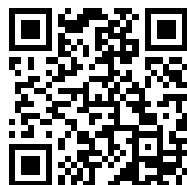
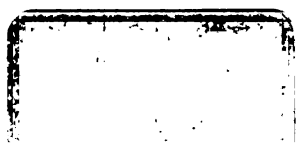

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COLORADO RIVER STORAGE PROJECT

HEARINGS
BEFORE THE
SUBCOMMITTEE ON IRRIGATION AND
RECLAMATION
OF THE
COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS
HOUSE OF REPRESENTATIVES

EIGHTY-THIRD CONGRESS

SECOND SESSION

ON

H. R. 4449, H. R. 4443, and H. R. 4463

TO AUTHORIZE THE SECRETARY OF THE INTERIOR TO
CONSTRUCT, OPERATE, AND MAINTAIN THE COLORADO
RIVER STORAGE PROJECT AND PARTICIPATING PROJECTS,
AND FOR OTHER PURPOSES

JANUARY 18, 19, 20, 21, 22, 23, 25, 26, 27, AND 28, 1954

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

Serial No. 11



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1954

42366

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COLORADO RIVER STORAGE PROJECT

MONDAY, JANUARY 18, 1954

HOUSE OF REPRESENTATIVES, SUBCOMMITTEE ON
IRRIGATION AND RECLAMATION OF THE COMMITTEE
ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to call, at 9:35 a. m. in the committee room, New House Office Building, William H. Harrison (chairman) presiding.

Mr. HARRISON. The Subcommittee on Irrigation and Reclamation will come to order.

We have hearings on three identical bills, H. R. 4449, by Mr. Dawson of Utah, H. R. 4443, by Mr. Aspinall of Colorado, and H. R. 4463, by Mr. Stringfellow of Utah.

Mr. ASPINALL. Mr. Chairman, I wish to correct the opening statement. My bill is not exactly identical, it is a similar bill, but not exactly identical.

Mr. HARRISON. The Chair will stand corrected. I thought they were identical bills. We will change that to similar bills.

(H. R. 4449, H. R. 4443, and H. R. 4463 read as follows:)

[H. R. 4449, 83d Cong., 1st sess.]

A BILL To authorize the Secretary of the Interior to construct, operate, and maintain the Colorado River storage project and participating projects, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, in order to initiate the comprehensive development of the water resources of the Upper Colorado River Basin, the Congress, in the exercise of its constitutional authority to provide for the general welfare, to regulate commerce among the States, and to make all needful rules and regulations respecting property belonging to the United States, and for the purposes, among others, of regulating the flow of the Colorado River, storing water for beneficial consumptive use, making it possible for the States of the Upper Basin to utilize, consistently with the obligation undertaken by the States of the upper division in article III of the Colorado River Compact, the apportionments made to and among them in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, providing for the control of floods and for the improvement of navigation, and generating hydroelectric power, hereby authorizes the Secretary of the Interior (1) to construct, operate, and maintain the following initial units of the Colorado River storage project, consisting of dams, reservoirs, power plants, transmission facilities, and appurtenant works: Echo Park, Flaming Gorge, Glen Canyon, Navaho, and Curecanti: *Provided, however,* That the Curecanti Dam shall be constructed to a height which will impound not less than nine hundred and forty thousand acre-feet of water or will create a reservoir of such greater capacity as can be obtained by a high water line located at seven thousand five hundred and twenty feet above mean sea level; and (2) to construct, operate, and maintain the following additional reclamation projects (including power generating and transmission facilities related thereto), hereinafter referred to as participating projects: Central Utah, Emery County, Gooseberry, Florida, San Juan-Chama, Shiprock-South San Juan Indian irrigation, Hammond, LaBarge, Lyman, Paonia (including the Minnesota unit, a dam and reservoir on Muddy Creek just above its confluence

with the North Fork of the Gunnison River, and other necessary works), Pine River Extension, La Plata, Seedskadee, Silt, and Smith Fork: *Provided*, That no appropriation for or construction of the San Juan-Chama project or the Shiprock-South San Juan Indian irrigation project shall be made or begun until coordinated reports thereon shall have been submitted to the affected States pursuant to the Act of December 22, 1944 (58 Stat. 887), and approved by the Congress: *Provided further*, That no appropriation for or construction of any part of the Central Utah project, beyond the initial phase thereof, shall be made or begun until a report thereon shall have been submitted to the affected States pursuant to the Act of December 22, 1944 (58 Stat. 887), and approved by the Congress. The benefits of the Act of July 1, 1932 (47 Stat. 564), are hereby extended and shall apply to all Indian lands served by each of the foregoing participating projects.

SEC. 2. Except as otherwise provided in this Act, in constructing, operating and maintaining the units of the Colorado River storage project and the participating projects listed in section 1 of 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): *Provided*, That (a) irrigation repayment contracts entered into pursuant to those laws may, except as otherwise provided for the Paonia and Eden projects, provide for repayment of the obligation assumed thereunder over a period of not more than fifty years exclusive of any development period authorized by law; (b) contracts relating to municipal water supply may be made without regard to the limitations of the last sentence of section 9 (c) of the Reclamation Project Act of 1939; (c) in constructing, operating, and maintaining the Shiprock-South San Juan Indian irrigation project, the Secretary shall be governed by the laws relating to the development of irrigation projects on Indian reservations where applicable; and (d), as to Indian lands within, under or served by either or all participating projects, payment of construction costs shall be subject to the Act of July 1, 1932 (47 Stat. 564). Said units and projects shall be subject to the apportionments of the use of water between the Upper and Lower Basins of the Colorado River and among the States of the Upper Basin fixed in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, and to the terms of the treaty with the United Mexican States.

SEC. 3. The Colorado River storage project and participating projects shall be treated and accounted for as one project: the capital investment in the commercial power features of said project shall be returnable within a period not exceeding fifty years from the date of completion of such features unless, in the judgment of the Secretary, concurred in by the Federal Power Commission, a longer period is deemed justified: interest on the unamortized balance of the investment in the commercial power features of the said project shall be returnable at a rate not less than the average rate paid by the United States on its long-term loans outstanding at the date of authorization of the said project: interest at such rate shall be paid annually out of the net revenues of the commercial power features thereof into Miscellaneous Receipts of the Treasury; and the return of that part of the costs of the project (including, but without limitation, those portions of the reimbursable construction costs of the Paonia project (including the Minnesota unit, a dam and reservoir on Muddy Creek just above its confluence with the North Fork of the Gunnison River, and other necessary works) and of the irrigation features of the Eden project, as authorized in the Act of June 28, 1949 (63 Stat. 277), which are, in the case of the Paonia project, beyond the ability of the water users to repay within the period prescribed in the Act of June 25, 1947 (61 Stat. 181), and, in the case of the Eden project, in excess of the amount prescribed in the Act of June 28, 1949) allocated to irrigation but returnable from net power revenues, authorization for which said allocation and return under the Federal reclamation laws is hereby confirmed, shall begin on a date not later than the date upon which the return of the capital investment in the commercial power features of the said project has been completed.

SEC. 4. The hydroelectric powerplants authorized by this Act to be constructed, operated, and maintained by the Secretary shall, to the fullest practicable extent consistent with the purposes of this Act, the Colorado River Compact and the Upper Colorado River Basin Compact, be operated in conjunction with other Federal powerplants, present and potential, so as to produce the greatest practicable amount of power and energy that can be sold at firm power and energy rates. Neither the impounding nor use of water solely for the generation of power and energy at such plants shall preclude the use and consumption of water of the Upper Colorado River system for domestic or agricultural purposes;

and the Secretary, upon the application of any party proposing to make any such use (which application is concurred in by the appropriate officials of the State or States in which such use is proposed to be made), after notice given by said party to all other interested parties and opportunity for public hearing on the issues involved and unless good cause be shown why such application should not be granted, shall release to the extent required for such use any right that the United States may have to impound and use water solely for the generation of power and energy as aforesaid. The Secretary is hereby authorized to enter into such contracts or agreements as, in his opinion, are feasible based upon a recognition and evaluation of the benefits arising from integrated operation of other hydroelectric powerplants and of the works herein authorized. Electric power generated at plants authorized by this Act and disposed of for use outside the States of the Upper Colorado River Basin shall be replaced from other sources, as determined by the Secretary, when required to satisfy needs in the States of the Upper Colorado River Basin, at rates not to exceed those in effect for power generated at plants authorized by this Act. Contracts for the sale of power for use outside the States of the Upper Colorado River Basin shall contain such provisions as the Secretary shall determine to be necessary to effectuate the purposes of this Act, including the provision that if and when the Secretary finds (a) that such power cannot practicably be replaced from other sources at rates not exceeding those in effect for power generated by plants authorized by this Act, and (b) that such power is required to satisfy needs in the States of the Upper Colorado River Basin, then such contracts shall be subject to termination or to modification to the extent deemed necessary by the Secretary to meet power requirements in the States of the Upper Colorado River Basin.

SEC. 5. In order to achieve such comprehensive development as will assure the consumptive use in the States of the Upper Colorado River Basin of waters of the Colorado River system the use of which is apportioned to the Upper Colorado River Basin by the Colorado River Compact and to each State thereof by the Upper Colorado River Basin Compact, it is the intent of the Congress to authorize the construction, operation, and maintenance of further units of the Colorado River storage project, of additional phases of participating projects authorized in this Act, and of new participating projects as additional information becomes available and additional needs are indicated. It is hereby declared to be the purpose of the Congress to authorize as participating projects only projects (including units or phases thereof)—

(1) for the use, in one or more of the States designated in article III of the Upper Colorado River Basin Compact, of waters of the Upper Colorado River system the consumptive use of which is apportioned to those States by that article;

(2) whose total benefits exceed their total costs including, but without limitation, costs attributable to the direct use of the facilities of the Colorado River storage project or any other project and an appropriate share of the costs of the Colorado River storage project;

(3) which are able, with their anticipated revenues from irrigation, based on the irrigators' ability to pay, to meet the operation, maintenance, and replacement costs allocated to irrigation and to pay within a period of fifty years following a suitable development period at least part of the construction cost allocated to irrigation.

(4) which have available, to aid them, an appropriate district, preferably of the water-conservancy type, which is satisfactory to the Secretary, one purpose of which shall be to provide revenues for the project over and above those paid by the irrigators, to assist in repayment of construction costs allocated to irrigation; and

(5) for which pertinent data sufficient to determine their probable engineering and economic justification and feasibility shall be available.

It is likewise declared to be the policy of the Congress that a new project, unit, or phase thereof shall be authorized as a participating project only when and to the extent that all sources of revenue directly available to said project, unit, or phase are insufficient to return its reimbursable costs during a fifty-year payout period.

SEC. 6. There is hereby established in the Treasury a special fund, designated the "Upper Colorado River Development Fund", to which shall be transferred at the end of each fiscal year, beginning with the initial year of commercial power production by the Colorado River storage project 7½ per centum of the net power revenues for that year after such net revenues exceed \$5,000,000 annually, but not to exceed \$1,000,000 in any one fiscal year. The moneys so

transferred shall be available upon appropriation (such appropriation to remain available until expended) for expenditure by the Secretary, without prejudice to the use by him for the same purposes of other appropriated moneys, for studies and investigations relating to the development, conservation, and utilization of the waters of the Upper Colorado River Basin, all expenditures from said fund to be nonreimbursable and nonreturnable under the reclamation laws. Funds appropriated for carrying out the authorizations contained in section 1 of this Act shall also be available for carrying out the studies and investigations set forth in this section.

SEC. 7. There is hereby established in the Treasury, from the receipts of the Colorado River storage project, a continuing fund of \$1,000,000 to the credit of and subject to expenditure by the Secretary to defray emergency expenses and to insure continuous operation of the project.

SEC. 8. The Secretary shall report to the Congress as of the close of each fiscal year beginning with the fiscal year 1955 upon the status of the revenues from and the cost of constructing, operating, and maintaining the Colorado River storage project and the participating projects. The Secretary's report shall be prepared in such manner as accurately to reflect the Federal investment allocated to power, to irrigation, and to other purposes and the progress of return and repayment thereon, and the estimated rate of progress, year by year, in accomplishing full repayment.

SEC. 9. The Secretary is authorized and directed to plan, construct, operate, and maintain public recreational facilities on lands withdrawn or acquired for the development of the Colorado River storage project or of the participating projects, except on lands in Indian reservations, to conserve the scenery, the natural, historic, and archeologic objects, and the wildlife on said lands, and to provide for public use and enjoyment of the same and of the water areas created by these projects by such means as are consistent with the primary purposes of said projects; and to mitigate losses of and improve conditions for the propagation of fish and wildlife in connection with the development of the Colorado River storage project and of the participating projects. The Secretary is authorized to acquire lands and to withdraw public lands from entry or other disposition under the public land laws for the construction, operation, and maintenance of recreational facilities in connection with the said projects, and to dispose of them to Federal, State, and local governmental agencies by lease, transfer, exchange, or conveyance, upon such terms and conditions as will best promote their development and operation in the public interest. The costs, including the operation and maintenance costs, of all said undertakings shall be nonreimbursable and nonreturnable under the reclamation laws, and funds appropriated for carrying out the authorization contained in section 1 of this Act shall, without prejudice to the availability of other appropriated moneys for the same purposes, also be available for carrying out the investigations and programs authorized in this section.

SEC. 10. The Secretary is hereby authorized to undertake the investigations and programs of cooperating Federal agencies outlined in paragraphs 33 to 39, inclusive, of the report of the regional director, region 4, Bureau of Reclamation, dated December 15, 1950, and entitled "Colorado River Storage Project and Participating Projects, Upper Colorado River Basin". The cost thereof shall be nonreimbursable and nonreturnable under the reclamation laws, and funds appropriated for carrying out the authorizations contained in section 1 of this Act shall, without prejudice to the availability of other appropriated moneys for the same purposes, also be available for carrying out the investigations and programs authorized in this section.

SEC. 11. Nothing contained in this Act shall be construed to alter, amend, or repeal the Boulder Canyon Project Act (45 Stat. 1057) or the Boulder Canyon Project Adjustment Act (54 Stat. 774).

SEC. 12. Construction of the projects herein authorized shall proceed as rapidly as is consistent with budgetary requirements and the economic needs of the country.

SEC. 13. There are 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.

SEC. 14. As used in this Act—

The terms "Colorado River Basin", "Colorado River Compact", "Colorado River System", "Lee Ferry", "States of the Upper Division", "Upper Basin", and "domestic use" shall have the meaning ascribed to them in article II of the Upper Colorado River Basin Compact;

The term "States of the Upper Colorado River Basin" shall mean the States of Arizona, Colorado, New Mexico, Utah, and Wyoming:

The term "Upper Colorado River Basin" shall have the same meaning as the term "Upper Basin";

The term "Upper Colorado River Basin Compact" shall mean that certain compact executed on October 11, 1948, by commissioners representing the States of Arizona, Colorado, New Mexico, Utah, and Wyoming, and consented to by the Congress of the United States of America by Act of April 6, 1949 (63 Stat. 31); and

The term "treaty with the United Mexican States" shall mean that certain treaty between the United States of America and the United Mexican States signed at Washington, District of Columbia, February 3, 1944, relating to the utilization of the waters of the Colorado River and other rivers, as amended and supplemented by the protocol dated November 14, 1944, and the understandings recited in the Senate resolution of April 18, 1945, advising and consenting to ratification thereof.

[H. R. 4443, 83d Cong., 1st sess.]

A BILL To authorize the Secretary of the Interior to construct, operate, and maintain the Colorado River storage project and participating projects, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, in order to initiate the comprehensive development of the water resources of the Upper Colorado River Basin, the Congress, in the exercise of its constitutional authority to provide for the general welfare, to regulate commerce among the States, and to make all needful rules and regulations respecting property belonging to the United States, and for the purposes, among others, of regulating the flow of the Colorado River, storing water for beneficial consumptive use, making it possible for the States of the Upper Basin to utilize, consistently with the obligation undertaken by the States of the upper division in article III of the Colorado River Compact, the apportionments made to and among them in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, providing for the control of floods and for the improvement of navigation, and generating hydroelectric power, hereby authorizes the Secretary of the Interior (1) to construct, operate, and maintain the following initial units of the Colorado River storage project, consisting of dams, reservoirs, power plants, transmission facilities, and appurtenant works: Echo Park, Flaming Gorge, Glen Canyon, Navaho, and Curecanti: *Provided, however*, That the Curecanti Dam shall be constructed to a height which will impound not less than nine hundred and forty thousand acre-feet of water or will create a reservoir of such greater capacity as can be obtained by a high water line located at seven thousand five hundred and twenty feet above mean sea level; and (2) to construct, operate, and maintain the following additional reclamation projects (including power generating and transmission facilities related thereto), hereinafter referred to as participating projects: Central Utah, Emery County, Gooseberry, Florida, San Juan-Chama, Shiprock-South San Juan Indian irrigation, Hammond, LaBarge, Lyman, Paonia (including the Minnesota unit, a dam and reservoir on Muddy Creek just above its confluence with the North Fork of the Gunnison River, and other necessary work), Pine River Extension, La Plata, Seedskadee, Silt, and Smith Fork: *Provided*, That no appropriation for or construction of the San Juan-Chama project or the Shiprock-South San Juan Indian irrigation project shall be made or begun until coordinated reports thereon shall have been submitted to the affected States pursuant to the Act of December 22, 1944 (58 Stat. 887), and approved by the Congress: *Provided further*, That no appropriation for or construction of any part of the Central Utah project, beyond the initial phase thereof, shall be made or begun until a report thereon shall have been submitted to the affected States pursuant to the Act of December 22, 1944 (58 Stat. 887), and approved by the Congress. The benefits of the Act of July 1, 1932 (47 Stat. 564), are hereby extended and shall apply to all Indian lands served by each of the foregoing participating projects.

SEC. 2. Except as otherwise provided in this Act, in constructing, operating, and maintaining the units of the Colorado River storage project and the participating projects listed in section 1 of 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): *Provided*, That (a) irrigation

repayment contracts entered into pursuant to those laws may, except as otherwise provided for the Paonia and Eden projects, provide for repayment of the obligation assumed thereunder over a period of not more than fifty years exclusive of any development period authorized by law; (b) contracts relating to municipal water supply may be made without regard to the limitations of the last sentence of section 9 (c) of the Reclamation Project Act of 1939; (c) in constructing, operating, and maintaining the Shiprock-South San Juan Indian irrigation project, the Secretary shall be governed by the laws relating to the development of irrigation projects on Indian reservations where applicable; and (d), as to Indian lands within, under or served by either or all participating projects, payment of construction costs shall be subject to the Act of July 1, 1932 (47 Stat. 564). Said units and projects shall be subject to the apportionments of the use of water between the Upper and Lower Basins of the Colorado River and among the States of the Upper Basin fixed in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, and to the terms of the treaty with the United Mexican States.

SEC. 3. The Colorado River storage project and participating projects shall be treated and accounted for as one project: the capital investment in the commercial power features of said project shall be returnable within a period not exceeding fifty years from the date of completion of such features unless, in the judgment of the Secretary, concurred in by the Federal Power Commission, a longer period is deemed justified; interest on the unamortized balance of the investment in the commercial power features of the said project shall be returnable at a rate not less than the average rate paid by the United States on its long-term loans outstanding at the date of authorization of the said project; interest at such rate shall be paid annually out of the net revenues of the commercial power features thereof into Miscellaneous Receipts of the Treasury; and the return of that part of the costs of the project (including, but without limitation, those portions of the reimbursable construction costs of the Paonia project (including the Minnesota unit, a dam and reservoir on Muddy Creek just above its confluence with the North Fork of the Gunnison River, and other necessary works) and of the irrigation features of the Eden project, as authorized in the Act of June 28, 1949 (63 Stat. 277), which are, in the case of the Paonia project, beyond the ability of the water users to repay within the period prescribed in the Act of June 25, 1947 (61 Stat. 181), and, in the case of the Eden project, in excess of the amount prescribed in the Act of June 28, 1949) allocated to irrigation but returnable from net power revenues, authorization for which said allocation and return under the Federal reclamation laws is hereby confirmed, shall begin on a date not later than the date upon which the return of the capital investment in the commercial power features of the said project has been completed.

SEC. 4. The hydroelectric power plants authorized by this Act to be constructed, operated, and maintained by the Secretary shall, to the fullest practicable extent consistent with the purposes of this Act, the Colorado River Compact and the Upper Colorado River Basin Compact, be operated in conjunction with other Federal power plants, present and potential, so as to produce the greatest practicable amount of power and energy that can be sold at firm power and energy rates. Neither the impounding nor use of water solely for the generation of power and energy at such plants shall preclude the use and consumption of water of the Upper Colorado River System for domestic or agricultural purposes; and the Secretary, upon the application of any party proposing to make any such use (which application is concurred in by the appropriate officials of the State or States in which such use is proposed to be made), after notice given by said party to all other interested parties and opportunity for public hearing on the issues involved and unless good cause be shown why such application should not be granted, shall release to the extent required for such use any right that the United States may have to impound and use water solely for the generation of power and energy as aforesaid. The Secretary is hereby authorized to enter into such contracts or agreements as, in his opinion, are feasible based upon a recognition and evaluation of the benefits arising from integrated operation of other hydroelectric power plants and of the works herein authorized. Electric power generated at plants authorized by this Act and disposed of for use outside the States of the Upper Colorado River Basin shall be replaced from other sources, as determined by the Secretary, when required to satisfy needs in the States of the Upper Colorado River Basin, at rates not to exceed those in effect for power generated at plants authorized by this Act. Contracts for the sale of power for use outside the States of the Upper Colorado River Basin shall contain such provisions as the Secretary shall determine to be necessary to effectuate

the purposes of this Act, including the provision that if and when the Secretary finds (a) that such power cannot practicably be replaced from other sources at rates not exceeding those in effect for power generated by plants authorized by this Act, and (b) that such power is required to satisfy needs in the States of the Upper Colorado River Basin, then such contracts shall be subject to termination or to modification to the extent deemed necessary by the Secretary to meet power requirements in the States of the Upper Colorado River Basin.

SEC. 5. In order to achieve such comprehensive development as will assure the consumptive use in the States of the Upper Colorado River Basin of waters of the Colorado River system the use of which is apportioned to the Upper Colorado River Basin by the Colorado River Compact and to each State thereof by the Upper Colorado River Basin Compact, it is the intent of the Congress to authorize the construction, operation, and maintenance of further units of the Colorado River storage project, of additional phases of participating projects authorized in this Act, and of new participating projects as additional information becomes available and additional needs are indicated. It is hereby declared to be the purpose of the Congress to authorize as participating projects only projects (including units or phases thereof)—

(1) for the use, in one or more of the States designated in article III of the Upper Colorado River Basin Compact, of waters of the Upper Colorado River system the consumptive use of which is apportioned to those States by that article;

(2) whose total benefits exceed their total costs including, but without limitation, costs attributable to the direct use of the facilities of the Colorado River storage project or any other project and an appropriate share of the costs of the Colorado River storage project;

(3) which are able, with their anticipated revenues from irrigation, based on the irrigators' ability to pay, to meet the operation, maintenance, and replacement costs allocated to irrigation and to pay within a period of fifty years following a suitable development period at least part of the construction cost allocated to irrigation;

(4) which have available, to aid them, an appropriate district, preferably of the water-conservancy type, which is satisfactory to the Secretary, one purpose of which shall be to provide revenues for the project over and above those paid by the irrigators, to assist in repayment of construction costs allocated to irrigation; and

(5) for which pertinent data sufficient to determine their probable engineering and economic justification and feasibility shall be available.

It is likewise declared to be the policy of the Congress that a new project, unit, or phase thereof shall be authorized as a participating project only when and to the extent that all sources of revenue directly available to said project, unit, or phase are insufficient to return its reimbursable costs during a fifty-year payout period.

SEC. 6. There is hereby established in the Treasury a special fund, designated the "Upper Colorado River Development Fund", to which shall be transferred at the end of each fiscal year, beginning with the initial year of commercial power production by the Colorado River storage project 7½ per centum of the net power revenues for that year after such net revenues exceed \$5,000,000 annually, but not to exceed \$1,000,000 in any one fiscal year. The moneys so transferred shall be available upon appropriation (such appropriation to remain available until expended) for expenditure by the Secretary, without prejudice to the use by him for the same purposes of other appropriated moneys, for studies and investigations relating to the development, conservation, and utilization of the waters of the Upper Colorado River Basin, all expenditures from said fund to be nonreimbursable and nonreturnable under the reclamation laws. Funds appropriated for carrying out the authorizations contained in section 1 of this Act shall also be available for carrying out the studies and investigations set forth in this section.

SEC. 7. There is hereby established in the Treasury, from the receipts of the Colorado River storage project, a continuing fund of \$1,000,000 to the credit of and subject to expenditure by the Secretary to defray emergency expenses and to insure continuous operation of the project.

SEC. 8. The Secretary shall report to the Congress as of the close of each fiscal year beginning with the fiscal year 1955 upon the status of the revenues from and the cost of constructing, operating, and maintaining the Colorado River storage project and the participating projects. The Secretary's report shall be prepared in such manner as accurately to reflect the Federal investment allocated

to power, to irrigation, and to other purposes and the progress of return and repayment thereon, and the estimated rate of progress, year by year, in accomplishing full repayment.

Sec. 9. The Secretary is authorized and directed to plan, construct, operate, and maintain public recreational facilities on lands withdrawn or acquired for the development of the Colorado River storage project or of the participating projects, except on lands in Indian reservations, to conserve the scenery, the natural, historic, and archeologic objects, and the wildlife on said lands, and to provide for public use and enjoyment of the same and of the water areas created by these projects by such means as are consistent with the primary purposes of said projects; and to mitigate losses of and improve conditions for the propagation of fish and wildlife in connection with the development of the Colorado River storage project and of the participating projects. The Secretary is authorized to acquire lands and to withdraw public lands from entry or other disposition under the public land laws for the construction, operation, and maintenance of recreational facilities in connection with the said projects, and to dispose of them to Federal, State, and local governmental agencies by lease, transfer, exchange, or conveyance, upon such terms and conditions as will best promote their development and operation in the public interest. The costs, including the operation and maintenance costs, of all said undertakings shall be nonreimbursable and nonreturnable under the reclamation laws, and funds appropriated for carrying out the authorization contained in section 1 of this Act shall, without prejudice to the availability of other appropriated moneys for the same purposes, also be available for carrying out the investigations and programs authorized in this section.

Sec. 10. The Secretary is hereby authorized to undertake the investigations and programs of cooperating Federal agencies outlined in paragraphs 33 to 39, inclusive, of the report of the regional director, region 4, Bureau of Reclamation, dated December 15, 1950, and entitled "Colorado River Storage Project and Participating Projects, Upper Colorado River Basin". The cost thereof shall be nonreimbursable and nonreturnable under the reclamation laws, and funds appropriated for carrying out the authorizations contained in section 1 of this Act shall, without prejudice to the availability of other appropriated moneys for the same purposes, also be available for carrying out the investigations and programs authorized in this section.

Sec. 11. Nothing contained in this Act shall be construed to alter, amend, or repeal the Boulder Canyon Project Act (45 Stat. 1057) or the Boulder Canyon Project Adjustment Act (54 Stat. 774).

Sec. 12. Construction of the projects herein authorized shall proceed as rapidly as is consistent with budgetary requirements and the economic needs of the country.

Sec. 13. There are 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.

Sec. 14. As used in this Act—

The terms "Colorado River Basin", "Colorado River Compact", "Colorado River System", "Lee Ferry", "States of the Upper Division", "Upper Basin", and "domestic use" shall have the meaning ascribed to them in article II of the Upper Colorado River Basin Compact:

The term "States of the Upper Colorado River Basin" shall mean the States of Arizona, Colorado, New Mexico, Utah, and Wyoming;

The term "Upper Colorado River Basin" shall have the same meaning as the term "Upper Basin";

The term "Upper Colorado River Basin Compact" shall mean that certain compact executed on October 11, 1948, by commissioners representing the States of Arizona, Colorado, New Mexico, Utah, and Wyoming, and consented to by the Congress of the United States of America by Act of April 6, 1949 (63 Stat. 31); and

The term "treaty with the United Mexican States" shall mean that certain treaty between the United States of America and the United Mexican States signed at Washington, District of Columbia, February 3, 1944, relating to the utilization of the waters of the Colorado River and other rivers, as amended and supplemented by the protocol dated November 14, 1944, and the understandings recited in the Senate resolution of April 18, 1945, advising and consenting to ratification thereof.

[H. R. 4463, 83d Cong., 1st sess.]

A BILL To authorize the Secretary of the Interior to construct, operate, and maintain the Colorado River storage project and participating projects, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, in order to initiate the comprehensive development of the water resources of the Upper Colorado River Basin, the Congress, in the exercise of its constitutional authority to provide for the general welfare, to regulate commerce among the States, and to make all needful rules and regulations respecting property belonging to the United States, and for the purposes, among others, of regulating the flow of the Colorado River, storing water for beneficial consumptive use, making it possible for the States of the Upper Basin to utilize, consistently with the obligation undertaken by the States of the upper division in article III of the Colorado River Compact, the apportionments made to and among them in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, providing for the control of floods and for the improvement of navigation, and generating hydroelectric power, hereby authorizes the Secretary of the Interior (1) to construct, operate, and maintain the following initial units of the Colorado River storage project, consisting of dams, reservoirs, power plants, transmission facilities, and appurtenant works: Echo Park, Flaming Gorge, Glen Canyon, Navaho, and Curecanti: *Provided, however,* That the Curecanti Dam shall be constructed to a height which will impound not less than nine hundred and forty thousand acre-feet of water or will create a reservoir of such greater capacity as can be obtained by a high water line located at seven thousand five hundred and twenty feet above mean sea level; and (2) to construct, operate, and maintain the following additional reclamation projects (including power generating and transmission facilities related thereto), hereinafter referred to as participating projects: Central Utah, Emery County, Gooseberry, Florida, San Juan-Chama, Shiprock-South San Juan Indian irrigation, Hammond, LaBarge, Lyman, Paonia (including the Minnesota unit, a dam and reservoir on Muddy Creek just above its confluence with the North Fork of the Gunnison River, and other necessary works), Pine River Extension, La Plata, Seedskadee, Silt, and Smith Fork: *Provided,* That no appropriation for or construction of the San Juan-Chama project or the Shiprock-South San Juan Indian irrigation project shall be made or begun until coordinated reports thereon shall have been submitted to the affected States pursuant to the Act of December 22, 1944 (58 Stat. 887), and approved by the Congress: *Provided further,* That no appropriation for or construction of any part of the Central Utah project, beyond the initial phase thereof, shall be made or begun until a report thereon shall have been submitted to the affected States pursuant to the Act of December 22, 1944 (58 Stat. 887), and approved by the Congress. The benefits of the Act of July 1, 1932 (47 Stat. 564), are hereby extended and shall apply to all Indian lands served by each of the foregoing participating projects.

SEC. 2. Except as otherwise provided in this Act, in constructing, operating, and maintaining the units of the Colorado River storage project and the participating projects listed in section 1 of 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): *Provided,* That (a) irrigation repayment contracts entered into pursuant to those laws may, except as otherwise provided for the Paonia and Eden projects, provide for repayment of the obligation assumed thereunder over a period of not more than fifty years exclusive of any development period authorized by law; (b) contracts relating to municipal water supply may be made without regard to the limitations of the last sentence of section 9 (c) of the Reclamation Project Act of 1939; (c) in constructing, operating, and maintaining the Shiprock-South San Juan Indian irrigation project, the Secretary shall be governed by the laws relating to the development of irrigation projects on Indian reservations where applicable; and (d), as to Indian lands within, under or served by either or all participating projects, payment of construction costs shall be subject to the Act of July 1, 1932 (47 Stat. 564). Said units and projects shall be subject to the apportionments of the use of water between the Upper and Lower Basins of the Colorado River and among the States of the Upper Basin fixed in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, and to the terms of the treaty with the United Mexican States.

SEC. 3. The Colorado River storage project and participating projects shall be treated and accounted for as one project; the capital investment in the commer-

cial power features of said project shall be returnable within a period not exceeding fifty years from the date of completion of such features unless, in the judgment of the Secretary, concurred in by the Federal Power Commission, a longer period is deemed justified; interest on the unamortized balance of the investment in the commercial power features of the said project shall be returnable at a rate not less than the average rate paid by the United States on its long-term loans outstanding at the date of authorization of the said project; interest at such rate shall be paid annually out of the net revenues of the commercial power features thereof into Miscellaneous Receipts of the Treasury; and the return of that part of the costs of the project (including, but without limitation, those portions of the reimbursable construction costs of the Paonia project (including the Minnesota unit, a dam and reservoir on Muddy Creek just above its confluence with the North Fork of the Gunnison River, and other necessary works) and of the irrigation features of the Eden project, as authorized in the Act of June 28, 1949 (63 Stat. 277), which are, in the case of the Paonia project, beyond the ability of the water users to repay within the period prescribed in the Act of June 25, 1947 (61 Stat. 181), and, in the case of the Eden project, in excess of the amount prescribed in the Act of June 28, 1949) allocated to irrigation but returnable from net power revenues, authorization for which said allocation and return under the Federal reclamation laws is hereby confirmed, shall begin on a date not later than the date upon which the return of the capital investment in the commercial power features of the said project has been completed.

SEC. 4. The hydroelectric power plants authorized by this Act to be constructed, operated, and maintained by the Secretary shall, to the fullest practicable extent consistent with the purposes of this Act, the Colorado River Compact and the Upper Colorado River Basin Compact, be operated in conjunction with other Federal power plants, present and potential, so as to produce the greatest practicable amount of power and energy that can be sold at firm power and energy rates. Neither the impounding nor use of water solely for the generation of power and energy at such plants shall preclude the use and consumption of water of the Upper Colorado River System for domestic or agricultural purposes; and the Secretary, upon the application of any party proposing to make any such use (which application is concurred in by the appropriate officials of the State or States in which such use is proposed to be made), after notice given by said party to all other interested parties and opportunity for public hearing on the issues involved and unless good cause be shown why such application should not be granted, shall release to the extent required for such use any right that the United States may have to impound and use water solely for the generation of power and energy as aforesaid. The Secretary is hereby authorized to enter into such contracts or agreements as, in his opinion, are feasible based upon a recognition and evaluation of the benefits arising from integrated operation of other hydroelectric power plants and of the works herein authorized. Electric power generated at plants authorized by this Act and disposed of for use outside the States of the Upper Colorado River Basin shall be replaced from other sources, as determined by the Secretary, when required to satisfy needs in the States of the Upper Colorado River Basin, at rates not to exceed those in effect for power generated at plants authorized by this Act. Contracts for the sale of power for use outside the States of the Upper Colorado River Basin shall contain such provisions as the Secretary shall determine to be necessary to effectuate the purposes of this Act, including the provision that if and when the Secretary finds (a) that such power cannot practicably be replaced from other sources at rates not exceeding those in effect for power generated by plants authorized by this Act, and (b) that such power is required to satisfy needs in the States of the Upper Colorado River Basin, then such contracts shall be subject to termination or to modification to the extent deemed necessary by the Secretary to meet power requirements in the States of the Upper Colorado River Basin.

SEC. 5. In order to achieve such comprehensive development as will assure the consumptive use in the States of the Upper Colorado River Basin of waters of the Colorado River system the use of which is apportioned to the Upper Colorado River Basin by the Colorado River Compact and to each State thereof by the Upper Colorado River Basin Compact, it is the intent of the Congress to authorize the construction, operation, and maintenance of further units of the Colorado River storage project, of additional phases of participating projects authorized in this Act, and of new participating projects as additional informa-

tion becomes available and additional needs are indicated. It is hereby declared to be the purpose of the Congress to authorize as participating projects only projects (including units or phases thereof)—

(1) for the use, in one or more of the States designated in article III of the Upper Colorado River Basin Compact, of waters of the Upper Colorado River system the consumptive use of which is apportioned to those States by that article;

(2) whose total benefits exceed their total costs including, but without limitation, costs attributable to the direct use of the facilities of the Colorado River storage project or any other project and an appropriate share of the costs of the Colorado River storage project;

(3) which are able, with their anticipated revenues from irrigation, based on the irrigator's ability to pay, to meet the operation, maintenance, and replacement costs allocated to irrigation and to pay within a period of fifty years following a suitable development period at least part of the construction cost allocated to irrigation;

(4) which have available, to aid them, an appropriate district, preferably of the water-conservancy type, which is satisfactory to the Secretary, one purpose of which shall be to provide revenues for the project over and above those paid by the irrigators, to assist in repayment of construction costs allocated to irrigation; and

(5) for which pertinent data sufficient to determine their probable engineering and economic justification and feasibility shall be available.

It is likewise declared to be the policy of the Congress that a new project, unit, or phase thereof shall be authorized as a participating project only when and to the extent that all sources of revenue directly available to said project, unit, or phase are insufficient to return its reimbursable costs during a fifty-year payout period.

SEC. 6. There is hereby established in the Treasury a special fund, designated the "Upper Colorado River Development Fund", to which shall be transferred at the end of each fiscal year, beginning with the initial year of commercial power production by the Colorado River storage project $7\frac{1}{2}$ per centum of the net power revenues for that year after such net revenues exceed \$5,000,000 annually, but not to exceed \$1,000,000 in any one fiscal year. The moneys so transferred shall be available upon appropriation (such appropriation to remain available until expended) for expenditure by the Secretary, without prejudice to the use by him for the same purposes of other appropriated moneys, for studies and investigations relating to the development, conservation, and utilization of the waters of the Upper Colorado River Basin, all expenditures from said fund to be nonreimbursable and nonreturnable under the reclamation laws. Funds appropriated for carrying out the authorizations contained in section 1 of this Act shall also be available for carrying out the studies and investigations set forth in this section.

SEC. 7. There is hereby established in the Treasury, from the receipts of the Colorado River storage project, a continuing fund of \$1,000,000 to the credit of and subject to expenditure by the Secretary to defray emergency expenses and to insure continuous operation of the project.

SEC. 8. The Secretary shall report to the Congress as of the close of each fiscal year beginning with the fiscal year 1955 upon the status of the revenues from and the cost of constructing, operating, and maintaining the Colorado River storage project and the participating projects. The Secretary's report shall be prepared in such manner as accurately to reflect the Federal investment allocated to power, to irrigation, and to other purposes and the progress of return and repayment thereon, and the estimated rate of progress, year by year, in accomplishing full repayment.

SEC. 9. The Secretary is authorized and directed to plan, construct, operate, and maintain public recreational facilities on lands withdrawn or acquired for the development of the Colorado River storage project or of the participating projects, except on lands in Indian reservations, to conserve the scenery, the natural, historic, and archeologic objects, and the wildlife on said lands, and to provide for public use and enjoyment of the same and of the water areas created by these projects by such means as are consistent with the primary purposes of said projects; and to mitigate losses of and improve conditions for the propagation of fish and wildlife in connection with the development of the

Colorado River storage project and of the participating projects. The Secretary is authorized to acquire lands and to withdraw public lands from entry or other disposition under the public land laws for the construction, operation, and maintenance of recreational facilities in connection with the said projects, and to dispose of them to Federal, State, and local governmental agencies by lease, transfer, exchange, or conveyance, upon such terms and conditions as will best promote their development and operation in the public interest. The costs, including the operation and maintenance costs, of all said undertakings shall be nonreimbursable and nonreturnable under the reclamation laws, and funds appropriated for carrying out the authorization contained in section 1 of this Act shall, without prejudice to the availability of other appropriated moneys for the same purposes, also be available for carrying out the investigations and programs authorized in this section.

SEC. 10. The Secretary is hereby authorized to undertake the investigations and programs of cooperating Federal agencies outlined in paragraphs 33 to 39, inclusive, of the report of the regional director, region 4, Bureau of Reclamation, dated December 15, 1950, and entitled "Colorado River Storage Project and Participating Projects, Upper Colorado River Basin". The cost thereof shall be nonreimbursable and nonreturnable under the reclamation laws, and funds appropriated for carrying out the authorizations contained in section 1 of this Act shall, without prejudice to the availability of other appropriated moneys for the same purposes, also be available for carrying out the investigations and programs authorized in this section.

SEC. 11. Nothing contained in this Act shall be construed to alter, amend, or repeal the Boulder Canyon Project Act (45 Stat. 1057) or the Boulder Canyon Project Adjustment Act (54 Stat. 774).

SEC. 12. Construction of the projects herein authorized shall proceed as rapidly as is consistent with budgetary requirements and the economic needs of the country.

SEC. 13. There are 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.

SEC. 14. As used in this Act—

The terms "Colorado River Basin", "Colorado River Compact", "Colorado River System", "Lee Ferry", "States of the Upper Division", "Upper Basin", and "domestic use" shall have the meaning ascribed to them in article II of the Upper Colorado River Basin Compact;

The term "States of the Upper Colorado River Basin" shall mean the States of Arizona, Colorado, New Mexico, Utah, and Wyoming;

The term "Upper Colorado River Basin" shall have the same meaning as the term "Upper Basin";

The term "Upper Colorado River Basin Compact" shall mean that certain compact executed on October 11, 1948, by commissioners representing the States of Arizona, Colorado, New Mexico, Utah, and Wyoming, and consented to by the Congress of the United States of America by Act of April 6, 1949 (63 Stat. 31); and

The term "treaty with the United Mexican States" shall mean that certain treaty between the United States of America and the United Mexican States signed at Washington, District of Columbia, February 3, 1944, relating to the utilization of the waters of the Colorado River and other rivers, as amended and supplemented by the protocol dated November 14, 1944, and the understandings recited in the Senate resolution of April 18, 1945, advising and consenting to ratification thereof.

Mr. HARRISON. I regret that larger space was not available to this committee, realizing the interest that people have in this particular legislation. We will, however, do the best we can to take care of those who want to be heard, those who want to testify, and as far as we are able, those who want to listen to the proceedings.

Wherever possible during the week we will hold afternoon meetings, that is, providing the business of the House is such that we can secure permission for that purpose. The morning meetings will start at 9:30, continue until noon, and the time for the afternoon meetings will have to be announced as we go along.

The program, as set out, will be as follows:

First, the Government will present the overall picture of the Colorado River and the particular projects in these bills and for which authorization is sought. Following that presentation, we will hear from the Senators and Congressmen of those States who would like to be heard and make statements. After that, the proponents of the bill will be heard, and then those who oppose the bill or parts of it. We will endeavor as far as possible to see that the time is divided equally, that no one is slighted; but we do ask that statements be made as brief as possible to cover the topic and that repetition be avoided as much as possible because we want to hear as many as we can. I think you all realize that our time is limited.

The first witness for the Department of the Interior will be Mr. Tudor, unless you have changed your list. That is proper, is it?

Mr. TUDOR. That is correct, yes, sir.

Mr. ASPINALL. Mr. Chairman?

Mr. HARRISON. Mr. Aspinall.

Mr. ASPINALL. Mr. Chairman, I do not know how many of the people who are here are witnesses and who have a right to hear the testimony of the Department, but there are out in the corridor six people at least who are going to testify in this proceeding, and they are from western Colorado. They have certain reservations to the proposal as it is now before the committee, and they have a right to hear this testimony, or have a right to have it in their hands tonight so they can study it before tomorrow. I do not know what the chairman wishes to do, but I do know there are many people here who are not going to testify, they are here because of their interest. That is perfectly fine, but of the people who have a right to hear what is going on, most certainly the people who are going to take part in these proceedings as witnesses have that right. I have some chairs here on my side. If it would be all right with the chairman, I would like to have these people come up and sit down by our colleagues here so that they can hear. These are users of the western Colorado water.

Mr. HARRISON. I assure the gentleman from Colorado we certainly want to take care of his constituents and particularly those who are going to be witnesses, and if there is no objection by members of the committee, we will be glad to have them come up here.

I might say that it was the intention of the Chair, after talking to some of the members of the committee, to try to reserve seats for the witnesses who are going to testify on that particular date. I realize that people interested in the project have a right to be heard. On the other hand, we are somewhat handicapped because no other room is available to us, and because of that we feel it almost necessary that space be provided, particularly for those who want to be witnesses. We will do the best we can, and we hope the general public will bear with us on these hearings, because if those who are to testify are not able to hear the testimony of others, it is going to be somewhat of a handicap.

Mr. Aspinall, if you would like to invite those up whom you mention, we will be glad to have them.

(Discussion off the record.)

Mr. HARRISON. I think we have pretty well straightened this out, so, Mr. Tudor, if you would like to proceed, you may do so.

STATEMENT OF HON. RALPH A. TUDOR, UNDER SECRETARY OF THE INTERIOR; ACCOMPANIED BY ERNEST O. LARSON, BUREAU OF RECLAMATION; AND T. R. WITMER, LEGISLATIVE COUNSEL, BUREAU OF RECLAMATION

Mr. TUDOR. I am appearing before you this morning to discuss the proposal for the Colorado River storage project and participating projects.

On December 10, 1953, Secretary McKay transmitted the Department's recommendations on this project to the President through the Bureau of the Budget for determination of its relation to the President's program. The Secretary recommended that the report be cleared for submission to Congress, for approval of the plan and the authorization of its initial phase. This was done simultaneously with its transmission to other Federal agencies and to the affected States for their comments, in the interest of time. The report is subject to modification in the light of these comments and the review by the Executive Office.

Accordingly, while we are not in a position at this time to make any recommendation for authorization of the project, we will, in response to the request of the chairman of the Committee on Interior and Insular Affairs, present our planning report and its findings and testify with respect to the project plan.

Investigations by the Department of the Interior for development of the resources of the Colorado River Basin, culminating in the plan for the Colorado River storage project and participating projects which is now before you for consideration, have been carried out for many years. Beginning as early as 1904, the Congress from time to time directed that specific investigations be undertaken by this Department. One of these culminated in the plan for the great Hoover Dam, which has helped so much in the development of the lower basin of the Colorado River and the contiguous area. With the authorization for construction of Hoover Dam, the Congress made provisions for investigations and reports by the Secretary of the Interior on projects for irrigation, power generation and other purposes and for the formulation of a comprehensive scheme of control, improvement and use of the waters of the Colorado River and its tributaries.

At the time of completion of construction of Hoover Dam, the Congress made provision, in the Boulder Canyon Project Adjustment Act of 1940, for the use of certain funds from power revenues from the dam for carrying out these investigations. The first \$1½ million was authorized—

* * * to be appropriated only for the continuation and extension, under the direction of the Secretary, of studies and investigations by the Bureau of Reclamation for the formulation of a comprehensive plan for the utilization of waters of the Colorado River system for irrigation, electric power, and other purposes, * * *

The investigation funds in the amount of \$500,000 annually from the power revenues of Hoover Dam, up to and including fiscal year 1987, were authorized to be appropriated only for the investigation and construction of projects with the use of the funds confined to the 4 States of the upper division up to and including fiscal year 1955.

After that year the funds are to be equitably distributed among the States of the upper division and the States of the lower division.

Acting under this specific directive from the Congress, the Department undertook, first, the preparation of a comprehensive plan for the entire Colorado River Basin, and later, the investigation of projects in the upper division States. In the preparation of the comprehensive plan, it was early evident that, since the potential projects exceeded the available water supplies, some division among the States of the waters allocated for use in the upper Colorado Basin by the Colorado River compact of 1922 would be necessary before firm recommendations for project construction could be made. Accordingly, a comprehensive plan was presented in 1947 as an inventory of potential projects. It was published as House Document 419, 80th Congress, with recommendations pointing to the need for a determination by the upper basin States of their rights to utilize the waters of the Colorado River system.

In 1948, the upper Colorado River Basin compact divided the waters available to the upper basin States among these States. This removed previous obstacles to the preparation of a comprehensive plan for water resource development in the upper Colorado Basin, and permitted formulation of the plan which is now before this committee.

In brief, the plan envisions construction of a series of holdover storage reservoirs in the upper basin of the Colorado River, to enable the upper basin States to meet their commitment to the lower basin States, while permitting full development and utilization of the waters available to the upper basin States. Power potentials at the reservoirs will be developed to provide revenues for assistance in repayment of irrigation costs which exceed the repayment ability of water users, and to assist in meeting the growing demands for power in the West. Along with the system of holdover storage reservoirs will be a series of participating projects to put available waters to beneficial use for irrigation and municipal and industrial water supply purposes. Wherever feasible, and economically justified, the participating projects will include provision for hydroelectric power development. In addition to the holdover storage reservoirs and the participating projects, some seasonal storage units will be required. The participating projects will benefit through the use of net power revenues from the power installation to assist in irrigation repayment.

Full details on the units and projects contained in this plan will be furnished by the Bureau field witnesses who will follow me on the stand. Of equal importance with the water use and control facilities are the programs of the other agencies of the Department of the Interior which have worked with Reclamation over the years in the formulation of this plan, which programs would be authorized to be contained under the provisions of the bills now before the committee.

These agencies, the Geological Survey, Fish and Wildlife Service, National Park Service, Bureau of Land Management, Bureau of Mines, and Bureau of Indian Affairs, each have specific responsibilities pertaining to the development and protection of natural resources, which must be carried on in connection with the program for development of the water resources. The work, which these agencies are carrying on in the basin, must be continued and expanded in order that the details necessary for scheduling full conservation and use of

the basin's natural resources will be available when needed for coordination with the water resource development program.

Without the work heretofore carried out by the Geological Survey, division of the waters of the basin by compact and formulation of this plan would hardly have been possible. The present programs of collection of basic data, including stream gaging, topographic mapping, measurement of sediment loads of streams, investigation of measures to control erosion at its source, studies of stream channel water losses, ground-water investigations, analysis of quality of water, and geologic mapping and minerals inventory, would be continued and expanded in connection with the basic plan.

Investigations by the Fish and Wildlife Service are necessary to provide the basic biological information necessary to evaluate the effect of the projects and units in the plan on fish and wildlife resources and to suggest means that may be employed to minimize any adverse effects from any features that are necessary to achieve the primary purposes of the plan. In addition to the studies of individual units and projects in the plan, provision is made for an overall wildlife study in the Upper Colorado River Basin to determine the relative importance of developing different portions of the area for migratory birds, the methods and areas that might be developed to relieve the presently congested big game ranges and to increase upland game bird habitat, and the possibilities of developing improved facilities in the reservoirs and streams of the basin.

The National Park Service has already made a general survey of recreational resources of the Colorado River Basin as its part in developing the plan under consideration. Preliminary examinations have been made of each reservoir site contemplated for use in the Colorado River storage project. Further detailed studies of each storage project reservoir will be required to plan appropriate facilities for recreational use and to provide for their management. These detailed studies will include determination of facilities for recreational use of the reservoirs, surveys and salvage in cooperation with the Smithsonian Institution and local interests of archeological remains that may be endangered by inundation, and carrying on the developments in connection with the plan which are of national interest and which would be handled as a part of the national park system.

Authorization of the plan will require an acceleration of the program of the Bureau of Land Management for cadastral surveys, land classification, and resource inventories. As the Bureau of Land Management is the Federal agency responsible for administration of a large portion of the area in the upper Colorado Basin, additional studies and a program of erosion control and sediment abatement will be required.

The program of the Bureau of Mines includes discovery of new mineral reserves, research to develop possible reductions in the cost of mining and processing ores, and development of efficient usage of minerals and metals. The Bureau of Mines is working closely with the Atomic Energy Commission on the recovery of uranium from the complex low-grade ores which are quite prevalent in the Upper Colorado Basin. In view of the increased development which the overall plan will make possible in the upper Colorado River Basin, it is proposed to accelerate the work of the Bureau of Mines as a part of the overall plan in order to permit development of mineral resources to

move forward concurrently with the water resource development program.

A portion of the program of the Bureau of Indian Affairs is included in the specific recommendations for participating projects, since several of the recommended participating projects include irrigation of Indian lands. As a part of the overall program, further studies will be made for the development of Indian lands and to assure the protection of the resources and rights now held by the Indians in the basin, in order that they may move along toward an economic independence comparable to that of other citizens of the basin.

The various units and projects in the plan recommended by the Department have engineering and economic feasibility and meet the financial requirements of the Federal reclamation laws. The cost of all facilities for generation of power and for provision of municipal and industrial water supplies can be returned with interest by the power and water users. Rates for the sale of municipal and industrial water and power will be established so that the cost of each facility will be fully returned to the United States within a period of 50 years or less from the time that facility is put into service. Irrigation water users will be required to repay to the maximum extent of their ability for 50 years. The portion of the cost allocated to irrigation which exceeds the repayment ability of the water users will be returned to the United States by the net power revenues after the power facilities have been paid out. It is contemplated that new construction be scheduled so that all of the reimbursable cost of each participating project will be repaid to the United States within 50 years of the time that the particular unit is completed and placed in operation. Small amounts would be allocated to flood control and other nonreimbursable purposes. If additional storage units and participating projects are added to the recommended plan, either a slightly longer period of irrigation repayment or a slightly higher power rate would be required to supply the necessary irrigation assistance.

In making this presentation to the committee, it is my desire to give special consideration to one feature of the project because of certain unusual circumstances surrounding it and certain personal investigations and recommendations that I have made in this instance. I refer to the Echo Park Dam and Reservoir. Inasmuch as this dam and reservoir fall within the confines of the Dinosaur National Monument, there has been opposition to its inclusion. In view of this opposition, the former Secretary of the Interior agreed to study and consider proposals for alternate reservoirs that would be outside the limits of the monument. In keeping with this commitment, Secretary McKay directed that such a study be made and in particular directed me to give it my personal attention.

In accordance with these instructions, I reviewed the reports which have been made by the Bureau of Reclamation and the studies, comments and other information which were made available to me by the National Park Service. I also met with a number of people and organizations who were interested and expressed opinions both for and against this development. I was furnished with considerable literature and read most of it. Finally, I made a personal reconnaissance of much of the upper Colorado River Basin area. In particular, and in company with the Commissioner of Reclamation,

I went by auto and boat to the vicinity of the Glen Canyon dam site. I flew over much of the Colorado River and its tributaries from the southern boundaries of Colorado to Vernal via Grand Junction and Salt Lake City. These rivers are in a region noted for its scenery. I viewed a number of the proposed alternate dam sites, including New Moab, Desolation, and Dewey. Finally, in company with the Director of the National Park Service and the Commissioner of Reclamation together with members of their staffs, I spent 3 days in the Dinosaur National Monument. This included a boat trip through Whirlpool Canyon of the Green River from the mouth of the Yampa River to Island Park. I also visited most other major points of interest by jeep and viewed by air the entire length of Lodore Canyon.

As a result of these studies and this field trip, I recommended to the Secretary that the Echo Park Dam and Reservoir be included in the upper Colorado River Basin project. My recommendation to him was in a brief memorandum, dated November 27, 1953, and approved by Secretary Douglas McKay November 30, 1953, which reads as follows:

In accordance with your verbal instructions I have made a study concerning the proposal to build the Echo Park Dam and the Split Mountain Dam as a part of the upper Colorado River Basin development. These two dams, if built, will be located within the Dinosaur National Monument. They were originally proposed to be included in the plan of development of the basin which was prepared by the Bureau of Reclamation and recommended for approval by the Secretary of the Interior in January 1951. Opposition developed to the construction of these two dams in the Dinosaur National Monument, and on December 4, 1952, the then Secretary of the Interior revised his recommendation and proposed that further consideration be given to studies of alternate sites. It was under these circumstances that you directed me to investigate the matter with particular reference to the suggested alternate sites.

In connection with this investigation I have reviewed the reports, sought and been furnished data and information from both the National Park Service and the Bureau of Reclamation, conferred with various interested parties and organizations, and have, in company with the Director of the National Park Service and the Commissioner of the Bureau of Reclamation, personally visited the two dam sites in question and inspected a considerable portion of the Dinosaur National Monument. I also inspected on the ground and from the air other portions of the upper Colorado River area.

The opposition to the two dams in question arises from persons and organizations interested in the national parks and their desire to preserve the Dinosaur National Monument in its present natural state. The Echo Park Dam, in particular, will create a large reservoir within this monument and will alter its appearance and the existing conditions. It is a matter of personal opinion as to the extent of the harm that may be created by this reservoir. My own feeling is that the alteration will be substantial and if conflicting interests did not exist, I would prefer to see the monument remain in its natural state. However, I do feel that if the dam is built, the beauty of the park will by no means be destroyed and it will remain an area of great attraction to many people.

It should be noted that neither of these proposed reservoirs will inundate any portion of the quarry where the dinosaur skeletons have been found.

I have examined the proposals for various alternate reservoirs. To be effective these alternates must provide approximately the same storage of water and must waste as little water as possible. The latter is extremely important for the available water for consumptive uses in the upper Colorado River Basin is far less than will be needed for the full economy of this region.

I have been furnished with information on the New Moab, Dewey, and Desolation dam sites, and have considered the possibility of increasing the height of the proposed Glen Canyon Dam. I am particularly impressed with the showing

that any of these alternate dam and reservoir sites would result in a net loss of water from evaporation from approximately 100,000 to 200,000 acre-feet per year. Even the lower figure is enough to provide all the domestic, commercial and industrial water for a city the size of Denver. In an area where water is so precious this is a matter of very serious consequence. Such lost water cannot be replaced at any cost and the ultimate regional economy would have to be reduced accordingly.

There has been some question as to the accuracy of the estimates of evaporation and the application of the formulas used to compute losses. I have reviewed this matter and, while there may be some error due to a shortage of experimental data, I am convinced that the calculations are reasonable and any error that exists is equally applicable to the calculations for all reservoirs. Therefore, the error in net differences in calculated losses between any two reservoirs must be small.

There would be substantial loss in electric-generating capacity if any one of the alternate sites were selected. The quantity of water available under the 1922 compact falls very substantially short of meeting the potential needs of agriculture, industry, municipal supply and other purposes. In order to make the greatest possible use of the erratic flow of this great river system, storage control must be provided. There is no practicable way to avoid some evaporation losses from the surface of such reservoirs. It is possible, however, to select reservoir sites where such evaporation would naturally be at a minimum.

Echo Park Reservoir is such a site. The deep, cool, shaded canyons, are also very favorable. None of the alternate sites which have been suggested can compare from this standpoint. Studies of alternate plans reveal that the increased evaporation losses could amount to several hundred thousand acre-feet yearly. The magnitude of these quantities is made especially clear when compared with the total use of water by the homes, places of business and industries of the city of approximately 600,000 people—roughly 100,000 acre-feet.

The Department's estimates of evaporation losses from potential reservoirs are based upon the most modern and dependable methods of calculation, and involve application of all available climatic, topographic, and hydrologic data.

The principal factors affecting the amount of evaporation from a reservoir are the surface area of exposure and the elevation of the reservoir. There are other items but these two are the most important. The formula which has been used to estimate evaporation makes due allowance for these items. It also contains factors which are based upon experimental data and to that extent the formula is empirical. There has been some concern expressed that the calculations for evaporation were not dependable due to the lack of experimental data and, therefore, the substantially lower estimate of total evaporation from the Echo Park Reservoir as compared to alternatives suggested could not be relied upon.

I quite agree that there could be some variation between the calculated evaporation from any given reservoir and that which would actually be experienced. However, if the calculations by formula of the evaporation for one reservoir vary from the true amount of evaporation that may be experienced, the variation for another reservoir in the upper basin will be of a comparable nature. In other words, if the actual evaporation from a reservoir is a certain percentage less than the calculated evaporation, virtually the same percentage variation will apply to alternate sites.

For this reason, I would not want to say that the calculated evaporation from any given reservoir would be exactly comparable to the true evaporation. However, I do assert that the calculated difference in evaporation between any two reservoirs and that which may be experienced if the reservoirs were built will be very close to an actual and true measure. Therefore, the comparisons which are made below are very reasonable and dependable.

I have had a table prepared giving certain fundamental data applicable to the Echo Park Reservoir and to alternatives which have been suggested. This table shows the name of each reservoir, its actual storage capacity, the area of its exposed surface, the elevation of the reservoir when full, and the evaporation which has been calculated.

(The table referred to follows:)

Reservoir elevations, capacities, areas, and evaporation rates of 10 reservoirs proposed for construction in the upper Colorado basins, compared with alternative proposals

	Maximum reservoir elevation (feet)	Gross storage capacity (thousand acre-feet)	Maximum reservoir area (acres)	Annual evaporation (acre-feet)
Echo Park	5,570	6,460	43,400	87,000
Glen Canyon	3,700	20,000	153,000	525,000
Flaming Gorge	6,040	3,940	41,600	56,000
Cross Mountain	6,090	5,200	53,000	70,000
Whitewater	4,880	880	10,300	21,000
Curecanti	7,635	2,500	18,200	32,000
Navajo	6,050	1,200	10,900	16,000
Crystal	6,870	40	557	Negligible
Gray Canyon	4,590	2,000	10,800	30,000
Split Mountain	5,050	335	4,200	8,000
Total 10 reservoirs recommended by Bureau of Reclamation		48,555	345,957	846,000
First alternative: New Moab	4,330	6,090	55,000	195,000
Second alternative: Dewey	4,380	6,100	64,000	215,000
Third alternative: Combination of low Gray Canyon and high Desolation Canyon	{ 4,400 4,758 3,735 }	{ 8,290 31,700 }	{ 118,000 186,000 }	{ 325,000 691,000 }
Fourth alternative: High Glen Canyon				

Mr. TUDOR. I will not read the details of the table; it is before you. I will simply call to your attention that the Echo Park Reservoir has a surface elevation of 5,570 feet with a gross storage capacity of 6,460,000 acre-feet, and a reservoir area exposed to evaporation of 43,400 acres. It is calculated the evaporation from that reservoir is 87,000 acre-feet annually.

Now the alternatives that have been suggested. In New Moab, it is an elevation of 4,330 feet. That is a little more than a thousand feet lower than Echo Park. It has a storage capacity comparable to Echo Park, 6,090,000 acre-feet. It has a larger exposed surface area, 55,000 acres. The calculated evaporation is 195,000 acre-feet per year. That is 108,000 more than Echo Park.

The second alternative is Dewey, with an elevation of 4,380 feet, just a little more than a thousand feet lower than Echo Park; a storage capacity of 6,100,000 acre-feet, very comparable to Echo Park; a surface exposed area of 64,000 acres, substantially more than Echo Park; and calculated evaporation of 215,000 acre-feet, or 128,000 more than Echo Park.

There is a third alternative which includes low Gray Canyon and high Desolation Canyon. In other words, if high Desolation Canyon is built, Gray Canyon must be built lower. The combined elevation of those two is something over 4,700. The combined gross storage of the 2—the low Gray Canyon and high Desolation Canyon is 8,290,000 acre-feet. The combined surface area of the 2 is 118,000 acres, and the total evaporation from the 2 is 325,000 acre-feet per year. It is not correct to subtract the 87,000 evaporation from Echo Park directly from that 325,000, because you must combine with Echo Park the high Gray Canyon. The combination of those 2 is 117,000 acre-feet of evaporation per year, so the net difference between this alternative and the proposed plan is an estimated 228,000 feet.

The fourth alternative would be the high Glen Canyon Dam, which is considerably more elevation—3,735 feet. It would then have a gross storage capacity of 31,700,000 acre-feet. The exposed reservoir surface is 186,000 acres, and the evaporation is 691,000 acre-feet per year. Again that figure must not be compared with the evaporation from Echo Park but with the combined evaporation of Echo Park, Split Mountain and lower Glen Canyon. So the net difference in this case would be 70,000 acre-feet.

The Echo Park Reservoir has an actual storage capacity of 6,460,000 acre-feet, its surface area is 43,400 acres and the calculated evaporation from this lake is 87,000 acre-feet annually.

The new Moab site which has been suggested as an alternate is near Moab, Utah, on the Colorado River. Due to the larger water surface area and lower elevation, water losses through evaporation at this site are estimated to exceed those at Echo Park by approximately 108,000 acre-feet annually. This reservoir has a further disadvantage in that it would extend into the Arches National Monument, bisecting the area and isolating an important feature. Furthermore, and as a matter of secondary importance, the new Moab Reservoir would reduce the entire system power output by an estimated 149,000 kilowatts.

The Dewey site is 30 miles upstream from Moab, Utah, on the Colorado River. This reservoir basin is even more flat and widespread than new Moab and the evaporation losses would exceed those at Echo Park by approximately 128,000 acre-feet annually. In this case, the system power output would be reduced by an estimated 188,000 kilowatts.

The Desolation site on the Green River is 28 miles upstream from Gray Canyon. Use of this site would limit storage at Gray Canyon to a 490,000-acre-foot reservoir. To replace this storage loss and also that of Echo Park would require that the Desolation Reservoir spread out over the canyon walls and have an exposed surface area approximately $2\frac{1}{2}$ times that at Echo Park. The net evaporation losses by this plan would be approximately 208,000 acre-foot greater than the recommended plan, and the system power output would be reduced by some 242,000 kilowatts.

Consideration has been given to increasing the storage capacity of the Glen Canyon Reservoir on the Colorado River near the Arizona State line. This would be an alternate to the construction of Echo Park. Should the Glen Canyon Reservoir water surface be raised to provide this additional storage, it would present serious difficulty of protecting the Rainbow Bridge National Monument. This monument is unique and has no counterpart. Furthermore, the additional storage in this lower elevation area of high evaporation would more than offset the savings of evaporation by elimination of Echo Park. The plan would further concentrate storage in the lower end of the basin and fail to provide the needed river control in the upper sections. The system power output would be reduced by an estimated 285,000 kilowatts if this plan is adopted.

Cross Mountain has been suggested as an alternate site, but this is not possible as the Cross Mountain Reservoir is a part of the basic plan. Any alternate for Echo Park must be some new reservoir which is not now included in the basin plan or some increase in reser-

voirs which are included. Cross Mountain does not fall in either of these categories.

Literally scores of potential reservoir sites in the upper Colorado River Basin have been considered by the Bureau of Reclamation and discarded as unsatisfactory for one reason or another. Among the unfavorable factors of these various reservoir sites have been high evaporation rates, excessive sedimentation problems, poor foundation conditions, limited storage capacity, overlapping of reservoir basins, poor locations from the standpoint of river control, right-of-way obstacles, loss of power potential, or other items.

In the final analysis, the increased losses of water by evaporation from the alternative sites is the fundamental issue upon which the Department has felt it necessary to give any consideration to the Echo Park Dam and Reservoir.

In making this recommendation on behalf of the Echo Park Dam and Reservoir, the Department is, of course, on the horns of a dilemma. On the other hand, there is a fundamental desire to preserve the natural beauty of the Dinosaur National Monument. The Department does not subscribe to any policy which contemplates indiscriminate or haphazard construction of reservoirs or other artificial developments in this or any other national park or monument area. It opposes any development in such areas if this can possibly be avoided without undue and irredeemable losses of some other natural resources. On the other hand, the Department does recognize that in this instance any alternate would result in a serious loss of water in a region which will always be short of this commodity and in which water is the limiting factor on the development of the economy and resources of the basin.

Again I point out that the choice is simply one of altering the scenery of the Dinosaur National Monument without destroying it in a basin which is and will remain rich in scenery, or of irreplaceably losing enough water to supply all the needs of a city of more than 600,000 people. In the opinion of the Department of the Interior, in this particular instance, and not as a matter of precedent, we believe that the choice should be in favor of building the dam and reservoir and that this is to the greatest interest of the Nation. We so recommend to the Congress.

This concludes my statement.

Mr. HARRISON. Thank you, Mr. Tudor.

Mr. Engle, do you have any questions at this time?

Mr. ENGLE. Mr. Secretary, do you intend to discuss in detail the matter of repayment capability of this project, or will that be handled by a subsequent witness?

Mr. TUDOR. That will be handled by a subsequent witness, but if they do not have all of the answers to the questions, we will work them out, sir.

Mr. ENGLE. I notice you make some reference to that on page 7 of your statement, but not in detail.

Mr. TUDOR. No, sir; not in detail.

Mr. ENGLE. It is your conclusion that repayment on this project falls within the principles of present reclamation law?

Mr. TUDOR. That is correct, sir. I might amplify that, Mr. Engle, that in this instance I went over the general plan of repayment, that we have scheduled it so that each project will be paid out by itself

within the period of time provided in the reclamation law. In the case of many of the participating projects where reclamation and irrigation is involved, it will, of course, be necessary and appropriate to depend upon the power revenues that are available from some of the other projects in the basin and from the project itself.

Mr. ENGLE. But in all instances each of these individual units pay out within 50 years total time, plus interest?

Mr. TUDOR. That is correct, if they are properly scheduled by the Congress to come in.

Mr. ASPINALL. Will my colleague yield for a question there?

Mr. ENGLE. Yes.

Mr. ASPINALL. Is that in conformity with the procedure that has been had in the other river basins when their development was authorized, Mr. Tudor?

Mr. TUDOR. I cannot answer that question in total, Mr. Aspinall, because I am not familiar with some of the payments that have been made on some of the other basins.

Mr. ASPINALL. Will you get that information?

Mr. TUDOR. We will, yes, sir.

(The information referred to follows:)

The basic principle proposed for the Colorado River storage project of using power revenues to assist in repayment of irrigation costs which exceed the repayment ability of the water users is in general conformity with the procedure followed in other river basins when the development was authorized. However, a basic change in the procedure proposed for the Colorado Basin is involved here. In other river basins it was contemplated at the time of authorization that the interest component of the power revenues would be used to provide the required financial assistance. In the proposal now before the committee, it is contemplated that power costs will be repaid in full with interest and that the irrigation assistance will be provided from net power revenues after the power repayment is accomplished.

Mr. ENGLE. One further question. With reference to Echo Park, is Echo Park an absolute essential to this project being economically feasible? In other words, can we take Echo Park out and proceed without completely destroying the program?

Mr. TUDOR. It would certainly put the project in hazard. I would not be prepared to say that it cannot be paid out. The alternative would be to increase the rate for power, because we would have a loss of power, and we are getting up pretty high as it is so that power is not competitive with other means. So it would be put in hazard, I would say.

Mr. ENGLE. In other words, Echo Park supplies revenues which are essential to the economics of the whole project?

Mr. TUDOR. That is correct. It not only supplies revenue from the generation of power at its own site, but by storing water in the upper basin you have that regulated fall through other power sites below. Consequently, the elimination of Echo Park and the substitution of any alternate decreases the total amount of power that can be generated and, by the same token, reduces the revenues that are available.

Mr. ENGLE. Is it correct to say, then, that Echo Park or some alternative equal to Echo Park is essential to the economics of the upper Colorado Basin project?

Mr. TUDOR. I feel that some alternate reasonably comparable to Echo Park is necessary; yes, sir.

Mr. ENGLE. Would you make an analysis of what will happen if, in the judgment of this committee, it seems advisable to take Echo Park out? Could you make an analysis of that?

Mr. TUDOR. In the first place, we have made the analysis as to evaporation losses, which to my mind is extremely important in an area which is very short of water. I am not sure as to the effect on power rates of any of the other alternatives. May I check with our witnesses to answer that correctly?

Mr. ENGLE. We will get to that later. But what I am saying, Mr. Secretary, is that in my judgment Echo Park in this program, being the controversy, may perhaps slow up and endanger the authorization of the entire project. In order to get something constructive done for the upper basin, it might be more intelligent to take Echo Park out and proceed with the less controversial features, and perhaps explore Echo Park and its alternatives a little further. That is why I ask if taking Echo Park out would be like taking the engine out of the automobile.

Mr. TUDOR. We think Echo Park is a necessary part of the project, yes, sir.

Mr. ENGLE. You think it would be like taking the engine out of the automobile then?

Mr. TUDOR. I might say it might be like taking the pistons out.

Mr. ASPINALL. Will the gentleman yield?

Mr. ENGLE. I will yield the floor, except I want to say that Dr. Miller and I have to go over to the Rules Committee, and our leaving the committee at this point is not any indication of our lack of interest, but priority on our time over in the Rules Committee.

Mr. HARRISON. Dr. Miller, do you wish to ask some questions before you go?

Chairman MILLER. Just briefly, because we are due at the Rules Committee in about 10 minutes.

Coming back to the Echo Park feature of this upper Colorado River Basin, the feasibility of the other projects would be altered if Echo Park was not a part of the program?

Mr. TUDOR. We feel definitely that the feasibility of the entire project would be placed in hazard if Echo Park were left out and some alternative substituted.

Chairman MILLER. And it is your opinion the several projects now contemplated under the upper Colorado River Basin development are feasible, all of them are feasible, with the Echo Park Reservoir in the development program?

Mr. TUDOR. All of the projects?

Chairman MILLER. All of the projects on the upper Colorado River Basin.

Mr. TUDOR. There are some of the projects which we are recommending be considered as to their feasibility, that is, the participating projects, before they are authorized. We are not asking for authorization now.

Chairman MILLER. In your studies of the upper Colorado River Basin, and remembering our obligations to the lower river basin and the Government of Mexico, have you found that there is sufficient water that can be stored up to meet the feasibility demand of the projects and at the same time keep our commitments for water that

should go down and must go down to satisfy Mexico under our International Water Agreement?

Mr. TUDOR. I would rather have that request referred to Mr. Dexheimer or Mr. Larson, who have personally studied that matter in more detail than I have, sir.

Chairman MILLER. You think they will be able to give us a detailed study as to the waters now committed to Mexico and to the lower Colorado development and whether there will be sufficient water in the upper Colorado River to satisfy their demands and at the same time develop the project?

Mr. TUDOR. I can say this: that project is developed on the premise that those demands must be satisfied, and Mr. Larson has that information.

Chairman MILLER. They are developed upon that premise that those demands must be satisfied?

Mr. TUDOR. That is right.

Chairman MILLER. They will have a detailed report of that?

Mr. TUDOR. That is correct, sir.

Chairman MILLER. And the amount of water that would be available?

Mr. TUDOR. Yes.

Chairman MILLER. One other question on Echo Dam. Your studies show that the evaporation is much less in the Echo Dam site than the other alternative sites that have been suggested?

Mr. TUDOR. It is much less at the Echo Dam site than at the other alternatives that have been suggested; yes, sir.

Chairman MILLER. Did I understand you to say there would be enough evaporation of water in the other dam sites to take care of a city the size of Denver? Or was that the runoff water that would take care of a city the size of Denver?

Mr. TUDOR. No, sir. The difference in evaporation between Echo Park and the other most favorable dam site is about 108,000 acre-feet, and that would take care—that is about what Denver consumes today. Incidentally, Denver uses more water per person than the average city in the United States. They use about 192 gallons per day, I believe it is, where the average is about 145. So on the average it would be for a city larger than Denver, a city of 600,000. If you take any other alternative sites where the loss is higher, as much as 200,000 acre-feet, you are getting up into enough water to serve the domestic and industrial uses of a city of a million and a half people.

Chairman MILLER. That is all.

Mr. ASPINALL. Will the Chairman yield to me?

Chairman MILLER. Yes.

Mr. ASPINALL. I would like to ask one question to follow through on the statement.

The purpose of this legislation, Mr. Secretary, is to permit the upper Colorado River Basin to deliver to the lower basin the charges which are against the upper Colorado River Basin by virtue of the Colorado compact; is that not right?

Mr. TUDOR. That is correct, sir.

Mr. ASPINALL. In other words, Colorado will be unable to deliver unless she does have the storage space; that is, in coming years?

Mr. TUDOR. They cannot deliver 75 million acre-feet in a 10-year period regularly.

Mr. HARRISON. Mr. D'Ewart.

Mr. D'EWARD. I think the record should show at this time that many of the members of this committee took the time during the recess to visit the area described by the Secretary, to fly over much of the area under discussion, to visit many of the dam sites, including Echo Park and Split Mountain, to meet with most of the communities that are particularly concerned, and visit with many of the people.

I think it important that the record make that clear because it was taken out of the recess time of the members and because it helps them to better understand the problem that is before them today. I think the time and the money was well spent; certainly we will be able to do a better job because of the knowledge gained.

Also, Mr. Chairman, I think that since this report has been before the Bureau of the Budget since December 10, it would be wholly within the right of the committee to put a little fire under the Bureau of the Budget and get that report up here because it is an essential part of this record.

Is there a report before the committee at this time referred to on page 3—

some division among the States of the waters allocated for use in the upper Colorado Basin by the Colorado River compact of 1922 would be necessary before firm recommendations for projection construction could be made.

Apparently the States in the upper basin have made a decision as to the division of water between themselves. Is that report available to us?

Mr. TUDOR. Mr. Witmer has the details on that, sir.

Mr. WITMER. My name is T. R. Witmer, legislative counsel for the Bureau of Reclamation.

The upper basin compact was entered into in 1948 and a bill to grant the consent of Congress to that compact was presented to this committee and reported out by this committee, and eventually passed the House. Hearings before this committee, plus the record made by the upper basin commission, was presented at that time and is in the committee's records. If it is not, I am sure we will be glad to supply whatever we can.

Mr. DAWSON. In fact, not only passed this House but passed the Congress and was approved by the President.

Mr. WITMER. That is right.

Mr. DAWSON. And is now the law.

Mr. D'EWARD. Has agreement been reached then among the users of water in the upper basin as to where it should be used?

Mr. WITMER. Among the five States of the upper basin there is a firm division of the supply available to the upper basin.

Mr. ASPINALL. Will my colleague yield?

Mr. D'EWARD. Yes.

Mr. ASPINALL. You do not mean to tell this committee, Mr. Witmer, that all the differences between the lower basin and the upper basin have been resolved in the compact?

Mr. WITMER. My answer to the question went only to the division of the water in the compact among the five upper basin States. I did not intend to say, and I would not be in a position to say, that there

is or is not any difference of opinion between the lower basin and the upper basin under the 1922 compact.

Mr. ASPINALL. But you would say that the amount of water to which each is entitled was determined by the upper Colorado River Basin compact?

Mr. WITMER. May I answer that this way? The upper and the east side. Has that report been now furnished to the committee? If it has not been furnished to the committee, I believe we should insist that report be made available at as early a date as possible. Certainly we need it in further consideration of this very important matter.

Mr. HARRISON. Mr. Saylor, any questions?

Mr. SAYLOR. I am afraid I do.

I would like the record to show that I took part of my vacation time last summer as a citizen of this great country and not as an official committee because I did not want to get that famous western hospitality shown to me and get just the gold carpet treatment but I wanted to find out the true facts. So in company with Mr. Aspinall—

Mr. ASPINALL. My friend, you got both. [Laughter.]

Mr. SAYLOR. Yes; but the treatment I got was of my own choosing.

We went down, not by airplane, but the same trip which the Under Secretary took, right down into the site of Glen Canyon and Split Mountain. So that when I ask questions about this, it is not from the fact that I have read a lot about these reports that have been put out, but I have actually taken some time out to go out and investigate. I am afraid that there is more involved in this than the good Under Secretary would indicate from this excellent statement.

I have been with the committee for a number of years, and each time one of these basic projects comes up that affects the Colorado River, whether it be between the upper or lower basin States, or both of them, somebody brings in a new angle. The last time we held any hearings on these matters, the issue that was before the committee was the quality of the water that was being delivered and the duty on the upper basin States to deliver to the lower basin States water of good quality, and to deliver at least the amount specified in the compact of 1922.

I am particularly interested because anything that this committee does, regardless of what it states in its report, is seized upon by the bureaus downtown to be gospel. The reason I say that is that we had what the committee considered a very unusual project to be considered by this committee. It happened to be in Colorado. It happened to be in the district represented by my good friend Mr. Aspinall. We were very careful in that report to say that while we used a new and distinct formula to make the Collbran project feasible, it should not be considered as a change in basic policy or to be seized or used by anyone as authority by this committee or anybody else to be applied to any other project. Strange as it may seem, since that time the Bureau has grabbed upon the Collbran formula and modified it, and we now have it thrown back in our face as being authority for the authorization of a project in a new formula of finding whether or not they are feasible.

Therefore, there are many issues involved in the upper Colorado Basin which I think deserve the serious attention, not only of folks who have come here to listen but the members of this committee.

The first thing that I would like to ask the Under Secretary, Mr. Tudor, is whether or not he would specify for us on the map which is in back of him the storage projects which have been recommended in the upper basin. And by those I mean those projects in the upper basin which will not produce 1 acre-foot of water for any land for irrigation.

Mr. TUDOR. Mr. Saylor, I think probably you are getting into detailed questions there which my colleagues would be better qualified to answer than I am.

Mr. SAYLOR. I mean, Mr. Secretary, we must for this committee have specified in the very beginning what projects on this upper Colorado development are solely for the creation of power, if any. That is the first thing that this committee must determine, because you referred in your testimony to House Document 419 of the 80th Congress, the survey that was made of the Colorado River dividing it both with the upper and lower basin. Since we are now dealing with the upper Colorado River basin, it is important that this committee know what projects in the upper Colorado are solely for the development of power.

Mr. TUDOR. I can answer it to this extent, Mr. Saylor: I am not familiar with all of the details, but there are only two that have a negligible amount of storage—the Crystal, with 40,000 acre-feet and the Split Mountain with 335,000. They have some river regulation but not as much as others. All of them have some river regulation in addition to the power that they may or may not generate.

Mr. SAYLOR. In other words, the reservoirs which you have designated as being called for in this bill at Glen Canyon and Echo Park, Split Mountain, Cross Mountain, all have some irrigation features to them; is that correct?

Mr. TUDOR. No, sir. No. They may only store water for regulation, they may or may not have irrigation features connected with them; but they are not solely power is the point I made. I think that was your question, was it not?

Mr. SAYLOR. No, not just power. It is irrigation as distinguished from the other features that you can charge to projects under the act of 1944.

Mr. TUDOR. For example, the Echo Park Dam does not have any irrigation directly from the dam. It does generate power and it does store water for river regulation.

Mr. SAYLOR. What about Split Mountain?

Mr. TUDOR. Split Mountain does not provide any water for irrigation, but it does give some regulation, a minimum of that, and it does generate power.

Mr. SAYLOR. What about Gray Canyon?

Mr. TUDOR. That I cannot answer myself. I do not have the information on that.

Mr. SAYLOR. Does somebody have that information?

Mr. TUDOR. Mr. Larson. Incidentally, Mr. Larson in his statement does have a statement covering each of these reservoirs as to the purpose they serve.

Mr. DAWSON. I do not want to interfere with your questions, but would it not be better procedure to let Mr. Larson explain the projects?

Mr. SAYLOR. I do not want to be told what will be a better procedure. The Department is up here trying to make out a case for

the upper Colorado River Basin. I think we must know in the very beginning what are purely storage projects and what are purely power projects.

Mr. HARRISON. Mr. Saylor, you have the time. Proceed.

Mr. SAYLOR. Here is the statement representing the opinions of the Department asking for the approval of the plan and the authorization of its initial phases. The first witness who is here should be in a position to know enough about this upper basin development to know what the projects are, what the overall picture is, and the details can be filled in afterward. But certainly as to projects themselves, this committee has a right to know from the very beginning what is involved.

Mr. TUDOR. Mr. Saylor, we have the people here who have worked on it, and we do have the information that you want.

Mr. SAYLOR. There is not any doubt about it, Mr. Tudor, there has been plenty of information. I have worked for weeks and read nights on lots of these projects that have been prepared here since 1940. What I am trying to figure out is to get that all on the record as we start off here.

You have come up and asked for approval of a plan. Certainly the committee is entitled to know from the very beginning what the plan is.

Now the principal part of your discussion has had to do with something that has never been before presented to this committee, evaporation losses, in attempting to justify the most controversial feature in the entire upper Colorado River Basin, namely, Echo Park and Split Mountain.

Now to carefully develop this matter it is necessary for this committee to know, and I think we should be told, the dams which you have erected and propose to erect in the upper Colorado River Basin in accordance with the interim report made in the 80th Congress as to what reservoirs you are going to use to control the river.

And the second phase which I want to question about then is what projects would you approve or have recommended, or if today they are still the same 11 projects which were presented in 1950. And then we should be told how you arrived at the calculation of water, what studies the Department has made to determine whether or not, in the light of all the recent developments, and in particular a report of the Colorado Water Conservation Board, which was published on the 31st day of October 1953, as to whether or not there is enough water actually in the upper basin to make this entire program feasible.

For that reason I feel this committee is entitled to this, and those are the questions that I have asked. There is not anything that I am trying to pull or get over. All I want is a chronological order of the reservoirs on the river which you would use to control the river and that do not have any reclamation features connected with them, because you have specified in your testimony that each one of these individual projects has that feature.

Mr. ASPINALL. Mr. Chairman, will my fine traveling companion yield to me for a little matter?

Mr. SAYLOR. Yes.

Mr. ASPINALL. There are four large reservoirs that are authorized—

Mr. SAYLOR. Mr. Aspinall, I can read the record, I know what they are; but I want the Bureau to tell us what they are.

Mr. ASPINALL. We have the 5 major reservoirs and 10 or 12 small reservoirs. That is all we have before this committee at this time because of the limitation by the legislation which is before us. When these other matters get before us, if they are proposed, then I think my colleague's remarks would be in order.

Mr. SAYLOR. I will leave that up to the chairman. I want to know, as this document has been the basis of reports, what the development, what the reservoirs are on the river for the control of the river along—

Mr. HARRISON. May the Chair say he agrees with the gentleman from Pennsylvania that he is entitled to get this information. But I might explain further that in setting the witnesses for the Department of the Interior they asked to have four witnesses, giving the approximate amount of time, and they wanted to develop their program along those lines. And that is the same arrangement we are making with all other organizations and groups who appear here to set up their own schedule as to how they will testify.

It is not the intention of the Chair to infringe in any way upon the gentleman from Pennsylvania's questions, but I think we should have the answers from Mr. Larson. He is the third witness.

Mr. SAYLOR. On page 3 of Mr. Tudor's testimony, he says:

In brief, the plan envisions construction of a series of holdover storage reservoirs in the upper basin of the Colorado River, to enable the upper basin States to meet their commitment to the lower basin States, while permitting full development and utilization of the waters available to the upper basin States. I think if the witness has come here and said what the plan is they envision, we have got to know in the first stage what those reservoirs are.

Mr. TUDOR. May I respond, Mr. Saylor?

Mr. SAYLOR. Yes.

Mr. TUDOR. I think that I would be presumptuous to set myself up as being familiar with all of the details of this plan which has been worked over for many years. I concern myself, and necessarily so, with the basic principles and general principles involved rather than the details. But I think you are quite right, you are entitled to all of this information. We have it, but it can be far better presented by the other witnesses than it can by myself. I have concerned myself with the general principles involved and this one specific problem on the matter of evaporation.

Now I would be glad to return at any time or continue here, whichever is the pleasure of the committee, but I do suggest the details be covered by the other witnesses who are far better qualified than I am on it.

Mr. HOSMER. Mr. Saylor, will you yield for a question?

Mr. SAYLOR. Yes.

Mr. HOSMER. What bothers me is the statement read from your testimony by Mr. Saylor. Now I want to make sure that we can evaluate your testimony properly. Do I gather by what you have just said that you are not familiar with all phases of this thing, and that, as a consequence, your opinions expressed in your prepared statement might not be based on a full and complete knowledge of the whole projects as it is proposed?

Mr. TUDOR. It is based upon a full knowledge of the general features of the project, but, for example, the foundation conditions at each site, the type of dam that is there, I am not familiar with it in detail in my own mind. I can refer to the report, of course, which I do not think would be as well as referring to one of the engineers who did the work.

Mr. HOSMER. In other words, we are to evaluate your testimony with that in mind?

Mr. TUDOR. That is correct, sir.

Mr. HOSMER. Thank you.

Mr. TUDOR. If I may, I will refer to this particular statement. I am well aware of the fact that in order to control this river it is necessary to have holdover storage there, not only from one season to another, but more particularly over a period of long wet years to a period of long dry years. The characteristics of the basin are such that is necessarily so; so this general type of development is necessary in this area.

Mr. HOSMER. Will you state for what purpose that general type of development is necessary?

Mr. TUDOR. It is necessary, on the one hand, to meet the requirements of the upper basin States to the lower basin States. In other words, there is the necessity for delivering 75 million acre-feet over a period of 10 years, and in order to do that you must, of necessity, have some very large storage capacity. The Glen Canyon Dam, I believe, is the biggest one; that proposes a storage of 26 million acre-feet, not all of which is available, but most of which is.

Mr. HOSMER. By how much at the present time does the obligation of the upper basin States to the lower basin States fail to be met?

Mr. TUDOR. They are not under regulation at all now, comparatively speaking.

There was one other point I wanted to bring out——

Mr. HOSMER. Just a moment. You have implied there is a failure on the part of the upper basin States to meet their obligations.

Mr. TUDOR. No. I just said the reservoirs are not there to regulate it now.

Mr. HOSMER. Then there is no present existing failure to meet the obligations to the lower basin States?

Mr. TUDOR. That is correct: there is no present failure.

Now the other reason it is necessary to have storage is so that the upper basin States can consumptively use the water that is up there for themselves.

Mr. HOSMER. Thank you.

Mr. SAYLOR. Mr. Tudor, another reason that I think it is necessary, whether we get it from you or someone else, that this committee have immediately a careful chronological accounting of the projects on the river that are to be merely for the control of the river; and, second, the participating projects which are in the present approved plan for the upper Colorado, is that it is necessary to determine the position of the Department with regard to basin accounting and whether or not the present Secretary approves the theory of basin accounts.

Mr. TUDOR. I can answer that question, Mr. Saylor. We do approve of basin accounts in an instance such as this. We have many basin accounts. For instance, the Columbia Basin is an account, Central Valley is an account, and this calls for a basin account.

Mr. SAYLOR. In other words, the entire position of the Department at the present time is predicated and the feasibility of the participating projects are based upon a basin account?

Mr. TUDOR. That is correct. I do not like the words "basin account." I am not just sure what word I prefer, but it should be an economic area.

Mr. SAYLOR. It is the upper basin. I do not know what else you could call it.

Mr. TUDOR. That is perhaps as a good a term as any, but when you use the words "basin account" you get outside of single economic areas, and it is a bit dangerous. I would not want to carry that theory to the extent of trying to join 2 or 3 economic areas together.

Mr. SAYLOR. Does the Department consider the area specified there in the map in back of you as an economic area?

Mr. TUDOR. I would say so; yes, sir.

Mr. SAYLOR. That includes parts of the States of Colorado, Wyoming, Utah, Arizona, and New Mexico; is that right?

Mr. TUDOR. That is correct, sir.

Mr. SAYLOR. Now you state that the Department has been in a sense torn between preserving the national parks and monuments and the theory of developing this upper Colorado River; therefore, you have decided that as a result of that visit which you made, and your studies, that the best thing you can do to develop this is to invade Echo Park or invade Dinosaur National Monument at two places, namely, Split Mountain and Echo Park; is that correct?

Mr. TUDOR. That is correct, sir. We feel that you have a choice of two things to do here. You can either leave the park as it is now, with its natural beauty, and thereby lose water in an area which is desperately short of water; or you will lose some scenery, or at least alter some scenery, and save the water. That is not a principle that we support. That should not be taken as a precedent that we would support in all instances.

Mr. SAYLOR. That is just what I am getting at, Mr. Tudor, that whatever this committee does in this instance will set the pattern, not just for the upper Colorado River Basin, but for every national park and monument in the United States, because I have pointed out carefully that every time this committee makes a step, or every time Congress does anything, the bureaus downtown seize upon it as a precedent. And you know and I know that there will be people down there in your Department that have for years advocated the invasion not just of this national monument but of many other national monuments and parks.

Mr. ASPINALL. Now, if my colleague will yield for just a moment—

Mr. SAYLOR. No; I am not going to yield.

Mr. ASPINALL. I wish my colleague would let the record speak for itself then because his statement is not a fact.

Mr. SAYLOR. I am very frank to tell you it is a fact.

Mr. ASPINALL. Have you read the order which brought Dinosaur National Park into existence?

Mr. SAYLOR. Yes, very carefully. And I have it right with me because I knew it would become controversial. And when it was established it said that there would be a dam built at Lodore Canyon.

Mr. ASPINALL. You admit that the question of water conservation was reserved in that order?

Mr. SAYLOR. It was not reserved in that order, sir. The only thing that was reserved in that was the right to put it in Lodore Canyon.

Give me a little time [looking through documents]. You know Will Rogers said data was like garbage; after collected you had to do something about it.

Mr. ASPINALL. I will admit that—my colleague does not have to read a law to me with which I am familiar—as far as a definite place, it was Browns Park.

Mr. SAYLOR. Browns Park.

Mr. ASPINALL. But the question of water conservation was a part of all of this, and I have an itemized statement of all of the letters and correspondence that the Park Service has received in this matter.

Mr. SAYLOR. I have a lot of it, too. And the important thing is that if this is established and it is changed from Browns Park in Lodore Canyon, it will be seized upon by those who want to invade the national parks and monuments as a precedent for going into Yellowstone, because there have been proposed—and I can hear my friend Mr. D'Ewart now say, "That's hardly possible"—but it has been proposed. You are all familiar with the fact that they have already proposed going into Glacier National Park. Now this is very important, at the very beginning of this that we find out why the Department is taking this position. It has been very interesting to me to follow the Under Secretary's statement and find that every time there was an alternative site proposed or suggested, one of the controlling factors of why they did not want to go in there was that they had to invade another national monument.

Mr. TUDOR. May I correct that, Mr. Saylor? I said that was the case in New Moab. There is a possibility in Glen Canyon, but not Dewey or Desolation.

Mr. SAYLOR. In other words, is it not a fact that the laws which govern the controlling and setting aside of national parks or monuments specifically states that they must, in order to become such a park or monument, contain something of unusual nature or beauty which should be retained and preserved for the entire United States? Is that correct?

Mr. TUDOR. I am not familiar with the detailed laws on it. I know the substance is comparable to what you said, but the details I am not sure of.

Mr. SAYLOR. And that when these national parks and monuments are set aside they are set aside for the use of not just one State alone, but they are set aside for the use and benefit of all the people in the United States?

Mr. TUDOR. That is the principle upon which the park system is set up—for the benefit of all of the people—yes, sir.

Mr. SAYLOR. And from the time Yellowstone Park has been set aside as our first national park, that same theory has pervaded the National Park Service and the setting up of the various parks and monuments throughout the United States?

Mr. TUDOR. I have not been associated with the Park Service that length of time, so I cannot answer you. But that is the general principle, that the parks are for the general use of all the people of the country, and we subscribe to it.

Mr. SAYLOR. And that if the two dam sites which you have commented on—Echo Park and Split Mountain—are built, that entire area where you went into the river down to below the national monument will be completely flooded?

Mr. TUDOR. Perhaps you looked over that one cliff which was something like 1,400 feet high. I did but I did not stay out on the edge very long. But we will flood a couple of hundred or two hundred and fifty of that. I think there will still be a great deal of beauty; perhaps some people think more beauty. And certainly it will be more accessible when the reservoirs are built. Not that I would build the reservoirs just to make the park more accessible than it is now, but I do believe the park will not be destroyed by the reservoirs. It will be altered; it will be made more accessible to more people.

Mr. SAYLOR. In other words, your theory is it would be much more desirable to build a dam at Echo Park Dam site. What is the approximate height of that dam?

Mr. TUDOR. About 600 feet from the foundation, but the foundation is under the surface of the water. 520 feet from the surface of the water.

Mr. SAYLOR. 520 feet. All of those rapids that you went over when you rode down the river will be gone; is that right?

Mr. TUDOR. Many of them will be gone; yes, sir. We would not have to get out and tow the boat over some of them with the reservoir there.

Mr. SAYLOR. The only thing you will have then is a nice placid pool in the bottom of the canyon; is that correct?

Mr. TUDOR. Yes; it will be a pool. That is correct, sir.

Mr. SAYLOR. And when you build the one at Split Mountain it will back up the water right to the foot of Echo Park?

Mr. TUDOR. I think it is close. Yes; it is close to the tail water of Echo Park. Incidentally, we could not get to Split Mountain through the Split Mountain site; there was not enough water. I would be able to with the reservoir there.

Mr. SAYLOR. You picked the nice dry season. If you had gone down there when we did, you would have no trouble getting down there at all.

Mr. TUDOR. I wish we had, but it is——

Mr. ASPINALL. We had a little trouble.

Mr. TUDOR. I would like to comment, Mr. Saylor, that it is certainly not the Department's position to invade national parks. And as to what the committee may do and the Congress may do, that, of course, is entirely their business. But I do want to reiterate—if I may I will read two sentences from my statement to emphasize.

The Department does not subscribe to any policy which contemplates indiscriminate or haphazard construction of reservoirs or other artificial developments in this or any other national park or monument area. It opposes any development in such areas if this can possibly be avoided without undue and irredeemable losses of some other natural resources.

Mr. SAYLOR. I might say to you, Mr. Secretary, that people of my district are more wrought up about the Bureau of Reclamation and the Department of the Interior having what one man wrote to me and called the "affrontery" to set up a policy of invading national parks and monuments than any other matter that the Department has done which has come to their attention in a long time.

Mr. TUDOR. Again, we are not setting up such a policy.

Mr. SAYLOR. No. But again, it becomes now a matter of opinion as to whether or not what will be all right today—you set up that as a very high-sounding and nice proposition. But unfortunately once it is established, if this is built, then it will be seized upon by everyone else and they will say, "You did it in Dinosaur National Monument; so you can do it anywhere else."

Now that is the policy that follows regardless of what the Bureau might think of when they set it up at this time.

Mr. REGAN. Would the gentleman yield there?

Mr. SAYLOR. Yes.

Mr. REGAN. You said it became a matter of opinion. I listened to the Secretary's statement here, and he confined it pretty well to the recommendation of Echo Park site and Split Mountain. Echo Park, he said, would inundate a part of the Dinosaur Monument but would leave high above the water level the quarry where the dinosaurs have heretofore been found.

I am, of course, as concerned about national parks as you and your constituents, and my constituents, and the rest of the people of the United States, but the Dinosaur National Monument was established with the idea that ultimately they would make beneficial use of the water of the Colorado River, and to do so would have to put in some dams that might cover a part of the total area. The total area is much greater than the confined area where the dinosaurs have been found. They will be high above high water.

Right now I think it is the least patronized of any national monument in the United States. And I may go further and say that if I were directed by the Park Service to be sure and see Dinosaur National Monument, I would think they perpetuated a hoax on the people of the United States because there is not a darn thing there to see, and I think the Department is entirely right.

You said you were expressing opinions; that is mine.

Mr. SAYLOR. I am always glad to have the opinion of my good friend from Texas, whom I respect, and whom I have agreed with on many occasions and whom I have disagreed with on a number of occasions.

Mr. REGAN. Successfully.

Mr. SAYLOR. And this is an occasion wherein I will have to call your attention that I disagree.

Now I want to tell you that it is true that the original site of 80 acres which was set aside because of the dinosaur bones which had been found in the area—

Mr. REGAN. And removed.

Mr. SAYLOR. Some of them removed; that is true. Removed by a group from Pittsburgh under the Carnegie Museum. That will not be inundated. But when the park was set aside it was specified that at Browns Park there would be authorization for the erection of a dam. Now this is not anywhere near the original place—Browns Park—and will inundate what was found many years after the 80 acres were set aside to be an area that was so distinct, so different, that they set aside the other 200,000 acres to make Dinosaur National Monument.

Mr. REGAN. Will you yield right there for an observation?

Mr. SAYLOR. Yes.

Mr. REGAN. In going up the center of where the dam site is proposed to be located, it is pretty bad road as you know—you traveled over

it. Dusty. And when you got up there you did not see much but high wall. If this dam was constructed and had a lake there, do you not think those people of Pennsylvania would get much more out of going to Dinosaur National Park when they got there?

Mr. SAYLOR. No, because the people from Pennsylvania have all the good highways they need, they brag about it—the fact they have this greatest network of highways. And when they go out to a place like this they know they are going out, and do not expect to have themselves carried down there.

If you want to talk about the number of people that have gone down, let us talk about it percentage wise, because during the past summer there have been over 500 people who made that trip, and that probably more than—as near as I can determine is 8 or 9 times as many people as have ever gone down before in its history.

Mr. REGAN. Would you yield there? Was not a good part of that 500 we who went down to look at it, including the Secretary? [Laughter.]

Mr. SAYLOR. No, I am not counting on that at all. I will include the Secretary because he took the boat ride, and you did not.

Mr. REGAN. They told me it was chilly and I did not want to take a chance.

Mr. SAYLOR. It is cold; that is true.

I mean the mere fact the entire feasibility of this whole area project is based upon the invasion of the national monuments, a position that was taken a number of years ago—in deference to the witness, it is only my opinion, some of the engineers down there have assumed this a good dam site. I am not an engineer, but after having looked at it, I concede that it is a good dam site. But it is in a national monument, and I am opposed to it; and I do not believe that the Department of the Interior in 1950 or in 1954 has sincerely gone out and estimated carefully the alternative sites. They agreed on this back in 1950 and everything that they have done has been to divert their attention and to justify their position.

Mr. RHODES. Will you yield for a question?

Mr. SAYLOR. Yes.

Mr. RHODES. If the proposed dam were to be at Browns Park, would the gentleman be opposed to construction of it?

Mr. SAYLOR. Absolutely no.

Mr. RHODES. Then the gentleman's opposition is based upon the transfer of the dam from one site within the national monument to another site within the national monument.

Mr. SAYLOR. Because when the area was set aside for the dam at Browns Park, practically all of the dam itself would have been outside of the park. Only the dam itself would have been within the confines of the National Monument.

Mr. RHODES. I am not familiar with Browns Park, and since the gentleman is a great river voyager and has gone down the river, I would like to ask him, if he will, where Lodore Canyon is with relation to Echo Park.

Mr. SAYLOR. Lodore Canyon is north of the present site. I have here a map I will show you.

Mr. RHODES. Above the confluence of the Yampa and Green Rivers?

Mr. SAYLOR. Above the confluence of the Yampa and Green Rivers.

Mr. RHODES. Not being an engineer, I am wondering if the gentleman might have considered this: Do you not feel it would be better to have the dam below the confluence of those two rivers rather than above so far as the control of the river is concerned?

Mr. SAYLOR. That is a matter that should have been considered, if it is now thought to be so valuable, at the time it was set aside.

Mr. RHODES. Of course, I think the gentleman will agree that we should not perpetuate an error. If an error was made at the time the monument was set aside, of course, the error should be corrected now. Would the gentleman agree to that?

Mr. SAYLOR. Yes, sir, and I would agree let us take it out of the park altogether, have none either at Browns Park or anywhere else.

Mr. Secretary, I feel it is unfair to the committee not to have these projects for the control of the river outlined at the very beginning. I have a number of questions in regard to the feasibility of these projects which are involved, a number of questions with regard to the amount of subsidy which power must pay, what formula you intend to use with regard to development of these participating projects. Are you in a position to answer those questions?

Mr. TUDOR. I am not in a position to answer those questions, Mr. Saylor, but we do have the witnesses here who have, I am sure, most of the answers. And if they do not have them, we will certainly get them for you.

Mr. SAYLOR. Mr. Chairman, I do not want to tell the Department how to present its case. Certainly I would like to protest the fact that, in my opinion, they have not come here and shown us the proper development of this upper basin. In other words, the witness before us, having participated and spent most of his testimony in trying to deal with evaporation, and the loss at Echo Park as compared to 10 other sites, it is not a presentation such as would enable the members of this committee to understand what the Department is trying to do in developing the upper Colorado River and its storage projects and participating projects.

Mr. TUDOR. May I speak in defense of the Department because you stated that you do not think we put on a good case?

I do not think we have either so far, nor is it my purpose to cover all of the details. But I think if the committee chooses, we have these other witnesses here, we will put them on at your pleasure, and they are far more competent to cover the details than I am. I have tried to cover the matters of general principle and specifically the matter of evaporation which I was directed to investigate.

Mr. HARRISON. The Chair might state again that he did allow the Department to put on the witnesses in the order in which they wanted to put them on, and the same courtesy will be extended to those in opposition to this particular bill. I personally feel that no criticism should be leveled at either side until they get through with their presentation. If at that time they have not made a case, then I think they can be justifiably criticized. Not only for the proponents but for the opponents. They are merely following the outline with the four Department witnesses in the order as given to the chairman, the same as the other delegations will give to the chairman the order in which they want their witnesses to appear.

Are you through, Mr. Saylor?

Mr. SAYLOR. Yes, at this time. I reserve the right to interrogate the witness further.

Mr. HARRISON. You shall have all the right and all the time you want, Mr. Saylor.

Mr. REGAN?

Mr. REGAN. Mr. Secretary, I have gotten from your statement that you boil these things down as of now to the recommendation of the Echo Park and Split Mountain Reservoir sites over the others, and that is the limit of your recommendations to this committee at this time—that they give consideration to this site for the reasons you enumerated—evaporation and water losses, et cetera; is that right?

Mr. TUDOR. Yes, sir. On the one hand, I am recommending that the Congress take action favorably on the upper Colorado River Basin project, as will be outlined in detail by our witnesses.

On the question which the former Secretary of the Interior said he would undertake to have investigated and which the present Secretary directed me to do, as to whether or not there are reasonable alternatives for the Echo Park and Split Mountain dam sites, I have made this investigation, and I am recommending that the committee and the Congress authorize the Echo Park and Split Mountain dam sites in lieu of any of the other alternatives that have been suggested or that we can find.

Mr. REGAN. Then you recommend it as a part of the entire upper Colorado River proposal?

Mr. TUDOR. That is right.

Mr. REGAN. And not singly are you recommending that? I mean that is not an individual recommendation, but you recommend that site in lieu of any other proposed site?

Mr. TUDOR. Any other alternative for those particular sites.

Mr. REGAN. For the reasons you gave of evaporation, et cetera?

Mr. TUDOR. That is correct, sir.

Mr. REGAN. Thank you.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. No questions.

Mr. HARRISON. Mrs. Pfost?

Mrs. PFOST. Mr. Secretary, I would like to ask if the Department of the Interior has arrived at any particular order in which to construct these dams. Which one are you recommending be constructed first?

Mr. TUDOR. That will be in our report to the Congress from the Bureau of the Budget. I would say this: that we are recommending the Glen Canyon and the Echo Park Dams for first construction.

Mrs. PFOST. Thank you.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. I just want to compliment the witness on the painstaking time and effort that you have put in to this matter, particularly taking the time to go out there and go over these sites. I think it is very seldom that we have the painstaking investigation that has been made in this case, and I want to commend your Department for it.

Mr. TUDOR. Thank you, sir.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Chairman, I wish to follow the lead of my colleague, Congressman Dawson, and compliment the witness on his good presentation. I think, Mr. Tudor, you have made a very fine

preliminary statement, with what I know is to follow. And I appreciate the interest that you personally have taken in this as well as the interest of the Secretary of the Interior.

