a decision how to use the money that would then come into existence. No one knew in 1928 what conditions would be in 1987, what the policy of Congress ought to be as to power rates or how you should use the income after the dam is paid for. Nobody knew in 1940 what the situation would be in 1987. No one knows now, 24 years in advance of that date, what the wise policy ought to be as to power rates for the use of those revenues.

Let me call your attention to the fact that the population of the southern portion of the Colorado River Basin is exploding, expanding at the rate of in excess of 3 percent per year; this means that in less than 24 years it will double. It may very well be, that after 1987, the ability of this Basin to sustain the population that it has attracted will depend upon the existence of low power rates to support

industries that in turn will support a large population and that Congress may decide that low power rates here as in the Bonneville area and in TVA, are more in the public interest than the dedication of power revenues, the increase of power rates to subsidize individual irrigation projects.

In any event, that is a decision that Congress in 1928 and again in 1940 reserved to itself for 1987. This, we think, is not the time to predetermine that question or to do it by implication and inference, piecemeal in authorizing this relatively small project.

If that precedent is established here, you may be very sure that other projects will be clamoring for the same assistance.

May I point out further that in section 1 of the Boulder Canyon Project Act of 1928, Congress denied to those who were underwriting the Boulder Canyon Project Act the use of Hoover Dam power revenues, these same revenues, to assist irrigation. It provided specifically in section 1 that the All-American Canal should be paid for by the users of the water from that canal without any assistance whatever from Hoover Dam power revenues, and if those irrigators choose to install powerplants on the canal they should finance them by themselves by their own bond issues, which they have done.

I think it grossly inequitable now to say that the power revenues that have been made possible by the underwriting by the California users of the Boulder Canyon project power, but that were denied the California irrigation participants in that project in 1928, should now be made available to new projects that had nothing to do with the underwriting of the Boulder Canyon project. In other words, the irrigation features of the All-American Canal were specifically severed from the benefits of the power features of the Hoover Dam. Why should the irrigation features of the Dixie project have these benefits?

There is a short and simple answer, use the Colorado River development fund, \$500,000 a year, currently being provided by the Hoover Dam power users. We agreed to that in 1940. You do not need to earmark the separate fund that does not come into existence for another 24 years.

There are a few other items here I would like to straighten out while I am on it.

While 70,000 acre-feet is a small quantity of water, bear in mind it is the quantity which will sustain a population of 350,000 people at 5 people per acre-foot. This is a significant item in the rapidly disappearing margin of the water supply of the Colorado River.

Something was said in the record today about salt. I am glad to see, personally, the Bureau of Reclamation taking a responsibility for the effect downstream of the construction of its projects upstream, not only in the quantity but of the quality of water.

I have no objection to recognition in this bill of the right of the users downstream to compensation for the deterioration of the quality of their water that the Dixie project may occasion. But I want to point out that the figure of \$2 million, if divided by the 1,600 acres that the mayor of St. George said would be adversely affected, amounts to \$1,250 per acre. Furthermore, that the quality of the water as shown on table 23, page 95 of the Bureau report, if I read these figures correctly, means the proponents of the bill are proposing payments of \$1,250 per acre because the salt content of the water would increase to 2,370 parts per million, without the removal of the effect of these salt

springs. If the salt springs are eliminated the salt content would be about 1,790 parts per million. Damages up to 2 million would be paid if the salt content in excess of 1,560 or 1,790 parts per million—it is not clear which, is not removed.

I simply want to say, and I trust that anybody from the press who is here will be discreet with respect to this, that we are engaged in a controversy with Mexico right now over the quality of the Colorado River water and the Bureau of Reclamation is on record that a quality of water for Mexico of about 2,300 parts per million ought to be satisfactory to them.

Now, if you are to recognize liability amounting to some \$1,250 per acre because salt content rises to 2,370 from 1,560, then I would think that you might be wise if you provided for these downstream users, affected by the Dixie project in some other way than labeling it as damages for the increase in the salt content to a figure that we say Mexico ought to live with. I dislike to see a price tag put upon parts per million.

That is all I have, Mr. Chairman.

Senator Moss. Thank you, Mr. Ely. I do not think the bill contemplates any finding on the number of parts per million and the costs therefor, I think it simply provides that should there be a claim made below and there is money available to meet that contingency, and it may not even be one, but what you say about salt content, of course, has great meaning to this committee, because we wrestle with that problem here and we know we have it in our hands in the Mexican water situation.

You have pointed out, I think, very clearly that there is not any precedent in the Lower Colorado Basin for charging any of the costs of irrigation against power in that basin, but you do recognize we have many precedents in other areas of the country and projects that come before this committee; is that not so?

Mr. ELY. Quite so. But that is not the point I am seeking to make here. I am simply seeking to make the point that it is unwise to earmark 24 years in advance the Hoover power revenues after 1987 to subsidize a specific project when Congress has twice directed that that decision be postponed until the project is paid for.

You do not have to make that decision 24 years prematurely, in my mind.

That is a very carefully worked out compromise among seven States in the basin, twice bargained, once in 1928, once in 1940, and it is not right that that decision be upset in this fashion.

We certainly have a great deal to say about the desirability of preserving to Congress the freedom of decision on rates as well as on the disposition of revenues. At the appropriate time, 1987, I should dislike to have to debate now, looking into a crystal ball, what that decision ought to be a quarter of a century from now.

Senator Moss. Perhaps if we get that far then we will debate while the money piles up and we will not know what to do with it.

There was one other point I noted in your testimony earlier. You indicated that Arizona and Nevada and California, the downstream States, certainly had to be considered on a project of this sort, and I suppose you are familiar with the fact that both Arizona and Nevada have responded saying that they have no objection, entered no objections to the authorization and construction of the Dixie project.

So, those States have granted their acquiescence, but California, of course, has entered its objection.

Mr. ELY. Well, ours, as I say, is not directed to the Dixie project as such. We simply feel that pending a Supreme Court decision that may come down any Monday morning, and which, if it follows the master's report is going to single out Utah and the Dixie project for the vulnerable position for being junior to the projects downstream, that it is rather premature to proceed with authorization. But the fact that the master's report does single the Dixie project out in that fashion does not motivate us. We have taken precisely the same position on the basin in general.

I am not testifying here of any particular concern about this one project but expressing a general position of the State as to policy. I am not expressing a position of the State. I am quoting to you a position taken by the director of water resources in his formal communication to the Secretary.

Senator Moss. Thank you, sir.

Senator Kuchel, do you have any comments or questions?

Senator KUCHEL. Yes. First of all, once again, Mr. Ely, the committee is indebted and I want to say I am personally indebted to another very penetrating analysis of some of the legal problems which the members here confront in dealing with this legislation.

Quite aside from the position which the State of California has taken to the comments of director of water resources Warner representing Governor Brown's State administration, would you comment briefly on one matter that I alluded to this morning, and that was with respect to amending this legislation so as to provide the right to litigate a claim between a State which felt aggrieved and the Department of Interior in interpreting the various contracts, and so forth?

Mr. ELY. I think your suggestion is very wise, Senator Kuchel, I would feel that it should properly go into an authorization for a California project if we were here with one.

It has been a rather uniform provision now in a number of bills, I think dealing with the Colorado River projects in recent years, and it was necessitated by the fact that the United States has been held by the Supreme Court to be a necessary party to the litigation of disputes among the States on the Colorado River. That being so we are unable to bring to the court our problems in the form of litigation, if need be, unless the Attorney General of the United States volunteers to intervene. He did intervene in the pending case of *Arizona v. California*. He declined to intervene last time Arizona brought a suit in 1935, and the case was dismissed at that time.

We should not be at the mercy—I will not put it that way. We should not be dependent upon the varying judgment of successive Attorneys General as to whether or not to intervene.

Senator KUCHEL. Most of the members of this committee represent States that are within the Colorado River Basin, upper or lower, and I can remember just a year or so ago when we had a very frank discussion among the members of some of the hazards which would result in the building of the West by additional reclamation projects if the conclusions of the special master in the *Arizona v. California* lawsuit were to become the law of the land. It would almost be, in many respect, a dog-eat-dog fight.

I think it is important to the members of the committee to understand, as you have pointed out, that the conclusions of the special master would make the rights of those specific projects in the lower basin senior to the rights to water in a tributary between Lee Ferry, which entered the river between Lee Ferry and Lake Mead?

Mr. ELY. That is correct.

Senator KUCHEL. Now, specifically with respect to this section 5 of the bill, and I think that members of our committee must have this clearly in mind, and there was confusion this morning, and it must be straightened out, first I want to read into the record the specific language on page 219 of the Department report:

That portion of the project costs which the Secretary determines to be properly allocable to irrigation but is beyond the ability of the water users to repay in 50 years, plus a 10-year development payment, be repaid from project power and municipal water revenues after the costs allocated to these uses have been repaid and from Hoover Dam power revenues after 1987 and from such other sources as may be available.

I think that the argument which Mr. Ely has made with respect to that particular problem in this bill, and that one alone, refers to the use of the words "after 1987."

If I understand it correctly, the Congress in 1940 created a river development fund to remain in existence until 1987 and if I can interpret what Assistant Commissioner Palmer said this morning, it is from that fund which each year the Congress appropriates presumably the full amounts of the money and, in the past, the appropriation of those annual amounts of money from that fund have been directed to the development, the investigation of water projects presumably in this basin.

Will you state again now for the record what the law is with respect to the fund that comes into existence from the power revenues in the lower basin after 1987?

Mr. ELY. Yes, sir. After 1987, the power revenues are controlled by section 5 of the Boulder Canyon Project Act, enacted in 1928. That language reads as follows:

After the repayments to the United States of all money advanced with interest, charges shall be on such basis and the revenues derived therefrom shall be kept in a separate fund to be expended within the Colorado River Basin as may hereafter be prescribed by the Congress.

In 1940, when the Boulder Canyon Project Adjustment Act was passed, adjusting the rates of Hoover Dam power, Congress specifically left that provision untouched. The separate fund does not come into existence until 1987 and no decision was made in 1940 as to what should be done with it after 1987. What Congress did do in 1940 was to create a brandnew Colorado River development fund operative until 1987. The language with respect to that in section 2(d) of the Boulder Canyon Project Adjustment Act, was a direction that \$500,000 per year be included in the calculation of the power rates and that \$500,000 per year transferred to the new Colorado River development fund to be available from 1940 to 1955 only for use within, the four States of the upper division, and after that, as the law says—such receipts for the years of operation ending in 1956 to 1987, inclusive, are authorized to be appropriated for the investigation and construction of projects for such utilization in and equitably distributed among the States of the upper division and the States of lower division.

So that fund is presently available and appropriations may be authorized to be made out of it for the Dixie project if you authorize the Dixie project.

Senator KUCHEL. But it was the intention of the Congress, indeed it was the specific language of the statute that subsequent to 1987 moneys will be sequestered for an entirely different purpose upon which Congress would make its decision as to their use subsequent to that time?

Mr. ELY. That is correct, and section 14 of the 1940 Boulder Canyon Project Adjustment Act specifically provides that all sections of the project act not inconsistent with the terms of this act, the 1940 act, shall remain in full force and effect.

The legislative history is very clear that the intent was to preserve intact this separate fund, which would arise, come into existence, after 1987, and furthermore, to preserve the decision on policy as to what the rate should be after 1987.

You realize that once the dam is paid for, the rates that are now used to retire the debt and pay interest are no longer required.

There are several alternatives to be considered whether the rates after 1987 shall drop, be reduced, to something approaching the competitive rates at Bonneville or TVA, to sustain industry in the Southwest, or they shall remain at the present rates to subsidize irrigation. Who can say now what the rates shall be in 1987.

We say it is premature to decide either what the 1987 rate will be, or to determine how those proceeds shall be used.

Senator KUCHEL. I thank you very much, Mr. Ely, and this, Mr. Chairman, is all I have to inquire now, but before we close these hearings, I would like to recall Commissioner Palmer for a moment, after Senator Jordan.

Senator Moss. Senator Jordan?

Senator JORDAN. Yes. Mr. Ely, I have been tremendously impressed by your testimony here.

Mr. ELY. Thank you, sir.

Senator JORDAN. Am I correct in saying that this is the first time in the history of the act, the Boulder Canyon Act, that an effort is being made to commit those funds after 1987 for the purpose of paying out an irrigation project? Have efforts been made before in this respect?

Mr. ELY. You are correct in saying this is the first time.

Senator JORDAN. I can appreciate that it is a very attractive area to look for funds because so many of the very good projects in the West have reached about the midpoint of their payout period and it is very evident that suddenly, when this payout is accomplished, there will be revenues available for something, either a reduction of rate or for the application to other purposes.

I am inclined to agree with the philosophy of thinking that would say that the authority should be retained by the Congress until such time as the original contract is completely fulfilled and then take a look to see what is required.

It did concern me in the testimony this morning to see that there was this attempt at a commitment of funds not yet available to be available after the payout period.

I can appreciate that the revenues from these small power projects within the project itself, the Dixie project, can very well be applied,

those power revenues, to the aid of irrigation, but I am inclined to agree that Congress should retain to itself the distribution or the allocation of those funds that will accrue when the main projects are paid out.

I am interested in getting this.

Senator Moss. Well, the Senator, of course, is aware that in the Idaho, the Oregon, the other irrigation projects in the Northwest, that that is precisely what we have done.

We have allocated the funds after the dams are amortized to be then allocated to irrigation on these projects we are building, and that is what we have done in the Central Valley of California.

So this would not be a new thing to do. But even so, this language does not say that we have to wait until that time, some of this \$500,000 could be used under the language of this act to be applied if that were the decision of the Department in applying it that way, when it sought its appropriations here before the Congress.

I think, really, you have made a very strong point that you thought Congress had set a policy about this fund that it should not be tapped before 1987, but, of course, that was another Congress, and this is a Congress that has fully equal power if Congress wanted to change the law in any way.

As a matter, we spend our time sort of changing things that were set earlier to conform with what we propose to do at this particular time.

I think we must all recognize that.

Mr. ELY. I am aware of that, but may I say that the 1940 act which reiterated the policy of the 1928 act in this respect was the only occasion that I know of in which all 7 States, all 14 Senators, joined in a bill and, furthermore, this 1940 act was directed not to come into existence until the Secretary of Interior had obtained from all of the power contractors an agreement that they would waive the rights under their Boulder Canyon project contracts made in 1930 and 1931 and take new contracts under the 1940 act.

So this is more than a case in which you are exercising the congressional normal supervisory authority. This is an instance of where in 1928 you directed that the dam should not be built, not a penny paid out until the Secretary of the Interior had in hand contracts with power users which would amortize the cost of the dam on specified terms. That was done. That was the bargain. And, furthermore, that the dam should not be built until California had enacted this Limitation Act of which I spoke. That was done.

The whole structure of the Boulder Project Act was consequently contractual, incorporating agreements between States—between the United States and the States, agreements between the Secretary of the Interior and power users, and with water users. In 1940, when Congress, on the unanimous endorsement of these 14 Senators directed that this great statute of 1928 and the agreements made under it should remain unaffected except to the extent specifically changed by this statute, and directed that the 1940 act should not become effective until new contracts had been made by those who had the old contracts, and that the power allocation should not be affected by the new statute, I think we are dealing with a history on which we can rely with some assurance that Congress is not going to knowingly change the deal.

I think the change proposed here by the Bureau of Reclamation is perhaps drafted without full cognizance of that history.

And, furthermore, it is totally unnecessary. You have a present existing fund into which the power users by agreement are paying \$500,000 a year. You do not have to wait until 1987. It exists now. We paid it last year, this year, every year. You are welcome to use it.

Senator Moss. That is what I was trying to point out, the bill does not require us to wait until 1987.

I think you make a very persuasive argument for it and certainly it is something that should not be lightly changed, but it still remains within the power of Congress to do that if that was our intent.

Thank you very much. Mr. Ely, for your testimony. We appreciate it very much.

Commissioner Palmer, will you come forward?

**STATEMENT OF WILLIAM I. PALMER, ASSISTANT COMMISSIONER,
BUREAU OF RECLAMATION—Resumed**

Senator KUCHEL. Commissioner, I have two things.

First, can you furnish to the committee a statement of the position of the Department of the Interior as to the feasibility of utilizing moneys from the Colorado River development fund which expires in 1987 to supply the additional \$3,200,000 to that part of the costs allocable to irrigation which the water users and power users can not pay?

Mr. PALMER. I will be very happy to get such a statement and supply it for the record.

(The statement referred to follows:)

**STATEMENT OF THE POSITION OF THE DEPARTMENT OF THE INTERIOR AS TO THE
FEASIBILITY OF UTILIZING MONEYS FROM THE COLORADO RIVER DEVELOPMENT
FUND**

We have concluded that the Colorado River redevelopment fund moneys should not be utilized to provide the \$3,200,000 repayment assistance required for the Dixie project in view of wording of the Boulder Canyon Project Adjustment Act of July 19, 1940, and its amendment of June 1, 1948, as follows:

"* * * Such receipts for the years of operation ending 1956 to 1987, inclusive, are authorized to be appropriated for the investigation and construction of projects for such utilization in and equitably distributed among the States of the upper division and the States of the lower division. * * *"

The required amount would comprise about one-third of the amount that would become available during the 20 or so years that might remain between completion of the Dixie project and 1987. This probably would not be interpreted by the several States involved as constituting equitable distribution. It would also impose an additional load on the money appropriated for those general investigations now financed from the fund.

The primary purpose of pointing to the Colorado River development fund was to stress the actual existence of such a fund and to make the record complete that the will of the Congress at the time of enactment of the 1940 adjustment to the Boulder Canyon Project Act was to authorize use of such a development fund for assistance in the construction of projects.

The size of the fund obviously is subject to adjustment and this, too, is clearly anticipated in the 1940 adjustment.

The principle of financial aid to irrigation features of reclamation projects from power revenues is clearly evident in the cited legislation. It is even more clearly enunciated in the Hayden-O'Mahoney amendment of May 9, 1938, the Reclamation Projects Act of 1939, and the Flood Control Act of 1944.

The Colorado River Storage Project Act of 1956 is an outstanding example of legislation establishing a basin account to provide power revenues for financial assistance to irrigation. The several acts of Congress authorizing the Central Valley project and the Missouri River Basin project also make use of this principle. As demonstrated in the list of 16 projects, submitted earlier for the record, the financial assistance principle has been applied frequently in the Columbia Basin.

Senator KUCHEL. I think the point Mr. Ely made is a serious one. I think the committee ought to have a complete understanding of the rather serious problem that was raised by the language of your report.

Mr. PALMER. Well, may I suggest, Mr. Kuchel, that Mr. Ely should have read on out to the end of the paragraph which says, "or such other sources as may be available."

Now, this would not preclude Parker-Davis or Colorado River development fund or any of the other revenues that might be available.

Senator KUCHEL. I think what has excited him and certainly should require the intense interest of the members of this committee is that "after" 1987. I understand the balance of it and I did read the whole thing.

Now, secondly, I would like, if it were possible, to have the Department comment by agreement or disagreement with that series of figures which Mr. Cole read as to the Colorado River Board's conclusion as to the amount of water available in the Colorado River, the deductions that are required, the losses which take place, the amounts of water involved in the heavily recommended projects in both places with a rather fearful conclusion that we get down to the point where we may be talking about more projects than water is available.

I would like to have the Department's comments on that, not today, but for the record, if you would.

Mr. PALMER. Mr. Kuchel, I think that Mr. Cole's presentation and Mr. Ely's presentation deserve the thoughtful consideration of the committee and they certainly do have the Department's.

We would be very happy to supply a subsequent analysis and give you our views on those points.

Senator KUCHEL. Very good.

(The statement referred to follows:)

VIEWS OF THE DEPARTMENT OF THE INTERIOR IN REGARD TO THE COLORADO RIVER BOARD'S CONCLUSION AS TO THE AMOUNT OF WATER AVAILABLE IN THE COLORADO RIVER

The concern expressed by Mr. Cole and Mr. Ely over the water situation of the Colorado River is shared by the Department of the Interior. A major part of the personal and official attention of the Secretary of the Interior has been directed toward this subject. As a result of this consideration, the Department has announced an overall plan for studying the water problem of the Lower Colorado River Basin. In view of the implications involved and the pending Supreme Court decision in the *Arizona v. California* suit, the Department does not believe that now is the time to become involved in a consideration of the adequacy of the flows of the Colorado River to meet the existing requirements or to provide a basis for the expanding development which will most assuredly occur in the lower basin. Secretary Udall expressed this view in a letter dated August 24, 1962, to Governor Brown of California, concerning California's request for an up-to-date inventory of the water resources of the Colorado River and their relation to demands. Moreover, we do not believe that the Dixie project should become a vehicle for resolving the issues involved in the Lower Colorado River. That

project will only reduce the inflow to Lake Mead by approximately 60,000 acre-feet per year. This is less than 1 percent of the water supply available to the lower basin.

Senator JORDAN. Mr. Chairman, the time is late, but I have one question. It relates to power, Mr. Commissioner. This project is primarily an irrigation project, the Dixie, is it not?

Mr. PALMER. Yes, sir.

Senator JORDAN. Is the use of the river for irrigation for storage compatible with the production of firm power to the extent that you claim firm power protection for it?

Mr. PALMER. As limited power installations and capacities as projected in the project plan?

Senator JORDAN. Yes.

Mr. PALMER. Yes, sir.

Senator JORDAN. That is a question I wanted cleared for the record because it seemed to me that at times of the year you would be storing water the power would not be available in your generators?

Mr. PALMER. The mayor of St. George testified that the city was ready, willing, and able to contract for power. They are able to do this primarily because their own generation is from fossil fuel, from diesel plants, or otherwise.

Senator JORDAN. They will integrate this hydro into their fossil fuel system. That explains it.

Mr. PALMER. Yes, sir.

Senator JORDAN. Thank you.

Senator MOSS. Thank you very much, Mr. Palmer.

This will conclude the testimony today.

There will be hearings held in St. George, Utah, on the 17th of the month and further hearings, if need be, in Washington, after that. So that we will be in recess until the 17th.

(Whereupon, at 4:30 p.m., the subcommittee recessed, to reconvene Friday, May 17, 1963, in St. George, Utah.)

THE DIXIE PROJECT

FRIDAY, MAY 17, 1963

U.S. SENATE,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
St. George, Utah.

The subcommittee met at 10 a.m., pursuant to call, in the district courtroom, County Building, Senator Frank E. Moss (chairman of the subcommittee) presiding.

Staff members present: Roy M. Whitacre; committee assistant.

Senator Moss. The subcommittee will come to order and we will begin with the further hearing of the Dixie project. There has been a hearing held in Washington, D.C., on the 7th of this month on the Dixie project, and at that time the bill itself and the report of the Department were placed in the record. Statements were taken from representatives of the Bureau of Reclamation, the National Park Service, all of the Federal departments that are involved, and other interested citizens.

Mayor Barlocker came to Washington and testified back there, as did Mr. Jay Bingham representing the Governor and the Utah Water & Power Board, so part of the record has been made. But I am anxious that we make the record fully and the only place we can do that is right down here in Washington County, southern Utah, where the people live and where the project will be built. I think all of our people desire an opportunity to be heard, or at least to hear what others have to say and to observe a hearing by a congressional committee, so the reason for holding the hearing here today is to complete the record. Now, we have a great many people to hear, and we want everybody to have an opportunity to be heard if he wants to speak. It is not, of course, mandatory that a person speak vocally on anything or everything he wants in the record. If any person has his testimony reduced to writing and would like to have it placed in the record to be part of the record, he may do that and not take the time to read it word for word. Very often the practice is for a person to submit his statement in writing and then just take a few moments to emphasize the particular part of it, the highlight of any of it that he would like to have emphasized particularly. So, that may be done if you like. We will move right along as fast as we reasonably can to get the hearing concluded at a reasonable hour today.

We have present from Washington, Mr. William Palmer who is the Assistant Commissioner of Reclamation. I am not going to call on Mr. Palmer to testify as such. I think you all know Bill Palmer, he is a native from these parts and now holds a very high

and responsible position in the Department of Reclamation. I am not going to call on Bill to testify, but he is available if any question arises that we want to get settled as we go along making the record. He testified fully in Washington. He is the man that probably knows most about the detail of this project, having worked on it for many years. Now, also, I am accompanied here by Mr. Roy Whitacre, professional member of the staff of the Committee on Interior and Insular Affairs, who will handle all the details. If you have any questions as we are going along and it is not possible to interrupt me, why, Mr. Whitacre will take care of it.

In my opening I would ordinarily give you some details about the project, but I think it is superfluous in this case. For 40 years or longer, people in this area have been dreaming of a Dixie project, planning and making an effort to bring it about. For the last 15 or 20 years we have been involved in very serious planning on the Dixie project, and we have never been able to get it along to the point where we could finally get a report of a satisfactory project made by the Bureau of Reclamation to the Congress until this year, and with a lot of effort and prodding and desire, we have moved to that point that we now have a project here that proposes the building of two dams, one on the Santa Clara and one on the Virgin River, to supply supplemental irrigation to some land, to make water available for municipal purposes, and to generate power for the city of St. George. They have already agreed that they would purchase all of the power that would be generated from the project. The power would help repay the project.

This being a reclamation project, of course, the power features have to be repaid with interest. Those who worry so vigorously about wild Federal spending are usually talking about a reclamation project or something of that sort where the money is to be repaid with interest, and we out in the West here understand those things. We simply need the help to get going, so we can get our project built. Well, I would like to also advise that the hearings will be printed up in a little printed volume when they have been completed. Everyone who testifies will automatically get one of these. Any of you may have one if you will simply leave your name and address with Mr. Whitacre or with Bill Cowley. He is seated at the front table over there. Just leave your name and address if you want a copy of the hearing, and as soon as they are printed they will be mailed out to you and you will have those to refer to.

We will then begin with this hearing. I think it is appropriate that I ask first to hear from Mayor Barlocker who is also president of the Dixie Project and Development Association. Mayor Barlocker testified in Washington, came all the way back there to testify. But he is present this morning and we will lead off by hearing from him. The witnesses may come up and sit right at the table here when they testify. The only admonition I have is to be sure and keep your voice up. Everybody here in the room would like to hear what goes on, and you wouldn't have come today if you didn't want to hear it, and if the persons testifying talk just to me across this table, some in the rear of the room will not hear it. So, maybe I will remind you once in a while to keep your voices up. Thank you. Mayor Barlocker.

**STATEMENT OF WILLIAM BARLOCKER, MAYOR OF ST. GEORGE AND
PRESIDENT OF THE DIXIE PROJECT AND DEVELOPMENT ASSOCI-
ATION**

Mr. BARLOCKER. Thank you, Senator Moss. Good morning, ladies and gentlemen. It is a pleasure for me as mayor of St. George to welcome all of you here. We are thrilled to see an overcrowded courtroom for a change. We want to particularly thank the Utah Water and Power Board who intentionally set their monthly meeting up for St. George and who are all present here this morning. We expect to hear from some of the board members during the day with additional testimony in behalf of the project. I would also like to thank Senator Moss and his committee for calling this hearing here at St. George, Utah. This is a great honor to the county and the city. This is the first time in the history of this county that a congressional hearing has ever been held in Washington County. We are very fortunate that they are here so that the people can see exactly what's going on. I would also like to thank particularly from the Utah Water and Power Board, Mr. Jay Bingham, who has been in Washington with me numerous times to help get this project on the road, and when we were back to the hearings also, State Engineer Wayne Criddle, who has been very informative and his statistical information has been very important as far as the committee in Washington is concerned. So, my remarks this morning are primarily to welcome you and thank you for coming and for showing your interest. We are all thankful for the League of Women Voters from Cedar City who are here and other people who are here from Iron County and Cedar City, because they, too, do have an important part to play in this development, and if it is consummated it is going to help not only Washington County but substantially Iron County as well. I would also like to thank Mr. West, who is the supervisor of region 3 out of Boulder City, Nev., and who has been primarily responsible for the initial Dixie report. And another man out of his office, Mr. Paulin, who has been very cooperative all the way through this project and has submitted many many times information that is requested by the Bureau of Reclamation, the Bureau of the Budget, and the Interior Department of Washington, to get this thing to the point that we are here today.

I should also like to mention the man who is not here today, who has worked on this project for about 40 years. As you know this project has been talked about for 55 years, since 1918 on the original report. Judge LeRoy Cox was the principle supporter of this project some 40 years ago, and he is now very ill in the Salt Lake City hospital, and due to ill health and his age, he was unable to be here today. He's been sick for about 6 months. We wish him well and thank him for all of the work that he did through the years on this project.

There was one statement that I would like to enter into the record. Due to a question that was asked me by Senator Kuchel from California, which pertains to the flows of the Virgin and Santa Clara

Creeks into the Colorado River, and rather than make the statement and take your time, I would like to place into the record a report that was handed to the Committee of the Interior and Insular Affairs of the future water resources and development in the Lower Colorado River Basin and have it printed into the record in its entirety.

(The report is as follows:)

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., January 18, 1963.

Congressman WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Your letter of November 27, 1962, inquiring as to the extent of the Department's present studies and of our views for an outline of a coordinated comprehensive pattern under which the water and power needs of the Pacific Southwest might be satisfactorily provided for is timely indeed. The area of concern in this matter is the lower Colorado River Basin and adjacent areas in California.

The water supply problems of the Pacific Southwest are matters to which we have given considerable attention in recent months and for which we have developed a broad proposal to bring about their resolution. That proposal, entitled, "The Proposed Lower Colorado River Project," is enclosed as attachment A.

The pending case before the Supreme Court, *Arizona v. California*, not only has precluded congressional consideration of additional lower Colorado River Basin projects, as you noted in your letter, but also has seriously impeded comprehensive studies that involve either use of the waters in contest or deal with the overall problem of lower basin water supply.

In this period, however, the Bureau of Reclamation has carried on in varying degrees investigation of a number of potential projects in the southwest. Some of these, such as for the Dixie project, Utah, and the Palmdale project, California, would be unaffected by the outcome of the pending court action. Others, such as those for the Bridge Canyon and Marble Canyon projects, have progressed so far as physical structure plans are concerned but have been limited as to their consideration of overall financial or comprehensive regionwide plans. Still other investigations, such as those covering supply problems of the Phoenix-Tucson area and other areas in Arizona and New Mexico, have been undertaken with moneys advanced by the affected States. A further category of investigations which involve such matters as water salvage potentials, character, and extent of groundwater reserves, existing and projected water supply demands, and river regulation is in progress to provide essential information and planning data needed regardless of the outcome of *Arizona v. California*. A brief review of all of the foregoing categories of investigations is enclosed as attachment B.

All of the potential projects and undertakings involved in the foregoing investigations must be regarded as integral components of a comprehensive Pacific Southwest water supply program, if an effective long-range coordinated plan for solution of the Pacific Southwest's water and related power needs is to be achieved. Such a solution, as you point out, is most urgently needed.

It cannot be too forcefully emphasized that, whatever the outcome of *Arizona v. California*, the water of the Colorado River available to the Lower Colorado River Basin is inadequate to the area's needs and that the only effective solution to its water problem lies in developing additional supplies while at the same time increasing efficiency in the utilization of existing in-basin water sources.

What is outlined in attachment A is a coordinated comprehensive plan involving long-range program which would be consummated in an orderly, step-by-step fashion geared to meet the Pacific Southwest's water needs as those needs accrue. Obviously, not all facets of this plan will be instituted immediately, but it is essential that as each project is developed and undertaken it be related to execution of the overall plan. There should be an early start on the Bridge Canyon and Marble Canyon units and on the undertakings that will utilize to the fullest practical extent the available in-basin water resources. At the same time, planning and investigation should be initiated on the longer range aspects of the program.

A serious threat to the realization of a comprehensive resolution of the Lower Colorado River Basin's water resource problems is posed by current proposals

to undertake isolated construction of important hydroelectric possibilities on the Lower Colorado.

It has been consistent national policy, evidenced by legislation dealing with the Colorado River, that the hydroelectric power resources of the Colorado be developed as regional resources, to be authorized and undertaken as component parts of a comprehensive program. If this policy is to be adhered to and we consider it not only sound but the only practicable policy that can get the job done, the hydroelectric power potentials of the Lower Colorado River Basin, such as Bridge Canyon and Marble Canyon, must not be taken out of the program.

As your letter makes clear, the fundamental issues involved in lower basin comprehensive development must be faced promptly. This Department is firmly of the view that the proposal presented herein points the way to a practicable and timely solution to the Southwest's water needs. We stand ready to cooperate with the committee and with all interested parties in further consideration of this vitally important matter.

Sincerely yours,

STEWART L. UDALL,
Secretary of the Interior.

ATTACHMENT A

THE PROPOSED LOWER COLORADO RIVER PROJECT

AN OUTLINE OF THE STUDY

The proposed Lower Colorado River project study initiated by the Secretary of the Interior is a regional approach to the water and power problems in the Pacific Southwest. A number of individual projects are presently being studied under congressional directives in parts of the Lower Colorado River Basin in Arizona, California, Nevada, New Mexico, and Utah.

The purpose of the broader study herein outlined is to consolidate investigations underway, expand the study, and find a regional comprehensive solution to the immediate and long-term water problems and incidental power problems of this section of the United States.

The chairmen of the affected committees of the Congress, as well as other Members of Congress, Governors, and interested agencies and groups of the affected States, will be consulted as soon as preliminary information is collected, to obtain the best possible advice on the direction and extent of the study as it progresses.

The proposed Lower Colorado River project would be patterned, in part, on the successful approach to similar problems in the Upper Colorado River Basin which resulted in authorization by the Congress in 1956 of the Colorado River storage project. Such a Lower Colorado River project would, of course, require several decades to construct and a very large investment of funds. It would concern the areas that use Colorado River water below Lee Ferry on the Colorado River, the division point between the upper and the lower basins.

POPULATION INCREASES

The goal of the study would be a proposed project to serve water and incidental power to this section of the United States which is experiencing the most rapid increase in population of any part of the country. The metropolitan areas of southern California now have a population of about 10 million people. It is estimated that in a little more than three decades, say by the year 2000, the population in this area will treble to approximately 30 million people. The metropolitan area around Phoenix, Ariz., had a population of about a half million people in 1958. In a little more than 3 decades, the population in this area is estimated to reach 2½ million people, or 5 times the 1958 population. To support this growth, we need to move now on plans that will produce the necessary water supplies to sustain such growth.

INADEQUACY OF PRESENT SOURCE OF WATER

The inadequacy of the Colorado River system to meet this region's continuing and rapidly growing water needs is already evident. The area has, in fact, already outgrown its water supply. The available water from the Colorado River system is divided between the Upper and the Lower Colorado River Basins by the Colorado River compact of 1922.

To meet southern California's needs and to augment the supply from the Colorado River system, the State of California is presently constructing the Feather River and Delta projects which will cost \$1¼ billion. It will import water from northern California streams across the Tehachapi Mountains into southern California. This huge project, with its large investment, is expected to meet southern California needs only for a period ending sometime between 1980 and 1985, according to the best estimates.

Similar inadequacies are evident in the Arizona area surrounding Phoenix and Tucson. All of the surface water from the Salt, Verde, and Gila Rivers and other streams in the area is presently consumed. In addition, some 4 million acre-feet of water from underground basins is being pumped annually to satisfy even present water requirements. Preliminary studies indicate that the recharge to the underground basins is approximately 2 million acre-feet a year, thus this metropolitan area is presently mining underground water at the rate of about 2 million acre-feet annually, causing a rapid and serious lowering of the underground water table. Already lands in this area have gone out of production because of the higher costs of pumping underground supplies.

If the final decision of the Supreme Court in the case of *Arizona v. California* should result in substantial additional quantities of water becoming available to Arizona, it would merely reduce the current overdraft of underground water in Arizona. With the continuing rapid growth, this would be only a temporary solution to the water supply in that area. It is no solution at all to the regional water problems. It merely temporarily moves the shortage from one place to another.

If, on the other hand, the decision of the Supreme Court is more favorable to California than recommended by the master, it means, as a practical matter, that southern California may be able to continue its present level of diversions from the Colorado River system, but no additional water would be available to meet the rapidly growing needs of southern California. Such a decision would not afford even partial relief to Arizona's continuing water deficit from the underground.

In view of the circumstances, it is apparent that whatever the final decision in *Arizona v. California*, any solution to the regional water problems of the Pacific Southwest involves the development of new water supplies wherever it can be done economically. The problem demands a comprehensive regional solution.

SOURCE OF ADDITIONAL WATER

Additional water supplies for the region could come from—

1. More efficient use of water in the Lower Colorado River Basin itself;
2. Participating projects where it can be clearly determined that long-term surface supplies are surplus to present and prospective needs;
3. Production of fresh water from saline water plants; or, more probably
A combination of these three sources of additional water.

BETTER USE OF AVAILABLE COLORADO RIVER SUPPLY

An estimated million acre-feet of water annually in the Lower Colorado River Basin could be salvaged by a sound water conservation program. Such measures would include lining of existing canals, additional storage for reregulation of Colorado River water, river channel rectification, and control of unnecessary water consuming plant life.

SURFACE WATER

Importation of surface water can be a principal means of meeting the present regional deficit and providing for anticipated future growth along the lines of the plan of California's water project. Additional fresh water could be brought from northern California streams across the Tehachapi Mountains. Possibilities include development of presently wasting supplies in the north coastal area, extension of the proposed East Side unit of the Central Valley project, and possible expansion of the State's Feather River and Delta project. Recognizing that uses in the basin of origin should have first priority, any study should first determine the amounts of water that should be so reserved and thus establish the amount that could be available for export into southern California. Along with this determination there will be a need to determining the total water supply in the Lower Colorado River region for which partial information is already available.

SALINE WATER

The municipal and industrial water supply problems of many parts of the Pacific Southwest are becoming increasingly important. As the percentage of urban population increases, there are possibly some municipal and industrial water needs, particularly in southern California, that might be met in large part by sea water conversion plants. The energy necessary for these plants could be provided by nuclear reactors as well as fossil fuel processes. The salt water supply could come from the Pacific Ocean, the Gulf of California, or from certain brackish water supplies. Baseload generation of electricity could be a companion of such conversion plants. This possibility emphasizes the value of peaking power from hydroelectric plants. The study should be broad enough to consider fully all of these possibilities.

FINANCING

The bulk of the financing of such a vast project must come from the sale of electric power and municipal and industrial water. The study must recognize the increasing high value of hydroelectric power for peaking and, therefore, the importance of powerplants on the Colorado River. Power revenues from the existing Hoover Dam powerplant, the powerplants at Parker and Davis Dams, and from the additional powerplants to be constructed on the Colorado River at Marble Canyon, Bridge Canyon—and wherever else such plants on the Colorado may prove feasible—including powerplants in combination with saline water plants, should be utilized in repaying the costs of water development. More power production is necessary, additionally, to meet the growing need for energy in the whole region. Combination nuclear and saline water plants may be developed in a few years to a point where they can be used and assist in an overall repayment program.

Future power rates are to be studied with some adjustment of Hoover Dam and Parker-Davis Dam power rates in prospect if these developments are initially incorporated financially into the Lower Colorado River project. If not so initially incorporated, any power revenues from these structures after the end of the present payout period could assist in meeting water costs. Agreement with the present Hoover power contractors would be necessary for any change in Hoover power rates prior to the expiration of present contracts.

CONCLUSION

In essence, the proposed Lower Colorado River project would recognize the need for a broad regional solution to the serious water problems of the Pacific Southwest and that such an approach properly conceived could be of mutual advantage to present and future water and power users in all parts of this fast growing section of the United States. The objectives would be the development of additional water supply as needed, the creation of a source of financial assistance to aid in the repayment of project works, the provision of power for pumping, and the production of power to meet other needs.

ATTACHMENT B

BUREAU OF RECLAMATION—STATUS OF PLANNING PROGRAM IN THE SOUTHWEST

1. PROJECTS ON WHICH FEASIBILITY INVESTIGATIONS HAVE BEEN COMPLETED

(a) *Dixie project, Utah.*—This project, which is located on the Virgin River in southwestern Utah, will provide irrigation water for about 23,000 acres. The feasibility report has been completed and submitted to the Office of the President.

(b) *Middle Gila River project, Arizona.*—This project involves a multipurpose dam and reservoir at the Buttes site on the Gila River to provide supplemental water for 100,000 acres of land in the San Carlos project. The feasibility report has been completed and submitted to the Office of the President.

2. POTENTIAL PROJECTS ON WHICH FEASIBILITY STUDIES ARE UNDERWAY

(a) *Boulder Canyon project, All-American Canal system water salvage, California.*—The purpose of this study is to evaluate the feasibility of salvaging a substantial part of the seepage losses in the All-American Canal system by instal-

lation of canal lining. The investigation was initiated this fiscal year and is scheduled for completion in fiscal year 1965.

(b) *Bridge Canyon project, Arizona.*—This is an investigation to determine the feasibility of a dam, reservoir, and powerplant to be located on the Colorado River about 117.5 miles upstream from Hoover Dam. The feasibility report is scheduled to be completed in fiscal year 1964.

(c) *Central Arizona project, Arizona.*—The principal purpose of this potential project is the diversion of water from the Colorado River into the Phoenix-Tucson area for supplemental irrigation and municipal and industrial use. Following submission of a report on this project to the Congress in September 1948, the Bureau terminated all further studies until fiscal year 1961 when the State of Arizona advanced funds for an appraisal of the project in light of current conditions. That appraisal has been completed and detailed studies to firm up the plan are underway leading to a report scheduled for completion in fiscal year 1967.

(d) *Marble Canyon project, Arizona.*—This potential project will consist of a major dam, reservoir, and powerplant on the Colorado River about 80 miles from Flagstaff, Ariz. The investigation of this project is scheduled to be completed and a report prepared by the end of the current fiscal year.

(e) *Maxwell project, Arizona.*—The principal feature of this project will be a multipurpose dam and reservoir on the Salt River about 25 miles northeast of the city of Phoenix. The project would provide benefits from water conservation, hydroelectric power, municipal and industrial water, flood control, and related functions. The investigation also will include studies of the feasibility of modernizing the facilities of the existing Salt River project. The feasibility report is scheduled to be completed in fiscal year 1966.

(f) *Palmdale project, California.*—This is an investigation of the feasibility of reconstructing an existing dam about 90 miles northwest of Los Angeles, Calif. The dam is located in a major earthquake zone and has been judged unsafe by the State of California. The report on this investigation is scheduled to be completed in fiscal year 1964.

(g) *Southern Nevada water supply project, Nevada.*—This project will involve pumping water from existing Lake Mead into Eldorado and Las Vegas Valleys to meet the municipal and industrial water requirements of the cities of Las Vegas, North Las Vegas, Henderson, and Boulder City, as well as the Nellis Air Force Base. The feasibility report is scheduled for completion in fiscal year 1964.