On page 1 of the report you state that requests had been sent to the various State and Federal agencies concerned. Do you have any of those reports back?

Mr. TUDOR. I think we have all of them. We have 4 out of the 5. We have not yet received Arizona's response to that, sir.

Mr. ASPINALL. But you expect it?

Mr. TUDOR. We expect it momentarily, yes, sir.

Mr. ASPINALL. On page 5 you show an interest of the Department in the game situation in Colorado as well as in the other States, and you state that there is presently a congested big-game situation. Now, Mr. Secretary, do you know that to be a fact?

Mr. TUDOR. No, sir. I am not a hunter and I did not see a congestion of big game out there; but I am well advised by our Fish and Wildlife Service, in whom I have confidence.

Mr. ASPINALL. Mr. Secretary, you understand as far as that area is concerned that the States have jurisdiction over game matters, do you not?

Mr. TUDOR. Certainly part of it, yes, sir.

Mr. ASPINALL. On page 6 you call attention to the necessity of cadastral surveys. Do you have the information at hand so you could tell us what percentage of this area is in need of cadastral surveys at the present time?

Mr. TUDOR. I cannot give you the details of that, but I do know that our Bureau of Land Management is badly behind on cadastral surveys throughout the country. It is one of the problems we are facing and it is causing us serious concern, not only here but elsewhere.

Mr. ASPINALL. The fact we do not have correct surveying, or surveying in some instances at all, is holding back the development of this area; is that correct?

Mr. TUDOR. Yes, sir; it is holding back this and other areas.

Mr. ASPINALL. That is right.

On page 11, in the last paragraph, you have the following statement:

The total quantity of water available under the 1922 compact falls very substantially short of meeting the potential needs of agriculture, industry, municipal supply and other purposes.

Were you talking about the inbasin needs?

Mr. TUDOR. Yes, the inbasin needs are short of their total demand. I mean supply is short of demand.

Mr. ASPINALL. On page 14, at the end of your table, you show a possible annual evaporation of 691,000 acre-feet in the case of the fourth alternative being followed and High Glen Canyon is constructed. Who would have to bear the burden of that evaporation loss under the present law?

If you cannot answer it, that is all right with me at this time.

Mr. TUDOR. I cannot answer that question as I am not aware of the law. But I would like to point out, however, that figure should not be misleading to you, that is, the figure of 691,000 if we use the high Glen Canyon Dam. If you use the Low Glen Canyon, the one we are planning, you are still going to lose 526,000 acre-feet. So this is not a net figure.

Mr. ASPINALL. Then my question could be directed to both instances. Who would have to bear the burden?

Mr. TUDOR. It would be the same in either instance, but I would rather have the attorneys answer that rather than myself, sir.

Mr. ASPINALL. Now, Mr. Tudor, my esteemed colleague, Mr. Saylor, called attention to the policy in these national monument areas, as well as the national park areas. Do you know what percentage of the national park and national monument areas have been set aside by legislative enactments as compared to those set aside by Executive order?

Mr. TUDOR. No, sir, I do not have that; but we can get the answer for you, sir.

Mr. ASPINALL. Do you know whether or not there is present at any place in the law a statement to the effect that there should be no water development or development for water conservation within national monuments or national parks?

Mr. TUDOR. I do not know of any such law, sir.

Mr. ASPINALL. That is all.

Mr. HARRISON. Mr. Westland?

Mr. WESTLAND. I do not have any questions, Mr. Chairman, but we have similar problems up in the Pacific Northwest in the State of Washington, the State of Idaho, in the development of these holding reservoirs. These States apparently do not have enough water. We have plenty of water up there in the Northwest, provided we can get holding reservoirs such as these to regulate the flow of the Columbia and its tributaries. I am very much interested in the development of this scheme, and I, for one, would like to hear the rest of the testimony from the Department of the Interior, and let them present their case.

Mr. HARRISON. Is that all, Mr. Westland?

Mr. WESTLAND. Yes.

Mr. HARRISON. Mr. Yorty?

Mr. YORTY. Just briefly, Mr. Chairman.

Mr. Tudor, I notice on the first page of this memorandum you carefully prepared for us you have a statement, which is also contained in the bill, that the capacity of Curecanti is limited to 940,000 acre-feet. Why is that?

Mr. TUDOR. I do not think you have my statement, sir.

Mr. YORTY. It is in the report I assume your Department prepared here for us.

Mr. TUDOR. Mr. Larson will be better qualified to answer that than I am, sir.

Mr. YORTY. It is also in the bill for which you have testified.

Mr. TUDOR. No, sir.

Mr. YORTY. You do not know the answer to that?

Mr. TUDOR. I do not have the answer to that, sir. I know it has been the subject of discussion, and Mr. Larson is in possession of the details and the latest discussion on that particular matter.

Mr. YORTY. But you are recommending the 940,000 acre-feet limit?

Mr. TUDOR. I do not think I want to commit myself on that right now, sir.

Mr. YORTY. Down a little further, in the second paragraph—do you have this memorandum?

Mr. TUDOR. No, sir; I do not have that one.

Mr. YORTY. It says:

The authorization of the San Juan-Chama project, the Shiprock-South San Juan project, and the Central Utah project (beyond the initial phase) would be qualified to the extent that there would be no appropriation for construction until reports on these projects had been submitted to the affected States and approved by the Congress.

I wondered if there is not a possibility your Department is being put in the position of trying to come and justify these projects before you have really had a chance to complete all the investigation and get all of the data for them. In other words, you seem to be authorizing initial phases of the project, and I wondered what position we will be in if the Congress should decide that they were not feasible and we should not have gone ahead, or if some of the States make objections to the plan that we regard as valid.

Mr. TUDOR. In general, we are recommending these projects which in themselves are sufficient. They will not be embarrassing to the Department or to the Congress if these are recommended because they will pay out, and then the others are added later as the Congress and the Department recommends.

Mr. YORTY. It is your testimony, then, that the initial phases of these projects in no way commits either the Congress or the Department to go ahead any further with the project?

Mr. TUDOR. My testimony is this: That these we are recommending now are sufficient into themselves and do not require the others to make them sufficient. So if the Congress does not approve of the others later, we are not embarrassed by the ones that have been recommended.

Mr. YORTY. Then it is your testimony that if we go ahead with these so-called—using your term—initial phases, we are not committed to go ahead any further with any of these projects and there will be no waste in stopping at the end of that particular construction.

Mr. TUDOR. That is correct, sir.

Mr. YORTY. I notice in the bill, though, there is quite a long statement about the intention of Congress to later authorize the rest of these projects based upon certain standards, and I do not want to make any statement on that at this time until I have a chance to study it further. But I do believe it is a phase of this we ought to look into very carefully, because it appears to me that we are committing ourselves pretty much in advance to authorize projects upon which you do not have the reports yet, and apparently you have not had time to complete your studies.

Mr. TUDOR. You do not have our comments on the bill either, sir.

Mr. YORTY. I have only your statement.

Mr. TUDOR. That is right.

Mr. YORTY. And this report I think your Department must have prepared, this memorandum, which is very good. I do not know who prepared it.

Mr. SAYLOR. That was prepared by the staff of the committee.

Mr. YORTY. I compliment our own staff, then. It is very useful.

Mr. SAYLOR. Yes.

Mr. YORTY. In that report I find that same type of statement regarding another project. It seems to run through here. That is where I got the idea. I certainly would not want to see your Department put in the position of being hurried into coming before our committee

and being forced to answer a lot of questions when maybe you have not had a chance to really prepare yourselves. Are you fully prepared—and by “you” I mean your Department—to give us all the facts about all of these projects so we will not be in a position here of going into a few of them and finding out we do not have information and having to stop?

Mr. TUDOR. We are prepared to give you all of the information on the projects we are recommending for initial authorization, but some of those which we are not recommending for initial authorization will have to be further studied.

Mr. YORTY. I notice that in one part of this report you have stated that as far as the power features go you intend to retire the power investment with interest calculated at the rate paid by the United States.

Mr. TUDOR. At the time of authorization.

Mr. YORTY. And that you will defer use of power revenues to pay the part of irrigation construction the irrigators cannot pay until the power costs are paid back.

Mr. TUDOR. That is correct.

Mr. YORTY. That would, as you estimate here, extend the payment period on those irrigation costs to 68 years.

Mr. TUDOR. No, sir. I think that refers to a former report. Our position and our recommendation on this matter is that these irrigation projects will have been paid for within the statutory limits under the reclamation law—within that period from the time they go into operation.

Mr. YORTY. That part in this report, then, about deferring the use of the power revenues to pay off the part of the irrigation construction costs the irrigators cannot pay is not correct?

Mr. TUDOR. That is correct; yes, sir. I think that perhaps bears some explanation because that was one point I interested myself in. Sixty-eight years would be beyond the period authorized by current law. The program as we are recommending it is that a dam like Glen Canyon, for instance, would pay for itself, including interest on the investment, or power facilities within some period less than 50 years, and then the remaining period it would continue to produce revenue would be applicable to the repayment of deficits on reclamation projects elsewhere in the basin, and that is where the basin account feature comes in.

Now, taking one of the reclamation projects within the basin, it is anticipated that it will have paid for itself from revenues from the water users, plus revenues from one or more of the power projects, within the statutory limit of a reclamation project. Each project would thereby be within the limit.

Now the total length of payout of the entire basin would depend upon the time that you authorized projects. Clearly you are not going to authorize all of these projects at once. Some of them are not going to be authorized for several years to come—maybe some of the last ones will be 20 or 30 years. And the repayment period on that last project would be calculated from the time it was authorized. But each individual project would be paid out within the statutory limit.

Mr. YORTY. What formula do you intend to use in fixing the power rate if you are not sure how many participating projects are going to

be dependent upon a particular power project for the deficiency in their revenues on the irrigation projects?

Mr. TUDOR. We are anticipating setting the rate initially at an adequate price which would pay for those projects which are authorized at that time, and then as more projects which are authorized at that time, and then as more projects are authorized, we may have to increase, or it may be possible to decrease, rates, but the rate would have to be adjusted from time to time to fit the situation that then exists.

Mr. YORTY. What is the maximum rate you could charge for power in that upper basin in your judgment and still have it marketable and competitive with other sources of energy?

Mr. TUDOR. It must remain competitive with steam power and, of course, you are right, it is a question of whether you are selling at bus bar or selling at switching stations or whether you are selling at load centers.

Mr. YORTY. We will talk about the bus bar so we have an understanding.

Mr. TUDOR. It is around $5\frac{1}{2}$ or 6 mills at the bus bar. That is an approximate figure.

Mr. YORTY. With that rate at Glen Canyon, is it your estimate now that all these participating projects could be made feasible?

Mr. TUDOR. From Glen Canyon alone?

Mr. YORTY. No, from the others too, but that would be the rate, I assume, for Glen Canyon, and I assume it may set the rate for others.

Mr. TUDOR. Presumably within the area we would have a postage-stamp rate as has been customary in the Bureau. The rate you would have to set for that power would depend to a certain extent on the rapidity with which Congress authorized these projects. If you authorized them very rapidly it would squeeze up the repayment and the rate would have to be raised. If it stretched the payment out more, the rate could be lowered. That question cannot be answered in detail but only answered in general at this time.

Mr. D'EWART. Will the gentleman yield?

Mr. YORTY. Yes.

Mr. D'EWART. Would you define participating projects?

Mr. TUDOR. I am going to ask Mr. Larson to answer that because he wrote the answer to it, if I may.

Mr. D'EWART. We would like to have it in the record at this point.

Mr. LARSON. The participating projects are the individual irrigation and multiple-use projects that, generally speaking, consume the water.

Mr. D'EWART. Consume the water.

Mr. YORTY. Mr. Chairman, may I ask what the intention of the committee is? I have an engagement, as do some of the other members of the committee to go over to the Defense Department for luncheon. I do not know how many are going.

Mr. HARRISON. The present intention of the committee is, of course, we will adjourn when the House goes into session, but Mr. Miller will ask permission to meet this afternoon, and if secured, and I anticipate it will be, we will return here at 2 o'clock and go until 4:30.

Mr. YORTY. My understanding is the committee is only going to go, a few minutes longer this morning.

Mr. HARRISON. We would like to finish this witness.

Mr. D'EWART. One more question. When you say "consume the water," you are confining that to the upper basin?

Mr. LARSON. Yes, sir.

Mr. HARRISON. Are you through, Mr. Yorty?

Mr. YORTY. Yes, sir.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. I would like to ask Mr. Tudor a question which perhaps Mr. Larson could better answer. I understand, with reference to the map, there are two initial storage units; is that right?

Mr. TUDOR. That is right.

Mr. YOUNG. Glen Canyon and Echo Park sites?

Mr. TUDOR. Yes.

Mr. YOUNG. And the bill under consideration supports five initial storage units, including Flaming Gorge, Curecanti, and the Navaho site?

Mr. TUDOR. Yes.

Mr. YOUNG. Your second element of explanation is "ultimate storage units." How many ultimate storage units does the Department favor?

Mr. TUDOR. It is nine, sir.

Mr. YOUNG. Would that be the same envisioned by the bill of Mr. Dawson, or are you familiar with it?

Mr. TUDOR. We have combined Navaho, making that 1 unit there, so there are 10 in there, but simply a variation.

Mr. YOUNG. In other words, your initial storage units and ultimate storage units combined are the same as included in the bill by Mr. Dawson?

Mr. TUDOR. That is correct.

Mr. YOUNG. How many initial participating projects are recommended or approved by the Department?

Mr. TUDOR. I cannot answer that question, but perhaps Mr. Larson can.

Mr. LARSON. Twelve.

Mr. YOUNG. And how many other participating projects would there be in reference to your explanation on the map, the bottom line in your explanation?

Mr. LARSON. There are 3 or 4.

Mr. YOUNG. San Juan, central Utah and Gooseberry?

Mr. LARSON. La Plata, San Juan-Chama, and Gooseberry. That is all of them.

Mr. YOUNG. How many—five?

Mr. LARSON. Three.

Mr. YOUNG. Is that the same as contemplated by Mr. Dawson's bill?

Mr. TUDOR. No, it is not, sir. There is some variation there.

Mr. YOUNG. Does his bill envision the other participating projects such as the map designates?

Mr. TUDOR. I cannot answer that one myself. I think maybe Mr. Larson can, and if he cannot, we can get the answer for you.

Mr. YOUNG. That is all I have.

Mr. SAYLOR. Mr. Tudor, it is remarkable to me, when somebody else asks the same questions I did you have the answers on the tip of your tongue. I mean, it is really startling and I am astounded.

I asked you to begin at the bottom and give me the reservoirs along the river, and you could not do it, you were not familiar enough. I asked you to tell me the number of participating projects and you could not do it. And now when someone else asks you the same questions, you suddenly have the answers.

You know, Mr. Tudor, I had great hopes when you went down to the Department but I am beginning to doubt it.

Mr. TUDOR. I did not recognize your questions as the same. I am very sorry.

Mr. SAYLOR. We can go back and look at the record. It was in plain English. I asked you to start down at the beginning and go up the river and tell me the number of dam sites you had on there to control the river, and you could not do it. Suddenly now when someone else asks you the same question, you can tell them how many there are.

Mr. TUDOR. I think I referred to my staff to advise me on it when the question was asked now, sir. The only question I was able to answer was that there were two dams included in the initial recommendation of the Department.

Mr. HARRISON. Mr. Young, any further questions?

Mr. YOUNG. No.

Mr. HARRISON. Mr. Hosmer?

Mr. HOSMER. I would just like to clear up a couple of ambiguities in my own mind in your testimony, and one of them comes up from a question proposed by Mr. Aspinall. He led off with the question that the purpose of this legislation is to permit deliveries to the lower basin, and you answered the question, and then you said something about a 10-year basis.

Mr. TUDOR. The 10-year basis is that they are obligated to deliver to the lower basin 75 million acre-feet over a period of 10 years.

Mr. HOSMER. Is that obligation expressed in the compact?

Mr. TUDOR. It is in the compacts, sir.

Mr. HOSMER. Are there any questions of interpretation whatsoever that have not been solved with respect to that obligation?

Mr. TUDOR. I am not familiar with whether or not there is. Perhaps our attorney can answer that one, sir.

Mr. HOSMER. Whether or not there are any, I want to ask this question: If there are such ambiguities in interpretations as between the upper and lower basin States, do you feel this legislation purports to set forth any interpretations or the resolving of these ambiguities of questions between the two basins?

Mr. TUDOR. The Department has taken the position it is not our responsibility in this matter to resolve any ambiguities in that.

Mr. HOSMER. I appreciate that, but you are familiar with this bill, are you not?

Mr. TUDOR. In general, yes, sir.

Mr. HOSMER. Do you or do you not believe that the bill purports to resolve some of the ambiguities, or its effect would be to that end?

Mr. TUDOR. I could not answer that question. I think our attorney should answer that one.

Mr. HOSMER. It is an open question as far as you are concerned?

Mr. TUDOR. Yes, sir.

Mr. HOSMER. Now do I understand this? That the approval that you indicate is a general approval of some type of upper basin project as contrasted to a specific approval of all the items in this bill?

Mr. TUDOR. We are making a specific recommendation of approval of the upper Colorado River Basin development program. We will make some recommended changes in the legislation that is before you.

Mr. HOSMER. In other words, you think that the development of the upper basin is a good idea, but you are not directly concurring with all the elements of the developments as indicated by this bill or by plans that have not reached the bill yet; is that correct?

Mr. TUDOR. That is correct. We are taking some exceptions to the bill, making recommendations regarding the bill, and that is the matter that has not been passed by the Bureau of the Budget to this committee yet.

Mr. HOSMER. But with respect to this particular bill, as between Echo Park and other locations, why, you are making specific recommendations?

Mr. TUDOR. That is correct.

Mr. DAWSON. Will the gentleman yield to me?

Mr. HOSMER. Yes.

Mr. DAWSON. The fact of the matter is that you are selecting certain projects which are set up in the bill and approving them, but others you are not approving. This is a fact, is it not? So to that extent it is specific.

Mr. TUDOR. To that extent it is specific, yes, sir.

Mr. HOSMER. That brings up this further question to my mind: We could just say that what is envisioned by this bill or what is before the Congress here is phase 1 and then phase 2 is these other projects that are indicated to come along later.

Now with respect to these phase 2 projects, they would have to necessarily dovetail in with the phase 1 projects. For that reason is it not necessary to have a little bit more information about the phase 2 projects so that the phase 1 projects can be made to fit the phase 2?

Mr. TUDOR. Let me put it this way: It is necessary and essential to have that information. But the phase 2 projects are far more dependent upon the phase 1 projects than the phase 1 projects are dependent upon the phase 2 projects.

Mr. HOSMER. But there is an interrelation between them both ways?

Mr. TUDOR. Oh yes; yes, sir.

Mr. HOSMER. How much approximately in money are we talking about by, I think, these 4 or 5 major projects in the bill and the 12 participating?

Mr. TUDOR. In the two dams and the 12 participating projects it is about \$1,200,000,000.

Mr. ASPINALL. Will my colleague yield for a point of clarification?

Mr. HOSMER. Yes.

Mr. ASPINALL. You are talking about what the Department is recommending?

Mr. TUDOR. Yes.

Mr. ASPINALL. The bill before us and the recommendations are somewhat different.

Mr. TUDOR. That is correct, sir; and we are embarrassed that our recommendation is not over here, but we have been unable to clear it in time.

Mr. HOSMER. Your recommendation concerns \$1,200,000,000?

Mr. TUDOR. That is correct.

Mr. HOSMER. What is the amount that is involved by the bill before the committee?

Mr. TUDOR. I am advised it is about \$1,500,000,000 estimated.

Mr. HOSMER. Now there is a provision in this bill with respect to the termination of power contracts in the event that the power is needed in the upper basin if it is sold elsewhere where they can be terminated. Is that going to make any difficulties in getting people to go in a contract of that nature, in your opinion?

Mr. TUDOR. That may cause some difficulty, and we are very, very seriously concerned about it. I have one principle there that the Department is a bit concerned about, and that is the way the bill is presently written it would commit the Department to supply power needs from other sources in the event that withdrawal from the lower basin was not made. We are studying that matter now.

Mr. HOSMER. In other words, that is a matter that ought to be resolved before final action is taken on this bill?

Mr. TUDOR. I think it should; yes, sir.

Mr. HOSMER. Thank you. That is all.

Mr. HARRISON. We have with us Senator Bennett of Utah, and we want you to know you are very welcome here, Senator. We will be glad to have you participate with us if there are any questions you would like to ask at this time.

Senator BENNETT. Thank you, Mr. Chairman. I have a statement to make at the proper time, and I think I will just sit and listen the rest of the time. Thank you.

Mr. HARRISON. We have now reached the time when the members of the committee will have to be on the floor of the House, so the committee will stand in recess until 2 p. m.

(Whereupon, at 11:52 a. m., the subcommittee recessed, to reconvene at 2 p. m. of the same day.)

Mr. HARRISON. The first witness this afternoon will be Commissioner Dexheimer.

Mr. DEXHEIMER. Mr. Chairman, I am W. H. Dexheimer, the Commissioner of Reclamation.

In view of the testimony which you heard this morning and the questions that were asked and in an effort to save the time of the committee, I would like at this time to change the order of our presentation and ask regional director, Mr. E. O. Larson, who has worked on this plan a good many years, to present to your committee the details of the plan and the supporting evidence in as much detail as we have it at this time.

If it will please the committee, I would rather defer my testimony until after Mr. Larson has given his.

Mr. HARRISON. Is that agreeable to the committee?

Mr. MILLER. In lieu of the questions asked Mr. Tudor this morning, I think there was some matter of confusion as to his statement and position on the feasibility of the projects.

I have asked that Mr. Tudor be permitted to submit in writing the answers to some of the questions that were raised at this morning session.

I think it will help clarify the record.

Also, that he be permitted to submit that statement to clarify the record.

Mr. HARRISON. Is there any objection by the committee?

The Chair hearing none, Mr. Tudor will be granted permission to submit the answers to the questions.

Mr. HOSMER. In that connection, if he can answer the questions I asked on the 1922 upper Colorado River pact interpretation, I shall appreciate that.

Mr. HARRISON. What was that again?

Mr. HOSMER. The question of interpreting the 1922 pact, if this 4449 in any sense attempts to do that.

Mr. HARRISON. You would like a statement from the Department as to whether in their opinion this bill under present consideration would change the interpretations under the 1922 compact?

Mr. HOSMER. Yes.

Mr. HARRISON. I am sure the Department will furnish what is requested.

(The information referred to is as follows:)

STATEMENT ON REPAYMENT

The following is added by way of clarification of the statements made by me with respect to payout of the Colorado River storage project and participating projects at the hearings on H. R. 4449, H. R. 4443, and H. R. 4463. Our plans are set up on the basis of having the cost of each power unit paid out with interest within 50 years from the time that unit first becomes productive. A similar provision appears in the bills.

Our plans also call for repayment of the irrigation allocations of each unit of the storage project and each participating project within 50 years of the time that unit is completed (exclusive of a development period up to 10 years, where applicable under the reclamation laws). Repayment will be accomplished by the water users paying, up to their ability to repay, for a 50-year period, with the balance paid by the application of excess power revenues from power units of the storage project during the same 50-year period, except in the case of the Paonia and Eden participating projects, for which special legislative provision has already been made, and those cases involving Indian lands to which the provisions of the Leavitt Act would be made applicable by the terms of the bills. Payout in this period would thus be accomplished in a period 10 years longer than that contemplated in section 9 (d) of the Reclamation Project Act of 1939 but within a very considerably shorter period than that permissible under other provisions of the 1939 act.

STATEMENT ON INTERPRETATION OF COMPACTS

The texts of H. R. 4449, H. R. 4443, and H. R. 4463 have been examined carefully to discover whether they contain anything which is in conflict with or which is interpretative of the Colorado River compact and the upper Colorado River Basin compact. Nothing of this nature has been discovered in the bills. Indeed, in many places (p. 2, lines 2-6, p. 4, lines 15-20, p. 6, lines 8-9, p. 8, lines 4-7, and p. 8, lines 16-20), there are specific references to the compacts and provision for operation of the project in accordance with the terms of the documents there referred to.

Mr. HARRISON. Mr. Larson.

Mr. ASPINALL. Mr. Chairman, I wish we could have the statement before Mr. Larson begins so that we can follow him right along.

Mr. DAWSON. I would like to suggest before you proceed, if you are going to use Mr. Jacobson, it might be a good idea to introduce him.

STATEMENT OF E. O. LARSON, REGIONAL DIRECTOR, BUREAU OF RECLAMATION, ACCOMPANIED BY C. B. JACOBSON, ENGINEER IN CHARGE OF COLORADO RIVER STORAGE PROJECT STUDIES; W. B. HUFFMAN, ENGINEER; AND PAUL SANT, ECONOMIST, FOURTH REGIONAL OFFICE, SALT LAKE CITY, UTAH

Mr. LARSON. I have with me Mr. Jacobson, the engineer in charge of the Colorado River project storage studies, and Mr. Huffman, engineer engaged in those studies, and Mr. Sant, from our regional office, to aid me in furnishing technical information and answering questions and getting facts before this committee.

I shall cover in a general way the basinwide plan of the Colorado River storage project and participating projects and briefly explain the Glen Canyon and Echo Park storage units and 12 irrigation and multiple-purpose participating projects recommended for authorization in the supplemental report of the Secretary of Interior, October 1953.

I shall also briefly describe units not contained in the Secretary's supplemental report, but included in the bill now before you.

The plan initiated in the bills is one through which the States of the upper basin of the Colorado River could eventually use all the water of the Colorado River system allotted to them. It would make utilization of the region's abundant natural resources possible and enrich the economy of the area and the Nation.

Without it, development of these valuable resources will be hampered, and the growth of the upper basin States will be stunted.

Through this plan, water would be made available for irrigation, municipal, and industrial use, and power generation. It would create vast new recreational facilities and substantial benefits to fish and wildlife.

It would make possible river regulation and sediment control which are needed at an early date to assure maximum utilization of important power potentialities on the Colorado River below Lee Ferry and above Lake Mead.

It is no exaggeration to say that on it depends the future of the upper Colorado River Basin, and that it would make a material contribution to the lower basin.

The basin plan on which these bills are based is the result of many years of investigation by the Bureau of Reclamation in cooperation with the upper basin States and other agencies of the Federal Government.

In 1946 the Colorado River Basin report was issued by the Bureau of Reclamation, covering potential developments on the entire Colo-

rado River system. Among these developments were over 100 potential irrigation and power projects that could use upper basin water.

This report was an inventory which served as a guide for future planning and compact negotiations. No specific plan of full development was possible in the upper basin until 1948, when the water was apportioned among the upper basin States through the upper Colorado River Basin compact.

With this compact as a foundation, the Bureau of Reclamation in 1950 issued the report on the Colorado River storage project and participating projects with supplements. This constituted a start on a comprehensive plan for the upper Colorado River Basin and was submitted to the President on December 4, 1952.

In December 1953, the Secretary of the Interior submitted a supplemental report to the President which proposed authorization of a part of the total plan consisting of 2 units of the storage project and 12 participating projects.

Some knowledge of the history of Colorado River development is necessary for an understanding of the Colorado River storage project. The early settlements along the river were established in the valleys and desert areas where tributary waters and the main stream flow could be easily controlled and used for irrigation. The deeply entrenched sections of the river, typical of much of its course, could not be used without large and costly works.

The great development in the Imperial Valley and other irrigation projects in California and Arizona made increasing demands on the waters of the Colorado River.

In contrast, the upper basin lagged far behind the lower basin in population increase and irrigation developments. An impending conflict between upstream and downstream use was recognized, and in 1922 the Colorado River compact became the law of the Colorado River. This compact made a division of water between the upper and lower basins.

Projects were soon constructed on the lower river capable of using most of the water allotted to the lower basin. No comparable development took place in the upper basin, and at the present time the upper basin States have works capable of using less than one-third of the water to which they are entitled.

There are serious problems confronting the States of the upper basin in any plan for using their share of Colorado River water which can be resolved only through the comprehensive basinwide plan now proposed.

Paramount among them is the compact requirement that the upper basin States deliver to the lower basin not less than 75 million acre-feet over any period of 10 successive years.

The uneven flow of the river, with its erratic periods of drought and flood, makes the fulfillment of the commitment to the lower basin and substantial development in the upper basin impossible without river regulation. Such regulation would require additional storage facilities on a scale that dwarfs past developments in the upper basin.

In selecting storage sites for river regulation in the plan of full development, we have striven to obtain at the lowest cost the largest yield of water, the maximum power output of the river, and the minimum evaporation from the reservoirs.

There is also the need to design works to make water available to each of the upper basin States in accordance with its allotment under the upper Colorado River compact.

In addition the plan must allow for the changing needs of the upper basin and be flexible enough to meet developments in farming, municipal, and industrial uses, and recreation which cannot be accurately predicted at this time.

Features in the plan for developing the upper Colorado River Basin are broadly divided into two categories: (1) storage project units, and (2) participating projects.

The Colorado River storage project is the backbone of the plan. It comprises a system of nine dams, reservoirs, and powerplants at strategic points above Lee Ferry, on the main stem of the Colorado River and its important tributaries. These nine storage reservoirs would provide the regulation necessary in the discharge of the upper basin's responsibility to the lower basin, thereby permitting uncurtailed use of apportioned Colorado River water in the upper basin.

Bureau of Reclamation studies show that development in the upper basin could proceed with some risk without the benefit of such storage regulation to a limitation of approximately 58 percent of its apportioned water.

In other words, 42 percent of the upper basin's apportioned water cannot be put to use unless excess waters are impounded during periods of prolonged high flows in a system of long-time holdover reservoirs for release during prolonged periods of low flows.

The element of time for construction and initial filling of these reservoirs requires initiation of the work sufficient in advance of the time the actual need is present for supplementing Lee Ferry flows.

During the interim period, however, the powerplants at storage sites would be supplying a large power-deficient area with low-cost hydroelectric energy. When it becomes necessary to operate the reservoirs to supplement the flows at Lee Ferry, the powerplants would continue to service the power demands of the area. This would be possible because there is a high degree of compatability in the functions of river regulation for power and for fulfillment of the compact commitments at Lee Ferry.

The estimated market demands for hydroelectric energy in the upper basin would require the total proposed installed capacity in all 9 powerplants within a 20-year period.

The anticipated net revenues from the sale of energy generated by the storage project would be sufficient under the plan to retire the entire construction cost of the storage project with interest on all features chargeable to power.

In addition these revenues would furnish financial assistance to irrigation under projects known as participating projects and make possible complete repayment of their interest-free construction costs. The repayment studies are based on complete reimbursement of all features of the Colorado River storage project. No nonreimbursable allocations were made in the initial units of the storage project to fish and wildlife conservation, flood control, recreation, sediment retention, and other purposes, although in the future such allocation may be found desirable and justified.

Although the storage project would provide for complete utilization of the waters apportioned the upper basin, full development would

necessarily extend over a great number of years. It has taken 100 years to develop existing projects in the upper basin—allowing for authorized projects and projects under construction—with a total consumptive use of about $2\frac{1}{2}$ million acre-feet, or one-third of the $7\frac{1}{2}$ million acre-foot annual allotment to the upper basin.

The 12 new participating projects being recommended by the Department of the Interior would increase present consumptive uses by an additional 640,000 acre-feet of water annually.

The bill suggests additional participating projects which would require an additional consumptive use of 360,000 acre-feet annually.

With an expedited program in the future, it may be possible in the next 75 years to place the remainder of the upper basin's share of Colorado River water in use.

To accomplish the function of river regulation, the Colorado River storage project would require an aggregate gross capacity of approximately 48 million acre-feet. This is half again as large as the capacity of Lake Mead.

In addition to a necessary 23 million acre-feet of storage capacity for river regulation, the reservoir would provide minimum power heads, capacity for fish propagation, and space for 200 years of sediment deposition. No single site on the upper Colorado River or its tributaries is capable of storing that amount of water.

In selecting a team of nine reservoirs out of a great many possibilities, careful consideration was given to important factors such as physical condition, water supply and its utilization, power production and its distribution, recreation, sedimentation, and reservoir evaporation.

In these respects we have painstakingly examined many combinations. The team of nine selected units would provide maximum water utilization and power production with a minimum loss of water from evaporation at the lowest cost.

Two of the essential units would inundate a portion of the Dinosaur National Monument. We have been unable to find any substitutes for these units that would not materially diminish the effectiveness of the nine-reservoir system. Reservoir evaporation is a very important item in this determination since it constitutes a charge against the upper basin's allotment of Colorado River water.

From the standpoint of evaporation, it is advantageous to store water in large reservoirs, in confined canyons and at high elevations on the river system to hold this loss to a minimum.

The project's power potentials are chiefly dependent on two factors: the quantity of regulated water, and the power head.

The first is related to the size of the reservoir and the magnitude of natural flow.

The second is related to the height of the dam above the river. The power head would not be diminished by sediment deposition, but the power output would be affected by upstream consumptive uses of water. The annual energy output of the system would be reduced from an initial 9 billion kilowatt-hours to an ultimate 6 billion kilowatt-hours annually.

The plan in the supplemental report proposes construction of the Echo Park and Glen Canyon units and an interconnecting basic transmission system. Records over a long period show that there is an

adequate water supply to assure initial filling of these reservoirs even though adverse drought conditions should prevail. Transmission costs and the estimated average rate of 6 mills per kilowatt-hour for the sale of system energy are based on a delivery of power to load centers by either Federal or other means of transmission.

In addition to the Glen Canyon and Echo Park units, the bills contain authorization of other reservoirs and participating projects which would serve as points of regulation, diversions, and sources of local benefits.

The Navaho Dam and Reservoir, formerly considered a potential unit of the storage project, are now included under the Navaho participating project.

The Glen Canyon Dam would be located on the Colorado River in northern Arizona about 13 miles downstream from the Utah-Arizona State line, and 15 miles upstream from Lee Ferry. It would be a concrete curbed gravity-type structure rising 700 feet above bedrock.

The reservoir would offer final regulation for deliveries to the lower basin under the Colorado River compact.

Out of a total capacity of 26 million acre-feet, 20 million acre-feet initially would be active capacity. The reservoir when filled would have a maximum water surface area of 153,000 acres and would extend about 187 miles up the Colorado River, nearly to the mouth of the Green River, and 71 miles up the San Juan River.

The reservoir would be the principal sediment depository in the upper basin.

In 200 years at the present rate of sediment flow in the river and with upstream storage developed as planned, sediment deposits would fill all inactive storage space and reduce the active storage space by more than half.

The powerplant would be located near the toe of the dam. It would consist of 7 generating units for a total installed capacity of 800,000 kilowatts which is approximately one-half the total installed capacity contemplated for the entire Colorado River storage project. The plant would operate under a mean powerhead of 480 feet. The total construction cost of the Glen Canyon unit, with an appropriate assignment of transmission costs, would be approximately \$421,300,000.

Although a capacity in excess of 26 million acre-feet is physically possible at the Glen Canyon site, addition in water elevation at Glen Canyon Reservoir might jeopardize the Rainbow Natural Bridge National Monument.

The Echo Park Dam would be located in Colorado on the Green River about 3 miles east of the Utah-Colorado State line and 3 miles below the junction of two major tributaries, the Green and Yampa Rivers, in the tricorn area of Colorado, Wyoming, and Utah.

Percentage-wise, the evaporation losses from the remarkable storage vessel at Echo Park would be exceeded by those at all other sites possessing major storage possibilities in the upper basin. Echo Park Reservoir is second only in size and importance to Glen Canyon. Being less subject to the toll of sediment deposition, this disparity in size would diminish with age.

The power potential at Echo Park also is second only to that at Glen Canyon. This difference is actually smaller than it appears considering the great contribution from Echo Park's regulated flows

to increased future production at the downstream Split Mountain and Gray Canyon sites.

Just as Glen Canyon's position favors power markets in the lower part of the upper basin, Echo Park is strategically situated in the heart of the power market in the upper end of the basin. The Echo Park unit, because of its position of strategic control of the Green and Yampa Rivers, would make feasible the storage and power developments of the Flaming Gorge, Cross Mountain, Split Mountain, and Gray Canyon units.

Echo Park Dam would be a concrete curved gravity-type structure rising 690 feet from bedrock. The reservoir would have a storage capacity of 6,460,000 acre-feet, including 5,460,000 acre-feet of live capacity. When filled to capacity, the reservoir would have a surface area of 43,000 acres and would extend 63 miles up the Green River and 44 miles up the Yampa River.

The powerplant at the dam would operate under a mean head of 475 feet and would consist of 50,000 kilowatt units for a total capacity of 200,000 kilowatts. The construction cost of the Echo Park unit is estimated at \$176,400,000, including an appropriate part of the basic transmission system.

In addition to the Glen Canyon and Echo Park units of the storage project, the Secretary of the Interior has recommended 12 participating projects for construction in the initial phase. A thirteenth project, the Eden project in Wyoming, was authorized in 1949, and is now nearing completion. The authorization of the Eden project, however, provided that the project be assisted by means of power revenues from the Colorado River storage project.

I will not attempt to go into the details of each of these participating projects except for a brief reference to the attached summary table. However, statements on each of the initial participating projects are attached and further details can be found in the supplements to the Colorado River storage-project report.

In addition, among the attached statements are brief summaries of the LaPlata project, the San Juan-Chama project, and the balance of the Navaho project, namely, the South San Juan Division, all of which are contained in the bill, but on which substantiating information as to feasibility is not available at this time.

For the Gooseberry project, also contained in the bill, a complete feasibility report has been submitted and a statement is included herein. Careful study of all available data shows that the depletions resulting from all the projects contained in the bill would have no appreciable effect on the quality of the streamflow passing Lee Ferry.

Before closing this general statement in which I have attempted to give you an overall picture of the basinwide plan and that part of it for which authorization is now being sought, there are two important phases which should be emphasized, the legal framework and the repayment schedule.

In a plan of this magnitude the authorities and laws under which the various features would be constructed, administered, and operated, would normally present almost unsurmountable problems and certainly would raise some grave questions of jurisdiction. The plan before you is happily free of such complications.

The storage project with its regulatory reservoirs is of interstate significance, and each unit of this part of the plan would be so treated. These units as far as water is concerned could be operated in strict conformance with the upper Colorado River Basin compact, a document so comprehensive that its provisions cover all necessary aspects of such operation.

The participating projects are consumptive-use projects intrastate in character. In the proposed plan, these projects would be constructed, operated, and maintained under reclamation law.

Water rights would, therefore, be obtained and administered under the water code of the State in which the project would be built.

A clear distinction would be maintained between the two categories in the plan. Should it become necessary at some future time for a State to make consumptive use of a portion of the water in one of the regulatory reservoirs in the storage project, the compact provides for such a contingency.

The plan requires payment against irrigation costs by the irrigators up to their ability to repay in 50 years, and the formation of appropriate districts preferably of the water-conservancy type which would assure local participation to the greatest extent in the repayment of construction costs prior to the irrigators' acceptance of assistance from power revenues.

The power features of the project would be repaid with interest to the United States Treasury at $2\frac{1}{2}$ percent on unpaid power investments by project power revenues within a specified 50-year repayment period for individual generating units. The power features recommended in the Secretary's supplemental report would be paid out completely in the first 44 years of operation.

Subsequent power revenues would be sufficient to retire the irrigation costs of the storage project prior to the 50th year of operation of the storage project.

In addition, power revenues would retire in the 50th year of the irrigator's repayment period all irrigation costs in excess of the irrigator's ability to pay for each of the participating projects recommended in the Secretary's supplemental report.

The additional storage units and participating projects recommended in the bill, namely, the Curecanti—940,000 acre-feet capacity—and Flaming Gorge storage units, the Gooseberry, La Plata, San Juan-Chama, and total Navaho participating projects, would require either a slightly longer period of repayment or a slightly higher power rate to supply the necessary irrigation assistance.

The plan also provides for submission to the Congress from time to time of additional storage project units and additional participating projects. These submissions will be made as the needs for such units and projects arise, and when investigations are complete and feasibility reports are available.

Such a procedure, in our opinion, will provide for the greatest possible development of the water and related resources of the Upper Colorado River Basin and will offer sufficient flexibility for future change in economic conditions.

With this statement, Mr. Chairman, I have a summary table of the Colorado River storage project and participating projects, listing first

the Echo Park and Glen Canyon unit, showing the generating capacity and the stream depletion of water, the total cost and the reimbursable allocations, irrigation allocations, and the irrigation allocations assigned to the repayment from net power revenues.

Shown next on the table is the same information for the two additional units included in the bills, namely, the small Curecanti and the Flaming Gorge units.

Then, third, we have the information for the 12 participating projects recommended for authorization in the supplemental report, and the table shows in what State they are located, the acres of new land, the land receiving a supplemental water supply, the generating capacity of powerplants, if any, attached to the participating projects, the amount of municipal water where it applies, the stream depletion amounts, the total cost, the amount of nonreimbursable allocation, and the reimbursable allocations for power, municipal water, and irrigation, and the irrigation allocation repayable by the water users and the irrigation allocation assigned for repayment from net power revenues.

The same information is shown for the additional participating projects in the bill over and above those recommended in the supplemental report of the Secretary, namely, for the Edan, La Plata, San Juan unit of the Navaho and the San Juan-Chama participating projects.

The Eden project is recommended by the Secretary for participation in net revenues, but is not recommended for authorization for the reason that it already has been authorized along those lines.

(The information referred to follows:)

SUMMARY TABLE—Colorado River storage project and participating projects

Project	State	Land to be irrigated		Power		Municipal water annually	Stream depletion annually
		New	Supplemental	Generating capacity	Annual generation		
Colorado River storage project:							
Initial units:							
Echo Park unit.....	Colorado, Utah						Acres-feet
Glen Canyon unit.....	Arizona, Utah	Acres	Acres	Kilowatts	Million kilowatt-hours		87,000
				200,000	1,094		526,000
				800,000	4,100		
Subtotal initial units.....				1,000,000	5,194		613,000
Additional units in the bill:							
Curecanti unit (940,000 acre-feet).....	Colorado			40,000	225		18,000
Flaming Gorge unit.....	Utah, Wyoming			72,000	417		56,000
Subtotal additional units.....				112,000	642		74,000
12 participating projects:							
Central Utah (initial phase).....	Utah	28,540	131,840	61,000	373	48,800	189,400
Emery County.....	do	3,630	20,450				15,500
Florida.....	Colorado	6,300	12,650				12,900
Hammond.....	New Mexico	3,670					7,900
La Barge.....	Wyoming	7,970					14,200
Lyman.....	do		40,600				0
Navajo project:							
Shiprock division 1.....	New Mexico	104,000					240,000
Panguitch.....	Colorado	2,210	14,830				9,000
Pine River project extension.....	Colorado, New Mexico	15,150					28,300
Sadsakadee.....	Wyoming	60,720					110,400
Silt.....	Colorado	1,940	5,400				5,800
Smith Fork.....	do	2,270	8,160				7,500
Subtotal, initial projects.....		236,360	233,930	61,000	373	48,800	640,900
Additional participating projects in the bill:							
Eden.....	Wyoming		9,540				32,400
Gooseberry.....	Utah	10,660	16,400				12,500
LaPlata.....	Colorado, New Mexico		9,800				9,000
Navajo-South San Juan division 2.....	New Mexico	47,000					101,000
San Juan-Chama.....	do		200,000	145,000	260	110,100	235,000
Subtotal additional projects.....		57,660	235,740	145,000	260	110,100	389,900
Total, participating projects.....		294,020	469,670	206,000	633	158,900	1,030,800
Grand total.....		294,020	469,670	1,318,000	6,469	158,900	1,717,800

See footnotes at end of table.

SUMMARY TABLE—Colorado River storage project and participating projects—Continued

Project	State	Construction costs				Irrigation allocation repayable by water users †	Irrigation allocation assigned for repayment from not power revenues
		Total (exclusive of nonreimbursable Colorado River development fund expenditures)	Nonreimbursable	Reimbursable allocations ‡ (exclusive of interest during construction)			
				Power	Municipal water	Irrigation	
Colorado River storage project:							
Initial units:							
Echo Park unit.....	Colorado, Utah.....	\$176,426,000		\$128,383,000		\$48,043,000	\$48,043,000
Glen Canyon unit.....	Arizona, Utah.....	421,270,000		370,974,000		50,296,000	50,296,000
Subtotal initial units.....		597,696,000		499,357,000		98,339,000	98,339,000
Additional units in the bill:							
Curcanti unit (940,000 acre-feet).....	Colorado.....	49,305,000		41,205,000		8,100,000	8,100,000
Flaming Gorge unit.....	Utah, Wyoming.....	82,942,000		52,042,000		30,900,000	30,900,000
Subtotal additional units.....		132,247,000		93,247,000		39,000,000	39,000,000
12 participating projects:							
Central Utah (initial phase).....	Utah.....	231,044,000	\$5,991,000	46,699,000	\$45,500,000	127,354,000	\$112,103,000
Emery County.....	do.....	9,865,500	229,000			9,636,500	9,821,500
Florida.....	Colorado.....	6,941,500	437,900			6,503,600	1,711,500
Hammond.....	New Mexico.....	2,302,000				2,302,000	1,932,000
La Barge.....	Wyoming.....	1,673,300				1,673,300	1,178,300
Lyman.....	do.....	10,564,000				10,564,000	8,369,000
Navajo project:							
Shiprock division †.....	New Mexico.....	178,825,000				178,825,000	165,525,000
Paonia.....	Colorado.....	6,944,000	152,400			6,791,600	4,377,600
Pine River project extension.....	Colorado, New Mexico.....	5,027,000				5,027,000	2,992,000
Seedskadee.....	Wyoming.....	23,272,000				23,272,000	18,487,000
Silt.....	Colorado.....	3,356,000	73,600			3,282,400	2,262,400
Smith Fork.....	do.....	3,367,000	24,000			3,343,000	2,298,000
Subtotal, initial projects.....		483,181,300	6,907,900	46,699,000	45,500,000	378,674,400	330,227,900
Additional participating projects in the bill:							
Eden.....	Wyoming.....	7,287,000				7,287,000	5,787,000
Gooseberry.....	Utah.....	5,790,500	33,000			5,757,500	3,352,500
La Plata.....	Colorado, New Mexico.....	9,958,500	773,800			9,184,700	7,949,700
Navajo-South San Juan division †.....	New Mexico.....	83,825,000				83,825,000	47,685,000

San Juan-Chama.....do.....	228,141,000	73,469,000	55,374,000	99,308,000	32,335,000	66,973,000
Subtotal, additional projects.....	304,972,000	806,800	55,374,000	175,332,200	43,595,000	131,737,200
Total, participating projects.....	788,153,300	7,714,700	100,874,000	553,905,600	91,941,500	461,965,100
Grand total.....	1,518,096,300	7,714,700	100,874,000	691,245,600	91,941,500	590,304,100

1 Exclusive of \$37,825,000 for required additional capacities in Navajo Reservoir and main highline canal for the South San Juan division.

2 Includes costs only of required facilities additional to facilities of Shiprock division. (See also footnote 1.)

3 Allocations of Colorado River storage project costs to units are only for the purpose of facilitating a payout analysis for the initial units and only illustrative for other units.

4 Repayment by irrigation water users toward construction costs over 50-year repayment period beyond a reasonable development period except 60-year period for Eden project and 68-year period for Paonia project.

5 Exclusive of \$5,500,000 allocable to purposes of the ultimate phase of Central Utah project.

I have with me, also, brief statements, 16 of them all told, of the participating projects I named in the table—1 or 2 or 3 or 4 pages—of all the participating projects recommended by the Secretary and additional ones in the bill, for filing with your committee.

I do not know whether you wanted them read.

It would probably take 2 or 3 hours to read them. That is subject to what is desired by the chairman.

Mr. HARRISON. Do any members of the committee want the reports read at this time.

Mr. D'EWART. No.

Mr. ASPINALL. Mr. Larson, do these supplemental statements of participating projects differ materially from the statements that have been made in the previous reports?

Mr. LARSON. I did not hear that.

Mr. ASPINALL. I say, do these supplemental statements of participating projects differ materially from the statements to be found in the previous reports?

Mr. LARSON. They are really summaries of what is contained in the supplemental reports of 1950 except that the costs are brought up to date, 1953 index, and some of the economics are brought up to date on our new procedures.

Mr. REGAN. I would like to know one feature of the report. It says on page 11 that—

The San Juan-Chama project and the balance of the Navaho project, namely, the South San Juan Division, all of which are contained in the bill, but on which substantiating information as to feasibility is not available at this time.

I want to know if he is putting a report on this San Juan-Chama at this time when he says the feasibility is not yet available.

Mr. LARSON. The San Juan-Chama project is in region 5 of the Bureau of Reclamation. The engineer is here.

I believe this statement is a general statement of all the projects as previously reported.

Mr. REGAN. Is it your idea that you are now asking authorization for the San Juan-Chama project?

Mr. LARSON. As I explained, the Secretary recommends in his supplemental report the authorization of 12 participating projects. The bills contain additional participating projects not in the Secretary's recommendation and the San Juan-Chama I believe is one of those.

Mr. REGAN. You are not at this time recommending the authorization of the San Juan-Chama project?

Mr. LARSON. No. I said I was including statements that would explain the units recommended by the Secretary, the 12, and the 4 additional ones contained in the bill.

Mr. REGAN. Is the San Juan-Chama in the 12, or in the 4 additional?

Mr. LARSON. It is in the four additional.

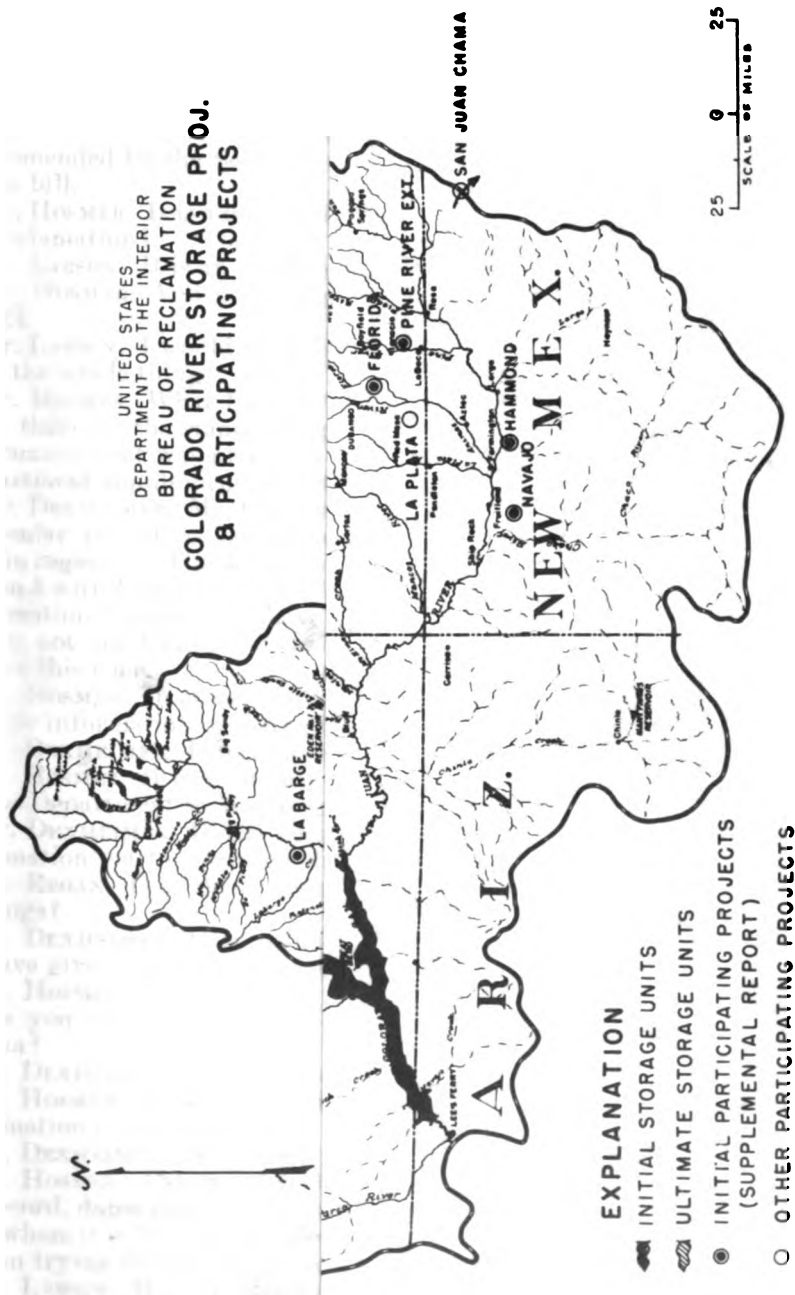
Mr. HOSMER. Mr. Chairman, I would like to ask a question or two.

Mr. HARRISON. Is it a question as to the introduction of this?

Mr. HOSMER. Yes. It is under date of January 4, 1954; is that the document you are talking about?

Mr. LARSON. Yes.

Mr. HOSMER. This was prepared by the Interior Department; is that right?



Mr. LARSON. Yes; Interior Department, region 5 of the Bureau of Reclamation.

Mr. HOSMER. When was it prepared?

Mr. LARSON. These statements I am filing now, most of them were just prepared recently.

Mr. HOSMER. For what purpose were they prepared?

Mr. LARSON. Informing this committee to give them an idea of the general description, the writeup of the participating projects recommended by the Secretary and the four additional ones included in the bill.

Mr. HOSMER. It is a document of the different regions of the Bureau of Reclamation?

Mr. LARSON. It is an explanation of the project.

Mr. HOSMER. And not of the Department in Washington; is that right?

Mr. LARSON. I would say this is a Department of Interior presentation, the whole thing.

Mr. HOSMER. What I am trying to find out is whether it is a document that has the stamp of approval of the headquarters or was it a document that was prepared and submitted to Washington and the Department simultaneously with its submission here?

Mr. DEXHEIMER. Mr. Chairman, I would like to point out that this particular project is outside of Mr. Larson's regional boundaries. It is in region 5. The document on San Juan-Chama was prepared by region 5 with headquarters in Amarillo. It is only a statement of the information we presently have available on the San Juan-Chama.

It is not one which is included for recommendation by the Secretary at this time.

Mr. HOSMER. In other words, this is the result of the regional office and the information in their file?

Mr. DEXHEIMER. Information that we have up to this time; yes, sir.

Mr. HOSMER. It has not been screened or evaluated by Washington, by the Department in Washington?

Mr. DEXHEIMER. It has been screened, but we don't have enough information yet to recommend it for authorization.

Mr. REGAN. Is it then necessary to incorporate it in any of these hearings?

Mr. DEXHEIMER. It is included in the bill, sir, and for that reason we have given you the information we have available.

Mr. HOSMER. Just one more question.

Are you talking about this whole document, or just San Juan-Chama?

Mr. DEXHEIMER. Just San Juan-Chama.

Mr. HOSMER. What about this whole document? Do you have any information on that?

Mr. DEXHEIMER. Which one do you have?

Mr. HOSMER. The one that Mr. Larson is asking be introduced in the record, dated January 4, 1954. It does not contain any statement as to whom it is from or any identifying features.

I am trying to find out the authority and background.

Mr. LARSON. It is an attachment to my statement which has been approved.

Mr. DEXHEIMER. This statement was prepared to give you all the information that we presently have available on all the projects which are included in the bill. It was for the purpose of giving you all the information which we presently have on all the projects that are included in the bill as differentiated from those projects which are included in the Secretary's report.

Mr. HOSMER. It was prepared in the regional offices and not in the Washington office; is that correct?

Mr. LARSON. All of these reports are prepared in the regional offices and reviewed in our Washington office.

Mr. REGAN. I would like to ask, Mr. Commissioner, was this report of the San Juan-Chama prepared in your Amarillo office?

Mr. DEXHEIMER. Yes.

Mr. REGAN. Region 5?

Mr. DEXHEIMER. Yes.

Mr. REGAN. Will the man in charge of the Amarillo office present his views at this hearing at a subsequent time? Is the man who is responsible for preparing this proposal going to present it?

Mr. DEXHEIMER. We didn't plan that he would, but if the committee wishes, we would be glad to have him here to do that.

Mr. REGAN. But he is in region 5, so Mr. Larson in charge of region 4 is going to present it in his stead; is that right?

Mr. DEXHEIMER. No, sir; we are just attaching it to Mr. Larson's overall reports on the upper Colorado project. We would be very happy to have someone from region 5 present the detailed information to the committee if they so desire.

Mr. REGAN. As one member of the committee, I so desire.

Mr. HOSMER. Mr. Chairman, may I inquire if we are going to go into all these projects and explain them in detail, the information that is in here?

Mr. HARRISON. I rather imagine so. They are part of the projects that come under the terms of the bill and it seems to me we would have to have some testimony regarding those projects, not just the statement that the whole thing should be approved without going into the individual projects.

I think the Department is planning to present testimony regarding at least the individual projects they have recommended. Twelve are for the inclusion in this overall picture and for that reason they are submitting the information for the committee.

Mr. HOSMER. This is not all the information that will be submitted?

Mr. HARRISON. Mr. Hosmer, I could not tell you. I will have to wait until the Department puts on its testimony. I have no way of anticipating what they are going to put on, except that I say I think they will put on testimony covering the terms of the bill.

In my opinion that is customary.

Mr. HOSMER. Mr. Regan and I would appreciate hearing some more of the details.

Mr. HARRISON. If there is no objection to the introduction of this as part of the record, it will be so ordered.

Mr. ENGLE. May I suggest, Mr. Chairman, that rather than have the court reporter write all this, which means a repetition of copying it in the record, that it be made a part of the record to be included not in the transcript, but in the final printing of the record so that when the record is printed this information will go direct to the Printing

Office. It will not require the court reporter to copy it all into the transcript and thereby run up the bill and result in unnecessary work.

Mr. HARRISON. If there is no objection to that, it will be adopted. (The document referred to is as follows:)

STATEMENT ON CENTRAL PROJECT, UTAH

The potential central Utah project would provide for the multiple-purpose use in Utah of water tributary to the Colorado River. Under the general plan of development streams, draining the southern slope of the Uinta Mountains in the Uinta Basin in northeastern Utah would be intercepted and conveyed westerly by gravity flow through the Wasatch Mountains to the Bonneville Basin. The water would be collected by an aqueduct leading to a storage reservoir high in the Wasatch Mountains. From the reservoir the water would drop through a series of hydroelectric powerplants before being used for irrigation, municipal, and industrial purposes. Replacement water and water for additional development in the Uinta Basin would be provided by a major diversion from the Green River and by smaller developments on local streams.

The project is of such magnitude it has been planned in two parts—the initial phase, a unified portion that could be developed and operate independently, and the ultimate phase. The two phases combined make up the comprehensive plan. Sufficient investigations have been made of the comprehensive plan to show its physical feasibility. Detailed investigations have been made only on the initial phase.

This statement on the central Utah project, except as otherwise noted herein, is based on the physical plan of development presented in the Bureau of Reclamation report on central Utah project, Utah, dated February 1951—a supplement to the Colorado River storage project report, dated December 1950. It is possible that significant modifications in the project plan may be found desirable during the definite planning stage of the investigation of the project.

THE AREA AND ITS NEEDS

The project area includes land on both sides of the Great Basin Divide, the high mountain series consisting of the Wasatch Mountains and continuing ranges, that extends north and south across the center of the State. To the east of the divide, within the Colorado River Basin, are the Uinta Basin lands that would be served by the project. This area includes the communities of Vernal, Roosevelt, and Duchesne. To the west of the divide is the Bonneville Basin. The project would serve an area along the eastern border of this basin. This area, the most highly developed region in Utah, includes the communities of Salt Lake City, Provo, Heber, Spanish Fork, Payson, Nephi, Richfield, Delta, and Fillmore.

The need for water and electric energy in the Bonneville Basin is intensified by expanding industrial activities. The new Geneva steel plant near Provo, the largest fully integrated steel plant west of the Mississippi, and the Kennecott Copper Co.'s electrolytic refinery, recently constructed near Salt Lake City, are important industrial additions. Finished steel and copper are attracting satellite industries. Largely as a result of the industrial expansion, the population of the Bonneville Basin portion of the project area increased 29 percent from 1940 to 1950. The area's demand for food and for municipal, industrial, and miscellaneous water supplies has increased accordingly. The Basin contains vast areas of rich alluvial soil, but irrigation is generally required to mature crops. The flow of small local streams, practically the only source of water, falls far short of irrigation requirements. Importation of a substantial amount of water into the basin is essential to the basin's agricultural and industrial expansion but can be accomplished only through development of the central Utah project. Without the importation contemplated under the project, future municipal and industrial expansion in Salt Lake City and areas to the south will require a reduction in the use of water for irrigation. Also, without the importation of water and without an increased supply of electric energy, further development of the Bonneville Basin's rich resources of land, minerals, and chemicals will be slowed.

In contrast to the Bonneville Basin, the Uinta Basin has abundant water resources as compared with the land resources. Streams flowing south from the Uinta Mountains—the Duchesne River and its major tributaries, together with Ashley Creek and Brush Creek—produce more than ample water for

irrigation. Most of the stream runoff, however, is uncontrolled and as summer progresses the supply diminishes below the requirements of the land. The Moon Lake and Midview Reservoirs constructed by the Bureau of Reclamation to a combined capacity of 55,300 acre-feet, together with many small privately and Indian-owned reservoirs, provide valuable but insufficient regulation of water resources. With further regulation of water resources, agriculture, the principal enterprise, could continue to expand. Industrial development based on deposits of petroleum, other hydrocarbons, and phosphates, would be encouraged. Development of the petroleum industry is now getting under way. Several oil wells recently have been brought into commercial production.

THE COMPREHENSIVE PLAN

When fully developed the central Utah project would provide a full irrigation water supply for 200,000 acres of new land. It would also provide a supplemental supply for 239,900 acres now inadequately irrigated. It would provide 48,800 acre-feet of water to meet foreseeable demands for municipal, industrial, and other miscellaneous purposes, and it could provide additional water for these purposes as future requirements developed. Project powerplants tentatively planned would have an installed capacity of 249,000 kilowatts and would generate almost 1.2 billion kilowatt-hours of electric energy annually. Additional power potentialities exist and as investigations of the ultimate phase are continued the planned capacity of the powerplants may increase materially.

The flow of all important streams on the south slope of the Uinta Mountains as far east as Brush Creek would be intercepted by the potential Strawberry aqueduct and conveyed to the Strawberry Reservoir in the Wasatch Mountains. The flow of Carter Creek on the Uintas' northern slope would be brought to the southern slope for conveyance to the reservoir. The aqueduct, 110 miles long, would consist largely of tunnels through mountain ridges separating the parallel streams. Inflow to the tunnels would be regulated in small reservoirs on the mountain streams. The western 36.8 miles of the aqueduct, extending from Rock Creek to the Strawberry Reservoir, would consist of two parallel bores. Power developments would be made on the various streams where practicable.

Strawberry Reservoir, a feature of the Strawberry Valley reclamation project, would be enlarged from its present capacity of 283,000 acre-feet to a capacity of 1,370,000 acre-feet by construction of Soldier Creek Dam on Strawberry River 9 miles below the existing dam. The enlarged reservoir would regulate (1) water delivered through the aqueduct, estimated to average 563,000 acre-feet annually; (2) additional water developed on Strawberry River between the existing and new dams, estimated to average 18,000 acre-feet annually; and (3) the present Strawberry Valley project supply, averaging about 69,000 acre-feet annually. Water in nearly uniform annual quantities would be released from the reservoir to the Bonneville Basin through 2 almost parallel tunnels, approximately 4 and 5 miles long, and then would be conveyed down the western slope of the Wasatch Mountains through Diamond Fork and Spanish Fork Canyons. In its descent from the reservoir to near the floor of the Bonneville Basin, a drop of about 2,600 feet, the water would pass through a series of hydroelectric powerplants with a combined capacity of 231,000 kilowatts, capable of producing 1.1 billion kilowatt-hours of energy annually. The water would pass first through the Old West and Fifth Water powerplants located near the outlets of the two tunnels. Water released from these plants would flow through the Sixth Water and Fifth Water aqueducts to a common surge pipe. The water would flow successively through the Hammock and Tanner powerplants to the Monks Hollow Reservoir. From Monks Hollow Reservoir the water would enter the Wasatch aqueduct. Eight miles down the aqueduct line, high on the wall of Spanish Fork Canyon, the water would be divided, part continuing in the aqueduct and extensions to the south and part being diverted to the north.

During the irrigation season the water continuing south in the Wasatch aqueduct would be distributed for irrigation and other purposes in the area from Salem to Levan. Part of the aqueduct water would be regulated in the Gooseneck Reservoir and other reservoirs and distributed to lands that are above canals of the Strawberry Valley project in an area between Salem and York Ridge, a ridge south of Santaquin. At York Ridge, part of the water would be diverted into the potential Mona-Nephi Canal and used as far south as Levan. Some of the water would replace that now supplied for irrigation from Salt Creek near Nephi, thus permitting more of the spring water tributary to Salt

Creek to be used for municipal, industrial, and other miscellaneous purposes in the Nephi area. Return flows from irrigation in the Nephi area would be utilized on agricultural lands in the vicinity of Elberta. These flows would be regulated in the existing Mona Reservoir that would be enlarged under the project. During the nonirrigation season water continuing south in the Wasatch aqueduct beyond York Ridge would be conveyed to the 530,000 acre-foot Dyer Reservoir and stored for irrigation of lands near Holden and Fillmore. Some of the water from Dyer Reservoir would be used near Delta for irrigation of lands now supplied from the lower Sevier River. Thus more water of the Sevier River could be stored in existing upstream reservoirs and used for irrigation of lands along the upper reaches of the river, principally near Richfield.

Water diverted to the north from the Wasatch aqueduct, including the present Strawberry Valley project supply, would drop through the Castilla powerplant. It would then be used for supplemental irrigation and other purposes in the area from Santaquin to Springville now partially served by the Strawberry Valley project. During the nonirrigation season releases from the Castilla plant would flow down Spanish Fork River to Utah Lake, relieving the obligation of Provo River to deliver water to the lake. So far as practicable throughout the year releases from the Castilla plant would be routed through existing powerplants of the Strawberry Valley project, thus providing a much needed firm water supply for operation of these plants.

Provo River water replaced in Utah Lake by water from the central Utah project would be stored in the potential 65,000 acre-foot Bates Reservoir on the Provo River and the potential 850 acre-foot Hobbie Creek Reservoir on a tributary of Round Valley Creek. The operation of these reservoirs would be correlated with that of the Deer Creek Reservoir and other existing reservoirs on the Provo River system to the mutual advantage of present and potential water users. The central Utah project water from the Provo River would be used for irrigation, municipal, and industrial purposes in the Heber-Francis-Wallsburg areas and in the Provo-Salt Lake City region. A portion of this water would be conveyed to lands in the western part of the Jordan River Valley through the existing Provo Reservoir Canal and the potential West Valley Canal. Another portion would be conveyed by the Provo Reservoir Canal and used for irrigation and other purposes in the area from Provo to Lehi. The remainder would be utilized for municipal, industrial, and other miscellaneous purposes in areas between Lehi and Salt Lake City. This water would be conveyed from Provo River through the Salt Lake aqueduct, constructed by the Bureau of Reclamation as a part of the Provo River project. Central Utah project water conveyed in the aqueduct would be regulated to meet fluctuating demands in the potential 490 acre-foot Front Reservoir located one-half mile south of the mouth of Big Cottonwood Creek near Salt Lake City. As an addition to use of the Salt Lake aqueduct, a potential mine-drainage tunnel that would serve the important Park City-Alta mining district also could be utilized for the delivery of central Utah project water in the Provo River to the vicinity of Salt Lake City. Use of the tunnel, however, is not included in present plans of the Bureau of Reclamation. Existing irrigation distribution systems would be rehabilitated and extended in the Heber and Wallsburg areas.

Dams would be constructed where practicable to impound water for recreational and fish and wildlife purposes, thus providing partial compensation for damages to these purposes from the construction of some other project features. Included would be a dam forming Round Knoll Lake near Wallsburg, which would provide a constant water surface of 300 acres. Fish hatcheries would be constructed to provide fish for stocking streams as further compensation for damage resulting from the project.

A dike 6.7 miles long and 20 feet high would be constructed across the mouth of Provo Bay, an arm of Utah Lake. The bay would then be drained to reduce evaporation losses and to reclaim 9,340 acres of land for irrigation farming. An irrigation supply for the area would be pumped from Utah Lake and would consist of water saved from evaporation in the bay area and increased return flows reaching the lake from project lands. Drainage water would be pumped from the bay area to Utah Lake. Plans are reported for a new State highway alignment across Provo Bay in the vicinity of the potential dike. Plans for the two structures could be correlated, resulting in a substantial saving in cost and other advantages.

The diking of Goshen Bay of Utah Lake, authorized as a part of the Provo River project but not yet undertaken, would become a part of the central Utah

project. The dike 22 feet high and 5.5 miles long would permit the south 26,000 acres of Utah Lake to be drained and would thereby reduce the average annual evaporation by 60,000 acre-feet. The water thus saved could be used for irrigation either in Cedar, Tooele, or West Jordan Valley.

A 7-mile section of the Jordan River channel between Utah Lake and Jordan Narrows would be enlarged. The channel improvement also was authorized as a part of the Provo River project. Improvement of the river channel from Jordan Narrows to Great Salt Lake is being investigated by the Corps of Engineers as a flood-control project.

In order to replace water now used in the Uinta Basin that would be exported and to provide additional water for further development within this basin, water would be diverted from the Flaming Gorge Reservoir that would be constructed on the Green River as a feature of the Colorado River storage project. The water would be conveyed from the reservoir through the Flaming Gorge aqueduct, a structure 120 miles long, including an 18-mile tunnel through the Uinta Mountains. Under an alternative plan of development Green River water could be supplied to the Uinta Basin from Echo Park Reservoir, another potential feature of the Colorado River storage project. If the Echo Park Reservoir were used as the Uinta Basin source of supply, the Flaming Gorge aqueduct would be eliminated and the water would be distributed by an aqueduct generally parallel to, but 160 feet lower than, the Flaming Gorge aqueduct. Central Utah project water from the Echo Park Reservoir would be pumped an average lift of 170 feet.

Green River water would be supplemented in the Uinta Basin by some water released from the Strawberry aqueduct and water developing below the Strawberry aqueduct. Supplies from the three sources would be coordinated for most efficient use and regulated in existing reservoirs, including the Moon Lake and Midview Reservoirs of the Moon Lake project, and several reservoirs that would be constructed under the project, including the Tyzack, Stanaker, Maeser, Halfway Hollow, Hancock, Altonah, Upalco, Starvation, and Hanna.

Project powerplants and transmission systems would be interconnected with the system proposed for transmission of electric energy produced by plants of the Colorado River storage project.

Water rights

Rights to flows of Uinta Basin streams have been acquired by both white settlers and Indians. These rights, evidenced by court decrees and by applications to appropriate water filed with the State engineer, cover all late-season waters carried by the streams. Nevertheless, surplus water beyond capacities of diversion works normally waste from almost all streams in the spring and early summer. Local interests, municipalities, and public agencies have filed applications to appropriate some surplus waters for local storage or exportation to the Bonneville Basin. The Bureau of Reclamation has filed applications to appropriate water for the project from the Green River and Uinta Basin streams.

The central Utah project would largely control the Uinta Basin's surplus waters. Much of the water would be exported, but that needed for further development in the Uinta Basin would be provided either directly or by exchange. Regulation of the water to furnish a full season supply would be advantageous to all present claimants and therefore no serious difficulty is expected in obtaining surplus waters for project purposes. Some water now used beneficially in the Uinta Basin could be exported in exchange for a regulated supply from the Green River without prejudice to existing water rights.

Annual depletions to the Colorado River at the sites of use resulting from the central Utah project are expected to average 189,400 acre-feet under the initial phase and 800,600 acre-feet under the comprehensive development. Depletions resulting from the comprehensive development would amount to approximately two-thirds of the water made available to Utah for future development under the terms of the upper Colorado River Basin compact. Sufficient water would be available in the Green River for the planned diversion to the Uinta Basin after completion of all potential upstream projects for use of water in Wyoming. The water exchanges involving Provo and Sevier Rivers and other lesser exchanges necessary to obtain potable water for domestic use could be made under the laws of Utah without impairment of existing rights. Present diversions from Strawberry River watershed would not be adversely affected.

Through its participation in the Provo River project the Metropolitan Water District of Salt Lake City has acquired water for future city growth. Although all of this water is not needed in the district immediately, an urgent requirement for water for municipal and irrigation use exists in areas outside of the district boundaries. Temporary use of the district's reserve water in adjoining

areas would lead only to intensified difficulties unless an additional source of water were assured for the future. As the central Utah project would provide the additional source of water, its authorization would justify immediate leasing of the district's reserve water for use outside of the district.

INITIAL PHASE OF PROJECT

In the initial phase of the project only Rock Creek and Uinta Basin streams west of Rock Creek would be diverted into the Bonneville Basin where development would be limited to areas between Salt Lake City and Nephi. Initial phase development in the Uinta Basin would include the Jensen, Vernal, and Upalco areas and lands along the Duchesne River.

The initial phase of the project would provide for the irrigation of 28,500 acres of new land and 132,000 acres now irrigated but in need of more water. Part of the water exported to the Bonneville Basin would be acquired by exchanges involving water for 42,600 acres of land in the Uinta Basin, more than half of which is owned by Indians or has been acquired from them. These exchanges may result in benefits to the Uinta Basin lands through improved water regulation. Available data do not permit an evaluation of such benefits; consequently, they are not claimed in this report but they will be determined and evaluated in the preconstruction planning. The initial phase would also provide 48,800 acre-feet of water annually for municipal, industrial, and other miscellaneous uses. Initial phase powerplants with an installed capacity of 61,000 kilowatts would generate approximately 373 million kilowatt-hours of electric energy annually. Approximately 2.2 million kilowatt-hours of energy would be required by the project for irrigation and drainage pumping. Energy produced at central Utah project powerplants would be firmed by interconnections with plants of the Colorado River storage project.

Project works

Under the initial phase 1 of the 2 parallel aqueducts comprising the western 36.8 miles of the Strawberry aqueduct would be constructed. This aqueduct would intercept flows of Rock Creek, Hades Creek, Wolf Creek, West Fork of the Duchesne River, Currant Creek, Layout Creek, and Water Hollow. Reservoirs to regulate inflow to the aqueduct would be provided on Rock Creek (Upper Stillwater), West Fork of the Duchesne River (Vat) and Currant Creek (Currant Creek).

The Strawberry Reservoir would be enlarged through construction of the Soldier Creek Dam. The dam would be constructed in the initial phase to the full height required for the comprehensive development. One-stage construction to ultimate capacity would cost considerably less than initial construction and later enlargement. One-stage construction also would obviate interference with initial phase operation that otherwise would result while the dam was being enlarged.

The existing outlet tunnel from the Strawberry Reservoir would be enlarged. Below the tunnel outlet, in succession down the west slope of the Wasatch Mountains, would be constructed the Old West powerplant, Sixth Water aqueduct, Hammock powerplant, Tanner powerplant, Monks Hollow Dam, the Wasatch aqueduct as far as York Ridge near Santaquin, and the Castilla powerplant. The Mona-Nephi Canal would be constructed from York Ridge as far south as Salt Creek near Nephi. The Mona Reservoir would be enlarged, the Elberta Service Pipe would be constructed, and the existing Elberta Canal would be enlarged to distribute water from Mona Reservoir.

Use of Provo River water through exchange in the initial phase would require construction of Bates Dam on Provo River, Hobbie Creek Dam on Little Hobbie Creek, the West Valley Canal, and the Front Dam. Provo Bay would be diked and drained and the upper 7 miles of the Jordan River channel would be enlarged.

An exchange of water between the Bates Reservoir and numerous small storage reservoirs on the upper Provo River would be made to provide supplemental water to areas in the vicinity of Francis and Heber City. Water developing between Bates Reservoir and Hobbie Creek Reservoir would be used for supplemental irrigation in the Wallsburg area in exchange for Strawberry Reservoir water delivered to Utah Lake. A dam would be constructed creating Round Knoll Lake for recreational and fish and wildlife purposes.

New project works to provide water for replacement and expanded irrigation and municipal use in the Uinta Basin would include Hanna Reservoir on the North Fork of Duchesne River, Starvation Reservoir on Strawberry River with a 6.8-mile feeder canal from the Duchesne River, the Upalco Reservoir offstream from Lakefork River, the Stanaker Reservoir with a 3.6-mile feeder canal from Ashley Creek, and the Tyzack Reservoir on Brush Creek.

Existing drains and irrigation laterals generally would be adequate for the project but some rehabilitation of drainage systems would be required in the Spanish Fork and Nephi areas, and new drains would be required in the Provo Bay, Lehi, Vernal, and Jensen areas. Construction of some new distribution laterals and rehabilitation of others would be required in nearly all major irrigation areas.

A pipeline would be required to convey water to communities in eastern Duchesne County. Necessary distribution facilities within the communities would be constructed and financed by local interests. The existing municipal distribution system in the Vernal area would be used to distribute the additional municipal water. Necessary extensions would be constructed by local interests. In the Bonneville Basin municipal water would be delivered at turnouts from principal project works. Additional facilities for treatment and distribution of the water would be provided by the water users.

Transmission lines for delivery of project power would be constructed to Salt Lake City on the north and to Manti on the south.

Facilities would be constructed for development of fish and wildlife, recreation, and forest resources in general as recommended in accompanying reports of the Fish and Wildlife, National Park, and Forest Services.

Construction schedule

Initial phase work would be constructed in steps extending over a period of about 16 years. Thus irrigation development would be undertaken at different times in 13 areas or blocks. First features constructed would include the portion of the Strawberry aqueduct from the West Fork of the Duchesne River to the Strawberry Reservoir. The initial program also would include construction of the Vat, Currant Creek, Bates, Hobbie Creek, Round Knoll, Front, Upalco, and Stanaker Dams, enlargement of the Strawberry tunnel, construction of the Old West powerplant, and improvement of the Jordan River channel. Construction would next be undertaken on the Soldier Creek, Starvation, Upper Stillwater, and Hanna Dams, the Strawberry aqueduct from the West Fork of the Duchesne River to Rock Creek, initial portions of the Wasatch aqueduct, Starvation feeder canal, Sixth Water aqueduct, Hammock powerplant, and transmission lines. Last initial phase features to be constructed would be the Castilla and Tanner powerplants, Tanner diversion dam, Mona-Nephi Canal, Monks Hollow and Mona Dams, Gooseneck Reservoir, Provo Bay development, and Elberta Service Pipe and Canal.

Effect on existing facilities

The operation of various existing facilities would require modification for correlation with the construction and operation of works planned for the central Utah project. Among the principal features in the Bonneville Basin affected by the initial phase would be the Strawberry Reservoir outlet tunnel, canals, and powerplants of the Strawberry Valley project; Deer Creek Reservoir, Provo Reservoir Canal, and Salt Lake aqueduct of the Provo River project; Utah Lake; and Mona Reservoir. Principal facilities in the Uinta Basin similarly affected would include Strawberry Reservoir of the Strawberry Valley project, Moon Lake and Midview Reservoirs and canals of the Moon Lake project, works of the Uinta Indian Irrigation project, and various other structures on the Duchesne River, Ashley Creek, and Brush Creek systems. Public and private power facilities in both basins also would be affected. It is anticipated that agreements between present interests and potential project interests can be reached to mutual advantage concerning such matters as correlated operation of existing and potential facilities, construction of new facilities or modification of existing structures, and the acquisition of necessary rights-of-way or lands and interests in lands.

Project lands

Preliminary land classification surveys of the project lands indicate that they would be suitable for sustained crop production under irrigation farming. Detailed classification of most of the land areas in the project would be required during the definite planning stage of the investigation to confirm the suitability of the lands.

Revisions in initial phase plan

Since preparation of the 1951 report, the communities in eastern Duchesne County have constructed a municipal water pipeline and this feature would therefore be excluded from the project. As a result of eliminating the pipeline, about 2,300 acre-feet of Upalco Reservoir water is considered as a supplemental supply to 2,300 additional acres of land in the Upalco area. A refinement of the

water supply studies for lands in the Duchesne River area—Indian and white owned—shows that 4,070 acres of white lands formerly considered as receiving replacement water would receive supplemental water instead. Allowances for these revisions in plan are incorporated in the results of current estimates covered in the following paragraph.

Economic analysis

Results of current (1953) estimates by the Bureau of Reclamation on costs, repayment and benefit-cost ratio are summarized in the following tabulation:

Costs and preliminary allocations

Total construction cost (January 1953 prices, exclusive of interest during construction for any of the purposes)-----	\$231, 647, 000
Nonreimbursable allocations:	
Recreation-----	2, 830, 000
Forest resource development-----	48, 000
Flood control-----	3, 113, 000
Project investigations (Colorado River development fund)-----	603, 000
Total nonreimbursable-----	6, 594, 000
Reimbursable allocations:	
Ultimate phase allocation-----	¹ 5, 500, 000
Initial phase allocation-----	219, 553, 000
Irrigation-----	\$127, 354, 000
Municipal water-----	45, 500, 000
Power-----	46, 699, 000
Total reimbursable allocations-----	225, 053, 000
Total allocations-----	231, 647, 000
Annual operation, maintenance and replacement costs-----	² 768, 990
Allocations:	
Irrigation-----	253, 930
Municipal water-----	69, 160
Power-----	445, 900
Total allocations-----	768, 990

¹ Cost of constructing Solder Creek Dam to the ultimate height in the initial phase construction.

² Estimated at a price level of 180 (1939=100) for all except power facilities which were estimated at current prices. Replacement costs estimated on a 50-year sinking fund basis with interest at 2½ percent.

Repayment of construction costs

[Thousands of dollars]

Purpose	Reimbursable allocation	Revenues ¹			
		Irrigation water users	Municipal water users	Initial phase power ²	Required from net power revenues ³
Ultimate phase-----	\$5, 500				\$5, 500
Irrigation-----	127, 354	\$15, 191			112, 163
Municipal water-----	45, 500		\$45, 500		
Power-----	46, 699			\$46, 699	
Total-----	225, 053	15, 191	45, 500	46, 699	117, 663

¹ Irrigation and municipal payments toward construction cost in 50 years. Initial phase power revenues paid toward construction cost extending over period from beginning of first power operation to 47 years after last power installation. Municipal water and power allocations repaid with interest at 2½ percent on the unpaid balances with interest returns during the payout period amounting to \$34,712,000 for municipal water and \$33,819,000 for power excluding interest during construction.

² Power revenues estimated at 6 mills a kilowatt-hour for firm energy, 3.5 mills for nonfirm and 3 mills for irrigation pumping energy.

³ Required from net revenues from Colorado River storage project, including initial phase central Utah project power, following payout of power allocations under the general repayment plan of the Colorado River storage project.

Benefit-cost ratio

Average annual equivalent benefits-----	\$9, 590, 400
Average annual equivalent costs-----	7, 827, 000
Ratio of benefits to costs-----	1.23 to 1

STATEMENT ON EMERY COUNTY PROJECT, UTAH

The potential Emery County project is planned primarily to improve the irrigation water supply and thus better the agricultural production of 24,080 acres of lands in Emery County in east central Utah near the towns of Huntington, Castle Dale, and Orangeville. The project is in the Green River Basin, a part of the upper Colorado River Basin.

The general type of farming now practiced in the area would be continued with project development. Agriculture would continue to center around the livestock industry with more than 90 percent of the irrigated area producing hay and grains. The increased production in livestock feed would permit increased production on the farm of beef, sheep, pork, and dairy products.

Principal construction features of the project would be Joes Valley Dam and Reservoir, with a total capacity of 57,000 acre-feet, to store water on Cottonwood Creek, the Swasey diversion dam on Cottonwood Creek, 10 miles downstream from Joes Valley, and the 17-mile Cottonwood Creek-Huntington Canal, with an initial capacity of 250 second-feet, heading at the Swasey diversion dam. Some canal laterals and drains would be constructed. Existing irrigation facilities in the area would be utilized as fully as practicable. Recreational facilities would be provided at the Joes Valley Reservoir.

The project would make available an average of 31,400 acre-feet of water annually for 24,080 acres of land in Emery County, including 20,450 acres now irrigated with only a partial supply and 3,630 acres not now irrigated. In addition, about 1,000 acre-feet of late-season water annually would be made available by exchange for transmountain diversion to lands in the Bonneville Basin now partially irrigated by the Ephraim and Spring City divisions of the existing Sanpete project. Recreational and scenic attractions at Joes Valley Reservoir site would be developed as planned by the National Park Service.

A preliminary land classification survey indicates that the project lands would be suitable for sustained production of crops under irrigation farming. A detailed classification would be necessary to confirm the suitability of the lands.

Water supply studies, based on records of streamflows as they have occurred in the past, indicate that an adequate irrigation supply would be available for the project with permissible shortages in occasional drought years. Water rights for the project can be obtained under Utah State law.

A construction period of 3 to 5 years, including completion of definite plan investigations, would be required to complete construction of the project.

This statement is based on the physical plan of project development presented in the Bureau of Reclamation report on the Emery County project, Utah, dated February 1951, a supplement to the Colorado River storage project report dated December 1950. Results of current (1953) Bureau of Reclamation estimates for this project plan are summarized in the following tabulation:

SUMMARY, EMERY COUNTY PROJECT, UTAH

Location: East central Utah on the eastern slope of the Wasatch Plateau near the towns of Huntington, Castle Dale, and Orangeville, upper Colorado River Basin.

Irrigation water supply

	<i>Acres-feet</i>
Increase in annual direct-flow diversions-----	3, 900
Annual storage supply-----	¹ 28, 500
Total project supply-----	32, 400
Annual stream depletion-----	15, 500

¹Includes an increase of 1,000 acre-feet annually in the water supply available for exportation to the Bonneville Basin for the Ephraim and Spring City divisions of the existing Sanpete project.

Irrigated acreage

	Acres
Supplemental irrigation service lands-----	20,450
New irrigation service lands-----	3,630
Total -----	24,080

¹ Exclusive of lands to receive water exported to Bonneville Basin.

Costs

Construction cost (exclusive of \$17,500 nonreimbursable past expenditures for investigations from Colorado River development fund, and includes Forest Service proposal for road relocation)---	\$9,865,500
Annual operation, maintenance, and replacement costs-----	36,980

Allocations and repayment

Purpose	Cost allocation	Source of repayment		
		Irrigators (50 years)	Required from net power revenues of Colorado River storage project	Nonreimbursable
Construction costs:				
Irrigation-----	\$9,636,500	\$3,715,000	\$5,921,500	
Recreation-----	229,000			\$229,000
Total -----	9,865,500	3,715,000	5,921,500	229,000
Operation, maintenance, and replacement costs:				
Irrigation-----	21,870	21,870		
Recreation-----	15,100			15,100
Total -----	36,980	21,870		15,110

NOTE.—Benefit-cost ratio: 1.38 to 1.

STATEMENT ON EDEN PROJECT, WYOMING

When completed the Eden project in southwestern Wyoming will divert water from the Big and Little Sandy Creeks in the upper Colorado River Basin to irrigate 10,660 acres of arable lands not now irrigated and will replace or otherwise rehabilitate the major features of the irrigation system that heretofore was utilized to irrigate 9,540 acres.

Climatically adapted crops in the area such as alfalfa, pasture grasses, and small grains, will be produced on the project lands largely in conjunction with livestock operations centered around dairy cows and farm flocks of sheep and of chickens.

Construction of the Eden project was originally approved by the President on September 18, 1940, as a water conservation and utilization project under the act of August 11, 1939 (53 Stat. 1418). Work on the project was about 16 percent completed when stopped by order of the War Production Board in December 1942. Completion of the project was subsequently authorized by act of June 28, 1949 (Public Law 132, 81st Cong., 1st sess.). Construction of the project under the latter authorization is now well advanced with two major features of the project already completed and work currently underway on some of the other project features. The latter act provided for "such modification in the physical features as the Secretary of the Interior may find will result in greater engineering and economic feasibility: *Provided*, That of the construction costs of the irrigation features of the project not less than \$1,500,000 for the project of 20,000 irrigable acres, or a proportionate part thereof based on the actual irrigable area as determined and announced by the Secretary of the Interior upon completion of the project, shall be reimbursed by the water users in not to exceed 60 years. * * * *Provided further*, That construction costs of the irrigation fea-

tures of the project which are not hereby made reimbursable by the water users shall be set aside in a special account against which net revenues derived from the sale of power generated at the hydroelectric plants of the Colorado River storage project in the upper basin shall be charged when such plants are constructed."

The current plan of the project is covered in a definite plan report prepared by the Bureau of Reclamation and dated May 1953. Construction features of the project include:

Big Sandy dam and dikes (now completed) on Big Sandy Creek to form Big Sandy Reservoir of 39,700 acre-feet total storage capacity.

Means Canal (now completed) to convey water from Big Sandy Reservoir to the west-side lateral and to the existing Eden Canal.

West-side lateral to serve lands on the west side of Big Sandy Creek. Eden Creek enlargement and relocation below the terminus of the Means Canal to serve lands east of Big Sandy Creek.

Little Sandy Canal rehabilitation and extension to connect with the upper section of the Eden Canal.

Enlargement of existing lateral system served by Eden Canal to serve both presently irrigated and new lands under that canal.

Project drainage system.

Project construction costs based on January 1953 prices are currently estimated at \$7,287,000. The project repayment was established by the project authorizing act of June 28, 1949, as \$1,500,000 to be repaid over 60 years. This amount deducted from total project costs leaves \$5,787,000 to be repaid from Colorado River storage project net power revenues under the general repayment plan of the latter project and in accordance with the Eden project authorizing act of 1949.

STATEMENT ON FLORIDA PROJECT, COLORADO

The potential Florida project is planned primarily to supply irrigation water to, and thus increase the agricultural production on, 18,950 acres of Florida Mesa and Florida River Valley lands in the upper Colorado River Basin in southwestern Colorado. The lands include 12,650 acres presently irrigated with only a partial supply and 6,300 acres presently not irrigated. Approximately 1,000 acres of the land, including 100 acres partially irrigated and 900 acres now unirrigated, are owned by Indians. In addition to irrigation values, the project would provide some enhancement in fish and wildlife values in the area and affect some decrease in flood damages along Florida River.

With project development, the irrigated lands would be utilized largely for the support of livestock enterprises as now practiced in the area. Climatically adaptable crops, such as small grains, hay, pasture, and some pinto beans, potatoes, apples, vegetables, and berries, would be produced. Analyses made indicate that a family-size farm would provide the farm family with a reasonable standard of living, provide employment for the available labor, and permit payment of operation, maintenance, and replacement costs of project facilities and some payment toward the construction costs of project facilities.

Preliminary land-classification surveys indicate that project lands would be suitable for sustained production of crops under irrigation farming. Detailed land classification would be required to confirm the suitability of all the lands. Water-supply studies based on records of streamflows as they have occurred in the past indicate that an adequate irrigation supply would be available for the project with permissible shortages in occasional drought years. Water rights for the project could be obtained under Colorado State law.

Construction features of the project would include the Lemon Dam and Reservoir with a total capacity of 23,300 acre-feet to store water on Florida River, construction of a new diversion dam on Florida River at the head of the existing Florida farmers ditch, enlargement and extension of the existing Florida farmers ditch diverting from Florida River, and some distribution and drainage facilities. Water would be released from the reservoir as needed and conveyed in the natural river channel to heads of various downstream canals and ditches that would divert the flow for distribution to project lands.

This statement is based on the physical plan of project development presented in the Bureau of Reclamation report on the Florida project, Colorado, dated January 1951, a supplement to the Colorado River storage project report dated December 1950. Results of current (1953) Bureau of Reclamation estimates for this project plan are summarized in the following tabulation.

SUMMARY, FLORIDA PROJECT, COLORADO

Location: Southwestern Colorado on Florida Mesa and in Florida River Valley, about 9 miles southeast of Durango, upper Colorado River Basin.

Irrigation water supply

	<i>Acre-feet</i>
Annual increase in direct flow diversions.....	6,900
Annual storage supply.....	16,300
Total project supply.....	23,200
Annual stream depletion.....	12,900

Irrigated acreage

	Indian-owned (acres)	Non-Indian-owned (acres)	Total (acres)
Supplemental irrigation service land.....	100	12,550	12,650
New irrigation service land.....	900	5,400	6,300
Total.....	1,000	17,950	18,950

Costs

Construction costs (exclusive of \$20,400 nonreimbursable past expenditures for investigations from Colorado River development fund).....	\$6,941,500
Annual project operation, maintenance, and replacement costs.....	12,600

Allocations and repayment

Purpose	Cost allocation	Source of repayment		
		Irrigators (50 years)	Required from net power revenues of Colorado River storage project	Nonreimbursable
Construction costs:				
Irrigation.....	\$6,503,600	\$1,711,500	\$4,792,100	
Indian.....	(618,000)	¹ (126,000)		
Non-Indian.....	(5,885,600)	(1,585,500)		
Fish and wildlife.....	208,700			\$208,700
Flood control.....	229,200			229,200
Total.....	6,941,500	1,711,500	4,792,100	437,900
Annual operation, maintenance, and replacement costs:				
Irrigation.....	12,100	12,100		
Indian.....	(1,100)	¹ (1,100)		
Non-Indian.....	(11,000)	(11,000)		
Fish and wildlife.....	500			500
Total.....	12,600	12,100		500

¹ Subject to elimination or adjustment under an extension of the Leavitt Act of July 1, 1932 (47 Stat. 564) authorizing the Secretary of the Interior to adjust reimbursable debts of Indians.

Note.—Benefit-cost ratio: 1.4 to 1.

STATEMENTS ON GOOSEBERRY PROJECT, UTAH

The potential Gooseberry project would divert water from a headwater tributary in the Colorado River Basin to improve the irrigation water supply and thus the agricultural production of 16,400 acres of arable lands in the Bonneville Basin in Sanpete County, central Utah. The project would also enhance recreational values for the population in the general vicinity of the project. A small

net loss would probably result in fish and wildlife values. A net benefit to forest resource development would result from relocation of roads in connection with construction of project storage facilities.

The general type of farming now practiced in the area would be continued with project development. Agriculture would continue to center around the livestock industry with more than 95 percent of the irrigated area producing hay and small grains for livestock feed.

Under the project plan surplus flows of Gooseberry Creek would be regulated at the 17,200 acre-feet capacity reservoir that would be constructed at the Mammoth site on the creek and would then be conveyed in the potential 2.4-mile Mammoth tunnel through the Colorado-Bonneville Basin Divide to Cottonwood Creek. The water would be diverted from Cottonwood Creek into existing canals and the potential Gooseberry Highline Canal for conveyance to project lands. The water would be distributed to individual farm tracts by existing laterals that would be rehabilitated as necessary as a part of the project development. Usable return flow would be collected in natural channels that would be cleaned and improved as part of the project. Drains would be provided for land with a high water table and the San Pitch River Channel would be improved as necessary to provide an outlet for the drainage system. Boating, camping, and picnicking facilities would be provided at Mammoth Reservoir as recreational features of the project. As part of the reservoir construction, 3 miles of forest roads and a sheep corral would be relocated and 2 miles of connecting roads would be constructed.

Water-supply studies based on records of streamflows as they have occurred in the past indicate that with project development the irrigation supply for project lands would be increased by an average of 14,000 acre-feet annually including 11,700 acre-feet of direct diversion and an increase of 2,300 acre-feet of usable return flows. Water rights for the project can be obtained under Utah State law.

A preliminary land classification survey indicates that the project lands would be suitable for sustained production of crops under irrigation farming.

Results of current (1953) Bureau of Reclamation estimates for the physical plan of the project, as covered in the Gooseberry project report dated January 1953, are summarized in the following tabulation.

SUMMARY, GOOSEBERRY PROJECT, UTAH

Location: In Sanpete County in the central portion of Utah.

Plan of development: Transmountain diversion of surplus flows of Price River in Colorado River Basin to Cottonwood Creek in Bonneville Basin for irrigation use.

Irrigation water supply

	<i>Acre-feet annually</i>
Mammoth Reservoir releases.....	11, 700
Usable return flow.....	2, 300

Total new irrigation supply.....	14, 000
Depletion of Colorado River flow.....	12, 500

Irrigated acreage: Land that would relieve supplemental irrigation water, 16,400 acres.

Costs

Construction costs.....	\$5, 760, 500
Annual operation, maintenance, and replacement costs.....	13, 560

¹ Exclusive of past expenditures for investigations from nonreimbursable Colorado River development fund and inclusive of \$116,000 cost chargeable to the Gooseberry project, under terms of an existing contract to which the United States is a party, for benefits to the project resulting from construction of the now existing Scofield Reservoir on Price River downstream from the Mammoth Reservoir site.

Allocations and repayment

Purpose	Cost allocation	Source of payment revenue		
		Irrigators	Net power revenues Colorado River storage project	Nonreimbursable
Construction cost:				
Irrigation	\$5,727,500	\$2,375,000	\$3,352,500	
Recreation	33,000			\$33,000
Total	5,760,500	2,375,000	3,352,500	33,000
Operation, maintenance, and replacement costs:				
Irrigation	11,020	11,020		
Recreation	2,540			2,540
Total	13,560	11,020		2,540

NOTE.—Project benefit-cost ratio: 1.2 to 1.

STATEMENT ON HAMMOND PROJECT, NEW MEXICO

The potential Hammond project would divert waters of San Juan River to provide an irrigation supply for 3,670 acres of arable land now unirrigated. The lands lie along the south side of the river in a narrow 20-mile strip opposite the towns of Blanco, Bloomfield, and Farmington, in northwestern New Mexico.

Project works would include the Hammond diversion dam on San Juan River, a main gravity canal, a hydraulic turbine-driven pumping plant, the East Highline lateral, the West Highline lateral, minor distribution ditches, and a drainage system.

The principal crops that would be grown on the lands with project development would be alfalfa, apples, corn, beans, and barley. Most of the farms are of the fruit-crop and dairy-field crop types.

Preliminary land classification surveys indicate that the lands would be suitable for sustained crop production under irrigation farming. A detailed classification would be necessary to confirm the suitability of all the lands.

Water-supply studies, based on records of streamflows as they have occurred in the past, indicate that an adequate irrigation supply would be available for the project with permissible shortages occurring in occasional drought years. A water right for the project can be obtained under New Mexico State law.

A period of about 2 or 3 years would be required to complete definite plan investigations and construction of project works except the drains. A few years operation of the project would be necessary to determine the extent of drainage actually required.

This statement is based on the physical plan of project development presented in the Bureau of Reclamation report on the Hammond project, New Mexico dated November 1950, a supplement to the Colorado River storage project report dated December 1950. Results of current (1953) estimates for this project plan are summarized in the following tabulation. Studies of the potential nearby Navaho project subsequent to 1950 indicate that it might be found desirable to materially modify the plan for serving the Hammond project lands during the definite plan investigations.

SUMMARY, HAMMOND PROJECT, NEW MEXICO

Location: Northwestern New Mexico along south side of Navaho River opposite towns of Blanco, Bloomfield, and Farmington, upper Colorado River Basin.

Irrigation water supply

	<i>Acres-feet annually</i>
Irrigation diversion requirement	18,400
Stream depletion	7,900

Irrigated area: Full irrigation service lands, 3,670 acres.

Costs and repayment

Project construction cost (exclusive of \$7,700 past expenditures for investigations from nonreimbursable Colorado River development fund)	\$2, 302, 000
Allocable to irrigation.....	2, 302, 000
Payable by water users in 50 years.....	370, 000
Required from net power revenues of Colorado River storage project.....	1, 932, 000
Annual operation, maintenance, and replacement costs.....	16, 100
Payable annually by water users.....	16, 100
Benefit-cost ratio: 2.8 to 1.	

STATEMENT ON LA BARGE PROJECT, WYOMING

The potential La Barge project would make a direct flow diversion from Green River, a principal tributary of the Colorado River, to provide for the irrigation of 7,970 acres of desert lands in Sublette and Lincoln Counties in southwestern Wyoming. Only about 300 acres of these lands receive any irrigation water at the present time. Their meager supply would likely be used on other lands outside the project area if the project was constructed. Water for domestic and stock-watering use on farms in the project area would be taken from project canals and from shallow wells that would be developed by the water users.

Project lands would generally be utilized for the support of livestock enterprises. Climatically adaptable crops, such as hay, small grain, pasture, and some garden crops would be produced. Analyses made indicate that an average farm of about 210 irrigated acres in the project area would provide the farm family with a reasonable standard of living, provide employment for the available family labor, and permit payment of operation, maintenance, and replacement costs and some payment toward construction costs of project facilities.

Detailed land-classification surveys show the project lands to be suitable for sustained production of crops under irrigation farming. Water-supply studies, based on records of streamflows as they have occurred in the past, indicate that an adequate irrigation supply would be available for the project with permissible shortages in occasional drought years. A water right for the project can be obtained under Wyoming State law.

Construction features of the project would include a main diversion and distribution canal with an initial capacity of 175 second-feet and extending approximately 40 miles along the west side of Green River, a few short laterals, and a few short drains as required. Construction of the main canal and the laterals would require about 2 years. Drains would not be completed until a few years after application of water to the land so that the extent of works required could be determined.

This statement is based on the physical plan of project development presented in the Bureau of Reclamation report on the La Barge project, Wyoming dated January 1951, a supplement to the Colorado River storage project report dated December 1950. Results of current (1953) estimates for this project plan are summarized in the following tabulation.

SUMMARY, LA BARGE PROJECT, WYOMING

Location: Southwestern Wyoming along west bank of Green River, about 50 miles northeast of Kemmerer, Wyo., upper Colorado River Basin.

Irrigation water supply

	<i>Acre-feet</i>
Annual diversion requirement.....	24, 300
Annual stream depletion.....	14, 200

Irrigated area: New irrigation service lands, 7,970 acres.¹

¹ Includes about 300 acres presently irrigated with meager water supply that would likely be used on other lands outside the project area if the project were constructed.

Costs and repayment

Project construction cost (exclusive of \$76,000 nonreimbursable past expenditures for investigations from the Colorado River development fund)-----	\$1, 673, 300
Allocable to irrigation-----	1, 673, 300
Payable by water users in 50 years-----	495, 000
Required from net power revenues of Colorado River storage project-----	1, 178, 300
Annual operation, maintenance, and replacement costs-----	14, 700
Payable annually by water users-----	14, 700
Benefit-cost ratio: 2.12 to 1.	

STATEMENT ON LA PLATA PROJECT, COLORADO, NEW MEXICO

The potential LaPlata project would store and divert waters of the LaPlata River to improve the irrigation water supply, and thus the agricultural production of 9,800 acres of arable lands in southwestern Colorado and northwestern New Mexico now irrigated with an inadequate supply. Of the total area, 6,000 acres are in Colorado and 3,800 acres are in New Mexico. The project would also decrease flood damages along the lower stretch of LaPlata River. LaPlata River is a tributary of the San Juan River in the upper Colorado River Basin.

The general type of farming now practiced in the area would be continued with project development. Agriculture would continue to center around the livestock industry with most of the irrigated area producing livestock feeds.

Features of the project would include construction of a 12,000 acre-foot reservoir at the offstream Long Hollow site and a reservoir at the State Line site on LaPlata River with a normal capacity of 17,000 acre-feet, of which 12,000 acre-feet would be active for water conservation and 5,000 acre-feet would be dead storage, and a surcharge capacity of 15,000 acre-feet for flood control. A 400 second-foot feeder canal would be constructed to divert surplus LaPlata River flows to the Long Hollow Reservoir and a 70 second-foot outlet canal would deliver storage water from Long Hollow Reservoir to existing irrigation canals. Project water would be distributed to individual farm tracts by existing irrigation systems.

Water supply studies based on records of stream flows as they have occurred in the past indicate that the project would increase the irrigation supply at canal headgates by an average of 12,000 acre-feet annually. Water rights could be obtained under Colorado and New Mexico State laws. Under project operation the average annual increase in stream depletion would be about 5,800 acre-feet in Colorado and 3,200 acre-feet in New Mexico.

Preliminary land classification surveys indicate that the project lands would be suitable for sustained crop production under irrigation farming.

Results of preliminary estimates, made at 1953 construction prices, at a projected long term price level of 180 (1939=100) for operation, maintenance, and replacements costs, and at a price level of 215 (1910-14=100) for benefits and repayment, are summarized as follows:

Costs

Construction (exclusive of past expenditures for investigations from nonreimbursable Colorado River development fund)-----	\$9, 958, 500
Annual operation, maintenance, and replacement costs-----	14, 080

Cost allocations

Irrigation (reimbursable)-----	\$9, 184, 700	Operation, maintenance, and replacement costs	\$14, 080
Flood control (nonreimbursable)-----	773, 800		-----
Total allocations-----	9, 958, 500		14, 080

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Repayment of construction costs

Irrigation water users (50 years)-----	\$1, 245, 000
Required from net power revenues of Colorado River storage project-----	7, 939, 700
Total repayment-----	9, 184, 700

Benefit-cost ratio

Average annual equivalent benefits-----	\$260, 000
Average annual equivalent costs-----	324, 000
Ratio of benefits to costs-----	0.8 to 1

The foregoing plan for the potential LaPlata project could be undertaken as a first stage of development of the potential larger Animas-LaPlata project. The latter project would develop the Animas River waters as well as the LaPlata River waters for irrigation of the LaPlata project lands and a considerable additional acreage of supplemental and new lands in the same vicinity. Current reconnaissance investigations of the Animas-LaPlata project indicate that this project would be more economical under a plan which would not include the Long Hollow and State Line Reservoirs. Completion of the current investigations of the Animas-LaPlata project is necessary to determine which of the alternative possibilities offers the most economical means of development.

STATEMENT ON LYMAN PROJECT, WYOMING

The potential Lyman project is contemplated as a means of improving the late-season irrigation water supply and thus of bettering agricultural production on 40,600 acres of land near the town of Lyman in Bridger Valley, a part of the upper Colorado River Basin in southwestern Wyoming. The lands are now irrigated with only a partial supply.

Because of the semiarid climate in the area, irrigation is necessary for successful crop production. Only grasses for hay and pasture, alfalfa, and some small grains can be produced to any extent as the growth of most other crops is precluded by a short growing season and untimely summer frosts that characterize the high 6,500- to 7,000-foot elevations of the project lands. Additional late-season irrigation water is needed to increase yields of the forage and grain crops to bolster the all-important local livestock industry.