3. RECONNAISSANCE INVESTIGATIONS

In addition to the above feasibility studies, the Bureau has underway several reconnaissance investigations in the area. Of these, the State of Arizona is contributing funds to assist in financing an inventory of the land and water resources of the State and is fully financing a reconnaissance study of diversion possibilities from the Colorado River. These studies are to be completed this fiscal year. Reconnaissance studies also are underway to develop plans for more fully utilizing the land and water resources of the Upper Gila River in Arizona and New Mexico and the San Pedro River in Arizona. Reports on these two studies are scheduled to be completed in fiscal years 1964 and 1965, respectively. In addition, a reconnaissance study is now approaching completion on the possibility of salvaging a substantial amount of water by eradication of phreatophytes along the Lower Colorado River.

4. OTHER ACTIVITIES

There are a number of other activities underway in the Lower Colorado River Basin which are aimed at better use of the available water supply. Advance planning studies were initiated this fiscal year on a terminal regulating reservoir on the Colorado River just upstream from Imperial Dam. This reservoir will permit better regulation and more efficient use of Colorado River water. A study also is underway to develop a plan for and evaluate the feasibility of groundwater recovery in the Yuma area, exclusive of Yuma Valley. The Bureau is currently performing special engineering studies in connection with the salinity problem associated with the delivery of water to Mexico under the treaty of February 3, 1944. This expedited program of investigation is to obtain data that will complement and extend much of existing data and will facilitate the formulation of a plan to alleviate the salinity problem.

Another activity of the Bureau which is of considerable importance to the Southwestern area is a river channelization and control program that the Bureau has had underway for several years on the Lower Colorado River.

The Bureau of Reclamation and the Geological Survey, jointly, are carrying on continuing studies of the quality of water of the Colorado River system to appraise its suitability for municipal, domestic, industrial, and irrigation use; to estimate the effects of future developments on water quality; and to examine possible means of improving water quality. These studies are being made pursuant to legislation authorizing the Colorado River storage project, the San Juan-Chama and Navajo Indian irrigation projects, and the Fryingspan-Arkansas project. The first progress report on these studies was transmitted to the Congress on January 3, 1963.

HOUSE OF REPRESENTATIVES,
Grand Junction, Colo., November 27, 1962.

HON. STEWART L. UDALL,
*Secretary of the Interior,
Department of the Interior,
Washington, D.C.*

DEAR MR. SECRETARY: The Committee on Interior and Insular Affairs of the House of Representatives anticipates that specific proposals for the further water resource development of the Lower Colorado River Basin will be before the Congress immediately after the final decision has been given in the case of *Arizona v. California*.

It is a matter of common knowledge that the pendency of the legal action of *Arizona v. California* has precluded congressional consideration of additional Lower Colorado River Basin projects. At the same time, it is becoming increasingly apparent that the available water supply in the Southwest, principally from the Lower Colorado River, is inadequate to sustain the area's economy on a long-term basis. These facts make it clear that further Lower Colorado River water resource development must be related to an effective, comprehensive, and coordinated plan. The necessity of such action was foreseen years ago by the Congress in its approval of sections 15 and 16 of the Boulder Canyon Projects Act of December 21, 1928, which sections direct the planning and investigation of projects on a comprehensive and coordinated basis, and, to that end, provided for consultation and cooperation with the basin States. Such understanding was given added emphasis by the Congress in the approval of the Boulder Canyon Project Adjustment Act of 1940. Time has demonstrated that the burgeoning water requirements of the lower basin can be effectively satisfied in no other way.

However, notwithstanding the importance of these objectives, comprehensive development for the lower basin has not reached a stage comparable to that achieved in the upper basin with passage of the Colorado River Storage Project Act of April 11, 1956. It is, in my view, necessary to begin now to encourage thought and discussion, as to the broad perimeters within which further Lower Colorado River development should be encompassed.

The Colorado River Storage Project Act of April 11, 1956, is the result of those charged with responsibilities in that area having come to grips as to the upper basin problems, and the understanding which necessarily precedes the achievements of any satisfactory comprehensive coordinated development. I do not suggest that the act of April 11, 1956, necessarily furnishes the only pattern for application in specific detail for the lower basin. However, such legislation does stand as compelling evidence that a framework for coordinated and comprehensive development can be achieved for the Lower as well as for the Upper Colorado River Basin.

As an initial step in stimulating widespread public discussion and the consideration of coordinated and comprehensive water resource development in the Southwest, and as an aid to the committee's own evaluation of proposed authorization programs, I should like to have from the Department of the Interior at an early date a statement of the extent of your present studies and an outline for a coordinated comprehensive pattern under which, in your Department's understanding and view, the Southwest water and power needs might be satisfactorily provided for.

Sincerely yours,

WAYNE N. ASPINALL,
Chairman, House Interior Committee.

Senator Moss. Thank you very much, Mayor Barlocker, I think it was most appropriate that you say a word of welcome and to recognize the long services of Judge Cox on this project. He would be proud indeed to see this hearing going on today in St. George. Our next witness will be Dr. Preston Jones, president of the Utah Water and Power Board. I might say that the Utah Water and Power Board is the State agency that tries to do on the State level work similar to the Bureau of Reclamation on a Federal level. They sponsor projects all over the State and have done a most outstanding job. I appreciate the arrangement made for the Utah Water and Power Board to hold an annual board meeting here in St. George coincident with this hearing, and I think most of the board—nearly all of the board are present today. I welcome them all and salute them, and we will hear from their president, Dr. Jones. You may stand or be seated, whichever is more comfortable to you, Doctor.

STATEMENT OF DR. PRESTON JONES, PRESIDENT, UTAH WATER & POWER BOARD

Dr. JONES. Mr. Chairman, for the purposes of the record I am Preston L. Jones, the chairman of the Utah Water and Power Board. As has been stated by Senator Moss, the Water and Power Board is an official agency of the State of Utah and is charged by statute set up by the legislature to promote water development. The Water and Power Board is nonpartisan. It is bipartisan I should say, there being seven democrats and seven republications and the State engineer constitutes the water and power board. They represent every section of the State being set up to be qualified for such things as this, to present the voice of the State. The water and power board and its predecessor, the Utah Water Storage Commission, have long recognized the Dixie project as a necessary element in the comprehensive development of the State water resources. We feel that this project is absolutely essential to the development not only of Washington County, but to Iron County as well. I have here an agreement entered into by these two counties. The water and power board acted as an intermediary to get the two together. The agreement will suffice as to how the water is to be taken by Iron County from the vicinity of Kolob Reservoir and Kolob Creek and Crystal Creek.

Senator Moss. The agreement will be printed in full in the record.

AGREEMENT

This agreement made and entered into as of the 26th day of August 1953 by and between Cedar City, a municipal corporation and Iron County, parties of the first part and Kolob Reservoir and Storage Association, Inc., a corporation, and Washington County, parties of the second part,

WITNESSETH:

Whereas an agreement has been reached for development of the water resources in Washington and Iron Counties; and

Whereas it is deemed desirable to have said agreement formally executed by the parties hereto;

Now, therefore, in consideration of the mutual promises and agreements herein contained, the parties hereto agree to follow:

1. To cooperate in getting reported releases by Commissioner of Bureau of Reclamation and the Secretary of the Interior so that the same may be referred back to Utah.

2. To cooperate to obtain \$20,000 from the board of examiners for the use of the Utah Water and Power Board, \$10,000 of which will be used to make a survey as to the feasibility of the Kolob site for water for Cedar City and vicinity, Cedar City and vicinity to pay any additional for this survey if needed, \$10,000 to be used to study and locate an additional or substitute reservoir of equal desirability either for Hurricane and Washington County or Cedar City and vicinity.

3. Water and power board shall assign 5,000 acre-feet of the early priority filings to Kolob project and is to utilize the Kolob site storage filing.

4. Hurricane and Washington County shall immediately build the Kolob Dam.

5. Hurricane and Washington County shall have the use of all the water the Kolob Dam for 5 years commencing with 1954.

6. After 5 years, if the Dixie project has not been completed, and provided further that no additional or substitute reservoir as hereinabove referred to has been completed, then and in that event, Cedar City and vicinity shall have two-fifths of the water of the Kolob site and the balance shall be utilized by Hurricane and Washington County.

7. If an equally desirable site has been obtained for Cedar City and vicinity in accordance herewith, Cedar City and vicinity will, after construction of the reservoir thereon, relinquish all of its right, title, and interest in the Kolob site to Hurricane and Washington County. On the other hand, if an equally desirable site shall be obtained for Hurricane and Washington County in accordance herewith, then after a reservoir has been constructed thereon, Hurricane and Washington County will relinquish all of its right, title, and interest in the Kolob site to Cedar City and vicinity.

8. After 5 years, if Cedar City and vicinity is using two-fifths of the water of the Kolob site in accordance with paragraph 6 hereof, then Cedar City and vicinity will pay two-fifths of the fair value of the Kolob Dam and the land utilized for that purpose as of the date of construction, deducting therefrom the depreciation property allowable between construction and the time the dam is first utilized by Cedar City.

9. After completion of the Dixie project or after acceptance by Hurricane and Washington County of a substitute reservoir in accordance with the foregoing, Cedar City, and vicinity shall have all of the water from the Kolob site and shall pay the remaining three-fifths of the fair value of the dam and land upon which is it situated as of the date of construction, after deducting fair depreciation from the date of construction to the date Hurricane and Washington County ceases to use the same.

10. After completion of the Dixie project, Cedar City and vicinity shall have all of the water from Kolob site unless a substitute reservoir has been accepted by Cedar City as hereinabove provided, and shall pay to the Dixie project, the annual loss of power revenue to the Dixie project. All payments by Cedar City shall be made annually but not in advance.

11. Cedar City and vicinity shall cooperate with Washington County in promoting the Dixie project and supply supporting data to justify the project, including the necessity for the development of any part of said project for the use of Cedar City and vicinity. It is specifically understood that Cedar City and vicinity and Hurricane and vicinity (Washington County) shall assist each other in obtaining an additional site or substitute site as hereinabove set out and in the event it should be determined that Cedar City and vicinity should have a reservoir site in Navajo Lake, it is understood that Cedar City will reimburse the Washington County Water User's Association for the expenditures made in the construction of the dike in said lake, reasonable depreciation to be deducted from the original cost.

It is further agreed that the initial and immediate steps for procedure in agreement with the Utah Water and Power Board be as follows:

(a) Water and power board to begin immediately to make investigation of engineering feasibility and cost of Kolob Reservoir (1) capacity; (2) water supply; (3) damsite, etc.

(b) Water and power board to assign such filings as are necessary to fill Kolob Reservoir up to capacity of 5,000 acre-feet. (This agreed to by Washington County interests, Dixie project, and U.S. Bureau of Reclamation.)

(c) Water and power board to authorize construction of Kolob Reservoir if found feasible and approved by State engineer.

(d) Water and power board to make engineering and cost investigation of conveyance channel to bring water from Kolob Reservoir site to Cedar City if site proves feasible.

(e) Water and power board to begin immediately to negotiate an agreement between Cedar City. U.S. Geological Survey, water and power board to cover an investigation of Navajo Lake as to (1) capacity; (2) water supply; (3) disposition of water from lake. Investigation is to proceed as soon as possible after agreement is signed. George Clyde is to discuss with U.S. Geological Survey and advise Cedar City.

(f) Water and power board to make other alternate investigations of possible water supply for Cedar City if necessary.

Witness the execution of this instrument as of the day first hereinabove written.

CEDAR CITY, a Municipal Corporation,
By _____
Mayor.

Attest:

City Clerk.

IRON COUNTY,

By _____
Chairman, Board of County Commissioners.

Attest:

County Clerk.

KOLOB RESERVOIR AND STORAGE
ASSOCIATION, INC.

By _____
President.

Attest:

Secretary.

WASHINGTON COUNTY,

By _____
Chairman, Board of County Commissioners.

Attest:

County Clerk.

STATE OF UTAH,
County of Iron, ss:

On the 26th day of August A.D. 1953, L.V. Broadbent, M.D., being duly sworn upon oath, deposes and says that he is the major of Cedar City, Utah, and that the above and foregoing instrument was duly executed by him for and on behalf of Cedar City, a municipal corporation, by authority of a resolution of the city commission.

Notary Public, County Clerk.

Residing at Parawon, Iron County, Utah.

STATE OF UTAH
County of Iron, ss:

On the 26th day of August A.D. 1953, Warren H. Bullock, being duly sworn upon oath deposes and says that he is county commissioner of Iron County, Utah, and that the above and foregoing instrument was duly executed by him for and on behalf of Iron County, by authority of a resolution of the county commission.

Notary Public, County Clerk.

Residing at Iron County, Parawon, Utah.

STATE OF UTAH
County of Washington, ss:

On the 26th day of August A.D. 1953, personally appeared before me _____ and _____ who being by me duly sworn did say, each for himself, that he, the said _____ is the president, and he,

the said _____ is the secretary of Kolob Reservoir & Storage Association, Inc., and that within the foregoing instrument was signed in behalf of said corporation by authority of a resolution of its board of directors and said _____ and _____ each duly acknowledged to me that said corporation executed the same and that the seal affixed is the seal of said corporation.

LILLIAN A. Cox, *Notary Public.*

Residing at St. George, Utah.

STATE OF UTAH

County of Washington, ss :

On the 26th day of August A.D. 1953, _____, being duly sworn upon oath deposes and says that he is the chairman of the Board of County Commissioners of Washington County, Utah, and that the above and foregoing instrument was duly executed by him for and on behalf of Washington County by authority of a resolution of the board of county commissioners.

LILLIAN A. Cox, *Notary Public.*

Residing at St. George, Utah.

Dr. JONES. I also have here the filings held by the Utah Water and Power Board. They are No. 9127; 11,929; and 34,030. These filings are held by the Utah Water and Power Board of the purpose of building this project. And I might state for the record that these filings go back long before any development was built on the lower Colorado. They go back to 1922, the first filing being made in 1922, many years before any development of the lower Colorado. The water and power board has further entered into this picture by defending these rights to the extent in the litigation between California and Arizona, the lower basin litigation as it is known, the water and power board has spent \$67,000 in defending the rights of these filings and our interest of the people of this State in the Dixie project. Now, the legislature has recognized the need of this project inasmuch as they set up—they recognize the willingness of the people of this area to make sacrifices to consummate the building of this project in that they gave them a special way in creating this conservancy district to provide 5 mills ad valorem tax in this area whereas in the rest of the State they are restricted to 1 mill. The Utah Water and Power Board went on record by unanimous vote passing this resolution :

Whereas the Utah Water and Power Board has the duty and responsibility to make plans, studies, and investigations to insure maximum development of water and power resources of the State of Utah ; and

Whereas Utah is entitled to an equitable portion of the water of the Virgin River system, a tributary of the lower Colorado River, and the Dixie project provides the only means by which this water can be placed to beneficial use in Utah ; and

Whereas this project would be of substantial benefit to the State of Utah and, while the residents of this area have diligently sought to perfect this project, it is of such magnitude that Federal assistance is required to accomplish this development ; and

Whereas the construction of the Dixie project on the Virgin River would result not only in benefits from irrigation, power, recreation, and flood control in the Virgin River Basin, but would also benefit the Lower Colorado River Basin as a whole as a silt control project ; and

Whereas this board has on various occasions adopted resolutions favoring the development of this project : Now, therefore, be it

Resolved, That the Utah Water and Power Board reaffirms its previous position in support of the development of the waters of the Virgin River and the construction of the Dixie project ; and be it further

Resolved, That this board pledges its full support to assist in whatever form appropriate to accomplish the complete development of this project ; and be it further

Resolved, That the Irrigation and reclamation Subcommittee of the Senate Interior and Insular Affairs Committee convening a hearing on this project in St. George on May 17, 1963, be and is hereby urged to favorably consider the Dixie project as outlined in the most current Bureau of Reclamation report, and recommend its authorization and early funding by Congress; and be it further

Resolved, That a copy of this resolution be transmitted to the chairman of the Irrigation and Reclamation Subcommittee of the Senate Interior and Insular Affairs Committee, Utah congressional delegation, and Vice President of the United States.

Dr. JONES. Thank you very much, Mr. Chairman.

Senator Moss. Thank you, Dr. Jones. We do appreciate your presence and your statement of the record and for giving us this resolution adopted by the Utah Water and Power Board. Without your fine support it would be difficult to get this project through. I have in my possession another resolution and I will read it into the record at this point. This is a resolution adopted by the Salt Lake City Chamber of Commerce.

Whereas the U.S. Bureau of Reclamation has prepared and submitted a report for the construction of the Dixie project on the Virgin River in Utah; and

Whereas said project constitutes the only way in which Utah can utilize its share of the waters of the Colorado River as a lower basin State: Now, therefore, be it

Resolved by the Board of Governors of the Salt Lake City Chamber of Commerce that it be recorded as approving said project and its construction at the earliest possible time.

Senator Moss. Our next witness will be E. J. Graff of Hurricane, Utah. Mr. Graff, come forward, please, sir. You may sit right there, if you like. That's fine, sir.

STATEMENT OF E. J. GRAFF, HURRICANE, UTAH

Mr. GRAFF. Senator Moss and all of the rest of you good people, I didn't exactly know what to expect here this morning or what you'd expect me to do. They told me last night to kind of write up a little bit that would take less than 5 minutes to give to express how we people feel here about this project. So, that's what I have attempted to do. So, I'll proceed to try and read this to you.

We are pleased you have come to our county, for further study of the Dixie project, and see its need, and get the feeling of the people for it. Everywhere, it is of major concern, the dominating topic, and the question asked all around is, "Do you think the project will go? Wouldn't it be wonderful if it did? We sure need it." And need it we do. Even now, we are afraid that by late summer the streamflow in our rivers will be very, very small and our orchards, vineyards, and other crops will suffer. If only this water that goes downstream in winter, and springtime, and floods could be held back for use, giving us a constant, uniform, dependable flow.

The source of this water is in our mountains. We look up at them in winter, while white with snow and think of it as our snow. We have always felt it was our water, and someday, somehow, it would be stored for our use. Our grandparents who colonized this spot, with much difficulty, over a hundred years ago, had this dream, and it has carried on with each generation. We hope the day has come, when this dream will become a reality. We feel the realization of this project would start a growth that would feed upon itself and multiply and we would have many of the advantages of the urban centers.

Our college would benefit greatly. The enrollment should double, and make possible many desirable features not now justified by the smaller enrollment. Our county is blessed with a wonderful, moderate climate and scenic beauty. These two lakes would greatly add to make it a choice spot in the Nation for recreation, sightseeing, and enjoyment.

We know there is a cost to all this, and it will take a long time to repay the direct costs, but meanwhile, there will be an indirect steady flow back to our cities, county, State and Federal Government in taxes and revenues because of this new created wealth and income. Men like to build, create, and do things of lasting importance to make the living better for many people. Here is an opportunity all ready and waiting, which only needs the word "yes" to make it a reality.

Thank you, Mr. Chairman.

Senator Moss. That demonstration is precisely how we feel for that very sincere and rather moving statement. I realize how completely the people down in this area support this project. Reference was made earlier to the fact that you've been willing to take upon yourself an unprecedented five mills tax in order to assure this project. But, I also would like to call attention to the fact that the vote for bonding the entire county was overwhelming, and was just as large in areas that will not directly participate in the waters and even the power from the project. But, everyone down here is for the project. Water is so precious and our land so beautiful that we all want to see the project built and the benefits flow to this county and the State. Our next witness will be Mr. Oberhansley, Frank Oberhansley, the superintendent at Zion National Park. We are glad to have you Mr. Oberhansley. Thank you for coming over, sir.

STATEMENT OF FRANK OBERHANSLEY, ZION NATIONAL PARK SUPERINTENDENT

Mr. OBERHANSLEY. Senator Moss, ladies and gentlemen, my testimony will probably be the briefest offered here today. I understand that testimony was already given for the Park Service for the Washington hearing.

Senator Moss. True, sir.

Mr. OBERHANSLEY. I think being a little closer at hand, we are in a better position to appraise the recreation values that this Virgin City portion of the project will bring. I can visualize being on this lake looking up at the north and south garden of the tabernacle door, looking up at the great west temple and towers of the Virgin. It has a unique location in relation to Zion National Park that I believe will make it more than of local significance. It will make it more than regional significance. I think in a sense it is everybody who comes to the park representing every State in the Union and more foreign countries will not—they have not seen this scenery that they will have on the Virgin project adjacent to Zion National Park. Now, we have assumed that this would relieve the burden or the pressure to Zion, because if this is properly developed with good access roads, circulation roads, camp grounds and concessions, launching ramps, docking facilities, that is really is going to be a tremendous thing for not only Washington County but for the State of Utah and for the entire Nation, as far as I'm concerned. It is going to be a great thing, and it is one of the reservoirs that I hope and sincerely desire to see built.

Now, I don't have much of a statement. That is it, Senator Moss. I put it down on a little card, but for the record I would like to read this because it represents the way I feel about this in very few words.

Money expended on the Dixie project is not really spent at all. It is money invested on which future generations will reap rich dividends far beyond the original investment. Because of its proximity to Zion, people from everywhere will relate the Virgin project to Zion scenery and in this sense the project will have more than local or regional significance.

That's my statement.

Senator Moss. Thank you very much, Mr. Oberhansley. I appreciate your calling the attention to the fact that the Virgin City Reservoir will be right adjacent to Zion National Park and will complement that great scenic wonder and really add to the beauties of Zion, and what you have said is certainly true. There is a map that hangs on the south wall here that may not be visible to all of you because of the pillar, but it shows the location on there of the Virgin City Reservoir on the Virgin River, and of course the Gunlock side over here on the Santa Clara River, west of the city of St. George. When the National Park Service testified in Washington, they made an estimate on 150,000 visitor days on the reservoir annually. I think they were rather low in their estimate. I think we will have many more than 150,000 visitor days on the reservoir.

Our next witness will be Mr. William Smirl, member of the Utah State Road Commission. Commissioner Smirl is from Kanab, and we should acknowledge that we have several visitors over from Kane County here to this hearing this morning. We are pleased to have you, sir.

STATEMENT OF WILLIAM SMIRL, MEMBER, UTAH STATE ROAD COMMISSION

Mr. SMIRL. Thank you, Senator. I am very happy to be here today and for the opportunity to appear in behalf of the road commission. For the record my name is W. J. Smirl, member of the State road commission, representing the 11 of the southwestern counties of the State. We have been familiar with this Dixie project for some time. As most of you know there is quite a lot of highway relocation attached to this thing, which at one time developed quite a problem. We are in full sympathy with the project and have offered to do whatever we can to help on it. I have a letter here of the past minutes and things which I will read to you stating our action in the past to this. Prior to this action we had a problem of relocating the highway between here and Colorado City to the Arizona State line. At that time a feasible place, of course, was to come from the old shearing corral road across the Virgin River there, and after careful study of the thing and a possibility of this dam, we could see complications to this effect. So, due to the dam and the prospect of the dam, we then located the highway from Hurricane up over the Carter Ridge at a cost which we felt, in the long run, would be very beneficial to the State because it would give access to both ends of the dam on the Virgin River which would be quite an item to the reclamation bureau or the people who were to build an access to this dam. So, we feel that we have gone

ahead and helped on that, that the road is now completed a very short distance from this road to both sides of the dam, both on the north and south side of the river.

I also have with me today, the commissioner from Kane County, and I'd like to add as to what has been said here that the county of Kane which is adjoining county on the east of this project, and where most of the water lies within the county and things, that they wholeheartedly support this project, and the county itself is all behind it and we sure hope that it is possible to go ahead and develop it. I'd like to read a letter here on the action that we took for the record. This is a letter to Mr. Jay R. Bingham, executive director of the Utah Water and Power Board. The subject, Dixie project.

Subject: Dixie project.

MR. JAY R. BINGHAM,
*Executive Director, the Utah Water and Power Board,
Capitol Building,
Salt Lake City, Utah.*

DEAR MR. BINGHAM: The Utah State Road Commission has not altered its stand relative to the proposed Dixie Reservoir which was taken at its meeting on September 11, 1961. At that time, a motion was unanimously passed as follows:

"That the commission takes the position that it would support the Dixie project to the extent that it would lend its assistance to the relocation of the highway, even to the point of reconstructing as a Federal aid highway project, providing all other avenues of assistance for the relocation are exhausted."

Since that time, Public Law 87-874 which was approved October 23, 1962, amended the Flood Control Act of 1960 to include water resources projects under the jurisdiction of the Bureau of Reclamation. Section 208 of this law contains the following provision:

"(c) For water resources projects to be constructed in the future, when the taking by the Federal Government of an existing public road necessitates replacement, the substitute provided will, as nearly as practicable, serve in the same manner and reasonably as well as the existing road. The head of the agency concerned is authorized to construct such substitute roads to design standards comparable to those of the State, or, where applicable State standards do not exist, those of the owning political division in which the road is located, for roads of the same classification as the road being replaced. The traffic existing at the time of the taking shall be used in the determination of the classification. In any case where a State or political subdivision thereof requests **that such a substitute road be constructed to a higher standard than that provided in the preceding provisions of this subsection**, and pays, prior to commencement of such construction, the additional costs involved due to such higher standard, such agency head is authorized to construct such road to such higher standard. Federal costs under the provisions of this subsection shall be part of the nonreimbursable project costs."

In view of the change in the Federal law which would permit the road to be replaced to present-day standards, and the fact that the costs will be part of the nonreimbursable project costs, appear to eliminate any necessity for construction of the road with other funds.

Very truly yours,

C. TAYLOR BURTON,
Director of Highways.

Thank you, Mr. Chairman.

Senator Moss. Thank you very much, Mr. Smirl. That is a very fine statement, and we are pleased to have the official position of the State road commission, and we appreciate your statement in behalf of Kane County. We are glad that Commissioner Adams is here, and that we know that the neighbors on the east support this project very fully.

Our next witness will be Wallace Iverson who is president of the Canal Co. from Washington. Is that the Washington Canal Co.?

Mr. IVERSON. Washington & St. George.

Senator MOSS. Washington & St. George Canal Co. Thank you, Mr. Iverson. Would you be seated right here and make your statement?

STATEMENT OF WALLACE IVERSON, PRESIDENT, WASHINGTON & ST. GEORGE CANAL CO., WASHINGTON, UTAH

Mr. IVERSON. I believe the purpose that I have been asked to report here is to find how the irrigation companies feel toward the 5-mill tax and how they feel that they would like to cooperate in supporting the project. I believe that our company, our irrigation company, is the largest on the Virgin River. And in close association with the farmers in our area, I find that there's very few who feel to object to the 5-mill tax, and are living in hopes and have a great deal of faith in the project. We feel that it is going to be a great benefit to the water rights that we have at the present time and in increasing and making permanent rights rather than drought conditions and different things causing drawbacks to our company and our farms. We feel that the program that has been planned out by our senators and our State water and power board, our local offices, are all working in harmony. We do hear once in a while of kind of a discouraging report from California, but it seems that interest is taken from the majority of the sources that we have, that we have no worry on that. As far as the project is concerned, we think that for irrigation it will more than double what we have in the county. It will increase the assessed valuation a great deal; it will give us power in this area that we are greatly in need of, and we hope to reduce the cost of power. We are very, very happy that Iron County is so cooperative with us in doing this. We feel that silt control will be served. The purpose it will serve will put the life of Lake Mead in a greater consideration; for those using Lake Mead water should think very seriously of it. We feel that the recreation area that it will make will contribute to the whole world. I was in Zion Canyon this summer, and I took notice of the different license plates that were on the cars, and I noticed the day I was in there, I counted 75 cars in there with California license. I only counted 17 with Utah license, and I don't know the exact number, but there were license plates from all over the States, and I also counted seven foreign cars in there.

Now, I'm sure that all of you are just like I am. When you reach the horizon of the hill going from La Verkin and Hurricane, when you get up there, the first thing you think about is the Dixie project. That's the thing that I always think about, and when you think of the lay of that, it lies exactly as one of the greatest lakes spoken of in the world. It lies in a pear shape. It will be a pear-shaped lake. It is fed from the Virgin River on the northeast and the water that leaves it in the southwest. If you remember and if you've read politics, which you have done, there's no other lake in the world that is more of a tourist center than the Sea of Galilee. It lies exactly the same, in the same direction. It is fed from the Jordan River on the east and its outlet is on the southwest. It is a Sea of Galilee where Jesus loved so much to be. It is a place where this here lay right in

the doorway, or at the gates of the national park as it is, I'm sure it will be one of the outstanding tourist attractions in the West. I'm sure that it will increase it by thousands and thousands of people. That's about all I have to say.

Senator Moss. Thank you, Mr. Iverson, for your very fine testimony and for your understanding of the project and your bringing us the feelings, the attitude, and the action of the large Canal Co. that you represent. Mr. Mathis, Mr. Reed Mathis will be the next one to appear.

STATEMENT OF REED MATHIAS

Mr. MATHIAS. I don't have a testimony prepared.

Senator Moss. All right, if you have a written statement and you want to put that in the record, we will be glad to receive it and place it in the record, Mr. Mathis.

Mr. MATHIAS. I have one at home partly finished.

Senator Moss. Well, if you want to send it in to me by mail, I will put it in the record, even if it doesn't get there for a week.

(The statement is printed on page 171.)

Mr. MATHIAS. I think these testimonials are representative of all the people in the area here, that this is a must, this project.

Senator Moss. Thank you, Mr. Mathis. I believe that is so. Inevitably we will have some repetition. As I said at the beginning, if there are any of you who feel you would just like to insert in the record in writing your point of view rather than repeat what has been said, you may do that, but we are glad to have so many people speaking up for the project. Support isn't unanimous on this, but you have to get out of the State of Utah before you find the opponents. Mr. Frei, Claude Frei. Will you come forward, Mr. Frei. Mr. Frei is from Santa Clara, also president of the Canal Co.

STATEMENT OF J. CLAUDE FREI, PRESIDENT, CANAL CO., SANTA CLARA, UTAH

Mr. FREI. Senator Moss and fellow citizens of Washington County, I was impressed by the statement that the Senator made about being pleased to continue this hearing so that this project will be built in Washington County. That's a good note to start on. We have all hoped for that for years and years. I'm a member of the Dixie Project Committee, Dixie Project Development Committee, of which Mayor Barlocker is our president. Two years ago we met and put him in as president of this board. Since, things have moved rapidly and decisively. In 2 years, this crowd, speaks of the interest that we are taking in Washington County. The people of Washington County voted a 5-mill tax for the conservancy district which is five times as great as any other that has been done in other States. Here is my statement which I will read, because I know there are many here that would like to talk.

I realize that the more that is given, the less the people will work for themselves, and the more their prosperity increases.

Washington County is an arid area. Water is the lifeblood of Dixie. Water is necessary to prevent an exodus, so the people won't be forced to leave their homes and crowd into the metropolitan areas.

Because of lack of water, our young people have been forced to leave Washington County to find work. They have gone to Los Angeles and Las Vegas by the hundreds, though many of them would rather stay here.

Help us to help ourselves and develop this area and make a pleasant, feasible place to live where the climate is ideal.

In Washington County lies Zion National Park and Dixie State Park which are fast becoming popular recreational areas.

With the addition of skiing, boating, and fishing, Washington County will become one of the most famous playground areas in America. It is located in a setting of red hills and unique coloring.

The crops that will be raised here will not swell our supply of subsidized crops. The crops will be garden, fruit raising, and semi-tropical grapes, almonds, figs, pomegranate, et cetera.

The electric power that the Dixie project will produce will develop this area industrially. The Hawthorne Manufacturing Co. is to start production in May.

The Dixie project is feasible, as advanced studies have shown. The culmination of the Dixie project will be a blessing to the people of Washington County, the State of Utah, and the United States.

The OK of this project will be an achievement, Senator Moss, your committee will be able to point to with pride.

Senator, I also have a statement of Marion J. Graff, I would like to read into the record.

STATEMENT OF MARION J. GRAFF

Why the Dixie project is so important to us, as members of the town of Santa Clara:

The population of the town of Santa Clara is smaller now than it was 30 years ago. The reasons are: lack of water, power, and industry. They only way we can get industry is to get more water and power. Thirty years ago, the people of Santa Clara were entirely dependent on agriculture. Now every small farmer must have another job to help sustain the farm.

For example: This year our water outlook is very poor. At this time, we have about 30 percent of our primary water. Many crops are planted with the faith and hope of a harvest, but because of the lack of water, most of our crops have failed. If we have more water and power, our young people would not have to go elsewhere looking for work, but could stay in Santa Clara, where industry could be developed and also more extensive farming.

Power is very important to bring in more industry. With more industry, and more people living in the area, agriculture would be improved.

The more we develop the area and the more people moving and staying here, the need will be greater for recreation facilities such as boating, water skiing, and fishing.

Unless we develop our lands with more water and power, it will be but a short time until the small communities along the Santa Clara Creek will be ghost towns, as some are almost there now.

Mr. FREI. Thank you, Senator Moss.

Senator Moss. Thank you, Mr. Frei. We will now hear from Malan Cox, the president of the farm bureau. Mr. Cox.

STATEMENT OF MALAN COX, PRESIDENT, FARM BUREAU

Mr. Cox. Senator Moss, Mayor Barlocker, friends and fellow citizens. For the record I would like to say I am Malan Cox, president of the Washington County Farm Bureau, an organization of some 350 families here in Washington County. I am a member of the board

of directors of the State farm bureau, an organization of some 9,000 families in the State of Utah. I represent the State today. As a farm organization and a backer of reclamation, we have had this thrown frequently at us by the consuming public and the politicians: "Why do we back reclamation with such a surplus of farm commodities?" Let me say this: Housing projects, urban areas, if you like, the building of roads, recreation, takes more farming land permanently out of production than reclamation puts back into production. Studies of supposedly experts, statistics that we read say that by 1970, or at the latest 1980, we'll have more people in the United States than the present farm plan will support. Yesterday I attended a board meeting in Salt Lake where the board of State farm bureau officially voted their wholehearted support in backing of the Dixie project, being very important to the State's economy and vital to the people of southern Utah, especially Washington, and to some extent Iron County. The farm bureau feels that this is a necessary project, and while we hope it can be started immediately, it will be at least 1970 to 1980 before it is completed and goes into production. I am also a farmer and stock raiser in Washington County. I have lived here some 60 years, and from personal knowledge know the value this will be through the production of economy, the food production, if you will, of this area. I am not an expert on recreation. I am not prepared to say what the lake will or will not do. But, it will help put food on the table when it is necessary. When we live down here in this country that is so frequently plagued with drought, as it is at this time, when that little unexpected shower day before yesterday caught one of our women in a small town out in the field, and from the shock of rain she fainted dead away, and it took two buckets of dust thrown in her face to bring her to. Thank you.

Senator Moss. Thank you, Mr. Cox, and I'm glad that's in the record. We appreciate the support of your fine organization and your coming to bring that word to us today. Next on my list is Julius V. Madsen, of Springdale.

STATEMENT OF JULIUS V. MADSEN, SPRINGDALE, UTAH

Mr. MADSEN. If the Dixie project is developed, it will bring great advantages to the people of Washington County and surrounding areas. To those who are agriculture minded, it will bring many acres of otherwise useless land under cultivation. To those in tourism, it will not only bring many more tourists into our area, but with the water sports, and so forth, such a project would develop, it would be the means of keeping our traveling friends busily and happily engaged for longer periods of time. This would of course benefit the whole area, as well as make the traveler's stay more pleasant. The Zion Park area is a natural hub for many of the West's scenic attractions. Many people now headquarter here and make daily excursions into some of our neighboring areas. Many more would do this with the attractions and facilities of such a project.

One advantage to all property owners in the area is that the value of their property would undoubtedly be increased. And with the power that could be generated, we could all look forward to a cheaper rate of power. This is something we would all very much welcome.

With so many advantages to us all, the Dixie project should have our wholehearted support.

Senator Moss. Mrs. Wesley P. Larsen, of Cedar City, will you come forward. You are the first lady we have had to testify, and we are delighted to have you.

**STATEMENT OF MRS. WESLEY P. LARSEN, PRESIDENT, CEDAR CITY
WOMEN VOTERS**

Mrs. LARSEN. I am president of the Cedar City League of Women Voters. Senator Moss, and gentlemen, for a number of years the members of the League of Women Voters of Cedar City have been studying and are aware of the necessity for the maximum conservation and development of water resources throughout the Nation. Our economic and cultural progress is dependent on a pure and adequate water supply. To achieve this end the league feels that long-range, comprehensive planning and development on a regional basis are essential.

We feel the Federal Government has a necessary role in financing water resource development, with State and local governments, and private users sharing in these costs as far as possible.

The League of Women Voters of Cedar City feels that the proposed Dixie project is vital in providing this area with needed culinary water, and supplementary irrigation water. The immediate economic future of southwest Utah depends on the conservation and intelligent use of our water resources.

Thank you for this opportunity to give you the views of the League of Women Voters of Cedar City.

Senator Moss. Well, thank you, Mrs. Larsen. We appreciate your coming here to testify. I can tell you of the very fine work the League of Women Voters does, particularly in the field of water resource development. I was appointed to the Select Committee on National Water Resources in the Senate and we held hearings throughout the United States. I think we held the hearings in 32 States of the Union on the whole question of water resource development. This had to do with drainage and oversupply of water in some areas of the country. They were very much concerned with the pollution problems everywhere because of the growth of pollution, and, of course, in the more arid areas with the developing of additional water supply. But, the point I wish to make is that at every single one of those hearings a representative of the League of Women Voters appeared and testified in behalf of their organization and gave very excellent testimony, because the group had been studying the problem over a period of years, 2 or 3 or 4 years or even longer. They knew what they were talking about. So, I am very happy that you came here today, Mrs. Larsen. Thank you.

Mr. Excell from Springdale. I believe it is mayor of Springdale, are you sir?

STATEMENT OF AUSTIN D. EXCELL, MAYOR, SPRINGDALE, UTAH

Mr. EXCELL. This will attest to my interest and concern in the realization of the "Dixie project."

I am the president of the board in Springdale, a small tourist community located immediately at the south entrance to Zion National

Park. Although we will be situated at the upper end of the lake caused by the proposed Dixie project, and will not receive any direct benefits through irrigation from the project, we are extremely concerned with the benefits it will afford our neighbors to the south.

Our primary interest however, lies in the other two aspects of the project: "Recreational Value and Electrical Power Supplied."

As I mentioned earlier, we are a small town but have the responsibility of providing accommodation and facilities for many of the one-half million visitors who travel through our part annually. Unfortunately, our business flourishes only for a short 4 to 5 months' period during summer travel season. Needless to say, we must find some way to extend our business season in order that we may have good wholesome businesses. This we feel the Dixie project will do.

Our weather here is mild, with a lot of warm sunshine 8 to 9 months out of every year. We are sure that boating, water skiing, and fishing facilities that should grow out of this project would give us the much needed extension on both ends of our tourist season.

Electrical power in our area is at a premium. Our town with its seven motels (or auto courts), six restaurants, four gift shops, three markets, and five service stations, together with the other usual tourist accommodations, is still using a small powerline run into the area before any of the above-mentioned businesses existed. This line was constructed some 35 years ago to accommodate a construction camp which was employed in the park at that time. Our power at this time is very inadequate, to say nothing of the exorbitant rates.

I am sure anyone can see why we as citizens of this area would be willing to make almost any sacrifice to be able to realize a dream which our forefathers conceived 30 years ago.

I would like to make a further statement so much as I have been working on this board, Dixie project, I have enjoyed it very much and have been very happy to have been able to spend my time in such a worthy project. We feel even though the town of Springdale is at the north end of this project and probably will not receive any direct benefits from the realization of this project, we are definitely in sympathy with our neighbors to the south and are very much in favor of seeing this thing worked through. I would also like to say at this time that inasmuch as we are strategically located well within the walls of Zions, that I would like on behalf of the people of Springdale to go on the record as being very much in favor of this project and on the statements made by superintendent of Zion National Park, Mr. Frank Oberhansley. Thank you.

Senator Moss. Thank you very much, Mayor Excell.

Our next witness will be Mr. Alvin C. Hardy from Springdale.

STATEMENT OF ALVIN C. HARDY, BISHOP OF SPRINGDALE WARD, SPRINGDALE, UTAH

Mr. HARDY. As bishop of the Springdale ward I wish to make a statement in support of the proposed Dixie project.

Since Springdale is situated at the boundary of Zion National Park, and our economy is geared to and is dependent on the flow of tourists who come to view the beauties of nature which are so wonderful in these parts, it seems to me the advantages to be derived from the Dixie project are many, such as:

1. Water storage and irrigation for the area just to our south and west which would provide many new homes and agricultural projects. These are greatly needed to strengthen our economy and to furnish the necessary manpower for industry which will come to the area.

2. Recreation and sports would be provided for local people as well as the thousands of tourists who come here and would like to stay in the area longer if such things were available.

3. The electrical power which could be provided is very vital to the area, since the present system is inadequate and rates are extremely high.

4. Flood control and erosion control would contribute greatly to values of property in the area.

These are only a few of the many items of value the Dixie project would contribute to the southern Utah area.

Senator Moss. Thank you, Mr. Hardy.

We are very pleased to have Warren Bulloch here from Cedar City. Would you like to be heard from, Mr. Bulloch?

Mr. BULLOCH. I certainly would, Senator.

Senator Moss. Come forward, we'd be delighted to have you. I noticed you came in, and I wanted to hear from you.

STATEMENT OF WARREN BULLOCH, REPRESENTATIVE OF THE CEDAR CITY WATER BOARD

Mr. BULLOCK. Honorable Senator, I deem it a pleasure to be here. I appear before this important committee here as a representative of the Cedar City Water Board, the Iron County water users, representative of the Utah State water users and member of the 21 county organizations for the development of the Colorado River. I have over the years realized that the development of water resources in Western United States should have top priority. Water is the first essential to any development, either urban or rural. I appear before you here today on behalf of the Dixie project. I say to you, the Dixie project is a most vital project for the people of the entire State of Utah, especially of southern Utah. It is not a new proposal, but one that I have known the need for over 40 years. Men who have passed on to the great beyond worked for this project and had hopes of seeing it built, knowing full well that it was the key which would unlock the door to the rich potential of this entire area. During their lifetime, however, their hopes and dreams were never realized. The development of our area, southern Utah, is at a standstill, and gentlemen, this project is now essential to give our area a rebirth. This is the only project that I can see in the foreseeable future which can give us the stimulus we need so badly to move forward.

Gentlemen of this committee, this is a dire need and in my opinion a most feasible project. This is our only available source of water. I know that the State of Utah in its entirety is behind this project, and I can speak for our county, Iron County, that we are 100 percent behind this project. I feel that county lines and State lines should be erased when it comes to development that's going to help a local area. And the building of the Dixie project is going to help the entire area of southern Utah, northern Arizona, and eastern Nevada. Thank you.