The Lyman project would provide late-season irrigation water through construction of a dam and reservoir with 43,000 acre-feet total capacity at the Bridger site on Willow Creek to store the spring flood flows of Blacks Fork and its tributary, West Fork of Smiths Fork. Surplus flows of these streams, now largely used for excessive irrigation in the spring runoff season, would be conveyed to the reservoir by two feeder canals, one diverting from each of the streams. The water would be retained in the reservoir until needed and then released to the Willow Creek channel. Enlargement of a few miles of this channel and construction of three canals to divert from this enlarged channel would provide the necessary facilities along with the existing irrigation systems in the area to effect the distribution of the water to project lands. The existing canal systems would be improved and extended as necessary. Drains would be provided where necessary to improve the removal of unavoidable waste and excess surface waters on the irrigated lands and to protect the lands from accumulations of harmful salts.

Preliminary land classification surveys indicate that project lands would be suitable for sustained irrigation farming although detailed surveys will be necessary to firmly establish their suitability. Some presently irrigated lands that may be found to be nonarable could be abandoned and their water supply transferred to readily accessible arable lands now idle.

Water supply studies, based on records and estimates of stream flows as they have occurred in the past, indicate that a total irrigation supply averaging 114,300 acre-feet annually within ideal requirements would be available to project lands under the plan of project operation. With project development, the lands would still be short by an average of 15,700 acre-feet, or 12 percent, of meeting the ideal irrigation requirement of 130,000 acre-feet annually. Without the project, the available irrigation supply to the lands within ideal demands averages 81,800 acre-feet or 37 percent short of a full supply. Thus, the project would increase the irrigation supply by an average of 32,500 acre-feet annually

and reduce the average irrigation shortages from 37 percent to 12 percent. A water right for the project can be obtained for the project as planned under Wyoming State law provided the necessary agreements and adjustments in water rights can be negotiated with holders of prior natural flow rights in the project area.

A period of 5 or 6 years would be required to complete definite plan investigations and construction of the project facilities excepting the drains. The drains would not be completed until a few years after operation of the project and the actual extent of drainage required could be determined.

This statement is based on the physical plan of project development presented in the Bureau of Reclamation report on the Lyman project, Wyoming, dated October 1950, a supplement to the Colorado River storage project report dated December 1950. Results of current (1953) Bureau of Reclamation estimates for this project plan are summarized in the following tabulation.

SUMMARY, LYMAN PROJECT, WYOMING

Location: Southwestern Wyoming on Blacks Fork, its tributaries and Willow Creek, in the vicinity of the town of Lyman, upper Colorado River Basin.

Irrigation water supply

	<i>Acres-feet annually</i>
Total ideal requirement at canal heads-----	130, 000
Direct flow diversions-----	70, 700
Bridger Reservoir releases-----	32, 500
Useable return flows in project area-----	11, 100
Total supplied under project operation-----	114, 300
Total presently supplied without project-----	81, 800
Increase due to project-----	32, 500
Project stream depletion-----	0

(Additional water consumed on cropped lands would be offset by water saved through improved irrigation and drainage.)

Irrigated acreage: Lands to receive supplemental water, 40,600 acres. (Some presently irrigated nonarable lands may be abandoned and their water supply transferred to now idle arable lands.)

Cost and repayment

Total construction cost (exclusive of \$58,000 past expenditures for investigations from nonreimbursable Colorado River development fund)-----	\$10, 564, 000
Allocable to irrigation-----	10, 564, 000
Repayable by water users in 50 years-----	2, 255, 000
Required from net power revenues of upper Colorado River storage project-----	8, 309, 000
Total annual increase in operation, maintenance, and replacement costs-----	45, 900
Payable annually by water users-----	45, 900
Benefit-cost ratio: 1.01 to 1.	

Remarks: Project is dependent on more efficient irrigation than that now practiced in the area. Adjustment in water rights is required to permit storage of surplus spring flows now accruing to direct flow rights. Amendment to Wyoming water law is required to permit transfer of water from one land tract to another.

STATEMENT ON NAVAHO PROJECT, NEW MEXICO

The potential Navaho project (formerly called the Shiprock and South San Juan projects) would provide for the irrigation of about 151,000 acres of arable dry lands lying along the south side of San Juan River, a principal tributary of

Colorado River, near the towns of Bloomfield, Farmington, and Shiprock in northwestern New Mexico. Of the lands that would be irrigated 122,000 acres are located in the Navaho Indian Reservation and 29,000 acres are outside the reservation. All the lands within the reservation and some of the project lands outside the reservation are Indian owned. Remaining lands outside the reservation are publicly owned or privately owned by non-Indians.

The general plan of the project includes the Navaho Dam and Reservoir on San Juan River and a main highline canal to divert from the reservoir at a point near the dam and at an elevation well above the stream bed. This main highline canal would divert the water to a point about 28 miles downstream from Navaho Dam where the water would be dropped through a direct connected turbine pumping plant to a lower main canal that would extend westerly about 60 miles to serve the major portion of the project lands by gravity. The dropping water would energize the pump to lift a part of the water to serve the portion of the project lands inside and outside of the reservation that are too high to be served by the gravity diversion. A distribution system would extend beyond the pump lift to deliver the pumped water to the high lands. A system of drains would be provided as required to prevent seepage of project lands. A certain balance between the various canal elevations and the acreages to be served by gravity and by pumping is necessary in properly planning and designing the project.

Planning investigations of the Navaho project are being carried on jointly by the Bureau of Indian Affairs and region 4 of the Bureau of Reclamation. The project is an integral part of the Indian Affairs program to bring relief to the Navaho Indians from their very low family incomes and to make them self-sustaining.

The active storage capacity required for the Navaho project at Navaho Reservoir is dependent on the scale of development of the potential San Juan-Chama project. The latter project is a potential transmountain diversion to the Rio Grande Basin from the headwaters of San Juan River. This diversion project is being investigated by region 5 of the Bureau of Reclamation. Coordination of the Navaho and San Juan-Chama project investigations are being made by the two regions of the Bureau of Reclamation and the Bureau of Indian Affairs in cooperation with the State of New Mexico.

Navaho project lands range from about 5,200 to 6,100 feet in elevation and have a semiarid to arid climate with an average frost-free season of about 150 to 160 days. Annual precipitation averages less than 9 inches with about half occurring during the growing season, making irrigation necessary for successful crop production. With irrigation climatic conditions are favorable for growing most field crops, a variety of garden crops, and such fruits as apples, pears, peaches, cherries, and apricots. Most of the project acreage would be utilized for production of livestock feeds with smaller acreages being utilized for fruit and garden crops.

The 151,000-acre project would require an average annual irrigation diversion of about 630,000 acre-feet. Permissible shortages in meeting this requirement would occur in occasional drought years under project operation. The average annual stream depletion that would result from the development would be about 341,000 acre-feet.

Preliminary estimates to date indicate that the total construction cost of the 151,000-acre Navaho project would be about \$232,650,000 exclusive of added storage replacement costs at Navaho Reservoir that would be required with upstream diversions to the San Juan-Chama project. Essentially all of the construction cost would be allocable to irrigation. Annual operation, maintenance, and replacement costs would approximate \$563,000 and would be allocable to irrigation. Preliminary studies also indicate that the farm income would be sufficient for project water users, after meeting operation, maintenance and replacement costs and maintaining a reasonable standard of living to repay about 8 percent of the construction cost without interest in 50 years after delivery of water and following a suitable farm development period. This would leave about \$213,210,000 of the construction cost to be met from net power revenues of the Colorado River storage project under the general repayment plan of that project. The payment capacity of the Indian owned land is estimated as being equal to that of the lands under non-Indian farming. The collection of construction costs which could be repaid from farm income would be deferred under the provision of the Leavitt Act of July 1, 1932 (47 Stat. 564), authorizing the Secretary of the Interior to adjust reimbursable debts of Indians.

The estimates to date indicate a project benefit-cost ratio approximating 1.2 to 1.

A construction period of about 15 years would be required for efficiently completing definite plan investigations and construction of the project excepting the completion of drains. The desirable construction period, however, would be affected by the actual rate of land settlement as the construction progresses. A development period of 5 to 10 years would be desirable following delivery of water to the various land tracts before making assessments for construction costs.

STATEMENT ON PAONIA PROJECT, COLORADO

The potential Paonia project would divert water from the North Fork of the Gunnison River in the upper Colorado River Basin to improve the irrigation water supply, and thus the agricultural production, of 17,040 acres of land in west-central Colorado. Of these lands 14,830 acres are presently irrigated and 2,210 acres are arable but not now irrigated. Fish and wildlife values in the area would be enhanced and flood damages would be decreased.

The general type of farming now practiced in the area would be continued with project development but the additional irrigation supplies would make possible a more intensive crop production. Production of livestock foods and fruit, such as apples, peaches, and cherries, would continue to be the major crops grown.

Under the project plan, the Spring Creek Dam and Reservoir would be constructed at a site on Muddy Creek 1 mile above its junction with the North Fork River. The reservoir would have a capacity of 18,000 acre-feet, of which 11,000 acre-feet would be active and 7,000 acre-feet would be reserved for sediment retention and dead storage. The existing Fire Mountain Canal diverting from the North Fork River 5 miles below the Spring Creek Dam would be enlarged and extended. The enlarged canal would be capable of diverting an increased amount of natural streamflow during the early irrigation season and in the late season its supply would be supplemented by water released from the reservoir. In this manner the irrigation water supply for lands under the Fire Mountain Canal would be improved and through its extension the canal would also serve lands on Rogers Mesa that heretofore have been irrigated from Leroux Creek, a tributary of the North Fork River. The Leroux Creek water thus released from Rogers Mesa would be diverted into the higher Overland Canal, which would be improved and enlarged for this purpose, and used to augment the present irrigation supply for lands on Redlands Mesa. Beginning at a point on the Fire Mountain Canal 9 miles below its head, the Minnesota siphon would be constructed to convey part of the water southward 12,000 feet across the North Fork River to the existing Minnesota Canal.

Water supply studies based on records of stream flows as they have occurred in the past indicate that with project development the irrigation supply for project lands would be increased by 18,500 acre-feet annually. The increase in stream depletion attributable to the development is estimated at an average of 9,000 acre-feet annually.

Land classification surveys indicate that the lands would be suitable for sustained crop production under irrigation farming. Some further detailed classification would be required to confirm the suitability of all the lands, particularly in the Leroux Creek and Minnesota areas.

The project was authorized by act of Congress on June 25, 1947. Enlargement and extension of the Fire Mountain Canal has been essentially completed under this authorization but modification of the authorization as described above is required to enable completion of the project. Reauthorization of the project, under the revised plan described above, was recommended in the Bureau of Reclamation report on the Paonia project, Colorado, dated February 1951, a supplement to the Colorado River storage project report dated December 1950.

Results of current (1953) Bureau of Reclamation estimates for the physical plan of the project as covered in the Paonia project report of February 1951 are summarized in the following tabulation:

SUMMARY, PAONIA PROJECT, COLORADO

Location: West-central Colorado on North Fork of Gunnison River (North Fork River) 50 miles southeast of Grand Junction, upper Colorado River Basin.

Irrigated area (acres)

	Receiving supplemental supply	New land
Fire Mountain division.....	8, 110	810
Leroux Creek division.....	4, 710	1, 400
Minnesota division.....	2, 010	-----
Total.....	14, 830	2, 210

Water supply

	<i>Acre-feet</i>
Average annual increase in usable irrigation water supply within ideal demands.....	18, 500
Average annual increase in stream depletion.....	9, 000

Costs

Project construction costs.....	¹ \$6, 936, 500
Increase in annual operation, maintenance, and replacement costs attributable to project.....	11, 100

¹ Exclusive of \$67,500 past expenditures for investigations from the nonreimbursable Colorado River development fund and exclusive of \$7,500 recreation facility costs.

Allocation and repayment

Purpose	Cost allocation	Source of payment revenues		Nonreimbursable
		Irrigators	Required from net power revenues of Colorado River storage project	
Construction costs:				
Irrigation.....	\$6, 791, 600	¹ \$2, 414, 000	\$4, 377, 600	-----
Fish and wildlife.....	70, 800			\$70, 800
Flood control.....	74, 100			74, 100
Operation, maintenance, and replacement costs: Irrigation.....	6, 936, 500	2, 414, 000	4, 377, 600	144, 900
	11, 100	11, 100	-----	-----

¹ Repayment in 68-year period as provided in 1947 act authorizing Paonia project.

Benefit-cost ratio: Ratio for overall project, 1.6 to 1.

STATEMENT ON PINE RIVER PROJECT EXTENSION, COLORADO AND NEW MEXICO

The potential Pine River project extension would provide distribution canals to deliver water made available by the existing Pine River project to irrigate 15,150 acres of land now unirrigated in southwestern Colorado and northwestern New Mexico. Of this acreage 1,940 acres are within the boundaries of the existing Pine River Indian irrigation project.

The Pine River project, consisting of Vallecito Dam and Reservoir on Pine River, was authorized for construction in 1937 to provide storage water for 69,000 acres and was substantially completed and placed in operation by the Bureau of Reclamation in 1941. About half of the lands to be served were under canals and partially irrigated at the time of construction and now receive supplemental water from Vallecito Reservoir. The remaining lands had no distribution facilities at the time of construction. Facilities for these lands were not included as part of the original project as it was thought that the works required were relatively minor and could be undertaken by the water

users with private capital. The required works proved so costly, however, that they have not been privately constructed. As a result, canal systems for the lands that can be economically developed at the present time are planned for Federal construction as the Pine River project extension.

With development of the extension the irrigated lands would be utilized largely for the support of livestock enterprises as now practiced in the general locality. Major crops that would be produced on the extension lands are hay and small grains with some potatoes, pinto beans, and early maturing vegetables, and berries also grown.

The project extension would consist of the enlargement and extension of eight major canals and ditches diverting from Pine River, the construction of one new diversion dam on Pine River, and the construction of a number of small distribution laterals. Over half the extension lands would be served by enlargement and extension of the existing King consolidated canal and construction of a new diversion dam at the head of this canal. The other canals and ditches to be enlarged and extended include the Pine River canal and the Myers-Asher, Bennet and Myers, Bear Creek, and Pine River, Sullivan, Shroder extension, and Thompson Epperson ditches. A period of 3 to 4 years would be required to complete definite plan investigations and construction of the extension works.

Preliminary land classification surveys indicate the extension lands to be suitable for sustained crop production under irrigation farming. A detailed classification is necessary to confirm the suitability of all the lands. Water supply studies, based on records of stream flows as they have occurred in the past, indicate that an adequate water supply would be available for the development with permissible shortages on occasional drought years. A water right for the project can be obtained under Colorado and New Mexico State laws.

This statement is based on the physical plan of development presented in the report on Pine River project extension, Colorado and New Mexico, dated January 1951—a supplement to the Colorado River storage project report dated December 1950. Results of current (1953) Bureau of Reclamation estimates for this development plan are summarized in the following tabulation.

SUMMARY, PINE RIVER PROJECT EXTENSION, COLORADO AND NEW MEXICO

Location: Southwestern Colorado and northwestern New Mexico on Pine River, about 20 miles east of Durango, Colo., upper Colorado River Basin.

Irrigation water supply

	<i>Acre-feet</i>
Average annual supply -----	45, 450
Average annual stream depletion:	
Colorado -----	27, 200
New Mexico -----	1, 100
Total -----	28, 300

Irrigated acreage

	Colorado	New Mexico	Total
New irrigation service lands:			
Indian ¹ -----	1, 940		1, 940
Non-Indian -----	12, 580	630	13, 210
Total -----	14, 520	630	15, 150

¹ Includes some land in non-Indian ownership within boundaries of Pine River Indian Irrigation project.

Costs

Construction cost (exclusive of \$53,360 past expenditures for investigations from nonreimbursable Colorado River development fund) -----	\$5, 027, 000
Annual operation, maintenance, and replacement costs -----	18, 950

*Allocations and repayment***Construction costs:**

Allocable to irrigation.....	\$5, 027, 000
Assigned to Indians.....	644, 000
Payable by Indians in 50 years or subject to adjustment under an extension of the Leavitt Act ¹	262, 000
Assigned to non-Indians.....	4, 383, 000
Payable in 50 years by non-Indian water users.....	1, 783, 000
Required from net power revenues of Colorado River storage project.....	2, 982, 000

Annual operation, maintenance, and replacement costs:

Allocable to irrigation.....	18, 950
Assigned to Indians.....	2, 400
Payable by Indians or subject to adjustment under an extension of the Leavitt Act ¹	2, 400
Assigned to non-Indians.....	16, 550
Payable by non-Indian water users.....	16, 550

Benefit-cost ratio: 2.2 to 1.

¹ Act of July 1, 1932 (47 Stat. 564), authorizing the Secretary of the Interior to adjust or eliminate reimbursable debts of Indians.

STATEMENT ON SAN JUAN-CHAMA PROJECT, COLORADO AND NEW MEXICO

The San Juan-Chama project would divert water from the headwaters of San Juan River, a principal tributary of the Colorado River, into the Rio Grande Basin for the purposes of providing supplemental water for existing irrigation projects and of providing water for municipal and industrial uses and for development of hydroelectric power. Although water for diversion would be collected from tributaries of the San Juan located in both Colorado and New Mexico all of the water would be used in New Mexico in the Rio Grande Basin. By exchange the project would also increase the use of water in New Mexico in the Canadian River Basin. The present plan provides for the diversion of 235,000 acre-feet of Colorado River Basin water annually out of the total amount allocated to New Mexico under the provisions of the upper Colorado River Basin compact.

With project development an adequate supply of excellent quality water would be available to satisfy the rapidly growing municipal and industrial requirements of the cities and towns in the middle Rio Grande Valley area. In addition water would be available to supplement the now deficient supply to over 200,000 acres of irrigated land in the area. Hydroelectric power would be developed to aid in supplying electrical energy for the development of the resources in the basin. The plants would be designed and operated primarily to meet peak loads and to permit efficient operation of an integrated fuel and hydropower system. In addition the project would provide an opportunity for further development of recreation, fish and wildlife facilities in the center of one of the more important tourist and recreational areas of the country.

Construction features of the project are described under the following three subparagraphs:

1. *Collection and diversion element.*—Three reservoirs having a total capacity of 190,000 acre-feet located on the West Fork, East Fork, and Rio Blanco tributaries of the San Juan River. A feeder canal and conduit system to collect and transport the water to the head of Willow Creek in the Rio Grande Basin. The conduit system would be about 48 miles in length and would have a terminal capacity at the outlet of the tunnel through the Continental Divide of 1,000 cubic feet per second.

2. *Regulation and power production element.*—Three reservoirs would be constructed on Willow Creek and the Rio Chama which, when integrated with the existing El Vado Reservoir and the authorized Chamita Reservoir, would provide facilities needed to regulate water releases for irrigation and municipal and industrial uses and for generation of hydroelectric power. Power development would comprise the installation of 145,000 kilowatts of plant capacity of which 95,000 would be utilized for peaking power and 50,000 for base power. The capacities of the 3 new reservoirs would be 228,000, 400,000, and 40,000 acre-feet. This capacity would be supplemented by the existing 198,000 acre-feet of capacity at El Vado and an additional 85,000 acre-feet planned to be provided in connection with construction of a multiple-purpose reservoir at a site

toward the lower end of the Rio Chama as part of the authorized middle Rio Grande project.

3. Water-use element.—Construction features for irrigation purposes would comprise regulatory reservoirs, rehabilitation of distribution systems, and some relocation and extension of canals and laterals on existing irrigation projects on Rio Grande tributaries. Water for these projects would be made available by operation under exchange agreements. The present plan does not include construction features for delivery of municipal and industrial water to the cities and towns beyond the reservoirs on the Rio Chama. Such features could be added later as part of the project if the local interests desire Federal construction and financing.

Construction of project features would be accomplished over a period of about 15 years including the installation of all power units.

This statement is based on the physical plan presented in Bureau of Reclamations interim report on the San Juan-Chama project, dated March 1952. The financial data and analysis of the projects were revised in December 1953 to conform to current policy and procedure. Project investigations to date are of reconnaissance degree of detail and the construction costs used, which are based on December 1951 prices, were prepared sufficiently conservative as to require no readjustment for the small change in construction prices since that date. Results of the estimates along with other project data are summarized in the attached table.

SUMMARY, SAN JUAN-CHAMA PROJECT, NEW MEXICO

Location: Primarily in northern New Mexico involving project features in the San Juan River Basin in southern Colorado and northern New Mexico and in the Rio Grande, and Canadian River Basins in northern New Mexico.

Water supply: Diversion of 235,000 acre-feet of water annually from the San Juan Basin to the Rio Grande and Canadian River Basins for irrigation, municipal and industrial water and hydroelectric power. Average annual stream depletion in Colorado River—235,000 acre-feet.

Costs and repayment

Project construction cost-----	¹ \$228, 141, 000
Allocations (including interest during construction on power and municipal water features):	
Power-----	75, 855, 000
Irrigation-----	99, 308, 000
Municipal and industrial water-----	59, 402, 000
Total allocations-----	<u>234, 565, 000</u>
Repayment:	
Power (42 years after completion of last unit)-----	75, 855, 000
Municipal and industrial water (50 years)-----	59, 402, 000
Irrigation:	
Water users (50 years)-----	32, 335, 000
Required from net power revenues after repayment of power allocation-----	<u>66, 973, 000</u>
Total repayment-----	234, 565, 000
Total annual operation, maintenance and replacement costs-----	1, 272, 000
Project benefit-cost ratio: 1.6 to 1.	

¹ Exclusive of replacement storage costs required for the potential Navaho project in the San Juan River Basin and also exclusive of past expenditures for investigations from the nonreimbursable Colorado River development fund.

STATEMENT ON SEEDSKADEE PROJECT, WYOMING

The potential Seedskadee project would divert water from Green River, a principal tributary of the Colorado River, to provide for the irrigation of 60,720 acres of arable dry lands lying along both sides of the river in Lincoln and Sweetwater Counties in southwestern Wyoming. Of the total area 51,960 acres would be

included in family-sized farm units and 9,030 acres would be used for community pasture. Water for domestic and stock watering use in the project area would be obtained from project canals and from shallow wells that would be developed by the water users.

Fish and wildlife values in the area would probably suffer minor damage as a result of project development. Recreation values would not be materially affected.

With project development, the irrigated lands would be utilized primarily for the support of livestock enterprises, particularly dairying. Climatically adaptable crops, such as pasture, small grain, hay, and some garden crops would be produced. Analyses made indicate that an average farm of about 200 irrigated acres in the Seedskadee area would be required to provide the farm family with a reasonable standard of living, provide employment for the available family labor, and permit payment of operation, maintenance, and replacement costs of project facilities and some payment toward construction costs of project facilities.

Detailed land classification surveys show the project lands to be suitable for sustained production of crops under irrigation farming. Water supply studies based on records of streamflows as they have occurred in the past indicate that an adequate irrigation supply would be available for the project with permissible shortages in occasional drought years. A water right for the project can be obtained under Wyoming State law.

Principal construction features of the project would include a diversion dam on Green River, a system of main canals and laterals to convey water from the diversion dam and distribute it to project lands, two hydraulic driven pumps at drops in the distribution canals to lift water to some of the lands, and a few miles of artificial drains.

The Seedskadee diversion dam would consist of a low ogee overflow section 400 feet long, canal headworks, a sluiceway, and a dike 1,000 feet long. The Seedskadee diversion canal would extend along the west of Green River and would convey water from the river to the project lands. It would be 19 miles in length and would have an initial capacity of 1,350 second-feet. The diversion canal would terminate at a bifurcation structure at the headings of the two main canal distribution systems, one serving lands west of the river and the other serving lands east of the river. Main canals in the distribution system would total about 160 miles in length. A lateral system would be constructed to deliver water from the main canals to individual farm tracts.

A construction period of about 8 years, including the completion of definite plan investigations, would be required to complete all project facilities except the drains. Drains would not be completed until several years after application of water to the lands so that the actual extent of drainage works required could be determined.

This statement is based on the physical plan of project development presented in the Bureau of Reclamation report on the Seedskadee project, Wyoming, dated November 1950, a supplement to the Colorado River storage project, dated December 1950. Results of current (1953) Bureau of Reclamation estimates for this project plan are summarized in the following tabulation. Studies of the upper Green River Basin made subsequent to 1950 indicate that significant modifications in the project plan may be found desirable during the definite planning stage of the investigation.

SUMMARY, SEEDSKADEE PROJECT, WYOMING

Location: Southwestern Wyoming along Green River, about 14 miles northwest of the town of Green River, Wyo., and 35 miles east of Kemmerer, Wyo.

Irrigation water supply

	<i>Acres-feet</i>
Annual irrigation net diversion requirement.....	225, 800
Annual stream depletion.....	110, 400

Irrigated area

	<i>Acres</i>
New irrigation service land in farm units.....	51, 690
New service land in community pasture.....	9, 030
Total new land.....	60, 720
Supplemental service land.....	0

Costs and repayment

Project construction cost (exclusive of nonreimbursable past expenditures for investigations from Colorado River Development Fund) -----	\$23, 272, 000
Allocable to irrigation-----	23, 272, 000
Repayable by water users in 50 years-----	4, 785, 000
Required from net power revenues of Colorado River storage project-----	18, 487, 000
Total annual operation, maintenance, and replacement costs-----	136, 600
Payable annually by water users-----	136, 600
Benefit-cost ratio: Ratio of average annual equivalent benefits to average annual equivalent costs, 1.46 to 1.	

STATEMENT ON SILT PROJECT, COLORADO

The potential Silt project would provide for the full irrigation of 1,900 acres of new land and provide supplemental water to 5,400 acres of partially irrigated land, all in the vicinity of Rifle and Silt, communities in Garfield County of west central Colorado. The lands are situated in three compact blocks north of the Colorado River between Rifle and Elk Creeks, tributaries of the Colorado River. The project would also provide some enhancement in fish and wildlife values in the area.

The basic type of agriculture in the area would remain unchanged with project development because of climatic and soil conditions. With late season water provided by the project, however, the plantings of row crops would be increased somewhat as would the yield of livestock feeds. Alfalfa, small grains, sugar beets, and potatoes would continue to be the principal crops grown.

Principal construction features include the Rifle Gap Dam and Reservoir of 10,000 acre-feet total capacity on Rifle Creek, a small hydraulic turbine and direct-connected pump at the dam, reconstruction of one presently abandoned ditch, rehabilitation of the existing Grass Valley Canal and construction of some laterals and drains. Except for minor drainage work, about 3 years would be required for construction of project features, including the completion of definite plan investigations.

Preliminary land-classification surveys indicate that the lands would be suitable for sustained crop production under irrigation farming. Water-supply studies based on records of stream flows as they have occurred in the past indicate that an adequate irrigation supply would be available for the project with permissible shortages in occasional drought years. A water right for the project can be obtained under Colorado State law.

This statement is based on the physical plan of project development presented in the Bureau of Reclamation report on the Silt project, Colorado, dated January 1951—a supplement to the Colorado River storage project report dated December 1950. Results of current (1953) Bureau of Reclamation estimates for this project plan are summarized in the following tabulation:

SUMMARY, SILT PROJECT, COLORADO

Location: In upper Colorado River Basin in vicinity of towns of Rifle and Silt, Garfield County, west central Colorado.

Irrigation water supply

	<i>Acro-feet</i>
Increase in annual irrigation supply-----	10, 100
Increase in stream depletion-----	5, 800

Irrigated acreage

	New Irriga- tion service land	Supplemen- tal irrigation service land	Total
Harvey Mesa.....	290	4,760	5,050
Dry Elk Valley.....	690	640	1,330
Under Davis ditch.....	920	-----	920
Total.....	1,900	5,400	7,300

Cost and repayment

Construction cost (exclusive of \$15,000 past expenditures for investi- gations from nonreimbursable Colorado River development fund) -	\$3,356,000
Allocable to fish and wildlife (nonreimbursable) -----	73,600
Allocable to irrigation.....	3,282,400
Payable by water users in 50 years.....	1,020,000
Required from net power revenues of Colorado River Storage project -----	2,262,400
Annual increase in operation, maintenance, and replacement costs..	8,400
Payable annually by water users.....	8,400
Benefit-cost ratio: 1.71 to 1.	

STATEMENT ON SMITH FORK PROJECT, COLORADO

The potential Smith Fork project in west central Colorado would regulate surplus flows of Iron Creek and the Smith Fork of the Gunnison River, a tributary of the upper Colorado River, to increase the irrigation supply for 8,160 acres of land now partially irrigated and provide a new supply for 2,270 acres now unirrigated.

Although an improved irrigation supply would permit new lands to be cultivated and result in better crop yields on presently irrigated lands, the cropping program is largely controlled by climatic soil and topographic conditions. Most of the acreage would continue to be utilized for the production of livestock feeds with hay, small grains, and pasture predominating. Increased feed production in the area would result mostly in increased dairy cows with some increase also in beef cattle, hogs, and poultry.

Detailed land-classification surveys show the project lands to be suitable for sustained production of crops under irrigation farming. Water-supply studies, based on records of streamflows as they have occurred in the past, indicate that an adequate irrigation supply would be available for the project with permissible shortages in occasional drought years. A water right for the project can be obtained under Colorado State law.

Construction features of the project include a storage dam and reservoir with 14,000 acre-feet total capacity at the Crawford site on Iron Creek, the Smith Fork diversion dam, the 2.7-mile-long Smith Fork feeder canal of 100 second-feet, to divert from Smith Fork to Crawford Reservoir, the 6.6-mile Aspen Canal of 145 second-feet initial capacity to convey water from Crawford Reservoir to part of the project lands and feed existing ditches and four small lateral canals. Existing irrigation facilities in the area would be utilized as fully as practicable. A period of 3 to 4 years would be required to complete definite plan investigations and construct the project works.

This statement is based on the physical plan of project development presented in the Bureau of Reclamation report on the Smith Fork project, Colorado, a supplement to the Colorado River storage project report dated December 1950. Results of current (1953) Bureau of Reclamation estimates for this project plan are summarized in the following tabulation.

SUMMARY, SMITH FORK PROJECT, COLORADO

Location: West central Colorado along Smith Fork in the vicinity of Crawford, Colo., and 73 miles southeast of Grand Junction, Colo., upper Colorado River Basin.

Irrigation water supply

	<i>Acres-feet</i>
Annual increase in direct-flow diversions-----	4, 450
Annual storage supply-----	11, 200
Total project supply-----	13, 650
Increase in annual stream depletion-----	7, 500

Irrigated acreage

	<i>Acres</i>
New irrigation service land-----	2, 270
Supplemental irrigation service land-----	8, 160
Total -----	10, 430

Costs and repayment

Construction costs (exclusive of \$75,000 past expenditures for investigations from nonreimbursable Colorado River development fund and exclusive of recreation development costs)-----	\$3, 343, 000
Allocable to irrigation-----	3, 343, 000
Repayable by water users in 50 years-----	1, 045, 000
Required from net power revenues of Colorado River storage project -----	2, 298, 000
Total annual operation, maintenance, and replacement costs-----	8, 400
Payable annually by water users-----	8, 400
Benefit-cost ratio: 1.27 to 1.	

Mr. MILLER. I first want to say, Mr. Larson, I appreciate your broad, general statement about the upper Colorado River projects. Looking over the chart, summary table, the two additional units at Echo Park and Glen Canyon, they show their cost and generating capacity, and items that are necessary.

It shows there that there are no nonreimbursable funds in the two projects, Echo Park and Glen Canyon.

In other words, there is no sediment control or recreation or flood control that might be considered nonreimbursable.

Mr. LARSON. As I stated in my statment here, we did not attempt to evaluate the benefits from sediment control, flood control, or other uses like that.

Mr. MILLER. Then on the item under "Irrigation," I suppose the \$48,043,000 under the Echo Park unit, it would be estimated that the \$48,043,000 out of the sale of electric energy would go to help pay for irrigation cost under reclamation law.

Mr. LARSON. Yes, that is the allocation under irrigation—the \$48,043,000 for Echo Park and \$50,296,000 for Glen Canyon—and that would be paid off after the 44 years.

Mr. MILLER. And in the system of the nine dams and reservoirs that you mention on page 4 of your prepared statement. I suppose the order of importance and priority would be the Echo Park and the Glen Canyon units?

Mr. LARSON. The Echo Park and Glen Canyon are the only two units recommended in the Secretary's supplemental report for authorization at this time.

Mr. MILLER. And you feel that the introduction of power from these two units will be sufficient to amortize the cost and pay off the cost in, I believe the statement says, 44 years at $2\frac{1}{2}$ percent interest?

Mr. LARSON. Yes, sir.

If you would like to see a chart, how that would work, we have a chart here to show exactly how that works out.

Mr. MILLER. Is that figure on a 6-mill-per-kilowatt-hour basis?

Mr. LARSON. Average of 6 mills per kilowatt-hour.

Mr. MILLER. After 44 years it would still be used to help pay irrigation costs?

Mr. LARSON. Yes, and those would be paid out very rapidly. Of the participating projects starting out for construction, the larger ones take anywhere from 12 to 15 years to build and they pay on to their 50th year. They would pay all they could within the irrigator's ability to pay. The power revenues on the 50th year would pay for any balance.

The municipal water users, if any, would pay the cost plus interest to go in the Treasury.

That is true of all 12 of the participating projects recommended by the Secretary.

Mr. MILLER. This estimated generating capacity is 1 million kilowatts from the two units, Echo Park and Glen Canyon?

Mr. LARSON. That is correct.

Mr. MILLER. Do you see sufficient outlet for the sale of the million kilowatt-hours in that immediate area?

Mr. LARSON. Yes, sir.

Mr. MILLER. It goes clear to the west coast?

Mr. LARSON. Our power market studies and those of the Federal Power Commission and others show that all of the power can be absorbed if we build on an orderly construction schedule.

Mr. MILLER. And you feel that there will be a sale—the power market studies show there will be a sale for a million kilowatt-hours when these dams are built?

Mr. LARSON. A million kilowatts?

Mr. MILLER. Yes, when the dams are completed?

Mr. LARSON. Yes.

Mr. MILLER. Do your studies show that in the construction of Echo Park and Glen Canyon there is sufficient water runoff to fill those reservoirs in a reasonable length of time so that they will be usable?

Mr. LARSON. Yes, sir; but because of the large capacity in Glen Canyon reserved for silt retention, it is important to fill Glen Canyon ahead of when it would ultimately be needed for regulatory storage for the upper basin States.

Mr. MILLER. Then you think that would help us to meet our commitments to the lower basin States and to Mexico by the construction of Glen Canyon Reservoir?

Mr. LARSON. Glen Canyon would be necessary for that purpose if the upper basin States are to use their $7\frac{1}{2}$ million acre-feet.

Mr. MILLER. What is the position of the Echo Park site?

Mr. LARSON. That is next in capacity and next in importance to Glen Canyon.

Mr. MILLER. Would it help also to supply waters to the lower States and to Mexico?

Mr. LARSON. It is for exactly the same purpose.

Mr. MILLER. There is no land directly under this that will be irrigated. From your chart there is no new or supplemental water for irrigation purposes?

Mr. LARSON. No; these two reservoirs and the rest that will follow are necessary to provide the long-time holdover from wet cycles to dry cycles to permit diversion high up on the tributaries by the upper basin States, that capacity being set, by our investigations, at a total of 48 million acre-feet.

So it is just as necessary to have the reservoirs below as it would be if they were above the diversion.

Mr. MILLER. The number of new acres to be brought under the 12 participating projects named in your report shows 236,360 acres and 233,930 are supplemental acres.

Mr. LARSON. That is correct.

Mr. HARRISON. Mr. Engle.

Mr. ENGLE. Mr. Larson, looking at this table which Dr. Miller referred to your attention, do I understand that the Department is reporting on the 2 initial units plus the 13 participating units; is that the part that is covered in the Department recommendations?

What I am trying to straighten out in my mind is the difference between what the Department is recommending and what is in the bill.

As I understand, there is more in the bill than you people recommend at this time; is that right?

Mr. LARSON. Yes, Mr. Engle. I am confining my statement to the bills in this way, that I am reporting on the 2 storage units and the 12 participating projects recommended by the Secretary in his report and then we are showing what information we have on the additional units and participating projects that have been included in the bill by the States—upper basin States.

Mr. ENGLE. Directing your attention to the compilation "Summary table," which is attached to your statement, you are directing your testimony, then, to all of those projects which appear in that summary table down to and including what is called subtotal initial projects, and just above where the table says "Additional participating projects in the bill"; is that right? Do you follow me?

Mr. LARSON. No, that is not correct, Mr. Engle. If you will look at the top we have treated the Colorado storage project units up at the top by themselves.

First are the Echo Park and Glen Canyon units, recommended by the Secretary. If you look at the left side near the top you will see additional units in the bill.

The Secretary did not recommend those, but they are in the bill—Curecanti and Flaming Gorge. Then going on down, we have next the 12 participating projects shown by the Secretary in his supplemental report, and then down below the additional participating projects in the bill over and above what we recommend, plus Eden.

Mr. ENGLE. That is what I want to know. In other words, the additional units in the bill which are the two you have mentioned, Curecanti unit and Flaming Gorge unit, are not recommended by Interior, nor are Eden, Gooseberry, LaPlata, Navaho, South San

Juan, and San Juan-Chama. Those are not in the Secretary's recommendation, is that correct, although they are in the bill?

Mr. LARSON. That is right. He mentions them in there, but Eden, as I tried to explain a little while ago, was previously authorized.

It does make statements on these other projects.

Mr. ENGLE. If we were to vote today on the project the Secretary has recommended we would be required to take out of the bill the Curecanti unit, Flaming Gorge unit, and the five mentioned at the bottom of your table; is that right?

Mr. LARSON. Except Eden.

Mr. ENGLE. Well, it is already authorized; taking it out would not make any difference. The testimony now being presented by you and the other Interior witnesses is related to those projects which you have mentioned and not the ones that are in the bill, but not recommended by the Interior; is that right?

Mr. LARSON. Yes, but he has made statements concerning these other projects—he may have no objection or something like that, I don't recall all the statements, but you have the statements, I assume.

Mr. ENGLE. Just two other questions.

You may not be able to answer this one. As I read the statement made by Mr. Tudor, he states that the report of the Interior has not had the clearance of the executive office, referring to the budget, and he says:

Accordingly, while we are not in a position at this time to make any recommendation for authorization of the project, we will in response to the request of the chairman of the Interior and Insular Affairs Committee, present our planning report.

Now, in the light of that statement, although you are not at the present time making any recommendation with regard to authorization, you do say, do you not, that these projects which you have recommended are economically feasible, is that right, as projects?

Mr. LARSON. These 12, yes, and some of the others for that matter.

We have given you the best information we have and each one of those statements will state that, what the benefit-cost ratio is, on each one of them, both the 12 and the others.

Mr. ENGLE. Do you concur in the statement made by Mr. Tudor this morning that if we took Echo Park unit out of authorization that we would in effect take the cylinders out of the engine as far as economic feasibility of this Colorado Basin project is concerned.

Mr. LARSON. You would certainly badly damage the plan because Echo Park is the wheel horse in the upper basin, for the reason that the Split Mountain potential powerplant right below is simply another wheel onto Echo Park.

It has very little storage, 335,000 acre-feet, and whatever the release through Echo Park is, it is automatically through Split Mountain and almost automatically through Gray Canyon right on down below.

Echo Park also affects the feasibility of the Flaming Gorge on the Green River above Echo Park and on the Cross Mountain. It is larger and if it were used to a large extent for peaking, it would assist the other plants.

So if Echo Park goes out of the picture it does affect the feasibility of both Flaming Gorge and Cross Mountain.

Mr. ENGLE. Thank you very much.

Mr. HARRISON. Any further questions, Mr. Engle?

Mr. ENGLE. No.

Mr. HARRISON. Mr. D'Ewart.

Mr. D'Ewart. Would you like to tell the committee why Gray Canyon was left out? I remember looking at that site. It looked like an excellent one for us on the committee outside of accessibility. Why was it left out?

Mr. LARSON. It is not left out. It was one of the team of nine, but it was not selected initially because we can't justify it initially without Echo Park.

With only 2 million acre-feet of storage and without regulation above, the cost of power generation would be more than steam.

Mr. D'Ewart. What is the argument for leaving out Split Mountain?

Mr. LARSON. Split Mountain is retained in the group of nine until such time as the power is needed. It is left out now. We have taken the two best units.

The most feasible plan to set up is the two cheapest units first, so that all these other seven dams could be added on an incremental basis.

In other words, the bulk of the initial transmission system has to be paid for by Glen Canyon (four-fifths), and Echo Park (one-fifth), or we just don't have a plan which will produce power and deliver to load centers less than the alternative source—from steam.

Mr. D'Ewart. I have one brief question as to rates. Your 6-mill rate includes the transmission facilities that are authorized in this bill?

Mr. LARSON. Yes. I can explain that if you like. We have taken the estimates of the nine dams and added a transmission grid system to the market centers on the basis of marketing all the power in the upper basin. We start on that basis. That would average about a 6-mill rate. That is regardless of whether the Government builds the whole transmission system, or whether it is built by private concerns. It all comes to the same place.

Mr. D'Ewart. Do you happen to know what the cost of generating power in this area is from coal or oil or gas?

Mr. LARSON. Yes. There are several new steam plants near Salt Lake City, and, of course, in Denver, and we have taken the cost of producing power steam, built now at the time these were built, as more than six mills, possibly 7, but at least more than 6.

Mr. D'Ewart. That is all I have.

Mr. REGAN. Mr. Larson, I would like to get back to page 11 of your statement.

In addition, among the attached statements are brief summaries of the LaPlata project, the San Juan-Chama project, and the balance of the Navajo project, namely the South San Juan division, all of which are contained in the bill, but on which substantiating information as to feasibility is not available at this time.

Then you come on down in the next paragraph and say "For which authorization is now being sought".

Now, are you now seeking authorization for those three projects in this bill, or should they be deleted from the bill?

Mr. LARSON. When I say authorization is being sought, I am, of course, referring to the bill. Personally I am not making any recommendations. I am simply reporting information on all the projects contained in the bill.

Mr. REGAN. I understand, but you say in your statement here that the feasibility has not been established and you are asking for authorization on that part that has been declared feasible.

Now, if we have 3 or 4 projects that are not feasible, why should they be included in the bill if you are not seeking authorization on them?

Mr. LARSON. Are you referring to the Gooseberry project?

Mr. REGAN. No, those to which you refer to here "as to feasibility is not available at this time."

You follow that for Gooseberry, also contained in the bill, you have a complete feasibility report.

Mr. LARSON. That is right.

Mr. REGAN. But you do not have on those three I have named.

Mr. LARSON. That is right.

Mr. REGAN. So, therefore, I ask you if they should be deleted from the bill that we are now considering for authorization?

Mr. LARSON. I don't think that is a question for me to answer.

Mr. HARRISON. Mr. Dexheimer, would you like to clarify that?

Mr. DEXHEIMER. I would like to say that the Department is now preparing a supplemental report on these bills in the light of very recent comments which we had from the various States. In that report, assuming that the Secretary approves what we are planning to do, it will say essentially this: that the States have asked that these be included and that we would have no objection if the Congress sees fit to so authorize them although our studies are not complete on them.

Mr. REGAN. Thank you, Mr. Dexheimer.

Mr. HARRISON. Is that all, Mr. Regan?

Mr. REGAN. Yes.

Mr. HARRISON. Senator Watkins is with us this afternoon. He has to leave shortly and he would like to ask some questions here. I want him to know he is welcome. We will be glad to have him participate in these hearings with us.

Senator WATKINS. Thank you, Mr. Chairman.

Mr. Larson, I note you say certain of these projects are not ready for authorization.

Mr. LARSON. I did not say that.

Senator WATKINS. That is what I understood you to say. I think you misspoke yourself.

Mr. LARSON. I did not mean it if I inferred that.

Senator WATKINS. When you say they are not ready, you mean they are not ready for immediate construction; isn't that the fact? I call your attention to Flaming George unit in Utah and Wyoming. What is the status of that one with respect to the rest of the project? What place does it have in the rest of the projects?

Mr. LARSON. It is 1 of the 9 dams as a team selected for completely regulating the river.

Senator WATKINS. It will be eventually necessary to regulate the water to deliver the water to the lower States and permit some to be used upstream?

Mr. LARSON. Yes, sir.

Senator WATKINS. Is that true of the Curecanti unit?

Mr. LARSON. Curecanti, or some other one.

Senator WATKINS. In other words, that is the amount of storage that is necessary to regulate the river?

Mr. LARSON. Yes. We had three on the Gunnison, Whitewater, Crystal, and the large Curecanti. Then the bill contained nothing on the Yampa.

Senator WATKINS. I would like you to explain if you will, irrespective of what is in the bill, because finally the House and the Senate can write into the bill what is necessary to make a project—we are not necessarily bound by what we introduce if the investigations and the facts later on show that there ought to be changes in the bill.

Now, as I understand it, what you are saying is that this will be a completely regulated river and it must be in the upper basin in order to deliver the water under the Colorado River compact of 1922, to the lower users and to Mexico, and at the same time to have some water in the amount that should come to the upper basin States.

Mr. LARSON. Yes, our estimate is the total of 48 million acre-feet required to regulate the river if the upper basin States fully utilize the water allotted to them under the 1922 compact and the upper basin compact.

Senator WATKINS. Tell us what projects will be needed eventually to make that complete regulation. I think the committee ought to know that and I certainly want to know. Through the courtesy of the chairman I am asking that question. Probably you can show it on the map if you have them all indicated. We can see what we have to do to regulate that river to accomplish the object.

Mr. SAYLOR. I hope you can get it. I tried this morning to get the answer and I could not.

Senator WATKINS. I think I understand what they are trying to get at.

Mr. LARSON. Starting at the top we have the Flaming Gorge Reservoir, with a capacity of 3,940,000 acre-feet.

The next one down is Echo Park at the junction of the Green and Yampa Rivers, with a capacity of 6,460,000 acre-feet.

Above Echo Park on the Yampa River is the Cross Mountain Reservoir of 5,200,000 acre-feet.

Going on down to Green, we have the Split Mountain with 335,000 acre-feet immediately downstream from Echo Park.

Further down the Green River, just above Green River, is the Gray Canyon Reservoir site with 2 million acre-feet.

Over on the Gunnison River, the high reservoir was the Curecanti of either two and a half million acre-feet which we selected in the first place, and the States later selected 940,000, and right below that, which is more or less a power dam, would be the Crystal Reservoir of 40,000 acre-feet.

Down near the mouth of the Gunnison River where it joins the Colorado near Grand Junction is the Whitewater site which has 880,000 acre-feet.

Then going on downstream at the end of the lower basin, we have the large Glen Canyon site with a capacity of 26 million acre-feet.

Making a total of 48,555,000 acre-feet.

Senator WATKINS. When you are talking about the 48 million acre-feet that is necessary to regulate the river, you are not now stating that all of that is necessary in the beginning or initial phase of construction?

Mr. LARSON. What is that?

Senator WATKINS. You are not claiming that all of that is necessary now, to begin construction now, of that number of reservoirs?

Mr. LARSON. No. In my statement I stated that theoretically the upper basin States could use 58 percent of its apportioned water without storage, but they would only get into difficulty. They could not fill the reservoirs and they ultimately could never use 42 percent of their water allotment.

Now, Mr. Chairman, I must correct my statement on the 48,550,000. That also included the Navajo Reservoir, which in our report of 1950 we had as 1 of the team of 10 dams.

Since that time, with the cooperation of New Mexico and working out the Navaho project with the Indians, and the San Juan-Chama, the Secretary is recommending in his report, which is agreeable to New Mexico, a transfer of the Navaho Reservoir out of the team of 10 dams. Now it is called a participating project for the benefit of the three that I mentioned, the San Juan-Chama, south San Juan division, and the Shiprock division of the Navaho project.

Senator WATKINS. What you are now recommending for authorization for the initial phase are two projects. Those are Echo Park and the Glen Canyon on the main stem of one of the large tributaries.

Mr. LARSON. Yes, those were the two in the Secretary's supplemental report.

Senator WATKINS. But if this program is worked out to take care of the waters of the river and to regulate it so that we can deliver to Mexico and to the lower basin States, the water they are entitled to under the compact of 1922, and still leave some for the upper States you must have all of these dams; is that right?

Mr. LARSON. That is correct. They may change the capacity of some like Curecanti. If the large Curecanti is not built, storage has to be found somewhere else.

Senator WATKINS. What you are planning is an overall development that will completely regulate the river and make it possible for the lower basin users to get their right and at the same time get as much as possible of the right given by the compact with the upper basin States.

Mr. LARSON. And at the same time provide for sediment deposition for 200 years.

Senator WATKINS. Your answer is largely yes to what I asked?

Mr. LARSON. Yes.

Senator WATKINS. I noticed you did not say yes, but you went off with a qualification.

Are there any other reasons why this overall program must be adopted before the full use of the regulation of the river upstream can be had?

I direct your attention to what I have in mind, which is the power to be developed. What part does that play in it?

Mr. LARSON. The power from these nine dams could certainly all be used in a comparatively short time. I think it is very fortunate to have a long-range plan that is feasible.

So whatever is authorized now will fit in with the ultimate picture and every step would be feasible as we go along.

Senator WATKINS. Would this program be feasible without the power revenue that would come from the building of all these dams?

Mr. LARSON. I know of no other way to finance the irrigation projects because they are all in excess of the water users ability to repay in a reasonable period of time which we have used in this plan as 50 years.

Senator WATKINS. In order to implement the 1922 compact, you certainly would have to have some way of financing the building of all these dams?

Mr. LARSON. That is correct.

Senator WATKINS. Is the fact that these reservoirs are made necessary by the terms of the treaty with Mexico keeping in mind the supply of the water as indicated in the records over the years?

Mr. LARSON. They are absolutely necessary if the upper basin States are to use their allotted water.

Senator WATKINS. Is there any other way they could get the water without the power project being built?

Mr. LARSON. They could go along for a while, as I stated in my statement there, and then they could divert no more, and meet the commitment under the 1922 compact which requires the upper basin States to deliver not less than 75 million acre-feet in any consecutive 10-year period. There may be some surplus that would have to be delivered.

Senator WATKINS. Now, has there been a period of time within the last 10 or 15 years when the flow in the river has been below what was anticipated at the time the 1922 compact was framed?

Mr. LARSON. The lowest cycle we have on record is the 10-year low cycle of 1931 to 1940, when the historical flow of the river was 10,151,000 acre-feet at Lee Ferry.

Senator WATKINS. For a 10-year period?

Mr. LARSON. Yes. And that shows the necessity for carrying water over long periods of time, 20, 25 years, or even maybe longer.

Senator WATKINS. This ought to be obvious, but I am going to ask the question anyway, because we do not always see the obvious, that a program which does not take into consideration the lowest water supply would not be worth anything at all; would it?

In other words, you could not build powerplants when you would not have any power, and have 1 year when you wouldn't have any water to deliver to plants?

Mr. LARSON. The low cycles are the determining factor in establishing the capacities of reservoirs.

Senator WATKINS. Referring to Echo Park Dam, how far above stream bed would it actually rise?

Mr. LARSON. What is it?

Senator WATKINS. How far above the stream bed will it actually rise?

Mr. LARSON. It is 690 feet above bed rock and 520 feet above stream bed.

Senator WATKINS. So it is important to know the difference that there is considerable space below stream bed down to bed rock.

Mr. HARRISON. Senator Bennett is also with us, but he says he does not want to ask any questions at this time.

Senator BENNETT. A Senator always changes his mind. While we have the map before us, and that long pointer, would you point out to the group where Browns Park and Lodore Canyon is? That came into the discussion this morning.

Mr. LARSON. If it is all right, Mr. Chairman, I will have Mr. Jacobson point that out, because he has gone through all the canyons.

Mr. JACOBSON. The section here [indicating] is the gateway to Lodore, and it is near the boundary of the monument. The capacity of the reservoir above that point lies largely in Browns Park. This is the boundary of the monument at this point here [indicating].

Mr. HARRISON. Can you identify that sufficiently so it will be distinguishable on the record as printed?

Senator BENNETT. If the dam had been built in Lodore Canyon, would the body of the lake that backed up behind it have been in Dinosaur National Park or would it have been outside of it?

Mr. JACOBSON. Can I have the question again?

Senator BENNETT. I was asking if the dam had been built approximately, to use the general term, in Lodore Canyon, would the lake backed up behind it have been within the boundary of the Dinosaur Monument or outside of it?

Mr. JACOBSON. There were two sites involved in that particular withdrawal. One was about 3 miles below the boundary, and the other one about 6 miles. Both are inside the monument. The monument boundary is 23 river miles above Echo Park damsite, so it will extend possibly one fourth the way.

Senator BENNETT. So the dam would have been within the boundaries of the monument and part of the lake would have been within the monument?

Mr. JACOBSON. Yes.

Mr. ASPINALL. What would have happened to the rapids, Mr. Jacobson, if the Browns Park project had been built? What would have happened to the rapids?

Mr. JACOBSON. The liveliness of the rapids, of course, is due largely to the volume of the water that passes over them.

Mr. ASPINALL. At what time of the year?

Mr. JACOBSON. In the flood season of the year. During the low-flow season it is very difficult to maneuver between the rocks. A dam at that point, providing capacity above for power and river regulation would cause an equated river, and the rapids would not be what they are today.

Senator BENNETT. I would like to ask one more question on that same point. Can you give us any estimate of the approximate volume of water that would have been stored had that dam been built instead of the recommended Echo point? I realize that is a hypothetical question because the dam was not built and probably the studies were not made out to the end.

Mr. LARSON. The capacity is very, very much smaller. We can get that, but I do not recall it.

Mr. HARRISON. Is that all, Senator?

Senator BENNETT. Yes.

Mr. HARRISON. Mr. Saylor?

Mr. SAYLOR. Mr. Larson, the nine sites which have been specified by you in response to Senator Watkins are not all of the available sites in the Upper Colorado River Basin; are they?

Mr. LARSON. No, there are 2 or 3 more sizable sites.

Mr. SAYLOR. You are familiar, I believe, Mr. Larson, with House Document 419 of the 80th Congress, called The Colorado River?

Mr. LARSON. Yes.

Mr. SAYLOR. Your name appears in there quite frequently.

Mr. LARSON. I have not looked at it for a few years.

Mr. SAYLOR. Well, there is in this survey in House Document 419 a number of other sites in the upper basin that are specified, other than the ones that have been designated here on the map.

Mr. LARSON. Yes, there are others mentioned in there.

Mr. SAYLOR. Yes. You are still the director of region No. 4; is that correct?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. And as director of region No. 4, this area comes within your jurisdiction?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Have you made the same kind of survey on the other available damsites that are referred to in House Document 419 that you have made so far on the nine which you have testified to here under the proposed plan now for the development of the upper Colorado River Basin?

Mr. LARSON. Some of them. We have drilled Dewey, for example, and went over it. We have a detailed topographic map and so on. We did not drill New Moab site because the reservoir would extend into the Arches National Monument.

Mr. SAYLOR. What others have you drilled or done work on besides those two?

Mr. LARSON. We have made some studies at Bluff but of course, we do not have much water there after the upstream projects are built; also the Desolation site. We studied the Dark Canyon site, but that is down in the Glen Canyon area, so that was eliminated for being within the Glen Canyon Reservoir site.

Mr. SAYLOR. So that in the upper Colorado River Basin there are sites wherein water could be stored for the purpose of enabling the upper basin States to use the water allocated to them in the compact of 1922, and in furtherance of their compact between the upper basin States dividing the water that has been allocated to them in 1948. Is that correct?

Mr. LARSON. There is, but not without material loss in evaporation and increase in cost of power generation.

Mr. SAYLOR. We will come to those points in a minute. The thing that I am trying to bring out is that you have not, by selecting these nine sites, wanted this committee or the general public to come to the conclusion that these are the only available sites in the upper Colorado River Basin wherein water can be stored?

Mr. LARSON. That is true. But we certainly mean to leave the impression that these are the best ones by far.

Mr. SAYLOR. That may be. That is a matter now of your opinion, that these are the best sites, is that correct?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Now, none of these nine projects which you have designated as storage areas have any irrigation features connected with them directly, is that correct?

Mr. LARSON. Yes, some of them may have. At Whitewater, water can be diverted from there, and Curecanti and Flaming Gorge also. You can say directly or indirectly that the storage project provides regulation so that the water-use projects can divert higher up on the tributaries. To me they are all directly connected with irrigation. Although they do not divert out of all of them, they are directly connected with them just the same. Whether the reservoir is above the lands or below the lands, if you get water by replacement, it still serves the same purpose.

Mr. SAYLOR. There will be power generated at each one of these nine sites, is that correct?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. You, I think, signed the regional directors' report of December 1950, on the Colorado River storage project and participating projects?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Do you have a copy of that available there?

Mr. HARRISON. Might I suggest at this time that if there are any other reports which you would like to have reference to, Mr. Saylor, that you give some information on them so that they may be sure to have them here?

Mr. SAYLOR. The only other reports that I wanted are the participating reports which were submitted to supplement this, and I think Mr. Larson is familiar with them all because he signed them.

They are the participating reports for the projects on the basin, which in 1950 were 11 in number.

Mr. LARSON. Yes. I have the 1950 report on the Colorado River storage project, and the supplemental project reports. We may not have them all, but we can have them tomorrow.

Mr. SAYLOR. Is it now true, Mr. Larson, that you, as the director of that area, look at this entire unit as one, that you look at the overall picture as one unit?

Mr. LARSON. Well, as a comprehensive plan.

Mr. SAYLOR. That is right. It is a comprehensive plan. So that when you said that there were wheels that participated in this thing, the wheels that you had specified will all have to turn eventually in each one of these nine projects?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. And if you moved your dams to other sites to gain additional storage, you would have additional wheels that would be a part of this whole overall program, would you not?

Mr. LARSON. Maybe. There might be places where it would cost more than steam and they would not be authorized.

Mr. SAYLOR. But the important thing that you are interested in, you have stated here, is that you want the upper Colorado River to be able to store its water and to use that water not just for the creation of power—that is not the principal reason for your recommending all of these dams—you are recommending them, are you not, so that the upper Colorado River will be able to deliver and fulfill its obligation to deliver water at Lee Ferry?

Mr. LARSON. No. The primary purpose is to develop agriculture, industry, and serve municipal populations, and at the same time meet delivery of water at Lee Ferry with the water to which the

lower basin is entitled; to use power as the vehicle to pay those costs that are over and above the ability of the irrigators to repay.

Mr. SAYLOR. Well, the irrigators have no duty in the upper basin to deliver water, do they?

Mr. LARSON. Not unless they should take what belongs to the lower basin or try to take it. It is the States' responsibility.

Mr. SAYLOR. The compact says that the upper basin had 7½ million acre-feet of water, is that not right?

Mr. LARSON. No. The compact said that the upper basin States can deplete the river, or words to that effect, up to 7½ million acre-feet annually, providing they do not cause the flow of water at Lee Ferry to be less than 75 million acre-feet in any consecutive 10 year period. That is what it says to me.

Mr. SAYLOR. Well, then, if we develop parts of the upper Colorado River, you can do it in some of the places you specified, and there may be other places that could be eliminated. One I have referred to in particular is Echo Park, Split Mountain. In other words, you have said, have you not, that there are other places in the upper Colorado River that you could store water? Is that not right?

Mr. LARSON. We have not found where we can replace that—

Mr. SAYLOR. Answer yes or no. Are there not other places in the upper Colorado River other than the nine that you have designated that you can store water in?

Mr. LARSON. Yes; like Dewey.

Mr. SAYLOR. There may be some features about them that are not as desirable. Is that not true?

Mr. LARSON. That is true.

Mr. SAYLOR. So that this theory that you have of being part of an integral plan, that plan is principally the brain child of yourself as director of region No. 4, is it not?

Mr. LARSON. No, sir; Echo Park was selected before I became regional director in 1943. It was drilled before that by another man in charge of planning.

However, I will admit that the longer I have gotten into it, the better it looks to me.

Mr. SAYLOR. I am delighted to find that the Bureau drilled as far back as 1943, because it seems there was nothing said in the President's order which withdrew this area in which Echo Park Reservoir site is located. If this was such an excellent site, and the Bureau knew so much about it, could you tell us if you know any reason why the President would not have included it in his withdrawal order?

Mr. LARSON. They did not know as much about it when the withdrawal was made, but soon after that, in 1939 or 1940 they drilled it. But our thinking after we got into the Colorado River has changed quite a bit when we realize the problems that we have making delivery at Lee Ferry, silt retention, and the fact that there are more projects, potentialities, than we have water, how valuable it is, and the toll of evaporation, and the lack of attractive large reservoir sites. We have learned a lot since 1938.

Mr. SAYLOR. In your report of 1950, you can tell me where in that report you have estimated the costs of building these nine reservoir sites?

Mr. LARSON. What is it you want, the cost estimates?

Mr. SAYLOR. Yes. I want to know where you have the cost estimates of the nine reservoir sites which have been testified to here this afternoon.

Mr. DAWSON. I refer the gentleman to the report here that is before you. I can give you the page number.

Mr. SAYLOR. I do not want your testimony, Mr. Dawson, I am only trying to find out from the man who drew it up, so that the record can clearly show where they are. I think they are just ahead of page 50.

Mr. LARSON. Page 7?

Mr. SAYLOR. I think on page 50 you will find the chart.

Mr. LARSON. On page 7 are the 10 dams, estimated construction cost, as a summary.

Mr. SAYLOR. Is that in the letter of transmittal?

Mr. LARSON. The regional director's letter. In our explanations here today, we have brought these costs up to the 1953 index, and made some changes, some other changes.

Mr. SAYLOR. Those 10 projects that appear on page 7 of the letter of transmittal, are the same 9 which you referred to in your testimony here this afternoon, and include Navaho, which you explained to Mr. Regan in his questioning as to why it was eliminated and now instead of being a storage project is a participating project?

Mr. LARSON. That is correct.

Mr. SAYLOR. I believe in addition you have the estimates of the total costs of these 10 projects which are a part of this report? Is that correct?

Mr. LARSON. That is the same table. It is just a duplication. In one case it is pulled up into the regional director's report. On page 49, there is a duplicate table.

Mr. SAYLOR. Now, following page 49, you have an itemized breakdown of these various projects, is that correct?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Now, have you ever made a similar breakdown for the other dam sites which you have referred to here in your testimony?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Such as Desolation?

Mr. LARSON. I don't know the details. The chief engineer worked up many estimates, such estimates on Dewey, and our own office has made up estimates on Desolation, and we have it also at New Moab.

Mr. HOSMER. I wonder if while he has that table there we can get the total 1950 costs on Glen Canyon and Echo Park?

Mr. SAYLOR. I am going to get to that. Now, would you make available for the members of this committee the other reports which you have made, the surveys you have made, for additional storage areas in the upper Colorado River Basin?

Mr. LARSON. We can produce that, but I do not think we have all of this with us from Salt Lake City.

Mr. SAYLOR. There is no need, sir, to have them here today or within the next week. It is just something that the committee would like to have. I know those of us who are interested in the upper Colorado River would like to see all of the studies that have been made.

Mr. ASPINALL. Do I understand that my colleague is asking for reports on some 253 reservoir sites?

Mr. SAYLOR. No, sir; I did not ask for that. I only asked for the information that was available upon studies that have already been made. If there are 2, 3, 4, 250 or 5,000, I do not care. I think we ought to have them.

Mr. ASPINALL. I thought you ought to know that there are approximately 253.

Mr. SAYLOR. I have not heard anything like 253 referred to this afternoon. But if there are 253, I am satisfied that Echo Park becomes much more easily replaceable by 253 than it is by 2, 3, or 5 that I heard tell about before.

(The information requested is as follows:)

DESCRIPTION OF MAJOR STORAGE AND POWER SITES IN UPPER COLORADO RIVER BASIN

Over the past half century a large number of storage and power sites in the upper Colorado River Basin have been investigated by private concerns, State organizations, and Federal agencies such as the Geological Survey and the Bureau of Reclamation. In each investigation the purposes to be served controlled the extent of study at each site. For the most part the primary objective was to provide storage of spring floods for direct application to lands during summer periods when the streamflow decreased below the rights of earlier appropriators.

Early in the Bureau of Reclamation's search for sites to store excess river runoff in years of high flow for subsequent release in compliance with article III (d) of the Colorado River compact it became apparent that development of smaller reservoirs for this purpose was more costly and extremely wasteful of water through evaporation. It was evident that long-time holder storage should be accomplished by storage in large reservoirs at higher elevations where evaporation rates were lower. It was also necessary in the consideration of potential sites to select developments which would serve purposes other than river regulation to assure feasibility and provide for maximum repayment since irrigators and other upper basin water users could not stand all of the costs of this long-time holdover storage in addition to the expensive facilities required for individual project service.

The following discussions of individual sites are separated by tributary basins and river profiles are attached to assist in following the narrative.

GREEN RIVER BASIN

Kendall Dam and Reservoir site is located at the headwaters of the Green River about 120 miles north and east of Green River, Wyo. The site is limited in economical storage to approximately 500,000 acre-feet. Because of its size and since its storage is closely tied in with irrigation developments downstream any use for long-time storage would be of little value. Site investigations have been made in connection with the Seedskadee and other small potential irrigation projects in that area.

Flaming Gorge Dam and Reservoir site: A number of dam sites have been investigated in the canyon section of the Green River from near the Wyoming-Utah State line to the Ashley Dam site 28 miles downstream. Several sites in the Flaming Gorge and Horseshoe Canyon section were drilled by the Bureau of Reclamation in 1907 and 1908 (21 holes) and by the Utah Power & Light Co. (31 holes), under a preliminary power permit issued by the Federal Power Commission in 1923. This company also cooperated with the Geological Survey during the period 1918-22 in making a plan and profile survey of the Green and Yampa Rivers from Greenriver, Utah, to Green River, Wyo., to be used for studies of potential hydroelectric developments.

Studies in conjunction with central Utah project investigations led to the selection of the Ashley Dam site and plans for a reservoir with nearly 4 million acre-feet of capacity from which a gravity diversion could be made to the south slope of the Uinta Mountains. This reservoir would extend upstream nearly to Green River, Wyo., inundating such dam sites as Horseshoe Canyon and the original Flaming Gorge and utilize the same reservoir basin as the Red Canyon site.

Other sites in upper Green River Basin between Green River, Wyo., and the Kendall Dam site such as Big Basin, Fontenelle, and Riview are limited by terrain

or streamflow to capacities of considerably less than one-half million acre-feet and are therefore of value primarily for direct water-use project service.

Swallow Canyon Dam and Reservoir was suggested in USGS Water Supply Paper 618 by Raif Wooley (1930) as an alternate to the Browns Park (Lodore) site since the geological exploration by the Bureau of Reclamation in 1907-9 (31 holes at 2 sites) indicated serious foundation difficulties and since the added storage possible with a high dam at Lodore would be of little value with regulation upstream by Flaming Gorge Reservoir. The Swallow Canyon development would be essentially a power drop with capacity only for reregulation.

Echo Park Dam and Reservoir: Mr. Wooley in his report points out the advantage of a storage and power development to regulate and use the combined flows of the Green and Yampa Rivers. Although he suggests a dam of 300 feet at the site, which was probably considered to be a very high dam at the time, later studies indicate that an economical dam over 500 feet high could be built at the site to furnish long-time holdover storage capacity. The reservoir formed by a 300-foot dam would have contained less than 1 million acre-feet and would have been of little value as a long-term holdover site. The investigations of this site are outlined in the Colorado River storage project report. Echo Park Reservoir would inundate both the Swallow Canyon and Lodore Dam sites.

Split Mountain Dam and Reservoir is essentially a second power drop below Echo Park Dam. Investigations are outlined in the Colorado River storage project report, and Mr. Wooley's report.

Juniper Dam and Reservoir was studied in considerable detail. Dam and reservoir topography was obtained and three holes were drilled in 1915. The reservoir capacity was limited to about 1½ million acre-feet by the town of Craig, Colo. The dam site and nearly all of the reservoir basin would be inundated by the Cross Mountain Reservoir.

Cross Mountain Dam and Reservoir has long been recognized as a good power development and was considered as a secondary power drop below Juniper. The reservoir capacity would be limited by the Juniper Dam to about 1 million acre-feet. Recent studies under the Colorado River storage project have indicated that the cost of a single dam at Cross Mountain to store 5,200,000 acre-feet is less than the cost of a combination of a small dam at Cross Mountain and a dam at Juniper to store about 2½ million acre-feet. The investigations of this site are outlined in the Colorado River storage project report.

Little Snake River Basin has inadequate runoff and lacks good sites for long-time storage.

Blue Mountain Dam and Reservoir has been given preliminary study as a power site. It is located in the canyon section of the Yampa River just downstream from the confluence of the Little Snake and Yampa Rivers. Storage at the site would be limited by the Cross Mountain powerplant to about 115,000 acre-feet. Because of its small size it would be of negligible value as a holdover storage reservoir.

Duchesne River Basin: The streamflow and storage sites in this basin are included under the central Utah projects for irrigation development. No significant contribution to long-time holdover storage can be developed.

White River Basin: The Buford site is the only significant storage site on the White River and is being considered for development in connection with irrigation in the White and Yampa River Basins. It is located upstream from Meeker, Colo., and is limited to about one-quarter million acre-feet. It would make little contribution to long-time holdover storage.

Desolation and Gray Canyon dam and reservoir sites offer the only large-capacity storage alternative in the Green River Basin. Development of the Desolation site would limit Gray Canyon storage to 490,000 acre-feet instead of the 2 million acre-feet presently planned. The Desolation Reservoir to replace Echo Park and the reduction in capacity at Gray Canyon would have a total capacity of 7,800,000 acre-feet and would extend upstream nearly to Jensen, Utah. The reservoir would have a maximum area of 113,000 acres and would result in added evaporation averaging 200,000 acre-feet annually. System power would be reduced by 242,000 kilowatts. Under present procedures for analysis development of this site would not be economically feasible. Status of investigations and a cost estimate are attached.

UPPER COLORADO RIVER BASIN

Depletions by existing and potential water-use projects in the headwaters area of the Colorado River and its tributaries upstream from the Roaring Fork River rule out any possibility of major long-term holdover storage. The location of

the main line of the Denver and Rio Grande Railroad in the canyon bottom further complicates any possibility for power development when the high cost of railroad relocation is considered. The Roaring Fork River Canyon is too precipitous to permit development of large capacity storage. Between the Roaring Fork confluence and Grand Junction, Colo., is the DeBeque dam and reservoir site identified in the Bureau of Reclamation reconnaissance report on the Cliffs-Divide project.

DeBeque dam and reservoir site development is complicated by the high cost of relocating about 30 miles of main line Denver & Rio Grande Western Railroad Co. railroad track. The dam site is located on the Colorado River about 20 miles northeast of Grand Junction, Colo. Preliminary study indicates that about 2¼ million acre-feet of storage could be obtained, however, at a very high cost. Economic feasibility will be dependent upon the use of site storage for future irrigation and industrial purposes as well as power production. The limited capacity of the site, its high streamflow, and its competitive uses makes any holdover storage contribution very minor.

Gunnison River Basin storage sites have been studied quite extensively. Of the many sites investigated all but the potential 2½ million acre-foot Curecanti Reservoir have only local regulatory values. The potential Whitewater Reservoir located near the confluence of the Gunnison with the Colorado River is also included as a Colorado River storage project unit but has only a limited value as a holdover storage site. Data on these two sites are included in the Colorado River storage project report.

Dolores River Basin: Limited streamflow, present in-basin irrigation, and present and potential water exports to the San Juan Basin for irrigation rule out any possibility for economical longtime holdover storage in this basin.

Dewey dam and reservoir site on the Colorado River 3 miles downstream from the Dolores River confluence is the best alternate for Echo Park since the New Moab site downstream would encroach upon the Arches National Monument. The reservoir capacity to replace storage at Echo Park would total 6,100,000 acre-feet. The maximum water surface area of 64,000 acres is 21,000 acres greater than at Echo Park, and the added reservoir evaporation loss would average 120,000 acre-feet annually. System power output would be reduced by 188,000 kilowatts. Status of investigations and a cost estimate are attached.

New Moab Dam and reservoir site is located 24 miles downstream from the Dewey Dam site and about 6 miles upstream from Moab, Utah. This site is more favorable than Dewey but would encroach into the Arches National Monument. System storage would be replaced by a 6 million acre-foot reservoir. The maximum water surface area would be 55,000 acres and the added loss over that at Echo Park and Split Mountain would average about 100,000 acre-feet annually. System power output would be reduced by about 149,000 kilowatts. Status of investigations and a cost estimate are attached.

SAN JUAN RIVER BASIN

Large existing and potential water uses in this basin restrict the storable runoff. The only feasible site on the San Juan River which might develop a significant amount of holdover storage is the Chinle (Bluff) site.

Chinle Dam and Reservoir is located on the San Juan River about 12 miles downstream from Bluff, Utah, and 132 miles upstream from its confluence with the Colorado River. With development of the Navajo, San Juan-Chama and other smaller projects, the streamflow at this site would be reduced by nearly 40 percent. The principal advantage of storage at this site would be as a sediment trap upstream from Glen Canyon Reservoir. About one-third of the sediment now passing Lees Ferry originates upstream from Chinle Dam site. To replace Echo Park storage a 7 million acre-foot reservoir would be required. The maximum water surface area would be 70,000 acres and the added evaporation loss about 100,000 acre-feet if vegetal growth on the silt beds on the reservoir fringes could be controlled. However, the high cost of site development together with small streamflow and low power head combine to make this development infeasible under present procedures for project analysis.

Status of investigations and a cost estimate are attached.

Goosenecks and Slickhorn sites downstream from Chinle on the San Juan are limited storage sites of value only as secondary power drops if storage and sediment retention is provided at Chinle.

Navajo Dam and Reservoir is described in the Colorado River storage project report. The entire storage capacity possible at the site would be required for

direct water supply by the Navajo project and replacement storage required by the San Juan-Chama project.

COLORADO RIVER BELOW GREEN RIVER CONFLUENCE

Development of the Glen Canyon Dam and Reservoir as described in the Colorado River storage project report to a total capacity of 26 million acre-feet would back water upstream from the dam site (15 miles above Lees Ferry) 186 miles up the Colorado River and 71 miles up the San Juan River. This reservoir would inundate the Great Bend power site on the San Juan River and the Dark Canyon site on the Colorado River. The remaining possibility for storage and power in this reach of the river is at the Junction site.

Junction Dam and Reservoir site is located on the Colorado River just below the confluence of the Green River and at the head of Cataract Canyon. An attempt to drill the site in 1914 was not successful. Holes were put down in 4 places, 1 to a depth of 125 feet but bedrock was never reached. Subsequent planning was limited to consideration of a low rock fill structure to provide reregulation for power development by tunnels through Cataract Canyon. The reservoir would be limited in upstream extent by the town of Moab, Utah, to a total capacity of about one-half million acre-feet. This limited capacity would not contribute to long-time river regulation.

Status of investigations—new Moab unit

1. *Engineering surveys.*—Topographic surveys have been made of the new Moab (Nigger bill) Dam site and part of the reservoir by the Geological Survey and the Bureau of Reclamation and maps have been prepared at a scale of 1:24,000 with a contour interval of 20 feet up to elevation 4,400 feet.

2. *Power surveys.*—Preliminary power production and rate studies have been made for the new Moab unit.

3. *Water supply studies.*—Hydrologic data recorded near the Dewey site is applicable to the new Moab unit. Preliminary reservoir operation studies have been made to determine the value of storage at this site as an alternative to Echo Park. Studies of sediment inflow and evaporation at the site have been made.

4. *Geology and exploration.*—No geologic exploration work has been done at the new Moab site.

5. *Economic studies.*—Preliminary economic studies have been made for the new Moab unit.

6. *Plans and estimates.*—Preliminary designs and estimates have been prepared for various sizes of dams at the new Moab site. Preliminary estimates of railroad location have been made.

Status of investigations—Dewey unit

1. *Engineering surveys.*—A preliminary dam site survey has been completed for the Dewey unit. Reservoir topographic survey maps have been prepared to elevation 4,300, at a scale of 1 inch = 2,640 feet and from elevation 4,300 to 4,430 at a scale of 1 inch = 1,000 feet.

2. *Power surveys.*—Preliminary power production, transmission, rate, and market studies have been made for the Dewey unit both as an independent unit and as an integrated part of the Colorado River storage project.

3. *Water supply studies.*—Hydrologic data have been recorded near the Dewey site and preliminary reservoir operation studies have been made to determine the value of storage at this site in the formulation of the plan of the Colorado River storage project and as an alternative storage site to Echo Park. Studies of sediment inflow and evaporation have been made.

4. *Geology and exploration.*—The Dewey Dam site was first drilled in 1918. Later during 1941, 1942, and 1943 preliminary type foundation and materials explorations were completed. The extent of these investigations is adequate for project report purposes.

5. *Economic studies.*—Preliminary economic studies have been made for the Dewey unit.

6. *Plans and estimates.*—Preliminary designs and estimates have been prepared for various sizes of dams at the Dewey site. Preliminary estimates of railroad relocation have been made.

Status of investigations—Desolation unit

1. *Engineering surveys.*—USGS river sheets have been prepared for the reach of the Green River which includes the Desolation Dam site and reservoir. No detailed dam-site topography has been prepared.

2. *Power surveys.*—Preliminary power production and rate studies have been made on the Desolation unit.

3. *Water supply studies.*—Hydrologic records have been computed and preliminary reservoir operation studies have been made to determine the value of storage at Desolation as an alternative to Echo Park. Studies of sediment inflow and evaporation have been made.

4. *Geology and exploration.*—No geology exploration work has been done at the Desolation site.

5. *Economic studies.*—Preliminary economic studies have been made for the Desolation unit.

6. *Plans and estimates.*—Preliminary designs and estimates have been prepared for various sizes of dams at the Desolation site.

Status of investigations—Chinle (Bluff) unit

1. *Engineering surveys.*—In 1914 the Bureau of Reclamation conducted limited field investigations at the Chinle site, including the preparation of a rough topographic map of the dam site at a scale of 1 inch=100 feet. In 1921 the Geological Survey made a survey of the lower San Juan River from its mouth to the mouth of Chinle Creek, 133 miles upstream, and prepared topographic maps (3 sheets) at a scale of 1 inch= one-half mile, with contour intervals of 5 feet on the river and 20 feet on land. The upper end of this survey covered the Chinle site. In 1946 the Bureau of Reclamation completed an aerial survey of the San Juan River from its mouth to near the 4-corner intersection of the Utah, Colorado, New Mexico, and Arizona State lines to a scale of 1 inch= 1,000 feet.

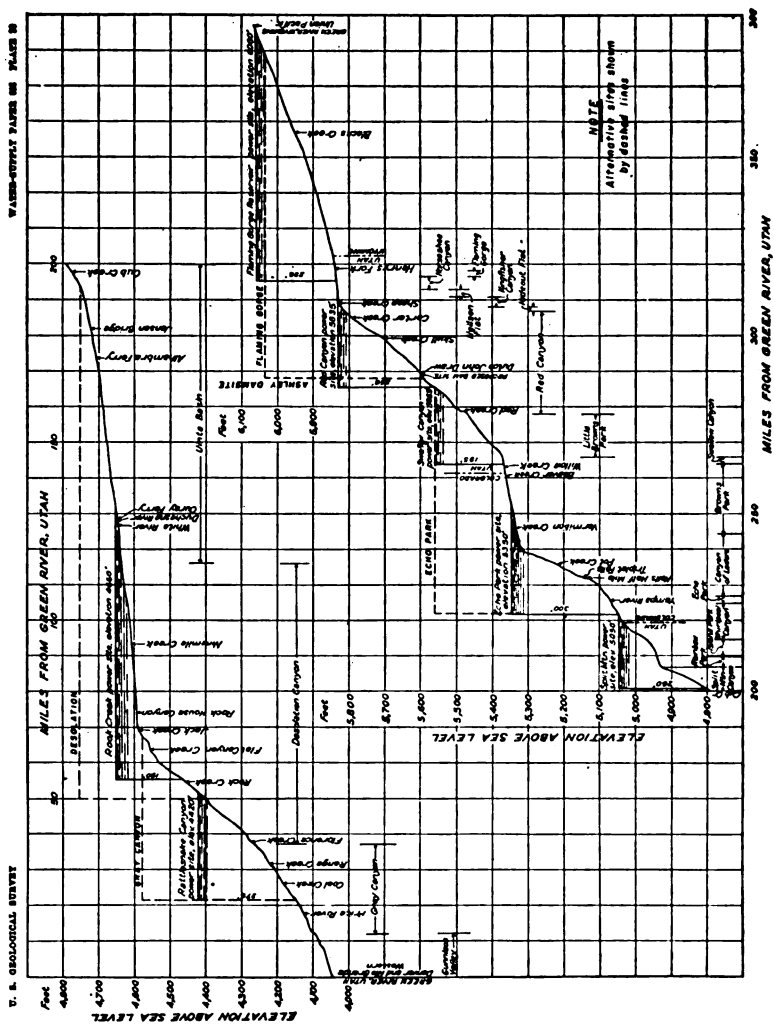
2. *Power surveys.*—Preliminary power production, transmission, rate, and market studies have been made for the Chinle unit both as an independent unit and as an integrated part of the Colorado River storage project.

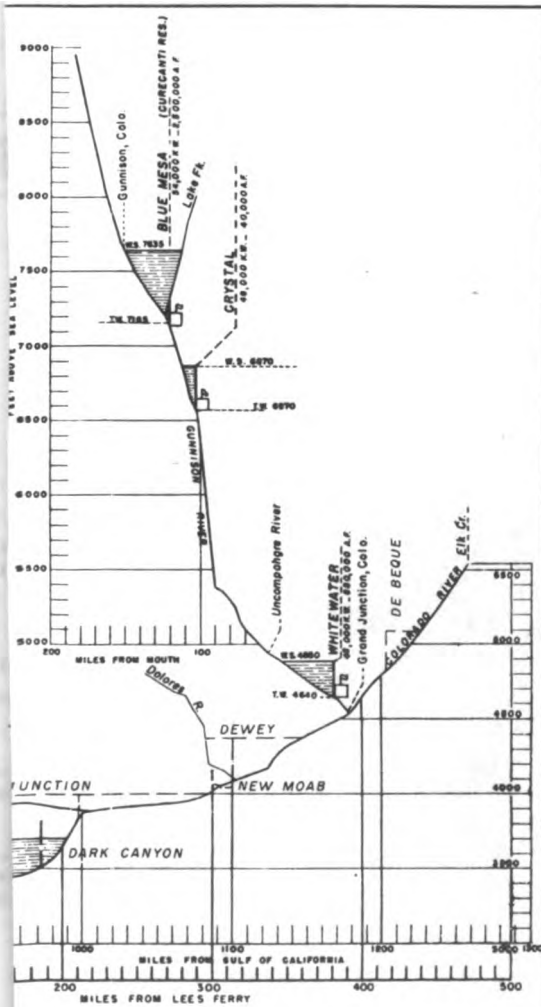
3. *Water supply studies.*—Hydrologic data have been recorded at the Bluff site, and preliminary reservoir operation studies have been made to determine the value of storage at this site in meeting the Lee Ferry flow compact commitment. Studies of sediment inflow and evaporation have been made.

4. *Geology and exploration.*—No geologic exploration work has been done at the Chinle site.

5. *Economic studies.*—Preliminary economic analyses have been made for the Chinle unit during the formulation of the Colorado River storage project and later in searching for an alternative to replace Echo Park.

6. *Plans and estimates.*—Preliminary designs and estimates have been prepared for various sizes of concrete and earth dams at the Chinle site.





NOTE
Alternative sites shown
by dashed lines

REV. DEC. 49 R.S.H.	UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION		
	COLORADO RIVER STORAGE PROJECT		
	RIVER PROFILE		
	SHOWING MAIN STEM DEVELOPMENTS		
DRAWN	N.R.S.	SUBMITTED	<i>W. H. Harnick</i>
TRACED	N.R.S.	RECOMMENDED	<i>Paul Jernigan</i>
CHECKED	W.H.	APPROVED	<i>Cliff B. Woods</i>
SALT LAKE AREA OFFICE — PER. TRAC ONE SHEET			

WATER-SUPPLY DATA FOR PAGE 10

U. S. GEOLOGICAL SURVEY

OFFICIAL ESTIMATE

Project: Colorado River storage project alternative—Date, January 1954

NEW MOAB UNIT

Uniform cost classification	Description	Total estimate
01.	RESERVOIRS AND DAMS	
01. 01	New Moab Dam and Reservoir..... Location: On Colorado River, 69.6 miles upstream from Green River confluence. Reservoir storage: 6,000,000 acre-feet. Normal water storage elevation: 4,330 feet. Maximum water storage elevation: 4,330 feet. Type of dam: Concrete, gravity. Volume of dam: 2,200,000 cubic yards. Crest elevation: 4,335 feet. Crest width: 40 feet. Crest length: 1,020 feet. Present river elevation: 3,958 feet. Height of dam above stream: 377 feet. Height of dam above foundation: 447 feet. Spillway capacity: 200,000 second-feet. Outlet capacity: 6,200 second-feet. Diversion capacity: 90,000 second-feet. Excavation, rock for dam: 147,900 cubic yards. Excavation, common for dam: 195,600 cubic yards.	\$88,000,000
11.	POWERPLANTS—HYDRO	
11. 01	New Moab powerplant..... Installed capacity: 186,000 acre-feet. Number of units: 3. Tailwater elevation: 3,958 feet. Mean operating head: 310 feet. Maximum static head: 372 feet.	26,000,000
13.	Transmission system..... Transmission lines, switchyards, substations, etc.	32,000,000
15.	General property..... Town, utilities, and general service facilities.	2,000,000
	Total, all classes.....	148,000,000

Source: U. S. Department of the Interior, Bureau of Reclamation.

DEWEY UNIT

01.	RESERVOIRS AND DAMS	
01. 01	Dewey Dam and Reservoir..... Location: On Colorado River, 94 miles upstream from Green River confluence. Reservoir storage: 6,100,000 acre-feet. Normal water storage elevation: 4,380 feet. Maximum water storage elevation: 4,380 feet. Type of dam: Concrete, gravity. Volume of dam: 1,516,000 cubic yards. Crest elevation: 4,390 feet. Crest width: 40 feet. Crest length: 2,025 feet. Present river elevation: 4,086 feet. Height of dam above stream: 304 feet. Height of dam above foundation: 368 feet. Spillway capacity: 200,000 second-feet. Outlet capacity: 6,200 second-feet. Diversion capacity: 90,000 second-feet. Excavation, rock for dam: 235,000 cubic yards. Excavation, common for dam: 447,000 cubic yards.	\$81,600,000
11.	POWERPLANTS—HYDRO	
11. 01	Dewey powerplant..... Installed capacity: 149,000 kilowatts. Number of units: 3. Tailwater elevation: 4,086 feet. Mean operating head: 273 feet. Maximum static head: 294 feet.	21,000,000
13.	Transmission system..... Transmission lines, switchyards, substations, etc.	25,800,000
15.	General property..... Towns, utilities, and general service facilities.	1,100,000
	Total, all classes.....	129,500,000

COLORADO RIVER STORAGE PROJECT

OFFICIAL ESTIMATE—Continued

Project: Colorado River storage project alternative—Date, January 1954—Con.

CHINLE UNIT (BLUFF)

Uniform cost clas- sification	Description	Total estimate
01.	RESERVOIRS AND DAMS	
01.01	Chinle Dam and Reservoir..... Location: On San Juan River, 130 miles upstream from Colorado River con- fluence. Reservoir storage: 6,920,000 acre-feet. Normal water storage elevation: 4,550 feet. Maximum water storage elevation: 4,550 feet. Type of dam: Concrete, gravity. Volume of dam: 1,590,000 cubic yards. Crest elevation: 4,555 feet. Crest width: 40 feet. Crest length: 1,250 feet. Present river elevation: 4,196 feet. Height of dam above stream: 359 feet. Height of dam above foundation: 470 feet. Spillway capacity: 230,000 second-feet. Outlet capacity: 30,000 second-feet. Diversion capacity: 60,000 second-feet. Excavation, rock for dam: 131,200 cubic yards. Excavation, common for dam: 295,390 cubic yards.	\$78,700,000
11.	POWERPLANTS—HYDRO	
11.01	Chinle powerplant..... Installed capacity: 80,000 kilowatts. Number of units: 3. Tailwater elevation: 4,196 feet. Mean operating head: 320 feet. Maximum static head: 354 feet.	11,200,000
13.	Transmission system..... Transmission lines, switchyards, substations, etc.	13,800,000
15.	General property..... Towns, utilities, and general service facilities.	1,300,000
	Total, all classes.....	105,000,000

DESOLATION UNIT

01.	RESERVOIRS AND DAMS	
01.01	Desolation Dam and Reservoir..... Location: On Green River 50.1 miles upstream from Green River, Utah. Reservoir storage: 7,800,000 acre-feet. Normal water storage elevation: 4,758 feet. Maximum water storage elevation: 4,758 feet. Type of dam: Concrete, gravity. Volume of dam: 3,100,000 cubic yards. Crest elevation: 4,763 feet. Crest width: 40 feet. Crest length: 2,025 feet. Present River elevation: 4,400 feet. Height of dam above river: 363 feet. Height of dam above foundation: 478 feet. Spillway capacity: 190,000 second-feet. Outlet capacity: 10,000 second-feet. Diversion capacity: 100,000 second-feet. Excavation, rock for dam: 315,300 cubic yards. Excavation, common for dam: 1,511,800 cubic yards.	\$147,300,000
11.	POWERPLANTS—HYDRO	
11.01	Desolation powerplant..... Installed capacity: 163,000 kilowatts. Number of units: 2. Tailwater elevation: 4,400 feet. Mean operating head: 325 feet. Maximum static head: 357 feet.	22,800,000

OFFICIAL ESTIMATE—Continued

Project: *Colorado River storage project alternative*—Date, *January 1954*—Con.
DESOLATION UNIT—Continued

Uniform cost clas- sification	Description	Total estimate
11.	POWERPLANTS—HYDRO—continued	
13.	Transmission system.....	28,200,000
15.	Transmission lines, switchyards, substations, etc. General property.....	2,700,000
	Towns, utilities, and general service facilities.	
	Total, all classes.....	201,000,000

Mr. SAYLOR. Now on your project breakdowns which appear between pages 49 and 50 of your preliminary report, would you turn to the breakdown of Glen Canyon Reservoir site? Will you give us for the record your estimates as of August 14, 1950, which, according to that sheet, shows the prices which you used in arriving at the cost of the Glen Canyon unit? Tell me what is the total cost of the Glen Canyon unit as of that time?

Mr. LARSON. The total cost of the Glen Canyon unit, with its appropriate share of the transmission system as listed, was \$363,900,000, and it was prepared from detailed estimates prepared by the chief engineer in Denver. This is a summary of his studies.

Mr. SAYLOR. And the figures which you have used in your statement today show what as the estimated cost of the Glen Canyon unit today?

Mr. LARSON. I did not get your question, sir.

Mr. SAYLOR. According to the statement which you submitted in the record today, what is the estimated cost of the Glen Canyon unit?

Mr. LARSON. \$421,270,000.

Mr. SAYLOR. And that was made up in the same manner in which your report was made in 1950, and just brought up to date?

Mr. LARSON. The costs were brought up to date, but the allocation to transmission system is different.

Mr. SAYLOR. What is the difference in the allocation of transmission?

Mr. LARSON. Well, we have been refining our studies and some of the procedures somewhat in our work so the allocations may be a little different. The transmission system is somewhat different, which affects the estimated cost. I would have to go into that to determine what that is. Out of the \$421,270,000 cost in this table submitted with my statement today, \$133,600,000 is for transmission, and you will note from the table following page 49 in the report, to which you referred, the transmission costs there are \$108 million.

Mr. SAYLOR. Now, this Glen Canyon unit would produce power at approximate what per kilowatt-hour?

Mr. LARSON. I cannot give you that for Glen, because we were working the whole system into a rate of 6 mills to keep a fairly uniform average rate that the other units can come on incrementally as time goes on, and we would still have a uniform rate less than steam.

Mr. SAYLOR. In other words, you are not able to tell this committee, the Department is not able to tell this committee, whether or not Glen Canyon can produce power for 2 mills a kilowatt-hour or for 10 mills a kilowatt-hour?

Mr. LARSON. Yes; I can tell you that. It produces 800,000 kilowatts. That is approximately half of the output of the total, for about one-third of the cost.

The information contained in the Secretary's report shows the cost of power delivered to the market at Glen Canyon as 4.7 mills.

Mr. SAYLOR. Will all of the power produced in the Glen Canyon Reservoir site be marketed in the upper Colorado Basin?

Mr. LARSON. That I do not know. But it could be. The upper basin from our forecast shows that in 20 or 25 years it can use the total output from all 9 plants. Whether any will go down to California and Arizona in the meantime is not for me to say.

Mr. RHODES. Mr. Larson, for some purposes, Arizona is deemed to be an upper basin State. You make a point there that is rather interesting to me. The way I read this bill, the power is to be marketed in the upper basin States insofar as possible. If the power is marketed in the lower basin States or in other States, the contract would be of irrevocable nature so that the power may be recaptured in the event the power is needed in the upper basin States. Is that your understanding?

Mr. LARSON. I believe that is a paragraph in the bill that you referred to. It will come back or, if that is not practicable, there would be an adjustment of rates or something.

Mr. RHODES. As I read the bill, it provides that the contracts must state that the power may be recaptured if it is needed in the upper basin which sort of sets up a priority customer of the upper basin States. Is that your understanding of it?

Mr. LARSON. I think the bill purports to be that, but I think it speaks for itself. I would not want to interpret it.

Mr. RHODES. I would like to have you interpret it, because I am wondering if you think of Arizona in this particular instance as an upper basin State or a lower basin State? In other words, is the State of Arizona, which is partially in the upper basin, a preferred customer or is it not a preference customer insofar as this power is concerned?

Mr. LARSON. I think the way the bill is written it gives preference to the upper basin States. That is what it says to me.

Mr. RHODES. In your planning, now, you mentioned that there was \$130 million in here for transmission from Glen Canyon. I presume you have a transmission grid for marketing the power from Glen Canyon. Might I ask you whether or not in planning that grid you have plans to transport any considerable amounts of power into the State of Arizona?

Mr. LARSON. I will have to swallow before I answer that, but I will do it. We have done it this way, Mr. Rhodes. We have figured on a transmission system in the upper basin to deliver kilowatt-hours to four States of the upper division, on this basis: If some power should go down, we will say, to Arizona, and if you do not deliver 800,000 kilowatts from Glen Canyon upstream, you immediately reduce the cost of your transmission, and by whatever that reduction was in our studies, it would be applied either in rates or lines to any power going down. That is the way we have assumed it.

In other words, we have assumed our studies on a complete transmission system in the four States of the upper division as a basis for arriving at a mill rate.

Mr. RHODES. Then I guess your answer to me as to whether you planned a transmission grid from Glen Canyon into the State of Arizona would be no?

Mr. LARSON. It is flexible. There is enough money in our estimates to go down there some distance. I do not know how far. It depends on how much power goes down.

Mr. RHODES. In your planning as to the marketability of this power, you stated that in 25 years all of the power can be marketed in the upper basin States. In that planning, do you have in mind marketing that power in the State of Arizona as well as the other upper basin States?

Mr. HARRISON. Will the gentleman yield there? Possibly on page 13 of the bill, where Arizona is definitely stated to be on in the upper Colorado Basin, I think that will cover that point as clearly as can be done.

Mr. RHODES. I agree with the chairman that it seems to so state, but I would like to have the Department's planning according to the testimony of this witness. I would like to have the Department's planning in the record. In other words, you are planning as to the places in which this marketing will take place in the next 25 years.

Mr. LARSON. Yes. Our planning was to base the rate on all the power being delivered to the upper basin so that if power went down below, to Arizona, the upper basin States or the lower basin, then the transmission system going from Glen upstream would be reduced by a certain amount of money, and whatever it was it could be applied below or an adjustment of rates made.

Mr. RHODES. As I interpret your testimony, then, you would say that only that part of Arizona which geographically lies within the upper basin would be considered as being within the upper basin?

Mr. LARSON. No, I did not say that. I said we have based our market studies on the other, and what goes down certainly is not for me to say—I mean the Bureau of Reclamation office.

Mr. RHODES. Of course, all I am trying to do is to get the basis on which you planned this project. I know you have made plans, and I know that you have considered certain basic fundamental data.

Mr. LARSON. Yes, we have. In my statement, we have assumed how much could go downstream without adversely affecting the transmission upstream. Well, certainly you cannot put less than half of Glen Canyon upstream to finance a transmission line. By the same token, you have to have quite a major demand downstream to finance a transmission line from Glen Canyon downstream.

Now, what will finally be done is not for region 4 or the Bureau to say, I do not think.

Mr. YORTY. Would the gentleman yield?

Mr. SAYLOR. I yielded for only one question.

Mr. YORTY. I wonder if my friend from Arizona will stipulate for power sale purposes that California also be considered as being in the upper basin?

Mr. SAYLOR. I thought at one point, Mr. Yorty, California might desire to see Arizona in all places.

Mr. RHODES. I am not sure that is where California would like Arizona to be at all.

Mr. YORTY. We do not like to be on both sides of all questions.

Mr. SAYLOR. In your original estimates in 1950 for the Glen Canyon unit, what did you figure power would sell for if the total cost of your project was \$363,900,000?

Mr. LARSON. There again we had a pool rate. It is in the report here, I believe, as 5½ mills.

Mr. SAYLOR. In other words, you were going to sell Glen Canyon power at 5½ mills; is that correct?

Mr. LARSON. We were going to sell it all at 5½ regardless of which plant; that is a pool rate.

Mr. SAYLOR. In other words, the Department's thinking in this matter is that from Glen Canyon site to Flaming Gorge Reservoir Dam site, and all of the intermittent ones, regardless of what the costs were to produce power, you were going to sell it at a figure which would pay out overall; is that correct?

Mr. LARSON. Yes, except that each opportunity would be less than developing power at alternative sources. But where they are in a team like this, one dependent upon the other, one enhances the output of another, then we have used the one rate because, as we see it, unless the plants are tied together, almost as one plant, we do not have all firm power, and if we do not have practically all firm power, we do not have a plan.

Mr. SAYLOR. You do not mean to sit there and tell this committee that you expect to build all of these nine dams at one time; do you?

Mr. LARSON. No.

Mr. SAYLOR. All right, then. What you intend to do is to tell the committee that eventually you hope to be able to sell all the power at one figure?

Mr. LARSON. What I want to tell this committee is that this plan is based on selling it at an average rate of about 6 mills right at the beginning and Echo Park and Glen Canyon are so big in comparison to the rest that when the rest are added, whatever they are, the ones we have planned it will not change the setup.

Mr. SAYLOR. Mr. Larson, since 1950 to 1954, the cost of Glen Canyon has increased over \$60 million. What effect has that had upon the figures of the Bureau as to what the costs are to produce power at Glen Canyon?

Mr. LARSON. All of our costs, since the 1950 report up to now, have been increased, I believe, about 12.8 percent, and we move the mill rate up from 5½ to an average of 6 mills.

Mr. SAYLOR. Could you tell this committee what it will cost today to produce power at Glen Canyon providing you can build Glen Canyon for \$421,270,000?

Mr. LARSON. That is the cost I gave you at 4.7 mills.

Mr. SAYLOR. That was the figure you gave us at which you could produce power in 1949.

Mr. LARSON. No, that is the cost we are using in the statement here today.

Mr. SAYLOR. Then if 4.7 mills is what it will cost to produce that power today, what would it have cost in 1950, when you submitted your original report?

Mr. LARSON. 4.2. I am just recalling that from memory, but it is less than 4.7.

Mr. SAYLOR. Now, if Glen Canyon were authorized by this committee alone, and no other participating projects were authorized or

no other river storage projects were authorized, what would the Department's policy be with regard to selling that power? Would you still want to sell it at 6 mills or would you sell it at 4.7 mills?

Mr. LARSON. I cannot speak for the Department. My own opinion is that if you sold it for 4.7 mills your upper basin planning is gone. You have no plan. If you are going to build the other regulatory reservoirs, that is.

Mr. SAYLOR. How long would it take to pay out the Glen Canyon project if you would charge 4.7 mills?

Mr. LARSON. I think that is 50 years.

Mr. SAYLOR. 50 years?

Mr. LARSON. Based on 50 years.

Mr. SAYLOR. That 50 years is from the time construction is started, or is that an overall 50 years?

Mr. LARSON. That is 50 years, I believe, after the last unit is in operation. But all of our costs include interest during construction on these powerplants.

Mr. SAYLOR. If there were no other projects authorized, and only the Glen Canyon Reservoir site was authorized to be built, that is, at the end of 50 years where would the revenues from the power produced at Glen Canyon Reservoir site go?

Mr. LARSON. That all depends on the legislation under which it is authorized. I would not know.

Mr. SAYLOR. Suppose there is nothing said in the legislation. At the end of 50 years when the project is paid for, what happens to the money?

Mr. LARSON. I assume it would go into the Treasury of the United States.

Mr. SAYLOR. It goes into the Treasury of the United States, and the Treasury of the United States is represented not just by the upper basin States, but it is representative of all the 48 States and Territories and possessions; is that right?

Mr. LARSON. That is correct.

Mr. SAYLOR. So that hereafter, when any moneys are taken, after that project is paid for, it becomes necessary to look at things very factually and determine whether or not the money should be turned in to the Treasury or used for some other purpose; is that right?

Mr. LARSON. It depends on the benefits you expect to get if you use it for some other purpose, or which we think is greater than 1 to 1.

Mr. SAYLOR. Now, does the Department or the Bureau have any formula wherein they can tell this committee how much they think any one of the participating projects in the upper Colorado River Basin should be subsidized by power?

Mr. LARSON. All we can do is tell you, using the procedures that we do use in the Bureau, what the outcome is, and the benefit-cost ratio, how much is repayable by water users and how much by municipal users, if there are any, how much by power, if there are local powerplants on the participating projects, which there are in the case of 2 or 3, and what the balance is that the irrigators cannot pay that we have set aside to be repaid from power revenues. We can tell you what that is for each one of those 12 participating projects and for some of the others.

Mr. SAYLOR. In other words, we have not gotten into participating projects, but the same thing that you have said with regard to storage

projects is also true for participating projects? The Bureau has made plans for more than 12 participating projects?

Mr. LARSON. My statement said that the plan was based on whatever participating projects were authorized now. As the needs arise and the reports are available, the States would come in for more projects as time goes on, and we have estimated that would go on for at least the 75 years before the upper basin States eventually use the water to which they are entitled.

Mr. SAYLOR. Let me ask you, in making these plans for storage and participation in the upper basin, how much water did you figure was available in the upper basin?

Mr. LARSON. Our studies are based on $7\frac{1}{2}$ million acre-feet.

Mr. SAYLOR. You, Mr. Larson, I am sure, are familiar with the report published by the Colorado Water Conservation Board in October of 1953?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. And that report was prepared by Mr. Hill of Leeds, Hill & Juett, is that correct?

Mr. LARSON. That is right.

Mr. SAYLOR. This report shows that there is not $7\frac{1}{2}$ million acre-feet available for the upper Colorado River.

Mr. LARSON. It does not show that to us, or to me. Shall I give you the reason?

Mr. SAYLOR. Well, let me first ask you if that is not what the report says, that you are approximately 1,300,000 acre-feet short right now in the upper Colorado River Basin?

Mr. LARSON. The report was based on——

Mr. SAYLOR. Answer the question, sir. Is not that what that report says?

Mr. HARRISON. I think you can answer the question, but you always have the right to explain your answer.

Mr. LARSON. May I have the question again?

Mr. SAYLOR. Does not this report show that the upper Colorado River Basin is short 1,300,000 acre-feet per year?

Mr. LARSON. Yes, based on carrying water only over 20 years, an erroneous assumption. The mass curve was based on historical flow, instead of virgin flow, which does not present a true picture.

Mr. SAYLOR. In other words, it is your opinion that the Colorado Water Conservation Board did not get a very good report?

Mr. LARSON. No, that is a good report. Mr. Hill has assumed that the reservoir should fill every 20 years. We have assumed we can carry over water over a longer period than 20 years. The past records indicate that to us. The next few years will tell.

Mr. SAYLOR. How long can you carry water? You said you could carry it longer than 20 years. I want to know how long you can carry it.

Mr. LARSON. In an efficient reservoir, with not too high evaporation, you can carry water fully 30 years, and these reservoirs, Glen Canyon and Echo, will do it.

Mr. SAYLOR. Will you still have enough to produce all of this power that you say is available?

Mr. LARSON. Yes, I think our estimates of the power production are very conservative. I would not be surprised if the power is not greater than we figured.

Mr. SAYLOR. All right. Will you tell this committee the next reservoir up the river? That is the Whitewater Reservoir. Can you tell us what the cost of that reservoir was in 1949 or 1950?

Mr. LARSON. \$40 million.

Mr. SAYLOR. Are you in a position to tell the committee what it would cost to build that reservoir today?

Mr. LARSON. Our cost brought up to date is \$44,291,000.

Mr. SAYLOR. And the next reservoir is Crystal Reservoir site. Will you tell us the cost of that reservoir in 1950?

Mr. LARSON. \$37,900,000.

Mr. SAYLOR. And the cost of it as of today?

Mr. LARSON. \$40,952,000.

Mr. SAYLOR. And the next reservoir is Curecanti. Can you tell us the cost in 1950?

Mr. LARSON. \$80,400,000.

Mr. SAYLOR. And the cost in 1954?

Mr. LARSON. The 2½ million acre-foot reservoir is \$85,972,000.

Mr. SAYLOR. Now, if you build a high dam at Curecanti Reservoir site, what would it cost in 1950?

Mr. LARSON. 1950? I just gave you that. \$80,400,000.

Mr. SAYLOR. And the figure that you gave us—

Mr. LARSON. We did not have a small Curecanti in 1950, only the large one.

Mr. SAYLOR. What would it cost to build that same dam in 1954?

Mr. LARSON. 1953? The small one or the large one? \$85,972,000.

Mr. SAYLOR. The next reservoir site is Gray Canyon. Tell us what it would cost to build that in 1950.

Mr. LARSON. 1950 was \$178,400,000.

Mr. SAYLOR. And the cost in 1954?

Mr. LARSON. \$190,854,000.

Mr. SAYLOR. And the next reservoir is Split Mountain.

What was the cost of that project in 1950?

Mr. LARSON. 1950, \$76,400,000.

Mr. SAYLOR. And the cost in 1954.

Mr. LARSON. \$84,417,000.

Mr. SAYLOR. Now, the cost of Echo Park Reservoir site in 1950?

Mr. LARSON. \$165,400,000.

Mr. SAYLOR. And the cost in 1954?

Mr. LARSON. \$176,426,000.

Mr. SAYLOR. The next one is Flaming Gorge. What was the cost of that in 1950?

Mr. LARSON. \$82,700,000.

Mr. SAYLOR. And the cost in 1954 of that same project?

Mr. LARSON. \$82,942,000.

Mr. SAYLOR. I think the last one is the Cross Mountain Reservoir. What was the cost of that in 1950?

Mr. LARSON. \$51 million in 1950.

Mr. SAYLOR. And in 1954?

Mr. LARSON. \$50,225,000.

Mr. SAYLOR. Could you give the committee the total cost of those 9 reservoirs in 1950?

Mr. LARSON. \$1,031,500,000 in 1950, for the 9.

Mr. SAYLOR. Can you give us the cost of those same 9 reservoirs in 1954, assuming that Curecanti is built as a high dam?

Mr. LARSON. I will have to correct the last figure. I was subtracting a little fast here. In 1950 it is \$1,076,100,000. In 1953, it is \$1,177,349,000.

Mr. SAYLOR. Assuming the change of plans from a high dam at Curecanti to a low dam at Curecanti, would you tell us the costs in 1954?

Mr. LARSON. Take \$37 million off the 1953 figure. Of course, we do not have the 1950 figure.

One billion, one hundred forty million dollars in 1953.

Mr. SAYLOR. Of that \$1,140 million, how much has the Bureau of Reclamation allocated to nonreimbursables?

Mr. LARSON. Not a dollar; nothing yet. Some day they might on some of them, but they have not yet. Our plan has not evaluated any nonreimbursables to this date.

Mr. SAYLOR. In other words, I gather that the committee is to be forewarned that there is in the minds of at least certain people that some part of it should be classified as nonreimbursible?

Mr. LARSON. No, but I think we should recognize that there are fish and wildlife, recreation, benefits of a national nature, silt retention, and things like that, that may be evaluated in the future. What will be done then for nonreimbursables, I would not know. But we have not tried to evaluate them or ask for nonreimbursables in this plan to date.

Mr. SAYLOR. But is it not a matter of fact that committees of Congress have already recognized that certain of the items which you have just mentioned are already nonreimbursable, and should be so designated? Do you mean to tell me that the Bureau has absolutely nothing in its plans so far considering the fact that we have flood control, recreation, and wildlife, and they have not taken any money into consideration in writing it off?

Mr. LARSON. We have some nonreimbursables in the participating projects, but there is very little flood control on the main stem of the Colorado River. There are some, possibly, but it is not large compared with the total costs that we are talking about of a billion dollars or more. So we did not attempt to evaluate them for the dams which authorization is being asked for in the bills at this time.

Mr. SAYLOR. Now, of the nine projects that have been specified here as reservoir sites, what is the longest period after construction during which the sale of power at 6 mills will pay out that project?

Do this for me, Mr. Larson. Can you go right up the river as I did in asking you about the costs of the dams, and give us the payout period for each one of them?

Mr. LARSON. I can give you that now. The payout period for all the power allocations for the Echo Park and Glen Canyon, those 2 units would pay out in 44 years at an average rate of 6 mills, and if the others are added to the lines, they would pay out in 50 years after the last unit is on the line. The scheme is based on all of them paying out in 50 years, the first 2 in 44. It will be 50 years after the units come on the line.

Mr. SAYLOR. So that if Whitewater Reservoir was built in 1970, the first unit went into effect that year, 50 years later that project would be paid for?

Mr. LARSON. Yes.

Mr. SAYLOR. And the same for Crystal—

Mr. LARSON. Of course, if it was not started until then, there would be so much revenue in the pool I do not know how you would do it then.

Mr. SAYLOR. What was that?

Mr. LARSON. I said if it was not started for 70 years——

Mr. SAYLOR. No, I said that we were going to build that one and have it finished by 1970.

Mr. LARSON. 1970?

Mr. SAYLOR. Yes.

Mr. LARSON. I beg your pardon. I thought you said 70 years.

Mr. SAYLOR. No, my statement is that in 1970 we would complete Whitewater Reservoir and 50 years thereafter that project would be paid for.

Mr. LARSON. That is right.

Mr. SAYLOR. And the same is true for Crystal, Curecanti and the others?

Mr. LARSON. If nothing happens in the meantime, or prices change, it might change conditions some. But at our present day prices, it shows that with our estimated cost it would pay out in 50 years after the last unit is on the line, in blocks as they come on.

Mr. DAWSON. You are referring to Whitewater. He mentioned Curecanti along with it. Do you qualify that with the rate of either a high or low dam?

Mr. LARSON. Any of them that are found that can produce power at less than the alternative cost of steam. That is the way our plan is set up.

Mr. SAYLOR. Would the same thing be true for any other project which you built in Desolation Canyon, for example, one of the two hundred-odd sites referred to by Mr. Aspinall?

Mr. LARSON. Probably not, because if you assumed that if you build Desolation, you would not build Echo Park, then I do not think that would be feasible at all. It is just like Gray Canyon which would not be feasible without Echo Park.

Mr. SAYLOR. In other words, according to you, Gray Canyon would not be feasible if Echo Park were not built?

Mr. LARSON. I doubt that it will be.

Mr. SAYLOR. Will you tell us why?

Mr. LARSON. Because it needs major regulation upstream to take peaking loads that would be possible at Echo Park Reservoir. What Echo Park does is to make Split Mountain and Gray Canyon feasible.

Mr. SAYLOR. Well, suppose you built one at Flaming Gorge and one at Browns Park. Then what would be the effect?

Mr. LARSON. You would still have the Yampa River unregulated.

Mr. SAYLOR. Are there any other dam sites on the Yampa River?

Mr. LARSON. There are smaller ones, but nothing like Cross Mountain, for example.

Mr. SAYLOR. What are the projects that are available on the Yampa River?

Mr. LARSON. What is it?

Mr. SAYLOR. What are the available sites on the Yampa River?

Mr. LARSON. There was a Juniper site, but that is submerged by Cross Mountain. There are no other large sites.

Mr. SAYLOR. After the initial phase of establishing these nine power-producing projects on the river, how many participating projects does the Bureau have in mind?

Mr. LARSON. The initial phase that would come along with the Echo Park-Glen Canyon unit, there are 12, and then these additional ones asked for by the States. To us, additional——

Mr. SAYLOR. Those additional ones are Eden, Gooseberry, La Plata, Navaho, and San Juan-Chama.

Mr. LARSON. Yes. You can exclude Eden because it is already authorized and nearly built. The Shiprock division of the Navaho project, that is an Indian project, and not a Bureau of Reclamation project. That is for the Navaho and Hopi Indians.

Mr. SAYLOR. But it must be considered by the Bureau of Reclamation if they are going to develop the river, whether they build it or whether they do not?

Mr. LARSON. It comes into the scheme as a participating project from the Indian Bureau just like the other ones were investigated by the Bureau of Reclamation, two Interior agencies, with separate things to do. But the plan as I mentioned in my statement is one that would go along over a long period of years. Participating projects would come in as they are needed, and desired, and approved by Congress.

Mr. SAYLOR. I think you have shown in your original statement here that in the 12 participating projects which you have recommended, there would be 236,360 acres of new land brought into production, is that right?

Mr. LARSON. That is correct, for the first 12.

Mr. SAYLOR. And in additional participating projects, there would be 57,660 acres of new land?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Making a total of new lands in these 17 projects of 294,020 acres; is that right?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Now, could you give a supplemental water supply for the sum of these projects?

Mr. LARSON. Yes, sir. The acreage is given for the supplemental supply lands.

Mr. SAYLOR. And the total amount of supplemental or acreage to receive a supplemental supply of water in the 12 participating projects is what?

Mr. LARSON. 233,930 acres.

Mr. SAYLOR. And what acreage is there that would receive a supplemental supply of water in the five additional participating projects asked for in the bill?

Mr. LARSON. 235,740 acres.

Mr. SAYLOR. Making a total acreage in the 12 participating projects and the projects authorized in the bill of what acreage to receive a supplemental supply of water?

Mr. LARSON. 469,670 acres.

Mr. SAYLOR. Can you tell the committee the total new lands receiving water and supplemental water?

Mr. LARSON. Well, under the 12 participating projects, and any additional participating projects, there are 294,020 acres of new land, and 469,670 acres of supplemental land. Is that what you asked for?

Mr. SAYLOR. Yes.

Mr. LARSON. Or a total in both categories of 763,690 acres.

Mr. SAYLOR. Now, in addition to these projects, Mr. Larson, can you tell the committee how many other projects are in the upper Colorado River Basin that might apply for and use water? If you do not have the answer, can you get it?

Mr. LARSON. As I explained in my statement, our 1946 report inventory of projects, included some 100 irrigation and power projects in the 4 States of the upper division, that is, the upper Colorado River Basin. That included projects outside of the natural basin entitled to use Colorado water. In other words, they were within the States of Utah, New Mexico, Colorado, and Wyoming. A lot of those, of course, will probably go out of the picture on detailed investigation. But it does seem reasonable from the studies made that there are more potentialities in the future than there is water to which the upper basin States are entitled. That may be 40 or 50 additional projects, depending upon the size.

Mr. HARRISON. Do you want any additional information on that?

Mr. SAYLOR. No, sir.

Mr. HARRISON. We have reached the time of adjournment. We will start again at 9:30 in the morning.

We will ask Mr. Larson to be present, and we will take up where we left off this afternoon.

(Thereupon, at 4:30 p. m., a recess was taken until Tuesday, January 19, 1954, at 9:30 a. m.)

COLORADO RIVER STORAGE PROJECT

TUESDAY, JANUARY 19, 1954

HOUSE OF REPRESENTATIVES, SUBCOMMITTEE
ON IRRIGATION AND RECLAMATION OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met pursuant to recess, at 9:35 a. m., in the committee room, New House Office Building, William H. Harrison (chairman) presiding.

Mr. HARRISON. The committee will come to order.

We will resume where we left off yesterday with Mr. Larson on the stand and Mr. Saylor asking the questions.

STATEMENT OF E. O. LARSON, REGIONAL DIRECTOR, BUREAU OF RECLAMATION, ACCOMPANIED BY C. B. JACOBSON, ENGINEER IN CHARGE OF COLORADO RIVER STORAGE PROJECT STUDIES; W. B. HUFFMAN, ENGINEER; AND PAUL SANT, ECONOMIST, FOURTH REGIONAL OFFICE, SALT LAKE CITY, UTAH—Resumed

Mr. SAYLOR. Mr. Larson, I believe at the close of the session yesterday we had completed the questioning with regard to storage projects and were now looking at your summary table of the 12 participating projects together with the additional participating projects in the bill.

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Rather than go into detail at this time and take up the time of the committee, could you tell me whether or not these 12 participating projects in the initial phase are the same 12 projects which you recommended in 1950?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Mr. Larson, they are the participating projects which you filed in your preliminary report in January of 1951?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Now for the sake of the record I wish, Mr. Larson, that you would at this point prepare a statement showing what these projects cost according to your preliminary report which you filed with the Bureau of Reclamation in 1951 and show what those projects would cost in 1954. Could you arrange and have that inserted at this point in the record?

Mr. LARSON. Yes. It will take me a little time to get a summary table here.

Mr. SAYLOR. I do not ask for it right now.

Mr. LARSON. Yes, sir.

Mr. SAYLOR. You can prepare that and have it put in the record at this point. In other words, it would take considerable time for us to go into detail and pick up each one of these in 1951 and compare them with the 1954 figure.

Mr. LARSON. That is correct.

Mr. SAYLOR. But I do want them in the record at this point, and if you will prepare that we will assume, therefore, that you have testified at this point of the comparative figures of these 12 participating projects.

Mr. LARSON. Yes. I must say that there are 10 listed in the 1952 report and there are 12 listed in the supplemental report of the Secretary.

Mr. SAYLOR. Which two projects have you listed now that you did not have listed in your original?

Mr. LARSON. The tables are arranged a little differently. They are the Navaho (Indian Shiprock Division) and Paonia projects.

Mr. SAYLOR. In other words, one of the projects which had been listed as a storage reservoir which you testified to yesterday has been changed from a storage project to a participating project. That is the Navaho?

Mr. LARSON. Yes, sir. And I have the impression that you were only talking about the participating projects. On the storage units, there were 5 in the recommended group in the 1950 report where there are now 2 in the supplemental report of the Secretary.

(The information referred to follows:)

Comparison of construction costs of participating projects

Project	State	Estimated cost, December 1949	Estimated cost, January 1953
Central Utah	Utah	\$198,840,000	\$231,044,000
Emery County	do	7,840,000	9,865,500
Florida	Colorado	6,211,500	6,941,500
Hammond	New Mexico	1,892,300	2,302,000
La Barge	Wyoming	1,478,000	1,673,300
Lyman	do	9,847,000	10,564,000
Navaho project, Shiprock division	New Mexico	(1)	178,825,000
Paonia	Colorado	6,191,000	6,944,000
Pine River extension	do	4,088,000	5,027,000
Seedskae	Wyoming	20,379,000	23,272,000
Silt	Colorado	3,190,000	3,356,000
Smith Fork	do	3,148,000	3,367,000
Eden	Wyoming	5,986,000	7,287,000
Gooseberry	Utah	(1)	5,760,000
La Plata	Colorado-New Mexico	(1)	9,958,000
Navaho-south San Juan division	New Mexico	(1)	53,825,000
San Juan-Chama	do	(2)	228,141,000

¹ No comparable estimate.

² No estimate.

Mr. ASPINALL. Mr. Chairman, I did not understand Mr. Larson. Did you say the Paonia project?

Mr. LARSON. The Paonia project is included in the 1950 report but in a different way. It is not in the list on page 21 of the regional director's report, but it is in the list of 12 in this table submitted with my statement yesterday.

The reason for that, Mr. Aspinall, is that the Paonia project was authorized before 1950. Now we are asking for the reauthorization in a different way. That is why it is in my table of yesterday.

Mr. ASPINALL. Also in the bill?

Mr. LARSON. And also in the bill.

Mr. SAYLOR. Now does the Bureau of Reclamation or your region 4 office have studies which they made of the Eden, Gooseberry, La Plata, Navaho, and San Juan-Chama projects in 1950?

Mr. LARSON. Not the Navaho; that is the Shiprock division of the Indian Bureau. There was not an authorizing report, at least at that time, and I do not believe there was an authorizing report for the San Juan-Chama, but that is in region 5.

Mr. SAYLOR. If the comparable figures are available for these additional participating projects which are in the bill, will you give us the picture and include in your statement—

Mr. LARSON. Whatever is available.

Mr. SAYLOR. The comparable figures of 1951 and 1954?

Mr. LARSON. Whatever we have we will submit. We have revised the Gooseberry report since 1950 quite materially. We have the old plan and the old costs, and now we have the new plan and the new costs.

Mr. SAYLOR. And you will explain whatever difference there is in your report?

Mr. LARSON. Yes. That difference by the way is now explained in the supplements to my statement yesterday on the Gooseberry. That explains that.

Mr. SAYLOR. Have you prepared a supplement for each one of these participating projects?

Mr. LARSON. Yes. For the information of this committee, yesterday I submitted a brief supplementary report bringing the costs up to date from the 1950 report for each of these participating projects and advising the committee what the present status is, the cost benefits and so on.

Mr. SAYLOR. Mr. Larson, are there any other participating projects in any later phases which the Bureau contemplates?

Mr. LARSON. You mean do we contemplate additional participating projects to be brought in in addition to this list?

Mr. SAYLOR. That is right.

Mr. LARSON. Yes, we are carrying on investigations every year. That is each year. And we now have other reports in the process of being written up or formulated as we conclude them in the Colorado Basin or outside of the basin using Colorado River water. We do not have any of those at the moment.

Mr. SAYLOR. Will you at this point in the record submit a list of the additional projects which the Bureau is contemplating in phase 2 of this upper Colorado River development?

(The information referred to follows:)

CURRENT PROJECT INVESTIGATIONS

Potential uses of upper Colorado River water in addition to the participating projects proposed in bills H. R. 4443, H. R. 4449, and H. R. 4463, on which reports are to be prepared. If these projects are found to be feasible, they might be made participating projects if so authorized by the Congress.

Project:	Location
Animas-La Plata.....	New Mexico-Colorado.
Central Utah ultimate plan.....	Utah.
Cisco-Thompson (De Beque).....	Colorado-Utah
Cliffs-Divide.....	Colorado
Dolores.....	Colorado-Utah
Dulce.....	Colorado
Emerald Lake.....	Do
Escalante.....	Utah
Fontenelle.....	Wyoming
Fremont.....	Utah
Fruitgrowers Dam project extension.....	Colorado
Gunnison River.....	Do
Henry's Fork.....	Wyoming
Nucla.....	Colorado
O'Neal Park.....	Do
Opal.....	Wyoming
Pack Creek.....	Utah
Paradox.....	Colorado
San Miguel.....	Do
Saucer Valley.....	Do
Savory-Pot Hook.....	Wyoming-Colorado
Sterling.....	Utah
Sublette.....	Wyoming
Turkey Creek Lakes.....	Colorado
Yampa River.....	Colorado-Wyoming

Mr. LARSON. When I say "contemplating," I mean submitting a report to show whether they are feasible or whether they are not. I can give you a list of the ones on which we have completed reports since this submission and the ones we are working on, if that is what you want.

Mr. SAYLOR. That is what I want. I want to find out—I think the members of the committee do—the projects which you have examined and the ones that you have determined to be feasible and the ones that you have determined to be infeasible.

Mr. LARSON. There are not very many as yet for which reports are available. The 1946 report gives you an inventory of the potentialities. Some of them we are following up with detailed investigations.

Mr. SAYLOR. Now, Mr. Larson, when you prepared these reports on these participating projects in 1950 and which were submitted in 1951, will you tell the committee what formula you used to determine how these projects should be paid for?

Mr. LARSON. In the investigations leading up to the 1950 report we used the procedures laid down by the Bureau of Reclamation for determining the engineering feasibility and justification of those projects. That is quite a thing to go into. At that time our comprehensive plan was based on the use of interest component and the up-to-date plan is not.

Mr. SAYLOR. Now that is what I am getting to. In other words when you submitted these plans in 1950, you used the interest component to determine whether or not these participating projects were feasible; is that right?

Mr. LARSON. No. We used the interest component for repayment of those costs over and above the ability of the irrigators to pay on those projects. We considered only those projects that had economic justification.

Mr. SAYLOR. In other words, one of the principal features of the repayment plan in all of the participating projects in 1950 was the interest component?

Mr. LARSON. The interest component only came under that plan from the units of the Colorado storage project and from the 2 or 3 participating projects that had power involved, like central Utah.

Mr. SAYLOR. What are the participating projects which provide power?

Mr. LARSON. Under the table submitted yesterday with my statement, out of the 12 participating projects the central Utah is the only one in the Department's report which has powerplants and in the additional participating projects the San Juan-Chama. And in both cases the revenues from those plants are put in this table with the revenues from the Echo Park and Glen Canyon plants.

Mr. SAYLOR. Now in bringing your figures up to date, for the benefit of the committee, in this report did you use the interest component?

Mr. LARSON. No. Our plan that we are reporting on now does not use the interest component.

Mr. SAYLOR. And what did you use to replace the interest component?

Mr. LARSON. The plan we have now, the Echo Park and Glen Canyon units would provide the power revenues along with the power features of the central Utah. We made an allocation against irrigation where applicable, and then we used the net power revenues to do two things: pay off the power allocation first in Echo Park and Glen Canyon—

Mr. SAYLOR. At that point, power revenues are to be used first to pay off—

Mr. LARSON. No. I got them backward. It is first to pay off the interest.

Mr. SAYLOR. Pay off the interest?

Mr. LARSON. During construction.

Mr. SAYLOR. On what?

Mr. LARSON. The interest on the power allocation, cost of the power facilities.

Mr. SAYLOR. In other words, the interest or the figure which you use now is to use power to pay the interest on the storage projects which provide power; is that right?

Mr. LARSON. If you would permit me to use a chart, it is very plain on the chart, just exactly how this is proposed in the plan.

Mr. SAYLOR. I am delighted to simplify this in any way at all.

Mr. LARSON. Can you see that, Mr. Saylor?

Mr. SAYLOR. Yes, sir.

Mr. LARSON. The left vertical scale is millions of dollars.

Mr. SAYLOR. How high does the million scale go?

Mr. LARSON. 25 million.

Mr. SAYLOR. 25 million?

Mr. LARSON. Yes, sir. And the bottom horizontal scale is years.

Mr. SAYLOR. How long is the year scale?

Mr. LARSON. We have extended that over here in colors up to 90 years but the payout does not go beyond the year 70 for initial projects.

The zero point on the horizontal scale is the first year that the first unit of power comes on the line. So that the revenues come in very rapidly. Up here on the very top line are net power revenues. Now before we plot net power revenues, we first take off the proposed upper Colorado development fund of a million dollars a year for expenditures for preconstruction and study funds.

Mr. SAYLOR. To be transferred from the Hoover Dam Act?

Mr. LARSON. No, sir; that is to be taken initially from the revenues from Glen Canyon and Echo Park.

Then we also take out of the revenue \$6,400,000 per year for operation, maintenance, and replacement to keep these plants in operating condition right straight through, and that includes a fund of \$1 million for emergencies.

Now above the zero horizontal line, during the 44-year payout period for the power allocation, the first money that comes out of net power revenues during the 44-year period is interest, starting heavy at the beginning and going down to nearly zero at the end of 44 years. Three hundred and fifty-nine million dollars of interest goes to the United States Treasury based on $2\frac{1}{2}$ percent on the unpaid power investment.

Above the area showing the interest are the net power revenues over and above interest, operation, maintenance, replacement, amounting to \$586 million and that will repay the power investment including interest on the money during construction.

Mr. SAYLOR. Wait a minute. You do not want us to believe that you are including that \$359 million twice?

Mr. LARSON. The \$359 million interest to the United States Treasury does not include interest during construction. The top figure does.

We have used in our plan an average rate of 6 mills—and I must say this does not mean that the power may not be sold for some other rate—but the average rate of 6 mills is the basis for this chart. After the 44 years, the respective irrigation allocations against the Glen Canyon and Echo Park storage units, plus that portion of the cost of the participating projects not paid by the irrigator, would each be paid off in 50 years in amounts shown in the table on the chart. Then if additional participating projects—say South San Juan division and San Juan-Chama—were authorized, the blue area for irrigation assistance would be extended until they are paid off. New projects like the Shiprock division and the Seedskadee, for example, are new land projects and some of the larger ones will require about 15 years to build. There is a development period on new lands. The 12 participating projects could be so scheduled to be paid out in 50 years from when the first repayment starts. And the others could be, or may be given a little longer time or, as included in Mr. Tudor's statement and my own statement yesterday, require call for an increase in the price of power.

Mr. HOSMER. Will the gentleman yield for a question?

Mr. SAYLOR. Yes.

Mr. HOSMER. That 50-year period you are speaking of starts after the 44-year; is that correct?

Mr. LARSON. No, the 50-year period on the 12 participating projects starts from the beginning of repayment, when the first repayment installment is due. And up through the 50th year the irrigators would pay all along up to their ability to pay, some income would come from the conservancy districts, or some other kind of indirect beneficiaries, and if any municipal water were sold, the actual cost would be collected, plus interest, the interest, of course, going to the Treasury, and then the balance would be paid off from the net revenues shown in blue on this chart.

Mr. HOSMER. You are using a period of 6 years after the 44 years to complete the entire payment; is that it?

Mr. LARSON. All 12 participating projects would be paid off by the end of the 50th year, counting from when the first repayment installment is due. It may take a little longer time for some of the later participating projects.

Mr. DAWSON. Pardon me. Do I understand you to say that the first installment would be due when the project is completed and put into operation?

Mr. LARSON. Yes. On new lands we have up to a 10-year development period, and on supplemental lands that may be 2 or 3 years—some shorter period.

Mr. SAYLOR. Are you through, Mr. Hosmer?

Mr. HOSMER. Does that include interest on this money that is used for the participating projects in irrigation or just principal?

Mr. LARSON. Irrigation under the reclamation law does not pay interest. It is interest-free.

Mr. HOSMER. I understand that, but insofar as the accounting of the United States Treasury is concerned, the internal accounting?

Mr. LARSON. I do not—

Mr. HOSMER. The Treasury gets the money, and they have to pay $2\frac{1}{2}$ and 3 percent for it.

Mr. LARSON. You mean to finance irrigation?

Mr. HOSMER. Yes. They are not getting back their interest.

Mr. LARSON. That is taken care of in figuring the feasibility of projects in the ratio of the benefits to cost—whether it is worth it to the Nation.

Mr. HOSMER. No monetary compensation?

Mr. LARSON. Whether it is worth it to the Nation or not.

Mr. ENGLE. Will the gentleman yield?

Mr. SAYLOR. Yes.

Mr. ENGLE. Where is the irrigation paid out on that chart? I am speaking of the contribution of the area to the payment of the capital cost of the irrigation features of the project. Is that shown on that chart?

Mr. LARSON. I have simply listed the 12. No, it is not shown on the chart. I simply show in blue the net power revenues available for assistance after 44 years to apply on the balance of the irrigation projects as they become due.

Mr. ENGLE. Is power carrying a hundred percent of the capital costs of this irrigation?

Mr. LARSON. The irrigation allocation, I believe, was what you have in mind, and it is shown on the third to the last column on the table submitted with my statement.

Mr. ENGLE. Yes. Now, how much of that is going to be paid for by irrigators and how much is going to be carried by power?

What I wanted to find out is what areas in this project are actually paying to retire the capital investment without interest.

Mr. LARSON. The irrigation allocation, as shown in the third to last column, and the second to last column, shows what the irrigators would pay.

Mr. WESTLAND. Would the gentleman yield for a question there?

Mr. ENGLE. Let me finish this and I will be through.

Percentage-wise, what does that represent? Percentage-wise, what are the irrigators discharging of the capital investment?

Mr. LARSON. It varies from about 11.9 percent up to 41.7 percent of those 12 projects.

Mr. ENGLE. What is the average for the whole business?

Mr. LARSON. 12.8 percent. But that does not include, for instance, in central Utah the power revenues within that project.

Mr. ENGLE. What I am trying to find out is what the area is paying here. Now if the capitalization in this project for irrigation amounts to something like \$400 million—does it not?—\$378 million is the capitalization of irrigation?

Mr. LARSON. That is the irrigation allocation, \$378,574,400.

Mr. ENGLE. I see down here \$691 million as the amount allocated.

Mr. LARSON. That is with the additional projects.

Mr. ENGLE. That shows for additional, whatever it is, which are not in the program yet?

Mr. LARSON. That is correct, and that includes the irrigation allocation against Echo Park and Glen Canyon.

Mr. ENGLE. 12 percent of the capitalization paid by the area without interest over a period of 50 years. I am trying to figure out what that would be in terms of interest on capitalization if they paid it. I am wondering whether or not they are going to be able to pay maintenance and operation costs.

Mr. SAYLOR. Have you not seen the new gimmick that has appeared? We now have \$6 million out of power revenue that is going to be taken to pay operation and maintenance charges. It is very evident this thing cannot carry operation and maintenance charges alone, and they are going to charge \$6 million to power.

Mr. LARSON. That is not correct.

Mr. SAYLOR. And it goes the entire length of the project.

Mr. LARSON. That is not correct.

Mr. SAYLOR. Sir, you just testified here that you had \$6 million shown for a 90-year period chargeable to the operation and maintenance.

Mr. LARSON. That is the Colorado River storage project for operation and maintenance of Echo Park and Glen Canyon and not the individual projects. The operation and maintenance of all individual projects is paid by the water users and is not connected with this. That is out first before we figure repayment ability.

Mr. ENGLE. Is it correct to say, then, that 88 percent of the capitalization of the irrigation costs will be paid by power, and that the irrigators will actually pay 12 percent over a half a century on the capitalization allocated to irrigation without interest? Are those two statements correct?

Mr. LARSON. Well, not quite. It is correct that irrigation upon an average would pay 12.8 percent for the 12 projects and 16.6 percent for all of them in the list. But municipal water payments, where there are any, are not included there. In other words, power does not pay all, municipal water pays part of the cost, too.

Mr. SAYLOR. Now, Mr. Larson, in the figure of \$691 million which has been referred to, that does not include the \$100 million, does it, which you have allocated to municipal water?

Mr. LARSON. The municipal water as shown in the fourth to the last column.

Mr. SAYLOR. That is right. It is listed as \$108,874,000.

Mr. LARSON. That is correct.

Mr. SAYLOR. And it is not included in the third to the last column listed as "Irrigation," which says \$691,245,000?

Mr. LARSON. That is correct—it is not included in either the third or the second to the last columns.

Mr. SAYLOR. So that the total of those two figures of irrigation and municipal water is approximately \$792 million?

Mr. LARSON. That is correct.

Mr. ENGLE. I have just done a little fast arithmetic here. Am I correct in my conclusion that the irrigators in this project will pay one-fifth of 1 percent of the interest on the capitalization charged to irrigation in this project for 50 years, and thereafter will have their obligation terminated?

Mr. DAWSON. Will the gentleman yield to me?

Mr. SAYLOR. Wait a minute. I have the time here and I yielded it to Mr. Engle.

Mr. ENGLE. I am trying to get the facts. I am not arguing about whether we should do it or not. If it is a feasible project, probably the people can do what they please. I want to find out what they are doing.

Is it true if they pay approximately \$50 million on \$500 million capital investment over 50 years, that is a million dollars a year, and that is one-five hundredths, it would be one-fifth of 1 percent? Is that right? Just as a rule of thumb, is that about right?

Mr. LARSON. I have not followed you on that.

Mr. ENGLE. Will you figure this a little bit and give me an answer later? Is it correct to say, approximately and as a rule of thumb, that the area will pay one-fifth of one percent on the capitalization in irrigation costs over 50 years, and that thereafter their obligation will be terminated except for maintenance and operation?

Mr. DEXHEIMER. We would be very happy to furnish that breakdown of information. It is a little difficult to do it here. If you will permit us to answer those questions and furnish a statement for the committee at some later time, we would appreciate it.

Mr. HARRISON. That will be satisfactory with us.

Mr. ENGLE. Thank you very much.

(The information referred to follows:)

In reply to a question by Representative Engle on January 19, 1954, relative to Colorado River storage project and participating projects, the following is submitted.

Question. "Is it correct to say, approximately and as a rule of thumb, that the area will pay one-fifth of 1 percent on the capitalization in irrigation costs over 50 years, and that thereafter their obligation will be terminated except for operation and maintenance?"

Reply. "The capitalization in the 12 participating projects listed in the summary attached to the statement by E. O. Larson is \$378,574,400. The repayment by water users from these projects is \$48,346,500 or approximately \$967,000 annually, which is equal to about one-fourth of 1 percent per year of the capitalization or a total of 12.8 percent of the total capitalization over the 50-year repayment period. The irrigation capitalization of the 12 participating projects and the initial units of the Colorado River storage project amounting to \$476,913,400 compared to the repayment by the water users would show about one-fifth of 1 percent to be repaid annually by the water users or a total of about 10 percent of the total capitalization over the 50-year repayment period."

Mr. HARRISON. Mr. Saylor.

Mr. SAYLOR. Now will you continue with your chart, or have you completed it? What is the yellow that is shown in the last part? Is there any allocation to that?

Mr. LARSON. That is just net revenues that continue to go on if you use the average 6-mill rate.

Mr. SAYLOR. And after that period is completed, according to your schedule, the fund would then be turned into the Treasury of the United States?

Mr. LARSON. That is what we have assumed.

Mr. SAYLOR. Now the next questions that I am going to ask you are in a sense hypothetical, yet are based in fact. These figures which you have presented to us are based upon the best estimates that the Bureau of Reclamation now has for the completion of the storage projects and the participating projects as outlined in your statement. Is that correct?

Mr. LARSON. It is based on the information we have to date in the detailed supplementary reports we have submitted.

Mr. SAYLOR. Now it is also based on a 6-mill power rate for the entire area; is that correct?

Mr. LARSON. An average 6-mill rate.

Mr. SAYLOR. That is correct, the average. In other words, the power, regardless of what it costs, will be charged 6 mills throughout the area?

Mr. LARSON. No. We have based our studies on an average of a 6-mill rate, but that may or may not be what is charged for power. In other words, we do not set that. And there may be some changes in contracts or something else. It may be a higher rate or something. It is not for me to say what will be charged.

Mr. SAYLOR. You have taken credit, Mr. Larson, for items of flood control that are chargeable to these various districts?

Mr. LARSON. A very small amount on 2 or 3 participating projects. We have no flood-control allocation against Echo Park and Glen Canyon.

Mr. SAYLOR. Why has there been no flood-control allocation?

Mr. LARSON. The flood damages are not great on the main river, and we have not gone into those details. In our opinion they would be small compared to the total costs, and we therefore did not attempt to evaluate them at this time.

Mr. SAYLOR. What other charges have you made against the storage projects and the participating projects?

Mr. LARSON. You mean nonreimbursable allocations?

Mr. SAYLOR. Nonreimbursables.

Mr. LARSON. We have not made any in this table. Now there may be some nonreimbursable allocations to Echo Park or Glen Canyon for recreation or something like that. But in the participating proj-

ects we have made nonreimbursable allocations. I can explain those if you care to have them.

Mr. SAYLOR. First, I would like to know why you have not made any nonreimbursable allocations against Echo Park and Glen Canyon. I am in favor of them, but I cannot understand why you have not charged something here. If it is to be the great recreation area that the men from the Department have come up here and testified to, if it is to be half as good as you have testified and the Department would want us to believe, I want to know why you have changed your policy and you have not charged anything to that when you are allowed to write something off and Congress has authorized it.

Mr. LARSON. The detailed studies have not been made along that line, and as we see it, it would not make any difference. Where the fish and wildlife benefits are present and recreation is involved with the dams, whatever it costs to develop these benefits would be nonreimbursable and it does not enter in our costs one way or another. We would increase the costs by the same amount we would reduce them for nonreimbursables, I take it, under the latest thinking.

Mr. SAYLOR. So if there are any benefits to be gained from the nonreimbursables, they will be in addition to the figures which you have submitted here now?

Mr. LARSON. That is correct.

Mr. SAYLOR. All right. Now you have made some chargeoffs of small amounts of \$7,714,700 for nonreimbursables on the participating projects, the sixth column from the right.

Mr. LAWSON. Do you want me to explain as I go down?

Mr. SAYLOR. I would appreciate it, and the committee, if you tell us what they are.

Mr. LARSON. Taking No. 1 for the central Utah project, the nonreimbursable is \$5,991,000, \$3,113,000 is for flood control; \$2,830,000 is for recreation facilities; and \$48,000 is for Forest Service resource development brought about by the project; making a total of \$5,991,000.

Now the next one is \$229,000 for Emery County and is for recreation facilities included in the report by the National Park Service to develop a reservoir area for recreation. The \$437,900 for the Florida project is \$229,200 for flood control, as contained in the report of the Army engineers, and \$208,700, as contained in the report by the Fish and Wildlife Service to develop fish and wildlife.

Going down to the \$152,400 for the Paonia project, this includes \$74,100 for flood control, contained in the report of the Army engineers, \$70,800 benefits for fish and wildlife contained in the statement of the Fish and Wildlife Service; and the \$7,500, contained for recreation in the National Park Service statement.

Now the \$73,600 for the Silt project is for fish and wildlife benefits contained in the report of the Fish and Wildlife Service; and the \$24,000 for the Smith Fork is for recreation on reservoirs there, contained in the report of the National Park Service; and the \$33,000 down at the additional participating projects, for the Gooseberry project, is to develop recreational activities of the Mammoth Reservoir, as contained in the statement of the National Park Service. And the \$773,800 is for the La Plata project. That is for flood control on the La Plata.

Mr. SAYLOR. And those figures which you have given are the ones that go to make up the nonreimbursable items totaling \$7,714,000?

Mr. LARSON. Yes; and they are explained in the supplemental statements I submitted yesterday with my statement.

Mr. SAYLOR. Now Mr. Larson, the theory upon which the reclamation law was originally started was that the irrigators were to receive interest-free money. Is that not correct?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. And at that time the pay-out period in the original reclamation law was a period of 10 years; is that correct?

Mr. LARSON. Ten, then changed to twenty.

Mr. SAYLOR. And from time to time that period has been increased from 10 years until the law now states that it is 40 plus the development period; is that correct?

Mr. LARSON. Yes, sir.

Mr. SAYLOR. Is it still the policy of the Department to figure the feasibility of not only this but all other projects based upon interest-free money for all features of irrigation, whether or not the farmers are to be the beneficiaries?

Mr. LARSON. I cannot speak for the policy of the Bureau, but in this case the period of 50 years was arbitrarily selected as a reasonable period and something that could be reasonably adhered to.

Mr. SAYLOR. And Mr. Engle's analysis a few minutes ago is correct, that the irrigators will pay back under reclamation law approximately 12 percent, that is, interest-free money. Is that correct?

Mr. LARSON. On the first 12 participating projects it is 12.8 percent, and the average of the first 12 and the additional is 24.9 percent, or 16.6 for all of them.

Mr. SAYLOR. But the whole allocation to irrigation in your figures is interest-free, whether or not the farmers or the water users repay it?

Mr. LARSON. Yes.

Mr. SAYLOR. In other words, this item of \$691 million—

Mr. LARSON. All financing for irrigation is interest-free.

Mr. SAYLOR (continuing). Has been figured as interest-free?

Mr. LARSON. That is right.

Mr. ENGLE. Will the gentleman yield for just a comment?

Mr. SAYLOR. Yes.

Mr. ENGLE. I would like to say this to keep the record straight: As far as I am concerned, I think the upper basin is entitled to develop their water the way they want to, and as long as the project is an integral project and pays out under reclamation law, I do not regard it as anybody's business how they do it. They can do as they please up in their own area. What I question is the intelligence of dedicating so much of that power resource to gold plating an irrigation system, whereas the difference could be taken in the lower power rate and subsidize minerals and timber and other resource production.

What I am saying is this: We have a soil resource in this country, and we have a mineral resource, and we have a timber resource. Now in an area where timber and minerals are so important and when we are facing continuing agricultural surpluses, the intelligence of continuing to dedicate a subsidy out of power revenues to irrigation projects upon such a proportion as this might be questioned; it might be more intelligent to force that power rate down, subsidize indirectly

through the power rate the development of the minerals and timber resources of the area, rather than the soil resource.

But that is the question that the area itself must decide. If it prefers to do it this way, and it falls within the framework of the reclamation laws, it is no skin off of our noses down the Colorado. As I said many times, you can put your water on your land or mix it with your whisky as far as we are concerned.

Mr. ASPINALL. Now, Mr. Chairman—

Mr. WESTLAND. Will the gentleman yield?

Mr. SAYLOR. Yes.

Mr. ASPINALL. Just a minute. I happen to be the only resident member of this committee from that area. That area only has as resident Members of Congress one Representative and one Senator. When the intelligence of the people desirous of developing that area is taken into consideration, then I think my colleagues should let me speak.

Mr. SAYLOR. I would be glad to let you speak to that, Mr. Aspinall.

Mr. ENGLE. I did not intend to—

Mr. ASPINALL. I understand you did not intend to reflect on the intelligence of anybody in the area and anybody who is trying to develop the area, but I wish this committee to understand that the water of the Colorado River to which the upper basin has a right is for consumptive uses, and the gentleman from California has spoken about uses which are not consumptive uses to the degree that agriculture is. And if what the gentleman from California suggests takes place, then it simply would mean that most of the water which is now being used consumptively would be allowed to flow down to southern California and Arizona and be put to consumptive use down there. After all, that is not quite fair when we consider the arguments and the principles involved in the Colorado compact of 1922.

Mr. WESTLAND. Will the gentleman yield?

Mr. SAYLOR. Now, Mr. Westland, I will be glad to yield.

Mr. WESTLAND. I noticed you have \$98 million charged against irrigation for Echo Park and Glen Canyon. According to the way I read this chart, that is all going to be repaid from power; is that correct?

Mr. LARSON. After the 44 years. The 6-mill rate does not include any net revenues over and above what is required to pay out the power allocation. I want to get that cleared up. The irrigation allocation in the storage units and the unpaid allocation from the participating projects is repaid immediately after the 44 years.

Mr. WESTLAND. But there is no charge to irrigation, to those water users on that \$98 million; is that correct?

Mr. LARSON. That is correct.

Mr. WESTLAND. And that is approximately 20 percent of the cost of those 2 projects?

Mr. LARSON. Well, in the economic analysis that would be taken into consideration to determine the economic justification of the participating projects, that is taken into consideration there.

Mr. WESTLAND. Actually out of the power revenues from Glen Canyon and Echo Park you are taking care of \$98 million worth of irrigation?

Mr. LARSON. The \$98 million is added to the irrigation allocations directly on the participating projects in a lump sum, and the amount that is over and above the irrigators ability to repay is paid by the

net revenues from Echo Park and Glen Canyon after the power allocation, the power costs, are paid off.

Mr. WESTLAND. You say "over and above their ability to pay," but you have allocated \$98 million and all of it is going to be paid from power revenue according to the way I read this. I may be wrong in reading it.

Mr. LARSON. Identifying the dollars is something else. We add the total irrigation allocation together and assess the irrigators up to their ability to pay during 50 years, and the balance they cannot pay is repaid by power.

Mr. PILLION. May I ask a question?

Mr. SAYLOR. I will yield for a question here, but I have some more questions I want to ask the witness.

Mr. PILLION. I yield. Go right ahead.

Mr. SAYLOR. The history of the Bureau of Reclamation from 1902 when it was started, to 1954, has shown, in accordance with figures which have been submitted by the Bureau that only once in that 52-year period has the Bureau of Reclamation ever built a project for what they originally estimated they could build the project. That one was completed just a short time ago in Montana.

Well, sir, I see you shaking your head. All this committee has to go by are the figures which the people in the Bureau submitted to us in response to a request.

So my next question is predicated upon the figures which have been submitted to us by the Bureau of Reclamation, which show that from 1902 to 1954 only one project was ever built for what the Bureau originally estimated it could be built for, and that the average over those years is that the cost of the projects that the Bureau of Reclamation has built has doubled.

Mr. WESTLAND. Will the gentleman yield?

Mr. SAYLOR. Now, assuming that that same figure would apply in the upper Colorado River Basin, what would the position of the Bureau be with regard, first, to the power rates which it would be necessary to charge to pay out this project within the time allocated?

Mr. LARSON. I cannot give you that answer to that hypothetical question right off. If you double the costs, I do not know whether we would exactly double the power rate or not.

Mr. SAYLOR. In other words, you do not know whether it would be necessary to double the power rate or not?

Mr. LARSON. It certainly would be necessary to materially increase it.

Mr. SAYLOR. But it would be necessary to increase it?

Mr. LARSON. Yes.

Mr. SAYLOR. What would the effect be on the payout period if the power rate were continued at 6 mills?

Mr. LARSON. It would be lengthened.

Mr. SAYLOR. Could you tell us how long it would be lengthened?

Mr. LARSON. No, I cannot. It would be materially lengthened, but I cannot state the number of years.

Mr. SAYLOR. Now you have stated in 1950 you used one system to figure the costs and the payout on the upper Colorado River Basin and in 1954 you have used another formula. Would you explain to the committee the difference between those two formulas?

Mr. LARSON. In one case, under the former plan, we used the interest component at 3 percent and applied it upon the irrigation costs. And in this case we pay out the power allocation, and when that is paid out, we use the net revenues to pay the additional irrigation costs.

Mr. SAYLOR. In the original you figured interest at 3 percent; is that correct?

Mr. LARSON. What is that?

Mr. SAYLOR. In the original you figured interest at 3 percent?

Mr. LARSON. That is right.

Mr. SAYLOR. And in the figures which you now have you have figured interest at $2\frac{1}{2}$ percent. Is that correct?

Mr. LARSON. That is correct.

Mr. SAYLOR. Is that a change of departmental policy?

Mr. LARSON. No—I do not know. I cannot speak for departmental policy, but we used the interest rate that is comparable to the long-term rates used by the United States, long-term loans.

Mr. SAYLOR. I see. That is in figuring it out today then, Mr. Larson, you used $2\frac{1}{2}$ percent, and that is the figure—

Mr. LARSON. I believe the last statement from the Treasury Department was 2.48 or something like that for loans beyond a certain number of years. I do not have the table with me.

Mr. SAYLOR. Do you know why in figuring it up in prior years you used 3 percent?

Mr. LARSON. That was the procedure used by the Department or the Bureau, and also specified, I believe, in reclamation law at that time.

Mr. SAYLOR. In one of these reports which were filed, the original repayment of power was estimated at 56 years. Your figures are based on 44 years. Do you know why the figure was changed from 56 to 44 years?

Mr. LARSON. Yes. The other was based on 3 percent interest and based on 5 dams. This is based on $2\frac{1}{2}$ percent and 2 dams, the 2 best ones.

Mr. SAYLOR. What are the five dams that were included in the original estimate?

Mr. LARSON. The Echo Park, Flaming Gorge, Glen Canyon, Navajo, and the Whitewater.

I should amend that, too, that that payout schedule before was based on the 10 dams, I believe. The $5\frac{1}{2}$ mills was based upon the overall scheme of 10 dams. This is based on the overall scheme really of nine dams. But by building the 2 first it pays off in 44 years. If we built all 9 at once it would require a 50-year payout period.

Mr. SAYLOR. There was a material difference in the amount of power which you produced in your original report and the present report. Will you explain that to us?

Mr. LARSON. I do not believe there was a material difference. We have more refined studies now, and we have based our power output on the year 20 as the average during the payout period. In other words, there would be a gradual depletion of water in the upper basin over the 44-year-payment period. There will be more power now and a little less at the end of 44 years, and we have taken the year 20 in our water supply studies as our average now, and we did not do that before. We did not have our studies refined to the point where we do now.

Mr. SAYLOR. In other words, at the end of the payout period, if the water is put to beneficial use in the participating projects, you

will not have as much power coming from the storage projects as you have at the present time or in the initial States?

Mr. LARSON. This will be the average; this year 20. We will have more power to begin with and a little less at the 44th year after the powerplants start. They will not all be built at once; they come in staggered.

Mr. SAYLOR. Is it possible that if other participating projects are figured to use then more and more water which is allocated to the upper basin, the power revenue will still continue to decline?

Mr. LARSON. It will until full development, as I mentioned in my statement yesterday.

Mr. SAYLOR. And at the stage of full development, what would the power be, or the potential output be, in the nine storage plants?

Mr. LARSON. The power output would decline from 9 billion kilowatt-hours to 6 billion, with full development of the 7,500,000 acre-feet.

Mr. SAYLOR. There would be a loss of one-third of the potential power output?

Mr. LARSON. That is correct, unless other powerplants are built, of course, to take their place.

Mr. SAYLOR. That is all, Mr. Chairman, at this time.

Thank you.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. I think that our colleague from Pennsylvania has pretty well covered the ground. However, there are a few general questions that I would like to have brought before the committee.

Mr. LARSON, the total area comprises about 110,000 square miles of territory; is that correct?

Mr. LARSON. I do not recall that figure. It is a large territory, but I do not recall it.

Mr. ASPINALL. That is the figure that I have secured from some place.

Mr. LARSON. We have it in our report here.

Mr. ASPINALL. Which is about the size of the State of Nevada. And a minute ago when I was just a little bit heated I did not mean to suggest that the two resident Members of Congress did not have able colleagues representing this area. That is not what I had in mind at all.

Mr. LARSON. You are correct in the 110,000 square miles, Mr. Aspinall.

Mr. ASPINALL. This area the size of Nevada has how much population, Mr. Larson?

Mr. LARSON. Strictly within the basin?

Mr. ASPINALL. Strictly within the basin.

Mr. LARSON. We can get that figure for you. The 1940 census showed 286,450 people within the upper basin.

Mr. ASPINALL. What are the natural resources of this area, Mr. Larson?

Mr. LARSON. The natural resources are tremendous. I hesitate to give them to you extemporaneously, except to say—

Mr. ASPINALL. Would you just enumerate some of them extemporaneously and then place them in the record?

Mr. LARSON. For instance, in the Nation about 30 percent of the bituminous coal is in upper Green River Basin. I believe we are

obtaining about 90 percent of our uranium and vanadium from the basin. We have a large percentage of the phosphate rock deposits for commercial fertilizer and phosphorus for chemicals, and the largest oil shale deposit in the United States for the development of oil from shale. That is a tremendous deposit.

We have one of the largest trona deposits of the Nation in Wyoming and the Green River Basin. It is the source of soda ash, which, of course, is a very strategic material along with lucite deposits. We have gilsonite in Uinta Basin and radium.

MR. ASPINALL. That is sufficient. They are almost undeterminable, are they not?

MR. LARSON. What is it?

MR. ASPINALL. I say, it is almost impossible to enumerate the resources which are in that area.

MR. LARSON. Yes, there are many others I have not mentioned.

MR. ASPINALL. Let me ask you this: From the studies you have made, how much of the lack of development do you contribute to the fact that there is a scarcity of power?

MR. LARSON. There is only about one hydroelectric plant within the upper Colorado Basin, I know of, of any consequence, near Grand Junction.

MR. ASPINALL. Yesterday you suggested in your testimony, as I remember it, there would be a ready market for the power as soon as it was developed?

MR. LARSON. Yes. We are of the firm opinion there is a ready market for all the power we can develop at Glen Canyon and Echo Park.

MR. ASPINALL. Do you have that broken down as to the different areas where it would be used?

MR. LARSON. We can produce that. The market within the basin, of course, is problematical on account of the development of these natural resources. We have a forecast of the large marketing areas of the eastern slope in Colorado—Pueblo, Colorado Springs, and Denver area—and the Wasatch front near Salt Lake City, and the area in Wyoming and New Mexico.

MR. ASPINALL. Where do you contemplate the building of the transmission lines for which provision has been made in this legislation?

MR. LARSON. Our average of 6-mill rate is based on sale of the power by the Government constructing a system of transmission lines along the Wasatch front and maybe down in through New Mexico, over into the Denver area and up into Wyoming. That is one scheme if they were built by the Government as a part of the project. Another could be a combination where the Federal Government constructed a tie-line tying the main powerplants together, and probably private utilities building the lines to load centers. And the average of 6-mill rate is based on either way we go.

For example, if the transmission and local grid system was built to the load centers by the Federal funds, it would be 6 mills. If the lines from the tie lines to load centers were built by private utilities, then it would be a somewhat less rate; say, $5\frac{1}{4}$. Now these are the rates we have based the plan on and may not be the rates that we finally contract. That is not for us planners to say. We are simply saying we

have arrived at an average of 6 mills that will do the job and pay out the power allocation.

Mr. SAYLOR. Will you yield?

Mr. ASPINALL. Yes.

Mr. SAYLOR. I would appreciate very much if the Department would submit at this point in the record an analysis of the cost of the power at each one of the nine reservoir sites or storage project sites.

Mr. LARSON. Mr. Saylor, that is in the supplemental report of the Secretary. You have that.

Mr. D'EWART. Mr. Chairman?

Mr. HARRISON. Are you through, Mr. Aspinall.

Mr. ASPINALL. No, but I will yield to Mr. D'Ewart.

Mr. D'EWART. I am a little disturbed in hearing the resources of the upper Colorado Basin listed and not mentioning grass, timber, and recreation. I think you should add those to your list.

Mr. LARSON. Mr. Aspinall said that was enough.

Mr. ASPINALL. I was coming to that when I had finished on the transmission lines.

Yesterday I referred to approximately 253 reservoir sites in the upper Colorado River Basin and suggested that they have been examined by the Bureau of Reclamation. Of course, I did not mean to leave with my colleagues the idea that the Bureau had surveyed each one of those reservoir sites. But the record of the Bureau shows that you are cognizant of that number of reservoir sites now constructed and possible of construction. Is that not right, Mr. Larson?

Mr. LARSON. Yes. We have examined these sites. Many of them we do not have to make surveys of. It is obvious in looking at them that they cannot be used. They are either too small, too expensive, or some other reason. We have sites where there are transcontinental railroads that we know the site would be infeasible—to relocate the railroad, or something like that.

Mr. ASPINALL. How long have you been doing surveying and planning work in this area?

Mr. LARSON. I am just finishing my 36th year in reclamation, and I started in planning in the Bureau of Reclamation in June 1923, and I was detailed on construction for a short time. Other than that, I have been on planning all my life.

Mr. ASPINALL. Where are the moneys to be obtained to do this work?

Mr. LARSON. The investigations carried on up until about 1942 or 1943 were largely from the general investigations fund, as it is known in the hearings, allotted to the Bureau of Reclamation, which were very small. In the early days there was only \$75,000 for the whole Bureau, when I first came in. And in 1940 the Boulder Canyon Project Adjustment Act, when it was passed, contained the provision that \$500,000 from the proceeds of the profits of Boulder Dam shall be used, the first million and a half for the preparation of a comprehensive report, which we prepared as of the date of 1946; and then the proceeds were to be used, up to and including the fiscal year 1955, for the investigations and construction—we have not used any for the latter—of projects, individual irrigation projects within the upper basin.

Beginning in 1956 until 1987 the Act provides—essentially—that the \$500,000 shall be used equitably between the States of the entire Colorado River Basin as determined by the Secretary of the Interior.

Mr. ASPINALL. If this plan is authorized, how much money is proposed to be taken annually from the proceeds of the sale of power for the further surveying and development?

Mr. LARSON. \$1 million a year.

Mr. ASPINALL. Which follows the general pattern of the Bureau of Reclamation in these matters; is that correct?

Mr. LARSON. That is correct.

Mr. ASPINALL. The reservoir sites upon which you have finally centered your attention for this legislation are in your opinion the most feasible of all sites which are in the basin; is that correct?

Mr. LARSON. Yes, sir.

Mr. ASPINALL. If the Flaming Gorge Reservoir site was constructed, which is outside of the park, what would happen to the quantity of flow of water in the lower canyon, as such waters go down through Lodore Canyon, as they go down through the Dinosaur National Monument?

Mr. LARSON. The flow of the Green River would be changed. In other words, the flood flows would be retained and the stream equalized.

Mr. ASPINALL. Would there be enough water which would go down with the regulated flow to permit the "river running" to which our good friend from Pennsylvania has referred?

Mr. LARSON. I am not too acquainted with that. I had better let Mr. Jacobson answer because he is the guy who went down in a boat and swam part of the way. He will know.

Mr. ASPINALL. I would like to have the answer for the benefit of these folks who are interested, no matter which way the answer goes.

Mr. JACOBSON. Naturally the "river runners" prefer the high flows, and most of the "river running" is done in a very short period during the year, possibly 6 weeks.

Mr. ASPINALL. That still does not answer the question, Mr. Jacobson. Would there be enough water released there from the powerplant to take care of this sport which these folks like?

Mr. JACOBSON. I am not that much of an expert at "river running."

Mr. SAYLOR. Mr. Aspinall, get him to tell you how much water they will release if they produce the amount of power they say they can at Flaming Gorge.

Mr. ASPINALL. I do not have the answer to that. I wish that you would see if you can get that information, Mr. Jacobson, and compare it to the amount of water which goes down the river during the so-called high-water season.

(The following statement subsequently was submitted:)

Question. What would equation of flow of Green River at Browns Park or Flaming Gorge do to present high runoff necessary to run Lodore Canyon rapids?

Reply. With equated flow at Flaming Gorge or a reservoir in Browns Park the discharge during the high spring runoff would be reduced from an average of about 7,000 cubic feet per second to about 2,000 cubic feet per second.

On the first page of your prepared statement, Mr. Larson, you made the following remark:

It would make possible river regulation and sediment control which are needed at an early date to assure maximum utilization of important power potentialities on the Colorado River below Lee Ferry and above Lake Mead.

Will you explain just what you had in mind?

Mr. LARSON. We have assumed (in our own mind, or I have), that the power potentialities above Lake Mead would be made use of,

particularly at Bridge Canyon. (They would be needed when the dam would be built.) If that dam is built, its reservoir has a comparatively small capacity. I believe it is something like $3\frac{1}{2}$ million acre-feet. Of course, it would fill very rapidly with silt unless Glen Canyon is built. And there are other sites, I assume. I am not acquainted down there except with Bridge Canyon. I know about that.

Mr. ASPINALL. In the planning of the Bureau has there been any program or effort to give the upper basin any of the benefits which would be accruing to the lower basin because of this sediment being caught in the upper basin?

Mr. LARSON. As I have said in my statement, the building of Glen Canyon would materially benefit the lower basin, both above Lake Mead if that dam was built, and certainly it would extend the life of Hoover Dam and Parker and Davis. I said that on the bottom of page 5 of my prepared statement—no nonreimbursable allocations were made in our plans for sediment retention and the other things, although in the future such allocation may be found desirable and justified.

We have not attempted to make any allocation for that.

In fact, I had better amend that. I assume that would have to be made now and not in the future for that particular service that you are talking about—silt retention.

Mr. ASPINALL. As I understood your testimony yesterday, Mr. Larson, you suggested that your final determination of the sites which you propose in your report comes largely from the fact relating to evaporation losses on the proposed reservoir sites; is that correct?

Mr. LARSON. Yes, evaporation and, of course, the costs of power production and size.

Mr. ASPINALL. Has there been any effort on the part of the Bureau to determine to whom those evaporation losses should be charged as between the lower and upper basin?

Mr. LARSON. No. We have taken the evaporation as one lump sum and have not got into that, for the reason that the evaporation, whatever is chargeable to the upper basin, is provided for in the upper basin compact. And as to any controversies between the two basins we have not gotten into that.

Mr. ASPINALL. It would be to the advantage of each basin, would it not, to have the reservoir evaporation losses kept at a minimum?

Mr. LARSON. That is generally correct. Of course, if they are all chargeable to the upper basin, then I assume the lower basin does not care.

Mr. ASPINALL. That may be right. [Laughter.]

Mr. LARSON. I should not have made the statement that way. What I meant, it would not be directly chargeable to them.

Mr. ASPINALL. That is all right.

Did I understand your statement yesterday to the effect that the difference in the loss by evaporation as between Glen Canyon and Echo Park would be over 100,000 acre-feet of water annually?

Mr. LARSON. Yes. When you raise Glen Canyon Dam materially, it spreads over enormous areas and besides goes up into the Rainbow Bridge National Monument.

Mr. ASPINALL. And that amount of water would be enough to satisfy a city of how many hundreds of thousands of people?

Mr. LARSON. What?

Mr. ASPINALL. And that amount of water would be enough to satisfy the needs of a city of how many hundreds of thousands of people?

Mr. LARSON. Well—

Mr. ASPINALL. Is that the evidence or have I something mixed up?

Mr. LARSON. It would be hundreds of thousands of people.

Mr. SAYLOR. I think, Mr. Aspinall, the only figures we have insofar with regard to evaporation is dastardly Echo Park. They have not taken into consideration what evaporation is going to be down in Glen Canyon. It just seems the only one they are worried about is the evaporation at one point, the only controversial project in the upper basin.

Mr. ASPINALL. That is the reason I am asking this question, and I would like for Mr. Larson to answer it.

Mr. LARSON. What is your question?

Mr. ASPINALL. My colleague suggests that the only consideration that was given to evaporation loss was at Echo Park. My suggestion is that you have taken into consideration the loss of evaporation at these different reservoirs that have been proposed.

Mr. LARSON. We have given the same treatment to each one of these reservoirs. Evaporation is important everywhere, every site, in the selection of them.

Mr. REGAN. Will you yield right there?

Mr. ASPINALL. Yes.

Mr. REGAN. In Mr. Tudor's statement on page 11 he says:

In the arid Colorado River watershed, any proposed project for control of water should be approached with the realization that water conservation is of great importance.

In other words, it is a place known for high evaporation.

As I understood Mr. Tudor, he was saying that the Glen Canyon would have less evaporation than several of the other sites because of its elevation.

Mr. SAYLOR. Echo Park.

Mr. REGAN. Echo Park. He said it would have less evaporation there because it was more protected by high wall mountains around it and confined to a smaller area, so the evaporation loss would be less than others in the arid Colorado River watershed.

Mr. RHODES. If the gentleman will yield, I think in the statement of Mr. Tudor there is a schedule of evaporation losses from each one of these dams, if I remember correctly.

Senator WATKINS. On page 14 of Mr. Tudor's statement you will find the estimate of Echo Park in comparison with the alternate sites.

Mr. REGAN. In that section, if I might follow up, Mr. Aspinall, one thing I did not quite understand yesterday was the gentleman from Pennsylvania referred to the Jewett report for storage water. You stated, I believe, Mr. Larson, you thought you could store water for 30 years in Glen Canyon or those areas selected.

Mr. LARSON. I said a longer time.

Mr. REGAN. The rate of evaporation in some of Mr. Tudor's examples indicated that evaporation might be as high as 10 percent annually. In that event the evaporation would take all the water in 10 years' time. So I do not see how you could spread it out over 30 years.

Mr. LARSON. That is not true.

Mr. REGAN. It is not?

Mr. LARSON. No.

Mr. REGAN. Well, one of the things he used in illustrating the advantage of Echo Park over the others is the matter of evaporation, and you certainly could not store water there over a period of 30 years in such a reservoir.

Mr. LARSON. We have made a considerable study along that line, and if you run water in and out of Glen Canyon it would take 49 years to use the evaporation equivalent to its storage. On Echo Park, it would take 74 years to use its equivalent of water in evaporation that would run in and out. And Split Mountain is 42 years; Gray Canyon, 67; Flaming Gorge, 70; Curecanti, the large, 86; and Crystal, of course, is small; and Whitewater, 42.

Mr. REGAN. I did not get that from Mr. Tudor's statement yesterday.

Mr. LARSON. He did not go into these details.

Mr. REGAN. Beg pardon?

Mr. LARSON. He did not cover the details that are the results of the studies.

Mr. REGAN. When you use the figure 30 years, I think the Jewett proposal was 20 years.

Mr. LARSON. We have worked out the water supply on a monthly basis over a period of years, where in the Hill report he plotted a mass diagram based on the historical flow, not the virgin flow. So, to his 6,200,000 you should add what is taken out. It is not too good an example. But in his report he qualified it and says that is based on 20 or 21 years and you may have to hold over water longer.

I will read his conclusion No. 12.

Increased diversions of water for use by agriculture and industry on the western slope and for transmountain diversions will depend upon the provision of sufficient storage capacity in the reservoirs for conservation of flood flows and some cyclic regulation in order that Colorado may make full use of the water allocated to it by the compact. Cyclic regulation of Colorado River over periods longer than 20 years will also be necessary.

And now there is one other point on the Hill report, it being that it is based on an average yield of 6,200,000 acre-feet, and that does not take into consideration that in years of low runoff many of the irrigated projects cannot divert a full supply even though they are entitled to it because the water is not there.

Those refinements are taken into consideration in our studies, where they are not considered by Mr. Hill in arriving at the 6,200,000. In other words, Mr. Hill makes several qualifications here on what he has said.

Mr. REGAN. Thank you.

Mr. ASPINALL. I have one more question. Unless the participating projects are built, Mr. Larson, how will this area be able to develop any further irrigation projects?

Mr. LARSON. Our studies of the Colorado Basin and the whole upper Colorado River Basin show that other than extensions of little projects where local interests can extend their own canals and things like that, that there are no projects left that can be repaid by the water users. Prices have gone up now and conditions changed. If we were to apply our same costs to the projects that are already there, they would be in the same category, many of them, that these are—

that they could not pay any higher percent of the irrigation allocation than these can.

Mr. ASPINALL. Is it a fact that these are the best participating projects that you can find at this time?

Mr. LARSON. Yes, sir. These are the best, at least that we have information on. There may be some that we will find better than these but they have not been investigated. But of the ones where water is in demand and all the ones we have investigated these are the best.

Mr. ASPINALL. Unless the water is put to this use by the participating projects and power purposes in the larger projects, how otherwise can the water be used in the basin?

Mr. LARSON. This is the only way it can be consumptively used, by participating projects such as we have here.

Mr. ASPINALL. That is all.

Mr. HARRISON. We have with us this morning Representative Stringfellow of Utah, and we want to welcome you here to participate in these hearings because we know they are of interest to you and your constituents.

Representative Stringfellow is 1 of the 10 individuals who were picked by the United States Chamber of Commerce to receive recognition as the outstanding young men of this country. It is my understanding that he must leave shortly to receive that decoration and that award, and if he has something for the record at this time, we will be glad to hear from him.

Mr. STRINGFELLOW. Will this afternoon be all right?

Mr. HARRISON. That will be all right. We will see that you are taken care of.

Mr. Berry?

Mr. BERRY. No questions.

Mr. HARRISON. Mrs. Pfost?

Mrs. PFOST. Mr. Larson, I should like to refer to your statement on page 6, where you say:

It has taken 100 years to develop existing projects in the upper basin, allowing for authorized projects and projects under construction, with a total consumptive use of about $2\frac{1}{2}$ million acre-feet or one-third of the $7\frac{1}{2}$ million-acre-foot annual allotment to the upper basin.

And you go on to say that this would increase the present consumptive uses by an additional 640,000 acre-feet of water:

The bill suggests additional participating projects which would require an additional consumptive use of 360,000 acre-feet annually.

Now when you add together the amounts that you have placed here in your statement, this will make a total of 3,500,000 acre-feet. Is it true, then, Mr. Larson, that the upper basin States still will have a balance of 4 million acre-feet for consumptive use?

Mr. LARSON. There are some other uses, too. Echo Park and Glen Canyon Reservoirs would consume an evaporation on an average of 613,000 acre-feet, and the 12 participating projects, 640,000 acre-feet, and the San Juan-Chama, LaPlata, these additional projects, 360,000, making a total of 1,613,000 acre-feet.

Then in the bill there is also the 940,000 acre-feet for Curecanti and Flaming Gorge, and if they are retained in there, you would add

18,000 acre-feet for Curecanti and 56,000 acre-feet for Flaming Gorge, or a total of 1,687,000.

Mrs. PFOST. In other words, the evaporation would be 1,613,000, and then you have added to that these others?

Mr. LARSON. If you add the other 2, you would have these 2 figures.

Mrs. PFOST. What was that second figure you gave me, Mr. Larson, on Curecanti?

Mr. LARSON. Mr. Huffman tells me here that the actual figure, if we add the Glen Canyon and Echo and the 12 participating projects, and then these additional projects in the bill, all of them, the grand total is 1,687,000 acre-feet of new depletion.

Mrs. PFOST. That is for evaporation?

Mr. LARSON. Oh, no, that is for consumptive uses on participating projects.

Mrs. PFOST. For consumptive uses that would be left?

Mr. LARSON. And evaporation. Then you subtract that, add that to the 2½ million, and subtract from the 7½ million, and you get what theoretically they have left.

Mrs. PFOST. Thank you very much. That is all.

Mr. HARRISON. Senator Bennett?

Senator BENNETT. I would prefer to wait.

Mr. HARRISON. Mr. Rogers, do you have any questions you would like to ask?

Mr. ROGERS of Colorado. You mean I may participate?

Mr. HARRISON. Yes, as the Representative from Colorado we are very glad to have you also participate in these hearings. Do you have any questions?

Mr. ROGERS of Colorado. Yes.

Mr. Larson, directing your attention to the statement made by Mr. Tudor yesterday, on page 3 thereof, if you have it before you, and down almost to the last line of the first paragraph, it is stated:

It was published as House Document No. 419 of the 80th Congress with recommendations pointing to the need for determination by the upper basin States of their rights to utilize the water of the Colorado River system.

Now that has reference to the compact entered into by the four upper basin States, that is, Wyoming, Utah, Colorado, and New Mexico?

Mr. LARSON. And Arizona.

Mr. ROGERS of Colorado. And Arizona?

Mr. LARSON. Yes.

Mr. ROGERS of Colorado. And as a result of that, you recognize the division that these States made among themselves, do you not, when you consider the various projects that you have testified to?

Mr. LARSON. Yes. We could not come out with a comprehensive basinwide plan that you could work to until we knew the allocation among the States.

Mr. ROGERS of Colorado. And all of these projects that are submitted are recommended, either the 12 or the other 9 that you have talked about?

Mr. LARSON. Yes. They were investigated in close cooperation with the local interests and the States in which the projects are located.

Mr. ROGERS of Colorado. And in each instance you found that their consumptive use of the water as defined in that compact would fit within the recommendations made here?

Mr. LARSON. That is correct.

Mr. ROGERS of Colorado. Thank you, Mr. Chairman.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Mr. Larson, there are a number of questions that were asked that I think it might be well to elaborate on and clarify for the benefit of the committee. One was in regard to the Hill report. I think you have discussed and cleared up some of the points, but a question was raised in regard to the average yield of the river, your estimates as compared with those in the Hill report.

Can you tell the committee if, according to your surveys, there will be enough water in the river to meet the requirements of the upper basin States?

Mr. LARSON. Yes. Of course, it is obvious that there is more than enough water for all the projects contained in the Secretary's supplemental report and the additional projects.

Now as to the estimates by Mr. Hill, if you base your assumption that the water will only be held over for 20 years, then he gets a lower estimate than we do. But there are some other refinements that he does not have that we do. So our studies show that there will be $7\frac{1}{2}$ million. But we have been mindful of the fact that if over a long period of years we happen to be a little wrong, there is 50 or 75 years of development before that time comes.

Mr. DAWSON. How long is it going to take to fill the Glen Canyon Reservoir, for instance?

Mr. LARSON. I cannot tell you that because I do not know whether it will be in a wet cycle or dry cycle when that comes.

Mr. DAWSON. What are your best estimates?

Mr. LARSON. It will take a good many years for this reason: That power is being generated in the lower basin, and it has to be filled with care, and it has to be closely coordinated with the power output of Lake Mead, because people are on the line; and it is to the advantage of everybody concerned that this be done in a very careful manner, carefully integrated.

Mr. ROGERS of Colorado. Mr. Chairman, will the gentleman yield there for a moment?

Mr. DAWSON. Yes.

Mr. ROGERS of Colorado. Now the Hill report only referred to Colorado. It had no reference whatsoever to the other upper basin States?

Mr. LARSON. That is right.

Mr. ROGERS of Colorado. And I think that the answer to the gentleman from Utah as to whether or not there would be plenty of water was given in the figures a moment ago when Mr. Larson testified, as from his statement on page 6 he outlined that $21\frac{1}{2}$ million acre-feet was being used consumptively, and that with this project and with the evaporation that would constitute 1,687,000 acre-feet, or a total of 4,187,000 acre-feet in the upper Colorado River Basin that would be consumptively used. And on the theory that the upper Colorado River at the time of the Boulder Canyon Project Act would be en-

titled—or should I say the surveys would reflect we would have 7½ million acre-feet; that if you deducted the 4,187,000 acre-feet from the 7,500,000 that we are entitled to under the Boulder Canyon Project Act—if that is a right phrase to use—we would then have 3,313,000 acre-feet in the upper Colorado River Basin that would not be consumptively used even if all these projects were put in force and effect. Is that about right, Mr. Larson?

Mr. LARSON. That is about right.

Mr. ROGERS of Colorado. Pardon me for interrupting.

Mr. DAWSON. I appreciate the statement of the gentleman, and that is the very matter I want to bring out, because there is an inference left by the statement of the gentleman from Pennsylvania there was something in the Hill report which might indicate there would not be enough water to take care of the projects which are specified in the bill.

One other question. A question has been raised in regard to the use of the power from this project. Will the director inform us as to where you intend to dispose of this power?

Mr. LARSON. I cannot tell you where we intend to dispose of it because I am not the one to dispose of it. I can tell you on what our plan is based.

Mr. DAWSON. Will you do that?

Mr. LARSON. Yes. We arrived at our average rate of 6 mills by delivering all the power in the upper basin. Then we were mindful of the fact that if power is to go down to Arizona, an upper basin State, for example, as mentioned in your bill, or to California for that matter—then the transmission grid upstream would be lessened in cost because the lines would not need to be so big or parallel lines may not be needed, or something else. It may be that the money saved could be applied downstream, or an adjustment of rates equal to it. That is the thinking on which our plan is based. We have made no attempt to allocate the power because that is not for us to do. When I say “us” I mean region 4 in planning this development.

Mr. DAWSON. Do you have in the area any appreciable number of public-power distributors? I mean by that as compared with private power?

Mr. LARSON. We have quite a large number, but the total forecast made by the Federal Power Commission and us shows that the present and possible REA's and public utilities uses are, I believe, less than 10 percent of the total market. Something like that.

Mr. DAWSON. And have you had any opposition to this project from any of the users of power?

Mr. LARSON. Not that I know of.

Mr. ASPINALL. Mr. Chairman, what was that last question?

Mr. DAWSON. I asked him if there had been any opposition so far as he knew to this project on the part of the users of power, distributors; and his answer was, “no,” not that he knew of.

Now these studies that you referred to on the flow of the river you have been making over the years, very detailed checks, have you not, on the river flow?

Mr. LARSON. The Geological Survey maintains a gaging station at Lee Ferry ever moment of every day of the year.

Mr. DAWSON. And how long have those surveys been in operation?

Mr. LARSON. There are incomplete records prior to 1914, but generally the continuous records are from 1914 on. We have stations back to 1914, upstream from Lee Ferry, but continuous at Lee Ferry from 1921.

Mr. DAWSON. Could you tell us what during the, we will say, last 20-year period has been your lowest flow past Lees Ferry as compared with your highest? In other words, what is the fluctuation of the river?

Mr. LARSON. I can give you two periods. From 1914 to 1953 the annual flow at Lee Ferry, which includes the Paria River, has averaged 15,339,000 acre-feet.

Mr. DAWSON. That is the average?

Mr. LARSON. Yes. That is the virgin flow as if none were taken out. That is adjusted flow, the virgin flow. In other words, we have taken the historical flow and added to it our estimated depletions to go back to the virgin flow.

Now the average virgin flow as we have computed it from 1931 to 1940, the 10-year low of record, is 11,832,000 acre-feet. That is our low cycle.

Mr. DAWSON. Can you give us the lowest year you had during that period of time and the highest year?

Mr. LARSON. The lowest year was 1934, and the virgin flow as we have computed it is 5,640,000, and the historical flow was 4,396,000 acre-feet.

Mr. DAWSON. That was your lowest?

Mr. LARSON. That is the lowest year of record.

Mr. DAWSON. Now what was the highest year?

Mr. LARSON. The highest year of record was 1917 when the virgin flow was 24,037,000 acre-feet.

Mr. SAYLOR. What year?

Mr. DAWSON. 1917.

Mr. LARSON. We had a fairly high year in 1952.

Mr. DAWSON. What was the flow in 1952?

Mr. LARSON. 20,300,000 virgin flow.

Mr. DAWSON. In other words, you had a variation up in the 20 millions and down to around 5 millions, rough figures?

Mr. LARSON. Very erratic flow.

Mr. DAWSON. Very erratic. And the purpose of these dams you have been speaking of is to hold that water back and to deliver the uniform flow and at the same time conserve the water so that the upper basin States can receive their share and still deliver the 75 million acre-feet over the 10-year period to the lower basin States?

Mr. LARSON. That is correct.

Mr. DAWSON. That is the general basis of this whole plan?

Mr. LARSON. That is correct.

Mr. DAWSON. Just one more question, Mr. Larson, with regard to the height of the dam at Echo Park and the average height of the reservoir. Do you have any pictures or any diagrams that would indicate what the effects might be of the construction of Echo Park on the scenery there? Do you want to present that or is some other witness prepared to do that?

Mr. LARSON. I think Mr. Dexheimer—we have a set we are going to file with the committee.

Mr. DAWSON. May I ask which one of you will do so?

Mr. DEXHEIMER. I plan to give them to you in my testimony if that is all right, or Mr. Larson can introduce them at this time.

Mr. DAWSON. I would like to see them, but I do not care which one of you presents them.

Mr. LARSON. Mr. Dexheimer has them to present to the committee.

Mr. SAYLOR. Will you yield at this point? Following out the questions you have asked and trying to arrive at the historic flow of the river, both virgin and actual, again we come up with the fact that you can never rely upon the figures that you get from the Bureau of Reclamation. I asked the committee members to familiarize themselves with the flow in the Colorado River. And here in this book, which is published as House Document 419, the virgin flow is shown on page 281 in the table, and in 1934 the low figure virgin flow was 5,501,000 acre-feet, and the historic flow was 3,966,000 acre-feet. Now we get two entirely different figures from the same Bureau with regard to the same flow in the same year.

Mr. DAWSON. Mr. Saylor, you refused to yield to me on several different occasions, and I regret to do the same to you. But in view of that statement, I would like to ask the Director to explain the statement that has just been made.

Mr. LARSON. Mr. Jacobson, who is very familiar with that, can give you the reason for the difference, Mr. Dawson, if that is all right.

Mr. DAWSON. I would appreciate it if he would.

Mr. JACOBSON. The figures that are published in the basin report of 1946, which Mr. Saylor refers to, are derived from overall depletions in the basin. The difference is merely due to a more detailed study of the use of water since 1946, and also the studies of the Upper Colorado River Basin Commission in arriving at the present depletion of water at that time.

Adding respective depletions to historical flows, you will come out with the new estimate of virgin flow. The particular low year mentioned, having the greatest difference of any of the years, is still within 10 percent.

Also the new figure is on a water-year basis, and I think the old figure is on a calendar-year basis.

We would be happy to furnish you with a statement as to those differences if the committee so desires.

Mr. DAWSON. We will appreciate it if you will do that so the committee members have it.

(The information referred to follows:)

Lee Ferry, flow comparison

[Units 1,000 acre-feet]

Colorado River storage project report				H. Doc. 419 (extended)			
Water year, October-September	Historical flow	Esti- mated depletion	Virgin flow	Calendar year, January-December	Historical flow	Esti- mated depletion	Virgin flow
1914	19,335	1,887	21,222	1914	19,868	2,127	21,995
1915	12,500	1,527	14,027	1915	12,396	1,760	14,156
1916	17,325	1,876	19,201	1916	18,380	2,225	20,605
1917	21,893	2,144	24,037	1917	20,436	2,449	22,885
1918	13,650	1,714	15,364	1918	13,775	2,058	15,813
1919	10,858	1,604	12,462	1919	10,611	1,890	12,501
1920	10,739	2,212	21,951	1920	20,387	2,651	23,038
1921	20,715	2,300	23,015	1921	19,572	2,652	22,224
1922	16,302	2,003	18,305	1922	16,198	2,457	18,655
1923	16,261	2,008	18,269	1923	16,868	2,508	19,376
1924	12,481	1,720	14,201	1924	11,708	2,120	13,828
1925	11,341	1,692	13,033	1925	12,411	2,171	14,582
1926	14,009	1,814	15,853	1926	13,080	2,221	15,301
1927	16,587	2,029	18,616	1927	17,551	2,560	20,111
1928	15,323	1,956	17,279	1928	14,714	2,350	17,064
1929	19,223	2,205	21,428	1929	19,632	2,723	22,355
1930	13,070	1,815	14,885	1930	12,414	2,175	14,589
1931	6,388	1,381	7,769	1931	6,229	1,707	7,936
1932	15,286	1,957	17,243	1932	15,180	2,386	17,566
1933	9,745	1,611	11,356	1933	9,750	1,973	11,723
1934	4,396	1,244	5,640	1934	3,966	1,535	5,501
1935	9,912	1,637	11,549	1935	10,283	2,023	12,306
1936	11,970	1,830	13,800	1936	12,145	2,212	14,357
1937	11,897	1,873	13,770	1937	12,006	2,212	14,218
1938	15,440	2,105	17,545	1938	15,661	2,508	18,169
1939	9,394	1,685	11,075	1939	8,872	1,973	10,845
1940	7,082	1,519	8,601	1940	7,617	1,878	9,495
1941	16,052	2,096	18,148	1941	17,888	2,688	20,576
1942	17,029	2,096	19,125	1942	14,809	2,447	17,256
1943	11,263	1,810	13,073	1943	11,435	2,180	13,615
1944	13,221	1,933	15,154	1944	13,034	2,060	15,094
1945	11,545	1,865	13,410	1945	11,788	1,990	13,778
Averages:				Averages:			
1914-45	13,789	1,849	15,638	1914-45	13,771	2,216	15,987
1931-40	10,151	1,681	11,832	1931-40	10,171	2,023	12,214
1934	4,396	1,244	5,640	1934	3,966	1,535	5,501

NOTES

1. The historical flows at Lee Ferry and the Paria River (the sum of which constitutes the natural flow at Lee Ferry) have been measured by the United States Geological Survey since June 1921. Prior to that date estimates were made based on correlation with upstream stations. Summaries of these data vary for calendar years (Jan. 1 to Dec. 31) and water-years (Oct. 1 to Sept. 30), because of the month combinations.

2. The differences in estimates of virgin flow are due to the evaluations of upstream depletion. At the time H. Doc. 419 was prepared the depletion estimates were based on an assumed rate of use per estimated area irrigated plus transmountain diversions. The latest virgin flow presentation uses the large amount of additional basis data obtained during the negotiations leading to the upper Colorado River Basin compact. It should be noted the difference amounts to only 2 percent of the average annual long-time virgin flow.

Chairman MILLER. Will the gentleman yield there?

Mr. DAWSON. Yes.

Chairman MILLER. I wanted to get again the average flow past Glen Canyon Reservoir. I believe you said 1914 to 1953. What was the average over that period of years?

Mr. LARSON. I have four here, Dr. Miller, if you want them. From 1914 to 1945, which has been used in the past, 15,638,000 average virgin flow. Historical was 13,789,000 acre-feet for that period. Water-years.

For the period from 1914 to 1953, the average virgin flow was 15,339,000 acre-feet, and for the 10-year low cycle, the lowest we have on record, from 1931 to 1940, the virgin flow is computed at an average annual virgin flow of 11,832,000, and the historical flow was 10,151,000 acre-feet for that same 10-year period.

Chairman MILLER. Thank you.

Mr. DAWSON. Would you tell us the difference between the historical and virgin flow?

Mr. LARSON. Historical is a measure of the water that actually passed. The virgin flow is the historical flow plus the computed consumptive use or depletion in the upper basin on the projects for evaporation and transpiration, and so on.

Mr. DAWSON. That is all.

Mr. HARRISON. We have Mr. Fernandez, the Congressman from New Mexico, here. I wonder if you would like to ask any questions.

Mr. FERNANDEZ. Thank you for the privilege.

I think the members of the committee have done a very excellent job in getting the facts from the witnesses, and Mr. Tudor and Mr. Larson both have made a very excellent presentation, including the fact that although some of these projects only are authorized for immediate full authorization, the others mentioned in the bill are not disapproved. And I take it that the committee may consider them for authorization on a provisional basis as provided by the bill and as recommended by the States, on a basis whereby appropriations may not be made until full and complete feasibility reports are filed and approved by the committee and by the Congress.

I have one question I would very much like to ask. It is not trying to develop the facts in this report but sort of a general question that has always intrigued me.

Mr. Larson, have any estimates been made, or can such estimates be made, that will show the payment to the Federal and State governments in income taxes resulting from the added agricultural production and industries which will be developed by power and by the added agricultural production in the area?

Mr. LARSON. I do not think we have made an estimate of income taxes. We take a lot of other factors into consideration though.

Mr. FERNANDEZ. I had understood that some such estimates have been made in areas already developed, and that the amount of Federal and State income taxes received from the added production and the added industries which have been developed through such a program have been quite large.

Mr. LARSON. Our engineers and economists use, of course, all the available information they can, and we know it does tremendously increase the benefits in an area where these projects are.

Mr. HARRISON. Mr. Dexheimer, did you want to answer that?

Mr. DEXHEIMER. If I may. We have made some such studies, and we would be happy to furnish them for the committee. We do not have them available at this time, but the income-tax figures we get in collecting data, and it shows a very sizable return from all of our irrigated areas. We would be happy to furnish a statement for the record if the committee wishes.

Mr. FERNANDEZ. If the committee wishes. I am not a member of the committee.

Mr. HARRISON. We will request that you furnish the committee with the information as requested by Mr. Fernandez.

Mr. DEXHEIMER. We will be glad to do so.

Mr. FERNANDEZ. Thank you, Mr. Chairman.

(The information referred to follows:)

FEDERAL TAX REVENUES AND RECLAMATION

Each step taken in the development of the Nation's basic resources moves the economy of the Nation to a new and higher plateau. This is strikingly demonstrated in an analysis of Federal tax revenues from Federal reclamation project areas. Based on the projected results of a sample study of 15 reclamation projects, the estimated cumulative return to the Treasury from the 69 projects or divisions of projects receiving water under the Federal reclamation program in 1952 now stands at well over \$2.7 billion dollars. This is an amount greater than total reclamation expenditures for all project works either complete or incomplete since the beginning of the Federal reclamation program in 1902.

The benefits accruing to the Nation through reclamation development are also measured in terms of families served, crop production, and value, livestock raised, and acres irrigated. They are expressed in rapidly expanding trade and business activity, in direct repayment to the Government by the beneficiaries of reclamation, in increased population on and adjacent to projects, and in a wide variety of other phenomena. These are all tangible, measurable benefits of a broad and lasting nature. They translate into expanding business activities in the project and surrounding areas. They filter to every State in the Union and every segment of society. They provide through this process additional economic stability to the Nation which is reflected in part by increased revenues to the Treasury in the far-away States and areas as well as on the projects themselves. The estimate of Federal tax revenues from reclamation project areas is, therefore, only a partial measure of the true contribution of basic reclamation resource development to the Nation's tax structure and to the economy as a whole.

In 1952 individual income taxes paid directly by irrigation farmers and by persons of the neighboring towns and villages whose business or employment was affected by the construction of 15 selected reclamation projects were estimated at \$105 million. The aggregate individual income tax revenues from this sample study area since 1916 is estimated at over \$700 million. In addition to individual tax revenues, an appropriate share of corporation and excise tax revenues collected in the same 15 projects areas is directly attributable to reclamation development. Estimated receipts from these sources total nearly \$400 million. The combined returns from individual and corporate tax revenues accordingly are estimated at \$1.1 billion. Total Federal project construction cost through June 30, 1952, for the same projects aggregated \$264 million. Thus far, Federal taxes collected have exceeded the Federal investment in irrigation features in these projects by 4½ times.

Long after project costs have been repaid by water and power users the new wealth created through Federal reclamation investment will be reflected in a continuous flow of tax revenues from the projects themselves and from the rest of the Nation as well.

Mr. HARRISON. Any further questions?

Mr. FERNANDEZ. No, sir.

Mr. HARRISON. Mr. Westland?

Mr. WESTLAND. Mr. Larson, what agency would merchandise the power developed by these two sites?

Mr. LARSON. In the area as I mentioned just a moment ago, the power market surveys were made by the Federal Power Commission and ourselves. They show that the demand that would come in would include something less than 10 percent from public utilities, cities that have their own power, and REA's, and 90 percent (in the upper basin I am speaking of) is private utilities. There are several sizable private utilities in Utah and Colorado and in New Mexico, of course.

Mr. WESTLAND. Does the Bureau of Reclamation act as the contracting parties, or is it the Upper Colorado Commission?

Mr. LARSON. Our plan is based on the Echo Park Dam being constructed and operated and maintained by the Bureau of Reclamation under this present setup, and I assume that the Bureau would—

Mr. WESTLAND. Be the contracting agency?

Mr. LARSON. Be the contracting officer for that.

Mr. WESTLAND. Can you give me an estimate as to how long it will take to get enough water in these dams to realize the full potential of the power output? I realize it is probably an estimate, but I would like to have it.

Mr. LARSON. Yes. Echo Park would take—according to our construction schedule—about 5 years. I think that is the shortest period possible for Echo Park Dam. Generally at a concrete structure, where the outlets are built first, water can be stored before it is finally completed, such as Hungry Horse and Hoover and Grand Coulee. And Glen Canyon, if it were built now, of course, will fill much more rapidly before any more water is used upstream and it will develop power in sizable amounts when there is above 6 million acre-feet in the reservoir. We can start then to produce power in sizable amounts.

Mr. WESTLAND. About how long do you figure that would take to get 6 million acre-feet?

Mr. LARSON. Again, it would take at least 6 or 7 years to build Glen Canyon—it is a large dam—and that amount of water could be stored before the dam is completed.

Mr. WESTLAND. Water could not be stored until after the dam is completed?

Mr. LARSON. No; it could be stored during building.

Mr. WESTLAND. Could you get 6 million acre-feet in that time?

Mr. LARSON. By the time it is finished we would have 6 million acre-feet in it.

Mr. HARRISON. Any questions, Mr. Rogers?

Mr. ROGERS of Texas. No.

Mr. HARRISON. Mr. Pillion?

Mr. PILLION. Referring to your summary table of the other day, Mr. Larson, I notice that your total annual generation capacity for Echo Park unit—right on top, the second column—is 1,094 million kilowatts; is that right?

Mr. LARSON. Kilowatt-hours.

Mr. PILLION. Yes. And I notice that your total cost there is \$176 million; is that right?

Mr. LARSON. Yes.

Mr. PILLION. Now based on those two figures, excluding the irrigation phases of it, what would be the cost of generating electricity at Echo Park unit?

Mr. LARSON. That is contained in the supplemental report of the Secretary which, I assume, you have. He shows that table.

Mr. PILLION. Referring to that and comparing that with the Glen Canyon unit, do you have the two figures there? Would you have those handy?

Mr. LARSON. They are right in that table of the Secretary's in the second to the last column in the table.

Mr. PILLION. The cost in mills, according to this table, for the Glen Canyon unit is 4.7.

Mr. LARSON. That is right.

Mr. PILLION. And the cost of Echo Park is 5.9 mills; is that right?

Mr. LARSON. Correct.

Mr. PILLION. Is it possible to deliver the electricity generated at Glen Canyon as far as the Echo Park area?

Mr. LARSON. Yes.

Mr. PILLION. And would the cost be appreciably greater than the 4.7, or what would the cost be as compared to producing electricity at the Echo Park unit?

Mr. LARSON. It would have to stand all the transmission costs in that case.

Mr. PILLION. Pardon me?

Mr. LARSON. It would have to stand all of the transmission costs up to that area.

Mr. PILLION. What are the transmission costs? In other words, would the generation of electricity at Glen Canyon, plus the cost of transmission to the Echo Park area, be less than the cost of generating electricity at Echo Park?

Mr. LARSON. For practical purposes about the same.

Mr. HOSMER. Would the gentleman yield there?

Mr. PILLION. Yes.

Mr. HOSMER. By that do you mean the cost of transmitting the power up to Echo Park would equal the cost of the Echo Park unit—\$176,426,000?

Mr. LARSON. No. It would increase the costs above the 4.7 mills.

Mr. PILLION. But it would not exceed the 5.9 which was the original cost of generating electricity at Echo Park; is that right?

Mr. LARSON. I cannot give you that answer exactly. It probably might.

Mr. PILLION. If the costs were——

Mr. LARSON. It would not exceed it.

Mr. PILLION. It would not exceed it?

Mr. LARSON. No, I do not believe so; no.

Mr. PILLION. Then it would not be wise, would it, to build the Echo Park Reservoir at this time or the dam if you can generate and deliver and transmit Glen Canyon electricity up as far as Echo Park Dam?

Mr. LARSON. Yes, we think it would. You have to go beyond Echo Park Dam to others who will want power. You have to get it over to the Salt Lake area, over to the eastern Colorado area.

Mr. PILLION. To do that you have to transmit that electricity from Echo Park and there is an added cost of transmission. I am talking about delivery of electric power from Glen Canyon site to the Echo Park site.

Mr. LARSON. There is not any sale for it just at that point. You have to keep on past Echo Park, to Salt Lake City and over to the Denver area.

Mr. PILLION. Yes.

Mr. LARSON. Which means very, very long transmission without any power added to the line in between. And this rate we have, the 5.9 at Echo Park, provides for transmission.

Mr. PILLION. Do you contemplate building the Glen Canyon first or building it simultaneously with Echo Park?

Mr. LARSON. I think they are shown on our construction schedule—the ideal way is to start on both of them, but Echo Park would come on the line first because it could be built a year, I assume, quicker than Glen Canyon.

Mr. PILLION. Would you start them simultaneously?

Mr. LARSON. Yes.

Mr. PILLION. Do you have a ready market for the power for both units?

Mr. LARSON. Yes, sir; I think we do. I am sure of that.

Mr. PILLION. That is all.

Mr. HARRISON. Senator Watkins, do you have any questions you wish to ask?

Senator WATKINS. I have some questions, yes, sir; but I have a few more than the other gentleman.

Mr. Larson, I think it would help us some if we knew how much water has already been put to a beneficial use in the upper Colorado Basin for the development of the Colorado and its tributaries.

Mr. LARSON. As I said in my statement, approximately 2,000,000 acre-feet. Then there are projects authorized or under construction, and when they are all finished and under full development we have estimated that at $2\frac{1}{2}$ million acre-feet, sir.

Senator WATKINS. Of course, that will all have to be counted as part of the share of the upper basin States?

Mr. LARSON. That must be counted against the upper basin, allotted under the 1922 compact.

Senator WATKINS. And most of those developments that put that water to use were all under private enterprise, by the people themselves without Government help?

Mr. LARSON. No. There are two or three projects in Utah and several projects in Colorado, and Eden project in Wyoming.

Senator WATKINS. I know there are some projects but a substantial part has been done by the people themselves?

Mr. LARSON. A substantial part has been done by the people themselves, mostly during the pioneer period up until about 20 years ago. There has been some extension since then.

Senator WATKINS. As a matter of fact, practically all the development that could be done by private enterprise within their means has taken place prior to this development by the overall program?

Mr. LARSON. That is true. Since about 1938 there have been some extensions in western Colorado in their own systems, putting new lands under irrigation.

Senator WATKINS. What we are confronted with here is a real problem of how to get for the States in the upper basin the amount of water to which they would be entitled under these two compacts.

Mr. LARSON. Yes. The people are very close to the end of the rope now on private development, if that is what you are getting at.

Senator WATKINS. Yes; I am pointing that out.

Mr. LARSON. They are up to that point.

Senator WATKINS. I think it is a fair conclusion to say they have done everything they can do for themselves on their own.

Mr. LARSON. Generally speaking, that is correct.

Senator WATKINS. I do not believe the Government ought to help us do things which we can do for ourselves. On the other hand, I think the Government can help us do the necessary things which we cannot do for ourselves. In fact, I think that is the basic philosophy of this particular reclamation program.

Now what you have attempted to do here, as I understand from the bill itself and from the report, is to work out one project for the entire upper basin division of the Colorado River?

Mr. LARSON. Yes, and in such a way that any initial phase that is authorized will fit into the future developments and leave plenty of leeway for the variation in the use of the water for irrigation, municipal, and industrial purposes. It is pretty hard to tell 50 years from now which way things will turn. But this plan is open to flexibility in that regard.

Senator WATKINS. And in planning this program you have to take into consideration both the compacts and fit the program to the rights of the States?

Mr. LARSON. Yes, sir.

Senator WATKINS. It would have been much easier, I take it, if the river could be planned without regard to the States, as to where it could be used to the greatest advantage.

Mr. LARSON. No. The upper basin compact is a wonderful document under which we make plans because it has settled so many things for us.

Senator WATKINS. I appreciate that and I congratulate the men who were able to compose their differences and cooperate together to develop that compact which made it possible now to proceed.

Mr. LARSON. It does much more than just divide the water. There are a number of other things in the compact that help us in planning for a good, intelligent basinwide plan, and one that can be carried forward in steps.

Senator WATKINS. It has been dwelt on by others, but I think it ought to be made very clear that there would not be enough water to satisfy the needs of the upper basin States—not the needs, I should not say, but their rights under the compact—without this comprehensive program that you and the other members of the Bureau of Reclamation have worked out.

Mr. LARSON. Without that there is no way that the upper basin States can use their allotted amount of water.

Senator WATKINS. How much could they get if they just went out and built projects individually without any regard to the other users on the stream, without a comprehensive plan? How much of their share of the water could they actually use, put to beneficial use?

Mr. LARSON. The projects that could be built by the users which they can finance themselves are very small.

Senator WATKINS. Even with Government help. Suppose they got Government help but did not have the comprehensive program?

Mr. LARSON. They could go on, as I said in my statement, and use what they are using now up to 58 percent, but if they did that, then the 42 percent of the allotment would remain unused.

Senator WATKINS. It would be impossible for them to use that much of it in that fashion?

Mr. LARSON. That is right.

Senator WATKINS. So what you have been trying to do in this whole program is to solve the problem of how to get the most out of the water that is awarded in the upper basin States which they have agreed to divide among themselves?

Mr. LARSON. Yes, and solve it in advance so it can be followed and worked out before the shoe pinches, you might say.

Senator WATKINS. And one other objective has been to make it possible for them also to permit enough water to flow down the Colorado past Lee Ferry to satisfy the rights of the lower States and the country of Mexico, as defined in the 1922 Colorado River compact and in the Mexican water treaty?

Mr. LARSON. Yes. We have assumed that the Mexican treaty and the 1922 compact must be religiously adhered to.

Senator WATKINS. In other words, this kind of program on a river is the kind that calls for very definite and close planning to get the most out of the resources?

Mr. LARSON. That is correct.

Senator WATKINS. That is why it is so necessary to take into consideration the various sites with respect to their losses by evaporation?

Mr. LARSON. That is right.

Senator WATKINS. And after the upper States get all of this water that is coming to them, if they finally do put it to beneficial use, will they have used all their millions of acres of ground?

Mr. LARSON. I do not know how many millions, but they will have considerable areas of arable land that will never be touched with water.

Senator WATKINS. You know the situation in Utah. Can you tell us about what portion of Utah is now under cultivation as a result of irrigation?

Mr. LARSON. The area in the State of Utah is 52 million acres. There are under canal systems about 1,250,000 acres. That is mostly insufficiently irrigated.

The reclamation projects built in Utah have provided a supplemental supply for about 350,000 acres of that 1,250,000, and 65 percent of the value of the crops are raised on two-fifths of the irrigated land.

Senator WATKINS. Percentage-wise, what would that be of the land in Utah?

Mr. LARSON. In percent, that is 1,250,000 and 350,000—

Senator WATKINS. I have heard it referred to many times that we use approximately 3 percent of our land in Utah.

Mr. LARSON. Three percent.

Senator WATKINS. For the growing of crops; is that right?

Mr. LARSON. Yes, it is about 3 percent.

Senator WATKINS. I have in mind also some dry grain.

Mr. LARSON. There is some dry farming in addition to that.

Senator WATKINS. What is the situation with respect to the other States in the upper basin? In New Mexico what is the percentage of land they have they can actually use that they have water for?

Mr. LARSON. I do not get down over the hill into the San Juan Basin very often but the percentage in San Juan Basin is very small. There is a very small area of irrigated land in New Mexico and San Juan Basin.

Senator WATKINS. What about the State of Colorado?

Mr. LARSON. The State of Colorado has a higher percentage of irrigated land than Utah does.

Senator WATKINS. Can you give us the percentage?

Mr. LARSON. No, I do not happen to remember that. And the reason is because we cover practically the whole State of Utah, but in Colorado

we only go up to the Continental Divide. I think later witnesses from Colorado can give you that information.

Senator WATKINS. What about Wyoming?

Mr. LARSON. In the Green River Basin in Wyoming we have 9,000 acres irrigated under the Eden project before we built the Big Sandy Dam, and there are a lot of irrigated ranch lands further on up by Big Piney and Pinedale, up through there, and in the Lyman project area. But I do not know the total acres, but it is still a very small percent of the irrigable land in the upper Green River Basin in Wyoming.

Senator WATKINS. One further question. In working out this program you had to fully follow the terms of the compact. There was no choice, in other words. You did not have any other choice in the matter but to follow the terms of the compact?

Mr. LARSON. That is correct.

Mr. FERNANDEZ. May I be indulged one more question?

Mr. HARRISON. Are you through, Senator Watkins?

Senator WATKINS. Yes.

Mr. FERNANDEZ. Mr. Larson, Senator Watkins' remarks with respect to Utah are peculiarly and especially true with respect to San Juan, where the pioneers have worked hard and done an excellent job of developing what country can be developed by private enterprise, have they not?

Mr. LARSON. Yes, in San Juan Basin.

Mr. FERNANDEZ. And they have now reached the end of their resources so far as the development of land by private enterprise is concerned, and if any more of the waters are to be used in New Mexico, it has to be done under this comprehensive plan?

Mr. LARSON. That is correct.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. I would like to get some information with regard to the San Juan and Navaho projects. On your summary sheet you have as one of your participating projects the Navaho Shiprock, and as one of the additional projects you have Navaho-San Juan. I wonder if you could differentiate the two for me.

Mr. LARSON. We have some confusion in names, and I will try and straighten that out.

The Navaho (Shiprock division) the reservation down at Shiprock here [indicating] is south of Farmington.

Mr. YOUNG. Is that an Indian reservation there around Shiprock?

Mr. LARSON. Yes, that is the Navaho Reservation. Upstream from the Navaho Reservation we have about, I believe, 29,000 acres of land on what is known as the South San Juan Division a part of what we now call the Navaho project. That, generally speaking, is white-owned lands, but there are some Indian-owned lands also in that division.

Then inside of the Navaho Reservation is the Shiprock division of the Navaho project. Yesterday I submitted a supplemental statement to my statement that explains the Navaho project and its two divisions.

Mr. YOUNG. There are two divisions of that Navaho project, one white owned and the other Shiprock; is that right?

Mr. LARSON. No. One is the south San Juan, which we call generally white owned.

Mr. YOUNG. Where is the south San Juan?

Mr. LARSON. The south San Juan is the land upstream from the east boundary line of the reservation, and inside of the reservation is the Shiprock Division, which is the proposed Indian development by the Indian Bureau.

Mr. YOUNG. And the Department wants to have them part of another project; is that right?

Mr. LARSON. We investigated them separately in one sense. We had a joint canal from the Navaho Dam, and it was determined by the Secretary that we should investigate that and cover it by 1 detailed report, which is being done now, and shows 2 divisions but in 1 report.

Mr. YOUNG. But it is not a part of the Colorado River storage project, or would it be a part?

Mr. LARSON. That would be a participating project to the Colorado storage project and only the Shiprock Division, including the Navaho Dam is included in the 12 participating projects.

Mr. YOUNG. Mr. Dawson's bill has the Navaho listed as one of the units.

Mr. LARSON. That is right. In our 1950 report the Navaho Reservoir was listed as one of a team of 10 reservoirs.

Mr. YOUNG. Is the Navaho Reservoir in existence now?

Mr. LARSON. No.

Mr. YOUNG. Under contemplation?

Mr. LARSON. That has been moved over in the report of the Secretary and concurred in by the State of New Mexico, to the category of a participating project—included as a participating feature is the storage reservoir necessary for the Navaho project.

Mr. YOUNG. Will you generate power there, too?

Mr. LARSON. No; power is not feasible.

Mr. YOUNG. Under Mr. Dawson's plan as one of the units it would be hydroelectric; is that right?

Mr. LARSON. In 1950 we envisioned that possibly we could develop power there because it looked like the Indian project was way in the future and also the San Juan-Chama. Now things have gone along more rapidly, so now it is determined best to attach Navaho Dam directly to the Navaho project including the south San Juan division as the full storage is required for the projects. Then if we have more rapid development, power is not feasible.

Mr. YOUNG. You figured the power was not feasible because of the expense involved; is that right?

Mr. LARSON. We thought it might pay out before the lands were fully developed, but that does not look so now.

Mr. YOUNG. I notice you have the central Utah project in the initial phase only. Why do you differentiate the central Utah and have that only in the initial phase when the other 11 projects are apparently initial and ultimate phase?

Mr. LARSON. That is a good question.

The initial phase of the central Utah is one of the projects recommended for authorization in the 1950 report and is again included in the supplemental report of the Secretary which you now have. The bill includes also the ultimate phase of central Utah, but that is very large.

Mr. YOUNG. Does Mr. Dawson's bill include that?

Mr. LARSON. Yes, for conditional authorization. Inasmuch as it is conditional and so very large, we do not have the details for the ultimate phase.

Mr. YOUNG. In other words, the Department might favor the ultimate phase if they had the details, but out of caution they are only in favor of the initial phase because they do not have the necessary planning. Is that it in essence?

Mr. LARSON. Generally speaking, that is correct. We have submitted a report on what we show as economic justification and engineering feasibility.

Mr. YOUNG. If the Department's plan were accepted, then it would be necessary to dovetail the ultimate project in with the financial structure at a later date; is that right?

Mr. LARSON. We have conceived of the ultimate phase of the central Utah, which is very large, very costly over a period of years, as needed beyond the initial phase. The initial phase would take at least 15 years to construct.

Mr. YOUNG. What will be the effect on the level of Lake Mead if all of these dams are constructed? Will it fluctuate more or less? Or will there be any effect at all?

Mr. LARSON. The fluctuation of Lake Mead will actually be less, but the power generation will be less by whatever water is consumptively used in the upper basin, by whatever projects are authorized.

Mr. YOUNG. Do you have any idea how much of the power head will be available? Would that be the same.

Mr. LARSON. Actually it may be greater, for the reason that Lake Mead now must have a reservation for flood control, and when Glen Canyon is built, that flood control automatically moves up to the upper basin.

Mr. YOUNG. How much less power do you think will be available from Hoover Dam in the event this project is authorized in the present bill?

Mr. LARSON. Under full development, 75 or 100 years, whenever it is reached in the upper basin, I mentioned in my statement that the total power production of Glen Canyon and the other 8 plants would be reduced from 9 billion down to about 6 billion kilowatt-hours annually, and there would be a comparative reduction in the output of Hoover. Maybe not that much because the head would be greater. So the reduction at Hoover would not be that large.

Then there is, of course, additional inflow between Glen Canyon and Hoover Dam.

Mr. YOUNG. Will Bridge Canyon ultimately fit into control of the river? Or if this is constructed, would there be any need for Bridge Canyon?