Senator Moss. Thank you very much for that fine statement, and we appreciate your coming and representing the five organizations that you do to express their support of this project. Your work over the years has been appreciated.

Mr. Squires, Mr. Ron Squires. Would you come forward, Representative Squires?

STATEMENT OF RONALD SQUIRES, STATE LEGISLATOR FOR
WASHINGTON COUNTY

Mr. SQUIRES. I represented Washington County in the legislature for the last three sessions, and I was glad to find out up there that all of Utah are in favor of our Dixie project. If my memory serves me right both houses of the legislature passed this resolution urging the U.S. Government to cooperate in building this great project. I came into Utah's Dixie in 1919 from central Utah and have made my home in the central part of where the Dixie project will be very effective and one of the first things I heard about was the hopes of someday getting a dam built in the Virgin River. I remember 3 or 4 years ago—2 or 3 years ago, when Vice President Johnson came into Utah and said he had just flown over the United States, and back in the eastern part the vegetation was green and everything there was so much different than this arid West. He said, "I'm convinced that we must build dams to hold the water that are in the rivers in this arid West to make it prosper and grow." We are growing rapidly in population and we do have to have more places for people to live. I am secretary and treasurer of the Virgin Canal Co. and past president of that company, and know our water conditions. I am a little small-fruit farmer in this area. I have been leading the water around. It is getting scarce, as my trees last night and today show. I never had time, Senator, to compile this, but I would like to send it to you.

Senator Moss. Very good, you may do so.

Mr. SQUIRES. If we bear in mind that due to our climate here and our ability to grow many of the semitropical products, we have unusual possibilities. For a land of family homes they can be at least partly self-supporting. This will be a land of family homes on small acreage. I'd like to stress again, it is being mentioned this land will not be put into production of agricultural products that are being grown in excess of our need such as corn, wheat, cotton, tobacco, and so forth. The crops grown here will mostly be of a perishable nature, consumed to a large extent in the fresh state. Storage of this water and the electrical power that it will receive from that will lend industries in this area wherein families can earn supplementary support for their families. The recreation possibilities on this lake forming at the door of the Zion National Park will make this the winter playground for people living within several hundred miles of this area.

I am sure that it is hard for any one of us to visualize the great potential of the recreational possibilities there. We have the climate and it doesn't cost a cent here, and the storage of this water will truly make this a paradise where the desert will be made a garden of production.

Thank you.

Senator Moss. Thank you very much, Representative Squires. That's an excellent statement, and we appreciate it today. Mr. Seegmiller, George Seegmiller, farmer at St. George. Come forward, sir.

**STATEMENT OF GEORGE SEEGMILLER, FARMER AT ST. GEORGE,
UTAH**

Mr. SEEGMILLER. Senator Moss, I am George Seegmiller, and I am chairman of the Dixie soil and water conservation of this area.

Senator Moss. Very good.

Mr. SEEGMILLER. I feel very proud of the achievements we have made in soil and water conservation locally. A big end of our jobs have been completed. We still have more to go, and I hope that by the time we catch up to what we are doing that we have more land to go on with this conservation work. The conservation work, I think, is the solution to the ills that we have in our Nation for bettering our conditions to see the conservation work being done that's done with these districts being created and set up. I heartily endorse all that has been said regarding the benefit of this project. I feel that our 5-mill levy is "peanuts" compared to what our forefathers did in the way of putting water onto land and doing it. I remember my father has said that a \$25 assessment was made on their water in 1 year, and that was something that they accomplished. I feel that we are some of that old stock, and give us a chance and we'll show you what we can do with Dixie land that will come under this project.

Senator Moss. Very good. Thank you for that statement and the spirit that it represents. I think that is typical of the people here. They believe they can do it, and therefore they can do it.

Mr. Hunt, Dee Hunt. Is Mr. Hunt here? We'll pass him for now, then.

President Bruhn of Dixie College, would you like to testify? President Bruhn, president of one of our very fine schools located here in St. George.

**STATEMENT OF ARTHUR F. BRUHN, A MEMBER OF THE STATE
PARK AND RECREATION COMMISSION**

Mr. BRUHN. Senator Moss, this morning I would like to testify as a member of the State park and recreation commission.

Senator Moss. Very good, we're happy to have you, President Bruhn.

Mr. BRUHN. Recreation has long been recognized as one of America's most rapidly growing industries. There are, moreover, indications that it will continue to experience phenomenal growth in the coming years. Automation, better highways, and many other factors provide the American people with more leisure time as well as increasingly safer and more comfortable ways to travel into areas that would have been unthinkable even a decade ago.

Southern Utah rightfully boasts some of the world's most superlative scenic areas. During the summer tourist season the economy is given a substantial shot in the arm by the influx of travelers. Despite

this, however, two problems remain: (1) The season is entirely too short, and (2) there is not, at any season of the year, enough "things to do."

The completion of the Dixie project will mark a tremendous step forward toward the solution of both of these problems. The relatively warm climate would provide opportunities for year-round fishing virtually in the front door of Zion National Park. Moreover, the season when fishing could be augmented by water skiing would be longer than on any other body of water in the State. Pleasure boating could easily become a year-round sport.

One of the principal problems that local groups have had in developing a winter golf course in the St. George Basin has been one of finding adequate water. Part of the water stored on either the Santa Clara or the Virgin Rivers could easily be put to good use to develop this long neglected resource.

With the options of golfing, fishing, pleasure boating and water skiing added to the incomparable opportunities of sightseeing now developed, recreation in my mind, constitutes another significant reason why this project should be undertaken at the earliest possible time.

Senator Moss. Thank you very much for that statement which is submitted for the Utah State Park and Recreation Commission.

Mr. Hafen, Charles Hafen from Ivins; is he here? That delegation will be in this afternoon.

Mr. Snow, J. C. Snow of St. George, representing the civic clubs here. He is secretary of the conservancy district also. Mr. Snow.

STATEMENT OF J. C. SNOW, REPRESENTING CIVIC CLUBS OF ST. GEORGE; TREASURER OF THE CONSERVANCY DISTRICT

Mr. SNOW. Senator Moss, Mayor Barlocker, the people of Washington County, since most of this has already been said, as Senator Moss stated, that it is repetitious, I have just a short statement here I'd like to read and I'd just like to emphasize a point or two.

Senator Moss. All right, sir.

Mr. SNOW. Our forefathers gave there very lives to conquer and develop this dry arid section of the State of Utah. Now it is our desire, our duty, to protect and continue to develop the only supply of life-giving water left in our area capable of supplying our vital needs, namely the waters of the Virgin River and the Santa Clara Creek as programed under the Dixie project.

St. George and Washington County can only continue to grow if and when the Dixie project becomes reality. The city of St. George is dependent on this supply for its future municipal water and the farmers of Washington County are looking to this supply to augment their present meager water supply for raising crops.

The farmers of Washington County are now farming with only a small percentage of the water necessary to produce and mature their crops. Only half of our tillable land is now in production because of the lack of sufficient water. It should also be noted that the crops grown in this area or that would be grown in this area would be crops that are not surplus crops and would not receive subsidy payments.

It is my sincere belief that this project is a feasible project and that over the period of the repayment that the project will not be an expense to the Federal Government but that it will repay the original investment with interest in addition to giving this county the necessary raw material, water, which is the life blood needed to continue its growth and development in the future.

To supplement that testimony I'd like to emphasize two points just a little that have been made here today. Having had the duty of supervising the rationing program of water in the city of St. George a few years ago, I'm quite aware of the fact there is nothing more important to any area than the water. Without it we can't grow and we are now practically to the limit of what we can do until something of this nature takes place. The other thing I would like to mention is that many of our people have had to leave. We talk about farming, and one of the best crops we raise in this area is the people we raise here, and up-to-date most of them have had to be exported to someone else to use. I feel like until this development of the Dixie project, as I say, is the last great hope that we have until this is completed, that our growth here is almost stopped. In fact, the period of the last few years the growth of Washington County, and the growth of St. George has been very meager, and even at that it has been one of the best that has been shown in this southern end of the State, and I am sure that this project will do the thing that we need.

Thank you.

Senator Moss. Thank you very much, Mr. Snow, for that statement. We are glad to have it.

Mr. Gubler, Norman Gubler, come forward, sir. We are glad to have you. You may stand or be seated, whichever you like to do.

STATEMENT OF M. NORMAN GUBLER, ST. GEORGE, UTAH

Mr. GUBLER. Senator Moss, members of the county and friends, I am happy to have this opportunity to say a few words in behalf of the young individuals in the county and in this area. I don't have a prepared written statement. However, I do represent the majority of the young married men and single men from 20 to 30 years old. I've traveled around the county and have talked to most of these people, and the thing that I would like to point out here, it's been mentioned by Mr. Frei and now by Mr. Snow, that to gain employment we have to leave the area.

Since coming back to this area in 1958 out of the Air Force, I don't believe I have worked in the area over 6 months. All of my work has been in southern Nevada. My home is here and my interests are in the county and in this area, and I feel that the development of this project will bring to us all—will help the economy to expand and we will be able to secure the needed employment in this area.

Thank you very much.

Senator Moss. Thank you, Mr. Gubler. I think your testimony is telling indeed to point out the need for additional water so that there may be additional growth and opportunity in this county and in this area. I commend you for your interest and your willingness to come

forward and speak as one of the younger witnesses that we have, speaking for the young people here. As Mr. Gubler mentioned, we have been sitting a long time, and we will stand up for about 5 minutes, then we can sit down and go to work again.

(Whereupon the hearing recessed for five minutes.)

Senator Moss. If you will please come to order, we will continue with the hearing. I want next to call on Commissioner Wayne Wilson, commissioner of Washington County and a member of the Utah Water and Power Board and a long-time stalwart supporter of water projects.

STATEMENT OF WAYNE WILSON, WASHINGTON COUNTY COMMISSIONER, ST. GEORGE, UTAH

Mr. WILSON. Senator Moss, we are privileged and happy to have you and your committee here, and I think we are doubly proud to have one of our natives on such an important committee, because there is no committee that I think that's in Congress that's more important than the water and irrigation, and I want you to know that we are appreciative of you and of the position that you hold and we are expecting a lot from you because of that position. When Senator Moss introduced the hearing in Washington he started it with a bale of cotton. Cotton, you know, was produced over here in St. George. The burlap had to come from some other section. And he gave them a report of the Dixie mission.

Now, this project was an old project, as has been stated. We have been thinking of this for a long time. I personally have worked for over 30 years when I was a young individual, and I am just a young individual, still working toward this project. This project is one that was thought of long before our day. When Bringham Young came into this area he told nearly every community that he visited that the day would come when St. George temple would be in the center of town. The day would come, he told the people in Rockville that there would be almost a continuous city from Rockville to St. George. I am a great believer in prophecy and I am working and I want it to be fulfilled. If we are going to, we are going to have to work toward it. So, it wasn't thought of by us, but even the creator who made a place that we could build a dam. We have water and we have very fertile valleys and land that can grow the crops that have been mentioned. And again I would like to say one of our best crops that we have is the people that we have here.

In the early days when those people were struggling and working on their canals and on the ditches, they sent an engineer in to show them how to build their dams. One of the oldtimers says, "Well, what does he know about it." He says, "I have helped that 25 times in the last year. Within just a few minutes you could be regulating your water and just a few minutes later there would be no dam and most of the head ditches would be filled with mud. Then come in just about the same length of time it would be down to almost dry river bed again and nothing to work toward."

The river with this dam now can be controlled, can be regulated and we can have a supply for the few acres that we are now irrigating and can add a few additional acres, which has been testified that we have real need of.

Senator Moss, your committee has heard the testimony of most of the people in this area. Their testimony is almost unanimous. I don't know of another group of people that would be better husbands of the water, no matter where it would be placed, than these people will handle the water if we are able to have it, and to use it. We will make good use of it in every respect. We have a climate that is very beneficial, that has a variety of seasons. We don't get so terribly hot but what we can stand it if you've got good air conditioning, and it doesn't get so cold but what you can stand it even out of doors most of the year. Now, the struggle that the people have put forth in this area has been tremendous, and any of you that will go and look, and I make reference to the Hurricane Canal, if any of you has read the history and will go and see that Hurricane Canal, you will see that back of it was a people who had faith, hope, and integrity. And from that day to this they have maintained that faith and hope, using the water, doing all that they could, and I would like to state for the record that this the earliest date that we have on record that we have been cut in our water supply this early, and at the present time the people in Hurricane are on one-half turn and just a little over half of a water supply at that, which would make about a fourth of the water we are needing with the crops that we already have planted and our orchards that are grown.

The water and power board has been helpful to the people in Washington County. They have built a lot of projects. They have helped them with a lot of the cement lining. The Baker Reservoir, the Kolob Reservoir, the Ashcreek Reservoir, the Frog Holler Dention Dam and miles and miles of cement lining trying to preserve and to help out with the little water that we have.

Again, we hope, Senator Moss, that you and your committee will convey to the people that you are in contact with, our hopes, our desires, and will let them, like we are letting you, know our feelings and our desires and the ways we will be able to use this water, and we feel that we are not robbing anyone else of any birthright, but we are maintaining our own and want to show that through the struggle that we have had, that we have put up with, that we have about reached it and now we are asking for help and we will pay back that help, not only in money, but in showing to the people of not only the State of Utah but to the world that we can and will use it as we should.

Again I want to thank the members of the water and power board for accepting the invitation to come and hold their meeting here in St. George so they could be here and testify for their solid support and their help toward the Dixie project. Thank you.

Senator Moss. Thank you very much, Commissioner Wayne Wilson. That was an excellent statement. Reference was made to a little bale of cotton. Since this project is named Dixie project, a lot of my southern brethren are rather curious about our origin of that name. They wondered whether we had pirated from them the designation of Dixie. So, in order to give them the full treatment, I sent each one of them a bale of cotton and also sent a reprint of the article from the State

historical society about the cotton mission that was sent down here by Brigham Young in the early days, and pointed out to them that we grow good cotton here in the State of Utah and we had a cotton mill at one time, we would weave it into cloth, and if they didn't look out we'd go back in business again. Then, I had to properly assure them we would not grow any cotton so that I could get their vote for the project. Phillip Foremaster, who is president of the Rotary Club here. Mr. Foremaster, will you come forward, please, sir. We are pleased to have you, sir, representing your fine organization in the city.

STATEMENT OF PHILLIP FOREMASTER, PRESIDENT OF ST. GEORGE ROTARY CLUB, ST. GEORGE, UTAH

MR. FOREMASTER. Thank you. I'd like to say, Senator, that that was my wife who fainted the other day. I hated to throw dust in her face, but I had to do it.

Hon. Frank E. Moss, my grandfather, William Lang, emigrated to America from England and landed in the Salt Lake Valley. He established himself at Mill Creek and engaged in farming. He and his wife were happy at Mill Creek and were doing very well. President Brigham Young at the October conference 1861, called my grandfather with others to go to St. George. My grandfather answered the call and came to Dixie. He was never reimbursed for his land at Mill Creek.

He continued in the farming business in Dixie and was one who spent a great deal of time trying to harness the Virgin River. It was a difficult fight. The quicksand provided no permanent anchorage for their dams. The floods came and washed out the work they had done. A dam was finished today; the water was led to the thirsty soil and possibly within hours the dam had washed out again. One day while driving piles my grandfather received a broken arm. However, despite all of these hardships the pioneers struggled on.

One hundred years have gone by, a permanent dam has been built on the river and we now have lovely farms irrigated by the waters of the Virgin. But our waters have been limited and our farms have been small. During this 100 years we have watched the water of the Virgin go by during the winter months and have said, "My, if only we could hold this water back for the coming summer. What couldn't we do in Dixie?"

It seems now, at the end of this 100 years, that there is a chance for us to impound this stream and hold back this liquid wealth. We hope it can be done. Brigham Young chose the spot for the erection of a temple and said, "This building will be in the center of the city."

He stood in the building, used for worship, down at what we know as Old Price City. Looking out the door his vision was directed toward the area to be covered by the Dixie project and he said, "That area will yet become a very bounteous area."

Perhaps 100 years from now it can be said that on May 17, 1963, the right people got together at the right place and did the right thing to make southern Utah grow as the prophet had predicted that it would.

Senator Moss. Thank you very much, Mr. Foremaster, for you very fine statement. Your roots are deep here, your grandfather having been one of the very early settlers.

Chairman Evan Woodbury, chairman of the County Commission of Washington County will be next. We are glad to have you, and go right ahead.

STATEMENT OF EVAN J. WOODBURY, CHAIRMAN, WASHINGTON COUNTY COMMISSION, ST. GEORGE, UTAH

Mr. WOODBURY. Senator Moss, I want first to express to you my personal appreciation for holding this hearing here on what is to southern Utah such an important project. In my way of thinking there is nothing at the present time that compares to any importance to this Dixie project as it does to the importance it has to us here. The only thing I feel bad about is my inadequacy to properly represent it as it should be represented.

I live on a farm in the Washington Fields, south of the Virgin River. I have spent most of my life there so far. I have seen crops wither and die or become dormant from lack of water. I have seen floods cause havoc to our crops, canals, and land. I have been aware for 40 years of young folks raised and educated here moving away to some other part of the country, not because they wanted to, but because it was necessary in order for them to make a living.

Washington County has a static population. It has held roughly at about 10,000 population for the past nearly 50 years.

There are few employment opportunities here. No matter how badly young folks wish to remain, most are forced to leave and get employment elsewhere. Time and again many leave for a period, then return in hopes of finding jobs that would make it possible for them to remain, only to be forced to leave again. (Many eventually come back to die.)

Utah's Dixie is a good place to live, if you can afford to live here, not many can. It has a healthy climate, both physically and spiritually. It is a country of inspirational landscapes. It's an area of sheer grandeur. It's an area naturally adapted to recreation; hunting, fishing, camping, hiking, et cetera. A good kind of citizenry live here. Comparatively few people have the opportunity to enjoy it because one essential is lacking in order for it to be able to grow and develop. Industry with ample job opportunities is not available.

The Dixie project could do much to change all this and at the same time contribute in a small way to the national interest or welfare.

First, it will help in the development of the greatest product of any county, an increased number of excellent citizens.

It will create a good many permanent jobs in addition to employment necessary for the actual construction of dams, canals, hydroplants, et cetera.

It will provide water for crops that now have an inadequate supply as well as water for thirsty lands that are little more than desert areas at present.

It will provide electrical energy for the development of the area.

It will control floods that now do much damage and create great expense through their destructive though infrequent occurrences, and convert the water from its destructive to beneficial uses. Then, too, the silt carried will no longer go down into Lake Mead.

It will increase the wealth of the area. The tax base of Washington County will perhaps jump tenfold in a very few years.

It will meet the needs of the times by satisfying much of the accelerated demand for additional recreational facilities.

It will provide opportunity for more people to live outside of the highly urbanized centers.

The Dixie project would be of much good to the United States, it would be a boon to Utah and would be of tremendous impact to Utah's Dixie land and should be built.

Yes, I am willing to do what I am able, to get the Dixie project, as are the other people who live here. That is why the majority of the people in every town in the county signed for the conservancy district and assessed themselves an annual 5-mill tax levy to go into the project, though several of the towns get no direct benefits.

Yes, will are willing because it is a good investment. It is a good investment to keep home to build up the country's young people we have spent several thousands of dollars on to raise and educate. Let's let those who wish to, stay home and repay the investment in them by building up our own Dixie Country.

Yes, we need the Dixie project. If we were able in any way to build it on our own it would have been built long ago. Give us sufficient help to go with our own efforts and we will build the Dixie project. It is in keeping with the attitude and spirit of our founding fathers, the Dixie pioneers.

Senator Moss. Thank you very much, Evan. What do you grow on your farm?

Mr. WOODBURY. Alfalfa, sugarbeet seed, hay, and silage and some barley.

Senator Moss. Has sugarbeet seed become a rather notable crop in the area?

Mr. WOODBURY. Yes, it is one of the best crops we have. The only thing, we are not raising enough sugarbeets.

Senator Moss. What I was asking for is, of course, the immediate criticism of those who are implying to impose reclamation projects, talking about surplus crops and subsidies and it is my information that none of the crops that you grow here are of the type that is supported by price supports. Now, I was asking you as a farmer what you'd do to see if you could confirm that.

Mr. WOODBURY. We raise a little barley, and it might be the only one that I know of.

Senator Moss. Some barley.

Mr. WOODBURY. We feed it all to our livestock. Washington County is a grain import county. We raise a small portion of what we use here.

Senator Moss. Grains that you raise you use up with your livestock? livestock?

Mr. WOODBURY. We use it with livestock.

Senator Moss. I notice you are also president of the Dixie REA. Would the Dixie REA take any of your power that would be generated at the dam?

Mr. WOODBURY. At the present time Dixie REA gets power from St. George City. We are a very small cooperative, probably the smallest in the Nation. We have 40 connected consumers and we get our power through the St. George City.

Senator Moss. As far as you know you would continue with that arrangement?

Mr. WOODBURY. That's right, they have been very cooperative and we have got along very good together. We see no need of changing.

Senator Moss. I see, thank you very much.

We now hear from Jack Scholzen. Mr. Scholzen, we are happy to have you here.

STATEMENT OF J. H. SCHOLZEN, HURRICANE, UTAH

Mr. SCHOLZEN. A definite change this Dixie project would mean to all of us in this area would be the opportunity for our children to remain here and maintain their homes.

At present it is estimated that 95 percent of all of our young people have to leave this area to seek a livelihood. This project would make it possible for them to stay home where they would like to be.

Senator Moss. Thank you very much, Mr. Scholzen.