Mr. LARSON. This will really make Bridge Canyon. Of course, the power output of Bridge Canyon, we have assumed, would be absorbed downstream because the power market shows that it could be readily absorbed.

Mr. YOUNG. Would this make Bridge Canyon less desirable or more desirable?

Mr. LARSON. This will make Bridge Canyon attractive for two reasons. It regulates the stream. And Bridge Canyon Reservoir does

not have the capacity. It is only about 3½ million acre-feet. So the regulation would take place at Glen and the silt retention capacity would be at Glen; so that it really makes Bridge Canyon attractive.

Mr. YOUNG. More attractive than it would be without these works being constructed; is that right?

Mr. LARSON. Much more. If constructed without Glen, its life would be short.

Mr. YOUNG. If I recall your testimony yesterday, I think you said that one reason for favoring the Echo Park site was the fact that ultimately alternative sites, even the best of the alternative sites, would result in about 100,000 acre-feet being lost by evaporation. Is that correct?

Mr. LARSON. In my mind it is actually more than that. The 100,000 acre-feet is using the new Moab as an alternative, and since that is in a national monument, in my mind I cannot compare Echo Park with it, moving from one monument to another. If you are just talking about monument reasons.

Mr. HARRISON. Might the Chair interrupt here. We are pushing our time to adjourn. I want to give you all the time you need.

Mr. YOUNG. Could you translate that 100,000 acre-feet into monetary terms? Would a farmer around the Echo Park site, wherever that water would be used, be willing to pay \$2 an acre for that, or \$5 an acre-foot for that, or 50 cents an acre-foot, or have you given that any consideration?

Mr. LARSON. The price that they can pay—it is not what they are willing to pay. But the repayment ability varies in the upper basin. It might be \$1 up to several dollars, depending on the location.

Mr. YOUNG. And for industrial use it might even be higher?

Mr. LARSON. It might even be higher; municipal purposes still higher.

Mr. YOUNG. That is all I have.

Mr. HARRISON. Upon reconvening at 2 p. m., Mr. Hosmer and Mr. Rhodes will have all the time that they would like to have for their questions. Following that I believe Mr. Dexheimer will testify. Are there any other witnesses from the Department you want on this afternoon, Mr. Dexheimer?

Mr. DEXHEIMER. Mr. Chairman, there are no other witnesses at this time.

Mr. HARRISON. At this time?

Mr. DEXHEIMER. Right.

Mr. HARRISON. And then following Mr. Dexheimer we will endeavor to hear the Senators and Representatives of the States involved who would like to give their reasons for their position on these projects.

The committee will now stand in recess until 2 p. m.

(Whereupon, at 12 o'clock noon, the subcommittee recessed, to reconvene at 2 p. m. of the same day.)

AFTERNOON SESSION

Mr. HARRISON. The committee will come to order.

Mr. Hosmer is not here, so Mr. Rhodes is in line for any questions he would like to ask Mr. Larson.

Mr. RHODES. Mr. Hosmer will be delayed. He would like to reserve the right to question Mr. Larson later, if he may.

Mr. Larson, you have been talking about power this morning. You are quite familiar with the upper Colorado compact. Does this compact purport to divide the power between these States which might be generated by the project? Is there any division of power?

Mr. LARSON. Our report does not divide the power.

Mr. RHODES. I am talking about the upper Colorado compact.

Mr. LARSON. That does not.

Mr. RHODES. There is no division of power?

Mr. LARSON. There is no division of power.

Mr. RHODES. In other words, it is the position of the upper basin States, and also the position of the Bureau, that you will market the power where you can and market it as soon as possible, I presume.

Mr. LARSON. I assume that the States and the Department together will determine where to market the power.

Mr. RHODES. They will determine where to market the power?

Mr. LARSON. Where it will be marketed.

Mr. RHODES. The Bureau, of course, is the contracting agency for marketing this power. I presume that the States would actually have nothing to say about where this power is marketed, except in so far as legislation passed by Congress would control the place of marketing?

Mr. LARSON. I assume legally that is correct, but again I am not an attorney and I do not know how much the States would have to say.

Mr. RHODES. The Bureau is the marketing agency.

Mr. LARSON. It is set up that way in the report.

Mr. RHODES. And since there is nothing in the compact which provides that certain numbers of kilowatts will be marketed in certain areas, presumably the Bureau will have more or less a free hand in marketing power.

Mr. LARSON. I assume it would be marketed in accordance with the departmental policy.

Mr. RHODES. In marketing this power, the bill provides that first preference should be given to the States of the upper basin. In your opinion, will power be marketed in areas which are within those States, but which are geographically outside of the upper basin?

Mr. LARSON. In answer to that question, I would refer you to paragraph 10 on page 3 of the Secretary's report which I believe comments on that.

Mr. RHODES. Would you care to read that?

Mr. LARSON. It states, "The State of Arizona also concurred in the report and expressed a desire to be included in the power marketing area of the project on the same basis as other upper basin States. The power-marketing studies in the report were made as examples only, and the method of preparing those studies does not evidence any intention to exclude Arizona from the use of power from the project."

Mr. RHODES. Did you have anything to do with the preparation of that paragraph?

Mr. LARSON. Not personally.

Mr. RHODES. Do you know who did prepare it?

Mr. LARSON. No, I do not.

Mr. RHODES. My reason for asking that is that there are certain weasel words in there that I would like to have spelled out by somebody, and I presume that sooner or later I will get that done. The question which I originally asked you, however, did not particularly apply to this paragraph 10. What I am trying to determine is this, and I will give you a hypothetical case.

Certain parts of, say, the State of Utah are within the upper basin geographically. Other parts of the State of Utah are not within the upper basin geographically.

Mr. LARSON. That is correct.

Mr. RHODES. Is it your position that the power from these projects will be marketed in the State of Utah not only in the part which is geographically in the upper basin, but also in those parts which are not in the upper basin?

Mr. LARSON. Yes, sir.

Mr. RHODES. And that also would be true of other States in the upper basin?

Mr. LARSON. That is right.

Mr. RHODES. I would like to ask you a question concerning the high Glen Canyon. I think you stated it would inundate the Rainbow Bridge. Will it completely cover the bridge with water or will it just rise up?

Mr. LARSON. No. With the 26 million acre-feet the water comes up in the canyon below the bridge, and when you get materially an elevation above the elevation of 26 million acre-feet, you would go up under the bridge and to the bridge abutments. Does that answer your question?

Mr. RHODES. It does not completely inundate the bridge.

Mr. LARSON. No, that is correct.

Mr. RHODES. So actually there would be no great impairment of the scenic value of the Rainbow Natural Bridge by the building of the high Glen Canyon Dam?

Mr. LARSON. That depends on how you look at it.

Mr. RHODES. If you want to use it for a bridge to go under, it actually could cover it, could it not?

Mr. LARSON. Yes, raising the water surface above the 26 million acre-feet I called your attention this morning to the fact that the water would soon spread out over wide areas and be subject to a greater loss in proportion to the storage.

Mr. RHODES. Do you have any plans for connecting the power generated at Glen Canyon with the power grid from Hoover Dam and Parker and Davis Dams?

Mr. LARSON. We have assumed that whatever power would go down the lower basin would, of course, be closely coordinated with the other powerplants in the Colorado River, including Hoover Dam.

Mr. RHODES. From an engineering standpoint would it not be desirable to use the Glen Canyon and the Hoover Dam systems to firm each other up?

Mr. LARSON. There can be some coordination as to that, although we have pretty well planned in the upper basin to have a system that will produce firm power. It can of course be coordinated with other power systems.

Mr. RHODES. There is no present plan to market any Glen Canyon power to the Hoover grid.

Mr. LARSON. Not as definite plans for the reason that marketing any substantial amount of power from the Glen Canyon Grid downstream would require additional transmission lines beyond Hoover because those transmission lines I assume would not be able to take large additional amounts.

Mr. RHODES. You assume that?

Mr. LARSON. They are designed to take Hoover Dam and not another dam.

Mr. RHODES. I see. You mean that if Bridge Canyon were built, the transmission facilities would have to be replaced?

Mr. LARSON. You would have to build a new transmission line to take whatever additional power would come from Bridge Canyon.

Mr. RHODES. That is all, Mr. Chairman.

Mr. HARRISON. Mr. Hosmer.

Mr. HOSMER. Thank you. Let me say, Mr. Larson, like my colleague from California, Mr. Engle, we Californians would like to see the upper basin developed to the full extent. Our only questions are general ones as taxpayers of the rest of the Nation in that we are interested in this from the standpoint of economic feasibility. A specific interest we have in it is, of course, to insure that this legislation or any similar type legislation reserves the rights of the lower basin, such as are set up in the Colorado River compact and by other means. So my questions will be directed to those two lines of inquiry.

On page 1 of your report, you state that the upper Colorado development would make possible regulation of sediment control which is needed at an early date, and insure maximum utilization of power potentialities above Lake Mead and Lee Ferry. Is that the Bridge Canyon project you are talking about?

Mr. LARSON. Probably I might have been making a poor choice of a word, but we meant comparatively early, and built in advance of any development down there that might be built.

Mr. HOSMER. In other words that early date is improper?

Mr. LARSON. What we mean there is that Glen needs to be built at an early date if the Bridge Canyon is built, and you could not go very many years comparatively speaking before it would be full of silt, say 35 or 40 years.

Mr. HOSMER. In connection with that silt you are familiar with the original estimates that were made in connection with Hoover Dam and Lake Mead?

Mr. LARSON. The one by the Navy and Geological Survey recently.

Mr. HOSMER. Do those coincide with the estimates that were originally made or are they greater or less?

Mr. LARSON. I believe the original estimates by the Bureau of Reclamation when they were designing Hoover Dam were that it would not hurt Lake Mead much for about 190 years or something like that from sediment deposition and I think the later studies now of the Navy show a slightly longer time than that.

Mr. HOSMER. That is pretty close to 200 years.

Mr. LARSON. Now we are dealing with a fairly long period so I would say for all practical purposes the two estimates check.

Mr. HOSMER. You state that this upper basin development would make a material contribution to the lower basin; what is that contribution?

Mr. LARSON. It would make possible a feasible power development at Bridge Canyon, and it would prolong the life of Lake Mead, and of course you can extend it on to the other two after Lake Mead is considerably damaged by silt in the future.

Mr. HOSMER. There is no present material contribution to the lower basin, then; is that right?

Mr. LARSON. There are no reservoirs built on the main stem of the upper Colorado River on the upper basin to stop any silt as yet.

Mr. HOSMER. In your testimony, do I understand that what you say is applicable to the Department's recommendations and specifically not to the bill before the committee?

Mr. LARSON. As my statement says in the first paragraph, I would briefly explain the Glen Canyon and Echo Park storage units, and the 12 irrigation and multiple-purpose participating projects recommended for authorization in the supplemental report of the Secretary of the Interior, dated October 19, 1953, and that I would also briefly describe the units not contained in the Secretary's supplemental report, but included in the bills before you.

Mr. HOSMER. You have recommended this development, and I am trying to establish whether you are recommending everything or what is in the October report.

Mr. LARSON. I think that is clearly set out, Mr. Hosmer, in the Secretary's report, where he specifically covers those additional units and projects. He mentions the Curecanti and the Navaho and the rest of them.

Mr. HOSMER. Is your capacity as a witness here as an individual or as representing the fourth region or fifth region?

Mr. LARSON. I am the regional director of region No. 4.

Mr. HOSMER. It is as a representative of the Department?

Mr. LARSON. I will let Mr. Dexheimer answer, but I assume I am one of the witnesses now of the Department.

Mr. HOSMER. Is it your purpose to sell or explain this project?

Mr. LARSON. My purpose is to explain.

Mr. HOSMER. You make a statement in your testimony—go ahead.

Mr. LARSON. I would like to refer to the third paragraph in Mr. Tudor's statement:

Accordingly, while we are not in a position at this time to make any recommendation for authorization of the project, we will in response to the request of the chairman of the Committee on Interior and Insular Affairs present our planning report and its findings and testify with respect to the project plan—and that is what I have been attempting to do.

Mr. HOSMER. You testified that this project would enrich the economy of the area and the Nation. Is that a general statement of opinion, or is it a statement of fact?

Mr. LARSON. It naturally is our opinion as a result of our studies and findings of feasibility of these projects as we have reported them.

Mr. HOSMER. And that applies to such other statements that without it the growth of the upper basin would be stunted?

Mr. LARSON. Yes, without them it would eventually stand still.

Mr. HOSMER. In that connection I would like to ask this question. Has there been any consideration at all in the development of the Department's attitude and specifically your testimony of the growing technical developments in the field of power production by atomic energy?

Mr. LARSON. I assume that the Department has taken note of that.

Mr. HOSMER. You are representing the Department and I think you are pretty well—

Mr. LARSON. Not in that respect, though.

Mr. HOSMER. You drew up your own testimony that you have given to the committee; did you not?

Mr. LARSON. Yes.

Mr. HOSMER. Did you make any of those considerations with regard to atomic development in drafting the statement that you made with respect that without this project the growth and development of the area would be stunted and so forth?

Mr. LARSON. We have looked at the power market and our power market studies show that these dams, looking into the future, would only meet just a portion of the demands for electric power, and that it will fit in with whatever means of producing power come along because certainly that will not be for nothing.

Mr. HOSMER. My question, Mr. Larson, was, did you in writing up your statement of this have in mind any of the developments with respect to power generation by use of nuclear reactors?

Mr. LARSON. We have been of the opinion—and I am speaking of ourselves in region 4—that would not interfere or affect the power production and the sale of power of these 9 dams, particularly the 2 that we are asking for authorization now.

Mr. HOSMER. Have you done any study of the nuclear developments in this field?

Mr. LARSON. No. Only what I have read in the reports in the newspapers. As I said, I am not an expert in that field.

Mr. HOSMER. In other words, your testimony insofar as that particular angle is concerned is purely a layman's opinion?

Mr. LARSON. I think it is a little more than that. I have gone on the basis, too, that if the Department thought otherwise, they probably would not give the statement.

Mr. HOSMER. You say you have gone on that assumption; is that right?

Mr. LARSON. I have gone on the assumption that it was reasonable to expect that we could dispose of the power and nuclear energy in the future would not interfere with the development and sale of this power. We have also given consideration to the fact that these dams would have to be built, if the water is going to be used, and then simply the powerplants could be added.

Mr. HOSMER. In other words, we are to evaluate your statements in light of that assumption if we have any different information with respect to nuclear development?

Mr. LARSON. Of course, if you have any different information it would be up to you to evaluate it.

Mr. HOSMER. In answer to Mr. Dawson's question awhile ago, with respect to where you are going to sell this power, I gathered that you feel that there is a market for it, but you do not desire to state specifically where it is going to be sold; is that correct?

Mr. LARSON. We have satisfied ourselves through the market surveys of the Federal Power Commission and our own that all of the power actually could be marketed in the upper basin, if necessary, and that there would be a need for it.

Mr. HOSMER. Let me stop you there. In your statement you say that within a period of 20 years. Are you changing that?

Mr. LARSON. No, I am not changing that. I said three-fourths, I believe, within a period of 20 years in my statement; did I not?

Mr. HOSMER. I will read it.

The estimated market demand for hydroelectric energy in the upper basin would require total installed capacity of all nine powerplants within the 20-year period.

That is on page 5 of your statement.

Mr. LARSON. That is 20 years after it is on the line.

Mr. HOSMER. 20 years after all nine powerplants are on the line?

Mr. LARSON. No. After the first one of Echo Park and Glen Canyon.

Mr. HOSMER. This chart you had of repayment of a lot of these things out of the power revenue, that is based on selling these revenues or selling this power up to a certain percent of capacity; is it not?

Mr. LARSON. We have a construction schedule worked out on Echo Park and Glen Canyon. Then the schedule as to when the various units would come on the line, and that chart that we had showed you the revenues that would come in as fast as the units come in, and they go on quite rapidly.

Mr. HOSMER. That is what I say. Your revenues depend on selling this power.

Mr. LARSON. That is correct.

Mr. HOSMER. My question is that you base it on selling the power.

Mr. LARSON. That is correct.

Mr. HOSMER. According to your statement here it will take a period of 20 years before you are able to sell all this power.

Mr. LARSON. That was for all nine reservoirs. This chart I was showing you this morning is only for Glen Canyon and Echo Park.

Mr. HOSMER. In other words, this statement then in your testimony of page 5 is applicable to something other than what you have been testifying about here today?

Mr. LARSON. The chart that I testified on this morning was for the disposal of all of Glen Canyon and Echo Park and central Utah, of course, and the statement at the end of the first paragraph on page 5, the 20 years after the first unit is on the line, pertains to the time when all 9 of the dams would be constructed.

Mr. HOSMER. That is a longer ways off than I originally thought, is it not? How long do you think it would take to get the nine constructed?

Mr. LARSON. What we are saying is that there is enough power demand to use the output of all 9 power dams 20 years after the first one is on the line.

Mr. HOSMER. In other words, from today, it is not 20 years, but 20 years from whenever they get all 9 dams built?

Mr. LARSON. No, that is not true. Probably 25 or 26 years from today if they are authorized today. That is what it is based on.

Mr. HOSMER. I did not hear that.

Mr. LARSON. Supposing it was authorized in this session of Congress, and we need a year for the report, preconstruction activities, 5 years for building the dam, then 20 years after that.

Mr. HOSMER. Let us take Echo Park and Glen Canyon; how long from the time you get them constructed would you have a sale for all

the power within the upper Colorado Basin? That would be the same time, would it not?

Mr. LARSON. Glen Canyon Dam would require about 6 years to build and the units could start to be installed toward the completion of the dam, and then thereafter as you can get them. Large units are difficult to get. That would string over a period of years for all units. How long I could not say.

Mr. HOSMER. In other words, in paying back, your chart is based on selling the maximum average capacity of these dams, is it not?

Mr. LARSON. We have estimated a schedule of when they would come on the line and what power would be available and sold during the 44 year payout.

Mr. HOSMER. You are planning on selling all of it you can?

Mr. LARSON. That is correct.

Mr. HOSMER. And you have had market surveys made and as a result of them you believe that somebody will buy the power?

Mr. LARSON. That is correct.

Mr. HOSMER. But you do not have any specific customers in mind, is that correct?

Mr. LARSON. Yes, we do have.

Mr. HOSMER. Have you got any contract negotiations or any commitments by anybody to take this power?

Mr. LARSON. We have had evidence from the power companies that this fits in with their scheme of things.

Mr. HOSMER. You are talking about the upper Colorado Basin power companies?

Mr. LARSON. Yes.

Mr. HOSMER. But it is going to take a period of 20 years before all this power can be sold within the upper Colorado Basin. Who out of the upper Colorado Basin is going to buy that during this waiting period for the upper basin to develop its consumption of it?

Mr. LARSON. We are sure, first, that we have enough sale for the power from Glen Canyon and Echo Park. We assume that there will be plenty of market for the power from the other dams as they are built. In fact, they would probably not be built until the demand is there.

Mr. HOSMER. Am I to understand, then, that this power is all going to be sold within the upper Colorado Basin at all times?

Mr. LARSON. No, sir.

Mr. HOSMER. Then I ask you if they are going to sell it outside and the answer to that must be yes.

Mr. LARSON. We figure there is plenty of demand for power even outside of the basin, especially in the lower basin.

Mr. HOSMER. In fact, you are going to have to sell it outside to use it up?

Mr. LARSON. We do not have to. If there is not enough demand for it in the upper basin it may be sold in the lower basin.

Mr. HOSMER. Sir, did you not tell me that your economic surveys do not show a present demand for all of that power, and therefore to get rid of it, you are going to have to sell it outside of the basin?

Mr. LARSON. You are confusing Echo Park and Glen Canyon with the whole nine dams. If we should build all 9 dams now, there is not sufficient present market for the output of all 9 dams in the upper

basin. But there is sufficient market for the Glen Canyon and Echo Park. That does not mean that some will not go downstream.

Mr. HOSMER. That brings up a point here in this specific piece of legislation that is before the House that requires the Secretary of the Interior to insert a termination clause in any contract for power going outside of the Upper Colorado Basin. It can be terminated when and if the power is needed up there. With that in mind, do you think that anybody outside of the upper basin would buy the power subject to having it cut off?

Mr. LARSON. I could not speak for those power purchasers.

Mr. HOSMER. Is it not a fact that the purchasers of power consider the continuation of the supply over a definite period of time an essential?

Mr. LARSON. As I understand that provision in the bill that you are talking about, it also has a proviso for replacement or adjustment of rates or something.

Mr. HOSMER. This is what it says:

Such contracts shall be subject to termination or modification to the extent deemed necessary by the Secretary to meet power requirements in the States of the Upper Colorado River Basin.

Period. There is no saving clause in there.

Mr. LARSON. To make adjustments. I do not know what that means.

Mr. HOSMER. Is it not a fact that it would be risky for any power consumer to attempt to rely upon such a source of power under those conditions?

Mr. LARSON. They could not build expensive transmission lines for them.

Mr. HOSMER. You have to have transmission lines to move it.

Mr. LARSON. I think that part of the bill should be something to question the States about.

Mr. HOSMER. In other words, that is something we should watch out for in the bill, is that right?

Mr. LARSON. That is something that is in the bill that is not for me to testify on.

Mr. HOSMER. You are testifying about this whole thing, are you not? I will withdraw the question. I am not trying to badger, Mr. Larson. I am seriously trying to get some information here. That is the purpose of my inquiry. As I say, this project, if it is feasible and if it does not interfere with the upper basin's use of the water, that is fine.

Mr. LARSON. I assume if the power went down to the lower basin, it would have to go down on a long enough term to justify transmission lines or there would have to be some other way of replacing it.

Mr. HOSMER. You explained some differences between the cost of these projects estimated in 1950 and the cost estimated in 1954.

Mr. LARSON. The last of 1953.

Mr. HOSMER. How did you translate your 1950 figures into your 1953 figures?

Mr. LARSON. We went back to the individual project costs and applied the new index furnished by the chief engineer from Denver to bring the prices up to date on different types of work.

Mr. HOSMER. Is that a percentage index to each of the different classifications of work?

Mr. LAWSON. It would be a higher percent for tunnels and another percent for concrete dams. It would depend on what type of work. The cost index is not the same for the 3 years for any 2 types of work.

Mr. HOSMER. But you applied percentages to the various components in making up the total cost in arriving at the present figures?

Mr. LARSON. There are other changes, too, Mr. Hosmer, besides changing the estimated cost of a feature. We had just a prorated charge for transmission system in the estimated costs of the 9 dams in the 1950 report, whereas now in our latest estimates we have worked these 9 dams out on an incremental basis to arrive at the transmission costs. In other words, we start with Echo Dam and Glen Canyon and we add in incrementally the other dams as we go along over the period of years.

Mr. HOSMER. You have been with the Bureau for a number of years, and I believe you have participated in the estimating of costs on these various projects during that time and some considerable length of time, have you not?

Mr. LARSON. Yes, sir.

Mr. HOSMER. Have you so participated in any projects that have actually been authorized and built?

Mr. LARSON. I have been construction engineer on several projects that I had charge of the planning in the first place, if that is what you are getting at.

Mr. HOSMER. I am trying to find out if you have had experience in the making of these estimates upon which the congressional committees have relied and passed legislation?

Mr. LARSON. When I first came in the Bureau in 1923, I was used in preparing estimates of dams, canals, tunnels and so on.

Mr. HOSMER. And you have been doing that work ever since?

Mr. LARSON. No, I have not. I have been administratively in charge since, and I do not do the detailed figuring myself.

Mr. HOSMER. The final figures are the responsibility of your office, is that right?

Mr. LARSON. I am responsible to see that we keep in close touch with the chief engineer on the change in estimating, keep up with the times on contracts we are awarding, change the estimates when there is a need, and also strive to get better information as the years go on. We get better information today than we did when I started in the Bureau in 1923, for example.

Mr. HOSMER. There was a statement made this morning that since 1903 the Bureau had only been right on one of these estimates and they all cost more than that. Was the one that was right your estimate?

Mr. LARSON. I disagree with that statement.

Mr. HOSMER. As a matter of fact, what is the fact, to your knowledge?

Mr. LARSON. I think there are quite a few projects built at the estimated cost. There are three principal reasons why a lot of them have not been. One is that in the early planning they did not have detailed information as well as we do now, and I think you will find in Report No. 933 of the 83d Congress to accompany H. R. 4551 that about 51 percent of the money spent by the Bureau of Reclamation in building projects has been expended from 1947 to 1951, so that a lot of the projects built during the increased prices were on plans which

were prepared earlier. In other words, prices have gone up materially since they were first planned. That is one reason.

Another reason is that the projects have been enlarged after they were first presented. Then I notice in the case of 2 projects 1 of which I am very familiar in working up the plans, the Hyrum project in Utah, is listed in here as \$930,000, and it cost more than that. Some of those costs that enter in there are not repayable. It may have been money put up by the State of Utah, for example, that is not to be repaid, and was not figured in the estimate to be repaid by the water users. In that particular case it was estimated that the water users would pay back \$932,000. The repayment contract was made for \$930,000. I do not know how the two got dropped. We built the dam and the canals within that estimate.

Mr. HOSMER. In general for reasons not under your control, these projects have actually cost more money than they were anticipated to cost, is that not a fact?

Mr. LARSON. Yes, I was giving you the reason why a large part has.

Mr. HOSMER. Yes, I understood. There may be various reasons for that, but in general, they always cost more than they were estimated to cost. What assurance can you give us with respect to the cost figures that you have placed before the committee in this case will be the ones that will actually turn out on the actual construction?

Mr. LARSON. In this case we have to my knowledge more detailed information on Echo Park and Glen Canyon participating projects than we usually had before, and we have contingencies in our estimates, and I think the estimates are all right. If the value of the dollar should go down again, then they would need to be raised upwards. However, if the value of the dollar increases, then we might be off in the other direction.

Mr. HOSMER. In other words, you could not guarantee us that we would get the dam for the amount of these estimates.

Mr. LARSON. These are estimates that pertain to today's unit prices.

Mr. HOSMER. Mr. Larson, on page 11 of your testimony you make this statement:

Careful study of all available data shows that the depletions resulting from all the projects contained in the bill would have no appreciable effect on the quality of the streamflow passing Lee Ferry.

First, I would like to know, does this statement apply to the 2 power projects and the 12 participating projects only?

Mr. LARSON. It applies to taking out of the stream the evaporation from the reservoirs and the consumptive use of irrigation projects with the figures I believe I gave Mrs. Pfof this morning.

Mr. HOSMER. You are talking specifically there about these projects in the bill, and no other projects.

Mr. LARSON. That is right.

Mr. HOSMER. In your testimony on page 2, you indicate that there are some 100 projects, that is, potential irrigation and power projects in the upper basin, is that right?

Mr. LARSON. No.

Mr. HOSMER. That is what you say. There are over 100 potential irrigation and power projects that could use the upper basin. Mr. Aspinall said 253, but I think you came to some agreement about that

Mr. LARSON. I think I mentioned yesterday that our Colorado River report covering both basins in 1946 shows 100 potential irrigation and power projects in the upper basin. That does not mean that they would all be built or that they would all be found feasible. That was just an inventory of potentialities, and they were not detailed reports showing their feasibility.

Mr. HOSMER. Yes, sir. But in connection with this testimony of yours we have heard the expression "phase 1 and phase 2" of this upper Colorado Basin development, have we not?

Mr. LARSON. Not from me.

Mr. HOSMER. I think I used it one time and somebody else used it one time, but there are other projects that you have spoken about upon which more detailed study will be made and they will be offered at some time or another possibly.

Mr. LARSON. I think all the way through my testimony I have referred to initial participating projects and initial units and then I have mentioned this is a basinwide plan that can progress as needs and desires arise in the future.

Mr. HOSMER. I think the summary table at the end of your testimony has listed additional participating projects in the bill, at least. In that connection, are any of these projects in your report of a transmountain diversionary character?

Mr. LARSON. The San Juan-Chama and the ultimate phase of the central Utah but I do not include it in the bill.

Mr. HOSMER. What was the second one?

Mr. LARSON. Maybe I do not understand you. Do you want the transmountain diversions?

Mr. HOSMER. The 12 participating projects.

Mr. LARSON. Yes. The initial phase of the central Utah, roughly four-fifths of the water.

Mr. HOSMER. What other project is of transmountain diversionary character?

Mr. LARSON. The central Utah, in the 12, only the central Utah. Additional projects in that list are the San Juan-Chama and the Gooseberry. There are three.

Mr. HOSMER. What available data was used in your careful study to come to the conclusion that you did on page 11, namely, that there would be no appreciable effect on the quality of the water?

Mr. LARSON. That conclusion was based on the 12 initial participating projects, including the Shiprock division and Echo Park and Glen.

Mr. HOSMER. What available data was used to make the study?

Mr. LARSON. From some studies in our office.

Mr. HOSMER. I will put it this way, then. Would you explain to me how you came to this conclusion?

Mr. LARSON. I would like to have Mr. Jacobson explain that a little, if it is all right with you.

Mr. HOSMER. Yes.

Mr. JACOBSON. At Lee Ferry, there is a continuous record of quality of water or concentrations of dissolved solids in the stream taken several times a day over a long period of years.

Mr. HOSMER. Let me ask you about that. Is that something that you take the average annual and minimum annual flows?

Mr. JACOBSON. No. Samples are taken not only daily but during certain periods of the day in some instances. It is almost a continuous record.

Mr. HOSMER. This study, then, that you are basing this conclusion on, what period did it cover?

Mr. JACOBSON. We purposely took the low-flow period of years, 1931 to 1947, which covers the most severe period of record, as far as concentrations are concerned.

Mr. HOSMER. There is some table that gives that, is there not, in your 1950 report.

Mr. JACOBSON. Of flow, yes sir, but not salt concentrations.

Mr. HOSMER. But your flows.

Mr. JACOBSON. That is right.

Mr. HOSMER. What page of your 1950 report is that on?

Mr. LARSON. That is on page 56 of the 1950 report.

Mr. HOSMER. Do you have any figures showing what would be the average annual minimum flow passing Lee Ferry if the upper basin used its 7,500 acre feet annually?

Mr. LARSON. You mean we have a table showing—

Mr. HOSMER. Do you have any figures?

Mr. JACOBSON. Yes, on page 62, column 3, if there were no reservoirs constructed in the upper basin, and a total of $7\frac{1}{2}$ million acre-feet were being consumed, column 3 would give you the resultant flow on an annual basis at Lee Ferry.

Mr. HOSMER. What is the average annual and minimum annual from that column?

Mr. JACOBSON. In that case it would be around 1,160,000 in the year 1934.

Mr. HOSMER. Is that a minimum annual figure?

Mr. JACOBSON. That is on the supposition that there would be no releases made from storage. But under the condition of the reservoir being built that flow would be supplemented to a large extent with storage water.

Mr. HOSMER. That is based on a total consumptive use of all the amount allowable?

Mr. JACOBSON. That is right.

Mr. LARSON. It does not include storage releases.

Mr. HOSMER. Your study is based on your 1950 report figure. Would the estimates you made be any different, or would that table be any different if you used the period instead of 1931 to 1947 up to the present time, 1953?

Mr. LARSON. It would be a little higher. With all 9 reservoirs and in this case it is 10 including the Navaho, the delivery at Lee Ferry is the next to the last column in the table on page 81, which in 1934 the delivery would exceed 8 million acre-feet.

Mr. HOSMER. That is in 1934, as distinguished from 1931, is that right?

Mr. LARSON. That is in year 20. That is not with a complete use of water. In year 1975, when all water would be put to use under our assumption of operations, there would be exactly $7\frac{1}{2}$ million acre-feet delivered in each year from 1931 on through 1947. That is given on page 83 of the report.

Mr. HOSMER. As I understand it, in this 1950 report the figures are based on consumptive use without the dams and reservoirs, or with the dams and reservoirs, or what?

Mr. LARSON. We have tables to show all three conditions. An initial condition with no reservoir. A condition in 20 years with the reservoirs, and in year 1975, which is an estimated development period for complete use of the $7\frac{1}{2}$ million acre-feet, and that condition is shown on page 83.

Mr. HOSMER. What bases did you use to make these estimates?

Mr. LARSON. The 20 years, as I explained this morning, was taken as the average condition between when the dams would be built or power generated up until the 44th year when they are paid off. The 75 years was an arbitrary figure that we assumed for full development. It might be 100 years; it might be sooner than 75. But we did select 75 years for development of our irrigation. It may be longer than that. We do not know.

Mr. HOSMER. In other words, there is a depletion on account of this consumptive use, is there not?

Mr. LARSON. There has been a depletion over the past 100 years and it will continue to go on.

Mr. HOSMER. And the amount of depletion differs in accordance with what the consumptive use is, is that correct?

Mr. LARSON. The amount of depletion will depend on what reservoirs are built and what participating projects are built.

Mr. HOSMER. In other words, there may be a considerable amount of flexibility in that depletion depending upon the nature and characteristics of the individual projects, is that right?

Mr. LARSON. There will not be too much fluctuation if Glen Canyon and Echo Park and these 12 participating projects are authorized, because that takes out 1,253,000. Then after that it is a more constant depletion because the other reservoirs take less evaporation and the participating projects it was assumed would be strung out over 75 years.

Mr. HOSMER. These depletion figures that you use in your 1950 report, are they calculated as of Lee Ferry?

Mr. LARSON. Yes. Depletion above Lee Ferry.

Mr. HOSMER. What would be the difference if they were calculated at the place of consumptive use?

Mr. LARSON. There would not be too much difference; probably a little more.

Mr. HOSMER. Due to what reason?

Mr. LARSON. From the different methods that you calculate it. Whether you calculate it on the basis of diversion less return flow or depletion of Lee Ferry.

Mr. HOSMER. I believe you covered it, but I just want to make sure. You have no plans for transmission lines to California or any place outside of the upper basin under the cost figures that you have given us, is that right?

Mr. LARSON. Except that we have made estimates of a transmission system complete in the upper basin, and as I said before, if part of the power went downstream, then we have tried to work out some estimates of what the cheapening of the transmission lines would be in the upper basin that could be applied on transmission lines downstream or an equivalent reduction.

Mr. HOSMER. That question was just kind of a breather, because I want to go back to this quality-of-the-water problem again. I asked you a question a good while ago as to what your studies were based on, and I think we have kind of gone around the answer, but to get my thinking straightened out, your studies were based on these tables in your 1950 report, is that correct?

Mr. LARSON. What studies do you refer to now?

Mr. HOSMER. The careful study of all available data that you made to come to the conclusion that there would be no appreciable effect on the quality of the stream water flowing past Lee's Ferry on account of this upper Colorado Basin development.

Mr. LARSON. That statement is based on all of our studies up to this time.

Mr. HOSMER. You remember a while ago I asked you what studies you made and of what information to come to this conclusion. I would like to have you recap for me an answer to that question.

Mr. LARSON. I will have to refer that to Mr. Jacobson. He made the statement.

Mr. HOSMER. That is right. We kind of drifted off that question and I want to get back to it, and get an answer.

Mr. JACOBSON. From the data of the quality of water examinations at Lee Ferry, which is the outlet of the upper basin—

Mr. HOSMER. In other words, you established what the quality of the water there is first?

Mr. JACOBSON. At present. When we have depleted the river under our assumption in the amount according to the depletions that are proposed in these 12 participating projects in the table, and the Echo Park and the Glen Canyon storage units.

The storage units would deplete the river by means of evaporation. Some of the projects would take water out of the basin through trans-mountain diversion. Other projects would consume water on lands within the basin, all having a net effect on the Lee Ferry flow which would reduce the present flows or past historical flows in an amount which in this case involved 640,000 acre-feet annually for the 12 participating projects, 613,000 for the 2 storage units.

Mr. HOSMER. And you have recognized a problem—

Mr. JACOBSON. Excuse me; 613,000 for the 2 storage units.

Mr. HOSMER. You have recognized the problem arising from the fact that the minerals and other substances that the water picks up as a matter of course will not be so much diluted when it passes Lee Ferry as it would if these projects were not constructed; is that right?

Mr. JACOBSON. That is right.

Mr. HOSMER. So that there is in our considerations of this same general project the possibility of a problem with respect to the quality of the water that goes from the upper basin to the lower basin?

Mr. LARSON. We have concluded that the increase—

Mr. HOSMER. That is not my question. I just ask you if there was a possibility of a problem about quality.

Mr. JACOBSON. That was our basic cause of making the investigation, to determine to what extent a problem would occur.

Mr. HOSMER. Did you have something you wanted to add on that?

Mr. LARSON. No. He said what I was going to say.

Mr. HOSMER. How much, if any, diminution in the quality of the water did you calculate would occur?

Mr. JACOBSON. At the present time, with projects now under construction, our estimate is that the mean concentration of dissolved solids in the flow at Lee Ferry for a period 1931-47 approximates 0.78 of 1 ton per acre-foot; with the construction of Echo Park and Glen Canyon Dams and the 12 participating projects so listed, that concentration would rise on the average to 0.87 tons per acre-foot, an increase of approximately 12 percent. However, during periods of low flow, because of the regulation afforded by these reservoirs the concentrations existing in the river today during periods of low flow would decrease because of supplemental deliveries of water at Lee Ferry, from storage, which is very well brought out in the fact that if the total basin were developed, there could be a delivery in Lee Ferry in compliance with the compact of 1,160,000 acre-feet during the year 1934, but with the operation proposed that flow would be at least 7½ million acre-feet during the critical year.

Mr. HOSMER. Is not that averaging accomplished now at Lake Mead to a considerable extent?

Mr. LARSON. I was testifying only to the extent in the upper basin. Our studies did not extend below Lee Ferry which is outside the scope of the project.

Mr. HOSMER. The 12 percent increase in the concentration in that water is a fairly substantial increase; is it not?

Mr. JACOBSON. On a percentagewise basis it is possible it could be considered a fair increase. Nevertheless, the water at Lee Ferry in accordance with the classification set forth by the various standards as to quality of water still remain in the classification of good to permissible.

Mr. HOSMER. To permissible?

Mr. JACOBSON. Yes. The other classification above that is called excellent. At the present time the quality of the water in the Colorado River is not in the excellent classification.

Mr. HOSMER. That is what causes us these worries. Mr. Larson testified that, of course, there are other projects and other plans, and we have an initial phase on the central Utah and so forth, and that there is study and work going on toward that. Are there any studies being made with respect to them as to the quality of the water here and what their effect on it will be? The reason I ask that question is that this bill contains a statement to the effect that it is the intent of Congress to construct more of these units in additional phases over and above those authorized in this act, and new participating projects, and so on.

Mr. LARSON. The San Juan-Chama changes the figure from 0.87 to 0.88, just one-hundredth.

Mr. HOSMER. That is one of possibly 100 projects under consideration.

Mr. LARSON. There will never be 100 total projects. The water is not there.

Mr. HOSMER. Do you recognize, as representatives of the Department, and if so can you speak officially for the Department, the responsibility with respect to the quality of the water passing Lee Ferry?

Mr. LARSON. I cannot.

Mr. HOSMER. You cannot, in other words, recognize any responsibility on the part of the Department for the quality of that water?

Mr. LARSON. I cannot speak for the Department on that question.

Mr. HARRISON. Mr. Larson, would you like a recess? You have been testifying this afternoon for 1 hour and 5 minutes. Would you like a breathing spell for a minute or two?

Mr. LARSON. Yes.

Mr. HARRISON. The committee will stand in recess for 5 minutes. (Brief recess.)

Mr. HARRISON. The committee will come to order. Mr. Hosmer.

Mr. HOSMER. With respect to the quality of water again, Mr. Larson, have any studies been made by you and the Department with respect to the effect of the ultimate development of consumptive use of the upper basin on the quality of water at Lee Ferry?

Mr. LARSON. No.

Mr. HOSMER. Then that is a matter for speculation and inquiry, I suppose?

Mr. LARSON. No, we have to know where those uses are. We have in mind making studies as time goes on, but it is a little early to make ultimate conclusions until we see where the water will go and see what happens. Up to now the content of salts in the stream is much less both for irrigation and municipal uses, and our studies in that matter would be carried on as the basin develops, I assume.

Mr. HOSMER. Is the degree of concentration of solids when you diminish the water proportionate or is it accelerating as further depletion occurs in given streams?

Mr. LARSON. I do not know whether I understand the question.

Mr. HOSMER. For the first gallon you took out or the first acre-foot, the concentration would increase so much. Now, for every additional acre-foot would it increase that amount, or as you took out more, would it tend to expand the concentration more per unit?

Mr. LARSON. It is not accelerating. It would be closer to proportionate.

Mr. HOSMER. You have given the mean concentrations at Lee Ferry. Would you give me what the amount of concentration is at the point from which water shifts from permissible to nonpermissible?

Mr. LARSON. I cannot give you that. Just a moment; perhaps I can.

Mr. JACOBSON. The curve I have with me is not expressed in tons per acre-foot. It expresses total concentrations in equivalents per million, and that point is 20 on the curve. The range between excellent to good is 0 to 7.5. The concentrations mentioned before are between 8 and 9 on the curve. So we are really at the upper edge of the good to permissible range.

Mr. HOSMER. Is that in conformance with the figures you gave a moment ago?

Mr. JACOBSON. The range is between 7.5 and 20.0, the range expressed in the quality of good to permissible.

Mr. LARSON. We are in the top of that range.

Mr. HOSMER. 20.0 what?

Mr. JACOBSON. That is expressed in total concentration in irrigation water in equivalents per million.

Mr. HOSMER. Is the municipal water standard higher or lower?

Mr. JACOBSON. Of course they are higher.

Mr. HOSMER. There is less concentration.

Mr. JACOBSON. Their standards are on a different method of standardization entirely.

Mr. HOSMER. You have more mineral in irrigation water than you have for municipal use.

Mr. PILLION. Would the gentleman yield?

Mr. HOSMER. Yes.

Mr. PILLION. I would like to refer to the summary table of yesterday, Mr. Larson. With reference to the estimated cost of the \$597 million project for Echo Park unit, and the Glen Canyon unit, before recommending that your Department made a comprehensive and thorough study of the marketability of the electric power to be generated; is that right? As to whether you could market the electric power to be generated by those two projects?

Mr. LARSON. Yes. We made a power market study, and so has the Federal Power Commission, at our request.

Mr. PILLION. Was that study made by your Department alone or by the Federal Power Commission, or by a combination?

Mr. LARSON. One of the detailed studies, and one that we go by quite a bit is one made by the Federal Power Commission, the regional office at San Francisco.

Mr. PILLION. I suppose in your estimation that body is the most qualified and best qualified agency to make that study; is that right?

Mr. LARSON. Yes; they are directed and authorized under the law to make our power studies.

Mr. PILLION. With relation to the 12 participating projects in which you expect to spend almost the same amount of money, \$483 million, did your Department or anyone else make a comprehensive or a thorough study of the marketability of the increased agricultural production to be brought in by the 12 participating projects?

Mr. LARSON. We have taken that into consideration and have our views on it. At least I have mine.

Mr. PILLION. Do you have any ideas as to when we will be in need of the increased agricultural production of those participating units. I mean other than surplus being bought up by the Commodity Credit Corporation?

Mr. LARSON. We feel that with the present growth of population in the United States, and the fact that it will take years, maybe over 15 years, for some of these projects before they are in production, that by that time the particular food that they raise will be needed. In fact, some of it is now. Generally speaking, these projects are not in the crops that are in the South. We do not have cotton or shell corn or things like that.

Mr. PILLION. Are you now speaking from speculation or do you have drafts or studies to back that up?

Mr. LARSON. There is an element of speculation. We know what the dairy industry as it goes along over the vears and sheep and beef cattle requirement is.

Mr. PILLION. To get away from that subject, Mr. Larson, for one more question, would it be feasible to build the Glen Canyon unit alone, which is the most economical unit of your two, and use the profit of that hydroelectric unit to pay for these other projects that you have here in your whole recommendation?

Mr. LARSON. It would not take care of all of them, and it does upset the basinwide plan that we have envisioned to build from.

Mr. PILLION. But would it not be a businesslike way to do it, to build one project and permit that project to perhaps pay for the other proj-

ects as they appear to be needed? In other words, if you were a businessman yourself investing your own money, is not that the way you would do it?

Mr. LARSON. If I were a businessman and an engineer, I would build Echo Park and Glen Canyon together, because that is the most feasible way to start out with this basin plan envisioning the other units to come in.

Mr. PILLION. You would build a high-cost unit along with a low-cost unit at the same time without seeing if they would pay off?

Mr. LARSON. They both produce power at less than steam and both within the 6-mill average rate.

Mr. HOSMER. I did not understand your answer this morning as to whom would be charged with the evaporation loss resulting from these projects, the upper basin or the lower basin.

Mr. LARSON. This morning I tried to infer that I could not say whether any of the evaporation losses in the upper basin were chargeable to the lower. All I was sure of was that the upper basin compact did cover how evaporation losses are to be charged out that are chargeable to the upper basin States.

Mr. HOSMER. In other words, they allocate among themselves these evaporation losses?

Mr. LARSON. Yes. The evaporation losses are charged in the proportion that the water is allocated to the States. There are some other provisions that if one State develops faster than the other, to take care of that. But in general under the full development of the upper basin States they stand evaporation in proportion to their allocation.

Mr. HOSMER. In that arrangement is there any allocation of the evaporation losses to the lower basin States?

Mr. LARSON. I do not recall that the upper basin compact has that in it. I do not think it does.

Mr. ASPINALL. Would my colleague from California yield at that place?

Mr. HOSMER. Yes.

Mr. ASPINALL. That agreement in the Upper Colorado River Compact goes only to those evaporation losses which the upper Colorado River Basin will have to accept; is that not right?

Mr. LARSON. I think the best way would be to read article 5 of the upper Colorado River Basin compact. If you want that read—

Mr. HOSMER. It is not long, is it?

Mr. LARSON. That is article 5 (a) :

All losses of water occurring from or as a result of storage of water in reservoirs constructed prior to the signing of this compact shall be charged to the State in which such reservoir or reservoirs are located. Water stored in reservoirs covered by this paragraph (a) shall be for the exclusive use of and shall be charged to the State in which the reservoir or reservoirs are located.

(b) All losses of water occurring from or as a result of the storage of water in reservoirs constructed after the signing of this compact shall be charged as follows :

(1) If the commission finds that the reservoir is used in whole or in part to assist the States of the upper division in meeting their obligations to deliver water at Lee Ferry imposed by article 3 of the Colorado River compact, the commission shall make such findings which in no event shall be contrary to the laws of the United States of America under which any reservoir is constructed as to reservoir capacity located for that purpose. The whole or that proportion, as the case may be, of reservoir losses as found by the commission to be reasonable and properly chargeable to the reservoir or reservoir capacity utilized to assure deliveries at Lee Ferry shall be charged to the States of the

upper division in the proportion which the consumptive use of water in each State of the upper division during the water-year in which the charge is made bears to the total consumptive use of water in all States of the upper division during the same water-year. Water stored in reservoirs or in reservoir capacity covered by this subparagraph (b) (1) shall be for the common benefit of all of the States of the upper division.

There is more, but I think that covers the point we have been talking about.

Mr. HOSMER. I would like to ask my colleague from Colorado, after listening to that definition, does he still feel that there is some question as to whether or not some of the evaporation is chargeable completely to the upper basin?

Mr. ASPINALL. My position is, Mr. Hosmer, that it is between the upper basin States that the compact agreement must apply. But as between the two basins, there has not yet been a determination of that matter.

Mr. HOSMER. In other words, you feel there is a question as to whether or not it would be possible to charge some of this evaporation to the lower basin on account of the activities in the upper basin?

Mr. ASPINALL. I think there is a question.

Mr. HOSMER. Let us ask you this, Mr. Larson. At the present time the entire amount of the obligations of the upper basin States to the lower basin States is being met, is it not?

Mr. LARSON. Yes.

Mr. HOSMER. Therefore, and as a consequence, the upper basin development is not in any way connected with fulfilling the obligation of the upper basin to the lower basin?

Mr. LARSON. Not past development but future development.

Mr. HOSMER. Then the upper basin States are merely recognizing an obligation in their development to continue that flow which is required by the compact, is that correct?

Mr. LARSON. Yes. The purpose of these reservoirs is to provide for future development, and still meet the commitments to the lower basin at Lee Ferry, as provided by the 1922 compact.

Mr. HOSMER. They are just going to do it so they will not stop fulfilling their obligation.

Mr. LARSON. That is correct.

Mr. HOSMER. And the lower basin States are obtaining no benefit in this respect out of the upper basin development?

Mr. LARSON. That is correct.

Mr. HOSMER. That is all, Mr. Chairman.

Mr. HARRISON. The Chair will recognize Mr. Yorty, who was not recognized this morning, before calling the next witness.

Mr. YORTY. Mr. Larson, I am going to ask very few questions. I want to say first that when we were up in the regions involved in this report this summer, you and your staff were extremely courteous and able in giving us information, and it was certainly helpful to me. Both you, Mr. Jacobson, and the others. I want to say, too, that you are one of the engineers who has turned down outside offers, I happen to know, far more lucrative, to serve with the Government, and I imagine this afternoon maybe you wished you had not. At least I suppose you wish you were working on some other river. But is it not true that in trying to establish the feasibility of these various projects, you are always as an engineer circumscribed by the law on this river? In other words, you cannot take the whole river as if there were no

State lines, and figure out the most feasible projects and plan accordingly, can you?

Mr. LARSON. No, sir.

Mr. YORTY. You have to recognize this division which we have made geographically, but which the river refuses to recognize economically.

Mr. LARSON. That is right.

Mr. YORTY. And for that reason I suppose it is true that oftentimes if you could view the whole river without the law of the river being established by the compacts, you would in some cases recommend projects as feasible that are not recommended on account of the law. Am I clear on that?

Mr. LARSON. Yes. They might not be strictly in conformity to the existing law.

Mr. YORTY. In other words, if you had just two plots of land on the river, and you could say which one you could get water on the easiest and cheapest from an engineering standpoint, that would be the one you would pick?

Mr. LARSON. Generally speaking.

Mr. YORTY. But as it is, with the river divided up by law, you take the water where it is, and try to figure out the projects in that area. I see Mr. Jacobson nods yes. He does not have to answer for the record. I only bring that out because I think through all of the hearings in our committee, particularly on the Colorado River, there is this background that is not always clear, that you are not dealing with feasibility as if you had absolute discretion. You have to consider this law of the river, and that does not only run through the Colorado River, but these problems of economics that refuse to recognize State lines run through our whole economy.

I notice on the Curecanti Dam and I tried to find out sooner why this limitation was spelled out in the bill, is there any engineering reason for that?

Mr. LARSON. When we made the first investigations on the Gunnison River, we selected a reservoir of the capacity of $2\frac{1}{2}$ million acre-feet in order to get some regulatory storage there for downstream developments at Crystal and Whitewater and regulatory storage for the whole Colorado system, and at the same time have some capacity there for future irrigation uses in the upper Gunnison River, and for replacement there, and for maybe future industrial development.

We were after a reservoir as large as we could get it. The high water surface would take it up near the town of Gunnison. In that area they strenuously objected to the reservoir near the town.

Later, the State of Colorado then suggested that the reservoir be limited to 940,000 acre-feet, and we got some studies out on that. Since that time the State is interested in finding better locations, more feasible projects, on the Gunnison, and have in mind that future studies should be made to see if better development cannot be worked out on the Gunnison River.

Mr. YORTY. How far up toward the town of Gunnison would the big dam have flooded, the one from an engineering standpoint you thought was best?

Mr. LARSON. It is right up to the airport and the sewer outlet that is close to town. Probably half a mile or a mile west of town. Is that what you mean?

Mr. YORTY. Yes. As I understand it, and as I recall the area that would not leave very much up in there. It would cover a lot of developed area.

Mr. LARSON. It takes out some ranches immediately downstream, that is, farmland for hay and feed. It does do that.

Mr. YORTY. As I understand, you are now looking for another site for that dam.

Mr. LARSON. We have not started yet, but we probably will.

Mr. YORTY. We are in no way committing ourselves to this Curecanti Dam with the 940,000 limitation, then?

Mr. LARSON. We were just giving information on the small Curecanti because it is included in the bill. They may ask for an amendment of the bill and change it before we are through here.

Mr. YORTY. There is no report on that yet?

Mr. LARSON. No, we do not have a detailed report.

Mr. YORTY. Very well.

Mr. LARSON. Except for the studies on the large and small Curecanti contained in the two tables at the end of the Secretary's report dated October 1953. He has 2 tables there, 1 with the large Curecanti and 1 with the small one.

Mr. YORTY. Is there any projected plan that the Bureau is working on by which if the Curecanti were built some of the streams that feed into it would be diverted or to the other side of the mountain?

Mr. LARSON. I do not believe there is any active investigation. Mr. Dexheimer and Mr. Bennett would have to answer that. I do not know what region 7 is doing. They did have one project there to divert from the Gunnison and that was changed to divert from the Fryingpan River, a tributary of the main Colorado River, above Grand Junction. What has happened since, I am not in a position to know, because I do not work for or represent region 7.

Mr. YORTY. If this Curecanti were left in the bill, it would mean to you, at least, that your Department was not committed to any further transmountain diversion at that particular point?

Mr. LARSON. I would say not.

Mr. YORTY. You understand, do you not, Mr. Larson, that we are somewhat concerned with this question of the kind of water that goes to the lower basin and I think you will agree as an engineer that large transmountain diversions in the upper reaches of these streams might very well lower the quality of the water down below; is that right?

Mr. LARSON. Not any more than the rest, because it takes some salt out, too.

Mr. YORTY. You do not think that making the diversions high up on the stream would make any difference?

Mr. LARSON. I do not think much. It depends a little on what the content is. It might in some cases help, I do not know.

Mr. YORTY. In your statement you mentioned conservancy-type districts, and felt that in many cases we should have conservancy-type districts to bolster up the feasibility of some of these projects. Is it your intention to make the formation of those conservancy-type districts a prerequisite to your recommending those projects, or are you going to do as the Bureau did once before, just recommend conservancy-type districts, and when it is not formed go right ahead and recommend the project anyway?

Mr. LARSON. The Secretary covers that statement, and if you want me to repeat that, I will tell you what we are doing about it on other recent projects.

Mr. YORTY. You do not need to repeat it. Just give us your opinion of what you are doing.

Mr. LARSON. On the Collbran, that Congress authorized about 2 years ago, we have told the local people there that in our opinion they should form a conservancy district with an ad valorem tax, and after they studied it, they thought it was a good thing. They are in the course of forming that district at the present time.

When Congress authorized the Weber Basin project a couple of years ago, we advised the local interests there that in our opinion they should form a conservancy district with an ad valorem tax. That district was formed not only to include all the farmlands and the cities, but even all the rangelands in the Weber River watershed, to get all of the ad valorem tax from the indirect beneficiaries that they could wherever they thought they would be benefited by the project.

In both of these projects that is a source of revenue to aid in the repayment of the project costs.

Mr. YORTY. Do you have some kind of a standard by which you say how much of the cost the conservancy district should bear?

Mr. LARSON. That is set by State law in the districts I am acquainted with in Colorado and Utah. They generally assess a half-mill ad valorem tax for expenses of organization, and all, and they go up to various percents after that to aid in the construction costs.

Mr. YORTY. Of course, I think it follows logically that if the conservancy does not bear a fair proportion of the cost, and too much is loaded on power, some area buying the power may pay a disproportionate subsidy to the projects.

Mr. LARSON. In this case, our 6 mills were not based on an increase in cost. It was simply the average rate per kilowatt-hour that would have to be obtained to pay out the power allocation in the 44 years or within 50 years. We were aiming at 50 years for all of them, and it happens to be 44 years for the Echo Park and the Glen Canyon.

Mr. YORTY. In that rate you did not consider the subsidy necessary to the irrigators?

Mr. LARSON. No. That chart I showed you on the cardboard this morning shows the net revenues after 44 years, which are tremendous. They pay off irrigation allocations very rapidly after that.

Mr. YORTY. That is all, Mr. Chairman.

Mr. HARRISON. Thank you very much. We appreciate your coming up here before the committee, Mr. Larson and Mr. Jacobson. You have been very patient, and you have answered the questions, and I know you have had a very strenuous time for the period that you have been on the stand.

To clear the record, the Department of Interior was asked to send witnesses here to tell us about these projects and it is my understanding that you came in answer to the request of the committee for somebody to talk on the projects. We appreciate very much having you with us.

Mr. LARSON. Thank you.

Mr. HARRISON. The next witness is Mr. Dexheimer, and the Chair wants to make a statement at this time regretfully. Because of the

limitation of our time, I feel it is necessary to ask the limitation on the time the members of the committee take in cross-examination of the witnesses. This, of course, would not apply to the witnesses who are testifying. I feel that the members of the committee have a right to cross-examine and ask questions for their information, but I also feel that the committee owes an obligation to those who have come a long distance to testify either for or against these projects. The time is going pretty fast, and I am going to ask the consent of the committee that hereafter committee members will be limited to 5 minutes each in their cross-examination, pointing out to the subcommittee members that they undoubtedly, if they need additional time, can secure time through the yielding of other members of the committee who do not need that time.

If there is any objection by the members of the committee, I wish they would voice it at this time.

Mr. SAYLOR. Reserving the right to object, Mr. Chairman, realizing that the time is important, and that there are many people here that want to be heard, I think the committee should know that we are dealing with a project here that involves billions of dollars, and I know of no one Member of Congress or anyone else that can examine witnesses on projects involving billions of dollars in 5 minutes. In other words, there is no use in having any examination if we are going to be limited to 5 minutes.

Mr. HARRISON. Do you make that in the form of an objection, Mr. Saylor?

Mr. SAYLOR. That is my objection.

Mr. HARRISON. It is an objection.

Mr. SAYLOR. Yes. I will not agree that the time should be limited as to these people who are presenting a case to spend \$2.5 billion of Uncle Sam's money. I think we should be entitled to a full hearing.

Mr. D'EWARD. I move that the time be limited to 10 minutes, plus whatever any member wishes to yield.

Mr. ENGLE. Second.

Mr. HARRISON. You heard the motion. Are you ready for the question?

Mr. REGAN. That means that any member can yield to another his 10 minutes of time.

Mr. HARRISON. That is right.

Mr. ENGLE. I will agree to yield my time to Mr. Saylor ahead of time, and that gives him 30 minutes to start with.

Mr. HARRISON. Are you ready for the question? All in favor, say "aye"; opposed "no". The motion is carried. Hereafter the members of the committee will be limited to 10 minutes for cross-examination, with the right to take yielded time from other members.

Mr. Dexheimer, proceed. We will adjourn promptly at 4:30. We will reconvene at 9:30 in the morning. There will be no meeting tomorrow afternoon because of the House business. If you are not through at that time, you will be expected back in the morning, and I understand you have no more witnesses from the Department.

Following Mr. Dexheimer's statement, I would like to hear from the Senators and other Representatives who would like to be heard.

So if you will proceed, Mr. Dexheimer.

**STATEMENT OF W. A. DEXHEIMER, COMMISSIONER OF RECLAMATION,
UNITED STATES DEPARTMENT OF THE INTERIOR**

Mr. DEXHEIMER. Mr. Chairman, probably one of the greatest single tasks presented me upon taking the oath of office of Commissioner of Reclamation some 6 months ago was that of bringing the plan of the Colorado River storage project and participating projects to its initial stage of fruition. Since my previous assignments with the Bureau of Reclamation have allowed me a sizable knowledge of the problems of the Colorado River, I was not unmindful of the magnitude of such an undertaking, the initial phase of which alone will require an expenditure of over a billion dollars in a construction period of 10 or more years.

Although I have been closely associated with the construction of projects in both lower and upper basins, my present responsibility demanded that I review to my own satisfaction the very details of the report on the Colorado River storage project and participating projects. The present plan reflects the changes and revisions which, in my opinion, were necessary to place the plan in agreement with the current policies of the Department of Interior and the Bureau of Reclamation.

The negotiations of the States and the formation of the plans for developing the upper basin have been followed by many of us with great interest. I observed in particular an extensive amount of cooperation between State and Federal agencies in deriving a comprehensive plan for developing the water resources and the other resources related to the use of water in this vast area. Probably no greater cooperative effort was ever made in the history of basin planning. In fact, the plan derived is the result of many years of extensive study on the parts of State and Federal personnel, culminating in the unanimous support of the official spokesmen of all five States of the upper basin. It likewise has the unqualified endorsement of me and my staff.

The plan contemplates administration and operation in full conformance with the Upper Colorado River Basin compact of 1948 and also the Colorado River compact of 1922. It provides for full compliance with the paramount requirements for deliveries at Lee Ferry. The plan also provides for the condition requiring that water uses for power are subservient to uses for irrigation and domestic purposes. Early operation of the powerplants, therefore, will not interfere with subsequent upstream consumptive uses and the repayment schedules accordingly allow for appropriate reductions in power generation as upstream uses occur.

The tremendous growth of population, agriculture, and industry in the West has imposed a constantly increasing burden upon the water resources of the area. Great centers of population have been forced to go far afield to satisfy their enormous thirst for water, and the potential sources of water for exportation are becoming scarcer and more expensive. Even portions of the great Columbia River Basin have been developed to the extent of their local supplies, and engineers are eyeing transmountain diversions from undeveloped tributary watersheds for continued expansion of the economic life of those areas. The same problem, though in differing degrees, confronts us in every State from the Mississippi River to the Pacific coast.

Reclamation has recognized this problem for many years, and our projects are designed to conserve and utilize the water most efficiently. Literally millions of acres of land lie parched and unproductive in the 17 Western States. A large percentage of this land could be made to produce crops for our growing population if the necessary water could be provided. Meanwhile, millions of acre-feet of water are wasted from our rivers to the sea each year for lack of control—such control as could be provided by the project we are discussing here today. Every watershed adjoining the Colorado River Basin has been developed by the effective utilization of local water resources, and some of them have drawn heavily upon the Colorado River through diversions of water and power. The economic pressure demanding expansion of use of the Colorado's water resources is irresistible. For a large segment of the West this basin is literally and figuratively an oasis, promising water and power for expansion of all phases of economic life.

Further development of the Upper Colorado River Basin cannot take place under existing conditions without risk of shortage due to commitments of the Colorado River compact and to the extreme annual and seasonal variations of flow of the main stream and its tributaries. The Colorado River storage project is the key which will unlock these imprisoned water resources for the development of the Colorado River Basin, for the adjoining watersheds which will benefit directly, and for expansion of the Nation's productive capacity.

I would like, Mr. Chairman, to introduce at this time some pictures taken of the Echo Park area, starting with the site of the Split Mountain Dam site, and going upstream through that area.

On one side of these pictures is shown the river in its natural state. On the other side we have filled in the ultimate water elevations as it would be at maximum storage in Echo Park Dam.

I would like to have the committee look those over, particularly as it may affect the canyons that we have been discussing previously.

MR. D'EWART. They will have to be accepted for reference. We cannot reproduce them in the record. We are very glad to have them.

MR. DEXHEIMER. I wanted those to be available for your information.

MR. D'EWART. Does that complete your statement?

MR. DEXHEIMER. Yes.

MR. D'EWART. Under instructions, then, from the Chairman, I will recognize Senator Bennett at this time.

Senator BENNETT. I have no questions of Mr. Dexheimer. Thank you, Mr. Chairman.

MR. D'EWART. Senator Watkins.

Senator WATKINS. I do not think I have any, either. Unfortunately I was not able to be in the room all the time and I did not get to hear his full statement.

MR. D'EWART. If there are any Senators who are absent who wish to extend their remarks in the record, they may do so.

Senator BENNETT. Mr. Chairman, I have declined to question Mr. Dexheimer, rather than passing up my opportunity for a statement.

MR. D'EWART. I so understand.

Senator BENNETT. I assume from the Chairman's announcement that approximately tomorrow morning we would expect to do that.

Mr. D'EWART. Mr. Saylor, I will yield you my 10 minutes at this time.

Mr. REGAN. I will yield five of mine.

Mr. SAYLOR. That takes 35 minutes, because I have already been given the time by Mr. Engle so that would put us up to at least quitting time. I hope, however, that I might raise enough questions that Mr. Dexheimer would at least spend part of the evening digging up the answers to have for us tomorrow morning.

Mr. Dexheimer, attached to the supplemental report of the Secretary of the Interior is an exhibit marked "Colorado River Storage Project and Participating Projects, Financial Operation Study for Examination of Investment Repayments from Power Revenues," dated October 9, 1953, and all of the witnesses up to this point have talked about a repayment during a 44-year period.

Will you explain to the members of the committee why this part of the supplemental report contains a study calling for a repayment over a 56-year period?

Mr. DEXHEIMER. I do not believe this refers to a repayment. It shows the power revenues from the sales of power over that period.

Mr. SAYLOR. Where is the schedule which shows that Glen Canyon and the other eight reservoirs or storage projects will from their power revenues pay out the cost of installation with interest in 44 years?

Mr. DEXHEIMER. Yes, sir.

Mr. SAYLOR. Where is that?

Mr. DEXHEIMER. We have a supplemental preparation which shows that. I would like to submit that to you.

Mr. SAYLOR. The exhibit which you have just handed me is dated December 24, 1953, and revised January 12, 1954.

Mr. DEXHEIMER. I am sorry. They handed me the wrong one. This is the one I should have given you at that point.

Mr. SAYLOR. Mr. Dexheimer, this is the Colorado River storage project, financial operation study, for examination of investment repayments from power resources. This shows the total, am I correct, from only three power-producing units, Central Utah, Echo Park, and Glen Canyon?

Mr. DEXHEIMER. Yes, sir.

Mr. SAYLOR. Is there to be no power produced at any one of the other storage projects?

Mr. DEXHEIMER. There will be, but this shows the repayment study based on these three units.

Mr. SAYLOR. In other words, does the Bureau of Reclamation have a repayment study showing the repayment from power developed in the upper Colorado River Basin?

Mr. DEXHEIMER. Yes, we have it. It is not available just now. We can furnish it for the committee.

Mr. SAYLOR. Mr. Chairman, I would like to request that Mr. Dexheimer have that available for the committee, and after we have a chance to look it over, to examine him further with regard to it.

Mr. HARRISON. Is there any objection to the request? If not, if you will prepare that with the understanding that further examination of that will be following the hearing of the other witnesses here?

Mr. DEXHEIMER. I will do that.

(The information is as follows:)

Colorado River storage project and participating projects—Financial operation study for examination of investment repayment from power revenues (Colorado River storage project consisting of Glen Canyon, Echo Park, Cross Mountain, Split Mountain, Gray Canyon, Flaming Gorge, Curecanti (2,500,000 acre-feet), Crystal, and Whitewater)

[Units: Cols. (3)-(4), millions of kilowatts; cols. (5)-(14) thousands of dollars; Jan. 25, 1954]

Project year (1)	Corresponding (2)	Sales of electric energy (all firms) (3)	Revenues from sales of electric energy at 6.0 mills (4)	Revenue deductions		Total (cols. (5) and (6)) (7)	Net power revenues (cols. (4)-(7)) (8)	Transfer to upper Colorado River development fund 1 (9)	Power investment during year (10)	Amortization of power investment:		Irrigation assistance from net power revenues (13)	Assistance needed for irrigation (14)
				Provisions for emergency expense (5)	Operation maintenance, overhead, and replacement (6)					2½ per cent interest on unpaid balance (11)	Unpaid balance (12)		
0.													
1.	1961	1,851	11,106	125	1,933	2,058	9,018	679	362,305	9.058	362,305		
2.	1962	2,673	16,638	125	3,152	3,277	12,761	957	53,830	10.421	416,824		
3.	1963	3,715	22,290	125	4,118	4,243	18,047	1,000	69,366	12.120	484,807		
4.	1964	3,964	23,784	125	4,788	4,913	18,071	1,000	30,366	12.756	510,246		
5.	1965	5,083	30,498	125	5,909	6,034	24,464	1,000	109,198	15.358	614,329		
6.	1966	5,052	30,312	125	6,772	6,897	23,415	1,000	41,234	16.186	647,457		
7.	1967	5,831	34,986	125	7,572	7,697	27,289	1,000	186,204	20.681	827,432		
8.	1968	7,177	43,062	125	7,984	8,109	34,953	1,000	830,925	20.773	875,945		
9.	1969	7,487	44,922	0	8,473	8,473	36,449	1,000	58,200	21.899	862,365		
10.	1970	7,457	44,712	0	8,473	8,473	36,269	1,000	0	21.560	908,586		
11.	1971	7,625	45,750	0	8,850	8,850	37,266	1,000	58,900	22.715	865,401		
12.	1972	7,696	46,116	0	9,175	9,175	38,441	1,000	43,500	23.385	925,020		
13.	1973	7,936	47,616	0	9,175	9,175	38,441	1,000	0	23.798	910,705		
14.	1974	7,936	47,616	0	9,535	9,535	39,509	1,000	41,800	23.446	937,832		
15.	1975	8,174	49,044	0	9,535	9,535	39,509	1,000	0	23.069	922,764		
16.	1976	8,190	49,040	0	9,535	9,535	39,545	1,000	0	22.682	907,293		
17.	1977	8,164	48,978	0	9,535	9,535	39,443	1,000	0	22.588	891,532		
18.	1978	8,127	48,762	0	9,535	9,535	39,227	1,000	0	22.588	875,593		
19.	1979	8,127	48,732	0	9,535	9,535	39,197	1,000	0	21.890	859,296		
20.	1980	8,190	49,140	0	9,535	9,535	39,005	1,000	0	21.482	842,163		
21.	1981	8,128	48,768	0	9,535	9,535	39,233	1,000	0	21.054	824,984		
22.	1982	8,096	48,396	0	9,535	9,535	38,861	1,000	0	20.625	807,748		
23.	1983	8,004	48,024	0	9,535	9,535	38,489	1,000	0	20.194	790,453		
24.	1984	7,942	47,652	0	9,535	9,535	38,117	1,000	0	19.761	773,097		
25.	1986	7,880	47,280	0	9,535	9,535	37,745	1,000	0	19.327	755,679		

See footnotes at end of table.

Colorado River storage project and participating projects—Financial operation study for examination of investment repayment from power revenues (Colorado River storage project consisting of Glen Canyon, Echo Park, Cross Mountain, Split Mountain, Gray Canyon, Flaming Gorge, Curecanti (2,500,000 acre-feet), Crystal, and Whitewater)—Continued

[Units: Cols. (3)–(4), millions of kilowatts; cols. (5)–(14) thousands of dollars; Jan. 25, 1954]

Project year (1)	Corresponding (2)	Sales of electric energy (all firms) (3)	Revenues from sales of electric energy at 6.0 mills (4)	Revenue deductions		Total cols. (5) and (6) (7)	Net power revenues cols. (4)–(7) (8)	Transfer to upper Colorado River development fund ¹ (9)	Power investment during year (10)	Amortization of power investment		Irrigation assistance from net power revenues (13)	Assistance needed for irrigation (14)
				Provisions for emergency expense (5)	Operation maintenance, overhead, and replacement (6)					2½ per cent interest on unpaid balance (11)	Unpaid balance ² (12)		
25	1967	7,818	46,906	0	9,535	9,535	37,373	1,000	0	18,892	738,198		
26	1968	7,756	46,536	0	9,535	9,535	37,001	1,000	0	18,465	720,652		
27	1969	7,694	46,164	0	9,535	9,535	36,629	1,000	0	18,016	703,039		
28	1970	7,632	45,792	1,000	9,535	9,535	36,257	1,000	0	17,576	685,358		
29	1971	7,570	45,420	0	9,535	9,535	35,885	1,000	0	17,134	667,607		
30	1972	7,507	45,042	0	9,535	9,535	35,507	1,000	0	16,690	649,790		
31	1973	7,445	44,670	0	9,535	9,535	35,135	1,000	0	16,245	631,900		
32	1974	7,383	44,298	0	9,535	9,535	34,763	1,000	0	15,798	613,935		
33	1975	7,321	43,926	0	9,535	9,535	34,391	1,000	0	15,348	595,982		
34	1976	7,259	43,554	0	9,535	9,535	34,019	1,000	0	14,897	577,770		
35	1977	7,197	43,182	0	9,535	9,535	33,647	1,000	0	14,444	559,567		
36	1978	7,135	42,810	0	9,535	9,535	33,275	1,000	0	13,989	541,281		
37	1979	7,073	42,438	0	9,535	9,535	32,903	1,000	0	13,532	522,910		
38	1980	7,011	42,066	0	9,535	9,535	32,531	1,000	0	13,073	504,452		
39	1981	6,949	41,694	0	9,535	9,535	32,159	1,000	0	12,611	485,904		
40	1982	6,886	41,316	0	9,535	9,535	31,787	1,000	0	12,148	467,271		
41	1983	6,824	40,944	0	9,535	9,535	31,415	1,000	0	11,682	448,544		
42	1984	6,762	40,572	0	9,535	9,535	31,043	1,000	0	11,214	429,721		
43	1985	6,700	40,200	0	9,535	9,535	30,671	1,000	0	10,743	410,799		
44	1986	6,638	39,828	0	9,535	9,535	30,299	1,000	0	10,270	391,776		
45	1987	6,576	39,456	0	9,535	9,535	29,927	1,000	0	9,794	372,649		
46	1988	6,514	39,084	0	9,535	9,535	29,555	1,000	0	9,316	353,416		
47	1989	6,452	38,712	0	9,535	9,535	29,183	1,000	0	8,835	334,074		
48	1990	6,390	38,340	0	9,535	9,535	28,811	1,000	0	8,352	314,632		
49	1991	6,328	37,968	0	9,535	9,535	28,439	1,000	0	7,869	295,054		
50	1992	6,267	37,596	0	9,535	9,535	28,067	1,000	0	7,376	275,183		
51	1993	6,205	37,224	0	9,535	9,535	27,695	1,000	0	6,890	255,002		
52	1994	6,143	36,852	0	9,535	9,535	27,323	1,000	0	6,375	234,502		
53	1995	6,081	36,480	0	9,535	9,535	26,951	1,000	0	5,863	213,676		
54	1996	6,019	36,108	0	9,535	9,535	26,579	1,000	0				

56	2016	6,173	37,038	0	9,535	9,535	27,503	1,000	0	5,342	192,515	-----
57	2017	6,172	36,932	0	9,535	9,535	27,317	1,000	0	4,813	171,011	-----
58	2018	6,111	36,662	0	9,535	9,535	27,131	1,000	0	4,275	149,155	-----
59	2019	6,080	36,480	0	9,535	9,535	26,945	1,000	0	3,729	126,639	-----
60	2020	6,049	36,294	0	9,535	9,535	26,759	1,000	0	3,173	104,353	-----
61	2021	6,018	36,108	0	9,535	9,535	26,573	1,000	0	2,602	81,389	-----
62	2022	5,987	35,922	0	9,535	9,535	26,387	1,000	0	2,032	58,037	-----
63	2023	5,956	35,736	0	9,535	9,535	26,201	1,000	0	1,451	34,287	-----
64	2024	5,925	35,550	0	9,535	9,535	26,021	1,000	0	857	10,123	-----
	2025	5,893	35,370	0	9,535	9,535	25,835	1,000	0	253	0	-----
	Total	432,608	2,595,648	1,000	571,974	572,974	2,022,674	63,636	1,064,999	879,580	\$326,443	\$185,592

1 Revenues transferred to upper Colorado development fund equal 7 1/4 percent of the net power revenues for the first 2 years and \$1 million annually thereafter. Transfers to this account during the 72-year period of \$71,636,000 are in addition to irrigation assistance totaled in col. (13).

2 Includes accrued interest during construction.

3 Net power revenues during an 8-year period beyond the repayment period of the power investment would be required to provide the assistance needed by irrigation in the repayment of the irrigation allocation of the Colorado River storage project units in the amount of \$185,592,000.

Mr. SAYLOR. Now, Mr. Dexheimer, do you have in the Bureau of Reclamation any blueprint or schedule showing how the power revenues which will be used in the production of power in the Colorado River storage projects will be used to repay the costs allocated to the participating projects?

Mr. DEXHEIMER. We have on this table that you have just received under column 19, after the power allocation is paid out from these three projects, a total which will be available for payment of other features.

Mr. SAYLOR. But you do not have it broken down so that the members of this committee can look at the power revenues and find out how the Bureau has allocated them to the 12 participating projects as testified to by Mr. Larson and the 4 participating projects covered in this bill?

Mr. DEXHEIMER. That was on the chart that Mr. Larson showed you this morning.

Mr. SAYLOR. That was in a chart in general overall form showing where revenue would be produced and covering only in a very general way. I want now a breakdown to show the projects, and how much you are charging to each one and how it shall be repaid.

Mr. D'EWART. Mr. Saylor, will you yield.

Mr. SAYLOR. Yes.

Mr. D'EWART. Do not these revenues from power go into a basin account, rather than direct to any project, and then are allocated on the basis of the basin account or the pool?

Mr. SAYLOR. Mr. D'Ewart, if you can tell me how they propose to do it, you are better than I am, because so far we have not had any information with regard to the matter.

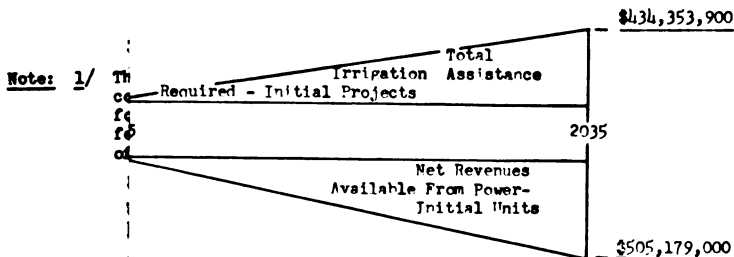
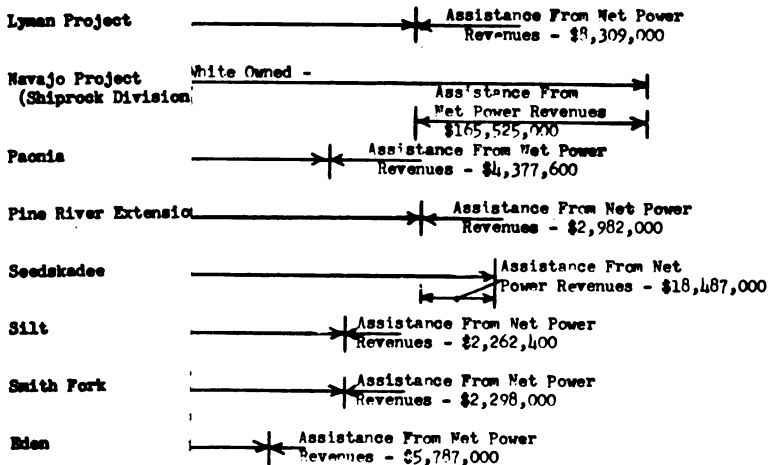
Mr. DEXHEIMER. On the table on the back of Mr. Larson's statement, which you have previously been furnished, is a summary table, and in the last column you will find the irrigation allocation assigned for repayment from net power revenues on the various projects. In the table which you are just given on the power revenues from these three participating projects, you saw the amount that is available for payment of those irrigation costs assigned to that paid by power revenue.

You would have to make certain assumptions as to which projects are built and when they are built to determine just how you would apply the revenue after the power features are paid out to determine which projects got how much money in any particular year.

If I understand your questions correctly, we would have to make certain assumptions as to when these participating projects were authorized, and then assign certain values from the power revenues to each of those.

Mr. SAYLOR. That is correct, because this bill would cover the overall development at least of 16 projects in addition to the 2 reservoirs. I want to know what this committee can look to and see as to how you intend to apply the money so it can be paid out in each project. If the information is not available at the present time I would appreciate your getting it, and giving it to us at a later date.

Mr. DEXHEIMER. It is in this statement that Mr. Larson gave you in the summary table in the last column.



Mr. SAYLOR. All that shows is the amount that you have allocated and it does not show how it is to be paid out. It only shows the sum that is allocated to each project. There is no pay-out period that you have indicated in these projects. I want to find out where between the 44 years you have shown here on this revised issue of December 24, showing a pay-out period of 44 years, how you allocate the power revenues in the next 6 years to pay off these projects.

Mr. DEXHEIMER. In this study we allocate the total power revenues as against the repayment to be made from power revenue on irrigation allocation. We also have this in the record, I believe, that each of the irrigation projects would be paid out, using the allocation repaid by the water users plus the power revenues to make them pay out in each case, I believe, in 50 years.

So that within the whole account everything is paid out from the time an irrigation project is authorized or constructed in 50 years.

Mr. SAYLOR. All I am asking you to do is to show me the program of the schedule of how you are going to pay it out. That is all I am asking you.

Mr. DEXHEIMER. I would have to have, Mr. Saylor, I believe, an assumption of the dates on which each one of these participating projects were to be built to make that schedule that you ask. This covers the whole thing in a lump so that the overall project shows the pay-out periods.

Mr. SAYLOR. I know, but your program here, and the testimony of Mr. Larson has been that you have 2 storage projects, 12 participating projects, 5 other projects authorized in the bill. All we have is your statement that it will pay out in 50 years. You can make whatever assumptions you want down there, but I would like to have you show the committee how that will pay out in 50 years.

Mr. DEXHEIMER. We would be happy to do that, Mr. Saylor. We will make assumptions at the time of starting of these participating projects, and submit that for the committee.

(See illustration facing p. 192.)

Mr. SAYLOR. The next thing I would like to ask is a question which I asked before. Are there other available sites that the Bureau of Reclamation can use in providing upstream storage, other than Echo Park and Split Mountain Reservoir?

Mr. DEXHEIMER. There are certainly many available sites. After years of study, we find that in none of those possible sites can you generate as much power nor can you save the water which is our primary purpose. Any other site wastes a great deal more water.

Mr. SAYLOR. And those other sites are found not only in the studies, that you have already made, but maybe in the studies that are to be made in the two hundred and fifty-odd reservoir sites that are in the Upper Colorado River Basin referred to by my colleague Mr. Aspinall?

Mr. DEXHEIMER. I could not say how many we have actually studied, but I imagine it would be pretty close to the 200 he is talking about.

Mr. SAYLOR. What is the difference in power rate that would be required if Echo Park and Split Mountain were not built, and another site were used?

Mr. DEXHEIMER. I think to answer that properly we would need to know what site, and how high the dam was, and what the runoff was at that particular point.

Mr. SAYLOR. Mr. Dexheimer, I am not an engineer. I am out looking for information and protesting the invasion by the Bureau of Reclamation of national parks and monuments. I think it is incumbent upon your Bureau not to come here and to set up and give to this committee as an ultimatum that that is where this project has to be built. I think this committee is entitled to know from you, and then let the committee decide whether the original site could be chosen or whether an alternate site should be chosen.

Mr. DEXHEIMER. We have given the committee, I believe, the differences in evaporation losses from the alternative sites. The difference in power rates from those different sites has not been our primary interest. We are of course obliged to throw out any site on which the power costs above the comparable steam cost for the area.

Mr. SAYLOR. Might it be possible to store the water and not produce power?

Mr. DEXHEIMER. Yes, sir.

Mr. SAYLOR. Since your primary purpose is not power and storage of water, have you looked in other places upstream at these two hundred and fifty-odd reservoir sites you might use?

Mr. DEXHEIMER. We have looked at a great many of them. Unfortunately, under the law and by the direction of the Bureau of the Budget, we are required to show feasibility of these projects. Without the power, they are not feasible.

Mr. SAYLOR. In other words, what you are actually coming before this committee and telling us is that, as desirable as it is to control the flow of the water so that you may deliver water at Lee's Ferry to take care of the lower basin, and regardless of what guise you use, you must have power to make not only the reservoir sites, but also the participating projects feasible?

Mr. DEXHEIMER. Yes, sir.

Mr. SAYLOR. Do you concur in the statement which was made here this morning that on the 12 participating projects as recommended by the committee, that the people who are to get the benefit of this water, these small owners and the landowners referred to by Mr. Stringfellow, will only be able to repay 12 percent of the cost allocated to irrigation?

Mr. DEXHEIMER. I do not have the percentage figure but I believe that is approximately correct.

Mr. SAYLOR. In other words, I might say to you that if you could show to me that all of these farmers were getting this money, I have no objection to giving it all to them without interest; but unfortunately I think regardless of what guise the Bureau of Reclamation uses, it is not for taking care of these small owners, but it is actually for the production of power. It is not to take care of the regulation of the river, which is clearly shown, because you have told us today that you must make these feasible, and the only place you can find the whole project feasible is by the use of power, is that not right?

Mr. DEXHEIMER. That is right.

Mr. SAYLOR. So that what you are telling this committee and the Members of Congress is that unless you invade the national monument at Dinosaur and produce the power there, that the entire upper basin program will fall through, because it did not have the subsidy of Echo Park power?

Mr. DEXHEIMER. No, sir. We are saying particularly on Echo Park that the Colorado River Basin cannot afford to throw away by increased evaporation the great quantity of water that would be thrown away in any other alternate site.

Mr. SAYLOR. If respectable engineers who have surveyed other sites in the upper Colorado Basin came to the conclusion that alternate sites would produce an equal amount of power or a greater amount of power at a comparable evaporation rate, then what would your position be?

Mr. DEXHEIMER. Assuming that there was no difference in the loss of water, nor in the regulation of the stream, we would naturally accept the greater power.

Mr. SAYLOR. What would you put as the maximum limit to which evaporation could be allowed with regard to the difference between Echo Park and Split Mountain Reservoir sites, and any other reservoir site?

Mr. DEXHEIMER. To my mind, Mr. Saylor, there is no maximum. We must hold to an absolute minimum. Water in the West is that precious.

Mr. SAYLOR. Does the Bureau of Reclamation have figures that could tell us how much water they have stored in reclamation projects, and how much water they are actually able to put to beneficial use upon land?

Mr. DEXHEIMER. I do not have those figures immediately available at the present time. I can say that we are servicing about 7 million acres of land with either supplemental or full supply of water in the West. The storage capacities of our reservoirs I do not have at hand, but I can furnish it.

Mr. SAYLOR. Could you get those figures for us to show the amount of water that is stored, and the amount that is actually put to beneficial use upon land?

Mr. DEXHEIMER. Yes, sir. Would you like it over a period of years or average storage, because they vary considerably.

Mr. SAYLOR. I would like to have it by projects.

Mr. DEXHEIMER. As of what time? They vary from year to year.

Mr. SAYLOR. Any available data that you are able to get for us I think the committee should have.

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

(The information is as follows:)

The attached table 32, entitled "Water Distribution—1952" is taken from our annual crop summary. Most Federal reclamation projects are operated by the water users themselves and they do not always have staff adequate to take measurements and compile these records. For this reason we do not have complete information available.

TABLE 32.—Department of the Interior, Bureau of Reclamation—Water distribution, 1952

State	Project	Acre-feet														
		Di- verted from stream ¹	Inflow from—		Delivered to reser- voirs ²	Net supply ³	Main canal		Delivered to lat- erals	Laterals		Delivered to farms				
			Reser- voirs ²	Other sources			Waste	Losses		Waste	Losses	Total	Per acre			
Arizona	Gila:															
	Wellton-Mohawk division		70,470				70,470		3,183				14,097	51,618	7.56	
	Yuma Mesa division		183,374				183,374		9,185				436,660	137,529	14.06	
	Gravity main canal division					253,844	26,476		419,348					7,128	5.04	
	Salt River	280,320	224,393				1,034,900	1,194	176,675				182,880	670,055	3.07	
Arizona-California	Yuma auxiliary	810,507					33,254		6,035				27,219	11,95	3.07	
	Yuma	33,254					388,334	47,283					5,157	196,225	5.47	
	Boulder Canyon: All-American Canal system	384,800	16,699			33,255										
	Coachella division		495,850				405,850									
	Imperial division		2,148,634				2,148,634	73,771	201,590				12,988	202,656	7.38	
Colorado	Central Valley:								83,860					1,897,032	4.46	
	Nadera	181,300					181,300		3,800					(¹)		
	Contra Costa		31,205				31,205		5,922					(¹)		
	Delta-Mendota		108,427				168,427		13,871							
	Fruit-Kern	529,320					529,320		20,434							
	Orland	125,276					125,276	3,129	5,232				9,761	28,301	78,853	4.58
	Fruitgrowers Dam	1,124	2,283				11,575	3,321	3,234				306	10,318	5.01	
	Grand Valley: Garfield gravity divi- sion	769,173					184,319	21,799	42,594				14,522	13,078	92,324	4.27
	Uncompahgre	477,643	87,468				565,111	45,049	14,055				70,463	99,351	336,163	4.78
	Minidoka:	406,740					406,740		95,940					24,300	286,500	4.39
Idaho	American Falls Reservoir Dis- trict No. 2	287,100	6,629				293,729						8,721	33,278	191,730	4.32
	Burley Irrigation District	471,340	42,770				514,110						16,470	270,150	227,400	3.59
	Minidoka Irrigation District	6,822					6,822							1,704	5,118	1.12
	Preston Bench	12,901					12,901							4,976	7,925	3.08
	Rathdrum Prairie: Post Falls unit															
Idaho-Oregon	Boise:															
	Arrowrock division	995,832	22,705			110,580	1,048,638							216,949	788,355	5.20
	Payette division:															
Montana	First unit	361,080					325,730	22,180	17,902				18,889	65,177	201,582	4.67
	Second unit															
	Buffalo Rapids:	44,191					44,191	8,041	9,256					882	26,012	1.81
	First division	35,332					35,332								16,538	18,794	2.07
	Second division															

Montana-North Dakota.....	226,983	44,800	24,400	157,753	32,923	30,800	94,040	3.72
Nebraska.....	1,304	1,304		1,304	266	99	939	1.79
Nebraska-Wyoming.....								
Huntley Intake.....	226,983	44,800	24,400	157,753	32,923	30,800	94,040	3.72
Milk River.....	1,304	1,304		1,304	266	99	939	1.79
Glasgow division.....	19,438	4,447	3,807	11,184	1,676	1,718	7,790	.71
Malta division.....	74,670	14,554	13,687	33,553	11,375	7,411	14,767	.62
Missoula Valley.....	4,300	4,300		4,300		1,826	2,474	1.40
Missouri River Basin: Yellowstone division (Savage unit).....	6,950	2,142	336	4,472			4,243	2.11
Sun River.....								
Fort Shaw division.....	66,212	20,602	22,095	66,212	9,555	4,429	19,785	2.60
Greenfields division.....	244,505	80,561	82,382	154,573	38,206	4,066	115,280	2.72
Lower Yellowstone.....	8,754	86	1,766	22,014			106,106	1.13
Mirage Flats.....	67						17,948	1.60
North Platte.....								
Northport Irrigation District.....	38,750	50,710	17,482	44,821	3,010	5,772	35,839	2.63
Fort Laramie division.....	421,170	61,670	70,197	298,705	8,568	231	281,865	2.25
Pathfinder Irrigation District.....	628,695	182,608	213,735	368,109		101,129	266,980	2.60
Newlands.....	417,630	73,481	58,503	287,951	38,368	50,491	198,072	3.79
Carlsbad.....	4,715	70,423	16,904	58,503	9,227	23,658	46,272	2.02
Tucuman.....	672,430	132,960	32,327	572,430	4,678	177,404	331,846	2.09
Rio Grande.....	25,849	5,160	4,357	16,332	1,844	2,877	11,611	1.28
Buford-Trenton.....						8,657	54,851	1.28
W. C. Austin.....								
Deschutes.....								
North unit.....	259,586	25,513	48,336	185,737	5,619	21,038	159,080	3.32
Central Oregon Irrigation District.....	258,980	2,966	44,870	211,124	5,025	22,361	183,738	4.50
Ochoco.....	17,210	26,300		43,510		8,801	34,709	4.35
Umatilla.....								
East division.....	18,527	55,758	1,040	75,325	5,036	24,206	46,082	7.77
West division.....	81,504	41,544	16,364	58,640	5,427	2,730	48,443	6.38
Stanfield Irrigation District.....	22,311	19,444		33,505		43,796	29,710	5.83
Vale.....	187,306	6,913		153,169		37,835	117,334	3.71
Klamath: Main and Tule Lake divisions.....	132,710	238,390		346,130	440	115,530	230,160	2.27
Owyhee.....								
North Canal gravity system.....	496,202	2,983	195,426	262,554	7,140	38,602	216,812	4.71
South Canal gravity system.....	73,901	162,373		217,271		40,543	176,729	4.60
Dead Ox pump canal system.....	56,644	2,354		58,998		10,968	42,793	4.90
Belle Fourche.....	8,358	139,512		147,870	5,327	50,046	72,150	1.37
Balmorhea.....	21,795	16,601		27,652	1,267	6,187	12,770	2.49
Hyrum.....	4,957	3,432		13,138		8,285	19,553	1.73
Newton.....	8,242	3,164		3,506		4,576	2,630	1.51
Ordin River.....	31,647	35,605		67,252		7,284	55,210	3.42
Strawberry Valley.....								
Spanish Fork.....	7,675	66,657		74,332		18,583	55,749	12.10
Springville-Mapleton.....		1,519		6,661		1,333	5,328	1.68
High Line unit.....	38,374	15,107		54,491		8,203	46,278	2.97

See footnotes at end of table.

TABLE 32.—Department of the Interior, Bureau of Reclamation—Water distribution, 1952—Continued

State	Project	Acre-feet											
		Di- verted from stream 1	Inflow from—		Delivered to reser- voirs 2	Net supply 3	Main canal		Delivered to lat- erals	Laterals		Delivered to farms	
			Reser- voirs 2	Other sources			Waste	Losses		Waste	Losses	Total	Per acre
Washington	Columbia Basin.....	45,434					45,434			14,007	5,433	25,994	4.67
	Okemogan.....	39,069		2,301		1,253	40,117	22,235	872		3,237	13,773	3.81
	Yakima.....												
	Tieton division.....	100,365		1,435			101,800					79,540	3.26
Wyoming	Sunnyside division.....	463,421					463,421	19,489	6,082	10,153		386,468	4.83
	Rosa division.....	329,315					329,315	32,881	22,520	12,076		222,531	3.48
	Kittitas division.....	322,940					322,940					234,246	4.33
	Kendrick.....	49,129		49,129			49,129	409	12,255	2,082	7,493	26,890	2.36
Wyoming-Montana	Riverton.....	428,973		276,252		287,411	417,814	153,153	13,122	33,712	81,635	136,192	2.47
	Shoshone.....												
	Franklin division.....	73,656					73,656				43,355	38,601	3.60
	Garland division.....	283,194				73,659	209,535				46,392	143,143	4.20
	Hearl Mountain division.....	143,247					143,247		48,943		26,220	68,084	2.08
	Willwood division.....	84,123					84,123				49,726	34,397	3.34

1 Diversion amount exclusive of waste at headgates for sand sluicing, etc.

2 Delivered to reservoirs connected with distributing system or to outside interests.

3 Diversion plus inflow from reservoirs and other sources less delivery to reservoirs.

4 Includes waste.

5 Estimated.

6 Total for canal and laterals.

7 No project-operated distributing system.

8 Supplemental supply only.

9 Delivered from 2 Forewick division drains.

10 Carriage loss in Tri-State Canal.

Mr. SAYLOR. The next thing I would like to ask you is whether or not your attention has been called to the Army engineers' comments in 1951 to the preliminary report of the Bureau of Reclamation?

Mr. DEXHEIMER. Yes.

Mr. SAYLOR. What was that report, favorable or unfavorable?

Mr. DEXHEIMER. I would say it was generally unfavorable.

Mr. SAYLOR. Has the Department of the Army or the Department of Defense now commented upon the new proposal?

Mr. DEXHEIMER. We have not yet received their comments.

Mr. SAYLOR. Have you received comments from any of the other departments that filed reports which you have attached to your supplemental reports in 1954?

Mr. DEXHEIMER. We have not yet received their comments to our December 10 supplemental report.

Mr. SAYLOR. Would it be any use to send it out and ask them for their comments on December 10 when I notice that some of the charts which you are still using are dated as late as January 14, 1954? In other words, you cannot expect anybody to comment on a department report when they do not have all of the data and information in front of them.

Mr. DEXHEIMER. I think all of the data and information was furnished there in the original report. We did receive comments on that report. The supplement that we have now only changes a few items, and I believe essentially removes the objections that the Army made in their reply to our previous report in 1951. We do not anticipate that they would have objection under the present basis.

Mr. SAYLOR. Mr. Chairman, I might ask at this point is the supplemental report of the Secretary of Interior a part of the record?

Mr. DEXHEIMER. May I answer that, Mr. Chairman?

Mr. HARRISON. Yes.

Mr. DEXHEIMER. Our supplemental report has not yet been formally transmitted to the Congress and therefore is not the subject of our hearing here. It is particularly on the bills. The report has been transmitted to the President through the Bureau of the Budget, and I think until they receive comments from the other departments, they will probably not release it formally. However, in response to the request of this committee we have made copies of the report available.

Mr. SAYLOR. Mr. Dexheimer, I think the Bureau of Reclamation is charged with the sale of power that would be produced in these reservoir sites in the upper Colorado Basin, is that correct?

Mr. DEXHEIMER. That is correct.

Mr. SAYLOR. Are there any preference clauses in the bill presently being considered by this committee?

Mr. DEXHEIMER. Yes, sir, there are.

Mr. SAYLOR. And are there preference customers in the upper Colorado River Basin which are enabled to take up the present anticipated power to be generated?

Mr. DEXHEIMER. I think Mr. Larson said preference customers would consume only approximately 10 percent of the power from these units in the upper basin.

Mr. SAYLOR. The rest of it would be disposed of to nonpreference customers?

Mr. DEXHEIMER. The rest of it would be disposed at the time we are ready to enter into contracts for it in accordance with the law and the policy then governing the sale of that power.

Mr. SAYLOR. A great deal of that area is serviced by private utilities.

Mr. DEXHEIMER. Yes, sir.

Mr. SAYLOR. They would be available customers for that power.

Mr. DEXHEIMER. It is my understanding that they would like very much to have it.

Mr. SAYLOR. Have you made a study in the area of just the amount of power that is produced by the private utilities and what they charge for power in the area?

Mr. DEXHEIMER. We have those figures available.

Mr. SAYLOR. Could you tell us whether or not power in the area is produced at the bus bar for 6 mills?

Mr. DEXHEIMER. So far as I know, there is no steam power in the area as cheap as that.

Mr. SAYLOR. What is the approximate sale price of steam power in that area?

Mr. DEXHEIMER. I think it is a little over 7 mills.

Mr. SAYLOR. So that if you took another reservoir site other than Echo Park and Split Mountain and produced a comparable amount of power, and increased your cost so that instead of being able to sell it at 6 mills, you were required to sell it at 7 mills, would there be a market in the area?

Mr. DEXHEIMER. If the 7-mill price was at load centers where the power was actually to be used, that is, cost including transmission and substation cost, and it was as cheap or cheaper than steam power, we assume that we have a sale for it.

Mr. HARRISON. The time for adjournment has arrived. We will adjourn until 9:30 tomorrow morning.

(Thereupon at 4:30 p. m., a recess was taken until Wednesday, January 20, 1954, at 9:30 a. m.)

COLORADO RIVER STORAGE PROJECT

WEDNESDAY, JANUARY 20, 1954

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to recess, at 9:30 a. m. in the committee room, New House Office Building, Honorable William H. Harrison (chairman) presiding.

Mr. HARRISON. The committee will come to order.

Mr. Aspinall, as you and Mr. Berry seem to be the only ones present now, you may proceed.

STATEMENT OF W. A. DEXHEIMER, COMMISSIONER OF RECLAMATION, UNITED STATES DEPARTMENT OF THE INTERIOR— Resumed

Mr. ASPINALL. Mr. Chairman. Mr. Dexheimer, I believe this is your first time to appear here before this committee, is it not?

Mr. DEXHEIMER. Yes, sir.

Mr. ASPINALL. As Commissioner?

Mr. DEXHEIMER. Yes, sir.

Mr. ASPINALL. And any other time as far as that is concerned?

Mr. DEXHEIMER. That is right.

Mr. ASPINALL. May I congratulate you upon your new responsibility and hope for you as much success as many of your eminent predecessors have had.

Mr. DEXHEIMER. Thank you.

Mr. ASPINALL. For the benefit of the record, you were working in the Denver office of engineering for the Bureau of Reclamation before you came here?

Mr. DEXHEIMER. That is correct.

Mr. ASPINALL. And you had been there for how many years before your present assignment?

Mr. DEXHEIMER. About 6 years.

Mr. ASPINALL. I have about 2 or 3 questions, because the Department and the Bureau have done very well in my opinion in placing before us the material necessary to our further discussion of the project which is proposed.

Mr. Dexheimer, the matter of evaporation losses which will occur in the upper basin reservoirs has been brought out in this hearing. In your opinion, if you have one—and if you do not have one, why, just please state frankly that you do not—is it likely that these losses will be charged as a consumptive use to the upper basin?

Mr. DEXHEIMER. In my opinion they would be.

Mr. ASPINALL. Will they be considered as a part of the 7½ million acre-feet to which the upper basin is entitled under the Colorado compact after delivery to the lower basin of the 75 million acre-feet over a 10-year consecutive period?

Mr. DEXHEIMER. I think the upper basin compact provides that the evaporation will be charged to the upper basin of all reservoirs in the upper basin.

Mr. ASPINALL. And it is only fair for the upper basin to endeavor to secure reservoir sites where the evaporation losses are the least possible; is that not correct?

Mr. DEXHEIMER. I think it is not only desirable that they do, I think it is very essential in order that they can make maximum use of the water which is available to them.

Mr. ASPINALL. Does the Bureau have any policy presently, Mr. Dexheimer, which will determine whether or not the States having established their priority in the upper basin shall be entitled in the future to use that percentage which has been set aside to them within those States? Do I make myself clear in that?

Mr. DEXHEIMER. The Bureau is guided by the provisions of the various compacts, and that is provided in the compact.

Mr. ASPINALL. In other words, in Colorado we are entitled to 51-plus percent of the upper basin's share of the water. The program of the Bureau will be to see to it that finally that 51-plus percent to which Colorado is entitled will be used within the confines of the State of Colorado. Is that correct?

Mr. DEXHEIMER. It is not the Bureau's responsibility; that is a compact provision which the Bureau is in no position to abrogate.

Mr. ASPINALL. What do you mean by the "abrogate"?

Mr. DEXHEIMER. The Bureau cannot do anything that would be contrary to the provisions of the compact.

Mr. ASPINALL. Is your planning such that looks forward to the consumptive use by Colorado of its share of the water as divided under the upper Colorado River compact?

Mr. DEXHEIMER. That is our planning, and our hope, that feasible projects can be found which will provide Colorado's use of that water.

Mr. ASPINALL. Now when you suggest you hope that that is possible, I want to know definitely as of this time, when this part of the upper Colorado program is brought before us, whether you have that in mind now that these States will be entitled to consumptive use of their shares of water under the upper Colorado River compact.

Mr. DEXHEIMER. We certainly do have that in mind. Our planning is aimed at providing facilities for the use within those States of that water. Although you realize, of course, we are not the only ones who plan or utilize water in that area. It might be done by others.

Mr. ASPINALL. In other words, you mean private enterprise might take over part of the responsibility?

Mr. DEXHEIMER. Private enterprise, or the State or cities, or in the case of oil-shale development, it might be done by a combination outside of the Bureau of Reclamation. There are many other ways that the water can be developed besides Bureau of Reclamation projects.

Mr. ASPINALL. That is right. But, on the other hand, following the appropriation theory of water rights, if certain programs are followed

priorities can be established, can they not, where future use of water would be denied to an area?

Mr. DEXHEIMER. That is correct, it could. They could be established. However, they would have to be contrary to provisions of the compact.

Mr. ASPINALL. The Bureau is looking toward its program with the idea in mind that each State will be ultimately able to use its share of the water?

Mr. DEXHEIMER. Yes, sir.

Mr. ASPINALL. One other question which was interjected into the hearing yesterday had to do with a transmountain diversion program which the region with headquarters at Denver had proposed, that is, the Gunnison-Arkansas project. Is it still the programs of the Bureau of Reclamation to press the overall Gunnison-Arkansas diversion project?

Mr. DEXHEIMER. Yes, insofar as the State of Colorado requests us by resolution of their official bodies to push that development.

Mr. ASPINALL. We are talking about the Gunnison-Arkansas, not the Fryingpan-Arkansas?

Mr. DEXHEIMER. At the present time we are not working on anything more than the Fryingpan-Arkansas. The Gunnison-Arkansas, of course, would be an enlargement of that, which we are not working on at the present.

Mr. ASPINALL. But you are not able to say at present whether or not you have discarded that proposal?

Mr. DEXHEIMER. No, it would not be discarded, but we are not actively working on it.

Mr. ASPINALL. I think that is all.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. I just had 1 or 2 questions, Mr. Dexheimer.

It was partly brought out last night with regard to the preference clause—all of these bills provide in section 2 that the Reclamation Act of 1939, where there is nothing to take it out of the Reclamation Act, the Reclamation Act shall apply. Is that right?

Mr. DEXHEIMER. Yes, sir.

Mr. BERRY. And that would include subsection (c) of section 9 setting forth the preference clause, which is for the preference to public bodies of the sale of this power. Section 2 on page 3, I believe it is.

Mr. DEXHEIMER. Which bill is that?

Mr. BERRY. I have the Dawson bill, H. R. 4449.

Mr. DEXHEIMER. Section 4 in H. R. 4449 modifies the existing 1939 act slightly, I believe.

Mr. BERRY. In what respect, Mr. Dexheimer?

Mr. DEXHEIMER. In the respect—and I quote the bill:

Electric power generated at plants authorized by this act and disposed of for use outside States of the upper Colorado River Basin shall be replaced from other sources, as determined by the Secretary, when required to satisfy needs in the States of the upper Colorado River Basin, at rates not to exceed those in effect for power generated at plants authorized by this act.

Mr. BERRY. No, that does not alter the preference clause, though, does it?

Mr. DEXHEIMER. Well, it could.

Mr. BERRY. That simply says where power is sold outside the basin it must be returned for preference customers in the basin, does it not?

Mr. DEXHEIMER. I do not believe this says for preference customers in this statement.

Mr. BERRY. Now section 2 of the Dawson bill—and these other two bills also—provides, “except as otherwise provided in this act, in constructing, operating, and maintaining the units of the Colorado River storage project and the participating projects listed in section 1 of this act, the Secretary shall be governed by the Federal reclamation laws”—citing the act of June 17, 1902, and supplementary acts, which would include the Federal Reclamation Act of 1939, would it not?

Mr. DEXHEIMER. Yes, sir.

Mr. BERRY. And that would give preference to public bodies in the sale of power.

Mr. DEXHEIMER. That is correct.

Mr. BERRY. I think that is all, Mr. Chairman.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. Mr. Dexheimer, is the Department prepared to recommend this entire program under this bill for authorization at this time?

Mr. DEXHEIMER. The Department as of right now does not have clearance by the executive branch on the report, nor the report on the bill, and therefore the Department is not in an official position to make its recommendation until that is cleared. Our purpose here is to testify as to the facts and acquaint the committee with the provisions of the project and of the bills rather than to say at this time the Department's official position recommends it.

Mr. REGAN. Could I carry that a little farther then? Do you have an idea that before this bill is finally considered by the committee the Department will have all of those facts before the committee, all of the recommendations?

Mr. DEXHEIMER. We hope so and expect that they will be.

Mr. REGAN. Do you have any idea of the time that will elapse?

Mr. DEXHEIMER. I have not been able to get any definite time from the Bureau of the Budget on when they expect to release it.

Mr. REGAN. It is a very big program to put all of these projects in at one time, totaling \$1½ billion. And while we are all interested, I am sure, in seeing that the upper basin gets beneficial use of their waters, there has already been spent on the Colorado River a considerable sum. We have had a proposal before this committee for some time to spend about \$2 billion on the Department's recommendations in the lower basin of the Colorado River, and now this estimate of \$1.5 billion on the upper basin, which runs into a considerable figure.

One of the main items here is the Glen Canyon project where the Reclamation Bureau is concerned with putting the water to beneficial use. The only beneficial use I see that you are going to have on this \$500 million proposal at Glen Canyon is to generate electricity. Now the Government built Hoover Dam to generate electricity, and Arizona was entitled to a portion of that electricity. The dam has been completed more than 20 years. It was named for President Hoover and he went out of office some 22 years ago, so I guess it must have been 22 years ago that was completed and the first electricity began to

generate there. It was not until last year that Arizona began to use any portion of the electricity to which they were entitled.

Now your Glen Canyon project is right on the Arizona line practically, and they would be the nearest source of potential customers. I can visualize going back up, if you are trying to run that line back up the Colorado River, it would be another half-billion dollars to get a tie line through that rugged country. You are asking then on that project alone a potential expenditure of close to a billion dollars.

We have heard some talk about our particular State from some of the members here. I come from a State that would pay of that cost from 25 to 50 million dollars. I do not see that it is going to have that beneficial result for the people of Texas. Why should they put 25 to 50 million dollars into an electric project that might never be of beneficial use? I cannot see where you are going to sell that electricity. Arizona does not need it.

Mr. RHODES. If the gentleman would yield, I would like to differ with him at that particular point. As I think the gentleman well knows, one reason Arizona was late in getting its share of power from Hoover Dam was because of the Santa Fe compact not being ratified at the time it perhaps should have been, and because of the transmission facilities not having been constructed.

For the gentleman's information, I talked to the Governor of Arizona yesterday on the telephone, and it is my understanding, not only from him but also from a letter which was written by the Arizona Power Authority to the Department, which I believe Mr. Dexheimer may have a copy of, that the State of Arizona is most eager to buy power from Glen Canyon.

Mr. REGAN. I will stand corrected on that. Then you do have potential customers in Arizona.

Mr. DAWSON. Will the gentleman yield to me?

Mr. REGAN. Yes.

Mr. DAWSON. I might also state we will have a future witness here representing power companies up in the upper basin who, I think, will testify they are ready and willing to take the power that can be produced.

Mr. REGAN. That is what I want to find out something about.

Mr. ENGLE. Will the gentleman yield to me?

Mr. REGAN. Yes.

Mr. ENGLE. If none of these other fellows will take it, you can always peddle it in southern California. [Laughter.]

Mr. REGAN. I wanted to see where these potential customers were, and they are coming out fast.

I notice, among other things, Mr. Dexheimer, on the schedule of costs of generating electricity at these various projects, three or four of them show a cost greater than that of steam power. On one here you have a cost of 8.4 mills, yet you can generate the electricity for 7.3. Another is 7.9 mills. Another one is 7.7 mills, then one almost at the break even point with your cost. So four of them will not generate electricity as cheap or cheaper than can now be generated by steam.

Mr. DEXHEIMER. We are not recommending those at this time, and we would not recommend them until and unless we can find a project

which would get the system power rate down below the rate that you could generate steam power.

If you will permit me a moment, Mr. Regan, I would like to correct a little bit of what might be misunderstanding on the use of the Hoover Dam.

While you say that we have just recently delivered power in some areas, we have been delivering power from that project since 1936 when the first generator went on the line, and we have been operating most of the time at over capacity as fast as we could get the generators put in and make them available.

There has always been more demand than we could supply. In order to help meet that demand we have completed power projects and river control projects down stream from there. But the largest benefit of the Hoover Dam has been the irrigation in California and Arizona, which was in effect before the Dam was completed, which has created one of the most prosperous areas in the world. And this project and the construction of the Glen Canyon unit would operate the same way to control the river so that that water would be available for irrigation.

Mr. REGAN. Mr. Dexheimer, I concede the point that Boulder Dam has brought into being a very profitable and wonderful irrigation system, supplying water for the municipal use of Los Angeles and other purposes, but I do not see any potential value in Glen Canyon. You have no irrigation under Glen Canyon directly. The only thing I see to Glen Canyon is that you have a storage basin there for silt collection and power generation.

Mr. DEXHEIMER. I think I can explain that perhaps this way: We have a compact between the upper basin and the lower basin. That compact requires a delivery of 75 million acre-feet in a 10-year successive period to the lower basin.

Mr. REGAN. Yes.

Mr. DEXHEIMER. In order for the upper basin to utilize water for irrigation, they must have some sort of river control providing a long-term carryover of storage water so that in short years they will be able to provide their commitments at the lower basin, and they will also be able to utilize water in the upper basin. Without that control, you would have the irrigation projects developed in the upper basin going without water in those short years in order to meet their commitments under the compact. That is why we say that storage capacity is absolutely essential in order that the farmers will not be dry 3 or 4 years out of those 10.

Mr. REGAN. In other words, you are telling the committee that the upper reservoirs will supply water to the irrigation and this Glen Canyon will be the storage to supply the water to your commitments to the lower basin?

Mr. DEXHEIMER. It will be the control, and with the series of upper basin reservoirs regulated depending upon the runoff in any individual year, storing water up above for use there, and still being sure that down in the lower basin the upper basin can meet their commitments for delivery.

Mr. REGAN. Getting back a minute to these several projects that will generate power at a greater cost than it is now being generated by steam, is it your idea that the Department is going to be able to furnish this committee all of the final analyses of these things in time for the

committee to consider this bill at this session, or had this committee better take certain features of the bill and give them consideration without waiting for the further analyses of these various projects that are not yet ready to be considered?

Mr. DEXHEIMER. We have recommended for a start in the report the Echo Park and Glen Canyon, which are very profitable ventures.

Mr. REGAN. What were those again?

Mr. DEXHEIMER. Echo Park and Glen Canyon, which are very profitable ventures, both from a water standpoint, water control, and from a power standpoint. And the taxpayer should have no fear at all about those being a very good investment.

Mr. DAWSON. Will the gentleman yield to me?

Mr. REGAN. Yes.

Mr. DAWSON. There has been some confusion in the committee of what is in the bill and what has been recommended by the Department, and I think it might be helpful if I furnished the committee at this time with a list of what is in the bill and the projects which have been recommended.

Mr. REGAN. I am very interested in that.

Mr. DAWSON. I think that would be very helpful. I will ask the clerk to pass them around.

Mr. HARRISON. I want to call to his attention that if the gentleman yields anymore he is going to be over his time limit and will not be recognized.

Mr. REGAN. I will yield entirely now. Thank you, Mr. Dexheimer.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. I am very much interested in the questions my colleague is asking, and I would be willing to yield him a little of my time, at least 5 minutes of it, to pursue what he has in mind.

Mr. HARRISON. That is agreeable if he wishes.

Mr. REGAN. In deference to the program, I will stop.

Mr. DAWSON. Mr. Dexheimer, there are two questions I would like to ask. A question was raised yesterday in regard to the cost that the central Utah project, for instance, was bearing of the total cost, and some inference was made that the cost for putting water on the land was all out of proportion. Could you state for the benefit of the committee, could you give us a comparison of the costs that are being paid by central Utah, for instance, for their water as compared with some other projects—the Big Thompson or comparable projects?

Mr. DEXHEIMER. I do not have that information here, but I would be glad to furnish it.

Mr. DAWSON. In a general way, is it out of proportion?

Mr. DEXHEIMER. My opinion is that in a general way they are approximately the same on comparable projects.

Mr. DAWSON. In other words, there is not any departure in this project from the policies which have been followed in the past on the using of power revenues after the power project has been paid off to help finance these irrigation costs which could not stand on their own feet?

Mr. DEXHEIMER. There is no change in the policy, there is a little change in the way we analyze them is all. But irrigators in any case are required to pay to their ability to repay, and, generally speaking, the comparable projects in the upper basin have the same ability to repay in one area as against another.

Mr. DAWSON. I would like to ask you, Mr. Dexheimer, in regard to the pictures you presented yesterday, how they were composed. I observe that you indicate on the pictures the water level after the dams will be completed. Could you state for the benefit of the committee how you arrived at those levels of water?

Mr. DEXHEIMER. Those pictures, on the two sides, one showing the river as it is now, on the other side exactly the identical picture with the water surface filled in, were done by spotting elevations at various points through the canyon of the maximum water surface in the reservoir at Echo Park and coloring it in to show what the effect of the reservoir would be.

Mr. DAWSON. In other words, I am showing you the sample picture here. On the left-hand side you show the water at the bottom of the canyon as it is now?

Mr. DEXHEIMER. Yes, sir.

Mr. DAWSON. And various strata of rock as you come up. And then you come over on the right-hand side and you project the water level as it will be after the dam is installed. I take it that these are based on actual measurements up the rock as imposed on the photograph?

Mr. DEXHEIMER. No. They were elevations taken on topographic maps, on which you follow a contour along the picture.

Mr. DAWSON. Then would you say this is a fairly accurate diagram of the water level after the dam would be in place?

Mr. DEXHEIMER. I think it is quite accurate; yes, sir.

Mr. DAWSON. That is all I have, Mr. Chairman. I would be glad to yield my time back to my colleague from Texas.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. I would like one minute for just one question. I would like to know if the Department's modified report will or will not include the San Juan-Chama project.

Mr. DEXHEIMER. It does not include the San Juan-Chama.

Mr. REGAN. Thank you.

Mr. HARRISON. Is that all, Mr. Regan?

Mr. REGAN. Yes.

Mr. HARRISON. Mr. Rogers?

Mr. ROGERS of Texas. Mr. Dexheimer, there have been so many figures going around here—dollars, acre-feet, and kilowatt hours—I would like to clarify one thing. Can you give me the estimated cost of the projects that are being recommended by the Department at this time?

Mr. DEXHEIMER. The total is \$1,134,643,000.

Mr. ROGERS of Texas. That is being recommended by the Department at this time?

Mr. DEXHEIMER. Recommended for authorization, yes, sir.

Mr. ROGERS of Texas. What percentage of that will be nonreimbursable?

Mr. DEXHEIMER. Very, very little. It is less than 3 percent.

Mr. ROGERS of Texas. That is all I have. I will yield some time to Mr. Fernandez from New Mexico.

Mr. FERNANDEZ. If I may be permitted to ask one question, Mr. Chairman. When you say that the San Juan-Chama project is not included in the report, you mean it is not included for immediate authorization?

Mr. DEXHEIMER. That is correct.

Mr. FERNANDEZ. It is not in any sense disapproved for future or provisional authorization if the committee sees fit to so consider it?

Mr. DEXHEIMER. No. When we are able to submit to the Congress a feasibility report we expect there will be a great many more participating projects.

Mr. FERNANDEZ. It is still considered in your report as part of the overall comprehensive plan which has been agreed to by the States?

Mr. DEXHEIMER. Yes. And we would not object if the Congress saw fit to authorize it at this time.

Mr. ROGERS of Texas. I would like to yield to my colleague and namesake from Colorado, Mr. Rogers.

Mr. ROGERS of Colorado. Mr. Commissioner, have you been handed the comparison of projects of H. R. 4449 that our colleague, Mr. Dawson of Utah, supplied?

Mr. DEXHEIMER. Yes.

Mr. ROGERS of Colorado. Directing your attention to the left side where it says "Projects in H. R. 4449", I notice that Navaho has been deleted from the projects recommended according to the supplemental report of October 1953, and also that Curecanti has been eliminated. Now both of those projects are within the State of Colorado, are they not?

Mr. DEXHEIMER. The Navaho is in New Mexico.

Mr. ROGERS of Colorado. Now are you in a position to supply to this committee, if request is made, the data and information as it may deal with the Cross Mountain Reservoir site?

Mr. DEXHEIMER. We have some data. We would be glad to furnish what we have.

Mr. ROGERS of Colorado. In other words, if the committee should decide to allocate Colorado a little more of these projects, as recommended by the authorities in Colorado, you are in a position to supply that to the committee?

Mr. DEXHEIMER. Yes. And we already have some data in the report on Cross Mountain, giving the allocations and the power rates and so on, along with the other projects.

Mr. ROGERS of Colorado. Did you not feel that you had enough information at the time the supplemental report of October 1953 was prepared to recommend it in this H. R. 4449 as a project that is ready or should be authorized?

Mr. DEXHEIMER. We do not have complete information, but we felt that we were not in a position to recommend it at this time because later as a participating project it would be much better, and these other projects are much better for the present development.

Mr. ROGERS of Colorado. Has your Department been apprised of the request made by the upper Colorado River Basin States as of January 1954 concerning the amendments that they may suggest to this legislation?

I have reference to a letter written by Mr. Will, the secretary and general counsel of the Upper Colorado River Commission.

Mr. ASPINALL. Mr. Chairman, there has been no testimony by Mr. Dexheimer of any proposed amendments, and I think that that goes to the responsibility of those proposing it rather than permit it to be brought in at this time.

Mr. ROGERS of Colorado. If I may interrupt, I am just merely asking the gentleman if it has been called to the attention of the Department. That is all.

Mr. HARRISON. I think it is proper for him to answer the question yes or no; but I will sustain Mr. Aspinall in his contention it is not properly a part of the hearing at the present time.

Mr. DEXHEIMER. We have not received it officially, although we are unofficially aware of what they have done.

Mr. ROGERS of Colorado. Thank you.

Mr. HARRISON. Mr. Rhodes?

Mr. RHODES. Mr. Dexheimer, I would like to ask a few questions concerning the release of water by the Bureau of Reclamation. Of course, if these projects are built, then, of course, the Bureau will be in charge of the amount of water which is released from each storage reservoir and which will eventually get down to the lower basin.

Now in the exchange between the gentleman from California, Mr. Hosmer, and the gentleman from Colorado, Mr. Aspinall, yesterday, there was an element thrown into this discussion which was new to me, and that is the element of charging of evaporation losses. And it occurs to me that in the event the Department interprets the law of the river and the laws pertaining to the basin one way you would release $7\frac{1}{2}$ million acre-feet each year to the lower basin. If on the other hand, you interpreted the law of the river and the laws pertaining to this project as Mr. Aspinall has suggested it might be interpreted, you would release $7\frac{1}{2}$ million acre-feet less the reservoir loss from evaporation.

I would like to ask you at this time as to your interpretation as to how much water must be released by the Bureau of Reclamation each year in order to satisfy the terms of the Santa Fe contract and all the laws applicable to the river which we are now studying.

Mr. DEXHEIMER. We do not consider that we are the people to interpret these compacts. However, I believe the upper river compact specifically provides for the evaporation in reservoirs in the upper basin to be charged to the upper basin.

Mr. RHODES. That is your present interpretation?

Mr. DEXHEIMER. Yes.

Mr. RHODES. And with that present understanding, then at Lee Ferry each year you would release $7\frac{1}{2}$ million acre-feet?

Mr. DEXHEIMER. Yes, sir.

Mr. RHODES. Now there has been very little said as to the effects on Hoover Dam of the construction of the Glen Canyon Dam. Is it not true, Mr. Dexheimer, that the construction of the dam at Glen Canyon would lengthen the life of Hoover Dam rather considerably by acting as a control for the silt going down the river?

Mr. DEXHEIMER. It would control the silt. If some other means were not provided for taking care of the silt in Lake Mead, presumably the silt would fill it up sooner.

Mr. RHODES. So that there would be some effect on the lengthening of the life of Hoover Dam by construction of Glen Canyon?

Mr. DEXHEIMER. Yes, there would.

Mr. RHODES. You are not prepared to say at this time how many years would be involved in that?

Mr. DEXHEIMER. No, I am not, because to a large extent it will depend on what works are built upstream to control silt also.

Mr. RHODES. But would not Glen Canyon provide a very adequate silt control even if it were built by itself?

Mr. DEXHEIMER. Yes, it would.

Mr. RHODES. As far as Hoover is concerned?

Mr. DEXHEIMER. It would.

Mr. RHODES. Do you have any idea what percentage of silt would be removed from the river by the construction of Glen Canyon which would otherwise find its way into Hoover Dam?

Mr. DEXHEIMER. About two-thirds of the silt.

Mr. RHODES. About two-thirds would be removed and would be captured at Glen Canyon instead of going on down to Hoover Dam?

Mr. DEXHEIMER. Yes.

Mr. RHODES. Turning now to the power question. Also the Bureau is to be the marketing agent for any power that is generated by this upper Colorado storage project. Is that a correct statement?

Mr. DEXHEIMER. Yes.

Mr. RHODES. Before I ask you this question, I would like to make a brief statement.

My good friend from Texas, Mr. Regan, has indicated that he doubts the possibility that the State of Arizona requires any additional power. The Arizona Public Service Co. has recently completed a rather large steam plant within the State of Arizona, the Salt River Valley Waters Users Association has completed a large steam plant, or is in the act of planning and constructing another large steam plant. The State of Arizona is a power deficient area and has been for years past, and we feel that unless it gets more power from Glen Canyon it will be for years to come. I think it is well known that area of California usually designated as southern California is also a power deficient area.

With that background, I would like to ask you the plans of the Bureau as to the marketing of power from Glen Canyon and from Echo Park. Is it planned by the Bureau that this power will be marketed throughout the West wherever a market can be obtained or will you market it only in the upper basin?

Mr. DEXHEIMER. The plan for marketing, of course, would be established when we are ready to market the power. If we were ready today, under the present law and policy of the Interior Department, we are required to satisfy the needs of preference customers insofar as it is feasible to do so within reasonable transmission distance, and the balance of the power we then try to sell at the most advantageous arrangement that we can make.

In our planning for the upper Colorado River project, we have included in the costs sufficient transmission lines to market all of the power to load centers. I think so far as our plan is concerned it would make very little difference whether we marketed it in the upper basin or in Arizona or other places so far as the cost of the work or the rate that we could sell power.

Mr. RHODES. From the last statement you made I sort of gathered in your mind you do not consider Arizona as an upper basin State for the purposes of marketing power.

Mr. DEXHEIMER. It is a question of transmission distance rather than location in the upper or lower basin that we would have to consider.

Mr. RHODES. Have you recently received a letter from the Governor of Arizona or the Arizona Power Authority concerning the desire of the State of Arizona to purchase power from Glen Canyon?

Mr. DEXHEIMER. It has not come to my personal attention.

Mr. RHODES. I see. Is your Department aware of such a desire on the part of the Arizona Power Authority?

Mr. DEXHEIMER. Yes.

Mr. RHODES. Now I will ask you a hypothetical question. Under the laws as they now exist, assuming there is nothing in this law which, as it finally passes Congress, would change such laws, if a request or application for power were received from the Arizona Power Authority, would it be given the same consideration as a similar request from a similar body in other upper basin States?

Mr. DEXHEIMER. Yes.

Mr. RHODES. Mr. Chairman, I will yield the balance of my time to the gentleman from California, Mr. Hosmer.

Mr. REGAN. Before doing that, I wonder if the gentleman would yield for a couple of questions?

Mr. RHODES. Glad to.

Mr. REGAN. He said Arizona had in recent years put in three steam plants. Do you have any figures on the cost of this generating of power at those steam plants?

Mr. RHODES. I do not, I am sorry to say.

Mr. REGAN. And do you have any information as to the distance of those steam plants from the Glen Canyon Dam?

Mr. RHODES. The two steam plants that I mentioned, where one is constructed and one will be constructed by the Salt River Valley Users Association, are located approximately 6 miles from Tempe, Ariz., which is approximately 8 miles from Phoenix. In other words, about 14 miles from Phoenix.

Mr. REGAN. But you do not know the distance in miles from the site of Glen Canyon Dam?

Mr. RHODES. Would you mean as the crow flies or as the car travels?

Mr. REGAN. As the transmission line might flow. [Laughter.]

Mr. RHODES. I could make a pretty good estimate and say it would be somewhere around 225 or 250 miles as the crow flies.

Mr. REGAN. Jumping Grand Canyon?

Mr. RHODES. Jumping all sorts of mountains and canyons and so forth.

Mr. REGAN. Thank you.

Mr. RHODES. The Arizona Public Service plant is down between Coolidge, Ariz., and Tucson, which is some 55 miles south.

Mr. HARRISON. Mr. Westland?

Mr. WESTLAND. I just have about two questions, Mr. Dexheimer. I think you said you were charging 97 percent to power on the cost of these two projects?

Mr. DEXHEIMER. No.

Mr. WESTLAND. You said about 3 percent nonreimbursable.

Mr. DEXHEIMER. Nonreimbursable, but the irrigators repay some of the cost also.

Mr. WESTLAND. What percentage of the costs do you figure you are charging to power?

Mr. DEXHEIMER. \$499,400,000 is charged to power out of the cost of \$1,134,000,000.

Mr. WESTLAND. Less than 50 percent of the cost of these projects is being charged to power?

Mr. DEXHEIMER. No, of the two initial units of the project, sir.

Mr. WESTLAND. I would like to get this straight. You have just said that out of a total cost of \$1,134 million you are charging \$499 million to power; is that correct?

Mr. DEXHEIMER. That \$499 million was only those two initial units. The total charge to power is—

Mr. WESTLAND. Let me phrase it a little differently. How much will power repay? What percent will power repay of these projects?

Mr. DEXHEIMER. Power will repay \$876 million of the total of \$1,134 million, approximately 85 percent.

Mr. HOSMER. Will the gentleman yield there?

Mr. WESTLAND. Yes.

Mr. HOSMER. That does not take into consideration the amount that will be devoted from power revenues to the diminution of the irrigation obligation after the 44 years, does it?

Mr. DEXHEIMER. Yes, it does.

Mr. HOSMER. It does?

Mr. DEXHEIMER. Yes.

Mr. WESTLAND. Just one other question on this evaporation problem. When Mr. Larson was reading out of that compact yesterday I thought I caught the phrase "projects built prior to the signing of this compact will be charged for the evaporation," will be charged in the locality itself. Am I wrong on that?

Mr. DEXHEIMER. Article 5 (a) of the Upper Colorado River Basin compact provides that "Losses of water occurring from or as a result of the storage of water in reservoirs constructed prior to the signing of this compact shall be charged to the State in which such reservoir or reservoirs are located."

Mr. WESTLAND. That is what I was getting at. Obviously these projects are being built subsequent to the signing of the compact.

Mr. DEXHEIMER. Subarticle B of that same article 5 provides: "All losses of water occurring from or as a result of the storage of water in reservoirs constructed after the signing of this compact shall be charged as follows:" And that is a complicated procedure which, in essence, charges the evaporation loss to the State in which the benefit is obtained or the reservoir is located, with some adjustments for their share.

Mr. WESTLAND. I will yield the balance of my time to the gentleman from Utah.

Mr. DAWSON. I just had one more question, Mr. Dexheimer.

A question was raised by the gentleman from Texas in regard to additional costs for transmission lines. Is it my understanding that there are to be additional costs? Or is it not a fact that the transmission lines, the cost of them, is included in the 1 billion 140 million dollar figure, was it, that you mentioned?

Mr. DEXHEIMER. The cost of transmission lines is entirely included in that estimate, and it may very well be that the Government would not actually spend as much for transmission as is contemplated in this estimate because these estimates provide for taking the power to the load centers. It may very well be that other people will provide some of that facility and reduce that transmission cost.

Mr. DAWSON. Is it not a fact there have been some suggestions made by the users of power in that area that they may construct some of those transmission facilities?

Mr. DEXHEIMER. I understand that the committee will hear testimony later to that effect.

Mr. DAWSON. Which would save additional money?

Mr. DEXHEIMER. Yes.

Mr. HARRISON. Are you through, Mr. Westland?

Mr. WESTLAND. Yes.

Mr. HARRISON. Mr. Young.

Mr. YOUNG. Mr. Dexheimer, I understand that the Bureau is supporting 2 storage projects and 12 or 13 participating projects. Does this leave quite a portion of the irrigable area still to be developed in the upper basin?

Mr. DEXHEIMER. Yes, quite a sizable portion still to be developed after these projects.

Mr. YOUNG. Assuming all of the participating projects included in the bill sponsored by Mr. Dawson were authorized, that would still leave quite a bit of irrigable area still to be developed; is that right?

Mr. DEXHEIMER. Yes, it would.

Mr. YOUNG. Can you give me any idea percentagewise what sort of inroads the passage of Mr. Dawson's bill would make on the area to be developed, or how many millions of acre-feet would still remain to be used?

Mr. DEXHEIMER. I think I can do it on a basis of water available. About 3,300,000 acre-feet would still be available for upper basin development after those projects.

Mr. YOUNG. Or for transmountain diversion of part of that?

Mr. DEXHEIMER. For development in the upper basin, whatever that might be.

Mr. YOUNG. Lake Mead at the present time has a capacity of around 30 million acre-feet; is that correct?

Mr. DEXHEIMER. That is correct.

Mr. YOUNG. Has that been up to capacity most of the time during the past 10 years?

Mr. DEXHEIMER. It has been very close to capacity several times.

Mr. YOUNG. Can you give me any percentage figures as to the utilization of the storage capacity of Lake Mead during the past 10 years, or other period?

Mr. DEXHEIMER. I cannot give them to you offhand. I would be glad to furnish a tabulation showing the storage at various times.

Mr. YOUNG. But you could say generally it has been utilized fairly close to capacity; is that correct?

Mr. DEXHEIMER. That is correct.

Mr. YOUNG. Now the bill provides for an upper Colorado River development fund up to a million dollars a year. That would be available to the Department for the development of the upper basin area?

Mr. DEXHEIMER. Yes.

Mr. YOUNG. Would that go on in perpetuity? Is there any limitation on that?

Mr. DEXHEIMER. As the bill is written, it would go on in perpetuity, and the money would be used to investigate and compile the figures that we have and the data that we are required to present for each individual project.

Mr. YOUNG. That could also be used for even construction of dams, though, could it not? It states "development, conservation, and utilization of water." Is that not a rather broad authorization?

Mr. DEXHEIMER. I think the bill limits it to investigation.

Mr. YOUNG. Are you familiar with the \$21 million to be spent for recreational purposes or would that come in somebody else's testimony. I realize you are not supporting the bill, you are merely up here to give information to the committee.

Mr. DEXHEIMER. I am not in a position to testify at all on that, Mr. Young.

Mr. YOUNG. As I understood the testimony yesterday, the construction of the projects contemplated by the bill and advocated by the Department would result in a diminution of power generation at Hoover Dam; is that correct? Around 9 billion to 6 billion kilowatt-hours.

Mr. DEXHEIMER. Eventually, with the full development, it would bring down the power output to some extent, yes.

Mr. YOUNG. Would that interfere with existing contracts for distribution of power to the power allottees under the Boulder Canyon Project Act?

Mr. DEXHEIMER. I do not think it would have any effect on that.

Mr. YOUNG. It would have no effect on existing contracts?

Mr. DEXHEIMER. Those contracts, you understand, are subject to diminution, but as a matter of practical experience in operating our plants we have been able at Hoover and Davis and some of our other plants to operate 10 to 15 percent over rated capacity and would probably be able to supply their demands even with the diminution.

Mr. YOUNG. Now with regard to power distribution, you spoke of load centers. Are there a few load centers or is there quite a sizable number?

Mr. DEXHEIMER. There is quite a sizable number in the upper basin and, of course, almost the whole State of Arizona, and there are load centers even beyond that.

Mr. YOUNG. Are any of those load centers in striking distance of the State of Nevada?

Mr. DEXHEIMER. The southern part of Nevada would be.

Mr. YOUNG. Nevada is a power deficient area, too, and if the Colorado River Commission were to put in a request for power, what sort of consideration would they receive according to existing reclamation law or the bill? The bill does not purport to change existing reclamation law, does it, as far as distribution of power?

Mr. DEXHEIMER. One of them, I think, modifies the existing distribution procedure slightly.

Mr. YOUNG. Would you specify in what respect, please?

Mr. DEXHEIMER. On page 7 of H. R. 4449, starting with line 13:

Contracts for the sale of power for use outside the States of the upper Colorado River Basin shall contain such provisions as the Secretary shall determine to be necessary to effectuate the purposes of this act, including the provision that if and when the Secretary finds (a) that such power cannot practicably be replaced from other sources at rates not exceeding those in effect for power generated by plants authorized by this act, and (b) that such power is required to satisfy needs in the States of the upper Colorado River Basin, then such contracts shall be subject to termination or to modification to the extent deemed necessary by the Secretary to meet power requirements in the States of the upper Colorado River Basin.

I can see the possibility of that being applied in such a way as to circumvent perhaps the preference customer.

Mr. YOUNG. That is all the questions I have, Mr. Chairman. I would like to yield the balance of my time to my colleague, Mr. Hosmer.

Mr. HARRISON. Mr. Donovan, do you have any questions?

Mr. DONOVAN. Just one. Can you tell us the total population of the area that the Colorado River storage project and participating projects contemplated by this bill affect, what it is at the present time?

Mr. DEXHEIMER. We do not have those figures. I would be glad to furnish them, however.

Mr. DONOVAN. Has a study of them been made?

Mr. DEXHEIMER. We have some studies on it, and I think we could furnish it without too much research.

Mr. DONOVAN. Could you make a good guess at it?

Senator BENNETT. If the gentleman will yield, those figures were put in the record yesterday, and my memory is 286,000. I could not be sure.

Mr. DAWSON. If the gentleman will yield to me, I do not think that was his question.

Mr. HARRISON. Mr. Donovan has the time. Whoever he wants to yield to.

Mr. DONOVAN. Yes, I will yield.

Mr. DAWSON. His question—

Senator BENNETT. Mr. Donovan, was not your question the population of the basin covered by the upper Colorado River project?

Mr. DAWSON. Or was the question the population to be served with water from this project?

Mr. DONOVAN. That is right.

Mr. DAWSON. Yes. That would include Denver and Salt Lake City.

Mr. DEXHEIMER. For the basin I believe the figure is 286,000. That does not include those areas which might be served from the project. They would run into the millions, I think.

Mr. DONOVAN. Can you furnish that figure?

Mr. DEXHEIMER. Yes, sir.

(The information referred to is as follows:)

POPULATION TO BE BENEFITED BY COLORADO RIVER STORAGE PROJECT

Direct benefits from the Colorado River storage project will be realized by almost all the people of the States of—

	Population
Colorado.....	1,325,089
New Mexico.....	681,187
Utah.....	688,862
Wyoming.....	290,529

Total population, 1950 census..... 2,985,667

Mr. HARRISON. Any further questions?

Mr. ASPINALL. Will you yield to me for one question?

Mr. DONOVAN. Yes.

Mr. ASPINALL. Mr. Commissioner, in answer to the question propounded by Congressman Westland relative to power features, in the provisions of the bill now before us which provisions you quoted,

would there be any possibility that Arizona, California, and Nevada might be given two preference rights for the use of power there?

Mr. DEXHEIMER. In my definition of preference customers, municipalities or public utility bodies, I am not sure just where that first choice on the power might go. If you consider that it should be marketed within a reasonable transmission distance, that is.

Mr. ASPINALL. Would you be willing to answer that question, that is, furnish the information and answer it for the Bureau, not this morning, because I would like to have a clearcut answer to that in relation to the Solicitor's opinion which has been rendered heretofore in that matter.

Mr. DEXHEIMER. The question you want answered is, Would Arizona and California be allocated power?

Mr. ASPINALL. Two preference rights. Is there a possibility that 2 preference rights, the rights of preferential customers on 2 different bases, be given to the lower States?

Mr. DEXHEIMER. We will answer that for you.
(The information referred to follows:)

The opinion of the Solicitor of the Department of the Interior to which Mr. Aspinall apparently referred is reported in 53 Lands Decisions 1 (1930). In this opinion the Solicitor held that the provisions of the Boulder Canyon Project Act did not give the States of Arizona, California, and Nevada 2 separate preference rights, 1 under the Federal Water Power Act and another under the Boulder Canyon Project Act itself. Nothing has been found in any of the bills now before the committee which would furnish a basis for a conclusion that any customer or any State is entitled to invoke two preferences.

Mr. HARRISON. Any further questions, Mr. Donovan?

Mr. DONOVAN. No.

Mr. HARRISON. Mr. Wharton, do you have any questions?

Mr. WHARTON. No.

Mr. HARRISON. The gentleman from California, Mr. Hosmer, has 13 minutes.

Mr. HOSMER. Mr. Dexheimer, you state on page 2 of your written testimony with respect to this plan that it contemplates administration and operation in full conformance with the upper Colorado River basin compact of 1948 and also the Colorado River compact of 1922. In your oral testimony, in response to questioning, you stated that you did not consider that the Bureau is the one to interpret the 1922 compact. Could you reconcile those two statements?

Mr. DEXHEIMER. The compact, we think, clearly provides certain things. If it should come to a dispute or a question of interpretation, we would not feel that we were the ones that should make that interpretation.

Mr. HOSMER. In other words, then the statement in your written testimony is a statement of how you feel about it now? What the interpretation is now. But your interpretation is not controlling. Is that right?

Mr. DEXHEIMER. That is correct.

Mr. HOSMER. And as a consequence, that statement in your written testimony may or may not be correct?

Mr. DEXHEIMER. As we see it now, I think it is correct.

Mr. HOSMER. You state further here then that this plan provides for the full compliance of the paramount requirement of deliveries at Lee Ferry. Now in your interpretation, I presume that you have considered the volume requirements as to deliveries as to Lee Ferry?

Mr. DEXHEIMER. Yes.

Mr. HOSMER. Does that statement also apply to any element of quality of that water?

Mr. DEXHEIMER. No; it does not.

Mr. HOSMER. In other words, it is your interpretation that just so long as the volume is there and it is wet, why, the compact and the requirements of the compact are being met?

Mr. DEXHEIMER. That is correct, I think, and I do not know of anything in the compact that specifies determination as to quality.

Mr. HOSMER. There is a minimum below which the quality of water cannot go if it is to be usable for irrigation purposes. Is that correct?

Mr. DEXHEIMER. That is correct.

Mr. HOSMER. You stated that the largest benefit of the Hoover Dam is irrigation in Arizona and California:

The Hoover Dam created the most prosperous areas of the world.

If the water of the Colorado River is not of a quality that is usable for irrigation, it is obvious, is it not, that these most prosperous areas of the world will be turned back into deserts?

Mr. DEXHEIMER. In the unlikely event that water became so salty as to harm the agriculture, yes.

Mr. HOSMER. Would it not then be a paramount interest of anybody concerned and responsible in connection with the lower basin States to insure that that contingency did not come about?

Mr. DEXHEIMER. I think it would.

Mr. HOSMER. Now you stated that the plan that you have testified concerning includes money sufficient to erect a transmission to the load center?

Mr. DEXHEIMER. Yes.

Mr. HOSMER. The load centers to which you are referring, are they in the upper basin or the lower basin, or both?

Mr. DEXHEIMER. They would be either in the upper basin or the lower basin with—

Mr. HOSMER. Wait a minute. You have stated that there are certain construction plans in that. Now that is what I am directing this to.

Mr. DEXHEIMER. The estimate includes sufficient money to transmit that power to load centers. If the power goes to the upper basin entirely, it would take a certain number and capacity of transmission lines to carry it to those load centers. If part of the power goes other places, that is, to Arizona, or other parts of the lower basin, there would be enough money in our estimate to build transmission lines a like distance toward those markets.

Mr. HOSMER. In other words, there is an amount set up in there but the specific expenditures are not set up; is that right?

Mr. DEXHEIMER. That is correct.

Mr. HOSMER. Would it be provident either for the Government or for a buyer to construct transmission facilities to points outside of the upper basin in light of the statement by the preceding witness, Mr. Larson, that the upper basin would within 20 years be in a position to consume all of that power itself, and in light of the provision that you read a few moments ago from H. R. 4449 respecting the cancelability and terminability of these contracts?

Mr. DEXHEIMER. I think that would depend on the need and the cost of that power, and the cost of the transmission line that he was required to build.

Mr. HOSMER. Let us take a more specific point then, and take the 250 miles of transmission line that Mr. Rhodes was talking about over rugged country to some point in Arizona. Would that be provident to construct in light of within a maximum period of 20 years it might become useless?

Mr. DEXHEIMER. Under the terms of this bill Arizona is included as an upper basin project or State and would participate in the power distribution; so that they would not be subject to that.

Mr. HOSMER. Let us take a similar line to some other point outside the upper basin.

Mr. DEXHEIMER. That would depend, of course, as I said, on the cost of building that transmission line from wherever the Federal transmission line might stop.

Mr. HOSMER. In other words, the buyer would have to think twice before he would sign up for that, and the Government should think twice before it would sign a contract requiring it to put out the expenses of such a transmission line?

Mr. DEXHEIMER. That is correct. But it might very well be that both parties could plan on further development of power to meet the needs either in the upper basin or the lower basin on which those transmission facilities could be utilized to full extent after that 20-year period.

Mr. HOSMER. Do you not think it would be safer to have something in this bill to meet that situation rather than to let it dangle? I can conceive of a situation where you would find it improvident to build such transmission lines, and you would therefore find it impossible to dispose of the power, and, therefore, the financial structure of this project would collapse.

Mr. DEXHEIMER. I do not think there is any possibility of the financial structure collapsing, because under the terms of this bill I think we will have a market for more power than we would have to sell, regardless of that provision.

Mr. HOSMER. Getting back to the quantity of water, your statement was you, as the Commissioner of Reclamation, would release 7½ million acre-feet a year and let the upper basin worry about their own depletion on account of evaporation. How would that matter, if the upper basin objected, be brought to your attention?

Mr. DEXHEIMER. Probably through a resolution of the Upper Colorado River Commission representing the States.

Mr. HOSMER. Would you then, as Commissioner of Reclamation, within the authority and discretion of your office, decide that they were right and cut down the amount of water going to the lower basin?

Mr. DEXHEIMER. No; it is not our province, as I said, to interpret the compact.

Mr. HOSMER. When you are turning loose the 7½ million acre-feet, you are, in essence, interpreting the compact to require you to do that. You could change your interpretation, could you not?

Mr. DEXHEIMER. I do not believe you could change it in that respect where the language is quite clear.

Mr. HOSMER. In other words, you think—Mr. Aspinall stated the other day that he had some reservations about this matter of the requirement for actual volume being met without deduction of depletion. Would you say that his reservations were unfounded?

Mr. DEXHEIMER. I think that it would be a problem for the States to work out among themselves through the Upper Colorado River Basin Commission.

Mr. ASPINALL. Would my colleague yield for just a minute, inasmuch as he brought my name in?

Mr. HOSMER. Yes.

Mr. ASPINALL. Do you consider, Mr. Dexheimer, the loss by evaporation to be an exclusive beneficial consumptive use of Colorado's share of the Colorado River water? Just yes or no.

Mr. DEXHEIMER. Yes.

Mr. ASPINALL. All right, go ahead.

Mr. HOSMER. You have mentioned, Mr. Dexheimer, the fact that there are some considerable questions that might arise from this, although you have taken the stand, I believe, that the upper basin should be responsible for that depletion. Would you not think it provident that the lower basin States would at this time want to meet and face and decide that problem rather than leave it hanging until a later date, just as they would in connection with the quality of the water?

Mr. DEXHEIMER. I think that article 5 of the upper Colorado River Basin Compact, which was approved by the Congress on April 6, 1949, makes very specific provisions for the charges of losses in reservoirs in the upper basin.

Mr. HOSMER. That is true as between the upper basin States, but I would not assume that would amount to any more than evidence of an admission with respect to any controversy between the upper and lower basin.

Mr. DEXHEIMER. It may very well be that the upper and lower basin will want to work together on further clarification of the 1922 compact.

Mr. HOSMER. Then getting back to the question that I just asked, in your opinion do you feel that it would be a provident thing on the part of the lower basin States to get those things established now while this bill is under consideration?

Mr. DEXHEIMER. I do not see how it would have any effect on this project.

Mr. Hosmer, if I may, I would like to quote from the Boulder Canyon Project Act and the Colorado River compact of 1922. Article 3 (d) states:

The States of the upper division will cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75 million acre-feet for any period of 10 consecutive years, reckoned in continuing progressive series beginning with the 1st day of October next succeeding the ratification of this compact.

Mr. HOSMER. Do you feel then that this committee is entitled to assume and rely conclusively that that depletion question will never be brought up, and that the upper basin States will without question for all times in the future accept the depletion loss themselves and not make any effort to charge it down below, or a part of it?

Mr. DEXHEIMER. I would rather not express an opinion on that. There is a possibility of anything happening.

Mr. HARRISON. The time of the gentleman from California has expired.

Mr. D'Ewart has 2 minutes left from the time he yielded to Mr. Saylor and which was not used.

Mr. D'Ewart. I will try and stay inside the 2 minutes.

Theoretically, at least, we are not supposed to build power projects except as they are incidental to irrigation. I think that is the intent of the law.

We have had several days of discussion on power and transmission lines and so forth, practically none on irrigation.

I have before me the presentation by Mr. Larson, and looking at the chart he furnished, the last page, Echo Park and Glen Canyon call for \$98 million to be spent for irrigation; and the next column—"irrigation allocation repayable by water users—zero."

Where can I find the necessary explanations and justifications for this irrigation in Glen Canyon and Echo Park from that source? There is some breakdown on the central Utah project in the summary furnished us with regard to Utah, but I do not find in the information that has been furnished us to date any justification for the irrigation that is contemplated under Echo Park and Glen Canyon totaling \$98,339,000. I would like to know where to look for it. I will not ask you to go into it all at this time.

Mr. DEXHEIMER. On that table you will find that the irrigation costs allocated in those two units, Echo Park and Glen Canyon, are to be repaid from power revenue.

Mr. D'Ewart. 100 percent?

Mr. DEXHEIMER. Yes, sir. The irrigation features of those, and the reason for allocation to irrigation, is that those storage projects for the control of the river are essential to be able to use the water for irrigation on the participating projects.

Mr. D'Ewart. It would not be because it is essential to justify the project, because irrigation is the only reason we can build a power project as an incidental project, would it?

Mr. DEXHEIMER. No, sir. Of course, we are required to make findings of feasibility on projects, and we have certain limitations under which we must work.

In this case you have heard a great deal about the control of the river. That is the first essential before you have a reliable water supply and meet the terms of the Colorado River compact.

Mr. D'Ewart. My question at the moment is, Where can I find the justifications for the use of the \$98 million? I do not find it in any of the information furnished the committee to date.

Mr. DEXHEIMER. It is in the 1950 report, the justifications with all of these figures. These are only the same figures brought up to date in this supplement.

Mr. D'Ewart. That is all.

Mr. HARRISON. Thank you, Mr. D'Ewart.

That finishes it, except I would like to make one brief statement here.

Did you have a question, Senator Watkins?

Senator WATKINS. I have one question I would like to ask. I noticed yesterday one of the Members of Congress on the committee

was asking questions about transmountain diversion, what effect it would have on the quality of water. As I remember, the gentleman from California asked several questions about that.

Is it not a fact that the metropolitan aqueduct from the Colorado River over to the metropolitan area of Los Angeles and those cities that use the aqueduct, makes a transmountain diversion, takes it out of the Colorado watershed over into the coastal area?

Mr. DEXHEIMER. Yes, sir.

Senator WATKINS. And, of course, what would happen down there would probably be about the same thing that would happen upstream.

Mr. DEXHEIMER. The mere transmountain diversion of water, of course, does not affect its quality unless it goes through some area that picks up salt.

Senator WATKINS. May I point this out? Is it not a fact that if you use all of the Colorado River water in the upper basin area on lands in that area that you would pick up more salts, have a greater quantity of salt, because of the leaching out of the salt in that area, that would go downstream to the water users below?

Mr. DEXHEIMER. You would pick up more salt than you would if you took part of that water outside of the drainage basin and you did not have that return flow.

Senator WATKINS. That would really benefit the project from the standpoint—I mean benefit the water that goes down below from the standpoint of the salinity, would it not?

Mr. DEXHEIMER. Possibly. It would depend on the amount and the time of diversion, and the source of that diversion, whether it was salty at the time or whether it was better water.

Senator WATKINS. I point out to you what I think is a well-known fact—that most of the lands of the West, including California, have over the ages had deposited more mineral matter on the surface soil and a few inches down, and through an evaporation over the ages you have a concentration, do you not?

Mr. DEXHEIMER. Yes, sir.

Senator WATKINS. And that, of course, would happen upstream or downstream wherever that would be used?

Mr. DEXHEIMER. That is correct.

Senator WATKINS. And also, under the way this river is set up physically, Mexico would still be below California, and you would have to take water as it comes on down. And if the theory that seems to be back of the questions asked by the gentleman from California would be true, then California would contribute to the salinity of the water that Mexico had received because of its transmountain diversions over into the coastal plains in California?

Mr. ENGLE. Which gentleman from California are you talking about?

Senator WATKINS. The gentleman over here to my right.

Mr. ENGLE. For the record, that is Mr. Hosmer, my colleague from the great Queen City of Los Angeles.

Senator WATKINS. May I say I did not see the gentleman from the Mount McKinley area of California in the room or I would have particularized.

Did the witness answer the last question?

Mr. DEXHEIMER. I am not sure that I did, Senator.

Senator WATKINS. I take it that it is apparent anyway. I do not need to ask it.

Mr. HOSMER. Mr. Chairman, I ask unanimous consent to ask another question of the witness.

Mr. ENGLE. I will yield the gentleman a minute. I have a minute to spare.

Mr. HOSMER. Is it not true that where you have a certain amount of water with a particular concentration of chemicals in it, that if you add fresh water to it, then the resulting mixture has a less dense concentration of minerals in it?

Mr. DEXHEIMER. That is correct.

Mr. HOSMER. That is all I have.

Mr. HARRISON. Are you through, Senator Watkins?

Senator WATKINS. Yes.

Mr. HARRISON. Do you have any questions, Senator Bennett?

Senator BENNETT. No.

Mr. HARRISON. For the record, I would like to say the Eden project in Wyoming was mentioned in Mr. Larson's statement, and I would like to ask Mr. Dexheimer if it is not true that the inclusion of that Eden project in Wyoming for participation was based upon the act of June 28, 1949?

Mr. DEXHEIMER. That is correct.

Mr. HARRISON. Which provided that construction costs of the irrigation features of the project which are not hereby made reimbursable by the water users shall be set aside in a special account against which net revenues derived from the sale of power generated at hydroelectric plants of the Colorado River storage projects in the upper basin shall be charged when such plants are constructed.

Mr. DEXHEIMER. That is correct.

Mr. HARRISON. I want to ask Mr. Dexheimer one further question. Is it true, Mr. Dexheimer, that there is any impairment of the water of the Colorado River by the lower basin from the time it becomes usable by them until such time as it enters Mexico, which is one of the signers of the Colorado River compact and is entitled to water under such compact?

Mr. DEXHEIMER. The use probably has some effect from the return flow, whatever degree that water might pick up salt.

Mr. HARRISON. As that water enters Mexico, the confines of Mexico, after being used by the lower basin States, there is an impairment of the quality of that water?

Mr. DEXHEIMER. I think there is to some extent. I do not know how much.

Mr. HARRISON. Would you provide for the use of this committee the exact impairment there? Because it is my recollection, having sat through the central Arizona hearings, that the statement was made there that the water was very salty before it reached the Mexico line, and it was practically unusable; and the statement was made in those hearings that the compact did not provide that the United States must supply usable water to Mexico, and thereby it was all right to supply salty water.

(The information referred to follows:)

Salinity at various points on the lower Colorado River from 1930 through 1951 is shown on the attached chart, which is entitled "Lake Mead Storage, River Discharge, and Dissolved Solids."

The middle chart of the figure shows the dissolved solids contents of Colorado River water at various stations on the lower basin. Those shown for the Grand Canyon station, and those for Yuma prior to 1935, illustrate the seasonal fluctuations in the salinity of these waters. Comparison of the curves for the two stations illustrates the increase which occurs as the water flows down the river.

In the spring, as the pure water from the melting snow finds its way to the river, it becomes contaminated to some extent by contact with soluble salts occurring in the sediment which is picked up. It reaches the river, however, still in a comparatively pure state, usually carrying only about 200 to 400 parts per million of dissolved matter during the months of May and June. During the fall and winter months, on the other hand, when a large part of the flow comes from ground-water sources, the dissolved solids content may be as high as 1,000 to 1,700 parts per million. As the water flows down the river the content of dissolved matter usually is increased, perhaps partly because of dissolution of additional minerals from the bed and banks, and partly by mixture with water of high salinity draining from adjacent irrigated lands.

With the closure of Hoover Dam, a huge mixing basin was formed for the inflowing waters of the Colorado River. By the end of 1936 there was sufficient storage above the dam so that the average salinity of the outflowing water remained nearly constant, the average for 1951 being 651 parts per million, as is shown on the lower chart on the figure.

Mr. HARRISON. The point I want to make is that I do not think the upper basin should be penalized by the lower basin in the construction of works which they are entitled to for the conservation of their water under the upper Colorado River compact on something which might happen, when, at the same time, the lower basin, if they have a duty to see that the water is sent to them in good shape, they have also a like duty to see that the water when they get through with it is delivered to the other compact user, Mexico, in a like condition.

I think the old adage would be correct as in court—If you want justice you should come in court with clean hands.

Mr. ENGLE. Will you yield?

Mr. HOSMER. Will you yield?

Mr. ENGLE. Let us keep the record straight now. California never took the position that Mexico bargained for soup, and salty soup, when it entered into this Mexican Treaty. We took the position that implicit in the Mexican Treaty was a guaranty that the water should at least be usable for the purposes for which the treaty was made, which included domestic use. We asserted that Arizona was undertaking to further dilute the quality of the water. As far as California was concerned, we asserted that Arizona had no right to deliver to Mexico under the treaty water of a salt content which was unusable for the purposes of the treaty.

We say further than that, inasmuch as California's diversions from the Colorado River are out of the watershed, with no returns to the river, we are not taking out pure water and sending back salt-laden soup. What water we get over there is completely diverted and not returned to the river.

So I want the record to be plain, Mr. Chairman, that California does not associate itself with any argument that has ever been made that anyone has a right to deliver salt water soup down the Colorado River to anybody on that river.

Mr. HARRISON. I thank you, Mr. Engle. I appreciate very much your remarks. I just wanted to make it clear for the record, and I think you have.

Mr. HOSMER. May the record show I join in my colleague from California's remarks.

Chairman MILLER. Now that the apologies of California are out of the way, I will get back on the track if I can.

Mr. DEXHEIMER. Mr. Chairman, could I make a statement there?

Mr. HARRISON. Yes.

Mr. DEXHEIMER. There was considerable evidence introduced at the time of the Mexican Treaty on this particular problem. That material is available to this committee in the hearings on the Mexican Treaty of 1944.

Mr. HARRISON. I will appreciate it if we may have that along with the other information.

Chairman MILLER. I want to ask one question. I understand from your testimony on the costs of the upper Colorado River project, that about 85 percent of the costs would be repaid through the production of electrical energy. Was that your statement?

Mr. DEXHEIMER. That is correct, Dr. Miller.

Chairman MILLER. And the electrical energy was on the basis of about 6 mills?

Mr. DEXHEIMER. Yes, sir.

Chairman MILLER. Approximately?

Mr. DEXHEIMER. Yes.

Chairman MILLER. And the other 15 percent would be charged maybe to irrigation or flood control or other items?

Mr. DEXHEIMER. There is a little less than 3 percent to nonreimbursable items, and the balance is repaid by irrigators.

Chairman MILLER. But in the repayment of the overall costs of the project, the power would repay about 85 percent?

Mr. DEXHEIMER. Yes, sir.

Chairman MILLER. And your engineers felt that that would be repaid in a period of 44 years or 50 years?

Mr. DEXHEIMER. 44 years for the power features; 50 years for the irrigation features from the time each participating project is completed.

Chairman MILLER. The amount allocated to the power, does that money bear interest?

Mr. DEXHEIMER. Yes, sir.

Chairman MILLER. At what rate?

Mr. DEXHEIMER. 2½ percent.

Chairman MILLER. But the amount chargeable to irrigation and the other features would not bear interest?

Mr. DEXHEIMER. It would not.

Chairman MILLER. I think that is all.

Mr. HARRISON. I want to say to Mr. Dexheimer that the committee appreciates very much your coming here and giving us the information, together with Mr. Tudor and Mr. Larson. You have all been very patient. You have answered the questions to the best of your ability, and you have offered, of course, to supply information, as requested, to the committee. We do appreciate it very much and want you to know that is our feeling.

There being no other witnesses now from the Department, we will call upon those representatives of the different States, the Senators and the Representatives of those States involved.

We have several Senators here with us—Senator Watkins and Senator Bennett of Utah, Senator Price Daniel of Texas, and Senator

Barrett from my own State of Wyoming, and a former member of this committee. I will try to call them as quickly as possible.

Senator Watkins?

Senator WATKINS. I would like to yield at this time to my colleague from Utah, Senator Bennett.

Mr. HARRISON. Senator Bennett.

**STATEMENT OF HON. WALLACE F. BENNETT, A UNITED STATES
SENATOR FROM THE STATE OF UTAH**

Senator BENNETT. Gentlemen of the committee, I have enjoyed sitting with you since the beginning of these hearings last Monday, and I have appreciated the opportunity you have given me to interject myself into the hearings from time to time.

As you are probably aware there are approximately 75 citizens of Utah here for these hearings, most of whom have been in the room most of the time the hearings have been going on, and many among them are men who have the hope of having the privilege of testifying.

So I do not feel that I want to occupy too much time, but I have two statements that I would like to put in the record and just give an explanation of what they are.

The first statement—the obligation or the opportunity to put this statement in the record comes to me as a kind of sentimental responsibility. When the settlement in my State was only a day or two old, the people began irrigation in the arid West, and from that time until now there has been a continuing interest. We have had a group of men who have devoted their lives to this problem, and one of these grand old men is my maternal uncle, stalwart of the Democratic Party in the State over all these years, who until a very few months ago headed Utah's water and power board—William R. Wallace.

Uncle Will is in his late eighties, and the doctors suggested it would not be wise for him to attend this particular hearing, which would have represented the culmination of many, many years of service in the cause of water in Utah, and particularly the development of the Colorado River project.

Uncle Will has always felt that I did not quite understand as much about the project as I should, and so he wrote me a personal explanation of that project. And with your permission, I would like to introduce that material as the first of the two statements. It is headed "Echo Park Dam" and is signed William R. Wallace.

Mr. HARRISON. Without objection, it will be received.

(The document referred to follows:)

ECHO PARK DAM

On Thursday, January 7, President Eisenhower in his address on the State of the Nation used these words:

"Part of our Nation's precious heritage is its natural resources. It is the common responsibility of Federal, State, and local governments to improve and develop them, always working in the closest harmony and partnership."

These words of the President of the United States indicate a broad vision and keen understanding. As a citizen of the State of Utah, I welcome the use of that word "partnership." I have searched the records from the time of the first meeting in 1922, held under the direction of Secretary of Commerce Hoover, concerning the division of the waters of the Colorado River and I am proud to say that Utah has tried earnestly and sincerely to bring about a real partnership between and among all seven States of the Colorado River Basin.

I recite these facts:

Utah was represented in 1922 at the writing of the Colorado River compact by State Engineer Caldwell and Dr. John A. Widtsoe. Dr. Widtsoe was an eminent educator and scientist with long experience in soil and water study and experiment. He became president of the Utah State College of Agriculture and later was elected president of the University of Utah.

Recognizing the uncertainty of river flow, they were insistent that no more than 16 million acre-feet of the Colorado River waters be allocated and set apart—8,500,000 acre-feet for the States of the lower basin and 7,500,000 acre-feet for the States of the upper basin.

It was felt that it would be unwise for either basin to plan for the use of greater amounts of water than the amounts allocated.

At that time Secretary Hoover estimated the river flow at 21 million acre-feet. It appears that based on that estimate some plans were made for much more than the allocated share. As of today it is estimated that the river flow is 17,700,000 acre-feet. Dr. Widtsoe's foresight is justified.

Utah was instrumental in having written into the Boulder Canyon Project Act: "The Secretary of the Interior is authorized and directed to make investigations and public reports of the feasibility of projects for irrigation, generation of electric power, and other purposes in the States of Arizona, Nevada, Colorado, New Mexico, Utah, and Wyoming for the purpose of making such information available to said States and to the Congress and of formulating a comprehensive scheme of control and improvement and utilization of the Colorado River and its tributaries." (The Boulder Canyon Project Act provided for the complete utilization by California of her share of the waters of the Colorado River.) It is under this provision that the United States has made the plans for the utilization of the water allocated to the States of the upper basin.

In 1922 the States of neither basin had the necessary information upon which to divide the basin water. We, in the upper basin, were fortunate in having the office of region 4 of the United States Reclamation Service in Salt Lake City under E. O. Larson, chief engineer, and his associates. We are proud of the knowledge, the vision, and the skill of these devoted men. Under their direction we have learned the facts that have permitted us to agree upon a division among the States of Utah, Wyoming, Colorado, New Mexico, and Arizona, which received the unanimous approval of every member of the legislatures of all our governors, of the Congress of the United States, and of the President of the United States.

Prior to the building of the Hoover Dam it had proven impossible to secure a treaty with Mexico as to the division of the waters of the Colorado River. In conference in both Mexico City and in Washington, D. C., Mexico remained firm in her demand for the annual use of 3,600,000 acre-feet. After the completion of the Hoover Dam, throughout all the year a great volume of water in a fairly steady flow was passing into Mexico, subject to prior use by landowners in Mexico.

Before we of the upper basin States could be sure of the full use of our waters, it was necessary to limit irrigation use by Mexico.

Representatives of the Department of State, the United States Section of the Boundary Commission and 2 representatives from each of the States of Utah, Wyoming, Colorado, New Mexico, and Arizona, over a period of nearly 3 years, met in conferences many times and in many places in the West and in Washington, and finally agreed upon a treaty allowing Mexico to use annually 1,500,000 acre-feet of water. Many days hearings were held before the Foreign Relations Committee. The treaty was ratified by the Senate in a vote 73 to 10 and was approved on April 14, 1945.

In these times of world strife and stress it is comforting and a pleasure to recite that 10 men, 2 each from the States of Utah, Wyoming, Colorado, New Mexico, and Arizona presided over by a wise and experienced engineer, Harry Bashore, appointed for that purpose by the President of the United States, not only agreed upon the fair division among the States of the upper division waters, but having before them the necessary facts and studies made over a long period of years by the engineers of the Bureau of Reclamation and by the engineers of the 5 interested States, agreed upon the terms and provisions of the proposed act, which in a masterly way provides the means for the comprehensive development of the upper Colorado River Basin waters and under which on a basis of real partnership these 5 States will continue to work together to the end that each will receive concurrent development.

Sincerely, we would welcome such a cooperation and partnership with all seven States in the Colorado River Basin. When you realize that out of the total area of Utah's 53 million acres only 300,000 acres (about one-half of 1 percent) have a full season water right and only about another 1 million acres have only an early season water right, you will realize how jealously we guard our water right of 1,713,500 acre-feet of the Colorado River waters and how earnestly we have worked to protect and develop that right.

Surely we may be permitted to be proud of the civilization that is Utah based upon so slender a water right.

Thirty-two years is a long time to wait. That is the time since the signing of the Colorado River compact. During all these years we have studied, planned, and worked. After many disappointments and rejected plans, there is before the Congress a plan that is feasible, economically and financially sound and thoroughly worthwhile.

The States of the upper Colorado River Basin in cooperation and partnership are ready to follow the suggestion and leadership of President Eisenhower in his address on the State of the Nation, which I again quote:

"Part of the Nation's precious heritage is its natural resources. It is the common responsibility of Federal, State, and local governments to improve and develop them, always working in the closest harmony and partnership."

There is an old saying: "Count your blessings."

Let us tell of two blessings that will be spread about through all the Nation by development of the latent wealth so concentrated in the upper Colorado River Basin. Fears are expressed that before many years we will have a shortage of gasoline and motor fuel. It is comforting to know that in eastern Utah, western Colorado, and southern Wyoming (may we take the Echo Park Dam as a center?) we are within one of the world's greatest coalfields expanding for hundreds of miles in Wyoming, Utah, and Colorado and that running through the great mountains are great deposits of oil sands and shales and that from these coals, sands, and shales we, the United States, are assured a safe source of oils and motor fuels for generations to come. One of the counties in the river basin is named Carbon County.

The deposits of phosphate rock within the same area are so enormous that we have a dependable supply of necessary phosphate fertilizer with which to replenish the fertility of hundreds of thousands of farm acres for at least a century to come. Low-cost electric power and available water supply are the magic key.

The history of Utah, 107 years, tells of the value of a little water in a semiarid land and that none should be wasted. To prefer one plan over another that would result in the evaporation loss of hundreds of thousands of acre-feet of water is unthinkable. There is great rejoicing in the State of Utah. Surely it must be true that after 32 years of watching, working, and waiting more water is on the way.

We, of Utah, are an outdoor people. Go 25 miles from any of our hundreds of towns and villages and you are in the wilderness. During the hunting season our mountains are a mecca for deer hunters from far and near. Less than 20 miles from our capital city there is a great bird refuge and shooting grounds and on the Great Salt Lake there is one of the world's greatest bird refuges for hundreds of varieties of swimmers and waders. Our fish and game wardens are proud of the game fish in our lakes and streams. The deep snows in our mountains provide the keenest of winter sports.

Earnestly we assure our friends from far away that we also are nature lovers. Yet, in our arid and semiarid land nature forces us to know that the highest and best use of water is to sustain life and to produce bread.

WILLIAM R. WALLACE.

Senator BENNETT. Now, gentlemen, one of the questions that occupied us a great deal during the first day or two of this hearing was the question of whether or not the erection of the dam at Echo Park represented a violation of the National Park System and whether or not there were alternative sites that would be just as effective without having this particular effect.

To us in Utah the problem is the other way. The question is whether or not the people of the United States want to repudiate solemn promises that were made to the people of Utah when the question was up before them regarding the proposed extension of the monument.

Originally the monument consisted of 80 acres, which contained a dinosaur quarry. And in the middle of the 1930's the Government suggested that the boundaries of the monument might be extended to include a lot of beautiful scenery which had no relation to dinosaur bones.

Long before that time the people of Utah had been concerned about the possibility of developing water and power in the upper reaches of the tributaries of the Colorado and a good many reports had been made about the effective use of sites in the Green River and in the Yampa. And so when the question came up, our Governor, our then Senator William H. King, and others undertook to get specific assurance from the Government that its opportunity to develop those power sites would not be lost if the citizens of Utah agreed to the extension of the boundaries of the monument.

So in the statement which I shall submit are contained specific references to letters which gave those assurances, not only from the Department, but specifically from the National Park Service, with respect to the reservation of power and irrigation sites in the proposed extension of the monument. It was only after these assurances had been received by the people of Utah that they agreed that the monument boundaries should be so extended.

I know there are among the citizens from my State members who participated personally in the development of those assurances, and you are going to hear from them if an opportunity is presented, and they can testify on a personal basis. But I have had the opportunity of digging into the record, and my statement contains reference to the specific assurances given to the people before the change was made.

The balance of my statement is repetitive. It discusses these questions of alternative dam sites. Since they have been discussed very thoroughly during the questioning of the Department witnesses, I feel it would be improper for me to continue that discussion.

I appreciate the opportunity of submitting this for the record, and I appreciate your careful consideration of the problems of my State. Thank you.

Mr. HARRISON. Your statement will be accepted for the record.

Are there questions from any members of the committee?

Thank you, Senator Bennett.

(The statement submitted by Senator Bennett follows:)

**STATEMENT ON ECHO PARK PROJECT PRESENTED BY SENATOR WALLACE F. BENNETT
(OF UTAH)**

Because others have discussed in great detail the general favorable features of the project, including our acute water and storage needs, I have chosen to concentrate my statement on two phases of the problem:

1. The charge that the building of Echo Park Dam would create a precedent which might lead to the destruction of the national parks and monuments.
2. The charge that there are other alternative sites available which would meet the project need equally as well.

ECHO PARK: NOT A PRECEDENT

Among the principal arguments leveled against the erection of a dam at Echo Park is that it will create a precedent destructive of the national park and monument systems. Those who would use this argument conveniently forget or ignore the promises made to the people of Colorado and Utah by the Department of the Interior, and more specifically by the National Park Service, that expansion of

the Dinosaur Monument in 1938 would not interfere with future grazing, irrigation, or power development. The promise concerning grazing, which in itself is a variation from normal park procedure, has been honored without any protest and there is no reason why the promises affecting irrigation and power development should not be similarly honored.

The people of Craig, Colo., and Vernal, Utah, heard Mr. David H. Madsen, who represented the National Park Service and conducted the monument expansion hearings in 1936, state unequivocally:

"I was authorized to state and did state as representative of the National Park Service, that grazing on the area would not be discontinued and that in the event it became necessary to construct a project or projects for power and irrigation in order to develop that part of the States of Utah and Colorado, that the establishment of the monument would not interfere with such development."

Mr. Madsen has attested to the validity of this statement and many who attended the Craig and Vernal meetings certify to its accuracy.

Many people in Utah, including the Salt Lake City Chamber of Commerce, were much concerned that the expansion of the monument from its original 80 acres to 209,000 acres might preclude development of the irrigation and power potential of the area. As a result of the many expressions of concern and alarm, the late Senator King, of Utah, stated in reference to the Echo Park and Split Mountain areas that they "possess latent possibilities as sites for reservoir development, irrigation, and other purposes." The late Governor Blood averred that, "unless specific reservations are made covering the matters referred to, the State would be blocked in the construction of reservoirs, etc. * * *"

In response to these representations, even the then Acting Director of the National Park Service, Mr. A. E. Demaray, assured Senator King by letter in May of 1938 that the reclamation and power reservations were being incorporated in the President's 1938 order to protect Utah's interests.

The people of Utah were doubly pleased when the President made his proclamation extending the monument in 1938, for they favored the extension and their only objections had been removed by Park Service promises and the reservations made in the Presidential order designed to protect the water power developments within the monument.

Thus, we in Utah were lulled into a sense of security, and it is small wonder that our people are considerably exercised at the accusations that we wish now to destroy the entire park and monument systems by supporting the Echo project.

Our wonderment is compounded by the urgings of opponents of the Echo Dam who would have the Government of the United States repudiate its promises and break faith with the people of Utah. They would ignore the manifest intent of the 1938 Presidential order.

Two members of my staff recently attended a meeting of the newly formed Emergency Committee on Natural Resources which was organized to combat the Echo Park Dam. This committee, too, seemed content that the Government break faith, and a member of their panel baldly asserted that the Echo Park and Split Mountain sites were unheard of in 1939. Apparently they were not acquainted with the nearly 50 years of study which has gone into the area, including the 1924 Bureau of Reclamation Report, which described the power potentialities of the Green and Yampa Rivers in and adjacent to the Echo Park area; or the 1930 Wooley Report of the United States Geological Survey in which Mr. Wooley suggested a series of dams and powerplants along the Green and Yampa, including a 300-foot dam at Echo Park. They seemed unconcerned with the fact that at the time of the enlargement of the monument, opposition was expressed not only by local interests but by the Bureau of Reclamation and by the Federal Power Commissions on the grounds that the potentialities of the canyon sections of the river for storage of water and power generation would need to be developed at some future time. The Federal Power Commission, when they were asked to vacate the power reservations in December 1934, went so far as to say that—

"It is generally recognized that the Green and Yampa Rivers present one of the most attractive fields remaining open for comprehensive and economic power development on a large scale. Power possibilities on the Green River between Flaming Gorge Reservoir and Green River, Utah, and on the Yampa River below the proposed Juniper Mountain Reservoir are estimated at more than 700,000 primary horsepower installed capacity. Excellent dam sites are available, and as the greatest part of the lands remain in the public domain, a very small outlay would be required for flowage rights. The sites we are considering are important lines in any general plan of development of these streams.

"* * * the Commission believes that the public interest in this major power resource is too great to permit its impairment by voluntary relinquishment of two units in the center of the scheme. The Commission will not object, however, to the creation of the monument if the proclamation contains a specific provision that power development under the provisions of the Federal Water Power Act will be permitted."

Opposition to the monument expansion was allayed by the promises given and the reservations made. I think that the record will show that few monuments have been created when the local people opposed them. We now find ourselves in the unusual position of being told by Echo opponents that we were merely deluded by these promises and that because of our reliance upon the good faith of the Government, we are now attempting to violate the sanctity of the national monument system.

Arrayed against their restrictive legalistic approach are all the equities of a people to whom promises were made by the Federal Government and who relied in good faith upon these assurances—to their detriment if the opponents prevail.

It is obvious that the Echo Park Dam will in no way create a precedent which will destroy the national parks. It is clearly distinguishable from the history and conditions obtaining at other monuments. Even the former Secretary of the Interior, Oscar Chapman, recognized this in his December 1950 report, approving the initial phase of the upper Colorado River project:

"I am not unmindful of the public interest in the inviolability of our national parks, and in the status, only a little less austere, of the national monuments. By no precedent of mine would I wish to endanger these places.

"* * * The order establishing the extension of the monument in the canyons in which the dams would be placed contemplated use of the monument for a water project, and my action, therefore, will not provide a precedent dangerous to other reserved areas."

Since no precedent is created, the discussion of the Echo Park Dam should be confined solely to the merits of the project itself.

ECHO PARK WILL ENHANCE SCENIC VALUES

It has been contended by some that erection of a dam at Echo Park will destroy the scenic values of the monument. Without further belaboring the obvious, it may be well to repeat that the original 80-acre dinosaur area will in no way be affected by either the dams or the reservoirs. There may be one indirect effect; more visitors may visit the fossil area because of the greatly added attraction created by the dam, making the wild canyons of the Green and Yampa accessible.

I think it important to put the scenery question in its proper perspective. The canyons, particularly those on the Green, are virtually inaccessible, save to the hardy few who dare run the river. The reservoir water would submerge a few talus slopes not particularly noted for their beauty, and any other geological or scenic values which might be affected are duplicated many times over in the surrounding area. We in Utah are possessed of the world's riches in resplendent scenery, while at the same time we are impoverished for water.

Of 209,744 acres in the Dinosaur Monument, a maximum water surface area of 42,400 acres will be inundated. The present water shortage area, comprising 3 percent of the monument area, will thus be raised to 20 percent by the reservoir. Due to the rapid fall of the river through the canyons, the depth of impounded water should taper off rapidly upstream, making the average depth 153 feet. Since the canyon walls will still be 1,500 to 2,000 feet above the reservoir surface, the view from the canyon's bottom, so seldom seen, now would be only slightly affected. The percentage reduction in height of canyon walls would average about 10 percent, a reduction which would be barely perceptible either above or below.

We in Utah are so richly endowed with scenery that we often fancy ourselves as experts. I believe that far from destroying a scenic area in the monument, it will be preserved, while at the same time creating a great scenic and recreational potential.

ECHO PARK KEY TO THE ENTIRE PROJECT

From a standpoint of the conservation of water and economic feasibility, the Echo Park Dam is without peer as far as proposed alternate sites are concerned. Some have wondered why Echo Park is defended so staunchly in the face

of frequently emotional criticism. Echo Park has been described as the wheel-horse of the upper Colorado project for many reasons, including the following:

1. It is strategically located for storage and regulation on the Green and Yampa Rivers.
2. It conserves water and has low evaporation because of its high altitude with steep and narrow canyon walls protecting the water from winds.
3. Next to the Glen Canyon Dam, it is the most attractive site from an economic and power point of view.
4. It will firm up the power of the units higher up on the river system and increase power output from the projects lower down on the stream.
5. Without Echo Park, all the projected storage units except Glen Canyon will not be economically feasible.
6. Lastly, Echo Park may someday provide water directly to Utah.

ECHO PARK: CONSERVATION OF WATER

In a recent report, Secretary Tudor, after an extensive study, stated that any of the proposed alternate dam and reservoir sites would result in a net loss of water from evaporation of from approximately 100,000 to 200,000 acre-feet per year. He gave the dramatic illustration that this loss, even at the lower figure, would provide all of the domestic, commercial, and industrial water for a city the size of Denver. This would be enough for 2 to 4 cities the size of Salt Lake City. These figures are also supported by the findings of Secretary Tudor's predecessor and by the Bureau of Reclamation. The importance of this great amount of water to the upper basin States cannot be overstated because of the basin's aridity and of the necessity to meet the obligations undertaken in the Colorado River Compact.

Opponents of Echo Park have proposed alternate sites, using Bureau of Reclamation data and research. What they do not seem to be able to understand is that even if all of the water is used, it will still not satisfy our needs. There is just so much water in the rivers and merely to provide equivalent storage space is not enough, if the water has evaporated. The water simply cannot be replaced by building alternate reservoirs alone.

Apparently realizing the vulnerability of their position, the dam opponents shift their ground and assert that the Bureau of Reclamation engineers and hydrologists do not know their trade—that the evaporation data is just a guess. They are willing to ignore the scientific literature and findings in the field and are unconcerned that several independent studies substantiate the findings of the Bureau.

In a study of the evaporation problem on the upper Colorado, Mr. Charles Curran, formerly senior specialist of engineering and public works in the Legislative Reference Service of the Library of Congress and now with the new Hoover Commission, concluded as follows:

"It is important in this connection to note that in the instant problem (Echo Park and Split Mountain versus alternates) the absolute determination of evaporation loss is not essential. It is desired to compare alternative reservoir systems to determine whether differences in evaporation losses would be significant * * *. The alternatives in the second best plan would be Desolation and Moab * * *. It is reasonable * * * to estimate that if the evaporation rate at the four reservoirs were identical the total evaporation at the two alternatives will be something about $3\frac{1}{2}$ times as much at the 2 sites proposed by the Bureau of Reclamation.

"As a rough estimate, considering these two factors (altitude and surface area), it would appear that the total annual evaporation from Desolation and Moab Reservoirs would be something in excess of 300,000 acre-feet more than evaporation from Echo Park and Split Mountain Reservoirs. This rough check indicates that the Bureau of Reclamation figure of a difference of 331,000 acre-feet is not unreasonable.

"While the data available is not too firm, they constitute the only data pertinent. The deduced difference in evaporation loss cannot, therefore, be considered a precise figure. However, under the circumstances of the problem on the basis of evaporation loss alone, the difference would appear to be of such magnitude as to warrant rejection of the alternate sites in favor of the two selected by the Bureau of Reclamation."

Further support was given by the report of the President's Water Resources Policy Commission (appointed by President Truman to study water resources of the United States). In speaking of the Colorado River Basin on page 416, they

cite the evaporation figures used by the Bureau of Reclamation in their report on the upper Colorado, and state:

"While the Bureau of Reclamation estimate represents careful study, it is possible that it may be conservative."

A further study was made by Mr. Ralph D. Goodrich, chief engineer of the Upper Colorado River Commission and dean emeritus of the School of Engineering of the University of Wyoming. He indicated that the best possible alternatives to Echo Park (Desolation and Gray Canyons) would cause an annual increased loss by evaporation of 285,000 acre-feet. His findings indicate many errors in the computations of the same men who dismiss the studies of competent technicians as a guess.

The choice on accuracy of the evaporation data appears to be between able engineers of the Bureau of Reclamation, supported by three independent studies, who consider the most likely error upon the part of the Bureau as being too conservative, and the statements of conservationists who dismiss all of the studies as guesswork.

STORAGE AND RIVER REGULATION

Echo Park is strategically located at the junction of the Green and Yampa Rivers where it may regulate the flow of both rivers.

Under the upper basin compact in 1948, Colorado guaranteed that they would not cause the flow of the Yampa River at Maybell to be depleted below an aggregate of 5 million acre-feet for any period of 10 consecutive years and that this water would, therefore, be available to Utah. The Echo Park Dam is a prospective source for water importation directly to Utah. There is concern among Utahans that the Echo site is the only feasible location to enable Utah to get the Yampa water, since sites farther down the river would be prohibitively costly because of the great pumping needed and the distance from the point of use. Flaming Gorge is also a prospective source for water to Utah at some future time, but there is again concern among many Utahans that as Wyoming begins to use her share of the water, the water flowing into Flaming Gorge will have a high salinity, possibly too high for best use. Water from Echo Park might eliminate both of these problems.

ECHO PARK ESSENTIAL FOR ECONOMIC FEASIBILITY OF ENTIRE PROJECT

As Secretary Tudor pointed out, there would be a substantial loss of electric power if any of the alternate sites were substituted for the Echo Park site.

Many of the greatly needed water storage projects of the upper Colorado River storage project will be economically feasible only if a maximum of inexpensive power can be developed. Revenue from the sale of power will be used to assist in the repayment of reimbursable costs of worthy irrigation projects which might not otherwise be feasible under the Federal reclamation laws.

In an arid area in which there is no other source of water, except as may be provided by these storage projects, there is a sacred duty to catch and conserve every drop of water that is possible under an economically feasible overall project. According to the best information available, nearly all of the projected storage units except Glen Canyon fall short of economic feasibility without the inclusion of Echo Park.

PRESENT ECHO PARK SITE WILL SERVE "GREATEST PUBLIC GOOD"

Secretary Tudor has recently completed an intensive study and rejected alternate proposals in addition. The supplemental report of the Bureau of Reclamation states:

"Every effort has been made to find suitable alternatives for the Echo Park and Split Mountain units because of their encroachment on the Dinosaur National Monument, but no adequate substitute for the Echo Park unit has been found because of the increased evaporation which will take place from the greater surface areas, at lower elevations, of the alternative reservoirs."

The report of the President's Water Resources Policy Commission stated forthrightly:

"While it is remotely possible that selection of alternate projects could allay this opposition [to Echo Park, etc.], the substantial economic advantages which most of the controversial projects possess suggest that they cannot be placed in the background easily."

As Secretary Chapman put it in approving the project in 1950:

"Weighing all the evidence in thoughtful consideration, I am impelled in the interest of the greatest public good to approve the completion of the upper Colorado River Basin report, including the construction of the dams in question (Echo Park, and Split Mountain) because:

"(a) I am convinced that the plan is the most economical of water in a desert river basin and therefore is in the highest public interest."

It appears from the vast weight of competent data that not only is there no precedent involved, but that the alternatives are not feasible either.

I have made a careful study of the reports, hearings and related data pertaining to the upper Colorado River storage project, with recommended participating projects, and I wish to offer to this committee my endorsement of the initial phase of the project, and recommend that it receive your favorable action. I am impressed with the crying need for irrigation and municipal water in my own State, particularly in areas which would be affected by participating projects. In addition to being direly needed, I conclude from the reports that the Central Utah, Emery, and Gooseberry projects are sound and economically feasible projects and I urge that they be included in the initial phase of the project.

Mr. HARRISON. Senator Watkins?

Senator WATKINS. I will defer to Senator Barrett.

Mr. HARRISON. I will recognize Senator Barrett, of Wyoming, my own State, and a former member of this committee, and former Governor of the State of Wyoming, and now junior Senator from the State of Wyoming.

STATEMENT OF HON. FRANK A. BARRETT, A UNITED STATES SENATOR FROM THE STATE OF WYOMING

Senator BARRETT. Mr. Chairman, I appreciate the opportunity to come back to this room here and to testify again before this committee. I may say that some of the happiest years of my lifetime were spent associating with a good many of the members of this committee here today and in the House of Representatives and in this committee room.

Mr. Chairman, I have a prepared statement that I would like to file for the record, and then to make an extemporaneous statement.

Mr. HARRISON. Without objection, your statement will be received and made a part of the record.

(The statement referred to follows:)

STATEMENT ON THE UPPER COLORADO RIVER BASIN, ECHO PARK PROJECT, BY HON. FRANK BARRETT, UNITED STATES SENATOR

1. Construction of the overall upper Colorado River storage project, of which the Echo Park Dam and 13 participating units in Colorado, Wyoming, Utah, and New Mexico are a part, will open vast new areas for irrigation and power development in the mountain west. The overall project contemplates the irrigation of 380,000 acres of land and generation of large blocks of vitally needed hydroelectric power for the 5-State area. This legislation will make it possible for the upper States to deliver the 75 million acre-feet each 10 years to the lower States and still make beneficial use of nearly an equal amount. It will serve as a guaranty that the upper States will not lose its priority to its own water by failure to put the waters to beneficial use.

2. The building of the Echo Park project of Colorado with its four participating units lying within Wyoming will be of great benefit economically, immediately and long range, to southwestern Wyoming.

An examination of immediate values includes the following:

The four units—LaBarge, Lyman, Seedskadee, and Eden—will involve an expenditure, according to present Reclamation Bureau plans, of nearly \$43 million. Such an expenditure in the area will go a long way to bolster business and agriculture now, as well as lay the basis for immeasurable future expansion. The area has for some time been suffering from a slump in activity in the Rock Springs and nearby coalfields, as well as from a prolonged drought, which has made heavy inroads on sheep and cattlemen in the area.

Cost of these projects is as follows: Eden, \$7,287,000; Seedskaadee, \$23,272,000; Lyman, \$10,564,000; and LaBarge, \$1,673,000. Money spent on these long-range projects will find its way back into the hands of persons now suffering economically from the causes just noted. It is estimated that between 300 and 400 coal miners in the Rock Springs coalfields will eventually be laid off because of a drop in the demand for coal resulting from increased use of other types of fuel and dieselization of the Union Pacific Railroad. Stockmen, both cattle and sheep, have suffered serious losses because of the drought and depressed livestock prices. Some, if not much of the unemployment resulting from coal-mine shutdowns might conceivably be taken up in construction activities, and ultimately by development of new industry brought into the area by the availability of electric power.

3. From the standpoint of agricultural development, construction of the 4 participating units within Wyoming will bring irrigation water to 79,390 acres of land for the first time, and supplemental water to 49,900 acres now under irrigation. Broken down, the new supplemental irrigation would involve 7,670 acres of new and 300 acres of supplemental on the LaBarge project, 40,600 acres of supplemental water on the Lyman project, 11,000 acres of new and 9,000 supplemental on the Eden, and 60,720 acres of new on the Seedskaadee. It is to be noted the Eden unit already has been authorized and now is under construction. It is to be included, however, in the overall development under the Echo Park Dam project. The Eden project involves construction of a 40,000 acre-foot storage reservoir on the Big Sandy and the Lyman project proposes construction of a 43,000 acre-foot storage reservoir.

4. While we are considering the Echo Park Dam project and its participating units, I would like to stress the urgency at this time of including the Kendall Reservoir project near the headwaters of the Green River in Wyoming as an original storage project in the overall upper Colorado River storage project. It is the only storage project proposed on the Green River and is necessary before Wyoming can apply its 14 percent allocation under the upper Colorado River compact. It will provide supplemental water for the four participating units under the Echo Park project in Wyoming—the Lyman, Seedskaadee, LaBarge and Eden, and will be needed in connection with those projects. Further study of this 340,000 acre-foot reservoir project above Big Piney and Pinedale on the headwaters of the Green River is needed to determine the possibility of providing storage to increase project acreage on the Seedskaadee project.

5. Echo Park Dam and the participating units within Wyoming are the key and cornerstone to the entire development of the upper Colorado River Basin watershed in southwestern Wyoming. Studies made of the project show that the dam will not destroy the prehistoric values of Dinosaur National Monument, since it will be located upstream from the known source of prehistoric discoveries. It will enable Wyoming to make full use of its proportionate share of Colorado River Basin water agreed to by the upper Colorado River Basin States.

6. The lake created by the Echo Park Dam, according to Wyoming State Engineer L. C. Bishop, will provide a recreation area development which will attract thousands of persons.

7. Years of study have shown the Echo Park project to be the most economical from the standpoint of cost as well as saving of water. In the saving of water alone it is estimated Wyoming would save 14,000 acre-feet of water annually which would be lost through evaporation should some site other than the Echo Park site be selected. As a whole 100,000 to 200,000 acre-feet of water a year can be saved from evaporation—enough to supply the needs of a city the size of Denver. The presently selected site is so situated that evaporation losses are lower than they would be elsewhere. This in itself would provide for fuller use of the water to be stored.

The dam and its power development aspects are located in the heart of the power marketing areas in Colorado, Wyoming and Utah. Under existing plans for the overall project it is expected the revenue from the hydroelectric power will repay the costs of development of the project. Another factor to be considered in the overall view is that the project will conserve in years of heavy precipitation floodwaters which now are lost to all because there is no storage space for them in the area.

Senator BARRETT. Mr. Chairman, I have a philosophy that some of the older members of this committee are entirely familiar with, in relation to the development of the resources of the West; and I want to say to your members who may have forgotten my remarks in the

years gone by that when the reclamation law was put on the books, the Congress very wisely provided that the income from the public lands of the West would be used largely for the development of our water resources. That is the reason 52½ percent of the funds accruing from the income on the public domain goes to the reclamation fund, 10 percent to the General Treasury.

Over the years Wyoming has contributed \$100 million to the reclamation fund and to the general fund from the income from its land. We think we should have a major interest, therefore, in the decisions relating to the development of our resources.

I heard some of my colleagues from California and Arizona arguing a moment ago about their position on this matter, and I can say to them that we have a pretty firm commitment to deliver 75 million acre-feet of water every 10 years to those lower basin States; and if we cannot get authorization from this Congress, or from the Congress, to build these storage projects up in the upper Colorado River, we cannot fill that commitment and reserve for ourselves enough water to develop the lands and the power that we need to bring our States up in competition with the other States of the Union.

Now as far as Echo Park is concerned, it is one of the cornerstones of the entire upper Colorado River development.

Again I say this: That when the Western States were admitted to the Union we came in under the equal-footing clause and we are entitled to the same consideration as all the other States of the Union. And I say that these issues involving the development of those Western States, the development of the resources of the West, should be decided largely by the wishes of those Western States.

This idea of saying that people of the Eastern States have an equal right in making the decisions that affect the welfare of the West is not according to the American tradition. It was not the basis upon which this Union was set up, it was not the basis upon which this Government of ours was carried on for a century and a quarter; and there is no good reason now why we should be forced to accede to the wishes of other people. They made their own decisions with reference to their own States.

We have a right to live. We are coming down now to a question of self-preservation. Self-preservation is the first law of nature. We are going to have the right to develop our own resources and protect those great natural values that God has bestowed upon the West and we are going to have a chance to take care of the people that are living now in the West and will live in the years ahead.

Personally, I do not see any good reason why the construction of a project in Echo Park will hurt in any way the great natural beauty of that valley, and it certainly will not in any way hurt the dinosaurs. Now these dinosaurs are not so precious anyway in my judgment. We have probably as many dinosaurs within a hundred miles of my home town as they have in the Dinosaur National Monument over in Echo Park. And they come into our country and dig those dinosaurs out, bring them down here to Washington. You can walk down here about 3 or 4 blocks and you can see plenty of them that came right out of our section of Wyoming. You can go up to New York in the American Museum and see plenty of them up there.

So I say, in the main this issue has got to be decided, should be decided by the people of the upper Colorado River Basin States, and

they are pretty much united on this proposition. So I hope the Congress will do to the upper basin States as they would have the upper basin States do to their States in legislation affecting them so vitally as this affects our people.

We have to have that Echo Park project. And if you do have it, it will make feasible these projects in Wyoming. I said a moment ago that we have contributed \$100 million to the reclamation fund from the soil of Wyoming and to the general funds, and we think that a little mistake was made when the Congress 52 years ago set up that reclamation fund and dedicated that money to all the States of the West. We think that it ought to go back to the States where it originated. So we think we have a particular claim on that.

We have four projects up there in Wyoming that would go right along with Echo Park, and they would pay out, as the chairman of the committee indicated a moment ago, if we have the power development in Echo Park to help materially in the process.

The Seedskaadee project is the biggest in our State. It costs \$23 million, takes in 60,000 acres.

The Lyman is an old project, established over there a long time ago. It will take 40 million acres of supplemental water and cost about \$10 million.

The Eden project has been authorized for some time, and there is a total of about 20,000 acres there and \$7 million in money that will be needed.

Then the LaBarge project is an important one but rather small, costing something less than \$2 million and furnishing water to 3,500 acres.

There is one other project I hope this committee will give very serious and careful consideration to, and that is the Kendall project up above the headwaters of the Green River in our State, above Big Piney and Pinedale. That will store some 340,000 acre-feet of water that will be needed to supply the water for these projects that I have just spoken of.

Now, Mr. Chairman, I know that the committee is very familiar with this whole matter. I feel very deeply about the development of the West. I think that we in Wyoming are entitled to that consideration.

I may say that because the economy of that particular section of Wyoming, depending largely, if not totally, on coal mining and also somewhat on livestock operations, we need this project to give us the stimulus to put that section of our State, and indeed the whole State of Wyoming, on a firmer basis.

I appreciate the opportunity to be here, Mr. Chairman. I hope that this committee will approach the solution of this problem in a fearless manner and take into consideration that the overpowering and vital interests of these Western States are involved here in this decision; and realize full well that, after all, people of the West ought to have the major right to make the decisions affecting their welfare.

Thank you very much.

MR. HARRISON. Thank you, Senator Barrett. I assure you that the committee has been very glad to have you here today to speak on behalf of the legislation before us as the Senator from Wyoming and also as the former member of this committee.

I have here a letter from the Governor of the State of Utah, addressed to the Honorable A. L. Miller, the chairman of the full Committee on Interior and Insular Affairs, supporting this bill, and without objection, I would like to have this introduced in the record following the testimony of the Senators and Representatives.

Mr. REGAN. At that point, may I ask also to include a letter from the State of Texas.

Mr. HARRISON. It is so ordered.

(Committee note: See p. 260.)

Mr. HARRISON. Senator Watkins.

STATEMENT OF HON. ARTHUR V. WATKINS, A UNITED STATES SENATOR FROM THE STATE OF UTAH

Senator WATKINS. Mr. Chairman and members of the committee, recently I had the opportunity, in line with my official duties as a member of the Joint Committee on Immigration and Nationality, to visit areas in Europe and the Near East where the United States has been helping to build reclamation projects. Without spending any great time on it, I want to call your attention to the fact that we have spent some \$300 million to help the Italians build reclamation projects: yet the Italians are under no obligation whatsoever to repay any of the costs of those projects.

Over in the Near East we now propose to help build a TVA project on the Jordan River. I visited that and looked it over. As I understand it, we have already voted to the President enough money so that he can use his discretion to at least get that project well underway. The estimated cost is \$250 million. In my judgment it will cost \$500 million before they get through with it.

It is desirable from the standpoint of helping our friends to build that kind of a project in Jordan or the Palestine area and the Arabian States immediately around. That money, obviously, unless legislation of Congress requires it, will not be spent for a self-liquidating project, but will be a gift from the people of the United States.

Now the project we have before us today is not the kind of a project that either of these are. It is entirely different. It is self-liquidating. We go along on the regular reclamation program with respect to irrigation. There will be, as I understand, no requirement that we pay interest on the irrigation features, but we will be required to repay every dollar of the principal. We will be required to pay every dollar of the principal and interest on the power investment and the money that is allocated for that purpose. And that is not counting what the people will pay on the water they get for their municipal use.

I do not want to talk to the westerners gathered here about the need for water. For the members of this committee who have studied this question, it is not necessary for me to repeat the story of the need, but let me give you a few historic examples of what we actually do out West to get this water.

I think that California is one of the States that gives the best illustration, and southern California, of all of California, is the best example. Southern California has been growing at a tremendous rate. They have made it so attractive down there that something like 200,000 people from my State have gone there to live. They went to Owens Valley, over 250 miles away, and bought up all the water in that

area and sent it down through the aqueduct to Los Angeles and dried up the valley.

They came over to the Colorado River, not only Los Angeles, but the metropolitan area of the other cities and towns in that area, and organized themselves into a Metropolitan Water District and took water from the Colorado River at a heavy expense. I admire their enterprise, I admire their foresight in looking ahead for a water supply.

Recently we have had an investigation going on in the Northwest—the headquarters are in Salt Lake City and that is how I happen to know about it—to see what the possibilities are of taking the waters from the Columbia down to southern California. I point to this as an example of how badly they need water in those areas.

Now over in my own State we have a lake called Utah Lake, south of Salt Lake City. That lake is a very shallow lake. We have been using it as a reservoir for years, but we are now planning to increase the size of that lake by making it deeper. Why? To save the vast amount of water that leaves that lake by evaporation. Is it a considerable amount? Well, I just checked with our engineer, Mr. Larson, from region 4, who has made an investigation of that, and it is about 85,000 acre-feet that go off from that lake every year. We are going to spend money to make it deeper. We cannot make it like Echo Park where you have a deep canyon and a wonderful place for storage, but we can make it deeper.

In numerous other ways I could illustrate the desperate need for water. Let me refer to my own State again. It was brought out in the testimony that less than 3 percent of the State of Utah is now under cultivation. We have some grazing, yes. Sometimes it is very scanty grazing, too. But out of the millions of acres that we have in the State of Utah only 3 percent is now used, and if we get the projects we hope to get through this overall program on the Colorado, we will be able to increase it slightly because we will not get too much irrigation water over. It is expensive, costly. Some of it has to be used, of course, over in the Uinta Basin. I am talking now about the Great Salt Lake Basin area. Several hundred thousand acres will be benefited with supplemental right. We have stretched our water supplies too thin in the past. Additional acreage will be brought in if the entire central Utah project is built.

Yes, we do need water. Irrigation and domestic use has the priority, as it does in nearly all of the reclamation States of the West, the 17 States. We can take it away from the farmers if it is necessary to get it into the cities and towns for human consumption and use in our homes. We do not want to dry up our farms. The only place we have any water left for Utah is in the Colorado River.

The pioneers worked to put to a beneficial use every bit of water that they could under their own efforts, and that has happened in other States, it has happened in all upper Colorado Basin States. Eighty-five percent of the projects we have in the West were built by private enterprise without any help from the Government, but we have arrived at a point where we no longer can build them without help.

Now we do not ask them to give that help to us. No. We are willing to repay, and it will take us quite a time to do it, but we will repay it in dollars and cents for the capital on irrigation and dollars and cents, with interest, for municipal uses and for the power.

Now, Uncle Sam will not only get that money back that way, but we can demonstrate through one of our projects in north central Utah he will get many hundreds of thousands of dollars and millions over the period of time that this program will run from income taxes as a direct result of this reclamation project.

Yes, we need it and we need it badly.

Now what are the problems we face in order to get it?

Unfortunately, we did not get a better deal when we entered into the compact in 1922, but we were on the defensive. The lower basin States were taking the water and putting it to beneficial use, and out in the West the water lawyers know "First in time, first in right." And under that situation we could have gone to the point where the substantial portion of the water we should have had upstream would be taken away from us due to the fact that somebody else put it to beneficial use. Hence, we entered into the compact.

What did we do in that compact? We gave a priority to the lower basin States. We gave a priority later on in the Treaty to Mexico. So that no matter what happens, we must see that that much water gets down there. It is a first mortgage on the river before we can take any under that agreement.

Now we face a desperate situation. How can we get the water out of these deep canyons and get it into the areas of Utah and Colorado and New Mexico and Wyoming where it is so badly needed? We have not very much, but we had to face a difficult problem in finding a way to do it.

The Bureau of Reclamation has been directed to study that problem. I want to pay my respects and pay my tribute to the man from the Bureau who has spent almost a lifetime in studying the Colorado River, Mr. Larson, who is one of our native sons, and we are very proud of him. Mr. Jacobson, who testified here, is also a native son of Utah. They have done an excellent job on that river. They are not taking a lot of theories, they have investigated.

I think Mr. Jacobson probably has been almost from one end of it to the other, and particularly from Arizona on the south to Wyoming on the north and up farther in the Wyoming country.

They have checked and rechecked for sites, probably some 250 altogether over the years they have been investigating. The problem is still there to deliver that water downstream, and also the problem of how to get it out of these deep canyons, put it through transmountain diversion to other areas and take care of the areas immediately in and around the Colorado River in the State of Utah, and also in the States of Colorado, Wyoming, and New Mexico.

They faced that problem, and finally they came up with a report which, in their judgment, would do the job. But it required a different type of approach than we have ever had so far as I know in the reclamation program. It required an approach of making this project, the whole development, the comprehensive development of the upper Colorado, one project. You have heard of Echo Dam project, you have heard of Split Mountain project, and all these others. They are only units of the overall project you have before you in this bill. There are certain items on the main stem that will be for storage purposes and for power purposes, but it ought to be obvious to everybody now that we will not have any water for the irrigation unless

we are able to satisfy the people down below and to carry water over from good years to bad years in these large mammoth reservoirs. While probably no water will be directly pumped out of those reservoirs, the water will be made possible by reason of them. Now we can have some of the water to which we are entitled. We can take out of the higher mountain streams in our own area this needed water rather than have to let it go down the river because we will have stored in these giant reservoirs enough water to satisfy the needs, and then we can take it out of the mountain streams in our areas for our lines and transport to the eastern part of Colorado and also over the Wasatch into the great Salt Lake Basin. That is the problem they faced.

They have come up with a bill, H. R. 4463. It definitely states on page 4:

The Colorado River storage project and participating projects shall be treated and accounted for as one project.

I dislike that word "project" for everything except the overall big one. What it should have read in my judgment is this: "The Colorado River storage project and participating units shall be treated and accounted for as one project."

Why is that necessary to have one project?

It is our theory, and I think it is a sound one and a correct one, that the people of those States are entitled to use that water as they would like to use it, according to their own plans, for irrigation, domestic use, industrial use, production of power. Priority, however, is given to consumptive use.

When they use it for power, they are only getting a byproduct of that water. And it so happens that that byproduct will be sold largely in the upper basin States. It will be the people of the upper basin States who will repay the entire costs of this great, giant project; no one else. Maybe a little will go to California. Arizona comes in by reason of the fact that it has a slight interest in the upper basin, but essentially the people of the upper basin States will pay for the power.

So they are, in effect, not receiving a subsidy from anybody; they are only using the resources that a divine providence placed there. And under western law—and it has been approved by the Supreme Court of the United States—the water in those areas belonged to the people of the States. We got together and divided it up.

Now that is the problem, and they were confronted with an additional one. We have parks and monuments in Utah. Let me name a few—Bryce, Zion, the Natural Bridge Monument, the Arches Monument, Cedar Breaks. We are proud of our parks. We also have the Dinosaur National Monument which started out with 80 acres and some dinosaur bones. The bones were dug out and brought to Pittsburgh and other places, and about all we have left there is a hole in the ground.

When I first came to the Senate I tried desperately to get some appropriations to help develop the Dinosaur National Monument. I got a cold shoulder from the people downtown and I received the same kind of treatment up here. It was not important enough as a national monument to get any appropriations. But suddenly, when our water program began to develop, these people who are so interested in it now to keep it the way it is, began to make objections to a program

which had been contemplated all the time. The Government officials knew about it, and they led the people to believe that they would have the reservation in the proclamation and they could fully build their reclamation projects. Now we are told we should build at Browns Park. Who knew back in 1938 where the best site would be? There had not been any investigations to the point of determining actually and factually where it should be. Of course not.

The intention was clear; that they should have their irrigation and power projects, should not be deprived of that, and at the same time the park people were willing to take it that way.

Frankly, they have taken in sometimes in these national monuments more territory than they had any right to take. We had a situation over in Wyoming where they created a national monument and almost brought on a rebellion. It was cleared up to a certain extent. Now they have made a lot of withdrawals in the State of Utah. But this one would have created more controversy than any other had we known that the Government did not intend finally to let us build our project there.

It is a deep canyon. If we are going to adopt a policy of making all the deep canyons that are scenic and beautiful in the United States, particularly in the West, parks, preserve them in their pristine glory, then we cannot build any projects in the areas where they are most needed and where we can do the best job.

I did not hear anyone protest when they decided to build the project down at Hoover Dam because of the scenery, and yet that is a deep canyon. I think it is deeper than the Echo Park area. Thousands of feet of rock wall rise out of that canyon.

There is no protest against Glen Canyon, no protest against other places in the canyon. Echo Park is just another part of the canyon.

I have lived out in that area. My home for many years was in eastern Utah not far from the Colorado border. I have seen the great shining glory that comes out of the Blue Mountain, better known as Split Mountain, and I have fished on the tributary streams of the Green River, a part of the Colorado, that runs into this area.

In my youth it was an almost unheard of thing for anybody to take a chance to go down this river through Echo Park. It was dangerous. We did not have the equipment they now have. But I dare say that not more than 500 people in the entire Uinta Basin have ever gone down through Echo Park, and it is not because they do not like scenery—they do. They have gone to Zion, they have gone to Bryce, they have gone to Cedar Breaks. They have done all of that.

We think a lot of Dinosaur National Mounment. Our problem is also to find some way in which we could build the project and at the same time make the monument more accessible to the people of the United States. And I insist that those who love scenery in the raw and nature in the raw, who want to have a river left they can run down and take a chance on coming out or being killed or drowned—I insist that there are plenty of places in the United States where that can be done. All they have to do is go over on the Salmon River in Idaho and they will have plenty of opportunities there.

But these deep canyons, where they can be utilized for the people of the States so they can develop their resources ought not to be put in a park where they would be interfered with.

I think it was an unfair advantage they took of the people, not only of Utah but of Colorado and all these States, to issue the directive as they did, although I think they intended, really, that we should build those projects there.

Now there are many other items in connection with this program that I could discuss here today, but the committee has been willing and very patient to listen to us. I have already talked too long. But I want to remind the members of this committee that the question now before this committee is not a partisan question in any sense of the word. The Republican Party and the Democrat Party have been vying with each other to see which could be the best friend to reclamation. We are all behind it, I think, the Republican and Democratic Parties alike in everyone of these upper basin States. The parties have gone on record time and time again in their conventions that they favor these progressive reclamation projects. So there should be no difficulty on that score and there should be no partisanship enter into it here at all.

Gentlemen of the committee, we have something here that if you intend to permit or to find a way for us to keep our young people at home in the Western States, that you should approve. We have been sending out for many years, up until the beginning of World War II, literally thousands of our young men and women because of the lack of opportunities in Utah. If this project should be built to its final conclusion, all of the divisions that are in it, we can then double the population of Utah.

And on population, let me say we are growing at a rapid rate in this country. It is my job to know about that. In slightly over 15 years, at the present rate, we will have over 200 million people in the United States. We have got to find food for them, we have got to find homes for them. And in spite of the fact that we can build industries out there in many of those sections, we must have water for food, and we must have water for industry.

The Geneva steel plant is located within a half mile of my home and had to have 20 second-feet of clear mountain water for consumptive purposes before it could turn a wheel. Other industries require the same thing.

What has been said about my own State applies to every one of the upper basin States and the entire area.

Thank you.

Mr. HARRISON. Thank you very much, Senator Watkins.

Mr. REGAN. Mr. Chairman, I have my junior Senator from Texas here.

I would like first to pay my respects to the other Senators who have been here and have talked. I want to tell Senator Bennett that we went out to Utah last year and had the pleasure of meeting your uncle Will Wallace, and all of us were highly impressed with his enthusiasm for this project.

Senator Barrett was our colleague here for many years, and we worked together. I think we almost changed the name of the committee to the Colorado River committee because we had days and days and weeks and weeks of testimony on the Colorado River, largely confined to the lower basin. I think those of us who sat through those hearings long recognized that the upper basin was not receiving the

benefit of the water, and I am sure most of us are interested in implementing any program which will give them the beneficial use of those waters, which comes under the head of being feasible. Of course, we are going to have to take a look at that.

Mr. Barrett said something about the protection of the interest of the States. I have here with me now and would like to present our junior Senator from Texas, who, as you people know, came to the great body of the Senate at that time because of his interest in the protection of the rights of the States.

It is my pleasure to present Senator Price Daniel, the junior Senator from Texas, who would like to say a few words with respect to one feature of this bill.

Mr. HARRISON. We are very glad to have you with us and participate in our hearings.

STATEMENT OF HON. PRICE DANIEL, A UNITED STATES SENATOR FROM THE STATE OF TEXAS

Senator DANIEL. Mr. Chairman and members of the committee. I appreciate this privilege. I am a member of the companion committee in the Senate, and I am glad to have the honor of meeting with you. I will try to be brief.

It is my purpose to present objections to only one phase of the project or the bills that you have before you. On behalf of the State of Texas I find myself compelled to object to the inclusion of the San Juan-Chama project in this legislation. This is the only project included in the bill to which my statement and objections will refer.

The proposed project, that is, the San Juan River and Chama River project, would call for building new dams and reservoirs on the Chama River, 4 of them, having a combined storage capacity of 753,000 acre-feet of water. The proposal would call for diverting 235,000 acre-feet from the San Juan River over into the Chama River.

Now the Chama River is the principal source of water in the Rio Grande.

About two-thirds of all the water that we get in the Rio Grande for irrigation for certain projects—and I will explain them—below Elephant Butte Dam on the Rio Grande comes from the Chama River, and that is our interest and our objection to this piece of proposed legislation. We believe that it would seriously harm already established Federal irrigation projects on the Rio Grande. I refer to the Rio Grande Federal irrigation project which obtains water from the Rio Grande, two-thirds of which comes from the Chama River, and which irrigates about 178,000 acres of land in the southeastern part of New Mexico below Elephant Butte Dam and in the El Paso area of Texas.

This proposed project for the construction of these new dams and reservoirs on the Chama River would have a combined storage of 753,000 acre-feet of water. Of course, much more water than was proposed to divert from the San Juan River.