We will now hear from Leonard Smith from Cedar City. Leonard would you come forward. Thank you, Leonard, we are glad to have you here today and we would like to hear from you.

STATEMENT OF LEONARD SMITH, CEDAR CITY, UTAH

Mr. SMITH. Senator Moss, I don't wish to embarrass you, but I would like to pay tribute to you personally. I had the pleasure of working 3 years with Senator Moss. I was on his field staff, and in that capacity became interested in the Dixie project. At the inset of the revival of the Dixie project, I think it was perhaps caused by the decision of Judge Rifkind on the allocation or adjudication of the Colorado River water. Judge Rifkind was appointed by the Supreme Court of the United States to study the Colorado River water and its adjudication. I was serving on Senator Moss's staff at that time, and in that capacity I was serving in the five-county committee of southern Utah.

I, at that time, said in meeting with Commissioner Wilson and Judge Cox, and I can assure you that they were really adherents to this project. They were very dedicated to it, and they were after it continually. I acted that time as a law agent man between Senator Moss and the committee. And I again say that I want to compliment Senator Moss on getting his teeth right into it and getting after it. He's done a wonderful job.

As to the need of the project, there is no question. I don't think there's anywhere, certainly in the State of Utah, that needs a project of this kind more than this area. As to the feasibility of it, the three phases of the feasibility report as submitted were, of course, irrigation, electrical energy, or power, and recreation. Now, as far as the three of them are concerned, of course, we need water more than anything. Secondly, we do need the power in southern Utah as does all the entire State of Utah. And as to the recreation facilities, it is perhaps our last frontier for development in southern Utah.

I think that all of the factors have definitely been established and as such we can go forward and perhaps build this project. I was indeed pleased when I noted that Senator Moss had been appointed or elected to this important committee, or subcommittee of the Interior

and Insular Affairs on water because I did feel that that was the step that might swing the Dixie project. Heretofore I admitted I was somewhat pessimistic, because I had felt the great weight of California, perhaps against us, and the statement that I read that the Governor had made that California would not submit to further improvements of the Colorado River or further development that might be detrimental to water interests of southern California. He made this statement and I read it, and I was perhaps too pessimistic about it. But, I do feel now with Senator Moss and Commissioner Palmer, who is a neighbor of mine in Cedar City, and I feel that this project will go on and perhaps be a reality and a dream of the good people of Washington County that have worked so diligently for it. I thank you.

Senator Moss. Well, thank you, Leonard. I appreciate your kind and encouraging words. We certainly do hope we are moving now with the Dixie project. There hasn't been a reclamation project authorized in the lower basin now for 17 years, I think. So, it is about time that we got on the move again, and I hope this will be the one that breaks the log jam and we can begin to move forward.

Reference was made to the decision of the master, Judge Rifkind, in the *Arizona v. California* case, and he does discuss the Dixie project in there. The California representatives in the Washington hearing set this forth as arguing that the master had indicated that there was objection to the Dixie project. I don't read the report of the master quite the same. For one thing he says the Dixie project itself cannot be considered an immediate threat to the continuation of the present flow into the main stream. And he goes on to say, although the project has been sent forward from the region twice, it has not been approved by the Secretary or by the Commissioner of Reclamation or the Secretary of the Interior. But, in discussing it, he stressed the point that actually very little water from the Dixie, on its comparative basis, gets into Lake Mead. Compared with the entire supply that goes into Lake Mead, Dixie furnished less than a tenth of—no, about .076, so the stream is virtually a captive stream now. It's all used here or along the river lower down and very little of it gets into Lake Mead, and when it gets in, it's going in as a flood sometime, which is a sign of water carrying a lot of silt with it, and is escaping into the lake, then. The river could be hoarded and held above in times of high flow and used on a continuous and regulated basis, then it would be a valuable contribution.

While we were discussing that Mr. Whitacre reminds me that I could call attention to the fact that Senator Hayden serves on this subcommittee. He's one of my junior members. And at the hearing of the Dixie project in Washington, Senator Hayden stated for the record, it is in the record, that he fully supported the project. He thought it was of great importance and that it shouldn't be held up because of the California—*Arizona v. California*—suit which has never come down. The decision has never come down yet from the Supreme Court, and he thought it ought to go forward. There's an interesting sidelight to that too. When I sent this reprint from the historical society around to the Senators, Senator Hayden got his and looked at it and he said, "That's a wonderful story." He called up my office and wanted to get 12 more copies right away. He was going to send them down to Arizona. He said every library ought to have one of those,

and it told what the folks did in the early days and how they struggled to use the water and to grow crops. So, he was quite carried away with the whole thing.

Of course, I'm sure you all know Senator Hayden is the senior Member of the Senate, and chairman of the Appropriations Committee, and I'm sure in the most powerful position in Washington to give us the assistance in appropriations if we can get this project authorized by the Congress. That's what we are about right now, to get a record so that Congress will authorize the project. I think that since we are going to have a recess soon for luncheon, there won't be a very long session this afternoon, and even though I had indicated I was not going to ask Commissioner Palmer to testify again, I think this might be a good point if Commissioner Palmer would come forth and sketch for us rather quickly the real features of the project. We have spent the day making a record, and this is what we want to do, we wanted to make a record of the feelings of the local people. But, I think that it would be well for us to deal somewhat on the specifics of the project, exactly how much water is expected to be impounded, where it would be diverted, how much power would come from it and also, Commissioner, since I do not expect there will be any California representatives here today, you might indicate to these people the objections that have been raised by California.

STATEMENT OF COMMISSIONER WILLIAM PALMER—Resumed

MR. PALMER. At the hearing adjourned in Washington, Senator, you will recall that it was just after Dallas Kones, the engineer for the California water—California, Colorado River Board and Northern Ely, their attorney, presented their case against the Dixie project. Their arguments are well known to all of us. They simply attempted at that time to retry the *Arizona v. California* lawsuit and to argue that until after the *Arizona v. California* decision had been handed down that nothing should be done on this, and even then there was not enough water in the basin to satisfy the needs of the developments already in existence.

Now, Senator, we found and have since researched this that there are three points that maybe ought to be considered now. One is that we share in the anxiety of everyone in the lower basin because of the water shortage. That includes this area, I might add. And we are in complete sympathy with the gentlemen from California who did such a scholarly job of presenting their case in Washington. And I might point out that this apprehension has been one of the governing features of this administration in Washington. It certainly has been with the Secretary and the Assistant Secretary and the Under Secretary and everyone on down through the Bureau. So, we share their concern. But, we are in complete disagreement with their conclusions. We feel that now is not the time to get into the numbers game until after there is a firm decision on the part of the Supreme Court. The Secretary, in denying or in declining Governor Brown's invitation to run an inventory of the river, stated that position, and we feel that is the only good position. Beyond that we feel that the Dixie project is not the proper origin in which

to debate the issues which are up for consideration particularly in the Ely testimony.

Now, may I pay a little tribute to A. B. West, regional director of this region. When he became regional director and I became Assistant Commissioner in Washington, we met and he said, "if it's all right with you I'd like your support to get some unfinished business down here," and I said, "what do you have in mind?" He said, "the first thing, I want to get the report out on the Dixie project. It's been planned too long." Of course, I subscribe fully to that and Mr. West has been pushing it ever since. So, you have powerful allies in the regional office at Boulder City. Now, the project is in two basic divisions, the Santa Clara division and the Virgin River division here. The two reservoirs, Gunlock and Virgin River. This, of course, is relatively small. Gunlock is what, approximately 24,000 acre-feet and an annual yield of about 16,000 and the Virgin is 246,000 and the annual yield is 105,000. I might say that in the formulation of this project we provide storage space for over 100 acre-feet of silt that will be trapped there and not allowed to get back into the river. The other thing, of course, is the transmission facilities for water of the canals. I took Roy Whitacre up on the project, on this section yesterday, and Mr. Whitacre is a former irrigation project manager, and I asked him how he would like to maintain the Hurricane Canal. He thought that would be a bit of a chore. So, we propose to avoid that by going from the base of the Virgin City Dam, taking water off of this powerplant and running it through the tunnel intersecting the—approximately the site of the Hurricane Canal just above Hurricane and then going around as the map shows. The other transmission, water transmission, is the enlargement and improvement of the Washington or the Ivins Bench Santa Clara Canal. The yellow is new lands to be irrigated and the green land, the green of the map is the area that will receive supplemental supply. That breaks down to about 9,000 acres getting supplemental water, water to round out the supply that is now inadequate, about 11,000 acres of full new irrigation. I said we shouldn't be showing these reservoirs in red, they ought to be in blue if we are going to get the silt out of that water.

The three powerplants, one here and the other one at Bench Lake, the last one at Warner Valley, Warner powerplant has a total production of about 13,200. That's not a tremendous amount, but infiltrated into a system that there is already a power shortage, it can make a big difference. The transmission lines, power transmission are shown in red.

Senator MOSS. What about the La Verkin Springs, Bill?

Mr. PALMER. Well, the La Verkin Springs, of course, is a problem, and has been a problem and one of the impediments that had to be removed before we could get the cooperation of Arizona and Nevada with Utah in sponsoring or pushing the project, had to meet the assurance that we would take a serious look at doing something about the water quality. That everyone appeared to be seriously deteriorating by building the Virgin Dam and blocking the fresh water flow up here and then diverting that water out here before it had a chance to get through the La Verkin Springs. We have gone into this thing

very thoroughly, and we have suggested to the committee that there are many ways that we want to look at further. We believe in the first place that the damage that will occur will be very very negligible. We believe the farmers will continue to farm with the same success that they have been farming over the last 100 years. The pH in the water will go up slightly, but the overall quality of the water is still usable. It is still within the ball park. We don't think it is going to make much of a difference in the farming operation. We are looking and hope that the committee will authorize this project, and I'm saying when they authorize it Senator. When they authorize the project, I hope they will instruct the bureau to continue its investigation of the water quality problems and to report back to the committee of remedial changes if any are needed.

I think if we watch this thing for a while and use our best technical skills in finding ways to value the water quality problem, I think we can find ways of solving it.

Senator Moss. How much will it cost, Bill, and how would it have to be paid back?

Mr. PALMER. The total project will cost about \$44 million. The reimbursable allocation will be paid back by water and power with the exception of about \$3 million which is proposed for repayment from lower basin revenues. Now, to add a small bit of clarity to the Senator's opening statement, not only does the project pay back virtually all of its cost from the water and power users themselves, it provides the recreational values and fishing and wildlife values, as added benefits to the project. The portion of the project costs allocated to municipal and industrial water supply and hydroelectric power are paid back to the Treasury with interest. The amount allocated to irrigation is about \$24 million, and it is interest free, and this is consistent with the Reclamation Laws since the 1902 act was passed. The recreation is proposed as a non-reimbursable allocation because you can't pin down the beneficiaries. This nonreimbursable allocation amounts to about \$21½ million. Fish and wildlife benefits also proposed as nonreimbursable account for a lesser amount, slightly over a million dollars. There's a small flood control allocation that is also nonreimbursable. But, bear in mind—add these up, if you will, in your own minds, that 44 million is all to be returned to the Treasury except for those three small allocations. So, this, Senator Moss, is an excellent project.

As I stated in Washington, this is evident from the standpoint of economic feasibility, it is engineering feasible and it is financially feasible. Now, Mr. Chairman, collectively these people have put a big burr under the saddle pads of the Senate committee, today they have given further evidence of their willingness to underwrite this project to the maximum degree possible. I sincerely hope with them that the project will be authorized.

Senator Moss. Thank you very much, Commissioner Palmer. It was important that we restate some of those details, that you did very well. I'm glad you clarified the statement that I made at the beginning, if it wasn't clear, and I probably did not make it clear. Of course, irrigation allocations are repaid, the principal is repaid, but not with interest. But, on all others, power, municipal water, industrial water are repaid with interest. The bill does call for using about

\$3,200,000 of revenues of power in the lower basin. It does not specify Hoover Dam. It could be any of the dams in the lower basin. This is a means that's been developed in other areas as in the Northwest and central California and other places where large power projects are called upon to bear some of the burden of supplying irrigation water or other kinds of water, because this is sort of a cash register. The lower basin was developed primarily at a time before this concept had been developed fully, and we have no basin account as such that can be chargeable. There is a basin development fund that is used, \$500,000 a year primarily for investigation, although it might be used for construction. So this is one little point that we have to deal with, and this is one thing that the California people have pointed to as a possible objection. They say that we should wait until 1987 when Hoover Dam is all paid off, then we can decide what we do about the power revenues there. Of course, we are not willing to wait that long and we hope that we can move along. Yes, Darrell Hafen?

Mr. HAFEN. I would just like to ask Commissioner Palmer a question, if I could, in regard to the map.

Senator MOSS. That would be proper if Mr. Palmer would respond.

Mr. HAFEN. The first question I have, I don't notice any water lines from the dam into the Washington and St. George area. Are there any water lines, culinary water lines planned in connection with the project, and if so do they go to the total cost of the project?

Mr. PALMER. The city could take water from the Bureau project either from the Gunlock Reservoir through the Santa Clara Ivins Bench conduit or take it from the Virgin conduit. But, the taking of water and the delivery of water to the city would be the city's own wishes at their own expense.

Mr. HAFEN. So, they would be responsible if they draw the water out of the canal to take the water and if it required treatment to treat it before it is put into the culinary systems, and it is not any part of the project.

Mr. PALMER. No, Mr. Hafen, these works are not a part of the project.

Mr. HAFEN. I appreciate that. There is one other question I have. I notice that your proposed transmission powerlines did not include an extension of that powerline into the Washington area, and I am wondering if the Washington area, at some future time, would desire to purchase power from the Dixie project through perhaps an agent of REA Cooperative, if they could tie on that line, and if those lines would be included in the overall project?

Mr. PALMER. It is pretty much up to Washington. Let me stress one thing. In all probability the Bureau will be required to have contracts executed before we enter into construction. Now, St. George has evidenced its willingness to underwrite the cost of power and assume their allocated cost of municipal and industrial water, and this would be covered by contract. I presume that you could then make your arrangements with St. George, if St. George had the capacity and you organized yourselves to an REA.

Now, you would not be eligible to receive power from any Federal system unless you qualified as a preference customer.

Mr. HAFEN. Now, that would be a cooperative board or a municipality?

Mr. PALMER. Yes, municipality or co-op of some kind.

Mr. HAFEN. I see, thank you.

Senator MOSS. Thank you, Mr. Palmer.

Now, we are going to have our noon recess. If there is any person who is unable to come back that hasn't had a chance to get his statement in, I will delay that long. I will do that, but we will have what appears to be not too long a session this afternoon. I think within about an hour when we reconvene we can finish with at least the names I have. I want to assure you that if there is anybody who wants to testify, even though his name may not be on the list, I will give him a chance.

We want to hear from all the people who would like to be heard on this project. We will stand, then, in recess until 1:30.

(Whereupon at 12:10 p.m., the committee recessed until 1:30 p.m., this same day.)

AFTERNOON SESSION

Senator MOSS. This hearing will now resume. I am glad to see so many back for the afternoon session. I know that everyone is very busy, particularly this time of year, but the large number who attended this morning and who are here again, attest to the great interest in this matter that we are considering today. This is a continuation of the hearing on the Dixie project by the Irrigation and Reclamation Subcommittee of the Interior Committee of the Senate. I am happy to note that Senator Hafen has joined us and we will be calling on him in just a few minutes.

Our first witness will be John Schmutz, former president of the Washington Field Canal Co., of St. George. Mr. Schmutz. Do you want to make a statement for us? Come forward, sir.

STATEMENT OF JOHN SCHMUTZ, FORMER PRESIDENT, WASHINGTON FIELD CANAL CO., ST. GEORGE, UTAH

Mr. SCHMUTZ. Senator MOSS, I haven't any written statement at all, and I am not representing anybody, only myself.

Senator MOSS. That's quite a lot, you go ahead, sir.

Mr. SCHMUTZ. I would like to make a comment or two on a little early history that some of them have mentioned this morning.

I was with Judge Cox when this project, I believe, was talked over. I was a member and president of the Washington Field Canal Co. for several years, and Evan Woodbury was one of the early members, too. Now, we have been working for the project for over 50 years, and it has never materialized yet. But, it looks very good now. I remember when we used to cross the river down in the Washington field and stay all week long, stay 10 days to cross the river in the spring of the year when the water was high. We don't have that kind of runoff now, and we haven't had for over 25 years, but we used to have it all the time. We saw floods that came down there that would leave debris on the top of the bridge that is down there now. I haven't measured it, but I believe that bridge is 15 feet above the bottom of the river, and it would be 3 or 4 months in the spring of the year that we sometimes would have to go out to Washington to cross the river. It was a better crossing there than it was down here until this bridge

was put in down here, I believe it was 1908, maybe along a year or two in there, but it was about that time that this bridge was put in.

I have seen enough water runoff for the first 2 or 3 months in the spring of the year, I'd imagine, to fill this reservoir we are talking about, two or three times. We used to have more floods come down there, but we don't have them any more at all. I don't know why, but we have little floods like we used to have. I don't know what we could talk about that is more interesting than that. These expressions that I have listened to this morning, when Brother Seegmiller said it used to cost us \$25 a share, I lived through that period. The last 25 or 20 years, we have just had small floods and not too many of them, but we have had lots of runoff, and we may have more sometime in the future. But, it doesn't look very promising now to get much runoff this spring.

I have seen the water down in the Washington fields when they were first put in, when 3 or 4 weeks at a time my crops would almost dry up and you would think they were dead, and we would get a little water, why we'd have a good crop. To me it doesn't look very good to us here. We've been here a long time. We see water going by and going to waste all winter, then along in June and July up until it starts to storm in the fall of the year, our crops will dry up on account of shortage of water. Along in these months in the middle of the summer, we have never had enough water. Now, if there is some way of holding this water back, keeping it until the time we could use it when we needed it, it would be a fine thing for this county.

I was interested in some of the statements this morning when they said our young people have all moved away. They have to move away, because there is no work here for them. If this Dixie project goes through, we'd have lots of homes, and homes would be scattered out in the rural districts, and they wouldn't be congested in the cities where they are now, they would be scattered out. People would be more content, and we'd get along a lot better.

Thank you, Senator Moss.

Senator Moss. Thank you, Mr. Schmutz. You said you have been here a long time, would you tell me how long?

Mr. SCHMUTZ. Eighty-five years.

Senator Moss. Eighty-five years. Well, you look as though it might have been just yesterday that you got here. Do you still work?

Mr. SCHMUTZ. Yes.

Senator Moss. Very good.

Our next witness will be Mr. William Woodbury of Hurricane.

STATEMENT OF WILLIAM WOODBURY, HURRICANE, UTAH

Mr. WOODBURY. Senator Moss, it is good to be here. I was asked some time ago to write a little paper, but I didn't know I was to represent the city of Hurricane until this morning. The Mayor asked me to come, and I got here late this morning. But I can justify this; in 1908 I went out from here to make that old bridge. I am William E. Woodbury, Hurricane City councilman. I bring tribute to Senator Moss and the committee for the interest in the Dixie Project from the people of Modena and Hurricane, and say thanks. What can water storage do for us? Black Ridge and Dallan Springs have been maintained by the simple runoff of the first class water in the Cordville

Springs, so we can have our full share of first class water for culinary water. What can we do to control floods and keep the water until we need it?

I hauled in from Modena by wagon part of the steel to make the old Virgin Bridge below St. George in 1907 and 1908. On New Years Day 1910 the largest flood ever to come down the Virgin River in 70 years ran away. The flood lapped the bridge and covered the fields south of the bridge. How many acres of land could that water irrigate if held until needed in the summer? As a city councilman of Hurricane, we are looking for cheaper power. The cost of bringing power from Glen Canyon or Cedar City would be eliminated as it could be developed at our doorstep. People of Hurricane are extremely happy over the efforts of the Dixie project development. It is time for progress. I went to school in this building in 1899, the sixth grade. See what the schools have done since then.

Why should we build the Dixie project; for over 50 years I have looked forward to some improvement in opportunities for our beautiful Dixie country and its wonderful climate.

The most important item is the control of surplus water that can be stored and used at the proper time. Over 50 years ago my father, in connection with Morris Wilson of La Verkin and A. B. Christensen, tried to extend the Hurricane Canal onto the Berry Spring Bench but lacked the financial support. During the 1920's, I tried in connection with several prominent men of Hurricane, to get a canal onto the same bench beginning at the mouth of La Verkin Creek, but financial help was needed. The opportunities for our children were not available to stay here and as a result nearly all have moved away. Only enough remained to take over when the parents died. If our Dixie Country is to give a chance to our future generations, the one big lacking asset for progress is to take care of our wasting waters. The impounded waters could give us cheaper electric power, open up unused land for farming of which there is no place on earth that can produce better grapes, pomegranates, tomatoes, fruits and garden vegetables. Producing these farm products could lead to many more jobs and our children could stay here and be a comfort to us in our declining years.

I hope before I pass on that I can see my dreams come true in regard to the wanted progress and development needed to make our Dixie Country arrive at its greatest possibilities which can be done only through the development of the Dixie Project.

Senator Moss. Thank you very much, Mr. Woodbury. That is a very fine and eloquent statement. We appreciate your appearance.

Mr. Mathew Bentley of St. George Utility Commission. Mr. Bentley.

STATEMENT OF MATHEW BENTLEY, ST. GEORGE UTILITY COMMISSION, ST. GEORGE, UTAH

Mr. BENTLEY. Senator Moss and Chairman Bill and gentlemen, I have with me two short reports, one was prepared by the St. George Utilities Commission and one which I prepared as a member of the St. George City Council. With your permission, Senator Moss, I'd like to call upon Mr. Kenneth J. Parkinson, to either read or summarize the report prepared by the St. George Utilities Commission. Mr. Parkinson is our superintendent in the electrical department.

Senator Moss. We would be very pleased to have him do that. Mr. Parkinson, you may go right ahead.

**STATEMENT OF KENNETH J. PARKINSON OF THE ST. GEORGE
UTILITY COMMISSION, ST. GEORGE, UTAH**

Mr. PARKINSON. Thank you very kindly, Senator. This is the report that St. George City Utility Commission, St. George, Utah, a division of St. George City which was created, I think, about 20 years ago to operate the revenue producing facilities and services of St. George City. I am thankful for this opportunity to make a statement to you on behalf of the Dixie project.

As you are no doubt aware, the Bureau of Reclamation report on the Dixie project contains a statement whereby the city of St. George has agreed to purchase the entire output of electric power from the Dixie project. A copy of the city's letter covering this agreement is here attached and reads as follows:

REGIONAL DIRECTOR,
*Bureau of Reclamation, Region 3,
Boulder City, Nev.*

DEAR SIR: In recent meeting with Mr. Pelham and Mr. Legler of the Bureau of Reclamation, Boulder City office, the question was raised regarding the marketing of Dixie project power and considering the possibility of obtaining Colorado River storage power at a lesser rate.

The city of St. George, realizing the need for both CRSP power and the Dixie project power, does hereby agree to purchase all of the Bureau power from the Dixie project which is made available for their own use or for their disposal at 6.9 mills, regardless of the price at which CRSP power is made available in this area.

The city of St. George is firmly convinced that an interconnection between the CRSP and the Dixie project is very vital and will be to the advantage of each.

We appreciate the personal interest of the Boulder City office in our behalf.

Respectfully,

ST. GEORGE CITY COUNCIL,
By WILLIAM BARLOCKER, *Mayor*,
ST. GEORGE UTILITY COMMISSION,
By M. M. BENTLEY, *Chairman*.

This decision was made after due consideration on the part of St. George City with the intent of underwriting or guaranteeing the required income to the United States, from the sale of the Dixie project power. Although the city of St. George has been allotted power from the Colorado River storage project and soon will contract with the United States to receive this allotment of power, we believe future power requirements will be sufficient to absorb the power from the Dixie project, and St. George now reaffirms its agreement to guarantee the required income to the United States from the sale of Dixie project power.

It is not the desire or the intent of St. George City to obtain exclusive possession of the power from the project, or of such power. It is the intent of the city to assure this committee, and the Congress, that if the Dixie project is constructed, the power produced can and will be marketed at the rate set forth in the project report. However, we do suggest consideration be given to the proposal that the United States through the Bureau of Reclamation, contract with the city of St. George to operate the project powerplants and system.

We believe there could be some reduction in the project operating costs through the close coordination of the St. George City power system and the project power system.

Senator Moss. Is this a proposal that the employees of the city of St. George would actually operate the powerplants, is that it?

Mr. PARKINSON. That was merely a suggestion, I think, on our part for something, to draw that to the attention of the Bureau of Reclamation. I believe the project will eventually be operated by probably the conservancy district. I'm not sure whether there is some conflict in the State law that might affect that, but we do feel that because it is going to take some coordination between different power units in the area, St. George would be the logical people to operate it from the standpoint of proved efficiency.

Senator Moss. St. George would continue to have a thermogeneration of its own, this wouldn't be sufficient power for the city, would it?

Mr. PARKINSON. At the present time it would. At the present time it would with the possible exception of some of the early spring months, such as March, when there's no water being passed through the Dixie project. At that time there probably wouldn't be enough to supply our requirements. But energywise, of course, there's ample power. I think our requirements today are about—this year it would probably run around 22 million kilowatt-hours and the project will produce some 45 million kilowatt-hours. But at the present time the project is in—the resulting increase of our power requirements in the area plus our normal power requirements, I am sure there is no problem in the area of being able to utilize all the power from the project as well as the power that we have already agreed to take from the Colorado River storage project.

Senator Moss. Thank you. Mayor Barlocker.

STATEMENT OF WILLIAM BARLOCKER, MAYOR OF ST. GEORGE CITY, ST. GEORGE, UTAH—Resumed

Mr. BARLOCKER. Just for a moment, I would like to clarify and re-emphasize the city's position. The city primarily wrote the letter to the department indicating that there was sale for the power, and as Mr. Parkinson has indicated we have had no intention at any time to bring or utilize all that power. It was a necessity to get on the record that someone would buy the power at a given rate so that it could be put into the Bureau of Reclamation's cost and repayment schedule. As far as the distribution of power is concerned, it's merely suggested to the city employees to do it. Under the court's decree that we have now, it shall be administered through the conservancy district. The conservancy district has the power, if I understand it, to redelgate a group or groups or private or power companies, or whoever they want to and can work with for the distribution of that power to anywhere in the area.

Senator Moss. Thank you, Mayor Barlocker. Mr. Bentley.

STATEMENT OF MATHEW BENTLEY, ST. GEORGE UTILITY
COMMISSION, ST. GEORGE, UTAH—Resumed

Mr. BENTLEY. This report that I have prepared is not long. As you would naturally assume, some of the things in this have already been presented, but I believe I can present it more effectively if I read it as it is.

My name is Mathew M. Bentley and at present I am serving as a member of the St. George City Council. I am pleased to have this opportunity of speaking in behalf of the Dixie project. St. George, Utah was settled in 1861 and its primary purpose was to raise cotton for the Utah communities, the supply from the Southern States having been cut off due to the Civil War. The Virgin River was the chief source of irrigation water for this area and for 30 years our pioneer settlers worked hard trying to divert the water onto their parched acres. Finally a spillway dam was constructed (1891) that has stood the test for all floods from that date to the present time. With the expansion of the irrigation in the St. George area and also in the eastern part of the county it was soon learned that a more stable supply of water was needed than that of depending upon the natural streamflow which might vary from a dry dam at the St. George and Washington Canal diversion to a flood of 16,000 second-feet. This figure was given to me by Mr. Wilson McConkie, who does the official measuring of the Virgin River streamflow, and was for the September 1961 flood. Enough water went down the river in 2 days to have watered all of the 3,500 acres in the St. George and Washington Canal system for a full year, had this water been stored and used as needed. The Dixie project which has been in the planning stage for more than 30 years would not only stabilize the supply of water but would bring into cultivation many acres as yet undeveloped, thus supplying homes for many of the young people of this area who will otherwise have to move away to find employment to provide a livelihood for their families.

The crops that would be grown on the land included in the Dixie project would include such items as alfalfa, silage crops, fruit, nuts, grapes, sugarbeet seed, pasture for beef cattle, etc., but no cotton as in the years following 1861. To my knowledge none of these crops are on the U.S. Department of Agriculture subsidy list and hence would not add to the burden of handling the present agriculture surpluses.

A little more than 30 years ago—about 1930 or 1931— I attended a meeting of the Lower Colorado River water users that was held in the Wadsworth Theater in St. George, Utah. There were in attendance at this meeting representatives from the Bureau of Reclamation, the States of Utah, Arizona, Nevada, California, and possibly some others. During a discussion of the Dixie project and the small amount of water that would be needed to take care of it, the representatives from California stated that California would never oppose the Dixie project if and when it received the approval of the Bureau of Reclamation.

I appreciate that the men who made this statement may not be alive in 1963, and if they were, the State of California might not be legally bound to honor their commitments; but morally, the State of California should be bound to honor such a promise. California representatives may deny what I have reported, but my statement is true; they might say that conditions have arisen that could not be foreseen in 1930 or 1931 but my point is that California once agreed, voluntarily to make no protest regarding water for the Dixie project.

In conclusion, my humble opinion is that the Dixie project, if and when consummated, would do more for the development of this southwest corner of Utah, than any other single factor could accomplish.

And as a supplementary thought I would like to concur in the statement made this morning by our former Mayor J. C. Snow. Culinary water is a real problem for our community, especially if we continue to grow and to expand as we hope to do. And the Virgin River does present our best potential source if the water could be made available at a position or point where we could use it. And one other comment, I recall that Evan Woodbury in reporting the crops that were grown by him, mentioned the sugarbeet seed industry. I happen to be president, Senator Moss, of the local sugarbeet seedgrowers organization, and in connection with the thought that was expressed this morning, the growers would like to grow an increased amount of seed if it were possible for the Utah-Idaho Sugar Co. with whom we contract for the growing of seed, had an outlet for it. Last year our beet seed was reduced by 25 percent, and this year our acreage has been reduced another 25 percent for the crop that will be planted in September of this current year. I am pleased to have this opportunity of making this comment, and thanks very much.

Senator Moss. Thank you, Mr. Bentley. We appreciate it. It was very well done. Next we will call on Senator Orval Hafen. Senator Hafen, would you care to comment for us here? We are pleased to have you.

STATEMENT OF ORVAL HAFEN, STATE SENATOR, ST. GEORGE, UTAH

Mr. HAFEN. My name is Orval Hafen, and I am a member of the Utah State Senate, and I was born and have been raised in this particular area. I am very proud of it, and have great faith in it. I have been thinking this morning of going back to about 1915 when I was very much younger than I am now, and going with my father and his associates to see them build the canal on Santa Clara Bench. About the most complicated equipment they had was a team and scraper, and I marveled at their courage and stamina in developing that project on a shoestring. But, they held on with the idea that someday somehow the water of that Santa Clara Creek would be stored and then the dream they had for that project could be realized. They did form a town there of Ivins and those people have just hung on the best they could all through these years. Now, I am 100 percent for this whole project, and I haven't heard all that's been said. I don't want to detract at all from the dam on the Virgin River, but I want to reinforce a little bit just this other part of the project, the dam and the reservoir on the Santa Clara

Creek below Gunlock. I think that's one feature that we should not forget. I don't know how much water will be available for the Santa Clara Bench project, but there are several thousand acres there, and to my mind the Santa Clara Bench is one of the most spectacular and most promising sections in this particular area, not only from an agricultural standpoint, but from a recreational viewpoint and as a site for retired people. The winter sunshine is comparable to that in Phoenix and Palm Springs, and the scenery surpasses that in those areas by a large margin. Many things could be said about the possibilities of that particular project. Now, talking about both phases of the project, I would like to state that water storage facilities are the primary need of the area. We need to store and to release water in an orderly way which now largely goes to waste. We've experienced years of drought, sometimes worse than others, but drought is quite a familiar experience to us. If this particular project is developed, I don't know where any substantial additional water supplies can be developed. The fact that the people in this area have agreed to the levy of a 5-percent ad valorem tax is proof of their faith in the project. I feel that this is one of the most promising areas in the entire Nation. Water is the key to its progress, and the future of the whole area is dependent upon the approval of this project. We can't go very much further than we have gone right now without this project. With the project it is hard to predict what could happen, but I am confident as many other people are, that it is one of the most promising areas in the Nation, and that the approval of this project is the entire key to its development.

Senator Moss. Thank you very much, Senator Hafen. It is a very fine statement and we appreciate it. John H. Morgan, Jr., from Salt Lake City. John, we are glad to have you come to testify. We haven't had many folks from Salt Lake City come, and we are glad to have you.

STATEMENT OF JOHN H. MORGAN, SALT LAKE CITY, UTAH

Mr. MORGAN. It is a pleasure to be here, Senator. Senator Moss and Mayor Bill, my name is John Morgan, from Salt Lake. I am a representative of S. W. Associates, a development group that consists of a group of Salt Lake fellows and St. George people interested in the development of this area just south of St. George.

It has been about 3 years since a group of us from Salt Lake City and St. George commenced the purchase of properties in the St. George area, looking toward the end view of developing a beautiful recreation and home development project, especially for retired citizens. This would contemplate a beautiful golf course-country club type of establishment in the center, surrounded by cooperative homes and apartments and other recreational and home living centers. We have purchased, or are in the process of purchasing, approximately 1,000 acres of land, beautifully located, adjacent to the new interstate freeway entering St. George from the south to fulfill the purposes of this effort. We selected this area because of its inherent beauty—we know of no other place to match it in the State of Utah or in the West for the purposes for which we have in mind.

St. George, in our judgment, is a sleeping giant in terms of its potential for development of a recreational, tourist, and retirement center. It has the great advantage of climate, location at the gateway to the national parks and Glen Canyon from southern California and other areas of the Southwest, and the coloring and beauty which cannot be equaled anywhere, in our judgment.

Did you know that the city of Tucson, Ariz., last year did a reported \$65 million worth of tourist business. The tourist business is the principal industry of Tucson, Ariz. Their chief attraction is their climate, their location, and their history. Although we do not in any way intend to detract from the great effort which has been put forward by the people of Tucson in the development of their tourist business, we submit that in each department St. George has a much greater potential than the city of Tucson, Ariz. We claim that it will take just two important factors to bring about the kind of tourist and recreational business which we have the potential of developing here in St. George.

The first important factor is a matter which is somewhat intangible, and yet without it, it is really impossible to achieve these goals. This is the matter of the initiative, desire, and cooperation on the part of the people involved in this project and the people of St. George. We believe that it is possible to achieve these goals. The whole history of St. George is a history of cooperation and initiative on the part of the people—first of all to survive the elements which almost killed them off, and secondly, to build a fine area which they have done. The building and development is really beginning to show itself in a major way at this point.

The second great factor, which has always handicapped this area and which will always limit its growth and development unless the problem is solved, is the lack of a dependable and adequate water and power supply. Water is the key to the life of this area. Without adequate and even abundant and predictable supplies of water this area must either die on the vine or be content with merely standing still while other areas grow and develop—areas which do not have near the potential that the St. George area has—merely because they are not plagued with the water problem.

The people here for over 25 years have been trying to secure the approval of this Dixie project which would be the answer to their prayers in terms of bringing water and power that we all desperately need here, and to help make it possible to accomplish the things that we have in mind for this particular project in which we are involved.

We are grateful for the work and effort which has already been accomplished by our congressional delegation in building the foundation for the successful approval of this great project. We know that there are a lot of hurdles which must be crossed before the final approval can be secured in Congress, but we also believe that the successful approval of this project is a matter of cooperation, not only among ourselves and the people of St. George, but also the cooperation and understanding on the part of all of us in helping you to secure this congressional approval.

We go on record as supporting this great effort and pledge ourselves to do whatever we can to cooperate and support and sustain

the efforts of all those directly or indirectly connected with this great project.

Senator Moss. Thank you very much, Mr. Morgan. Mr. Lyndyle Foremaster. I believe you are president of the Lions Club.

STATEMENT OF LYNDYLE FOREMASTER, PRESIDENT, ST. GEORGE LIONS CLUB, ST. GEORGE, UTAH

Mr. FOREMASTER. Pardon me, Senator Moss, I haven't a statement written up.

Senator Moss. Well, if you have anything to say, you go ahead and say it.

Mr. FOREMASTER. I am Lyndyle Foremaster of St. George, and I am a farmer and livestock producer in St. George, and I am also president of the St. George Lions Club. I planned on having a statement written up, but I thought it wouldn't be necessary, to just drop in. I am talking from the standpoint of a farmer and producer and one that's willing to have my taxes raised to complete this project. I would like to say that the project is one that we sincerely need here in the southern part of the State, and the land that we will be able to bring under production which is laying idle at the present time will justify this end of the State in accomplishing this project, and I would like to say that I am supporting it 100 percent. Thank you.

Senator Moss. Thank you, Mr. Foremaster. We appreciate that. Mr. Ray Schmutz.

STATEMENT OF RAY SCHMUTZ

Mr. SCHMUTZ. Senator Moss, I have appreciated the opportunity of rearing my family in a rural area where children have the opportunity of working with their neighbors and their friends and people with whom we associated in learning cooperation and helping each other, learning the values of good living; where they can assume their responsibilities to their families and to their fellow men and learn their responsibilities. I think that in so doing they have an opportunity of developing those attributes of character which we like to see in citizens and which will make them desirable citizens as they grow older. Too often these opportunities, I feel, are not found in urban areas. Therefore I would like to see my children and their children have an opportunity to grow up in rural areas where they can learn these things which I think are desirable for them. I like to see them or someone else's children have that opportunity to continue to live in rural areas, and if the Dixie project is built it will provide that opportunity for a lot more people than we have here now. I think it is important that we provide these opportunities for our younger people, because, as has been indicated before, they are our major crop, certainly our most important crop, and too many of them have to leave because the opportunities are restricted and limited here under the present conditions. If we can provide the opportunity for them to fulfill their opportunities by living in rural areas. I know that there is a great concern now on the part of the Government through RAD program. It seems to me this fits

very well into the program, rural area development, which can be provided here for our area through the Dixie project, and certainly it is most worth while. From a personal standpoint it allows me as a farmer to make a much better operation in the things that I can produce and the opportunity that we will have in farming, and economic unit with our livestock and our farm, and certainly it will be the determining fact in allowing me to encourage at least one or more of my boys to stay with the farm. If we have an adequate supply of water it will be a much more attractive situation than the way it is at present. Thank you.

Senator Moss. Thank you very much, Mr. Schmutz. Is Mayor Dee Hunt from Ivins here? Mayor Hunt, we will be glad to hear from you. We are glad to have you here.

**STATEMENT OF ANDREW DEE HUNT, PRESIDENT, TOWN BOARD,
IVINS, UTAH**

Mr. HUNT. What I have written down here has been pretty well said by pretty near everyone who I have listened to, but I would like to read it anyway.

In regards to the proposed Dixie project, we of the small town of Ivins feel that the very future of our lives will be determined by the outcome of the Dixie project. These people are basically a progressive people. However, because of the lack of opportunity they are discouraged from investing their time and lives in an area with no future. At the present time our young people, if they have any ambition must move to Las Vegas, Salt Lake City, or other places to gain opportunity to put their education and ambition to work. The Dixie project could change and would change this outlook, by creating the basic development that would give the future meaning.

At the present time the town of Ivins has just enough culinary water for the homes now being lived in. During 3 of the months which are the hottest of the year we ration the tapwater to prevent us from being without.

We have no extra water to encourage even one more resident in town, as the present population goes short 3 months out of the year. The Dixie project would allow culinary water to encourage growth and expansion and progress. I believe that our great country will need more than ever before, the type of character people that this area has been able to produce. People who believe in honest labor, who love education and progress, who will build chapels and schools before anything else, who will go without to give their children the best possible education, who do not waste their time seeking after pleasure and worrying about old-age benefits. Because of the limitations of our underdeveloped natural resources we have come to the point where we must ask for help. I believe that if the Nation will make an investment in this area at this time, it will pay a big dividend in the future of our great Nation.

I would like to also say progress; unless there is progress, you stand still. I've watched for the last 20 years the small town of Ivins shrink in. They used to farm about 3-mile-square area and it has gradually shrunk in until it is less than a mile, or somewhere around a mile square. But that's not entirely due to the loss of the

stream by more development above, but it is partially due to the drought and other things that enter in. But, we have dreamed of this project for as long as I have been a resident of this town, for the past 20 years that I know of, and it would certainly mean a beginning of our city, our town. That's all I have to say, thank you.

Senator Moss. Thank you very much, Mayor Hunt, for your statement. We are glad to have it. Is Mr. Ruben Ence here? Mr. Ence comes from Ivins, also. Mr. Ence, you may go ahead.

STATEMENT OF RUBEN ENCE, IVINS, UTAH

Mr. ENCE. I've lived up in Ivins for 40 years. When we first moved up there we had a lot of water. In fact, one time we didn't even empty our reservoir. We refilled it one year, and for the last 10 years we haven't had any water, we haven't farmed. You can tell from the looks of me how well we feel up there. If you need work you have to go out and get it, you can't get it at home. There is no water available. We hardly have enough water to raise a little corn or garden for our house, and we've done everything in the world to try to get water. We have been talking of building a new reservoir, but we find they are not feasible. We have been willing to go ahead and do what we could on our own. Now, this Dixie project has been mentioned for about 50 years. I don't remember that far back, but I can remember 40 years ago. And now, it is beginning to look feasible, and to me for the Ivins Bench it is the only solution. If this project doesn't go through this time it doesn't look like it will ever go through. This is the only solution for the Ivins project. We have a townsite up there for 200 families and there are about 18 or 20 families living there at present. Sometimes it will go up, and the first thing you know somebody moves off and she's cut down and we never get over 20. And you can't blame people for not coming to that kind of a country, and it is one of the best places in the world to live. It is quiet and up against that red mountain, nice scenery. We have a nice breeze up there all the time, and it is a nice place to live. It is a nice place to raise a family. You can raise good families up there, but the most of us are getting too old again. We are going to have to get new machinery or we won't be able to keep going. They talked this morning about this good crop of young people that has to move away. We have lots of feasible land if this project goes through. Senator Hafen told us—there's about 2,000 or 3,000 acres of land over there that is the best land in the world. You can raise anything from garden to alfalfa, beets, anything you want to plant. Yet, we can't plant it because we don't have the water. But, this would be a fine place for some young people that has to move off to get work with their families. They move their families out, and the first thing you know, they are all gone. I hope that these brethren will see fit to try to push this. We know they are doing all they can.

Now, our mayor here in St. George, I think he's really pushed the wagon along, and those who work with him and they have really done a good job.

The need for the Dixie project in our locality is very great. Citizens of our community depend largely upon the crops and fruits

from their orchards and farms for their living. Many people raise vegetables to sell, and fruits of all kinds are sold locally and shipped to other places.