El Vado Reservoir on the Chama River now has a storage capacity of 198,000 acre-feet. Under the Flood Control Act of 1948 the United States engineers were authorized to build Chamita Dam and Reservoir with a capacity of 700,000 acre-feet without spillway gates, or 965,000 acre-feet with spillway gates installed. Those having a total

in El Vado and the authorized Chamita Dam reservoir for proposed storage by the Bureau of Reclamation of 1,916,000 acre-feet.

As I have already said, two-thirds of the water that we get in the Rio Grande in southeastern New Mexico and in the El Paso area of Texas comes from the Chama River. We have in that area of Texas 70,000 acres of fertile land in the Rio Grande project in El Paso County, Tex., now being irrigated, and 18,000 acres of cultivated land in Hudspeth County, Tex. Thus, 88,000 acres of land in El Paso and Hudspeth Counties, Tex., are dependent upon this water that is supposed to flow into Elephant Butte Dam—supposed to flow into Elephant Butte Dam in accordance with the compact that has been entered into between the States of Colorado, New Mexico, and Texas.

In addition to these lands in Texas there are 90,000 irrigable acres of rich land in Dona Ana and Sierra Counties, N. Mex., which are likewise dependent upon water from Elephant Butte Dam, making a total of 178,000 acres receiving project water. These lands are highly improved and represent millions of dollars in value. What they are worth to the economy of the territory in which they are situated is almost beyond calculation.

I am informed, Mr. Chairman, that the Rio Grande Federal irrigation project which serves these areas in New Mexico and Texas below Elephant Butte Dam ranks second or third in the United States as to the value of crops produced on the lands irrigated, and it is one of the few irrigation projects that is paying its construction costs to the Government.

If these new dams and reservoirs are constructed on the Chama River and operated as it is proposed in this legislation, it can only result in diminishing the supply of water to the Rio Grande project and to this rich land that is now being cultivated in the areas of New Mexico and Texas. This would be to such an extent as to seriously threaten the existence of the project and I say that because, while serving as attorney general of the State of Texas, I found what serious damage it could cause even with the El Vado Dam and reservoir and the manner in which it was operated on the Chama River, the one now in existence.

I saw what damage it could cause to our State and to the southeastern part of New Mexico. As of December 31, 1952, New Mexico had failed to deliver into Elephant Butte Reservoir on the Rio Grande approximately 460,000 acre-feet of water required by the Rio Grande compact to be delivered into Elephant Butte. This is more than twice the debit permitted New Mexico by the terms of the compact. It became my duty, as the attorney general of Texas, to file suit against the El Vado or the Middle Conservancy District there in New Mexico and the State of New Mexico. We had cooperation from certain New Mexico officials, but not from the conservancy district operating the El Vado Reservoir and Dam. It became a very serious thing because of the drought that we had, and we were denied the water. The water was held up and not allowed to come into Elephant Butte Dam in accordance with the Rio Grande River compact.

So, Mr. Chairman and members of the committee, if more reservoirs are built on the Chama River, some having much larger capacity than El Vado, and the impounded waters are used for developing new land and for generation of hydroelectric power and industrial and municipal purposes in New Mexico above the Elephant Butte Reservoir, the

inevitable result will be a greatly diminished supply of water for the Rio Grande project, with consequent disaster for landowners and the economy of the area.

I regret to have to oppose this project in a neighboring State, but we have a compact with the State as to the use of those waters, and the State has not lived up to the compact because of one reservoir and the manner in which it is operated on the Chama River, and we fear the authorization of these additional projects on the Chama River.

I want to thank the committee for giving me this opportunity to present these objections on behalf of the State of Texas to the inclusion of this one particular project in the legislation now before you.

Mr. HARRISON. Thank you very much, Senator Daniel. We appreciate your appearing before the committee and giving us your views on these projects.

Chairman MILLER. May I ask the junior Senator from Texas, is the project which you bring into the picture a part of the immediate development of the upper Colorado River Basin? I did not notice it in the participating projects.

Senator DANIEL. As I understand it, they would be authorized by this legislation.

Mr. REGAN. May I answer that, Mr. Chairman?

Chairman MILLER. Yes.

Mr. REGAN. It is included in the bill for consideration, but I asked them this morning, Commissioner Dexheimer, if they were a part of the modified report, and his answer was, "It is not."

Mr. REGAN. We want to put it into the record for future reference that the Representatives for the State of Texas are objecting to this proposal, which again will come before us, I am sure, in time.

Chairman MILLER. In other words, Texas is going to object to the whole project because of this one?

Mr. REGAN. No. I think the Senator made it very clear that he was objecting to one feature of this total project only.

Chairman MILLER. Which is not in the bill?

Mr. REGAN. It is, and it is now before this committee.

Senator DANIEL. My information was it was very much before your committee, and I said right at the beginning that it is the only feature of this legislation that I make any objection to.

Chairman MILLER. If it were not in the bill, he would have no objection, of course?

Mr. REGAN. Until it is out of the bill, though, we do object.

Mr. DAWSON. I might say to the chairman, it is in the bill, but a favorable report has not been given by the Department.

Mr. FERNANDEZ. I hope that the Chama transmountain diversion project will be very much before the committee before we get through.

Mr. HARRISON. Mr. Fernandez and Mr. Rogers, do each of you want time to make a statement?

Mr. FERNANDEZ. I do, and Senator Anderson, who is tied up with the emergency cotton quota bill this morning and could not be here, would like to make a statement in the morning.

Mr. HARRISON. What about you, Mr. Rogers?

Mr. ROGERS of Colorado. Yes.

Mr. HARRISON. Mr. Aspinall, do you know about your Senators?

Mr. ASPINALL. I will find out.

Mr. HARRISON. Let the Chair say there will be no meeting this afternoon because of business in the House. We will meet again at 9:30 tomorrow morning, and if we can secure permission by the House we will meet tomorrow afternoon, as we also will do on Friday under the same provisions.

The first thing tomorrow morning we will hear those Senators and those Representatives who wish to be heard. Following that, we will go into the testimony of those witnesses from the upper Colorado River Basin States in favor of this particular legislation. Because of certain requests, the first witnesses I will call will be some from my own State of Wyoming.

Following that presentation of the proponents, we will then hear the testimony of those who are opposed to either the whole project or portions of the project. May I assure those people who are in opposition, the conservation groups, although it might not appear at this time that they will have sufficient time, they will be assured and they will receive the same amount of time as the proponents. In other words, there will be no favoritism, and everyone, to the ability of the chairman, will be treated equally here. So while time may seem to be fleeting on the statements by the proponents, we will certainly arrange sufficient time to give the others their fair share of time.

Mr. ASPINALL. Is it planned at this time we go into next week with these hearings?

Mr. HARRISON. The Chair would prefer not to make any commitment upon next week, other than to say there will be equal time given.

The committee will stand in recess.

(Whereupon, at 12 noon, the committee recessed until 9:30 a m., Thursday, January 21, 1954.)

COLORADO RIVER STORAGE PROJECT

THURSDAY, JANUARY 21, 1954

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to recess, at 9:30 a. m. in the committee room, New House Office Building, Hon. William H. Harrison (chairman) presiding.

Mr. HARRISON. The committee will come to order.

As stated yesterday, we will hear first today the Senators and Representatives who are interested in the legislation before the committee.

We have Senator Clint Anderson, of New Mexico, present at this time. I want to welcome the Senator, and we will be glad to hear his testimony now.

STATEMENT OF HON. CLINTON P. ANDERSON, A UNITED STATES SENATOR FROM THE STATE OF NEW MEXICO

Senator ANDERSON. Thank you, Mr. Chairman. The State of New Mexico finds itself in the very fortunate position where all groups inside the State are unified as to what the State desires. The representation from the State of New Mexico officially, and from the 2 Senators and 2 Members of the House, will all agree on the unified position. Therefore, I am happy that we can say to the committee and to the public that the State of New Mexico is happy to endorse the project as a whole, that we are happy to have included the projects in other States, and that we hope the entire bill will pass, not only to the benefit of New Mexico but to the benefit of every one of the States in this area.

I see across the table my distinguished colleague from the State of Utah, Senator Watkins, who is a fine authority on reclamation matters. I say that as a person who has served with him in the Senate Committee on Interior and Insular Affairs. We have all come to respect his vast knowledge of reclamation and irrigation law, but I wish this morning to commend him for the fact that he is trying to see that the water allotted to his State is used as the people of his State want it used, and that is what we desire in the State of New Mexico.

Yesterday a very able Member of the United States Senate, the Honorable Price Daniel, appeared before you and had some comments to make on the desires of the State of New Mexico for the San Juan-Chama project. I do not wish to take strong issue with my friend, Senator Daniel, because I hope by the time we get through understanding what we are seeking he will be as enthusiastic as to what New

Mexico may want at this time as we are. But I do want to point out that the State of New Mexico does not seek to take away from Texas any water, or any plan that will aid in the troublesome Rio Grande problem.

These three projects, the projects for which the State of New Mexico as a whole is contending, all are important to us. We think the Shiprock project, once the Navaho Dam is built, might even get underway ahead of some of the others because a great deal of work has been done on that. But we do believe that there should be provisional or conditional, whatever you wish to call it, probably conditional authorization of these three projects, including the San Juan-Chama transmountain diversion, and that feasibility reports can then be prepared with the full knowledge that those feasibility reports must be submitted to the Congress, the Congress must approve them, and the State of Texas or the State of Colorado or any other State that feels it is aggrieved by these matters can then present its objections and the matter can be properly handled in a manner fair to the State of Texas and fair to the State of New Mexico.

I do not anticipate real trouble when the feasibility reports on these projects are completed, because I have been pretty closely associated with this suggestion that water be diverted from the San Juan into the Rio Grande for a great many years. I suppose there are not many Members of the Congress, certainly I realize there are not many Members of the Senate that I visit with who were at the Santa Fe when the original river compact was negotiated. It happened that I spent quite a little time there because of my interest in it, and I can remember many of the discussions that took place at that time, which is only 30 years ago, and rather short in the life of the river, even though quite a while in the time of a man in public affairs.

At that time we thought we were dividing up the water of a stream that had in it 30 million acre-feet of water. We only divided up 15 million acre-feet of it, perhaps, $7\frac{1}{2}$ million of it to the upper basin States and $7\frac{1}{2}$ million to the lower basin States, plus a million acre-feet which I think was to come out of the Gila River and was not part of the water we divided, although I understand there is now some argument. But nonetheless, we felt there was much more water.

I realize I have used the word "we" frequently, as if I were a member of the official body doing the dividing up. I was not. I was in the group reporting it on that occasion. But I am trying to say that all the States felt there was much more water in that river. Therefore, there was a feeling that the State of New Mexico would have difficulty in the future years using all the wealth for water that was going to come to it from the San Juan River.

We had a rather small population in the northwestern corner of our State. We did not have then the fine oil and gas fields that have since been developed, and there was a great problem as to how this water would be economically used in the northwest corner of the State.

There was then an engineer who had devoted a great deal of time to this matter. He was then relatively young in years, and he had spent the 20 or 30 previous years thinking about diverting water from the San Juan River into the Rio Grande River to supplement the water supply there, which he thought someday might get so tight that there would be difficulties between the States of New Mexico and Texas for the use of that water. He proposed then, as early as 1920

and 1925, that there be a transmountain diversion. I think I wrote my first newspaper story on the transmountain diversion in the year 1918. So this is not a new idea that New Mexico has recently developed.

New Mexico then continued to feel that it had a right to make the best possible use of its water for the benefit of the greatest number of people in its State.

Let me say that the Senate Committee on Interior and Insular Affairs, as I imagine this committee is, is occasionally interested in the question of what happens to the water of the Colorado River in the State of Arizona because there are Indians in the Colorado Reservation—I believe it is called that—who feel they have some rights to water, and there are Indians living on the California side of the river who have some rights to the water.

Now California never believed in 1920, 1921, and 1922 that all the water allocated to the State of California should be used for any particular set of Indian projects along the Colorado River. Rather it felt that the water which was coming to California should be used as the people of that great State desired for the benefit of the greatest number of people in that State. Therefore they developed a Metropolitan Water District in the city of Los Angeles that has accomplished the real purpose that many people had in mind, which has made Los Angeles—at least its contribution, I think—made Los Angeles one of the great cities, the third or fourth great city in this country. They developed electrical power. They did not say that electrical power had to be used along the river or in reservations or in any particular area, but it too might be diverted over into the city of Los Angeles and the surrounding area and make its contribution to the industrial life of those areas.

That is why, Mr. Chairman, I have been hopeful that we would have power features attached to all these great dams that are built in the upper Colorado Basin so that power might be used to benefit and to bless all the communities in these western areas that need all the help they can get. But similarly, I believe the State of New Mexico ought to have a right to use its water as it sees fit, providing that in the use of that water it does not jeopardize its neighbor States.

I do not believe, Mr. Chairman, that the San Juan transmountain diversion would jeopardize any State but would only help the others. For instance, the projects contemplated that a small amount of water might be traded to the State of Colorado. There is an area in the State of Colorado where supplemental water is needed for irrigation. By the use of a very small amount of San Juan water which would be traded in this instance for water in the headwaters of the Rio Grande, we could greatly improve a substantial area of the State of Colorado. If we can do that with New Mexico water, I will be happy, I will not be worried if Colorado gets some benefit out of our project. If we, as a State, can be useful to some other State, it is a fine thing, particularly for these Western neighbors that have to live pretty closely together if they are to survive at all.

When we have diverted a small amount of water from the Rio Grande headwaters for use in Colorado and traded it for certain amounts of water that comes to us from San Juan transmountain diversion, there will still remain substantial amounts of water. That

water is not to be used to benefit the position of the farmers in the middle Rio Grande Valley.

I am happy to have a fair-sized farm in that valley. I am not asking for new water by this project. As a matter of fact, I have recognized the scarcity of water in the middle Rio Grande and have in the last few years put down pumps that supplement the river water, so that when irrigation stops, as it did on August 1 this year, I can use three huge pumps and throw many thousands of gallons into irrigation ditches and take care of my own land.

We are not so worried about the farmers, although I would be happy to have them have a more secure water supply.

The city of Albuquerque has served notice in the last few days, really in the last few hours almost, that it wants to file on 150,000 acre-feet of the water that may come from the transmountain diversion. Now that application of the city of Albuquerque is not based on its mere wishes to have a chamber of commerce figure at which it can look. The Government of the United States has established on the hills above what used to be the city of Albuquerque, but which is now definitely a part of it, a great project known as Sandia Base. That is to some degree a secret project, but it is no secret that several thousand employees are working in that base in the development of military weapons. That area frequently itself is not too plentifully supplied with water.

Above it a short distance, near Santa Fe but lying some distance from Santa Fe, is the great scientific laboratory of Los Alamos, which certainly was one of the germinating places if not the actual breeding ground, of the atomic bomb. That high mesa now comprises about 10,000 or 12,000 people. You are fortunate in having as a member of this committee a Representative from the State of California whom I first met at Los Alamos, and in whose home I have had the pleasure of being entertained, and I am happy to see him here this morning.

But that high mesa is very vital to the defense of the United States. New weapons are being developed there, new weapons of fantastic striking power, that this country needs if it is to keep abreast—not to keep too far ahead—but to make sure it at least keeps abreast and, I hope, quite far ahead of any nation that may cause it any trouble.

The water supply, as the Congressman from California, Mr. Hosmer, can tell you, is not too plentiful. Wells are being constantly developed, and the population available at Los Alamos is to some degree dependent upon the ability with which they can develop water.

Now the additional water in the Rio Grande water that would come from the San Juan transmountain diversion would in my opinion—and I am not trying to commit any engineers to my layman's opinion—but in my opinion it would be very useful to three great Government projects: First, the scientific laboratory at Los Alamos, where the University of California and other groups are steadily engaged in trying to develop for this country the designs for weapons which will keep this country able to defend itself; secondly, to the Sandia Base at Albuquerque; third, to the Special Weapons Command at Kirtland Field, where we not only try to develop and manufacture these devices which Los Alamos has dreamed up, but where materials from Hanford and from other areas of the country are brought so that weapons may be fabricated.

There is also, of course, the extreme importance of tying together not only the production of the weapon itself but the deliverability of the weapon. While I am a member of the Joint Committee on Atomic Energy, I have been greatly impressed this summer by my visit to the various atomic installations to see how wisely and how well the men representing the Army, Navy, and Air Force have been working with the scientists in the developing of machines which will deliver what the scientists will dream up back in the laboratory.

Now below that at White Sands, which is still in New Mexico and still along the Rio Grande—all of these installations are along the Rio Grande—there is being developed the type of weapon that might make it possible to deliver these fantastic devices by some mechanism other than an airplane piloted by a human being. We are dealing steadily with rockets and with types of weapons that are unique, that are of the Buck Rogers age and not of the age when people were sitting at Santa Fe trying to divide up the waters of the Colorado River. These, too, depend upon the water of the Rio Grande.

The installation at White Sands has been severely restricted by the inability to develop water as rapidly as the people in charge of it might have desired. Housing has been erected substantial distances off the base because conditions for the building of houses were more convenient there than on the rather dry desert area around the White Sands Proving Grounds.

I am trying to say, Mr. Chairman, that all of these great projects which are vital to the defense of the United States depend for their expansion, for their future usefulness, to some degree upon the water than may be moved from the San Juan into the Rio Grande in the San Juan transmountain diversion. When that fact is presented to the good people of the neighboring State of Texas, I am convinced that Texas, which has always prided itself on the high degree of response it has given to every request for volunteers in time of need, would not want to fail to have that water used for that very fine defense purpose.

Therefore, I say that if provisional or conditional authorization can be given for these projects, I am convinced that we can work out with our neighbors, both to the north in Colorado and to the south in Texas, the utilization of this water which will not jeopardize any existing water right which now obtains.

I am not in favor of trying to take away from the farmers in the lower Rio Grande Valley, either in the Mesilla Valley area that lies within the State of New Mexico or across the line in the State of Texas, any water rights which they now enjoy. I am, however, anxious that this water shall be put to beneficial use and to its highest beneficial use, spreading across lands of farmers not being the highest use to which that water may be put. We need it for industrial and domestic purposes. I believe that the constitutions of many States, possibly the constitution of the State of Utah, certainly some of the Western States, carry provisions that the waters of the rivers shall be used for industrial and domestic purposes first, and after that for the irrigation of agricultural land.

We are not trying to use this water for the development of additional agricultural land.

Mr. Chairman, at one time there was presented to the Congress—at least to the Congressional Representatives—a tentative program for the utilization of the waters of the San Juan that might be diverted into the Rio Grande. That general proposal carried a project for a new development known as the Jornada development, the old desert that had been associated with many difficult crossings in early pioneer days. I can understand how the people living below Elephant Butte Dam would be very worried by that project because it would have brought into being some 70,000 or 80,000 acres of land which would have used a great deal of the water. I never sponsored that. I opposed it immediately. I urged at once it be taken out of the proposals because I did not desire then, and do not desire now, to use the San Juan water for the development of new irrigation projects. A small amount of it may be needed to firm up the water supply that we have existing now in the middle Rio Grande, but that is not the prime purpose. The primary interest I have is making it possible for these atomic installations to grow, to be assured of not any water but the power that will be developed by the San Juan transmountain diversion.

The engineers from the Bureau of Reclamation who have skillfully worked on this San Juan diversion have proposed the erection of dams at somewhat regular intervals along it, with the possibility at least that power generated by those could all be taken by the Los Alamos project and by the Sandia Base project without interfering in any way with the existing power supply.

I do not desire to take too much time of the committee. I again want to say that the State of New Mexico does not have its eyes on water belonging to some other State. It seeks only to make the best possible utilization of water belonging to it and on that basis hopes that the Congress will approve provisional authorization for all three of these projects in New Mexico, and when the feasibility reports are filed on them, then the interested and affected States will have plenty of time to lodge their protests. I think they will find that New Mexico does not want to hurt, but only wants to help, the areas that surround them.

Thank you very much, Mr. Chairman, for the opportunity of being heard.

Mr. HARRISON. Thank you, Senator Anderson. We are very happy to have you with us and receive your statement on the legislation before this committee.

Senator WATKINS. May I ask a question of the Senator?

Mr. HARRISON. Senator Watkins.

Senator WATKINS. If this project which is now being presented to the Congress is not adopted, what will be the state of the reclamation program in the West?

Senator ANDERSON. If the Navaho Dam is not included, I will say to my distinguished friend from Utah that the bill will pass over my dead body.

Senator WATKINS. That is not my point. I am calling attention—maybe I was not quite fair to the Senator.

Senator ANDERSON. I would be happy to answer the question correctly if you wish to put it. I misunderstood you.

Senator WATKINS. I was asking you about the general program of the Bureau of Reclamation. As I understand it, there are very few projects now that the Bureau is working on, and if they do not have

a program now such as this is, we will probably not have very much of a reclamation program in future years.

Senator ANDERSON. I will say to my distinguished friend that if this project is stopped now, a great deal of all the reclamation work in the West will stop. We have very few projects as fine as the upper Colorado Basin project. I think it must be kept going. I am just as much interested, as the Senator from Utah well knows, in the projects within his State and within the State of Colorado and the other States as I am in the projects in the State of New Mexico. We in the West need to keep this going. I think we need the development of power in the West, and I think that the Congress would be doing a great injury to the general cause of reclamation, which this committee in the House and in the Senate have vigorously supported, if it should allow the Colorado River Basin project to be put aside at this time.

Senator WATKINS. It is about the only project of any consequence that is now ready for authorization and for construction.

Senator ANDERSON. Yes, and it has the happy circumstances that all the West is united behind it. Many projects might be proposed that would look to be good on the surface, but you might find some conflicting interests in the West and in the Mountain States as to their utilization of that water. This is one that finds them all happily joined together, the upper Colorado River Basin States. I do not wish to comment improperly about the other States, I only wish the lower basin States had the harmony that the upper basin States have. We at least are together, and we hope by our example we may finally bring the other States together, although I admit that is a pretty forlorn hope. [Laughter.]

Senator WATKINS. I think if we keep at it long enough that we will get them around to our point of view.

Senator ANDERSON. I hope our missions of good will may finally accomplish that.

Mr. HARRISON. That you very much, Senator.

Before I call the next witness, the Chair would like to make a general statement. I have the names of a great many witnesses who want to testify; witnesses who come from the different States in the upper basin. Obviously, it is not going to be possible to give those witnesses as much time as they would like for the time that some of them have requested. It would be my suggestion, wherever possible, that the group from the different States get together, pick one general spokesman for the majority of the time, and the others to collaborate, a smaller length of time, and stating on their list of witnesses who they want to appear first and in general order. Because if time becomes too limited, it will be the Chair's action to take alternately from each different group, and then if the time runs out, those who have not been called will just not be called. And I do want to hear every person possible, but as I have tried to make plain, and I think most of you know, our time is limited. We cannot give unlimited time to all of those witnesses who want to testify, and I have assured both sides that they will receive equal consideration. So the statement I have just made I will apply equally to those who oppose the project either in whole or in part when their time comes to testify.

Mr. ENGLE. Mr. Chairman?

Mr. HARRISON. Mr. Engle.

Mr. ENGLE. May I inquire as to the intention of the Chair? Is it your intention to close these hearings at the end of this week?

Mr. HARRISON. If at all possible, Mr. Engle. I have arranged that if the opponents of the bill or parts of the bill cannot receive full time by the end of this week that we will go through Monday to see that they do get an equal share of time.

Mr. ENGLE. May I suggest that the Representatives from California want to say something, not in opposition particularly, but not particularly in support either.

Mr. HARRISON. Does it have anything to do with the quality of the water, Mr. Engle?

Mr. ENGLE. It might have. And it seems to me a little optimistic to try to authorize a project like the one in this bill on a week's hearing. From my own viewpoint, I am very much impressed that so many people would come so far from the West to attend this hearing and they ought to be given a chance to be heard. If there is anything this Congress ought to do, it is to keep the doors open to the people from out in the country. And with all due deference to the Government witnesses and the congressional witnesses and everybody else, it seems to me that when they do make a trip like this, we ought to try to get to them anyway. I would be in favor of it certainly, and then to go to the first of the week if we have to. In other words, they came here to talk, and let us give them a crack at it.

Mr. HARRISON. That is the intention of the chairman that has been expressed during these hearings. My only interest, I would like to see, and I think the rest of the committee would like to see, the statements kept as short as possible and still express the opinion of those witnesses. The time I have suggested would be merely the time they use in making their statements and not the time consumed by the questions from the committee.

Mr. DAWSON. Mr. Chairman, I would like to say, as one who is in favor of the project who wants to make a statement, that if it is agreeable with the Chair, I would be perfectly happy—and I know some others would—to defer making my statement at this time and give these witnesses an opportunity to be heard, with the understanding we could make our statement later.

Mr. HARRISON. I am sure that would be agreeable to the members.

Mr. ASPINALL. I join with my colleague, who has introduced a similar bill, in making that request, and I do so because the area which I represent has witnesses here who wish to be heard. Most certainly I wish to hear them. This is the first legislation of this kind we have had for a long time in my memory that the sponsors of the bill have not been called upon for their statement, but that is perfectly all right with me. I want to get out of the way so that the witnesses can be heard.

Mr. HARRISON. Thank you.

We have with us here this morning the senior Senator from my own State of Wyoming, former Secretary of State, and a former Governor, who is now, as I have said, serving as the senior Senator from Wyoming, Senator Lester Hunt, who would like to make a statement at this time.

**STATEMENT OF HON. LESTER C. HUNT, A UNITED STATES SENATOR
FROM THE STATE OF WYOMING**

Senator HUNT. Thank you, Mr. Chairman and members of the committee.

I very greatly appreciate the opportunity to testify briefly in behalf of authorization for the Secretary of the Interior to construct, operate, and maintain the Colorado River storage project and its participating projects.

Now, Mr. Chairman, I shall address myself primarily to the interest of the State of Wyoming in this development, knowing, of course, other States are quite able to take care of their own presentations.

Mr. Chairman, we in Wyoming have long been interested in putting the headwaters of the Colorado River to beneficial use. These projects have already been delayed, to my way of thinking, all too long.

The first interstate meeting of the upper Colorado River States for the purpose of agreeing on the diversions of Colorado River waters as between the upper basin States was called by me in my capacity as Governor of Wyoming in July of 1946. And even though it had been 24 years since the compact between the upper and lower basin States had been approved by the Congress, some upper basin States were still not ready to negotiate a compact.

We did not, however, let the matter rest for long periods of time, but after the appointment of Mr. Bashore to represent the Federal Government, and continuous urging by those States wishing to accomplish the compact at the earliest possible date, I am happy to say the compact was finally accomplished, ratified by the Congress July 6, 1949, 27 years following the approval by Congress of the upper and lower river compact, giving to the upper basin States their fair percentage of the waters of the Colorado River.

We in Wyoming are still pressing to get the various projects in our State authorized and, we hope, appropriations made therefor just as soon as it is possible to do so. We support the position of the other upper basin States with regard to the projects in their respective States.

The need in Wyoming is greater at this time than ever before in the particular area where our Wyoming units are located; namely, in the southwestern part of the State.

Other areas of Wyoming have taken advantage of reclamation possibilities, and agriculture is now our principal industry. As the result of these reclamation projects, the population of the State, valuations of the State, and the per capita wealth have been tremendously enhanced. But southwestern Wyoming has had only limited development of our water resources.

The economy of southwestern Wyoming is changing rapidly. Industrialization—the production of coal—has been the principal item of their economy, but due to dieselization of our railroads and the use of natural gas and oil, coal production continues to decrease. Where at one time in this area some 8,000 families had as their only support work in the mines, today it has dwindled until I would estimate no more than 1,000 are now employed in the coal mines in this area.

Fewer coal mines are working today in the Sweetwater area than at any period in the last 40 or 50 years, and unemployment in December of 1953 was nearly 5 times greater than the same period in 1951. Retail business in this area in the month of December 1953 was off 60 percent in luxury items and an average of 15 percent on all other items.

This area is suffering further decreases in their economy, for along with the coal industry, cattle and sheep have been the mainstay down through the years. However, wool production in the last 15 years has dropped 50 percent due to importation of foreign wool, and the price of cattle having dropped approximately 50 percent in the last 2 years, along with a devastating drought, have added to the economic decline of this area.

Development of water resources, the building of reclamation projects, wherever they may be, have a favorable impact not just in the immediate vicinity but the whole State and on industries, may I say, in all parts of the United States.

As an example, every settler on a reclamation project in the building of his home creates business wherever materials going into that home are produced. As he equips his unit with machinery, the implement manufacturer in Illinois, Indiana, and other areas benefits. And as he purchases his motor equipment, Michigan and other States benefit. As he equips his home with furniture and appliances, these come from all parts of the United States, as well as increasing local valuations and populations.

In authorizing and appropriating for the development of this natural resource, the Congress will have the opportunity to implement and put into action recommendations by the previous administrations and more recently by the President in urging the Government to place orders and projects in those areas of unemployment.

Favorable action by the Congress in the Colorado River project explicitly meets these recent suggestions by the President.

Having lived most of my life in an area, the economy of which has been greatly dependent upon the development of our natural resources, and therefore knowing firsthand the tremendous beneficial effects that will result from the developments sought in this authorization, I cannot too strongly say to this committee, and urge, that this is constructive, beneficial, and at this time especially urgent legislation.

It would be entirely superfluous, Mr. Chairman, for me to discuss technically these various projects—to mention their cost or in any way to deal separately with them. You have that testimony from the various State engineers and from the Bureau of Reclamation engineers. Except to say that to meet the situation I have described in the southwestern part of my State, we would urge the Seedskaadee project receive first priority.

May I congratulate you, Mr. Chairman, may I congratulate your committee for acting so promptly as you have in starting these hearings on the revised report by the present Secretary of the Interior which I know has been before you only slightly more than a month.

Thank you.

Mr. HARRISON. Thank you very much, Senator Hunt. We are very glad to have you with us and receive your statement on this legislation. We certainly welcome you to participate in any of our hearings during the balance of the week.

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

Mr. HARRISON. Mr. Fernandez, do you want to make a statement at this time?

Mr. FERNANDEZ. As Senator Anderson said, New Mexico is in full accord on every phase of this project and are working together. In the interest of a better presentation of the New Mexico situation, I would like to defer my own statement or argument that I may want to make until after the people from New Mexico who are here to testify have presented their testimony.

Mr. HARRISON. What about you, Mr. Rogers?

Mr. ROGERS of Colorado. I appreciate the privilege offered to me to testify at this time, Mr. Chairman, but like my colleague from New Mexico, there are a number of important matters that may particularly affect my area that will be testified to by witnesses who I understand will come forward shortly. With the permission of the committee, I would appreciate if my statement could be deferred and inserted in the record following that of the other Senators and Congressmen. If that meets with your permission, I will defer at this time.

Mr. HARRISON. Thank you, Mr. Rogers.

(COMMITTEE NOTE: See p. 501.)

Mr. HARRISON. At this point I would like to insert in the record letters from Gov. J. Bracken Lee of Utah and Gov. Allan Shivers of Texas:

STATE OF UTAH,
OFFICE OF THE GOVERNOR,
Salt Lake City, January 5, 1954.

Hon. A. L. MILLER,

*Chairman, Committee on Interior and Insular Affairs,
House Office Building, Washington, D. C.*

DEAR REPRESENTATIVE MILLER: This letter is addressed to you and through you to the members of your committee, in support of the passage of House bill 4463 which, if passed, will authorize the construction of the Colorado River storage project and participating projects. I had hoped to appear before your committee with the delegation from Utah, but my obligations in Utah at this time do not permit me to do so. It would be appreciated if you would receive this communication and make it a part of the record of your hearings.

The Colorado River compact, signed in 1922, allocated to the upper basin States, in perpetuity, 7½ million acre-feet of the waters of the Colorado River, for beneficial consumptive use, with the proviso that the upper basin States must deliver at Lee Ferry 7½ million acre-feet per year and 75 million acre-feet each 10 years. In 1949, the upper basin States—Colorado, Utah, New Mexico, and Wyoming—signed the upper Colorado River compact allocating to each of the upper basin States its share of the waters allocated to the upper basin States by the Colorado River compact.

Since 1922, no major project has been constructed on the Colorado in Utah and only minor projects in the other upper basin States. The topography and the characteristics of the flow of the Colorado River make it difficult to control and use the water consumptively. Furthermore, the provision, in the Colorado River compact which requires the upper basin States to deliver at Lee Ferry 75 million acre-feet every 10 years, makes it mandatory that the river be regulated by storage so that the water in the wet years may be carried over to meet the storages in the dry years. This means that before Utah and the other upper basin States can use their water consumptively, the river must be regulated. Such regulation requires a network of storage reservoirs. These storage dams offer opportunity for the generation of power, the revenues from which, after the power facilities are paid for with interest, may be used to assist in the development of other public resources.

The Colorado River must be controlled and developed as a unit. After years of investigation by the United States Bureau of Reclamation, a plan of development called the Colorado River storage project and participating projects has

been proposed. This proposal has been reviewed and approved by the Secretary of the Interior and is now before the Congress in the form of proposed legislation, House bill 4463.

Utah has a major stake in this project which includes, in addition to the major storage dams at Echo Park and Glen Canyon, three participating projects—the central Utah (initial phase), the Gooseberry and the Emery County. All of these projects have been found to be feasible from an engineering and economic point of view and have benefits which exceed the costs. The reimbursable costs allocated to irrigation and power can be paid off in 50 years and the revenues from the power features of the Colorado River storage project and participating projects will, after repaying construction costs of the power features with interest, provide revenues to pay the construction costs of the irrigation features above the ability of the irrigators to pay.

The Colorado River storage project and participating projects in Utah as set forth in House bill 4463, will, upon authorization and ultimate construction, provide for the initial stages of the development of Utah's remaining water, land, raw material, and power resources in the Colorado River Basin, which water and power resources are urgently needed to meet the demands of a growing population.

This project and House bill 4463 has the full and complete endorsement of the people of Utah. The special session of the Utah Legislature, December 1953, unanimously adopted a resolution approving this project and urging the Congress to pass House bill 4463 authorizing it. I am fully acquainted with the pertinent features of this project, and I am convinced that the full development of the land and raw material resources of the Bonneville and Uinta Basins in Utah is absolutely dependent upon an increased supply of regulated and controlled water for irrigation, municipal, industrial, and other miscellaneous uses and an increased supply of electrical energy. The central Utah, Gooseberry, and Emery County participating projects will provide the water and power needed and the construction of these projects, together with the Echo Park and Glen Canyon Dams for river regulation, silt control, and power, will provide the only practical means of securing a substantial quantity of new water and power urgently needed in the State and the only means by which the State of Utah can make beneficial consumptive use of its share of the water and power resources of the Colorado River.

I urge favorable consideration by you and your committee of House bill 4463.

Sincerely yours,

J. BRACKEN LEE,
Governor of Utah.

EXECUTIVE DEPARTMENT,
Austin, Texas, January 12, 1954.

HON. A. L. MILLER,

*Chairman, Committee on Interior and Insular Affairs,
House of Representatives, Washington, D. C.*

DEAR CONGRESSMAN MILLER: There has come to my attention an interim report on the San Juan-Chama project, San Juan River and Rio Grande Basins, Colo. and N. Mex., which was prepared by the Bureau of Reclamation.

A review of this interim report reveals that the proposed project contemplates the impounding of water in the San Juan River Basin, a tributary of the Colorado River Watershed, and diverted therefrom into the Rio Grande Watershed approximately 235,000 acre-feet per annum. The water, when it reaches the Rio Grande Watershed, is to be impounded by a series of dams and is to be released primarily for the production of power.

On page 17 of the interim report in the first paragraph, beginning with the third sentence, we find the following statement:

"The project plan is based on fullest practicable utilization of the flows of the Rio Chama and its tributaries for development of hydroelectric power in conjunction with the flows diverted from the west slope."

Records indicate that the Rio Chama is the largest contributing tributary of the Rio Grande. It is evident, therefore, that the flows from the Rio Chama are the principal supply for the Elephant Butte Reservoir. The flows which add most to the storage behind the Elephant Butte Dam occur in the late spring and early summer as a result of melting snow and spring rains along the Continental Divide.

Article VII of the Rio Grande compact reads:

"Neither Colorado nor New Mexico shall increase the amount of water in storage in reservoirs constructed after 1929 whenever there is less than 400,000

acre-feet of usable water in project storage: *Provided*, That if the actual releases of usable water from the beginning of the calendar year following the effective date of this compact, or from the beginning of the calendar year following actual spill, have aggregated more than an average of 790,000 acre-feet per annum, the time at which such minimum stage is reached shall be adjusted to compensate for the difference between the total actual release and releases at such average rate: *Provided further*, That Colorado or New Mexico, or both, may relinquish accrued credits at any time, and Texas may accept such relinquished water, and in such event the State or States so relinquishing shall be entitled to store water in the amount of the water so relinquished."

It will be noted that the operation of the San Juan-Chama project "for the fullest practicable utilization of the flows of the Rio Chama and its tributaries for development of hydroelectric power in conjunction with flows diverted from the west slope" would be in violation of article VII of the Rio Grande compact, as set out above, and would adversely affect the water supply for El Paso, Tex., and for El Paso and Hudspeth Counties.

The Rio Grande compact has been ratified by the States of Colorado, New Mexico, and Texas and by the Congress of the United States. Therefore, as Governor of Texas, I must respectfully request that your committee insist upon compliance with the terms and provisions of the Rio Grande compact by each of the three States and by the Federal Government. And we further respectfully request that your committee authorize no project which will be in conflict with the terms of the Rio Grande compact.

Sincerely yours,

ALLAN SHIVERS.

We will proceed with some of the proponents of the bill from the different States. At this time I would like to call on Hon. L. C. Bishop, engineer of Wyoming, to make his presentation. I will ask all witnesses to keep their statements as close to 10 minutes as possible. That does not include examination or questions by the committee.

I also have one or two requests from the Colorado group who must leave, and I will endeavor to get to Mr. Breitenstein and Mr. Kuiper. I understand through Mr. Aspinall they are particularly interested, and we will try to see that they are taken up as well as one or two others.

MR. HARRISON. Mr. Dawson, do you wish to make a statement?

MR. DAWSON. I have submitted a copy of my statement for the record.

I would just like to merely state that I have attempted in this statement to summarize the various statements and arguments I have heard on this bill, and I do hope that the members of the committee will take the opportunity to read it.

I would also like to have printed in the record, not the letters that I receive, but names of the individuals and the various organizations which have sent resolutions favoring the construction of the Echo Park Dam. They go into the hundreds, but I would like their names placed in the record and I file a list for that purpose.

MR. HARRISON. Any objection?

The Chair hears none. It is so ordered.

(Mr. Dawson's statement and the list of names referred to follow:)

TESTIMONY OF WILLIAM A. DAWSON (REPUBLICAN, OF UTAH) ON UPPER
COLORADO RIVER PROJECT

Mr. Chairman, I don't intend to belabor the committee with repetitious arguments concerning this project, but I do appreciate this opportunity of listing a few facts concerning the history of the Colorado River, the upper basin's share of the river and the relationship of the program before us to the needs of the States involved.

1. There can be no dispute that the upper Colorado River Basin States gained a priceless asset—and assumed a solemn obligation—in 1922 as signatories to the Colorado River compact. The asset is the right to put to beneficial use a portion of the waters of the Colorado and its tributaries. The obligation is an agreement to see that these depletions do not reduce the share of the lower basin's flow of the river below 75 million acre-feet every 10 years. These rights and obligations are fixed by treaty—the supreme law of the land.

2. There can be no dispute that the upper basin States are not now in a position to either take advantage of the assets granted by the compact—nor, in extreme circumstances, to meet the obligations to the lower States it imposes. The annual flow of the Colorado fluctuates widely—as high as 22 million acre-feet in some years—below 5 million acre-feet in others.

3. There can be no dispute that under present lack of development vast amounts of water flow to waste in wet years—water belonging to and desperately needed by, thirsty cities, industries, and farms in the four upper basin States.

4. There can be no dispute that a series of dry years under the present lack of development in the upper basin, could seriously endanger and could conceivably ruin a large part of the economy of the lower basin areas which depend upon the Colorado River for their waters.

5. There can be no dispute that the only way to prevent this waste and to remove this threat is through the construction of large holdover reservoirs.

Here we have a plan that will do that. We have expert testimony that the projects recommended for authorization are feasible. Their cost of construction will be repaid, with interest, within the 50-year period set under our newer and somewhat more rigid feasibility test. Expert testimony has been given pointing up the need of the area for additional water—not only for farm lands, but water for domestic use—drinking water.

We have expert testimony that the power is needed. And I think it is important to emphasize in this connection that this is truly a reclamation project, not a public power project disguised as flood control. Power rates will be set sufficiently high to repay the cost of the 2 major dams mentioned in the Department's report—Glen Canyon and Echo Park—within the 50-year repayment period. This repayment contract carries an interest rate of $2\frac{1}{2}$ percent and none of the cost of the 2 dams is charged off to flood control. Their entire cost is repayable.

The participating projects listed in this measure (when it reaches its final form) will meet the new rigid feasibility test. Irrigation charges along with power revenues which will be available “after,” and I emphasize “after,” the storage dams are completely paid for, will return to the Government the cost of the participating projects within the 50-year limit.

This legislation merely calls for authorization of the projects. It permits the Bureau to proceed orderly toward the day when our budget situation and our defense commitments will permit Congress to again start spending our citizens' money upon needed public projects in this country, rather than scattering it about the rest of the world.

Against the weight of this evidence, you have two objectors. Those who maintain that conservation of water is important—but conservation of wilderness is more important. They have in the past opposed the project because they are opposed “to the principle” of any reclamation project in any national park, no matter what the justification, and against the weight of testimony that the construction of the project will increase its use as a recreational and scenic area.

The other opposition can only come from those who are opposed to reclamation projects as such for this program, developed after nearly 20 years of exhaustive investigation, meets all requirements of the reclamation law.

Comparisons are always revealing and sometimes sad. Here are some sad ones as far as the citizens of Colorado, New Mexico, Utah, Wyoming, and a portion of Arizona are concerned.

Development of power by projects constructed or authorized for construction by Congress, in generating capacity (kilowatts) are:

Lower Colorado Basin: 1,700,900

Upper Colorado Basin: 32,000

Total storage capacity of projects (constructed or authorized) in the two basins (in acre-feet):

Lower: 38,624,430

Upper: 1,686,955

Colorado River water put to use:

Lower: 5,351,600 acre-feet annually

Upper: 1,923,200 acre-feet annually.

This project has been studied more thoroughly and at greater length than most of those this committee has authorized in the past. It represents the culmination of years of hope and planning. It has had the approval of two Secretaries of the Interior. It should have the approval of this committee.

It is ironical that the development of the Colorado River area through reclamation has lagged behind that of the other river basins. Here the river flows through the most water-needy States in the Nation. Here are some of the greatest dam sites in the world. It is time the Nation took action to take advantage of this situation and end this waste of a valuable national resource.

**RESOLUTIONS PASSED IN SUPPORT OF UPPER COLORADO RIVER STORAGE PROJECT—
ECHO PARK DAM PROJECT**

Orem Lions Club, Orem, Utah
 Ogden Women's Legislative Council, Ogden, Utah
 Provo Council, Parent-Teacher Association, Provo, Utah
 Lark Lions Club, Lark, Utah
 Utah Fish and Game Commission, Salt Lake City, Utah
 Wright Planing Mill, Provo, Utah
 Hobble Creek Riding Club, Springville, Utah
 Springville Fire Department, Springville, Utah
 Palmyra Wild Life and Game Association, Springville, Utah
 Women's Conservation Council of Utah, Salt Lake City, Utah
 Springville Kiwanis Club, Springville, Utah
 Utah Board of Forestry and Fire Control, Salt Lake City, Utah
 Springville Banking Company, Springville, Utah
 Mass Meeting, at Fillmore, Utah, representatives, 11 towns, 5 service clubs, 8 organizations
 Springville-Mapleton Wildlife Association, Springville, Utah
 Mayor and Board Commissioners, Provo, Utah
 Utah Federation of Women's Clubs, Provo, Utah
 Utah Wildlife Federation, Salt Lake City, Utah
 South Cottonwood Lions Club, Salt Lake City, Utah
 Provo Chamber of Commerce, Provo, Utah
 City of Delta, Utah
 Delta Second Ward of L. D. S. Church, Delta, Utah
 Senior Ladies Literary Club, American Fork, Utah
 Utah County Central Labor Council, Provo, Utah
 Associated Civic Clubs of Northern Utah, Brigham City, Utah
 KOVO Broadcasting Co., Provo, Utah
 Beaver County Water Users Association, Utah
 Weber County Water Users Association, Ogden, Utah
 Utah Water Users Association, counties of Davis, Morgan, Summit and Weber, Ogden, Utah.
 Salt Lake County Water Users Association, Midvale, Utah
 Springville Irrigation District and Springville Irrigation Co., Springville, Utah
 Provo Electric Power, Department of Utilities, city of Provo, Utah
 Springville City Council, Springville, Utah
 Utah County Central Committee, Republican Party, State of Utah
 Board of Utah County Commissioners, Provo, Utah
 Springville Chamber of Commerce, Springville, Utah.
 Orem Women's Club, Orem, Utah
 Greater Utah Valley, Inc., Provo, Utah
 Northwest Public Power Association, Inc., Vancouver, Wash.

**ENDORSEMENTS IN SUPPORT OF UPPER COLORADO RIVER STORAGE PROJECT—
ECHO PARK DAM PROJECT**

Associated Students, Brigham Young University, Provo, Utah
 Utah Mining Association, Salt Lake City, Utah
 Women's Council of Provo, Provo, Utah
 Vernal Chamber of Commerce, Vernal, Utah

TELEGRAMS RECEIVED IN SUPPORT OF UPPER COLORADO RIVER BASIN STORAGE PROJECT—
ECHO PARK DAM

Utah Wildlife Federation, Salt Lake City, Utah
 Utah Fish and Game Commission, Salt Lake City, Utah
 Ellis Mower, Provo, Utah
 Provo Exchange Club, Provo, Utah
 Utah Federation of Women's Clubs, Provo, Utah
 Provo Lions Club, Provo, Utah
 Board of Trustees, Utah State Agricultural College, Logan, Utah
 Midvale Business and Professional Women's Club, Midvale, Utah
 Utah State Federation of Business and Professional Women's Clubs
 Chambers of Commerce, Rock Springs and Green River, Wyo.
 Junior Chambers of Commerce, Rock Springs and Green River, Wyo.
 Lions Club, Rock Springs and Green River, Wyo.
 Kiwanis Club, Rock Springs, Wyo.
 Exchange Club, Rock Springs, Wyo.
 Rotary Club, Rock Springs, Wyo.
 Business and Professional Women's Club, Rock Springs, Wyo.
 Federated Women's Club, Rock Springs, Wyo.
 Committee for Industrial Development of Southwestern Wyoming
 B. F. Barber, Provo, Utah; Les Reese, Provo, Utah; Grant D. Richens, Provo, Utah; Don A. Jensen, Provo, Utah; Myron Fulrath, Provo, Utah; Len Cockrell, Provo, Utah; Vern Davis, Provo, Utah; Paul Fields, Provo, Utah; Grant Jacobsen, Provo, Utah; Bill Whittaker, Provo, Utah; Theron Luke, Provo, Utah; Mac McFarlane, Provo, Utah; Curtt Curtis, Provo, Utah; Dean Leavitt, Provo, Utah; Wayne Close, Provo, Utah; Ken Weaver, Provo, Utah; Alt Steele, Provo, Utah; Allen B. Sorensen, Provo, Utah; Dick Stone, Provo, Utah; Bert Smith, Edgemont, Provo, Utah; Don Sims, Provo, Utah; Lynn Searle, Provo, Utah; Fred Forbes, Provo, Utah; Dal Clark, Provo, Utah; Don Carlson, Provo, Utah; Al Lewis, Provo, Utah; Harry Olsen, Provo, Utah; Wally Glover, Provo, Utah; Ray Ivie, Provo, Utah; Chet Oliver, Provo, Utah; Ken Houston, Provo, Utah; Lynn Moulton, Provo, Utah; Bob McGee, Provo, Utah; Larry Jones, Provo, Utah; Dick Castleton, Edgemont, Provo, Utah; Tom Bullock, Provo, Utah; Beck Clark, Provo, Utah; Jack Daynes, Provo, Utah; Sid Faden, Provo, Utah; Doug Hendricks, Provo, Utah; Vern Wentz, Provo, Utah; Charley Wilde, Provo, Utah; Bob Strong, Provo, Utah; Jim Winterton, Provo, Utah; Stephen L. Scroufe, Salt Lake City, Utah; A. M. Buranek, Salt Lake City, Utah; Ralph Hafer, Salt Lake City, Utah
 Strawberry Water Users Association, Payson, Utah

ENDORSEMENTS IN SUPPORT OF UPPER COLORADO RIVER STORAGE PROJECT—ECHO PARK
DAM PROJECT

Fred Turner, New York; A. B. Vandel, New York
 Salt Lake City Junior Chamber of Commerce, Salt Lake City, Utah
 Amasa A. Davidson, Sandy, Utah; Gene L. Taylor, Salt Lake City, Utah; Stanford R. Mahoney, Salt Lake City, Utah; George D. Fehr, Salt Lake City, Utah; John H. Littlefair, Salt Lake City, Utah; L. J. Hepworth, Salt Lake City, Utah
 City of Richfield: Chamber of Commerce, Jaycees, Lions Club, Rotary Club and Kiwanis Club, Richfield, Utah
 Salt Lake City Lions Club, Salt Lake City, Utah
 Malcolm C. Petrie, Salt Lake City, Utah; Gwen R. Taylor, Salt Lake City, Utah
 Salt Lake County Farm Labor Association, Salt Lake City, Utah
 E. J. Heiser, Salt Lake City, Utah; Jos. S. Walker, Pleasant Grove, Utah; M. E. Harris, Salt Lake City, Utah; Walter Conrad, Reno, Nev.; Milton E. Danitschek, Salt Lake City, Utah; Paul F. Catterson, Salt Lake City, Utah; J. Verne Taylor, Salt Lake City, Utah; American Legion Post, Wm. R. Sands No. 5, Myron, Utah; R. Neal McDonald, Salt Lake City, Utah; A. A. Chenery, Salt Lake City, Utah; L. W. Cramer, Salt Lake City, Utah
 Public Affairs Forum of Utah County, Irma Sayer, secretary, Provo, Utah

ENDORSEMENTS IN SUPPORT OF UPPER COLORADO RIVER STORAGE PROJECT—ECHO PARK
DAM PROJECT

Timpanogos First District Federation of Women's Clubs, Provo, Utah
 Utah Sorosis, member of Utah Federated Women's Clubs, Provo, Utah
 Utah Committee on Industrial and Employment Planning (signed by 80 representatives of chambers of commerce, civic and service clubs, labor organiza-

tions, farm and trade associations, State and local government agencies, veterans' and women's groups, educational institutions and churches)
 Hon. J. Bracken Lee, Governor of State of Utah, Salt Lake City, Utah; Norman P. Stromness, Salt Lake City, Utah; H. W. Gilmore, Fort Duchesne, Utah; Fisher Brewing Co., Salt Lake City, Utah; Dixon Taylor Russell, Provo, Utah; Sterling E. Price (member, National Wild Life Association, Provo, Utah; Glen P. Weeter, Provo, Utah; Warren G. Weeter, Provo, Utah; L. O. Tripp, Salt Lake City, Utah; Ronald K. Schultz, Provo, Utah; Rita Paulsen, Provo, Utah; A. M. Barlow, Provo, Utah; Lloyd E. Thompson, Provo, Utah; Eunice D. Foster, Provo, Utah; John C. Deo, Clearfield, Utah; State Senator Elias L. Day, Salt Lake City, Utah; Dr. Grant D. Richens, Provo, Utah; Mrs. Louis C. Farmer, Provo, Utah; Mrs. Fern Lewis, Provo, Utah; Mrs. Wm. J. Vincent, Salt Lake City, Utah

RESOLUTIONS PASSED IN SUPPORT OF UPPER COLORADO RIVER STORAGE PROJECT—ECHO PARK DAM PROJECT

East Mill Creek Lions Club, Salt Lake City, Utah
 Utah Associated Garden Clubs, Salt Lake City, Utah

SUPPLEMENTAL LIST OF MESSAGES IN SUPPORT OF ECHO PARK DAM PROJECT

Utah State Agricultural College Alumni, Logan, Utah (telegram)
 Kiwanis Club of Salt Lake City, Utah
 Sanpete County (Utah) soil conservation district, Manti, Utah
 Leland O. Campbell, Salt Lake City, Utah; Roy Despain, Salem, Utah (boatsman and guide on Yampa and Green Rivers); Richard A. Brown, Salt Lake City, Utah; Wm. J. Bouck, Salt Lake City, Utah; R. H. Daines, Salt Lake City, Utah; D. R. Waller, Salt Lake City, Utah; D. T. Hansen, Salt Lake City, Utah; M. B. Haspinan, Salt Lake City, Utah; Vern M. Christensen, Bountiful, Utah; Dick Long, Salt Lake City, Utah; Rodney Egan, Salt Lake City, Utah; Ariel Taylor, Salt Lake City, Utah; Verl H. Stevens, Kearns, Utah; Robert C. Ashdown, Bountiful, Utah; J. O. Roestenburg, Salt Lake City, Utah; Willis Ure, Salt Lake City, Utah; Benjamin Abel, Salt Lake City, Utah; Wm. C. Taylor, Salt Lake City, Utah; Myron Kiddle, Salt Lake City, Utah; Les Schwaar, Salt Lake City, Utah; John B. Allison, Salt Lake City, Utah; Ray S. King, Salt Lake City, Utah; Donald K. Ruord, Salt Lake City, Utah; G. Wesley Boyle, Salt Lake City, Utah; Grant B. Bitter, Salt Lake City, Utah; Peter L. Madsen, Salt Lake City, Utah; Bertha M. Madsen, Salt Lake City, Utah; Eva Christensen, Salt Lake City, Utah; Vieldrik Boekweij, Salt Lake City, Utah; Mrs. Grant Humphries, Salt Lake City, Utah; Virginia Smith, Salt Lake City, Utah; Maud McDonald, Hinkley, Utah

STATEMENT OF HON. DOUGLAS R. STRINGFELLOW, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

MR. STRINGFELLOW. Mr. Chairman and members of the committee, I certainly appreciate the courtesy which has been extended to me and my colleagues in the Congress. Only one of us happens to be a member of this committee. We appreciate the interest and the judicious hearing that you are giving this controversial subject.

I am submitting with your permission, Mr. Chairman, a written statement, and for the sake of time I would just like to say a few remarks, and then sit down.

The Colorado storage project is a very bold project conceived by the Bureau of Reclamation in cooperation with the five States of the Upper Colorado River Basin to enable them to utilize their apportionment of the Colorado River water. Legislation in the form of my bill and other bills submitted by my colleagues authorizing the construction of this basin development is now being studied by your committee. The future of this vast area is in your hands and needless to say, your committee is faced with making a very momentous decision.

I have gone back into the history of previous projects, namely, the Columbia Basin project, the Boulder Canyon project, the Central Valley project in California, and they were all conceived in an atmosphere of controversy, and they were all born into an atmosphere of controversy. Gentlemen, need I remind you of the very courageous and foresighted stand taken by the Members of Congress when they passed approvingly on this legislation.

It is easy for us to sit here and see what wonderful things the projects have done and to take pride in the foresighted approach of the Congress. For example, we practically made California as a result of reclamation development on the Colorado River. It is a known fact, and the facts that I have here will prove that reclamation is one of the most feasible investments the United States Government has ever made. Federal investment will be paid back. Naturally we subsidize different features of the project, but that is the heart of the reclamation program; help the little man make new homes and assist in the economic development of an area.

I will not go into the figures that I have in my statement, but I would like to stress this one. Based on the projected results of a sample study of 15 reclamation projects, the estimated cumulative return to the Treasury from the 69 projects or divisions of the projects receiving water under the Federal reclamation program in 1953, now stands at well over \$3.1 billion. This is an amount greater than the total reclamation expenditures for all project works either complete or incomplete since the beginning of the Federal reclamation program in 1902.

The benefits accruing to the Nation through reclamation development are also measured in terms of families served, crop-production value, livestock raised, and acres irrigated.

It would be too much of an imposition on your time to try to explain the economic importance of the development of this area not only to the Nation but to my State and to the surrounding States. So we have proven that the investments made in the past in reclamation are sound, even though they received their birth in an atmosphere of controversy.

My purpose in coming before the committee today is just to ask this committee to be as judicious as it can, to view the projects with foresight and courage, as did your predecessors in developing other areas in the United States. It is a proven investment. But unlike other areas of the United States there are many points peculiar to this one area. I have a great deal of respect for men like Mr. Larson and Mr. Jacobson, for the economists, the same engineers who conceived other reclamation projects, that have proven sound, and if you gentlemen were faced with the same decision today as were your predecessors, there would not be one dissenting vote with reference to the investment we have made in reclamation development.

The entire area is being develop. It is an entire river movement.

I would like to point out for the sake of my colleague, for whom I have a great deal of respect, Mr. Hosmer, that it takes uranium and other fissionable materials to produce atomic power. Located within the Colorado Basin is the greatest domestic occurrence of uranium, and you cannot develop it unless you have water and power.

We should also be concerned about the vast potential of vanadium and in the Colorado Basin, we also have the largest source in the entire world of magnesium chloride. You are aware, I am sure, of the importance of magnesium chloride to national defense. In the basin we

have 17 percent of all coal reserves in the world. But there is a big "if" involved in the entire picture, and we will realize the enormous economic impact only if we get the water and power to develop the area.

Now, there is one thing—I hate to bring this into the hearing right now, because I know it is going to blow off the roof when it opens up—and that is the argument which the conservationists are going to bring in with reference to encroachment upon scenery. Need I remind the committee that Utah is my State? We are just as concerned about the scenery of Utah as anybody. Sitting here in the committee room today you have over 75 people from that very area. Utah is their home, and they know more about the area, gentlemen, than any one of us. When the conservationists come before you, I hope you will realize that in this area we have two resources. We have the scenery resource, and we have the water resource. The development of one makes the other one attainable.

For me to stand here and say that there will not be any encroachment upon our scenery would be faulty, because naturally when you pour water in a glass you cover up the bottom. I would like you to make sure that all of these people who testify in reference to scenery encroachment are asked if they have ever been there, and ask them how many acres of irrigated land they have. Ask them if they have ever gone out and coaxed a stream of water down a furrow that is parched and dry. That is the same emotionalism approach they are going to use, but gentlemen, mine is based on fact and not political expediency.

I just hope and pray that this Congress, the 83d Congress, 2d session, is as foresighted in its approach to this enormous development which has been recommended by sound engineers and economists as were its predecessors in recommending other projects which were equally as controversial.

I appreciate your giving me this time, Mr. Chairman.

Mr. HARRISON. Thank you very much, Mr. Stringfellow. Your written statement, without objection, will be received and made a part of the record at this point.

Mr. STRINGFELLOW. Thank you.

STATEMENT OF HON. DOUGLAS R. STRINGFELLOW, MEMBER OF CONGRESS, 1ST DISTRICT, UTAH, IN FAVOR OF H. R. 4463, AUTHORIZING CONSTRUCTION OF UPPER COLORADO RIVER PROJECT AND PARTICIPATING PROJECTS

Mr. Chairman and members of the House Interior and Insular Affairs Committee, I want to express my gratitude to you for this opportunity to appear and testify in support of my bill H. R. 4463, which authorizes construction of the upper Colorado River storage project and participating projects.

If I do nothing else in my brief appearance today, let me indelibly press upon your minds how very much this project means to us in Utah and to the West in general. This room is filled with many of my friends from Utah who have traveled more than 2,000 miles just to be present and hear these proceedings. I am only a freshman Congressman, but in my heart I feel that the authorization of this project may well be one of the most momentous tasks I will personally undertake for the people of my State during my tenure as their representative in Congress. Years of work, study, and research have gone into each of these projects and we believe each is economically feasible and justified.

The Colorado River storage project and participating projects is a bold plan conceived by the Bureau of Reclamation in cooperation with the five States of the Upper Colorado River Basin to enable them to utilize their apportionment of Colorado River water. Legislation (H. R. 4463) authorizing the construction

of this basin development is now being studied by your committee. The future of this vast area is in your hands. Needless to say your committee is faced with making a momentous decision.

However, the situation in which you find yourselves is not new. Need I remind you of the debates which occurred during the consideration of the Boulder Canyon project authorized in 1928, the Columbia Basin project authorized in 1935, and the Central Valley project authorized in 1935, to name only a few. These were highly controversial.

Decisions on the aforementioned completed projects were made courageously and based on facts after careful deliberation.

For a moment let's review the decisions which have been made by preceding Congresses in regards to reclamation. The soundness of the Federal investment in the field of reclamation is apparent in such a wide variety of nationally important attainments that the reclamation program emerges as one of Uncle Sam's most profitable investments. As a direct result of 50 years of reclamation work and planning we have accomplished the following:

(1) Over 7 million acres of fertile farmland receiving either a full or supplemental supply of irrigation water through Bureau-constructed works.

(2) One hundred and twenty-five thousand family-sized farms and a like number of suburban units are receiving irrigation water through reclamation projects. These same projects provide municipal and industrial water service to over 2 million people.

(3) We have realized 47 harvests of choice fruits, nuts, vegetables, feed, forage, and field crops, having a combined value of almost \$9 billion. The 1952 harvest was valued at \$850 million.

(4) Twenty-five hydroelectric powerplants have been constructed with an installed capacity of 4,506,200 kilowatts. During fiscal year 1953 these plants grossed \$48.8 million from 25.9 billion kilowatt-hours of hydroelectric energy.

(5) Nearly \$510 million in direct project revenues have been paid into the Treasury of the United States in the form of water service or construction account payments by water users and revenues from the sale of low-cost hydroelectric power. (In addition water users have paid the entire cost of operating and maintaining the irrigation features of projects.)

The total cost of project plants, property, and equipment from the inception of the program through June 30, 1953, involved in attainment of these outstanding accomplishments, aggregated \$2,406 million. And of the \$2,406 million over \$450 million was tied up in project features still under construction. Thus the specific accomplishments of reclamation's first half century are based on completed work costing approximately \$1.9 billion.

The magnitude of figures running in the millions and billions escapes the average individual. Comparison of reclamation costs with the cost of other Federal programs, however, helps to make them more understandable and at the same time accents the soundness of the Federal investment in reclamation. The total cost of all project plants, property, and equipment on all reclamation projects from June 17, 1902, through June 30, 1952, would finance the Department of Defense for only 20.3 days at the rate of expenditure prevailing in fiscal year 1952, and would meet the cost of our programs of assistance to foreign governments for only 150 days in the same year. The fiscal year 1952 expenditures of the Bureau would have financed the Department of Defense for only 2.3 days, the foreign assistance program 17 days, and the Veterans' Administration for only 18.2 days.

Each step taken in the development of the Nation's basic resources moves the economy of the Nation to a new and higher plateau. This is strikingly demonstrated in an analysis of Federal tax revenues from Federal reclamation-project areas. Based on the projected results of a sample study of 15 reclamation projects, the estimated cumulative return to the Treasury from the 69 projects or divisions of projects receiving water under the Federal reclamation program in 1953 now stands at well over \$3.1 billion. This is an amount greater than total reclamation expenditures for all project works either complete or incomplete since the beginning of the Federal reclamation program in 1902.

The benefits accruing to the Nation through reclamation development are also measured in terms of families served, crop production and value, livestock raised, and acres irrigated. They are expressed in rapidly expanding trade and business activity, in direct repayment to the Government by the beneficiaries of reclamation, in increased population on and adjacent to projects, and in a wide variety of other phenomena. These are all tangible, measurable benefits of a broad and lasting nature. They translate into expanding business activities in the project and surrounding areas. They filter through this process additional

economic stability to the Nation which is reflected in part by increased revenues to the Treasury in the far-away States and areas as well as on the projects themselves. The estimate of Federal tax revenues from reclamation-project areas is, therefore, only a partial measure of the true contribution of basic reclamation-resource development to the Nation's tax structure and to the economy as a whole.

Long after project costs have been repaid by water and power users the new wealth created through Federal reclamation investment will be reflected in a continuous flow of tax revenue from the projects themselves and from the rest of the Nation as well.

The tabulation of the 1953 crop returns indicates that a harvest worth an estimated \$936 million was taken from approximately 7 million irrigable acres provided with a full or supplemental water supply through Federal reclamation developments. This is the third consecutive year of crop values in excess of the three-quarter-billion dollar figure and the seventh year of values exceeding the one-half billion dollar mark.

The combined value of all crops since the first reclamation harvest now stands at well over \$8.9 billion. This cumulative crop value is over four times the total cost of project plant, property, and equipment for all reclamation-project features through June 30, 1953, including nearly one-half billion dollars of construction work in progress. This comparison, moreover, is based upon the cost of all reclamation investments including power, navigation, flood control, municipal water, recreation, fish and wildlife, and irrigation. It is not based on irrigation alone.

Unimpeachable evidence of the contribution of a vigorous western economy to the well-being of the Nation is provided in an analysis of freight shipments consigned to the irrigated West by the Eastern States and the freight originating in the West and delivered throughout the rest of the Nation. A 1 percent sample study of waybills conducted by the Interstate Commerce Commission in 1951 indicates that 1,544,300 cars carrying a net load of 39,820,200 tons were shipped into the 17 Western States from the 31 Eastern States and 2,210,400 cars were loaded with 71,927,900 tons in the 17 Western States for shipment to the 31 Eastern States.

Every segment of the Nation's economy has participated in the construction of reclamation's engineering achievements. In doing so every section of the Nation has been benefited by reclamation long before the impact of prosperous and consumed markets had been measured.

The preceding brief analysis is a Horatio Alger theme on a magnificent scale, not the rise of an individual nor the rise of a community, but the economic growth of an entire area known as the West, comprising more than three-fifths of the land area of the continental United States.

Water is the secret of this story.

Even though the various reclamation projects were born in an atmosphere of controversy the foresight displayed by this committee and the Congress in casting an approving vote is unquestionable in view of the facts. Now you members of this committee have been called upon to make another very important decision. The Colorado Basin States are suffering economic atrophy. We need water. Utah is looking toward the Colorado River as its only hope.

I know this committee will act as courageously as did your predecessors. Your approval of the legislation which will authorize the development of the Colorado Basin would have a dynamic effect on the economy of the entire Nation.

Most Americans became aware of the existence of the upper Colorado Basin as an entity when they read of the various accounts of the controversy now raging as to whether this area, rich in the minerals essential to a great industrial Nation, should be reserved for its scenic grandeur in a wilderness state, or whether the water and power resources should be developed as an initial step in making tremendous resources available to the Nation.

Few Americans have gained the proper perspective of this Utah-Colorado area which is capable of providing both mineral and agricultural resources and at the same time opening its doors to the tourists who will come to view its grandeurs. We have proceeded in discussions as though it were either a wilderness or an exploited area. We should have viewed it not only as a scenic area, but also one offering tremendous potential natural wealth. At present the scenic resource is as locked in those mighty canyons as are the mineral resources. The development of one makes the attainment of the other possible.

Utah is my State. I am as much concerned with the maintenance of its superb

scenery as I am in the development of its latent resources. I know of hundreds of miles of spectacular canyon scenery through which you can walk on dry ground because no water is available. These canyons are exquisitely formed and colored and certainly contain an abundance of good dam sites, but no water.

Witnessing these hearings today are many people who live in the Basin area where these dams and reservoirs will be constructed. They are Democrats and Republicans, conservationists and members of wild life federations. They know the area better than any of us. It is their home. This project has been under consideration for many years. They have not, therefore, been stampeded or had their thinking warped by stupid emotionalism or political expediency. The argument of the conservationists has been weighed against that of economic necessity.

Probably no term in economics has become more hallowed to the noneconomist than the word "conservation." In politics conservation stands now as a watchword, under the cloak of which to give subsidies, build political empires, and vilify any who raise a voice against conservation proposals, regardless of what is being dubbed conservation.

The argument is not a matter of use or disuse. Conservation is concerned with the when of use.

Therefore, we from Utah cannot get too excited about a slight impairment of a very minor segment of the State's scenic resources if that impairment itself provides access to resources for all the people and at the same time unlocks the coal, oil, oil shale, uranium, vanadium, manganese, potash, phosphorous rock, gilsonite, asphalt and other resources of the basin. The development which we are now considering will do precisely the latter; moreover, at the same time it will make possible thousands of new opportunities in farming and ranching and thousands of new jobs in industrial facilities in the basin and throughout the Nation. It will provide a reliable American source of supply of many of the resources essential to us in the atomic age—peace or war.

The national insurance aspect of the basin is one which should not be treated too lightly. It is a characteristic not found in other areas of the United States. The potential is incalculable. The greatest occurrence of a domestic supply of vanadium and uranium in the United States is in this area. Need I stress the importance of an orderly development of these deposits in case we lose our offshore supply.

The upper Colorado Basin contains approximately 17 percent of the world's coal resources. Much of it can be developed as a rich source of synthetic oil by hydrogenation or gas synthesis process. At present United States consumption of petroleum runs about 5 million barrels per day and the coal resources of the upper Colorado Basin, if synthesized for oil would meet these tremendous national demands for well over 2,000 years.

The oil shale resources of the upper Colorado River Basin are not yet fully known, but estimates indicate that there may be locked within those shales over 500 billion barrels of oil. Using a 1952 figure the domestic demand for oil was almost 3 billion barrels a year. There is then a potential supply of oil from oil shale to meet our present demands for 190 years.

The world's greatest supply of magnesium chloride is found in the basin. Also about three-fourths of the phosphate ore reserve occurs in the upper Colorado River Basin and the adjacent Bonneville Basin.

Gentlemen, I could go on and on for many hours describing the potentialities of the upper Colorado River Basin and what its development would mean to the economy of the United States and by way of furnishing us national insurance of a domestic supply of critical minerals.

This is the point I would like to emphasize, the key to the utilization of this potentially rich area is water and power, the only source of which is the Colorado River. If for lack of foresight the proposition is turned down, the area will remain an arid wasteland forever.

It is true that Utah and Colorado stand to gain the most from the immediate authorization of these projects inasmuch as they will be the direct recipients of most of the water and power made possible by the construction of these dams and reservoirs. However, secondary benefits will accrue to all adjacent States, and in fact to the whole Nation from this development. For instance, the great industrial boom which California has experienced during the past two decades has been immeasurably advanced by the vast amounts of coal, iron ore, and other minerals supplied by Utah mines. In the field of power, southern California has benefited most from the great hydroelectric development which is an integral part of the Boulder project. Yet opponents of Hoover Dam detained construction of this mighty dam just as the opponents of the upper

Colorado River project are now voicing objections to the construction of these reservoirs and dams.

The construction of Echo Park Dam and development of the central Utah projects will insure needed water and power, not only for irrigation of arid land but also for continued development of our great mineral wealth. We must never forget that the Colorado Plateau located in eastern Utah and western Colorado is potentially the greatest mineral producing area in the world.

The only reason this region hasn't been developed at an earlier date is because of its remote location and the fact that any mining or industrial development is dependent upon a continued and adequate supply of water.

Some of the States belonging to the lower Colorado River compact are concerned for fear that the building of these dams will impair their water supplies. Of course this is completely untrue, because the existing compact clearly calls for the delivery of so many acre-feet of water each year and the development of storage space in the upper regions of the Colorado will actually insure rather than threaten such commitments. Therefore, any of the lower States who are hesitant or whose representatives are opposing this project are being very shortsighted. If Utah and Colorado fail to gain approval for these projects, then California, Arizona, New Mexico, and Nevada, and in fact the whole West will lose forever two of our most precious resources—water and power. Because when water is wasted, it can never be reclaimed, and we can't afford to lose a single drop of this liquid gold.

We in Utah are proud that our pioneer forefathers developed the first irrigation canals and extensive system of reservoirs and dams in the United States. During the past 100 years we have indeed succeeded in making the desert blossom as a rose, just as predicted by Brigham Young. We can reclaim more of the desert and convert more of nature's treasures for the benefit of mankind if we can succeed in extending irrigation to eastern and central Utah just as we have brought all of the valley of the Great Salt Lake under cultivation. To succeed, we need only obtain congressional approval and authorization for these projects.

By favorably reporting my bill, H. R. 4463, the House Interior and Insular Affairs Committee can unlock this vast storehouse of mineral wealth, not only for the good and benefit of the West, but to provide abundance and security for all our Nation. The decision which is made this year by this committee will either provide the water and power to keep the wheels of progress turning in the West or else paralyze and retard future growth forever or until such time as courageous farsighted legislators have the initiative to take this bold step. I urge and implore you to be men of vision, true statesmen, and to vote for immediate authorization of all phases of the upper Colorado River project and participating projects as previously favorably reported by the Bureau of Reclamation and by the Secretary of the Interior.

Senator WATKINS. Mr. Chairman, Congressman Stringfellow touched on a subject in his statement just completed which bears repeating and enlargement upon, and I would appreciate being given a minute or two to do so.

Mr. HARRISON. The request of the Senator from Utah is granted. You may proceed, Senator Watkins.

Senator WATKINS. A new approach to reclamation, in a sense, was forced upon supporters of the project and Bureau of Reclamation engineers. Under the Colorado River compact of 1922, and a subsequent treaty with Mexico, the upper basin States gave a priority of use for their portions of the waters of the river to the lower basin States and Mexico. No matter what happens, we must see that this reserved water gets downstream. It is a first mortgage on the river before we can safely take out any water for the upper basin States under the compact.

Furthermore, when this vitally needed water of the Colorado is made available to the upper basin States it must be obtained from deep canyons and distributed to water users in a drainage area of 110,000 miles, an area larger than New York, Pennsylvania, and New Jersey combined. Portions of four States—Colorado, Utah, Wyo-

ming, and New Mexico—are dependent upon a solution to this problem for water and power to make possible future economic and population growth.

Because of these complexities, the decisions was made to regard this river development as one large project. The comprehensive development of the upper Colorado River Basin contemplates the construction of an interlocking system of dams to be constructed on the tributaries and the main stem of the Colorado River to assure full and complete regulated flow and the maximum advantage. Opponents of this project direct their attacks at the Echo Park Dam, alleging that construction of Flaming Gorge and Cross Mountain, or multiple other combinations, could do the job without constructing Echo Park Dam within the confines of Dinosaur National Monument. I point out to the members that Flaming Gorge and Cross Mountain, as well as some other recommended alternatives for Echo Park, constitute an integral part of this comprehensive control plan. The dams recommended are necessary to the overall basin development and were selected after consideration of about 250 different sites.

The eventual outlay sought for the project amounts to about \$930 million, including \$21 million for recreation development of the Dinosaur National Monument. This sum, if authorized, will be expended over 20 to 40 years, which is the period of time estimated to be required for construction.

While this amount may look large, I desire to point out that this will be a self-liquidating project.

In explanation of the statement that this project is self-liquidating, it would be well to keep in mind that this project is self-liquidating by the residents within the confines of the upper Colorado River Basin. By that I mean the revenue both from irrigation and power will be paid by the residents of those portions of the four Western States comprising the upper Colorado River Basin. We residents will buy the power, and we will use the water, and we will pay the Federal Treasury every penny which it cost to construct this project, with interest. We have asked for Federal assistance in the nature of financing the construction of this project, which is beyond our means to otherwise finance. We in the West have, through private enterprise, developed much of our water resource. In fact, we have done all that is humanly possible and, therefore, we now ask assistance from the Federal Government in order to accomplish that which we are helpless to accomplish in any other way.

The heaviest costs of the project arise from the two storage-power units on the main stem. I should like to point out that the storage features of those structures are made necessary by those prior commitments on Colorado River water mentioned previously. It ought to be obvious to everybody now that we will not have any water for irrigation and municipal water supplies unless the upper basin is able to satisfy the people downstream and be able to carry water over from good years to dry years in those mammoth reservoirs. While probably no water will be directly diverted out of those reservoirs, they will make possible the impounding of water in those smaller participating units. Furthermore, the key big dams of Echo Park and Glen Canyon will supply the bulk of the power revenues required to finance the whole project.

The conservationists have viciously attacked plans for construction of the key Echo Park Dam, thereby ignoring the overall plans for the

basin development, and disregarding the chief fundamental object of conservationism in the semiarid West. This fundamental purpose, established in the pioneer days of the West, is that water must be the first resource to be conserved if the West is to survive, let alone grow and prosper.

The conservationist opponents should have been the strongest supporters for this great water conservation program, because many of them realize clearly how desperately water is needed in the West, and particularly in the upper basin area.

Alternate sites suggested by these opponents unquestionably would lose from 120,000 to 250,000 acre-feet of water per year more than would be lost to evaporation at the Echo Park Dam site. This means that enough water to supply a city of a half million people would have been lost if the people in that area could have succeeded in leaving Echo Park out of the project development plans. And there is no way that the water, once lost, can be replaced in that area.

Such opposition is the more deplorable when it is considered that this vital water is saved, and the project is speeded by inclusion of Echo Park, and at little or no loss to those of us who love rugged western scenery just as much as any so-called conservationists.

STATEMENT OF L. C. BISHOP, WYOMING STATE ENGINEER

Mr. HARRISON. Mr. Bishop, will you give your name and qualifications to the reporter there?

Mr. BISHOP. Mr. Chairman and members of the committee, my name is L. C. Bishop. I am the State engineer of the State of Wyoming. I have been a practicing irrigation engineer in Wyoming since 1907. Since 1939 I have been State engineer of the State of Wyoming.

Wyoming is in complete accord with the policy of the Department of the Interior for basinwide development of the water resources without regard to State lines.

We believe this development should be orderly and that each project should (1) meet feasibility requirements and (2) be selected where the most benefit will accrue to the greatest number of people.

If the upper Colorado River Basin States are to make good their obligation to deliver 75 million acre-feet of water at Lee Ferry in continuing 10-year periods, it is quite necessary that the storage project substantially as planned by the Bureau of Reclamation be constructed.

With the Colorado River unregulated only about half of the potential development can be justified in either the upper or lower basin and the storage project is necessary to hold water from the years of plenty for use in the years of drought.

Also if the States of this basin are to beneficially apply and consumptively use the water to which they are collectively entitled under the Colorado River compact of 1922 and individually under the upper Colorado River compact of 1948, it will be necessary to construct the participating projects substantially as planned.

The headwaters of four major river systems are located in Wyoming. They are: the Colorado, Bear, Columbia, and Missouri. About 11 million acre-feet of water flows across its borders each year for use and re-use in neighboring States and large quantities are wasted in

the Great Salt Lake and Atlantic and Pacific Oceans. We hope eventually to apply a small portion of this water to beneficial use and are quite willing that our neighbors may do likewise with their equitable share. We assume that the authorization legislation will be sufficiently flexible to permit including a unit such as Kendall Reservoir in Wyoming which we feel is the key project and quite necessary to provide storage for some of our participating projects.

I might explain at that point that that does not include the three projects listed in the authorization bill.

On this assumption we approve the proposed bill for authorization of the upper Colorado River storage project and participating projects as it opens the door for the States to get together and approve and sponsor projects in order of their importance and their several economic needs.

Since there has been a lot of opposition to Echo Park and Split Mountain Reservoirs, and on account of their importance in this basin-wide development program, I shall speak in support of these units.

All of the upper basin States are in agreement on the importance of these units of the storage project. I will discuss their merits from the viewpoint of Wyoming.

Wyoming is in complete agreement with the then Secretary of the Interior wherein he said on June 27, 1950:

I am impressed with the fact that the waters of the Colorado River constitute a resource of paramount importance to the region and that in view of the arid nature of the area, my approved plan for development of the upper basin must take every practicable provision for the conservation and multiple use of these waters in the interest of the people of the West and of the whole Nation.

I am not unmindful of the public interest in the inviolability of our national parks, and in the status, only a little less austere, of the national monuments. By no precedent of mine would I wish to endanger these places.

Weighing all the evidence in thoughtful consideration, I am impelled in the interest of the greatest public good to approve the completion of the Upper Colorado River Basin Report, including the construction of the dams in question, because:

(a) I am convinced that the plan is the most economical of water in a desert river basin and therefore is in the highest public interest; and, (b) the order establishing the extension of the monument in the canyons in which the dams would be placed contemplated use of the monument for a water project, and my action, therefore, will not provide a precedent dangerous to other reserved areas.

I note that the fossils are not in the areas of the monument proposed to be flooded and that the creation of the lakes will aid the public in gaining access to scenic sections of the Green and Yampa River canyons. Much superb wilderness within the monument will not be affected, excepting through increased accessibility.

The importance to the growth and development of the West of a sound upper Colorado River Basin program can scarcely be overemphasized. I hope this decision on my part will promote quick solution of all other problems connected with this matter so that we may proceed with such a program.

I ask the National Park Service and the Bureau of Reclamation to cooperate fully in making plans that will insure the most appropriate recreational use of the Dinosaur National Monument, under the circumstances.

That is signed "Oscar L. Chapman, Secretary of the Interior."

Following this declaration by the Secretary, the States of the upper Colorado River Basin felt that the reports of the Bureau of Reclamation and the National Park Service would soon be released and that the project would be authorized and construction soon proceed. However, the report was not released until near the close of 1952 and it left the status of the Echo Park Dam in doubt.

The principal reason Wyoming is concerned over this key unit is the fact that (1) we will eventually stand 14 percent of the evaporation

loss of from 100,000 to 300,000 acre-feet of water, this amount being the saving from operation of Echo Park Reservoir in place of the alternate sites (this would result in a minimum annual loss to Wyoming of 14,000 acre-feet of water), and (2) the added revenues that can be made available from power generated at this and other strategic locations to supplement irrigation construction funds, and (3) the many recreational benefits that will be made available to its citizens.

In all, the storage project will consist of some 10 to 12 dams with a combined capacity of about 48,500,000 acre-feet, of which 22,500,000 acre-feet will be for silt retention, minimum power heads and fish propagation. The remaining 26,000,000 acre-feet will be for conservation including irrigation of the lands embraced in participating projects.

In the selection of these sites the States of the upper basin have held many conferences with their engineers and the engineers of the Bureau of Reclamation with the view of selecting those that would provide maximum water utilization with minimum loss by evaporation and at the least cost.

In conclusion, a summary of the foregoing is as follows:

1. On the basis of present stream flow records it appears that the minimum cyclic storage required to permit full beneficial consumptive use of 7,500,000 acre-feet of water per year by the upper basin may be more than that presently planned. It would seem, therefore, that we should build soon those units which will most economically store and otherwise utilize the water.

2. The Echo Park and Split Mountain Reservoirs are integral units of a master plan which is the most economical from the standpoint of cost as well as saving of water, and is therefore in the best interest of all the people of the entire Colorado River Basin.

3. Creating of the lakes will make more accessible to the public the scenic sections of the Green and Yampa River Canyons.

4. The project will in no manner interfere with operation and maintenance of Dinosaur National Monument as none of the known fossils are located in the area to be inundated.

5. Recreational benefits will be materially increased. Thousands will visit the area where very few have visited it in the past.

6. Very little ranch land will be inundated by these reservoirs, while the opposite is true in the case of most large reservoirs.

States like Wyoming that have substantial areas in several river basins would like to see all basins receive the same consideration from the Congress and be developed concurrently. Substantial progress has been made during the last 9 years in other river basins; while no substantial progress has been made in the Colorado River Basin.

For the information of the committee I quote the following from my review of the report of the Bureau of Reclamation on the upper Colorado River storage project and participating projects:

It is noted that there is no recommendation in the proposed report for legislation permitting preferential use in the upper basin of electric energy generated by Colorado River storage project units. It is our belief that such a provision should be included in the bill for authorization of the project. We hope you will see fit to include an appropriate recommendation to this effect in your final report.

I will comment that the report is in accord with statements of plans proposed by Mr. E. O. Larson, director of Region No. 4, United States Bureau of Reclamation, at meetings held in Rock Springs, Wyo., and Salt Lake City, Utah, during the last 2 years. It seems to provide the flexibility for basin development and coordination of the interests of the States as proposed by Mr. Larson.

The plan has been made to conform with allocations of water contained in the upper Colorado River compact and provides storage facilities to assure delivery at Lee Ferry of not less than 75,000,000 acre-feet in continuing 10-year periods.

Reservoir storage is planned for multiple purposes. The plan is to hold over water from years of plentiful supply to meet the obligations of the upper basin at Lee Ferry under the terms of the Colorado River compact, and to produce revenues to assist in repaying the costs of the dams and other facilities.

As I read the revised report, I conclude that it was intended, as was the original report, to be subject to changes as further studies may warrant. We concur with your revised report's inclusion of the Eden, LaBarge, Lyman, and Seedskadee units among the participating projects for initial construction. In regard to the Seedskadee unit, I believe that the advance planning for the project should include further study of the possibility of providing storage at Kendall Reservoir to increase the project acreage—

In other words, studies show there is plenty of water for the project as planned without increasing the acreage, but we would like to have Kendall considered for an increase in that acreage—

and a possibility of including a high diversion dam at the Fontennelle site in lieu of the low diversion dam, diversion canal, and Green River siphon.

The plan of repayment for the various storage units and participating projects as advocated in the bills being considered by this committee is economically sound and financially feasible. It will provide for the repayment well under 50 years of all the power features of the project with interest and for the repayment of costs of irrigation features beyond the ability of the water users to repay.

The benefit-cost ratio of the overall basin project is favorable to the region and to the Nation as a whole.

This concludes my statement and thanks for listening.

Mr. HARRISON. Thank you, Mr. Bishop. Would any members of the committee like to question?

Mr. D'EWART. At the bottom of page 5 of your statement there is a reference to preferential use of electricity in the upper basin. Could you give us some citations where that has been done in other legislation?

Mr. BISHOP. That last paragraph, Congressman?

Mr. D'EWART. Yes. You say:

It is our belief that such a provision should be included in the bill for authorization of the project.

Is there any precedent for that, and, if so, where are they in present law?

Mr. BISHOP. I would not know where to cite that precedent, but I am sure there are such precedents.

Mr. D'EWART. That is all.

Mr. HARRISON. Mr. Aspinall, do you have any questions?

Mr. ASPINALL. Just two questions of very minor importance. Mr. Chairman.

On page 1 of your statement, Mr. Bishop, you state that the headwater of the Colorado River is in Wyoming. Now the headwater of the Colorado River, as such, is in Colorado, is it not?

Mr. BISHOP. I might explain, Congressman, that they made a mistake when they named that Green River; it should have been named the Colorado River in Wyoming because that is the principal source of supply.

Mr. ASPINALL. All right. I just wanted to know your thinking.

Also you stated that considerable amount of water from Wyoming was used in neighboring States. Is there very much water from Wyoming used in Colorado?

Mr. BISHOP. Well, not so very much.

Mr. ASPINALL. That is all right.

Mr. HARRISON. Senator Watkins, any questions?

Senator WATKINS. There is not much of it used in Utah either, is there?

Mr. BISHOP. Yes, quite a bit.

Senator WATKINS. At what point?

Mr. BISHOP. They are contemplating the use of a lot more of—

Senator WATKINS. Contemplating; but up to the present time they have not been using any of it. That is right, is it not?

(No response.)

Mr. HARRISON. Mr. Berry?

Mr. BERRY. Mr. Bishop, is there any plan contemplated for the use of coal in southern Wyoming to firm up power generated at this upper dam, do you know?

Mr. BISHOP. We have the coal, and we figure that will ultimately be in the program; yes, sir.

Mr. BERRY. It requires a lot of water, though, does it not in these steam plants?

Mr. BISHOP. Yes, sir. We have lots of coal, and we figure they will make gasoline from that coal some day and they will need a lot of water to process it.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Mr. Bishop, you make reference to the Kendall project. As I take it from your statement, you are merely referring to some studies to be made; is that correct?

Mr. BISHOP. Some what?

Mr. DAWSON. Some studies to be made in regard to the Kendall project.

Mr. BISHOP. The Kendall Reservoir will be located on the main stream above all of our other projects, and some of the projects need supplemental water supplies, and we figure we must eventually have Kendall, and we would like to have it first because it is a key project to the Wyoming participating projects.

Mr. DAWSON. Are you insisting that Kendall be put in the present bill or in some future bill?

Mr. BISHOP. We either would like to have it put in or have the bill flexible enough that it can be put in as it is needed.

Mr. DAWSON. Do you mean with just the Secretary's approval or with the requirement that it come back to Congress for congressional approval?

Mr. BISHOP. We would expect it to have to come back to Congress. We think that the authorization legislation should be sufficiently flexible that it could be included later by the Congress, I might say.

Mr. DAWSON. That is all.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. No questions.

Mr. HARRISON. Mr. Hosmer.

Mr. HOSMER. Mr. Bishop, on your first page of testimony you make the statement:

With the Colorado River unregulated only about half of the potential development can be justified in either the upper or lower basin and the storage project is necessary—

and so forth.

Do I understand by that that you intend to state that without the upper basin storage project only half the potentiality of the lower basin can be used?

Mr. BISHOP. I was looking at it as overall. Maybe more than half the lower basin could, but in order for the lower basin to get complete development they have to have some storage in the upper basin, some regulation of the river.

Mr. HOSMER. At any time in the past in any period of 10 years, that you know of, has the lower basin failed to obtain an average of 71½ million acre-feet a year?

Mr. BISHOP. No. We are way over the 75 million; that runs up around 125 million in continuing 10-year periods now.

Mr. HOSMER. With that in mind, I do not understand why this upper regulation is necessary or the—

Mr. BISHOP. Because the water goes down there, Congressman, at a time when they do not need it. Of course, Hoover Dam has assisted materially. Before Hoover Dam they got very little development down there, as you know. Hoover Dam has made a lot of it available. The other dams are to bolster up Hoover Dam and help hold back the sediment that will eventually fill Hoover Dam and decrease its life. And as I see, the whole upper and lower basin program should be worked out together. It is of benefit to all.

Mr. HOSMER. I notice you state in your testimony that these things should be considered on the benefit of the greatest good to the greatest number of people.

Mr. BISHOP. Yes.

Mr. HOSMER. And I certainly agree and highly approve of that. Now this question, Mr. Bishop: Having in mind the large uses of the water in the lower basin at the present time, having in mind also the fact that unless this water is of a certain minimum quality it might as well not be in the river, do you feel that there is a cause for concern with respect to the quality of the water on the part of the lower basin?

Mr. BISHOP. I figure that all those matters should be carefully considered. But just from a practical standpoint, we know that the quality of the water has been improved by Hoover Dam to the extent that it is usable downstream during the entire year where it used to be so muddy at certain times they could not use it at all; and then when it got real low the salt content was great. And as they get more of those reservoirs the quality of the water will be improved, in my opinion.

Mr. HOSMER. As a matter of fact, Mr. Bishop, if this upper Colorado project is carefully designed and it is not extended to an unreasonable length, it could be carried out without substantially impairing the quality of the lower water, could it not?

Mr. BISHOP. That is right.

Mr. HOSMER. And therefore, with that in mind, do you not think that it would be wise in this legislation, in order to remove the fears of those who are concerned with the quality of the lower basin water, to perhaps establish some guaranties in the legislation with respect to that at the present time and not leave them up to some future regulation?

Mr. BISHOP. I would not go as far as to say that I think they should have a guaranty. I think they should be given careful consideration by competent engineers to those matters and Congress should, of course, go by the recommendation of these men.

Mr. HOSMER. You are the State engineer for the State of Wyoming. Would your opinion be any different if you were the State engineer for the State of California?

Mr. BISHOP. I did not quite get your question.

Mr. HOSMER. I want to know if your answer would be a little bit different if you were State engineer for California instead of Wyoming.

Mr. BISHOP. No; it would not.

Mr. HOSMER. You think then that we have no reason to worry about this water?

Mr. BISHOP. That is right. I really think it is going to be improved. That is my honest opinion.

Mr. HOSMER. You have not made a thorough and detailed study of that, have you?

Mr. BISHOP. No, sir.

Mr. HOSMER. So you have just kind of a "horseback" opinion on that particular point?

Mr. BISHOP. Where we have these dams the quality of the water has been improved below them on account of holding the floods back and allowing the water to flow down in a larger amount during the low-water season and put clear water there all the time where heretofore it used to be muddy part of the time.

Mr. HOSMER. Of course, one thing is sediment and the other thing is salt.

Let me ask you this: Do you think this legislation could be written in such a manner as to remove any questions about quality of water?

Mr. BISHOP. I do not think that ought to be in the legislation. I think the reservoirs will automatically hold the silt back and do a lot of good to the lower basin and be a lot of benefit to the lower part of the country; but I do not think it ought to be in the legislation, anything about it. I think that will just take care of itself.

Mr. HOSMER. Then your opinion is based on your interest as a member of an upper Colorado Basin State?

Mr. BISHOP. My idea of the improvement of quality of water is based on operating a project for 25 years as a project manager and living on that stream for some 25 years before the project was built where we had the muddy water and the alkali low water.

Mr. HOSMER. What concerns me, Mr. Bishop, in that respect is your testimony a few moments ago with respect to the Kendall project as a "sneaker." Now we are worried about a lot of other "sneakers" in here. We would like to settle this thing from our lower basin standpoint.

Mr. HARRISON. Might I interrupt there? As the Representative from the State of Wyoming, I certainly resent the language and words of the gentleman from California suggesting that Wyoming would try to put something over as a "sneaker." I hope that he will request that that word be removed from the record.

Mr. HOMER. Well, sir, that word was used by the witness here and I was asking him with respect to it. So I do not think it is proper for me to withdraw the word from the record.

Mr. HARRISON. I just want to express at this time for the record that I, as a Representative from Wyoming, resent the use of that word. Proceed.

Mr. HOMER. Your testimony on page 4, Mr. Bishop, stated that your State, Wyoming, would eventually stand 14 percent of the evaporation loss on some 100,000 to 300,000 acre-feet of water. You, of course, base that statement on some calculations that you made?

Mr. BISHOP. According to my understanding of the compact, the upper basin States stand the evaporation loss in proportion to the amount of water they receive under the terms of the compact.

Mr. HOSMER. In other words, in calculating that figure you allocated no evaporation on account of the upper basin storage project to the lower basin; is that correct?

Mr. BISHOP. We could not do it if we wanted to the way the compact reads.

Mr. DAWSON. Will you yield for a question?

Mr. HOSMER. Yes.

Mr. DAWSON. It was my understanding in your statement you were referring to the 100,000 to 300,000 acre-feet that would be lost in evaporation if one of these alternate sites that have been suggested were used?

Mr. BISHOP. That is right.

Mr. DAWSON. And based on Wyoming's percentage of water in the upper basin States, you arrived at what Wyoming's share of that evaporation loss would be if they selected one of these alternate sites. That was your statement, was it not?

Mr. BISHOP. Yes, sir. And that would be enough water, I might add, to take care of a pretty good sized irrigation project in Wyoming.

Mr. HOSMER. With respect to the recommendations you made regarding the preferential use of electricity in the upper basin, you recognize the possibility of a question about the actual disposition of the electrical energy during the period up to which it could be all used in the upper basin, and from that a further question with respect to questions of people outside the upper basin considering the desirability of buying if they have terminable contracts.

In other words, my question is directed to the period of some 20 years, I think, as testified by Mr. Larson, during which sales would have to be made outside the upper basin in order to pay the project out as they have calculated. Now if somebody is going to be subjected to the terminable contract, do you think that they might think twice and sometimes refuse to purchase this power under those conditions?

Mr. BISHOP. I do not quite get what you are trying to get at.

Mr. HOSMER. My question is directed to the concern with selling this power during the period in which the upper basin will not be able to use all of it. And I would like to have the bill so written that any terminability provision in it would not prevent outside buyers from purchasing the power during that period. And I just wanted to know if you feel that that is something that should be considered by us.

Mr. BISHOP. Yes, I think it should, and I think it should be sold and the most return received from it that they can.

Mr. HOSMER. That is all.

Mr. HARRISON. I wonder if the gentleman from California would be kind enough to clarify his position for me as to his questions. I would like to know whether it is the gentleman's contention that as long as there is any possibility of impairing the quality of the water that the upper basin States should not be permitted to go ahead with any construction for the use of their share of the compact water.

Mr. HOSMER. No, sir; that is not my contention in any way, shape, or form. My contention is merely this: That this project to my mind can be designed and can be put into effect successfully—and I do not know about the feasibility because we have not gone into that in detail as yet—but I think that it can be done and carried on, and as far as we in the lower basin are concerned we would be happy to see it developed to its maximum use, in such a manner as the water we use down south can still be used for irrigation and still be used for

municipal water, if need be. We spend millions of dollars a year down there now in water purification units.

So on the basis of quality I have no objection to this bill whatsoever if through it we can make certain that we are not going to just have salt brine come down that river. I think that it can be done, and I think that as long as there has been a question raised with respect to evaporation as a matter of concern between the upper and lower basin, that that question too could be taken care of and settled at this time.

It is my desire, Mr. Chairman, to cooperate with the members of this committee and the Members of Congress and the Senate who are sponsoring this project to the fullest extent to see that it is carried through successfully and carried through under such conditions as it will be of the most benefit to the greatest number of people.

But I do not see any sense to it if it is carried on in such a manner as to take the oasis of California and return it into a desert, and at the expense of many millions of taxpayers' dollars, for the simple purpose of transferring a desert up further north into an oasis. I think that both of them can be oases out of deserts and operate side by side. My only desire is to insure that this legislation, Mr. Chairman, accomplishes that purpose.

Mr. HARRISON. Do you think the legislation should contain any different provisions than were contained in the lower basin authorizations for projects?

Mr. Hosmer. With respect to the quality of water, sir, there was no question as between the upper and lower basins because whatever the lower basin did had no effect upon the quality of the water of the upper basin. In this instance we have that problem and it should be met.

Mr. HARRISON. Of course, there were other members of the compact who received water through the Colorado River compact; is that not right?

Mr. Hosmer. Pardon me.

Mr. HARRISON. Mexico receives water, does it not?

Mr. Hosmer. That is correct, sir.

Mr. HARRISON. Then would you not say that Mexico would be just as entitled to receive assurance they would get good water as the lower basin would be?

Mr. Hosmer. It is probably a problem of all the three units—the upper and the lower and Mexico.

However, sir, when we are talking about language being stricken from the record, I did resent yesterday the implication that our States in the lower basin were in position, in equity at least, of having dirty hands and had no right to be heard or make a presentation.

Mr. HARRISON. I think the gentleman is completely wrong on that statement, and if such statement was made, I assure him it was never intended. But I wish he would show me that statement on the record such as he has stated. I really request at this time that you do show me. I assure you that should I have made such a statement inadvertently, I shall be very glad to retract it and apologize to the gentleman from California, and I request the gentleman from California to do the same thing.

Mr. Hosmer. I do not have the transcript.

Mr. DAWSON. I think I remember the statement. It was the rule in equity that he who seeks equity, must do equity and come into court with clean hands.

Mr. HARRISON. That is right.

I might say out of fairness—and I do not want to get into a wrangle here because we are taking up the committee's time—the gentleman from California and I have always gotten along and always will continue to get along. I must say, frankly, I had no intention of impugning anybody's motives. I merely made a statement of a rule that the gentleman, as an attorney, is familiar with. My only intention was to say by that, if you expect the upper basin to give you clear unimpaired water, then in the same reasoning you, yourself, should be expected to see that the other compact users below you receive the same treatment. If that was my intention, I cannot see that in any way that impugns anybody's motives. We merely asked that we be treated in the upper Colorado Basin the same as you are being treated in the lower Colorado Basin.

Mr. HOSMER. I think, Mr. Chairman, we are all going to work this out on a fair and square basis, as well as we can. Of course, as one of the witnesses said yesterday, when you talk about water you are talking about life and death for a particular area of our country.

Mr. HARRISON. I am sure the gentleman and I will get along.

Mr. HOSMER. So the feathers might fly a little bit. We have had actual shootings out in California about water, and as you will recollect, over a number of years. I do not think it is going to come to that here. On the other hand, I think we are going to be able to settle this amicably and to the satisfaction of all.

Senator WATKINS. Mr. Chairman, may I ask the Congressman a question?

Mr. HOSMER. Yes.

Senator WATKINS. I greatly appreciate his statement of being willing to help the upper basin States to put to use their water, but I think he is asking a little too much to ask us to try to guarantee in this legislation that we will not send the water down there in such condition it cannot be used. We have already, in effect, in the 1922 compact guaranteed California's water ahead of everybody else—I mean the lower basin States and also Mexico.

We have given that effective guaranty and have gone to heavy expense in order to make that good. I think it would be asking a little too much now to ask us to guarantee in this legislation that the water will not be unusable.

I will say this, that after a rather detailed study of this program personally and in consultation with the men who planned it, it seems to me that we have a project now that will really make the water more usable downstream than it has been before in many respects, including salinity. The high waters, the flood waters, which come from the high mountains where there is very little of the chemical exposed that brings about that condition, will be stored in these reservoirs, and the salt content will be greatly diluted, as I understand it, so you should get better water.

We do not want to send water down there to make a desert of lower California. We want to help you grow every way we can. You are

a good market for us down there, incidentally, and we want you to be there, millions of you. We hope you get the water out of the ocean and take the salt out of it and use it. I know that is being worked on. I want you to know we are not going to deliberately in any way send you salty water.

Mr. Hosmer. I appreciate that the Senator feels that way.

Senator Watkins. But I think it is a little too much to guarantee it will be just as you like.

Mr. Hosmer. The increase in the amount of concentration of salt in the water, by the testimony of the witnesses yesterday, was about 12 percent on these initial phases, and you gentlemen have many more projects developing in that area that will be proposed before long, and there is a percentage beyond which that water is no longer usable by us down south. I think when I used the term "guarantee" I would not expect, of course, any warranties on this score. What I meant by that, we can write this bill in such manner as to insure that that quality continues to be such as is usable in the lower basin States.

Senator Watkins. I would say, in reply to that, that the bill as now written, as a practical matter, will insure just what you said you wish.

Mr. Hosmer. Sir, I respect your judgment very much, but in this case I must differ with it.

Senator Watkins. Do you think as a matter of fact then—let us get this clear—that the way this project is planned it is going to increase the salinity of the water for California?

Mr. Hosmer. That was the testimony of the witnesses yesterday. I believe Mr. Dexheimer or Mr. Larson.

Senator Watkins. I did not so understand.

Mr. Hosmer. They so testified, I believe.

Senator Watkins. I did not so understand it, that it was going to make the water unusable.

Mr. Hosmer. He did not say that. But this bill, Mr. Senator, contains provisions about vast other projects, and actually states it is the intention of the Congress to approve them in the future, projects which, incidentally, have so far had no research work done on them.

Chairman Miller. Will the gentleman yield?

Mr. Hosmer. Yes, sir.

Chairman Miller. I just want to suggest to the chairman that questions between members of the committee might well be reserved for the executive sessions. We will have many of those that the committee members will want to thresh out among themselves, and it might be wise to proceed with our witnesses here and get the testimony before the committee. I see the chairman has about 30 names of people that want to be heard, and I would suggest, Mr. Chairman, if possible, you reserve the intracommittee questions for executive session on what is in the bill and so forth; that they be held in abeyance until we do hear these witnesses.

Mr. Harrison. Thank you, Mr. Bishop.

At this time I would like to ask unanimous consent to introduce a letter from Hon. C. J. (Doc) Rogers, the Governor of the State of Wyoming; also a statement by Hon. Howard Black, attorney general of the State of Wyoming, in favor of the proposed legislation.

(The documents referred to follow:)

WYOMING EXECUTIVE DEPARTMENT,
Cheyenne, January 15, 1954.

Hon. WILLIAM HENRY HARRISON,
*Chairman, and Members of the Subcommittee on
Irrigation and Reclamation.*

GENTLEMEN: This letter is presented to you by Hon. L. C. Bishop, State engineer of the State of Wyoming, who comes before your committee in the interest of legislation affecting the upper Colorado reclamation storage project and participating projects.

I have a very keen interest in the proposed legislation and its application to reclamation in Wyoming and neighboring States and sincerely hope that the necessary authorization for this program will advance to early enactment.

Mr. Bishop as a member of the upper Colorado River Commission has prepared and will present to you a statement covering this subject. I have read this statement and it has my complete approval.

It is not my purpose to furnish factual data to you at this time. This will be done by Mr. Bishop and others who will attend your committee hearings. I regret that I will not be able to attend the hearings myself but I wish to assure your committee that the gentlemen who will appear have my unqualified support in the presentation of our case.

I do feel, however, that I should explain briefly certain aspects of Wyoming's economy which would be materially improved by an early start of the construction of these participating projects within our State.

During the year 1953 that portion of the State of Wyoming which would be benefited most by the Seedskaadee, Lyman, LaBarge, and Kendall units was seriously afflicted by drought conditions. Those drought conditions, plus a material decrease in the price of livestock, have developed a serious economic problem in a considerable portion of the southwestern ranching section of Wyoming. In addition to these unfavorable conditions, this same area which has extensive coal mining industries scattered throughout Sweetwater, Lincoln, and Uinta Counties is experiencing a serious decrease in coal mining activities. The resulting layoffs at coal mines present a real threat to the economy of those counties.

I am mindful of the humane and practical proposal of President Eisenhower looking toward the development of new industries in such sections of our Nation as might find their economy temporarily disturbed by reverses and resulting unemployment.

I do not hesitate to say to you now that a considerable portion of southwestern Wyoming falls into this classification, and I am profoundly concerned with the situation that exists there. The development of any project or projects which would provide employment to those who have been and are now being thrown out of jobs would be a blessing of real magnitude to many of our people.

The construction and final completion of these projects within Wyoming will also provide water for the irrigation of many thousands of drought-stricken acres upon which more than 300 new farm families can be established to the future benefit of our State and Nation.

Your committee is respectfully urged to give its approval to this important legislation, and with every confidence in the wisdom and justice of your actions, I am

Sincerely yours,

C. J. (DOC) ROGERS, Governor.

STATEMENT OF HOWARD BLACK, ATTORNEY GENERAL OF WYOMING

My name is Howard Black. I am attorney general for the State of Wyoming. I am legal adviser for the State engineer, interstate streams commissioner, and Wyoming Natural Resource Board. As such legal adviser, I have been called upon by representatives of Wyoming to make a statement before this committee.

I am familiar with the development program of the Bureau of Reclamation for the upper Colorado River, and particularly the participating projects proposed for the State of Wyoming.

The Wyoming participating projects proposed in this bill are Seedskaadee, LaBarge, and Lyman, all of which are excellent projects and meet feasibility requirements.