The farms raise varied crops. Because of our long growing season, we have many cuttings of alfalfa, which is also used as a cash crop. We have sugarcane, from which molasses is made and sold locally and shipped. There are many fruit stands at which tourists buy produce. Sugarbeets, field corn, potatoes (all vegetables), onion seed, sugar-beet seed, all types of fruit, nuts, and grapes are raised. There is much pastureland for livestock, and much irrigation is needed to insure an abundant harvest for these people to earn a living from.

Recreational facilities are much in demand. There is considerable fishing, boating, swimming, not only by our people locally, but many tourists avail themselves of the opportunities to visit our lakes and campsites, bringing in revenue for our people. We have a wonderful climate, energetic people, and the ability to do things if we have our natural resources as a combination to further these.

We hope these items will bring a consideration and thoughtful appeal in our behalf. I thank you.

Senator Moss. Thank you, Mr. Ence, very good.

Mr. Harmon Bubler. Come forward, Mr. Gubler.

STATEMENT OF HARMON GUBLER, IVINS, UTAH

Mr. GUBLER. Senator Moss and Mayor Barlocker. I feel sorry for these mayors. I was mayor once for 12 years myself and I know what they have to do, especially in a town like Ivins. You think there is not much to do there, but there is a little work to do, and a lot that should be done, and unless we get more people we won't do much up there. Now, I am going to read my statement today.

We understand that you as a committee are making investigations concerning the advisability of building a reservoir on the Santa Clara Creek, a tributary of the Virgin River on the Dixie project.

We are sorely in need of a reservoir on the Santa Clara Creek. This would act as a supplementary addition of water for the land already under cultivation and would serve to bring under cultivation many more acres of land. The land now irrigated is only a fraction of the land that could be irrigated if there were water available.

St. George is growing; however, it would grow much faster if other lands could be put under cultivation. There is a lot of land, good land, that could be put under cultivation. These lands would produce most any kind of fruits, except tropical fruit. Peaches, apples, pears, apricots, plus grapes all do well in this country. Nuts grow here, too. These lands are very good for the trucking business; many kinds of vegetables grow here.

The poultry business, either turkeys or chickens, thrives here. As the country grows we need more facilities for recreation. A reservoir on the Santa Clara Creek would help fishing and hunting and would create conditions that would be helpful in giving us more recreation. A reservoir on the Santa Clara Creek would give us opportunities that would develop this part of the country. It would help to make homes for many people who would otherwise have to go elsewhere to make a living. It would bring thrift and prosperity to southern Utah.

We need your help. Southern Utah needs your help.

Now, I have lived in Ivins for about 30 years, and when I first went to Ivins I thought maybe 15 or 25 years we would have a town there and maybe a small city. Now, I have been just a little bit disappointed in that respect. I still think there is hope for Ivins. Now, I'm going to tell you what I heard when I was a boy. You have heard them tell about Brigham Young going north of Ivins, and when I was a boy, I heard from the older people on several occasions that somewhere near the townsite of Ivins there would be a city in the future. Now, that city hasn't come as yet and I still have hopes that there will be a city there sometime. Now, we have a man up in Ivins who is not of our faith, exactly. I had a talk with him one day, and he said that Brigham Young said that southern Utah would be the head of the State of Utah. Now, I've heard that from others today. Now, whether that's true or not I don't know, but I haven't lost faith yet. Now, I don't think I will see it myself, but some of our people will, some of our sons and daughters and grandchildren will see it, I think. Unless we get more water Ivins won't grow, and unless we get more water St. George isn't going to grow too much. St. George is growing, but unless we get more water, unless we get more industries in the country, St. George won't grow too rapidly. Now, in order to have industry we have to have water, and about the only way that you can get that is by building reservoirs. Now, I am like President Flutes, I have been kicking around here off and on for a long time, and years ago when I was a young man we had high water in the Santa Clara Creek in the middle of June, and that happened very often. But, now, we don't have that. Now, the Lord might have mercy on some of us and send us more rain and more snows in the mountains. Now, we have a potential in southern Utah. We have coal at Cedar and we have iron in Cedar, we have copper in the mountains there and we have a little silver, possibly, and a little gold and some of the other important metals if they can just be found there. They will be found and this country has got to have water if it's going to grow.

Now, I am going to mention our young children. I have lived in this country for 80 years or a little better, and I have seen a lot of our best talent, our prize boys and girls leave this country. They couldn't get employment here and they had to go elsewhere. Now, I have a son in New York who's been there for 5 years. At the present time he's teaching in Harvard University, Harvard College, New York University. Now, he wants to come west. In fact, he's going to come west. This fall he's going to go to Sacramento, Calif., and there he's going to teach in Sacramento State. He's teaching public administration and political science. Those are his majors and minors, and he will be an asset to that country, I'm sure, and we like to have our people that come back come to southern Utah and help us, and they will be valuable assets to us. Now, we are losing young men every year as long as this water situation doesn't improve and are going to keep on losing them. Now, I don't know that I want to say any more. I ask that God will bless us and help us to get what we are working for and I still have faith that we are going to get it, and I think these men are going to help us to get it. Thank you very much for your assistance.

Senator Moss. Thank you very much, Mr. Gubler. I have come to the end of those whose names I have listed. Mr. Spendlove is here. Mr. Spendlove, would you care to make a brief statement?

STATEMENT OF ORMOND D. SPENDLOVE

Mr. SPENDLOVE. I don't care to say anything only that I am back of this 100 percent and everything that has been said, I think has been OK.

Senator Moss. Thank you, Mr. Spendlove. There are representatives of the California Pacific Electric here. Is there any statement to come from them?

STATEMENT OF EARL HANSON, VICE PRESIDENT, SOUTHERN UTAH DIVISION; MANAGER FOR CALIFORNIA PACIFIC UTILITIES CO.

Mr. HANSON. We certainly are heartily in agreement with the sentiment we have heard here today. We would like to say there has been considerable talk about the conservancy district and the local tax that is used to support the project, and I believe we are the largest, or perhaps very close to it, Mayor Barlocker, about the largest property-tax payer in the county, and as such we will be a sizable supporter in the property tax side of the picture; and we feel that we are glad to participate to this extent, and we know all these things that have been said about the advantage that will come with this project and we will benefit and our customers will benefit and we'd like to add our support.

Senator Moss. Thank you, Mr. Hanson and we appreciate that very much, your speaking for the California Pacific. Now, are there any volunteers, now anybody that I have overlooked. Yes, Mr. Hafen.

STATEMENT OF DARRELL HAFEN, ROAD RUNNER INN CORP.

Mr. HAFEN. Senator Moss, I thank you very much. Darrell Hafen is my name, and I represent the Road Runner Inn Corp. and the Green and Sandhollow Springs Water Co., and I suppose in another capacity although it doesn't have a direct relationship to the Dixie project, the Interstate Freeway Association. We have a project which is located at the community of Washington, Utah, between Washington and St. George. We have approximately 1,200 acres of land under option and contract and fee ownership and lease purchase; and to the north of us there is approximately 5,000 to 6,000 acres of land in the valley north of Washington which is federally owned at the present time, and there has been action by the Utah State Land Board as I understand it, to select—at the present time I think they made application to select somewhere around the neighborhood of 2,500 acres of land north of the city of Washington. And our project is a combination project, tourist and recreation center and a retirement city project that we have been working on for almost 6 years. The project could not get underway until we knew that we were going to have some kind of access from the new freeway, since the new freeway was projected to cut through the middle of our property.

No. 2, our project has been held up because of a definite guaranteed source of water supply, and I just returned at noontime from Washington and I was visiting with some farmers down south of the city of Washington who were hunting water today at noon, and of course they had been prevented from getting their adequate water supply over the past few years, because of the condemnation proceedings which were instituted by the St. George City 6 years ago and under which the fifth district court allowed a temporary order of possession on this water on condemnation proceedings. So, we do have a great need for water and we recognize the real value of the Dixie project; not only for development of Washington area, but the St. George area, all of the county of Washington.

Now I will submit to you within the next 2 weeks with that as in connection with our project, certain publicity which we have fostered over the past few years and supported it with information which will indicate that I believe we are on the right track in planning for the minimum population in the valley of Washington somewhere in the neighborhood of 50,000 people within a 30- to 40-year period of time. We feel that it is proper to take a long-range approach to a higher land use of this particular valley and start out from what you can do and work toward this long-range goal. But, we feel if you don't approach it from this long-range goal that it will hamper not only the project from the standpoint of developing it the way it should, but also then you can plan out the entire valley as a complete city without having nonintergraded streets, non-intergraded parking and shopping center areas, nonintergraded parks, facilities for churches and things of this nature.

Now, I would just like to mention that in connection with this retired aspect and the potential of this particular potential for this area, Dale Webb initiated the first retired city of such, I believe, in 1960 in Arizona—as I understand it, that city has a population today of around 10,000 people. I believe if someone would have been told that within a 2- or 3-year period of time, at the time he originated the project that he would have had 10,000 retired people in his project that he would say he was dreaming. He has since then started two or three other retirement city projects in different parts of the country and for the first time to my knowledge he has initiated a project in Tucson, Ariz., within the past year, and as I understand it this project was devoted exclusively for retired Catholic people. He seems to feel, I guess by gearing a retirement project to one particular religious group this would be a successful venture. I believe they have sold approximately 5,000 units within the past year at this particular new city in Tucson, Ariz.

And as I recall, somebody made a statement to me when they started to try to develop Tucson, that Tucson would never go, that Phoenix would have it all. I think that logically if you look at it from strictly a religious retirement center in the St. George area, which I think would be a natural market for this area, because of the background of Brigham Young and his history and winter home and a number of things like that. I think it represents a real potential for this area, because it is the only area in the whole State of Utah that has a climate similar to Tucson and similar to Phoenix. Some people say the climate at St. George year around

is better than it is at Tucson or Phoenix, Ariz. So, in connection with our organization at Washington we feel that if we are going to be deprived, the city of Washington and not only the city of Washington, but ourselves be deprived of this culinary source of water which the city of St. George has a temporary order of possession on at the present time, we are going to have to look to the Dixie project for culinary water. We hope this won't be true, because we do feel that the city of Washington has the senior right from the stream and should not have to enjoin in the initial condemnation proceedings and should prevail and should have control of this culinary water at all sense of justice and right. **We would like to do anything that we could in order to speed up the Dixie project.**

Now, I would like to mention that I am in the process of moving my home from Salt Lake City to Grand Junction, Colo., where we are setting up the national headquarters of the Interstate Seventy Freeway Association. We are doing this for two or three reasons. One reason is to expedite the bottleneck sections between Cove Fort and Denver in order that this traffic could move through this area and maybe a few years in advance of what it normally would come through. It is going to take quite a promotion program, but this particular freeway when it is completed and in this particular bottleneck section in Utah will provide a direct route from New York, St. Louis, and all of the popular areas of the East directly to Denver and Cove Fort and St. George and Los Angeles. This route then will become an equally distanced route from the East to the southern California area as it is currently from the East and the Middle West by Highway 66 to southern California. So, we anticipate that this particular route will double the amount of traffic which currently exists in this area as a result of Highway 91.

Now, in connection with the establishment of headquarters of this association in Grand Junction, Colo., we have been quite interested to learn that probably coincidentally there is a festival going on in Grand Junction, Colo., today called the Foresight Festival and these people in Grand Junction initiated a festival—initiated a program designed to complete a modernization of the downtown area and have done a tremendous job over the past year and have increased the tourist business in Grand Junction 61 percent. The reason I mentioned this is because there does seem to be a relationship between Grand Junction, Colo., and St. George area because of the fact that Congressman Aspinall who is in the House and is apparently chairman of the Interior Committee in the House will have to be—apparently is one of the key men in helping the Dixie project through the House. As I understand it this is where one of the biggest problems is going to be faced. We feel that because of this particular freeway and because of the Dixie project coming up at this time and hearings being held at this time, Grand Junction feels that Interstate 70 Freeway will mean as much to them as the coming of the railroad. There is a direct connection between the future of the Dixie area and the future of the western slope area of Colorado. So, we would be hopeful that through our efforts we may be able to be of some assistance to you in whatever way we may be to help in getting support of other areas for the Dixie project.

We have the direct support of the newspaper in Grand Junction, Colo., and the key leaders of the tourist convention committee in Grand Junction in connection with the Interstate 70 Freeway Association.

Senator Moss. I will appreciate it if you will make your statement as brief as possible, Darrell. We have been talking about a lot of things that aren't specific on the Dixie project.

Mr. HAFEN. I understand that, although I do feel that there is a definite need for cooperation between these other States and other areas and the Dixie area.

Senator Moss. Yes, I concede that.

Mr. HAFEN. And we would be more than happy to lend whatever support we could to assist you in that regard, and I wanted to lay the foundation for the need of large amounts of culinary water that would essentially come from the Dixie project, and also power which would be needed from this particular area. Thank you very much.

Senator Moss. Thank you, Darrell. I appreciate your statement, and certainly I agree we need all the cooperation and help that we can get. That completes the list of witnesses here today. As I indicated earlier, if there is anyone who wanted to file a written statement and didn't have the opportunity to do so today, mail it directly to me in the Senate in Washington and I will see that it is included in the record before it is printed up. The record will take, oh, a week to maybe 2 weeks before it is printed, and in that length of time you can get in additional statements if you wish to do so. We have moved right along. I was very grateful for the fine cooperation I've had from all of the people here. If I have counted them right we have heard from 39 witnesses today. They have all seemed to be on the same side of the subject. That's something of a record and something that I rejoice about. Sometimes these hearings are not so unanimous as this one has been today. But, it is a great pleasure to come and preside over a hearing in St. George, to meet with you people who are so concerned about your water resources and so willing to do whatever is in your power to improve them and to bring you at least, some hope, that we can get the kind of cooperation and help that we will need from the Representatives in the Congress of the United States so that this Dixie project can be authorized and funded and built. It will be a great day for Utah when that can be done. So, thank you all, and this hearing is adjourned.

(Statements and letters filed for publication in the hearing record are as follows:)

ST. GEORGE, UTAH, *February 3, 1963.*

Senator FRANK E. MOSS,
U.S. Capitol Building, Washington, D.C.

DEAR SENATOR MOSS: In 1960 the road commission took our home of almost 10 years to build a freeway through our property. We built another home on the property we had left.

The Santa Clara Creek runs through our property. This past September 1, 1962, a flood came down the creek and the elevation of the new highway threw the flood waters into our yard and almost in our home causing property damage. When we lived in our other home and a flood came down the creek the new highway wasn't there to back the water and it flowed

through the fields. We are very concerned about the floods since this one flowed through our yard like a river. A larger one would ruin our home.

It is a shame that all this water is allowed to overflow through the fields, causing damage and drowning livestock and now endangering our home. Besides this is an extreme drought area and the farmers need this water very much.

We are depending on you to help us get the Dixie project through.

Sincerely,

Mrs. Mildred Giles.

St. George, Utah, January 16, 1963.

Senator Frank E. Moss,
U.S. Senate,
Washington, D.C.:

Our thanks and appreciation for your determined efforts on the Dixie project indicated by current Utah news releases. Your membership on Senate Interior Committee strengthens our hope for ultimate congressional approval Dixie project long over due is essential to industrial growth and economic security of this rural area.

H. Bruce Stucki,
President, St. George Chamber of Commerce.

J. C. Penney Co., Inc.,
April 25, 1963.

Senate Subcommittee concerning the Dixie project.
Attention: Senator Frank E. Moss.

HONORABLE SIRS: We strongly urge your support in behalf of the Dixie project. With it we in this part of the country will be able to experience a normal growth. Without the Dixie project we will be very limited. Water is life and opportunity.

Please recommend this project to your friends and colleagues. We are depending on you.

Very truly yours,

Blaine R. Andrus,
Director, St. George Rotary Club, St. George Chamber of Commerce,
Manager J. C. Penney Co.

STATEMENT OF C. W. COTTAM, ST. GEORGE, UTAH

Senator Moss, my name is C. W. (Walter) Cottam of St. George, Utah. I have been in contact with nearly all property owners in this county and I find that they overwhelmingly support the proposed "Dixie Project." I have known the Virgin River for 65 years. I have seen it so dry that a bird couldn't quench its thirst. I know the tremendous fall from the elevation north and east of Zion National Park to the river's course through Nevada. Because of this drop in elevation flood waters erode the land very fast and carry so much sediment that the stream appears to be a thin mud. To store these flood waters, as proposed in the Dixie project, would make it possible for this area to make industrial growth. It would also protect Lake Mead from heavy loads of silt, thus prolonging the life of that lake. We are desperately in need of more water to provide for a normal growth and this project would provide the only known source of water remaining, therefore, we urge Congress to make it available to us by making the Dixie project a reality.

We are happy that this project would benefit others too. Fishing, boating, and water skiing so close to Zion National Park and other places of scenic beauty would make this area a tourist's paradise. Many people will find their vacation one continuous round of pleasure where they see and enjoy more, but travel less. They will get more for the tourist dollar. The recreational phase of the Dixie project is of greater benefit to others than to us: California will get the greatest benefit because she furnishes us the most tourists. There are places off the main highway but nearby that have equal if not greater beauty than those that are now famous. These will soon become accessible.

We therefore urge Congress to grant us this Dixie project so that the lake that would be created might become another link in the chain of recreational facilities of our great Nation.

STATEMENT OF REED MATHIAS, ST. GEORGE, UTAH

To the Subcommittee on Interior and Insular Affairs:

We are all aware of the fact that any development or growth in the arid west and especially in southern Utah, whether economywise or populationwise, depends on the conservation and beneficial use of the limited amount of water available. In this area the Virgin River and Santa Clara River are the only sources where water can be conserved and developed.

For years our best crop, our young people, have had to leave here to make a living, maybe we could keep some of them home if we can put in the Dixie project. We have a limited amount of water, with this project we could substantially develop our resources.

We have a mild climate with a long growing season, a climate that will permit the growing of a number of diversified crops including early vegetables, all kinds of fruit such as figs, pomegranates, peaches, etc. Sugarbeets and sugarbeet seed is a major crop of southern Utah. It is an area of relatively small farms and a number of farmers feed a few livestock. This feed is mostly silage, alfalfa hay and grain. A substantial amount of the grain is shipped in but some barley is raised, mostly a little north of here. This project will also be a major flood control and conserve lots of water that would otherwise go on down the river and waste because the big part of our flood water never reaches Lake Mead. In view of our favorable climate the recreation facilities on these lakes could be developed into a major asset including fishing, boating, water skiing, etc., and being next to our National Parks would be a great tourist attraction.

The hydroplant on the Virgin River, producing annually about 45 million kilowatt-hours of power would also be a major asset to their area. We hope the congressional committee can act favorably after viewing the benefits of the Dixie project.

THE ROAD RUNNER INN.
Washington, Utah, May 30, 1963.

Senator FRANK E. MOSS,
Senate Office Building,
Washington, D.C.

DEAR SENATOR MOSS: I would like to specifically request that my letter of May 27, 1963, relating to the Dixie project be included in the report of the public hearings, and I would also like to request that this letter be so included.

We are now in the contract negotiation stage with two different parties regarding the major financing of our "retirement city" and tourist and recreation center to be built in connection with this city at Washington, Utah. I can foresee over the next 30 years a need for large amounts of culinary water for our development and the logical place to acquire this water is from the Dixie project. Therefore, I would like to specifically request that 25,000 acre-feet annually of culinary water be written into the act, ready to be submitted before Congress, to be utilized eventually for our retirement city, etc., and that the Green & Sand Hollow Springs Water Co. be the corporate entity that will acquire this water for the development of the land in the Washington, Utah Valley. Also, I am very concerned about the location of the powerlines location for the Dixie project. I believe that more careful studies should be made of potential development in the area before a firm location is decided upon the powerlines. We will need this Dixie project power and if necessary we will broaden the articles of the Green & Sand Hollow Springs Water Co. to provide power service, or establish a local REA power co-op.

I am deeply concerned about these matters and I would like to again request this letter to be included in the Dixie project public hearing transcript and that you write to me concerning your views on these matters of great importance to our development. Please send a copy of your letter to my Salt Lake City address, Post Office Box 481, Salt Lake City. Thank you.

Sincerely,

DARRELL G. HAFEN.

THE ROAD RUNNER INN,
Washington, Utah, May 27, 1963.

Senator FRANK E. MOSS,
Senate Office Building,
Washington, D.C.

DEAR SENATOR MOSS: In line with my testimony on the Dixie project I believe that you and others should know of the critical nature of the culinary water problems in the St. George, Utah area. As I see it, the Dixie project is a must for this area at this time.

Our organization has been planning retirement housing for senior citizens from the beginning of our development at Washington, Utah. I firmly believe that this area is to become a "retirement city" area for Utah. In fact, it is the only area in the whole State whose climate is conducive to such an enterprise. We have backed up our belief in this matter with an expenditure of \$100,000 in land and development costs. We have tested the market on retirement housing among the LDS Church in the improvement era and we received a very favorable response to the ad.

As I indicated at the recent public hearing St. George City is attempting to secure culinary water from the vicinity of Washington through an eminent domain proceeding—which I believe to be wrong in substance and intent. I believe that one third-class city (Washington) has just as much right to a drink of water as another third-class city (St. George) and I believe that St. George has the duty to utilize all its present water sources before "disturbing" people in another city.

Thus, you can see that more water will be needed—and power. I indicated a minimum population of 50,000 in the Washington area over a 30- to 40-year period. I still believe this to be correct and I hope that all interested people take this factor into account in culinary water and power considerations under the Dixie project.

Sincerely,

DARRELL G. HAFEN.