Wyoming is very anxious that Kendall Reservoir be included in this initial authorization bill as it is the one reservoir that makes possible the Wyoming participating projects.

Kendall Reservoir, with a proposed storage capacity of 340,000 acre-feet, will be located on the Green River above all Wyoming participating projects and is the only main stem reservoir proposed in Wyoming.

Wyoming's population is increasing rapidly and this area is one of the few places in the State where water is available to be applied to unoccupied and undeveloped land. The application of water to lands in the area will provide homes for a good many farm families. It is important that water be first applied on these upstream areas whereby it is returned for reuse downstream.

We in Wyoming sincerely hope this committee will report favorably on this important bill.

Mr. HARRISON. At this time I would like to call —

Mr. ASPINALL. Before you call the next witness, I would like to ask permission for my colleague, Congressman Chenoweth, to have the right to file his statement at the end of the statements filed by members of this body.

Mr. HARRISON. Without objection, it is so ordered.

At this time I would like to call the Honorable Joe Budd. Mr. Budd is a member of our State Legislature of Wyoming. He is very familiar with irrigation and irrigation matters and is a resident of the area involved in the projects proposed in the bill as participating projects.

Will you proceed with your statement, Mr. Budd.

STATEMENT OF JOE L. BUDD, ASSISTANT COLORADO RIVER COMMISSIONER, BIG PINEY, WYO.

Mr. BUDD. Mr. Chairman, honorable committee members, my name is Joe L. Budd. I have spent my entire life at Big Piney, Wyo., near the headwaters of the Green River. I am engaged there in the cattle business as both my father and grandfather were before me. I am an assistant Colorado River commissioner and a past president of the Wyoming Development Association.

I want to approach your honorable committee not as the representative of a group of applicants applying for relief or welfare but as a representative of a group of reputable businessmen would approach their banker to borrow money to expand a proven and profitable business.

We are making an offer to the United States of America to develop for the benefit of the Nation and its citizens an enormous additional source of permanent revenue.

We are offering to provide a place for war veterans to establish homes and a livelihood for themselves and their families. I should not just say a place, I should say a place in the sun.

These veterans in return, besides repaying their allotted share of the borrowed money are saying to the United States of America, "With only the help of this loan we will by the sweat from our brows create a vast area of wealth and productivity from an area of barren land. We will take our children from your crowded streets. We shall raise and educate them under the fine traditions so typical of our rural areas."

The Nation's laborers are saying to the United States of America, "Lend us the money, at interest, to guarantee ourselves the perpetual use of the Nation's greatest resource, which is, of course, water. Lend us the money, at interest, to create a dependable source of power and we shall from the sweat of our brows wrest great wealth from within the very bowels of the earth." We shall make available to our Nation unlimited amounts of coal, iron, gas, oil, trona, oil shale, uranium,

vanadium, copper and phosphate. We shall build factories to process and refine these materials within the very confines of this great inland empire more safe from the ravages of war.

Where our life-giving soil and our valuable minerals are now lying useless, where our water is being wasted into the ocean we shall, if you will lend us the money, at interest, create farms, new industries, jobs, which shall provide not only immense tax revenues, but shall provide homes, food, fiber and additional security for our great Nation in this hungry and troubled world.

Mr. HARRISON. Thank you very much, Mr. Budd.

Do any members of the committee have questions?

Mr. Aspinall?

Mr. ASPINALL. Mr. Budd, you realize that of the \$600 million, approximately, which will be allocated to irrigation, that none of that amount of money will draw interest, and that which comes from the power revenue which is allocated to irrigation is without interest. You understand that?

Mr. BUDD. I understand that, sir.

Mr. ASPINALL. In other words, that is the national benefit coming from the area which is to be developed; is that correct?

Mr. BUDD. In my feeling that is an additional national benefit.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. No questions.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. No.

Mr. HARRISON. Mr. Hosmer?

Mr. HOSMER. No questions.

Mr. HARRISON. Thank you very much, Mr. Budd, we appreciate your coming down here from the State of Wyoming and taking your time to give us your testimony.

Mr. BUDD. Thank you, Mr. Chairman.

Mr. HARRISON. The next witness will be the Honorable H. T. Person, dean of the School of Engineering of the University of Wyoming. Is Dean Person in the room?

He does not seem to be here now.

I will ask the Honorable Norman Barlow, former member of the house of Wyoming, now State senator, who has been very active in the water conservation group, to take the stand.

STATEMENT OF NORMAN W. BARLOW, PRESIDENT OF THE GREEN RIVER BASIN DEVELOPMENT CO., AND ASSISTANT INTERSTATE STREAMS COMMISSIONER FOR THE STATE OF WYOMING

Mr. BARLOW. Mr. Chairman and members of the committee:

At this point I would like to present for the record a letter that was addressed to the chairman of your committee, signed by the secretary and general counsel of the Upper Colorado River Commission, dated January 18, 1954. I would like to read one paragraph of this letter, Mr. Chairman.

In connection with the identical bills (H. R. 4443, H. R. 4449, and H. R. 4463) "To authorize the Secretary of the Interior to construct, operate, and maintain the Colorado River storage project and participating projects, and for other purposes," now pending before your subcommittee and upon which hearings begin this morning, I have been directed by the Upper Colorado River Commission to recommend the following amendments.

I would like to ask this to be placed in the record, Mr. Chairman.

Mr. HARRISON. Without objection, it is so ordered.

Mr. ASPINALL. Mr. Chairman, I wish a statement of the procedure to be followed at this place. If the amendment is proposed at this time by the witness, does that mean it automatically comes before our committee, or is it necessary for some member of our committee to sponsor that amendment later on?

Mr. HARRISON. I think, Mr. Aspinall, it would be proper for some member of the committee to sponsor the amendments.

It will be received at this time to be made a part and matter of record as the suggestion of this particular group.

Mr. ASPINALL. Very well.

Mr. HARRISON. Without objection, it will be received and made a part of the record.

(The document referred to follows:)

UPPER COLORADO RIVER COMMISSION,
Washington, D. C., January 18, 1954.

HON. WILLIAM H. HARRISON,
Chairman, Irrigation Subcommittee,
Committee on Interior and Insular Affairs,
House of Representatives, Washington, D. C.

MY DEAR MR. HARRISON: In connection with the identical bills (H. R. 4443, H. R. 4449, and H. R. 4463) to authorize the Secretary of the Interior to construct, operate, and maintain the Colorado River storage project and participating projects, and for other purposes, now pending before your subcommittee and upon which hearings begin this morning, I have been directed by the Upper Colorado River Commission to recommend the following amendments:

Page 1, line 7, after the word "States," insert "and with the Indian tribes".

Page 2, line 13, after the word "Navajo," insert "Cross Mountain".

Page 2, line 13, strike "Curecanti"; substitute "Kendall," together with the following proviso: "Provided, That no appropriation for or construction of the Kendall unit shall be made or begun until and unless the Secretary of the Interior shall have found it feasible under standards laid down by the Federal reclamation laws:".

Page 2, lines 13 to 19, delete "Provided, however, That the Curecanti Dam shall be constructed to a height which will impound not less than nine hundred and forty thousand acre-feet of water or will create a reservoir of such greater capacity as can be obtained by a high water line located at seven thousand five hundred and twenty feet above mean sea level;".

Page 2, line 22, after the colon insert "(a)".

Page 3, line 7, strike the word "coordinated." Substitute "feasibility".

Page 3, line 15, delete the period, insert a comma together with the following: "(b) and also one or more projects on the Colorado River and its tributaries above Grand Junction, Colorado, which will impound approximately three million acre-feet of water, a substantial portion of which shall be located on the upper reaches of the Gunnison River: Provided, That no appropriation for or construction of any of such works shall be made or begun until a report thereon shall have been submitted to the affected States pursuant to the Act of December 22, 1944 (58 Stat. 887), and approved by the Congress."

Page 4, line 14, after the word "costs," insert "within the capability of the land to repay".

Page 5, line 12, delete the sign beginning the parenthesis and substitute a bracket.

Page 5, line 23, after the figures "1949," insert "and, in the case of Indian lands in participating projects, in excess of the amounts found to be within the capability of the land to repay".

Page 5, line 23, delete the sign ending the parenthesis and substitute a bracket.

Page 6, line 15, after the word "preclude" insert "or impair".

Page 7, line 13, after the word "power," insert "generated in plants authorized by this Act and disposed of".

Page 7, line 18, strike the word "replaced"; substitute "supplied".

Page 11, line 12, strike "except on lands in Indian reservations".

Page 12, line 10, strike the period after the word "section" and substitute a colon, together with the following: "Provided, That this section shall not apply to lands in Indian reservations or lands owned by Indian tribes."

Insert the following section to be numbered 11:

"SEC. 11. The Secretary is authorized and directed to do such things as may be necessary, including the granting of all necessary rights-of-way, easements, and dam sites on or involving public lands or power sites of the United States, to assist in the construction of the Blue River project, as hereinafter defined, and provided:

"(a) The Blue River project means that portion of the water works system and plant of the city and county of Denver, Colorado, which consists of works planned by the Board of Water Commissioners of the City and County of Denver, for a regulatory dam to be constructed at and near Dillon, Colorado, sometimes called the Dillon unit, a tunnel from Dillon, Colorado, to Grant, Colorado, sometimes called the Montezuma tunnel, and regulatory storage and hydroelectric power installations at and near the junction of the North and South Forks of the South Platte River in Colorado, sometimes called the Two Forks unit, and related improvements and structures, all for diverting at a point immediately below Dillon, Colorado, an average of not to exceed one-hundred-and-seventy-seven-thousand-acre-feet per year of water from the Blue River and its tributaries, transporting said water to the South Platte River near Grant, Colorado, and storing and utilizing said water for municipal uses including generation of electric energy.

"(b) Denver, as used herein, shall mean the city and county of Denver, Colorado, as its territorial limits are now fixed or may hereafter be extended.

"(c) Upon the condition that the legal availability of a reasonable quantity of water for the Denver-Blue River diversion be established, either by litigation or some other arrangement and the condition that such project be otherwise feasible, the Secretary, with the approval of Congress, shall advance to Denver, as a loan to be used in the construction of said project, funds of the United States in amounts not exceeding in the aggregate \$75,000,000 upon Denver entering into an agreement satisfactory to the Secretary to repay all money advanced, together with interest on unpaid balances, terms of repayment to include the following:

"1. Net revenues of the Denver water plant and taxes levied on all taxable property in Denver shall be made available to the discharge of Denver's obligations to be created under this section.

"2. No interest shall be payable on advances for the construction of any unit until completion of construction thereof, or until the lapse of fifteen years from the first advance therefor together with any period of delay on account of failure of the United States to provide money therefor, whichever shall occur first.

"3. Repayment of principal, with interest at the average rate being paid by the United States for long-term money at the time the repayment obligation arises, shall be made in fifty equal annual installments after the obligation to pay interest arises.

"4. Denver may accelerate the discharge of any portion of its remaining obligation to the United States at its election.

"No money advanced under this section shall be used by Denver for overhead. The Secretary is authorized to make and execute agreements necessary or proper for the execution of the purposes hereof and the protection of the United States in the relationships to be created under this section."

Sections 11, 12, 13, and 14 of the bills then would be numbered 12, 13, 14, and 15, respectively.

Page 13, line 9, strike the period after the word "Act"; substitute a colon, together with the following: "Provided, That appropriations for the storage units of the project and their incidental works may be made without regard to the soil survey and land classification requirements contained in other laws."

Page 14, line 12, insert: "The terms 'Secretary of the Interior,' and 'Secretary,' as used herein are synonymous."

Sincerely yours,

JOHN GEOFFREY WILL,
Secretary and General Counsel.

Mr. BARLOW. Now, Mr. Chairman, I have an exhibit from the Secretary of State of the State of Wyoming, which represents a true and correct copy of Joint Memorial No. 1, Senate, being Original Senate Joint Memorial No. 2, as passed by the 32d Legislature of the State of Wyoming, and approved by the Acting Governor on February 6, 1953. It is signed by C. J. "Doc" Rogers, secretary of state.

That is a memorial wherein the State of Wyoming officially went on record approving the upper Colorado River storage project bill. I would like that to be included in the record, Mr. Chairman.
Mr. HARRISON. Without objection, it will be received and made a part of the record.

(The memorial referred to follows:)

STATE OF WYOMING
 OFFICE OF THE
 SECRETARY OF STATE

UNITED STATES OF AMERICA,
State of Wyoming, ss:

I, C. J. "Doc" Rogers, Secretary of the State of Wyoming, do hereby certify that the annexed is a full, true, and correct copy of Enrolled Joint Memorial No. 1, Senate, being Original Senate Joint Memorial No. 2., as passed by the Thirty-Second Legislature of the State of Wyoming, and approved by the Acting Governor on February 6, 1953, at 4:25 o'clock p. m.

In Testimony Whereof, I have hereunto set my hand and affixed the great seal of the State of Wyoming.

Done at Cheyenne, the Capital, this twenty-ninth day of December A. D. 1953.

[SEAL]

C. J. "Doc" ROGERS,
Secretary of State.

ENROLLED JOINT MEMORIAL NO. 1, SENATE, THIRTY-SECOND STATE LEGISLATURE OF
 THE STATE OF WYOMING

A JOINT MEMORIAL memorializing the Congress of the United States of America with reference to proceeding with the development of the Colorado River in the Upper Basin States by authorizing the Colorado River Storage Project and participating projects

WHEREAS the development of the Colorado River in the Upper Basin States, consisting of Arizona, Colorado, New Mexico, Utah and Wyoming, is of foremost importance to the future development and general welfare of said States and of the Western United States, and

WHEREAS the allocation of the waters of the Colorado River apportioned to the Upper Basin by the Colorado River Compact has been amicably settled by and between the above States, and

WHEREAS the Upper Colorado River Compact Commission, comprising one member each from the States of Colorado, New Mexico, Utah and Wyoming and the Federal government is a functioning body and has already completed a dynamic plan for the development of the Project, and

WHEREAS a report of the participating projects has been compiled by the United States Bureau of Reclamation, approved, with modifications, by the Secretary of the Interior, and submitted by him to the Congress of the United States, and

WHEREAS this desirable development cannot be commenced without the authorization of the Congress of the United States of America: Now, therefore, be it

Resolved by the Senate of the Thirty-Second Legislature of the State of Wyoming, the House of Representatives of such Legislature concurring, That the Congress of the United States of America, be and it is hereby memorialized to promptly, diligently and fairly consider and act upon at this session, legislation to authorize the Colorado River Storage Project and participating projects; and be it further

Resolved, That certified copies hereof be promptly transmitted to the President and Vice President of the United States, the Speaker of the House of Representatives of said Congress, United States Senator Lester C. Hunt, United States Senator Frank A. Barrett, and Representative in Congress William Henry Harrison, to the Secretary of the Interior, the Commissioner of Reclamation, the Upper Colorado River Compact Commission, and the governors and legislatures of the following states: Arizona, Colorado, New Mexico and Utah.

F. W. BARTLING,
President of the Senate.
 DAVID FOOTE, SR.,
Speaker of the House.

C. J. "Doc" ROGERS,
Acting Governor.

Approved February 6, 4:25 p. m.

Mr. BARLOW. Now, Mr. Chairman, my name is Norman W. Barlow. I am president of the Green River Basin Development Co. and assistant interstate streams commissioner for the State of Wyoming.

I am appearing today in behalf of the State of Wyoming and also in behalf of the Green River Basin Development Co. This is a basin association representing all of the area of the Green River Basin in Wyoming. This association is concerned primarily with the development of the resources of this area in Wyoming, water being the most important resource we have in the area. We recognize the need of the use of water for our economy in our area for the production of crops that are necessary to support and allow a healthy growth.

As early as 1938 our basin association interested itself in the proposition of a compact for the upper basin States of the Colorado River. By resolution this association directed the Governor of the State of Wyoming to suggest to the Governors of the other upper basin States in the Colorado River Basin that we start negotiations for the division of the water in the upper Colorado River. After several invitations by the Governor of the State of Wyoming, we were able to have our first official meeting of the States contained in the upper division in July of 1946 at Cheyenne, Wyoming. As you know, after more than 2 years of negotiating, consuming weeks of time in meetings, the Upper Colorado River Basin compact was officially signed on October 11, 1948 at Santa Fe, N. Mex.

Wyoming was particularly happy in getting this very important proposition resolved because we felt that our area being contained in the extreme upper reaches of the Colorado River system, we should have assurance that Wyoming would have its proportionate share of the water of the Colorado River system and that our development program could progress in an orderly manner. We feel that this is necessary in order to allow our basin to develop and grow as our economy demands.

We are pleased with the cooperation that we have received from the Bureau of Reclamation in making extensive and exhaustive studies and surveys of our area, and we are supporting 100 percent the projects that are contained within our boundary in the State of Wyoming and listed in this proposed legislation now being considered by your committee.

We are also asking at this time that your committee give earnest consideration to the amendments to the bill that are suggested by the Upper Colorado River Commission to this committee. Contained within the suggested amendments to the proposed legislation now being considered by your committee is the inclusion of the Kendall Reservoir in Wyoming which we feel is definitely necessary in order to not only store approximately 340,000 acre-feet of water that will be of general benefit to the entire river system but it will provide necessary storage to supplement all the tributaries in the upper reaches of our irrigation system in Wyoming. This reservoir, if constructed, will eliminate the drought hazards that we have some years on some of our tributaries that do not always have sufficient flow of water to guarantee full irrigation seasons for the land to which they are responsible. It will guarantee 100 percent assurance of crops in these areas. The reservoir, in addition, would provide additional water to bring in new eligible areas which are greatly needed in a growing country such as we have in the Green River Basin in Wyoming.

We are fortunate in Wyoming to have other projects that are eligible for construction, and we hope that the same can be had at an early date. These projects have received favorable reports from the Bureau of Reclamation and are contained in this proposed legislation, namely: The LaBarge project, which will irrigate approximately 7,970 acres; the Lyman project, which will irrigate approximately 40,600 acres; the Seedskaadee project, which will irrigate approximately 80,000 acres; and the Eden project, which will irrigate approximately 20,000 acres.

Only by the construction of these mentioned projects can Wyoming hope to put to beneficial use its proportionate share of water as set forth in the Upper Colorado River Basin compact of 1948.

We in Wyoming subscribe to the theory that the overall development plan of the Bureau of Reclamation for the Upper Colorado River Basin should be done concurrently so that each state in the Upper Colorado River Basin will be progressing with its reclamation program. We also subscribe to the theory that, if possible, the upper reaches of the streams in the basin should be developed first because, speaking from practical experience and operating irrigated ranches as I do in the Green River Basin in Wyoming, we know that the fullest utilization of water for irrigation can be had when development starts at the upper reaches of the stream and is allowed to progress downstream getting use and re-use of water as you go. This theory is practical and successful when applied and we hope that in our development it will be adhered to so that we can get the greatest good in full utilization of our water resources.

Wyoming, being a public lands State, has contributed heavily to the reclamation fund. Approximately half of the moneys that have come in to the reclamation fund for general use in the 17 reclamation States of the United States has been furnished by the processing of resources within the boundaries of the State of Wyoming. Therefore, we feel that it is only fair and reasonable for our irrigation projects in Wyoming to be given sincere consideration in asking for appropriations in furthering our reclamation program.

Wyoming is extremely fortunate, together with Colorado, Utah, and New Mexico, to have a commission functioning as effectively as the Upper Colorado River Commission is functioning in aiding these respective States in furthering their reclamation activities. We are also grateful for the cooperative spirit that has been manifest to date by the four States in working together for common interest that is so important to these States, and in particular to Wyoming.

This concludes my statement. Thank you.

Mr. HARRISON. Dr. Miller, do you have any questions?

Chairman MILLER. No.

Mr. ASPINALL. No questions.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. No.

Mr. HARRISON. Senator Watkins?

Senator WATKINS. No.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. No.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. I would like to ask where the Kendall project is located in reference to the other projects.

Mr. BARLOW. It is the extreme northern tributary of the Colorado River and headwaters of the Green River in Wyoming.

Mr. YOUNG. About how far north of the LaBarge, Seedskaadee, or Flaming Gorge?

Mr. BARLOW. Approximately 60 miles north of LaBarge; about 80 miles north of Seedskaadee in Wyoming.

Mr. YOUNG. How much water was Wyoming allotted by the Santa Fe compact?

Mr. BARLOW. Wyoming was only allotted its proportionate share of the upper division in the Santa Fe compact in 1922, but in 1948 it was allotted 14 percent of the water of the upper division.

Mr. YOUNG. How much of that water will be developed by the four projects included in the bill, plus Kendall?

Mr. BARLOW. How will it be used?

Mr. YOUNG. How much will be utilized in the development of those projects?

Mr. BARLOW. Approximately 6 or 7 percent, I think, is now being planned for use of Wyoming's share. That is 6 or 7 percent of the basin's share, which would be approximately 50 percent of Wyoming's share.

Mr. YOUNG. That is all.

Mr. HARRISON. Mr. Hosmer?

Mr. HOSMER. Do you have any information, Mr. Barlow, with respect to what, if any, effect on the quality of water passing Lee Ferry the construction of Kendall Reservoir would have?

Mr. BARLOW. I think the Bureau has that information; I have the data, Congressman, on the physical features of the dam and the reservoir. However, I think it is the contention of the State of Wyoming and our State engineer and our special assistants who have worked with our engineers, that it would improve the quality of the water in storing it at Kendall.

Mr. HOSMER. You do not have any specific information yourself, do you?

Mr. BARLOW. I am not an engineer and I do not carry data along that line. However, we have records in our file in the State of Wyoming that would show that conclusion.

Mr. HOSMER. You do not have it here?

Mr. BARLOW. No, I do not.

Mr. YOUNG. May I ask one more question, Mr. Chairman?

Mr. HARRISON. Mr. Young.

Mr. YOUNG. You say that the proposed project will use about 6 percent of the allotted 14 percent?

Mr. BARLOW. That is approximate.

Mr. YOUNG. Approximate, yes. Is it under contemplation that the additional 8 percent may at sometime in the future also become used by participating projects in the Colorado River storage project?

Mr. BARLOW. It could be, but it has to be by amendment; it is not proposed at this time.

Mr. YOUNG. I mean, is that under consideration by your organization or by the Reclamation thinkers?

Mr. BARLOW. Naturally Wyoming is anxious to develop all its water resource eligible in the Colorado River Basin of Wyoming. We are only doing it as we conclude our engineering studies and as the projects are approved by the Bureau of Reclamation. Projects that we are

now asking in this proposed legislation have been studied by the Bureau, and we do have feasibility reports on them.

Mr. YOUNG. That is true. But is part of the long-range thinking to have these additional 8 percent come under the terms of projects like this and utilized for power development and irrigation?

Mr. BARLOW. That is correct; that is the plan.

Senator WATKINS. Will the gentleman yield for a question, or an observation?

Mr. YOUNG. Yes.

Senator WATKINS. I call your attention to section 5 of the bill. It contemplates very clearly that other projects will be investigated and presented in due time to Congress under this overall one project idea of the program.

Mr. YOUNG. I understand that, but I wanted to check and see if that was their planning to have all that water utilized under this, or whether they are going to divert some part somewhere else to other projects like the San Juan-Chama project.

That is all the questions I have.

Mr. HARRISON. Mr. Barlow, did I understand you to say that you had the specifications and information on the Kendall project with you, or data on it?

Mr. BARLOW. Yes.

Mr. HARRISON. I would like to make that a part of the record at this time for the information of the committee members in studying the overall picture. If you do not have it in proper form, if you will have it prepared.

Mr. BARLOW. I will be very glad to provide that for you.

Mr. ASPINALL. I wish to know how voluminous this report is. If it is as voluminous as some of these reports, it ought to be made a part of the file and not a part of the record.

Mr. HARRISON. My understanding is it is information from the State of Wyoming and not the Bureau; is that right?

Mr. BARLOW. It would be very concise and would not be voluminous.

Mr. ASPINALL. Then I withdraw my objections.

Mr. HARRISON. With the understanding that if it is voluminous we will accede to the request of the gentleman from Colorado. If it is not voluminous it will be made a part of the record.

(The information referred to follows:)

KENDALL

The statement of the Bureau of Reclamation concerning the potential Seedskadee project in Wyoming, was based on an application of current prices to the physical plan of project development presented in the Bureau of Reclamation report on the Seedskadee project, Wyoming, dated November 1950, a supplement to the report, Colorado River storage project and participating projects dated December 1950. Studies, nevertheless, continued in the upper Green River Basin subsequent to 1950, indicate that significant modifications in the Seedskadee project plan may be desirable in view of circumstances incident to potential development of other areas. The Kendall Reservoir appears to be a key feature in the development of these other areas and also a source of implementing the present plan of the Seedskadee project. During the definite planning stage of investigating the Seedskadee project, the Bureau will report on any modifications which should be incorporated in its present plan.

The Kendall Dam site is located on the Green River about 120 miles northeast of Green River, Wyo. A dam 135 feet above the present streambed would form a reservoir of 500,000 acre-feet total capacity with a maximum water surface area of 13,000 acres. The average evaporation loss from the reservoir would

approximate 15,000 acre-feet annually. A powerplant with an installed capacity of 5,000 kilowatts would be located at the dam.

With the Kendall Reservoir, an additional 15,000 acres could be included in the farm area of the Seedska-dee project. This inclusion would, however, require a change in the presently contemplated Seedska-dee diversion works and main canal for which a higher diversion dam downstream at the Fontenelle site and a shorter main canal would be substituted. Because of the regulation afforded by the upstream Kendall Reservoir a 7,000 kilowatt powerplant would then be possible at the Fontenelle site.

Based on very preliminary data, the inclusion of the Kendall Reservoir would involve an addition of \$20 to \$25 million in the construction cost of the Seedska-dee project allowing an adjustment for substituted diversion works and main canal. This added construction cost would provide the Seedska-dee project an additional 15,000 acres in its farm area and also 12,000 kilowatts of installed hydroelectric generating capacity. It would also provide the regulation needed prior to further use of the Green River in the area below the Seedska-dee project. Wyoming contemplates several such uses in the future, particularly for municipal and industrial purposes.

Mr. HARRISON. Mr. Barlow, being as familiar as you are with that particular area in which the proposed participating projects are located, which are the Seedska-dee and LaBarge and Lyman, would you like to elaborate at any additional length as to the necessity of those particular projects to the economy of the State of Wyoming and their location in the State, the feasibility, if any?

Mr. BARLOW. Mr. Chairman, I think our senior Senator from Wyoming this morning touched on the economic situation as we find it in southwestern Wyoming at the present time. I believe that the Bureau in their studies have found that the Seedska-dee project is a project that could not only be authorized but appropriations would be eligible for immediate construction. It does not necessitate a dam for holdover storage. There is sufficient water at the point of diversion to throw water onto virgin lands at the present time that through the studies made by the Bureau are very eligible for development. It is located approximately 20 miles from one depressed area, that is, depressed at the present time, and approximately 40 miles from another area that is presently being depressed in an economic way because of the coal industry in those areas. It would implement this area greatly and improve their economic situation if they could have an immediate start of construction and the development of this proposed project.

It is a project that fits in very well for colonization and putting veterans and so forth on the land, and that has been very popular in Wyoming. One reclamation project that we had in Wyoming, namely, the Riverton project, when it was opened and applicants were eligible to file on those lands, they were oversubscribed. The same with the Pyle project in northeastern Wyoming. So Wyoming does seem to be virgin territory for veterans that want to get acclimated and get into business.

I am sure that the studies of the Bureau will bear that out.

Of course, we in Wyoming are very desirous, we have a lot of country out there, good country, and we have a lot of room for people that are now congregated in crowded areas in our metropolitan cities. It is a philosophy and a policy of Wyoming to invite newcomers into our State, and we are providing our resources and helping to develop these resources by having people coming into our State.

Mr. HARRISON. Thank you very much, Mr. Barlow, for a very fine statement.

Mr. BARLOW. Thank you.

Mr. HARRISON. I might say here that it is the intention of the Chair to call Mr. Breitenstein immediately after we convene this afternoon. We will meet at 2 o'clock, with the understanding that if a rollcall vote is held in the House, the committee will have to recess during the time it takes for the members to go to the floor of the House and cast their vote on the particular measure which comes up this afternoon.

The next witness I would like to call is Breck Moran from Wyoming. Breck Moran has done an outstanding job on our natural resources board. He is very conversant with the situation in the State, particularly as to irrigation and reclamation.

You may proceed.

STATEMENT OF BRECK MORAN, REPRESENTING THE NATURAL RESOURCE BOARD OF THE STATE OF WYOMING

Mr. MORAN. Mr. Chairman and gentlemen of the committee, my name is Breck Moran. I live in Cheyenne, Wyo. I am chief of resource development of the Natural Resource Board of the State of Wyoming. I am also serving my fifth year as president of the Wyoming Development Association, formerly known as the Wyoming Reclamation Association.

My purpose in appearing before you today is to support the bill which would authorize the upper Colorado River storage project and participating projects. Since other aspects of this proposed development of such vital importance to the State of Wyoming have been ably presented by other members of Wyoming's delegation, I propose principally to confine myself to the acute economic situation which is developing in that part of Wyoming which drains into the Colorado River and briefly to emphasize how that situation may largely be and, I believe, permanently alleviated by the development of that section through construction of the upper Colorado River project.

The Green River watershed in Wyoming is today almost wholly dependent upon livestock—sheep and cattle—the production of coal and, more recently the trona industry.

All of you know the situation in the livestock industry—long standing in the case of sheep and of more recent deterioration in the case of cattle. This situation in the Green River watershed has been compounded by the drought, forcing heavy shipments of livestock at greatly depressed prices for lack of feed.

All of you know the nationwide situation in regard to the coal industry. It has its counterpart in the Rock Springs area of Wyoming. There the fall in coal production has been approximately 50 percent.

In the figures I am about to quote, you ladies and gentlemen from the more populous sections of America will please keep in mind that Wyoming is very sparsely settled. The entire population of Rock Springs, by far the largest city in Wyoming's Green River Basin, is only 12,000 persons. When, therefore, I quote hundreds please remember that, relatively, a hundred in our country is more important than ten or a hundred thousand in a city or State counting its population in millions.

To go back to the distress in the coal industry in the Green River Basin, within the last few months approximately 275 men have been discharged. Expected to be discharged in the near future are between 350 and 400 additional men. The official unemployment figures for Rock Springs for the month of December showed only 95 unemployed in 1952 as against 475 unemployed in 1953, an increase of 400 percent.

As a result of these situations arising in the livestock and coal industries, the larger businesses in Rock Springs estimate that they are suffering a decline of about 60 percent in local business. Straight across the board, the decline in local business is estimated at between 25 and 30 percent.

Now the building of the upper Colorado River projects in Wyoming should not be regarded in the same light as the building of a new post office, ball park, stone monument to a departed hero, or some other improvement which temporarily relieves unemployment but adds little or nothing to the permanent economic machinery of a community. The upgrading in beneficial use of the land from unimproved grass lands to farmlands as a result of reclamation will not harm the livestock industry but will improve it, for there will still be hundreds of square miles of grazing lands, and much winter feed can be grown on the reclaimed lands. These farmlands—settling families in areas which now know only the lonely tramp of the occasional sheepherder—will do more than replace the loss in business in the towns like Rock Springs. Furthermore, the availability of cheap power from the great power generators just across the border from Wyoming and also, quite possibly, from smaller generators installed incident to reclamation development in Wyoming will provide opportunities to develop the vast mineral resources of the region.

In short, construction of these reclamation projects in that watershed will effect a transformation of the region which will go far beyond any dreary attempt to "make work" to cure a "sick country". This investment will build a glorious new economy in one of the least developed but potentially rich areas remaining in the United States.

Nor does Wyoming feel itself a beggar in asking that this investment be made. As I hope all the members of this committee know, Wyoming, through the oil royalties collected by the Federal Government in Wyoming, has contributed approximately a half of the total Federal reclamation fund which is spent in all 17 of the reclamation States. We are asking, therefore, only that some of what is being taken out of Wyoming in irreplaceable oil and gas for the benefit of the rest of the Nation be put back into Wyoming, particularly at a time like this when a large segment of the State faces a decline into what may amount to economic ruin.

Mr. Chairman, I ask in conclusion to be permitted to read and enter into the record a telegram signed by the following organizations of Rock Springs and that region: Chambers of Commerce of Rock Springs and Green River; Junior Chambers of Commerce, Rock Springs and Green River; Lions Club, Rock Springs and Green River; Kiwanis Club, Rock Springs; Exchange Club, Rock Springs; Rotary Club, Rock Springs; Business and Professional Women's Club, Rock Springs; Federated Women's Club, Rock Springs; Committee for Industrial Development of Southwestern Wyoming.

They wire as follows:

We, the undersigned, urge your support and influence for construction and funds for Seedskadee project to help alleviate currently growing unemployment which cannot be absorbed or lessened by industries in this area. We also urge your support for the possible authorization for construction of Echo Park unit. These projects are both vital to economy of this region and we have listed them in order of importance to us as stabilizing factors presently and in the future.

Mr. HARRISON. Do you have any questions, Senator Watkins?

Senator WATKINS. No questions.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. No questions.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. I would like to say, Mr. Chairman, that when we were in Wyoming last fall the witness took beautiful care of us and really showed us over his State, and went into the resource problems out there. I would like to express at this time for the record and on behalf of the committee the fine way he presented the needs of his area and demonstrated to us how this committee could be helpful in meeting those needs.

Mr. MORAN. Thank you, sir.

Mr. HARRISON. Does anybody else have any questions?

Mr. Moran, of course, you are very familiar with the location of the projects mentioned as participating projects in Wyoming, the Seedskadee, Lyman, and LaBarge, also the Eden which has been formally approved and authorized. Do you want to add anything to your statement regarding those particular projects as far as the State of Wyoming and its economy needs them to be authorized?

Mr. MORAN. Mr. Chairman, by far the largest and the one which starts from scratch is Seedskadee, and it appears since there is plenty of water for diversion to supply that project, that that would be the one to go after under the present conditions.

It is possible, from studies that are presently being made, a slight alteration in some of the design of those projects might put the LaBarge and Seedskadee in together.

The other projects would be projects in which there would be considerable supplemental water furnished for presently existing lands and also lands added to them, but it appears that Seedskadee is the really big one which could alter very much for the better the whole economy of that section. Is that the kind of description you wished, sir?

Mr. HARRISON. That is right. As Mr. Barlow has said, there is no necessity of building any dams to take care of that particular project?

Mr. MORAN. No, sir. As a matter of fact, as far as Kendall Reservoir is concerned, this one that has been discussed, it is, of course, comparatively small in comparison to these other storage reservoirs, and it probably is not entirely necessary, but it would greatly improve the water situation there.

I understand that under the present plans there would be in certain dry years very little water going on down the Green below Seedskadee unless that reservoir were built. So it is not absolutely necessary. It would, however, greatly improve the general situation in the area.

Mr. HARRISON. If there is nothing further you would like to add and no questions from the committee, I want to congratulate you

upon a very fine statement. Of course, I have to join with my colleague in appreciation of the courtesy that you extended to us during the trip through Wyoming.

Mr. MORAN. I do not mind saying I enjoyed it.

Mr. HARRISON. We have with us one of the Congressmen representing California, the Honorable Leroy Johnson, who would like to be heard at this time. If Mr. Johnson will come forward, he may make his statement.

**STATEMENT OF HON. LEROY JOHNSON, A REPRESENTATIVE IN
THE UNITED STATES CONGRESS FROM THE STATE OF CALI-
FORNIA**

Mr. JOHNSON. Mr. Chairman, I want to thank you very much for giving me a chance to make this statement, which has been rather hurriedly gotten together.

For the record, my name is Leroy Johnson, a Member of Congress from California, representing the 11th District.

Mr. Chairman, I greatly appreciate the opportunity to appear before this committee to make a statement concerning H. R. 4449 which is now being considered by your committee.

I speak only for myself, but I believe I have many associates, some known to me and most of them unknown, who share my views on the pending legislation.

I am here today to protest your action in building a series of dams that would flood out the national monument which has been long established and which would obliterate some very unique scenery.

I am not here in any spirit of carping criticism. What I have to say to you is a reflection of my deep conviction that it would be a bad mistake to destroy this national monument.

Furthermore, I have consulted with several friends who have had vast experience in the National Park Service and who are among the greatest conservationists in our country. I refer to Horace M. Albright and Newton B. Drury, each of whom served about a decade as the Director of our National Park system. They concur in my view that it would be a mistake to obliterate this scenic area.

Also Maj. Gen. U. S. Grant III agrees with my viewpoint, and he likewise is a great engineer as well as a conservationist.

Some people think that protests like mine are futile. I do not. Once I was cast in this same role. I objected to a bill which had for its purpose the revision of an order made by President Franklin Roosevelt which had created Jackson Hole Monument. When the bill was before the House I modestly asked for 5 minutes to offer my objections. I was given no time whatever and told by my Republican colleagues that I had no business talking against that bill. Fortunately, on the majority side at that time was Hardin Peterson of Florida, and he very kindly gave me a little time to register my protest as to what the committee was trying to do. The House paid no attention to what I had to say but rode right over me and passed the bill. The same result was accomplished in the Senate, but the President refused to sign the bill. Our feeble efforts bore fruit. Jackson Hole today is part of the Teton National Park, as it should be.

I wish to make it perfectly plain that I do not wish to deprive the States involved in this legislation of any water. I am convinced that

by a different arrangement of these dams all of the required water could be obtained and the monument could be preserved for posterity as it should be.

Maj. Gen. U. S. Grant III, the great engineer I referred to, and also as a conservationist, has made some studies that will prove what I have said. I certainly hope that he will be called as a witness in this hearing. He is a very objective analyst and could give this committee some valuable information.

I have two bills, H. R. 1037 and H. R. 1038, pending before this committee which provide for establishment of the Green River Canyons National Park from a portion of the Dinosaur National Monument, and the other prohibits the construction, authorization or maintenance of any project for the storage or delivery of water within or affecting any national park or monument. The passage of such a bill would forever stop the attempts that continue to be made to destroy national monuments. Hearings on those bills would enable the committee to explore the problem.

Furthermore, we have a very anomalous situation in this case which tends to deprive the conservationists of the best possible witness to plead their cause and to protect pieces of land which should be preserved for posterity. I think it is fair to submit to you for your serious consideration the contradictory situation in which the National Park Director finds himself. He is the one man who is devoting his life to the preservation and development of places that have scenic, historic and scientific interest. He is really the official agent for the implementation of the Antiquities Act. Yet under the odd situation we have here his lips are closed and he cannot utter a word. He is under the Secretary of the Interior. The Secretary has determined that this dam should be built even though it will flood this monument.

I am ascribing no bad motives to the Secretary or anyone else in his Department. They are all capable and honest men. But the situation that we have deprives the conservationists of their very best witness.

I know two former National Park Directors who were classmates of mine in the University of California. They feel that this situation should be corrected so our conservationists will have a real spokesman and one who has a responsible position of conservation of our scenic and historic areas.

I thought it was almost a fixed policy to retain for posterity those areas which have by Executive order been set aside as provided in the Antiquities Act. So far as I can determine, no such area has been obliterated by action such as you propose here.

As our population grows and gets more and more urban, there is increasing need for national monuments and national parks. If this bill is passed it would set a very dangerous precedent for the obliteration of national monuments.

Many of the parks we now have and which the public enjoys so much have been obtained by protests such as we are making here. It took 20 years of tedious effort to get the Grand Canyon National Park. A Federal district attorney of the United States had to be fired so that litigation could be prosecuted to the end that the obstructions to the creation and development of that park could be cleared away. And who do you suppose caused the district attorney

to be relieved of his job? None other than Harlan Stone, Attorney General of the United States, and later the great Chief Justice of the United States.

Other long struggles have been carried on supported by millions of our people to conserve these places that have scenic peculiarities for posterity. The Sierra Club and other similar organizations have been on guard for years to protect our public domain against spoliation and to use their unselfish efforts to get such parcels of land into the national park system. We may lose a battle today, but I predict we will not lose the war for the preservation and development of just such places as you are proposing by these bills to flood out forever.

I have nothing to gain from this effort. I am only here because I am convinced that this step which you propose to take is in direct violation of good conservation practice.

As a young man I used to hike through the coast ranges of California and climb such small mountains as Mount Hamilton, Tamalpais, St. Helena, and sometimes some of the Sierras.

Do not be fooled. The great body of conservationists are not well organized but they have strong convictions and their interest is entirely unselfish. They want these lands protected. They are not confined to any one State but are found everywhere. They are not a pressure group. They have no selfish purpose to serve. They look to us in Congress to protect these unique lands so that future generations may enjoy them.

Mr. Chairman, I want to just add one short word. Several days ago there was a very interesting editorial in the Washington Post about this matter. Undoubtedly many members of the committee read it. I would like permission to insert the last one-quarter of it in the record.

Mr. HARRISON. I am afraid, Mr. Johnson, the rules of the committee provide that no editorials can be made part of the record.

Mr. JOHNSON. If I came here and read that editorial—

Mr. HARRISON. If you read it in your statement, it would be different.

Mr. JOHNSON. May I add it to my statement.

Mr. DAWSON. I would like to know which editorial—the one they wrote the first day or the retraction the next day?

Mr. JOHNSON. It was a sort of a retraction. I guess it was the second one. But at the end it said—and I concur with them entirely—why not resurvey this matter and see if you cannot find a way to save the scenic beauty of that area and not destroy this park, and still get all the water you need; which I believe is exactly what can be accomplished. Anyway that was the essence of the editorial. They suggested that the Department resurvey the matter and restudy the matter and find a way not to obliterate this national monument.

I would be glad to respond to any questions that anybody has.

Mr. HARRISON. Senator Watkins.

Senator WATKINS. I would like to ask you—suppose they did resurvey the matter and came out with the same answer. Would you then withdraw your objection?

Mr. JOHNSON. I think I probably would.

Senator WATKINS. Do you realize this matter has been surveyed and surveyed and surveyed many times?

Mr. JOHNSON. I do not know how many times it has been resurveyed, but I am a great believer in what General Grant said about the matter. I think that man knows what he is talking about, and I am not so sure I would change my position in view of what I have read about Mr. Grant's efforts.

Senator WATKINS. I have read Mr. Grant's statement, and I have answered it fully on the floor of the Senate. I am of the opinion that General Grant, if he went out there and actually made the tests with the men who have been doing the job to find the best site, that he would agree with that and not disagree. It is easy to sit in an office and with a slide rule or something else figure out just how this is going to be done; but it is a different matter when you go out attempting to find a solution for a very great problem.

Mr. DAWSON. Would the gentleman yield for a comment?

Mr. JOHNSON. I would like to answer the Senator's statement.

I have known General Grant since in the middle twenties when he was a district engineer, and I have tremendous faith in what that man puts down on paper. I do not think he would put down there anything he was not rather sure of.

You say you answered him in the Senate. In other words, you differed, and that constituted an answer.

Senator WATKINS. I took the information from the men who checked on the ground, experts who have been doing that work for years, and I am sure they know what they are doing. We have two of these men here that did the fieldwork. Mr. Jacobson is expert on matters of that kind in checking waters. He had no purpose in mind except to find the best possible site and to save as much water as possible.

Now you realize that in the upper basin States and the entire West water for consumptive use is worth almost any price you have to pay for it, particularly when we have to have it for cities and towns and the use of human beings.

Mr. JOHNSON. You do not need to emphasize that to me. I live in a country where they live on irrigation too. I understand the necessity for conservation of water.

Senator WATKINS. Many of the beautiful things of California have to be slightly altered to accommodate the people of that area. I liked the Golden Gate and the harbor without the two bridges across, but I realize they must have those bridges if they are going to live there.

Mr. JOHNSON. They are not impeding navigation in any way.

Senator WATKINS. Of course, they are not impeding navigation, but they interfere with the view.

Mr. JOHNSON. I think they add attraction to the view. I just cannot follow you on that.

Senator WATKINS. You realize also that this matter was gone into by Mr. Chapman?

Mr. JOHNSON. By whom?

Mr. WATKINS. Mr. Chapman, former Secretary of the Interior.

Mr. JOHNSON. Yes.

Senator WATKINS. And that he made a statement with respect to that. I wonder if you agree with that. [Reading:]

Weighing all the evidence in thoughtful consideration, I am impelled in the interest of the greatest public good to approve the completion of the Upper

Colorado River Basin report, including the construction of the dams in question, because:

(a) I am convinced that the plan is the most economical of water in a desert river basin and therefore is in the highest public interest; and, (b) the order establishing the extension of the monument in the canyons in which the dams would be placed contemplated use of the monument for a water project, and my action, therefore, will not provide a precedent dangerous to other reserved areas.

I note that the fossils are not in the areas of the monument proposed to be flooded and that the creations of the lakes will aid the public in gaining access to scenic sections of the Green and Yampa River Canyons. Much superb wilderness within the monument will not be affected, excepting through increased accessibility.

The importance to the growth and development of the West of a sound Upper Colorado River Basin program can scarcely be over emphasized. I hope this decision on my part will promote quick solution of all other problems connected with this matter so that we may proceed with such a program.

I ask the National Park Service and the Bureau of Reclamation to cooperate fully in making plans that will insure the most appropriate recreational use of the Dinosaur National Monument, under the circumstances.

That is the letter of Oscar Chapman when he made the decision after long hearings. Do you agree with his statement?

Mr. JOHNSON. I cannot say I agree or not. I couldn't hear all of it, to be frank. But according to this editorial in the paper, he is the one that said we ought to preserve the monument. When was that statement made?

Senator WATKINS. On June 27, 1950.

Mr. JOHNSON. Apparently he has changed his mind according to the paper.

Senator WATKINS. Well, he did wobble a bit, I will admit.

[Laughter.]

Mr. JOHNSON. You think he wobbled because he wobbled away from you. Maybe he saw the light finally.

Senator WATKINS. I think he was right the first time. He lived over in that area.

Mr. JOHNSON. So has a very personal interest in that.

Mr. ASPINALL. If the gentleman will yield, for the record, Mr. Chapman never lived in that area.

Senator WATKINS. I mean by that he lived in Colorado, which is somewhere in the area.

Mr. ASPINALL. Will the gentleman yield further?

Senator WATKINS. Yes.

Mr. ASPINALL. Now I know how sincere my colleague is in his position, but I would like to ask him this question: There is not any sacredness, is there, in the issuance of an executive order establishing a national monument, that it shall not be repealed, that it shall not be amended, or anything like that?

Mr. JOHNSON. There is a certain amount of sacredness in my mind because I think before a President puts his name on an order like that, he has had it very carefully looked into. Also I believe that the most of the Presidents that have been active in conservation look to a national monument as a step leading to a national park.

Mr. ASPINALL. Let me advise my colleague of some action that was taken in my first term in Congress. I was asked by the National Parks Service to sponsor legislation doing away with two national monuments, Holy Cross National Monument and Wheeler National Monument. The first one I mentioned was more nationally known

and internationally known and far better attended than the national monument to which you refer.

I presented the legislation. There was no opposition from my colleague, there was no opposition from the National Parks Service, there was no opposition from anybody.

Now I just want my colleague and those who are interested in these historic sites to know that there is no precedent whatsoever that must continue an executive order establishing a national monument.

Mr. JOHNSON. Were your bills passed?

Mr. ASPINALL. My bills were passed and——

Mr. JOHNSON. On the consent calendar?

Mr. ASPINALL. And were signed by the President and they are now law.

Those two beautiful areas are now again under the jurisdiction of the Forest Service. They were not continued as national monuments because we were never able to get the funds, and they have been better taken care of under the National Forest Service than they ever would have been, in my opinion, under the National Park Service.

Mr. JOHNSON. Of course, this would not have any chance if you put dams in there that you propose to put in.

Mr. ASPINALL. It is not a question of dams, as my colleague knows; it is just a question of some other service entering into this area. That is all it is.

Mr. JOHNSON. The other service wants to obliterate the canyon.

Mr. ASPINALL. My colleague has not been present in the canyon.

Mr. JOHNSON. I agree with you.

Mr. ASPINALL. Your colleague speaking has been——

Mr. JOHNSON. Frankly, I was not in the canyon, but I have to take the word of somebody I have confidence in.

Why does it happen that two former park directors who have not a thing to gain by this are violently opposed to this?

Mr. ASPINALL. I understand their position, like I do my colleague's position. But let me tell you from one who knows, one who has been there, who spent 50 years in the area, the beauty of this area will be enhanced greatly by this construction.

Mr. JOHNSON. I hope you are right.

Mr. DAWSON. I might suggest that Mr. Johnson see the pictures that have been introduced here as to the appearance of the canyon after the dams are in as compared with them as they are now.

Could I ask a question? I do not know who has the floor.

Senator WATKINS. I yielded to the Congressman from Colorado.

Mr. HARRISON. Are you through, Senator?

Senator WATKINS. I had 1 or 2 more questions.

I want to know if you believe it is proper for parks to invade reclamation projects?

Mr. JOHNSON. Parks to invade reclamation projects?

Senator WATKINS. Yes.

Mr. JOHNSON. I never had that matter submitted to me.

Senator WATKINS. May I call your attention to the fact that reclamation projects have been under discussion and have been in the minds of the people of the area out in eastern Utah and western Colorado near the area of Echo Park for many, many years. Then when it was proposed to expand the 80-acre site of the Dinosaur Monument where the dinosaur bones were found, they all called the atten-

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JOHNSON. We had this sort of controversy in Kings River Calif., and utilities went in there to begin building dams. People, conservationists, Sierra Club and others took it up overwhelmingly. They said they wanted to preserve these. You can find other places.

Some of us have thought the invasion of Yosemite was a mistake, but it was just a very casual invasion to furnish water to San Francisco.

I do not doubt but what people are of all shades of opinion. I do not come here in any belligerent attitude or to reflect on your opinion. I offer with me, not the slightest.

I feel from the advice I have gotten from men I have known a long time and have tremendous confidence in that it would be a mistake. I think you could look it over again and see if you could not find money.

ASPINALL. A point of order, Mr. Chairman.

HARRISON. Will you withhold it just one minute?

ASPINALL. Yes.

HARRISON. I would like to say, Mr. Johnson, although we cannot receive the editorial for the record, we will be glad to receive it as a file. To be very fair with you, if you want to submit a copy for the file, it will be received and made a part of the file but not a part of the record.

Mr. DAWSON. Mr. Chairman, before the point of order is put, I would like simply to say this: I have just a lot of questions I would like to ask. I know I am not going to have the opportunity.

Mr. JOHNSON. I can come back if you want me to.

Mr. ASPINALL. We may hear from our colleague anytime after we hear from the out-of-town witnesses.

Mr. JOHNSON. I do not want to take up time from people coming here, and I hope I have not.

Mr. HARRISON. You make your point of order?

Mr. ASPINALL. Yes.

Mr. HARRISON. The point of order is made that the House is in session, so the committee will stand in recess until 2 o'clock this afternoon. The first witness will be Mr. Breitenstein.

(Whereupon, at 12:03 p. m., the subcommittee recessed until 2 p. m. of the same day.)

AFTERNOON SESSION

Mr. HARRISON. The committee will come to order.

I understand that Mr. H. T. Person, the dean of the School of Engineering of the University of Wyoming, who has prepared a statement for this committee, does not want to deliver that statement in person, and has asked that it be introduced into the record.

Mr. Person, have you copies of that statement?

Mr. PERSON. I have it.

Mr. HARRISON. Would you prefer to testify first?

Mr. PERSON. It will just take me about 2 minutes, Mr. Chairman.

Mr. HARRISON. All right.

Mr. ASPINALL. Mr. Chairman, of all these fine witnesses from Wyoming, this is the one witness whom I would like to hear, because I had one of the most enjoyable experiences of my life serving with

tion of the officials to that situation, and they said, "We do not object to extending this, providing it will not interfere with plans for reclamation projects for storage." And even the statement of the President in his proclamation recognized that fact.

Now the actual drilling of the sites and the actual surveying of the sites to be used had not been accomplished at that point. So it was not possible to describe definitely where the project would be. But as I remember the order it said in Browns Park and the Green River area. Added the words "Green River area." This is a part of Green River and also a part of the Yampa. I have lived out there. That was my home country when I was a youngster.

I can tell you this: Most of the people of that area never did visit the Echo Park region, that is, down in the canyon, because in those days it was considered entirely too dangerous. It was not because we did not like scenery.

I think it should be the attitude of the conservationists to work with the Bureau of Reclamation, to work with the people of these States.

Mr. JOHNSON. Well——

Senator WATKINS. Just a moment. So that we can get the greatest good for the greatest number.

Now I like to visit that area. At my age I do not feel like I want to take the chance of trying to swim out if the boat overturned, and that is possible in those rapids. But I would like to visit that area. I would like to have the members of my family visit that area. I would like to have hundreds of thousands come into the West and millions come into the West to visit the area. And we will provide in full cooperation with the Park Service a beautiful way to get in there.

I had a letter from a man who is just as strong a conservationist as you are, of my own State, who has run the rapids and has been running the river a long time.

This man finally winds up his letter—after praising the beauty of the place, finally comes to this conclusion:

Those making the trip are without exception amazed at the rugged beauty and kaleidoscopic change. Many have felt that the scenery equals that available at any of our national parks.

The proposed Echo Park Dam in Whirlpool Canyon would stop my river trips and my desire to have my posterity have this experience would be denied. Yet, with this loss I feel that this project would create more beauty than it would destroy. Where in the world could a clear blue lake extending up this majestic gorge be duplicated. The possibility of adventure by boat on this body of water is exciting.

Considering the limited number who are now able to take this river trip as compared to the thousands who could enjoy it if it were developed, and considering the danger presently involved, I feel that if I were to oppose this dam I would be selfish and narrowminded. So I wish to add my support to this project and request that you do all in your power to assure the building of this dam.

That is signed "Roy Despain." He is a man who has been visiting that area for years and enjoys it just as you would, but he wants the rest of the people, the millions, to be able to go there; and as it is now, only a few thousand can make it because of the danger to people who are not so robust as some of the river runners who like to make that trip.

Mr. JOHNSON. We had this sort of controversy in Kings River Canyon, Calif., and utilities went in there to begin building dams. The park people, conservationists, Sierra Club and others took it up and won overwhelmingly. They said they wanted to preserve these areas. You can find other places.

Many of us have thought the invasion of Yosemite was a mistake, although it was just a very casual invasion to furnish water to San Francisco.

I do not doubt but what people are of all shades of opinion. I do not come here in any belligerent attitude or to reflect on your opinion if you differ with me, not the slightest.

But I feel from the advice I have gotten from men I have known a long time and have tremendous confidence in that it would be a mistake, and I think you could look it over again and see if you could not get harmony.

Mr. ASPINALL. A point of order, Mr. Chairman.

Mr. HARRISON. Will you withhold it just one minute?

Mr. ASPINALL. Yes.

Mr. HARRISON. I would like to say, Mr. Johnson, although we cannot receive the editorial for the record, we will be glad to receive it for the file. To be very fair with you, if you want to submit a copy for the file, it will be received and made a part of the file but not a part of the record.

Mr. DAWSON. Mr. Chairman, before the point of order is put, I would like simply to say this: I have just a lot of questions I would like to ask. I know I am not going to have the opportunity.

Mr. JOHNSON. I can come back if you want me to.

Mr. ASPINALL. We may hear from our colleague anytime after we hear from the out-of-town witnesses.

Mr. JOHNSON. I do not want to take up time from people coming in here, and I hope I have not.

Mr. HARRISON. You make your point of order?

Mr. ASPINALL. Yes.

Mr. HARRISON. The point of order is made that the House is in session, so the committee will stand in recess until 2 o'clock this afternoon. The first witness will be Mr. Breitenstein.

(Whereupon, at 12:03 p. m., the subcommittee recessed until 2 p. m. of the same day.)

AFTERNOON SESSION

Mr. HARRISON. The committee will come to order.

I understand that Mr. H. T. Person, the dean of the School of Engineering of the University of Wyoming, who has prepared a statement for this committee, does not want to deliver that statement in person, and has asked that it be introduced into the record.

Mr. Person, have you copies of that statement?

Mr. PERSON. I have it.

Mr. HARRISON. Would you prefer to testify first?

Mr. PERSON. It will just take me about 2 minutes, Mr. Chairman.

Mr. HARRISON. All right.

Mr. ASPINALL. Mr. Chairman, of all these fine witnesses from Wyoming, this is the one witness whom I would like to hear, because I had one of the most enjoyable experiences of my life serving with

him on the Upper Colorado Survey Commission. I have a great admiration for his ability.

Mr. PERSON. Thank you.

STATEMENT OF H. T. PERSON, ENGINEERING ADVISOR TO WYOMING'S INTERSTATE STREAMS COMMISSIONER

Mr. PERSON. Mr. Chairman, and members of the committee, I have served as engineering advisor to Wyoming's interstate streams commissioner in connection with the problems of the development and utilization of Wyoming's upper Colorado River Basin water for the last 15 years.

The House bills under consideration by this committee propose the authorization for construction of five initial units of the so-called Colorado River storage project and 16 participating projects. Of the proposed storage units, none are located in Wyoming. Of the 16 proposed participating projects, 3 are located in Wyoming.

The most important of the five proposed storage units to the upper Colorado River Basin and to Wyoming, are the Glen Canyon and Echo Park Reservoirs. We feel that these two storage units and power projects are essential for the maximum ultimate development and utilization of the water and land resources of the upper Colorado River Basin States. These two units are essential to make possible the use by the upper basin States of the water allocated to them under the 1922 Colorado River compact. These two units are essential to the upper basin States in connection with meeting the minimum flow obligations at Lee Ferry imposed by the 1922 Colorado River compact. The power revenues from these two units are essential in connection with the irrigation development in the upper basin States, since irrigation development cannot be accomplished without a subsidy from either power revenues or some other source.

Our studies indicate that the 2 so-called storage units are the 2 most important units of the system of storage reservoirs necessary for complete development of the upper Colorado River, from the standpoints of (1) maximum water utilization, (2) minimum evaporation loss, and (3) most economical power production.

The three participating projects in Wyoming proposed for construction authorization under the bills being considered are the LaBarge, Lyman and Seedskadee projects. These 3 projects will irrigate about 68,000 acres of new lands and provide supplemental supply to about 40,000 acres which are already under irrigation. The total water depletion resulting from these three proposed projects will be about 125,000 acre-feet. With these 3 projects completed Wyoming will be using only about 35 percent of the water allocated to it under the 1948 upper Colorado River Basin compact. To make further use of the water allocated to Wyoming by this compact, storage in the proposed Kendall and other storage reservoirs is necessary and should be provided.

The water users under the 3 proposed participating projects in Wyoming will be able to repay about 21 percent of the cost of these projects allocated to irrigation in a 50-year period. The remainder of the cost can be paid from power revenues from the units of the Colorado River storage project.

The completion of the units of the Colorado River storage project and the participating projects proposed under these bills will result in a total water use in the upper basin which is still well under the use allocated to the upper basin under the 1922 Colorado River compact.

We believe the authorization of the units of the Colorado River storage project and participating projects proposed under these bills is the necessary first step in making possible the full utilization of the water and land resources of the upper Colorado River Basin in Wyoming. It is a highly important step in the development of the many and unlimited mineral resources of the basin. It is an important step in the development and utilization of the recreational resources of the basin.

Thank you.

Mr. HARRISON. Is there anything you want to add to that?

Mr. PERSON. No, sir; Mr. Chairman.

Mr. HARRISON. Mr. Aspinall, do you have any questions?

Mr. ASPINALL. No, sir.

Mr. HARRISON. Mr. Hosmer?

Mr. HOSMER. Yes, Mr. Chairman.

You make reference, Mr. Person, to the two units essential to the upper basin States in connection with meeting minimum flow requirements at Lee Ferry. You are discussing only their quantitative flow requirements, are you not?

Mr. PERSON. Yes, sir.

Mr. HARRISON. Any further questions?

Thank you, Mr. Person. I appreciate your coming here and making that statement. We are certainly glad to have you.

As announced prior to adjournment at noon, the next witness will be Hon. Jean S. Breitenstein, special counsel to the Colorado Water Conservation Board, and Commissioner of Colorado on the Upper Colorado River Commission.

STATEMENT OF JEAN S. BREITENSTEIN, COLORADO MEMBER OF UPPER COLORADO RIVER COMMISSION AND ATTORNEY FOR COLORADO WATER CONSERVATION BOARD

Mr. BREITENSTEIN. Thank you, Mr. Chairman.

My name is Jean S. Breitenstein, and my address is 718 Symes Building, Denver, Colo. I am the Colorado member of the Upper Colorado River Commission. For a number of years I have been the attorney for the Colorado Water Conservation Board which is the official agency of the State of Colorado charged with the duty of promoting the conservation of the waters of the State of Colorado in order to secure the greatest utilization of such waters and the utmost prevention of floods. My task here is to present the official position of the State of Colorado, as determined by the Board, on the Colorado River storage project.

Mr. Chairman, in doing that, I will, of necessity, have to discuss matters which are not within the bill as it is now before the committee. They are covered by amendments which have been presented by the Upper Colorado River Commission but not formally submitted to the committee. I very respectfully ask your indulgence in permitting me to go beyond the bill and to cover all the matters in my statement.

Mr. HARRISON. Without objection that permission will be granted to you.

Mr. BREITENSTEIN. The wise and orderly development of the waters of the upper Colorado River system is vitally needed to assure the continued welfare of the people of Colorado. The State is divided into two parts by the Continental Divide. On the east the limited water supplies are fully developed. On the west the drainage area of the Colorado River and its tributaries produce annually about 11 million acre-feet of water—more than 70 percent of the flow of the river at Lee Ferry. Under the applicable compacts, Colorado is allotted the beneficial consumptive use of about 4,000,000 acre-feet annually. Of this quantity about 1,650,000 acre-feet is presently being used or is committed for use. The future economy of Colorado will, in large measure, be fixed and determined by the manner in which the uncommitted Colorado water is put to use.

For many years the Colorado Water Conservation Board has given consideration to the problem. To supplement the studies and investigations of the Bureau of Reclamation and other Federal agencies, the Colorado board has obtained and reviewed engineering reports of its own staff and of an independent engineering firm of national reputation. It has also secured expert economic studies.

Its decisions have not been reached hurriedly. They represent the exercise of informed judgment based upon a patient and painstaking study of all aspects of the Colorado situation.

On January 14, 1954, a few days ago, the Colorado Water Conservation Board adopted the following resolution to assert the policy of Colorado in regard to the Colorado River storage project.

Whereas the Colorado Water Conservation Board has given consideration to the report of the Secretary of the Interior, dated December 22, 1950, on the Colorado River storage project and participating projects, and to the supplemental report, dated December 10, 1953, of the Secretary of the Interior on the same subject; and

Whereas the board in an endeavor to ascertain the attitude of all interested areas and citizens of the State of Colorado in regard to the position which Colorado should take on such reports did at its February 17, 1953, meeting create the Colorado Conference Committee to study the use of Colorado River water in Colorado and particularly the proposed transmountain diversion by Denver from the Blue River; and

Whereas such reports have been made and the conference committee has reported to the board; and

Whereas in a further effort to reconcile conflicting views as to the use of Colorado River water without the natural basin in Colorado the board did on December 30, 1953, appoint a mediation committee, which has this day reported that it could come to no agreement; now, therefore, be it

Resolved by the Colorado Water Conservation Board, the official State agency which is charged by law with the duty and responsibility of promoting the conservation of the waters of the State of Colorado in order to secure the greatest utilization of such waters and the utmost prevention of floods, That:

1. It is the position of the State of Colorado that all waters of the Colorado River system available for use in the State of Colorado under the various instruments constituting the law of the river shall be put to beneficial consumptive use in Colorado as expeditiously as orderly economic development will permit.

2. Because of Lee Ferry delivery obligations imposed by the Colorado River compact of 1922, substantial quantities of regulatory holdover storage must be provided in the upper basin if that basin is to be able to put to beneficial consumptive use its allotted share of Colorado River water.

3. The Colorado River storage project will provide such necessary storage and is essential to the full economic development of the water resources of the upper basin.

4. The plan of the Colorado River storage project to finance the construction of the necessary holdover reservoirs through the revenues derived from the sale of power generated at hydroelectric plants and to utilize a portion of such revenues to assist in the financing of so-called participating projects which meet certain fixed criteria is approved.

5. In connection with the Glen Canyon Reservoir Colorado directs attention to the fact that this reservoir, which is located but a short distance above Lee Ferry, will yield substantial benefits to the lower basin, one of the most important of which is the detention of silt and the resulting prolongation in the useful life of Lake Mead. The official representatives of Colorado should strive to obtain some recognition by the lower basin of these benefits and, if possible, a sharing by the lower basin of such matters as reservoir losses.

6. The Echo Park unit is a desirable feature which has the full support of Colorado.

7. Authorizing legislation should contain appropriate provisions for the recapture for use within the upper basin of power generated by the Colorado River storage project when and if any of such power is sold or transmitted for use within the lower basin.

8. Specific provision should be made in authorizing legislation to assure that no rights vest in the use of water for power generation in units of the project which will prevent or handicap the beneficial consumptive use upstream of the waters of the Colorado River system to which any upper basin State is entitled.

9. Colorado has no objections to the report of the Secretary of the Interior on participating projects except that Colorado urges that further study be given to the La Plata and San Miguel projects, which are urgently needed, in order to develop, if possible, a feasible plan therefor and except as hereinafter noted.

10. The report and the supplemental report of the Secretary of the Interior practically ignores any development of Colorado River system water in Colorado. For this reason, Colorado cannot accept the report and supplemental report as now submitted. As conditions precedent to Colorado approval of the report, provisions must be made therein, or in the authorizing legislation, which will assure the following water development in Colorado:

(a) The Cross Mountain unit must be included within the initial authorization for construction as a part of the first phase of the project.

(b) There is no doubt that further consumptive use of water in Colorado is directly dependent upon high upstream storage. To provide therefor there must be included in the initial authorization approximately 3 million acre-feet of total new storage on the Colorado River and its tributaries above Grand Junction, Colo., a substantial portion of which shall be located on the upper reaches of the Gunnison River. The known reservoir sites which might accomplish this objective are Curecanti on the Gunnison and DeBeque on the Colorado River. Additional investigations may disclose other sites. There is little doubt but that the stated amount of storage will be needed. The Secretary of the Interior is urged to expedite the investigation and study of projects which will furnish the requested storage.

11. Denver, the capital city of Colorado, desires to divert water from the Blue River, a tributary of the Colorado River, for municipal and industrial uses in the Metropolitan Denver area. The rights of Denver to take and divert such water are alleged to be in conflict with rights for the use of water stored in Green Mountain Reservoir and taken through the Green Mountain powerplant for the generation of power. Green Mountain Dam, Reservoir, and powerplant constitutes a unit of the Colorado-Big Thompson project of the United States Bureau of Reclamation.

The controversy over the relative rights of Denver and the Green Mountain project are in litigation in a lawsuit now pending in the Supreme Court of the State of Colorado and in another lawsuit now pending in the United States District Court for the District of Colorado.

It would be improper for this Board to attempt to invade the province of the courts or to influence the pending litigation. The Board has no intention of doing either. The feasibility of the proposed Denver-Blue River diversion depends, among other things, on the outcome of this litigation, or on some alternative thereto which satisfactorily protects the Colorado-Big Thompson project.

Upon the condition that the legal availability of a reasonable quantity of water for the Denver-Blue River diversion be established, either by litigation or some other arrangement, and the condition that such project be otherwise feasible, the Board approves the Denver-Blue River project for inclusion as a participating project in the authorization of the Colorado River storage project or for such

other Federal legislative or administrative action as may be requested by Denver.

12. The Board recommends that Denver and the representatives of the west slope in Colorado make every effort to arrive at a harmonious solution of the unfortunate transmountain diversion controversy which for years has created dissension in Colorado. The Board pledges that it and its staff will be ready to assist in the amicable settlement of this prolonged conflict.

13. The director of the board and the Colorado member of the Upper Colorado River Commission are directed to do all things necessary and proper to effectuate this resolution.

14. Copies of this resolution shall be forthwith transmitted to the Governor of Colorado and to the members of the Colorado congressional delegation.

Mr. Chairman, I have with me a certified copy of that resolution which I would like to offer for the purposes of the record. I see no reason to have it printed, but here is a certified copy of that resolution.

Mr. HARRISON. Without objection, it will be received and made a part of the file.

(The document above referred to was received and made a part of the file.)

Mr. BREITENSTEIN. This resolution which I have just read was presented to the Upper Colorado River Commission and that commission, on January 17, 1954, unanimously took the action expressed in the following resolution.

Whereas the Upper Colorado River Commission at its February 26, 1953, meeting did unanimously adopt a motion which provided, in part, that at any time during the consideration of the bill for the authorization of the Colorado River storage project by the commission, the congressional delegations from the upper Colorado River Basin, or the Congress of the United States, the commission will support such amendment to the bill or such independent bill or bills as may be recommended by the Colorado Water Conservation Board for the use in Colorado of water allotted to Colorado by the upper Colorado River Basin compact, such projects to meet the minimum criteria set out in section 5 of the February 13, 1953, draft of bill for participating projects; and

Whereas the State of Colorado at this January 15, 1954, meeting did present to the commission a statement of its position in regard to the Colorado River storage project and the bill proposed for the authorization thereof; and

Whereas in said policy statement the State of Colorado did recommend certain Colorado projects for inclusion within the Colorado River storage project and its authorizing legislation; and

Whereas such Colorado projects will constitute additional projects to be included within the Colorado River storage project and its authorizing legislation: Now, therefore, be it

Resolved by the Upper Colorado River Commission. That pursuant to the recommendations and requests of Colorado the draft of bill to authorize the Colorado River storage project shall be so revised and amended as to eliminate therefrom the reference to the Curecanti project and so as to include the following:

1. The Cross Mountain unit, along with the Glen Canyon and Echo Park units, within the initial authorization for construction.

2. The authorization of approximately 3 million acre-feet of total new storage on the Colorado River and its tributaries above Grand Junction, Colo., a substantial portion of which shall be located on the upper reaches of the Gunnison River, provided that no appropriation for or construction of all or any part thereof shall be made or begun until the Secretary of the Interior shall have made a finding of feasibility thereon and the Congress shall have approved the same.

3. The Denver-Blue River diversion as a participating project provided that before any moneys shall be appropriated for or applied thereto the Secretary of the Interior and the Congress shall have approved the Denver plan and the method of repayment proposed by Denver.

4. The legal committee is directed to prepare for consideration by the commission suitable amendments to effectuate this resolution.

The foregoing resolutions speak for themselves. They are the official actions of the State and the commission.

Qualified witnesses have presented to the committee the underlying principles and theories of the Colorado River storage project. They have the approval of Colorado. No comment by me on them will add anything to this hearing.

Regulatory hold-over storage is necessary to equate the Lee Ferry flows so that the upper division States may use their full allotments of water. It is but good sense that as much of this storage as possible shall be located in the upper reaches of the Colorado River and its tributaries where the reservoirs may not only serve to regulate the stream and generate power but also serve agricultural, municipal, and industrial needs of the upper basin. The project units proposed for Colorado will have such multiple purposes. Perhaps more important they will provide a water supply for a region, which, in a report of the Bituminous Coal Institute referring both to the coal deposits of western Colorado and the oil-shale deposits of northwestern Colorado, has been described in the following manner:

It is no wonder that the fuel authorities in their moments of crystal-gazing envision this region, western Colorado, as the powerhouse—and perhaps the industrial center—of America's future.

The Cross Mountain Dam, located on the Yampa River about 50 miles west of Craig, Colo., will have a total initial capacity of 5,200,000 acre-feet and will generate about 330 million kilowatt-hours of electrical energy annually at a cost which compares very favorably with the cost of energy produced at other project units. The benefit-cost ratio is favorable. It is a feasible and desirable project which, through coordinated operations, will benefit such downstream units as Echo Park and Glen Canyon. It will provide a water supply for the irrigation of lands in the western part of Moffat County, Colo., and will impound substantial quantities of water for stream regulation.

Any substantial increase in the consumptive use of water in Colorado is dependent upon high upstream storage. In recognition of this undeniable fact, Colorado has requested that the project and the authorizing legislation include in the initial authorization 3 million acre-feet of total new storage on the Colorado River and its tributaries above Grand Junction, Colo., a substantial portion of which shall be located on the upper reaches of the Gunnison River.

The Bureau of Reclamation has under study two reservoir sites which might furnish the requested storage. One is the 940,000 acre-foot Curecanti unit on the Gunnison River and the other the 2,200,000 acre-foot DeBeque unit on the main stem of the Colorado River.

The Curecanti Dam is strategically located on the Gunnison River above an area which has great agricultural and industrial potentials. It will supply supplemental water to an irrigated area. Within the Gunnison River Basin there are about 68,000 acres of irrigable land, classes 1 and 2, which is not now irrigated. Much of this can be brought into cultivation with water made available by Curecanti.

In the Gunnison Basin are vast deposits of high-grade coal which may be the base for a substantial industrial development but only if a water supply is assured by the Curecanti unit. Curecanti would be a multiple-purpose dam which would impound water to irrigate large areas of land, to provide good clear water for municipal and industrial uses, to regulate streamflows and to produce substantial

quantities of electrical energy. It is a development which is greatly desired by the area in which it is located and which it will benefit greatly.

There is no section of the United States which has a greater industrial potential than the Rifle-Grand Junction area on the main stem of the Colorado River. Grand Junction is the business center for much of the uranium development on the Colorado Plateau.

As the committee knows, that plateau is the greatest producer of uranium ores in the United States. Perhaps of even greater importance is oil shale.

In this region there are located the richest and most extensive oil shale deposits in the United States. The Bureau of Mines estimates that these oil-shale deposits cover an area of 2,500 square miles and will yield about 15 gallons of shale oil per ton of shale. About 1,000 square miles have been explored by core drilling and other tests. Experts state that the cost of gasoline made from crude oil obtained from new fields is actually more than the cost which would be incurred in the mining and refining of oil shale.

Resources for Freedom, a report by the President's Materials Policy Commission, June 1952, volume IV, page 175, forecasts that by the year 1975 there will be production of 1.4 million barrels of shale oil a day to supply the fuel needs of the United States. It is inevitable that other industries will follow any commercial shale-oil development without much delay. The principal motivating factors will be abundant cheap fuel for power and byproducts usable economically by the chemical and related industries.

The report of the engineering firm of Leeds, Hill & Jewett to the Colorado Water Conservation Board has this to say concerning the DeBeque Reservoir:

Opportunity exists for the creation of a suitable reservoir by construction of a dam in DeBeque Canyon at the lower end of the valley in which the industrial development would presumably be centered. Diversion requirements of such industries could be satisfied by the withdrawal of water from the reservoir without regard to the inflow at the time. Return waters, except the very small proportion which might be unduly contaminated by chemical processes, could be returned to the same reservoir without waste downstream. All irrigation requirements in the Grand Junction area could be satisfied, without conflict with any other use, by the release of water from the reservoir, and the average quality of the irrigation water would be somewhat improved over that now available in the summer months.

It is recognized that the cost of construction of such a storage project would be large, primarily because of the necessity of relocating the trunk highway and railroad which now follow the Colorado River. This cost, however, would be insignificant in comparison to the tremendous capital investment which must be made to industrialize the region and which will not be made until there is assurance of ample water.

We say that the Bureau of Reclamation should expedite studies of the proposed Curecanti and DeBeque units. The completion of the investigation of these units will no doubt establish their feasibility. But whether the storage which Colorado requests is located at these sites or some alternate sites, there is real need for such storage. It must be furnished to provide for an economic development which will increase the wealth and preserve the strength of our Nation.

Other agricultural and domestic needs of the western slope of Colorado can be served by the Florida, Pine River Extension, Silt, Smith Fork, and Paonia participating projects. These are desirable developments which satisfy the criteria established by the bill for par-

ticipating projects. Time does not permit comments on each of these units. They are specifically described in report of the Secretary of Interior on the Colorado River project.

The Denver-Blue River diversion is an important and desirable feature of the project under consideration. This diversion will augment an already existing, well-managed, publicly owned water plant through which the city and county of Denver supplies its own inhabitants and the surrounding metropolitan area with domestic and industrial water.

United States Government personnel and their families constitute about one-sixth of the population served by the Denver water system. Denver, the capital of Colorado and the largest city in the upper basin States, is experiencing a growth which demands immediate acceleration of the development of the only remaining practical source of an additional water supply. That source is the Blue River, a tributary of the Colorado.

For the reasons stated, Colorado respectfully requests that this committee, and the Congress, act favorably on the Colorado River storage project as modified by the amendments proposed by the Upper Colorado River Commission.

Thank you.

Mr. HARRISON. Thank you, Mr. Breitenstein.

Dr. Miller, have you any questions?

Mr. MILLER. The only question I would raise would be the question of Denver's rights to the water. I believe you said that some of that was before the courts at the present time?

Mr. BREITENSTEIN. Yes, sir.

Mr. MILLER. I presume that the feeling in Denver, and your feeling, would be that the committee ought not to take any action on the Blue River and the other water rights concerning Denver until they are settled by the courts?

Mr. BREITENSTEIN. The committee and the Colorado Water Conservation Board can neither invade the province of the courts. That is recognized in the resolutions which I have submitted here.

Now, if water is legally available, and made available either by the outcome of the litigation or some other means, and the project is otherwise feasible, then the water conservation board has approved it for consideration by the Congress and the Secretary of the Interior. But it recognizes that there is the question of the legal availability of the water.

Mr. ASPINALL. Would you yield for a question?

Mr. MILLER. Yes.

Mr. ASPINALL. Do you not think perhaps we are invading the jurisdiction of the court in this present proceedings if this body should take cognizance of any matter pertaining to this project at this time?

Mr. BREITENSTEIN. Congressman, I don't think that would constitute an invasion of the province of the court, because these water matters and water cases go on for years and years. If we just do not talk about them while a court procedure is going on, we might never get any development at all. But the board recognizes that it would be improper to influence the pending litigation.

Mr. ASPINALL. And it is your opinion, if Congress gave a qualified approval of this, that it would have no effect whatsoever upon the legal proceedings now in court?

Mr. BREITENSTEIN. I have great confidence, Congressman, in the Colorado courts, both State and Federal, and in my opinion their integrity is such that the consideration of this project by this committee would have no effect upon the ultimate decision. I have confidence in our courts.

Mr. ASPINALL. I don't suppose that you mean to imply that the Congressman from the Fourth District does not have confidence?

Mr. BREITENSTEIN. I definitely do not, Congressman; no, sir. I am sure you have the same confidence I do.

Mr. MILLER. I believe that is all.

Mr. HARRISON. Mr. D'Ewart? We want to remind the committee we are still under the 10-minute rule.

Mr. D'EWART. I am a little disappointed in that part of your resolution that says a mediation committee has this day reported that it could come to no agreement. This committee is generally a little hesitant about building projects that would establish the prior use of the water within the State when the State itself does not agree as to where and how that water should be used. We indicated that when we were out there last summer.

Is there any hope that within the State of Colorado you can reach that determination within a reasonable length of time?

Mr. BREITENSTEIN. Congressman, I have been working on these Colorado River matters for 26 years. At the moment I have really no hope of any unanimous solution of the existing controversy in Colorado. The water conservation board is the only agency charged by Colorado law in the matter. It has acted on a split vote. Every effort has been made to bring about peace and harmony, and thus far the efforts have failed.

Mr. D'EWART. You can recognize the hesitancy of this committee to step into a matter which is directly a States rights matter, to take water away from one neighborhood and give it to another without some indication from the State that that is their desire?

Mr. BREITENSTEIN. Congressman, I have given you the official State action on it. In doing that, I recognize that that action was a result of a split vote. But it is the official action. The only machinery which we have to resolve the controversy has acted.

Mr. D'EWART. I am a little disappointed.

Mr. BREITENSTEIN. I was, too.

Mr. D'EWART. I have one more point: You are recognized as an outstanding legal authority on reclamation law. The two principal projects before the committee are the Echo Park and Glen Canyon. Set up in the Bureau of Reclamation, they have very limited irrigation works. I mentioned this yesterday. None of the costs chargeable to irrigation as set up by the Bureau could be repaid by irrigation. In your view, does this committee have the right to establish and build or authorize construction of a hydroelectric project when there is neither flood control nor irrigation directly connected with it?

Mr. BREITENSTEIN. In my opinion, Congressman, this project directly affects irrigation. Without these enormous dams, the upper basin cannot use its allotted share of water. This is a condition precedent, a prerequisite, to the use by the upper basin of the water allocated to it. That water will be consumptively used for irrigation, for industrial purposes, domestic purposes, and so on. But we

have to have these in order to get full irrigation development. So I say that it is directly related to irrigation.

Mr. D'Ewart. You know, under the court decisions, it is supposed to be incidental to irrigation and flood control, or to firm up otherwise existing projects. When there can be no direct charge, nothing returned because of irrigation costs, isn't that beyond incidental?

Mr. BREITENSTEIN. Well, on the participating projects, Congressman, there are returns from irrigation.

Mr. D'Ewart. Yes. But we are asked to authorize Echo Park and Glen Canyon.

Mr. BREITENSTEIN. Yes, sir.

Mr. D'Ewart. With no return from irrigation. The question here is whether we are going beyond the province of the Congress, in view of court decisions in the past, in authorizing these projects when they are not incidental to irrigation and not incidental to flood control. In other words, these things are incidental to the power construction.

Mr. BREITENSTEIN. These two large dams are incidental to the beneficial consumptive use in the upper basin of the water allotted to it. Without them we cannot have that beneficial consumptive use. To me, these large holdover reservoirs are an incident to the upper basin securing the ultimate development to which it is entitled under the Santa Fe compact. Without them we cannot have it. So I say they are an incident to our irrigation development. And I think they are within the law, Congressman.

Mr. D'Ewart. Well, I have high regard for your opinion. However, if the power is incidental to irrigation, then should not the irrigation return some of the cost of the dam? That is, to follow your reasoning right through to the logical end.

Mr. BREITENSTEIN. That can be said, yes. And I again point out that on these participating projects, irrigation pays part of the cost.

Mr. D'Ewart. Yes, but I am speaking of these two principal projects where they do not.

Mr. BREITENSTEIN. That is correct.

Mr. D'Ewart. I am questioning in my mind why some of those costs should not be repaid by irrigation if we are going to argue on the floor of the House that the power is incidental to irrigation.

Mr. BREITENSTEIN. Well, I cannot answer that any further than I have.

Mr. D'Ewart. I would like to see it explored by some of the others when they come around to it because it is going to embarrass us on the Floor. There is no question in my mind but we have to have a complete and logical answer to that or we are in trouble. We might just as well recognize it.

Mr. BREITENSTEIN. Of course, Congressman, I think it also helps out for the lower basin, too, in the use of the water down there. It is a further assurance that they will have a water supply for the development of the Imperial Valley and around Yuma.

Mr. D'Ewart. Someone on the floor is going to stand up and say "Why don't they pay for it?"

Is that not true?

Mr. BREITENSTEIN. It may be.

Mr. HARRISON. Any further questions?

Mr. D'Ewart. No.

Mr. HARRISON. Mr. Aspinall.

Mr. ASPINALL. Following that argument, is there any difference between what this bill attempts to do and what the Pick-Sloan bill accomplished in bringing the two of them together? One of them was entirely a flood-control program and the other was reclamation and when they united them they brought them both under the same legislation.

Mr. BREITENSTEIN. Yes, they did. It was comparable.

Mr. ASPINALL. For the benefit of the record, Mr. Breitenstein, would you state the divided vote that was had upon the Colorado Water Conservation Board resolution as of January 14, 1954?

Mr. BREITENSTEIN. Congressman, do you want it just by the outcome or do you want me to give the vote of the individual members of the Board?

Mr. ASPINALL. Just the total vote, and then if I want an explanation we will go further.

Mr. BREITENSTEIN. The vote as recorded was 10 to 3. I should say that 1 of the 10 voting in favor of the resolution was Mr. George Pughe, of Craig. He originally voted against it. After he had done that, he changed his vote, making the statement that he did so because he might wish to move for a reconsideration at some future date. The vote as recorded was 10 to 3.

Mr. ASPINALL. And where do the four, including Mr. Pughe, have their residence?

Mr. BREITENSTEIN. All in your district, Congressman. Ed Dutcher lives at Gunnison.

Mr. ASPINALL. You do not need to give the names. They all live west of the Continental Divide?

Mr. BREITENSTEIN. Yes, sir.

Mr. ASPINALL. And where do the eight reside that voted in favor of the resolution?

Mr. BREITENSTEIN. Well, George Bailey lives in Walden.

Mr. ASPINALL. Do not give the individual names.

Mr. BREITENSTEIN. They all live east of the divide.

Mr. ASPINALL. Mr. Breitenstein, in No. 6, paragraph No. 6 of the resolution just referred to, you state that the Echo Park unit is a desirable feature which has the full support of Colorado. You don't mean to imply that it has the unanimous support of all of the citizens of Colorado.

Mr. BREITENSTEIN. It has the full support of the Colorado Water Conservation Board. As far as I know, there was no one on the board, Congressman, who was opposed to the Echo Park Dam.

Mr. ASPINALL. But there are certain groups in Colorado who are opposing Echo Park?

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

Mr. ASPINALL. You referred to the DeBeque Reservoir. Has any work ever been done upon this proposed project, Mr. Breitenstein?

Mr. BREITENSTEIN. I cannot tell you all the work that has been done on that, Congressman. I saw some pictures in the Denver Post the day before I left last week showing a crew in there drilling at the site.

Mr. ASPINALL. Do you know of anything that was done before the first of this year?

Mr. BREITENSTEIN. Yes. Before the first of this year. I saw maps prepared by some office of the Bureau of Reclamation on the site, and

since last summer I have heard the matter discussed at numerous water meetings in Colorado.

Mr. ASPINALL. Where did you get your figure of the possibility of storage of 2,200,000 acre-feet at the DeBeque Reservoir?

Mr. BREITENSTEIN. I talked to Mr. Crawford, the Director, and the consulting engineer for the Board, Mr. J. R. Riter, who is with the Bureau of Reclamation, and I think others. The figures that I got ran from about 2 million to about 2.5 million, and I thought it was fair enough to strike about an average.

Mr. ASPINALL. Do you not think it is rather farfetched, though, to talk about the work that has been done upon the Curecanti and the DeBeque in the same vein?

Mr. BREITENSTEIN. Much more work has been done on Curecanti than DeBeque.

Mr. ASPINALL. I would like the record to show that work has been done on Curecanti and very little on DeBeque.

Mr. BREITENSTEIN. Yes, that is correct.

Mr. ASPINALL. On page 6 of your statement, where you speak about possible authorization by the Secretary and the Congress, do I understand that you mean by the regular procedure of a bill in Congress when a matter comes up?

Mr. BREITENSTEIN. Frankly, I think you would have to do it that way. Now, it might be that it would be handled through an appropriation measure. I do not know. My thinking went beyond that, Congressman.

Mr. ASPINALL. On page 8 of your report, stating the resources of the oil-shale fields, you make the statement of an average of 15 gallons per ton of shale oil. That takes into consideration the low grade and the high grade, does it not?

Mr. BREITENSTEIN. Yes, that does. And, Congressman, if I may I would like to read into the record a statement referring to the high-grade deposits there. May I do that?

This is a quotation from the Leeds, Hill, and Jewett report to the Colorado Water Conservation Board, referring to the oil-shale deposit. This is a quote:

The Bureau of Mines estimates that approximately 100 million barrels of shale oil could be produced from each square mile of the Mahogany Ledge—that is the high grade section—a section less than 100 feet thick which assays about 30 gallons of shale oil per ton of shale. There can be no doubt that the reserves are more than sufficient to support mining operations at the maximum conceivable rate for several hundreds of years.

Mr. ASPINALL. It is the plan of those who are interested to develop the veins carrying the high-grade shale first?

Mr. BREITENSTEIN. Yes. The Mahogany ledge is high grade.

Mr. ASPINALL. Mr. Breitenstein, may I say to you personally that I know you have had a very difficult job. I just want you to know that as the representative of western Colorado, I appreciate the work that you have done, and that you are trying to do, and I hope we will be able to get together so it may not be quite so difficult in the future.

Mr. BREITENSTEIN. Thank you very much.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. I just had one question with regard to the matter that was brought up by my colleague from Montana. Before you were

here, one of the witnesses analyzed this report which was attached as an appendix by Mr. Larson. He observed that opposite the Echo Park and Glen Canyon projects was listed the two writeups which were chargeable to irrigation. In the righthand side the same amounts were charged 100 percent to power. As I understand your statement, these two dams are figured in as part of the whole upper Colorado project, and the participating projects which are listed below, and which the irrigation costs are chargeable, a certain percentage to irrigation and a certain percentage to power, all are lumped into one total. In other words, you could allocate some of the irrigation costs out of here, I assume, which would simply mean that the costs would be lower down below.

Mr. BREITENSTEIN. To me that is a matter of bookkeeping.

Mr. DAWSON. But in your opinion, the legal effect would be that it would be possible to set it up this way without running in violation of the existing reclamation law, is that correct?

Mr. BREITENSTEIN. That is my opinion on the matter, Congressman. And let me say, further, in my opinion the construction of these large dams, these holdover reservoirs, will make possible much greater irrigation and industrial development in the upper basin than is contemplated by the projects now before the committee. You will have other irrigation projects that have not been investigated yet. They will not be possible unless you first have this regulatory holdover storage. That is a prerequisite to the future irrigation development of our area.

Mr. DAWSON. That is all.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. You say that Colorado is entitled to 4 million acre-feet by the terms of the compact?

Mr. BREITENSTEIN. Approximately that, yes.

Mr. YOUNG. It is impossible for the legislature in Colorado to dispose of the utilization of that water?

Mr. BREITENSTEIN. In my opinion, Congressman, the legislature cannot because of our constitutional provisions. We are an appropriation state. Under our constitution he who first diverts the water and applies it to a beneficial use has a priority over the next man. Because of that constitutional provision, I have serious doubts of the validity of any legislation which might try and resolve the east slope-west slope controversy.

Mr. YOUNG. The State did have authority to enter into an agreement to reserve 4 million, but after they received the 4 million they are powerless to dispose of it, is that right?

Mr. BREITENSTEIN. They are powerless without a constitutional amendment, in my opinion, to make any legally binding arrangement which will allocate water to one side of the mountains or the other.

Mr. YOUNG. Do you think the Federal Government has authority to go in and regulate the disposition of that?

Mr. BREITENSTEIN. No, sir; I don't.

Mr. YOUNG. Would the inclusion of those projects, then, have to await the outcome of the two suits, one in the State court and the other in the Federal court?

Mr. BREITENSTEIN. So far as the legal availability of water for the Denver project is concerned, that will have to await the outcome of that legislation, or settlement or some other arrangement of it.

Mr. YOUNG. Can you estimate how long that might take?

Mr. BREITENSTEIN. I can't, Congressman. I don't know.

Mr. YOUNG. You wouldn't advocate holding up the whole project until then?

Mr. BREITENSTEIN. No, sir. This is a conditional authorization only that would be sought for Denver. And in accordance with the statements that I read, Denver would have to come back to the Congress before it could get any money to spend on its project.

Mr. YOUNG. In your testimony you mentioned the fact that the lower basin should recognize the benefits of building this project and possibly share in the evaporation losses. In your opinion could the upper basin make any legal claim to compel them to share any evaporation losses or deduct so much from the 75 million acre-feet to be delivered every 10 years?

Mr. BREITENSTEIN. Congressman, I know of no legal basis for any such claim by the upper basin, because of the provisions of the old 1922 compact. I thought personally for a long, long time that the Glen Canyon Reservoir was such a great benefit to the lower basin that from a standpoint of equity the lower basin might well share some of those evaporation losses. But the upper basin agreed, the upper basin States agreed, to the 1922 compact, and it is my opinion that under that compact they have to stand the reservoir losses in the upper basin.

Mr. YOUNG. You mentioned the San Miguel project. Where is that located?

Mr. BREITENSTEIN. Southwestern Colorado. The San Miguel is a tributary of the Dolores River, which in turn is a tributary of the Colorado.

Mr. YOUNG. Is that shown on the map up here?

Mr. BREITENSTEIN. I don't see the San Miguel on that map. It shows the Dolores.

Mr. YOUNG. Could you briefly explain, or is it too complicated, the two suits which are pending in Colorado, one in the State court and one in the district court?

Mr. BREITENSTEIN. The State court suit is an adjudication of water rights from the Blue River. To get to the specific point which is involved, the query is whether or not the city and county of Denver or the Green Mountain project, has the earlier priority for the use of water. More specifically, it really refers to the direct flow power rights at Green Mountain. The Federal court suit involves that question of the construction of an agreement made between representatives of the east slope and the west slope prior to the authorization of the Colorado-Big Thompson project.

Mr. YOUNG. After these two suits are settled, will the water problems be solved as far as the distribution of the 4 million acre-feet?

Mr. BREITENSTEIN. Not all of them, Congressman.

Mr. YOUNG. In other words, you may have more disputes.

Mr. BREITENSTEIN. Yes.

Mr. YOUNG. It seems to me it would be a good idea to amend your constitution and take care of it once and for all.

Mr. BREITENSTEIN. I am afraid that would be a difficult job.

Mr. YOUNG. That is all the questions I have.

Mr. HARRISON. Mr. Hosmer?

Mr. HOSMER. Mr. Breitenstein, pursuing Mr. D'Ewart's line of questioning a little further, I believe you stated these power dams were directly connected with the irrigation in the upper basin area.

Would you tell us how, for instance, the Glen Canyon Dam would be directly or indirectly connected as a source of revenue to pay for these other things upstream?

Mr. BREITENSTEIN. Congressman, in the 1922 compact, the States of Wyoming, Utah, New Mexico, and Colorado obligated themselves not to deplete the flows of the river at Lee Ferry below 75 million acre-feet in each 10-year period. That is an obligation of those States to furnish water to the lower basin for the use of the lower basin. They have to do that. The engineers say that without substantial regulatory holdover storage, to even out the flows of this erratic and variable stream, the upper basin States can probably use not more than about 4-million acre-feet of water. Glen Canyon, Echo Park, the other holdover reservoirs, help irrigation and other uses of water in the upper basin by permitting the basin to use greater quantities of water than could be used if that storage were not afforded.

Mr. HOSMER. In other words, it is that indirect regulatory connection that you are speaking about?

Mr. BREITENSTEIN. It is the regulatory connection, but I say it is direct, Congressman, rather than indirect.

Mr. HOSMER. The direct purpose and immediate purpose of the dam is to supply water southward in accordance with the commitments?

Mr. BREITENSTEIN. Yes. It is to help the four States that I mentioned to use their share of water without violating the compact which they signed.

Mr. HOSMER. You stated just now and earlier in your testimony that this was a further assurance to the lower basin States that they will have water. They have not so far ever failed to get their total volume of water, have they?

Mr. BREITENSTEIN. No, sir. The flows down there have been in excess of the 75 million acre-feet every 10 years.

Mr. HOSMER. In other words, this is only an assurance in respect to your contemplated uses of it?

Mr. BREITENSTEIN. That is correct; yes.

Mr. HOSMER. Now, I notice in your testimony, Mr. Breitenstein, that you state your task here is to present the official position of the State of Colorado as determined by the board, and that you are attorney and counsel for the board.

Mr. BREITENSTEIN. That is correct.

Mr. HOSMER. I presume, then, that you speak as an official and agent of the State of Colorado?

Mr. BREITENSTEIN. That is my intent, sir.

Mr. HOSMER. And therefore, in so speaking, I would assume that your statement to the effect that there is no legal basis for any claim on the part of the upper basin States that any depletion be assessed against the lower basin States, amounts to an admission on the part of at least the State of Colorado that would carry weight in courts to that effect, is that correct?

Mr. BREITENSTEIN. I don't know about that, Congressman. There is no doubt in my mind from a legal standpoint, we have to stand the evaporation losses on Glen Canyon and Echo Park. Now, it seemed to me for a long, long period of time, that Glen Canyon is such a great benefit to the lower basin that, from the standpoint of equity the lower basin might well accept some of those reservoir losses.

Mr. Hosmer. Well, sir, let me state this: Insofar as there is any contention made on behalf of the backers of this legislation that there is one drop of depletion to be charged off against the lower basin States on account of the upper basin development, I shall be unalterably opposed to it.

That is all.

Mr. Breitenstein. May I say, Congressman, I have said several times this afternoon that so far as my opinion goes, there is no legal basis for any demand, claim, desire, or whatever you wish to call it, of the upper basin to charge any of those to the lower basin. I put it on an entirely different basis than that.

Mr. Hosmer. There is a desire of the State that you represent, and in an official capacity here today, as indicated by point 5 of their resolution, a certified copy of which you made a part of the file, to such effect, and further alleging that it is made on the basis of substantial benefits to the lower basin.

Mr. Breitenstein. I think it is.

Mr. Hosmer. All right. Now let's get into that. One of the most important things is the detention of silt and in the prolongation of the useful life of Lake Mead. Yesterday we had testimony to the effect, from the officials of the Bureau of Reclamation, that it would be 190 years before there would be any effect whatsoever on Lake Mead from sedimentation.

Mr. Breitenstein. They are engineers, Congressman. I can't argue with them. I am just a lawyer.

Mr. Hosmer. Well, somebody put this word "substantial" benefits into the lower basin here, and in light of no detrimental effect for two centuries, it seems to me that that is not an accurate representation of the fact about the benefit to the lower basin. What is your opinion with respect to that?

Mr. Breitenstein. I think it is a substantial benefit, Congressman, but I am a lawyer, and I must say that on these engineering matters you should talk to a technical man, trained in engineering.

Mr. Hosmer. Then your opinion as to substantial benefit is a layman's opinion insofar as that particular point is concerned?

Mr. Breitenstein. That is right.

Mr. Hosmer. Thank you. That is all.

Mr. Harrison. We thank you very much, Mr. Breitenstein, for your testimony today.

Mr. Aspinall. Mr. Chairman, before you call the next witness, there was filed with the committee this morning a request from the secretary and general counsel of the Upper Colorado River Commission relative to certain amendments. He has now produced another letter for an amendment to those suggested amendments, and I ask that it be filed with the committee for our future use.

Mr. Harrison. Without objection it will be received and filed.

(The document referred to is as follows:)

JANUARY 21, 1954.

Hon. William H. Harrison,
Chairman, Irrigation Subcommittee,
Committee on Interior and Insular Affairs,
House of Representatives, Washington, D. C.

MY DEAR Mr. Harrison: Reference is made to my letter of January 18, 1954, in which I called attention to a series of amendments of the bills (H. R. 4443, H. R. 4449, and H. R. 4463) upon which bills hearings are now in progress.

Our commission has directed me to recommend the following perfecting amendment in lieu of the fifth amendment suggested on page 2 of my letter of January 18:

Page 6, lines 13 to 16, delete entire clause beginning "Neither"—and ending with the semicolon at the end of line 16 and substitute:

"No right to impound or use water for the generation of power or energy, created or established by the building, operation, or use of any of the power-plants authorized by this act, shall be deemed to have priority over or otherwise operate to preclude or impair any use regardless of the date of origin of such use, of the waters of the Colorado River and its tributaries for domestic or agricultural purposes within any of the States of the upper Colorado River Basin;"

Sincerely yours,

JOHN GEOFFREY WILL,
Secretary and General Counsel.

Mr. HARRISON. The next witness will be Leonard Kuiper, from Colorado. I understand he has to leave and we are granting him this opportunity of appearing.

Mr. ASPINAL. Mr. Kuiper is city manager of the city of Delta, in an important district of Colorado, and he is a civil engineer of varied and valued experience, considerable experience.

Mr. HARRISON. We are certainly glad to have him before the committee.

STATEMENT OF L. R. KUIPER, CITY MANAGER, DELTA, COLO.

Mr. KUIPER. Mr. Chairman and members of the committee, I am L. R. Kuiper, city manager of Delta, Colo. I have worked as an engineering consultant and contractor in the Gunnison Basin since 1946.

The construction of a storage reservoir high up on the Gunnison River to regulate the flow of that river has become necessary in order to permit further development of the agricultural potential and even, in fact, to maintain at existing levels the present agricultural development of the area, if the Gunnison River is required to furnish its proper share of the water allocated to the lower basin by the 1922 compact.

For many years the waters of the Gunnison River and its tributaries below the proposed Curicanti Dam site have been closely administered by the water officials of the State of Colorado in order to insure the most efficient use of the waters of the Gunnison River and its tributaries in that area. Private development of water resources in this area has continued through the development of small reservoirs and stream diversions. For the most part this development has been by individuals and small groups of individuals.

The development has been limited to the small streams because of the limited means of the people making the developments. The extreme variations in the flow of the uncontrolled Gunnison River, in general, has made small scale development from the Gunnison River itself an impractical matter. The extreme variations in high and low flows make it infeasible for the small operator to install structures that would make full season irrigation possible and practical. As a result of this condition, most of the development that could be supplied from the Gunnison River proper is being supplied from the smaller tributaries where smaller diversion structures and reservoirs are possible.

If the river were regulated it would be feasible to use the waters from the main stream on land presently irrigated from tributary

streams and thus free that water for considerable development higher up on these tributary streams.

Fuller utilization of the small tributary streams is becoming increasingly necessary in the entire area. This use is not only important to future development, but is rapidly assuming more importance in the maintenance of the existing economy of the area. The increasing effect on existing economy is due to the policy of the United States Forest Service to cut livestock grazing allotments on the United States forest lands.

While it is not the intent to criticize that policy here it is appropriate to point out the effect it is having on the area economy. The cuts in the livestock grazing allotments make it necessary for the stockmen to look elsewhere for summer grazing in order to preserve the balance of their livestock units.

The solution is to provide irrigated pasture in the areas that separate the high forest summer forage and the lowland winter range and feed-producing lands. These intermediate areas, in general, lie midway up on the tributaries and need the waters that could become available if those waters were released from irrigation uses in the main river bottom. If proper regulation of the river were accomplished, the farm units now using tributary waters could economically and practically use waters from the main river channel.

The construction of a reservoir high up on the Gunnison would thus serve a dual purpose. It would regulate the stream below the reservoir so that diversions could be made to lands now using tributary waters and release water from those tributaries for use higher up and thereby permit stockmen to irrigate pasture to compensate for the loss of summer grazing privileges on United States forest lands.

By equating the seasonal flows such a reservoir would also have the effect of making the streamflow above the reservoir available for irrigation on lands above the reservoir site since lands below the dam could be supplied by releases of the floodwaters stored during the high runoff period. The effect of such stream regulation would be that of beginning an almost completely new cycle of irrigation development in the upper Gunnison River basin.

Records of gauging stations on the stream indicate that approximately two-thirds of the annual runoff occurs during the snow melt period of April through June, with maximum discharges as high as 15,000 second-feet in most years at Grand Junction. After this high runoff period flows rapidly recede to about 1,000 second-feet for the rest of the year. The tributaries show the same general pattern as the river itself. In most cases the late season flows of the tributary streams have already been appropriated in excess of actual divertible water.

The aforementioned statements are taken from Bureau of Reclamation studies, United States Geological Survey records and records of the office of the State engineer of Colorado. They clearly show that by the time the irrigation season begins in earnest, that is, in about the month of June, most of the water has already gone down the river out of reach.

The impoundment of the floodwaters of the stream for regulated release would also increase the quality of the water during the low-flow periods. At present much of the low flows are return irrigation

waters containing high concentrations of minerals leached from the soil. Regulated flow would provide a dilution factor such that the waters would be more suitable for industrial uses so that the mineral and timber reserves would be subject to greater development.

As only one example to illustrate what could be accomplished by stream regulation I should like to cite the following case:

The Uncompahgre project has suffered from short water supply as follows:

1946: 20 percent of requirements for 44 days.

1947: 15 percent short for 18 days.

1948: 16 percent short for 30 days.

1949: 15 percent short for 30 days.

1950: 25 percent short for 105 days.

1951: 22 percent short for 121 days.

1952: 16 percent short for 37 days.

1953: 21 percent short for 69 days.

These are average shortages and occur in the middle of the growing season when water is most important. In this area of virtually no rainfall such shortages are little short of disaster.

The Uncompahgre project has a decree for 1,300 cubic feet per second from the Gunnison River through the Gunnison tunnel. That decree exceeds the river flow at that point during the major part of the irrigating season.

In addition to the Uncompahgre project decree there are individual decrees aggregating 2,000 cubic feet per second, junior to the Uncompahgre project decree, on the Gunnison River above the tunnel site. The 2,000 second-feet of individual decrees represent nearly 80,000 acres of irrigated lands. The result of this condition usually results in a shortage of water for both the Uncompahgre project and the decree holders above the tunnel.

Storage at the Curecanti site would impound sufficient floodwaters to satisfy the demands of the Uncompahgre project and permit the water they must call for now to be used to satisfy the needs of the junior decree holders in the Gunnison area. It would make it possible for an area of approximately 150,000 acres to revert from one of sub-standard water supply to one of complete supply.

For this reason as well as the reason of new lands that could be irrigated from this project, we in the western parts of Colorado would certainly like to see this project constructed.

Mr. HARRISON. Does that complete your statement?

Mr. KUIPER. Yes, sir.

Mr. HARRISON. Any questions?

Mr. ASPINALL. Mr. Kuiper, I understand that your position is that you favor the bills which are now before the committee; is that correct?

Mr. KUIPER. Yes, sir.

Mr. ASPINALL. That you particularly favor construction of a unit which is known as Curecanti?

Mr. KUIPER. We do. And that, incidentally, is one of the features on which there is no controversy in the State of Colorado.

Mr. ASPINALL. You have given a great deal of study to the economics of this proposed unit?

Mr. KUIPER. Yes, sir.

Mr. ASPINALL. In your opinion, is it feasible?

Mr. KUIPER. It can be feasible, yes, sir.

Mr. ASPINALL. I think that is all.

Mr. HARRISON. Thank you very much, Mr. Kuiper, for your testimony.

The next witness will be Mr. Glenn Saunders, assistant city and county attorney, Board of Water Commissioners, City and County of Denver.

STATEMENT OF GLENN G. SAUNDERS, ASSISTANT CITY AND COUNTY ATTORNEY, BOARD OF WATER COMMISSIONERS, CITY AND COUNTY OF DENVER, COLO.

Mr. SAUNDERS. My name is Glenn G. Saunders, attorney for the Denver Board of Water Commissioners. The Board of Water Commissioners of Denver is a department of the city with constitutional and charter powers giving the full control of a waterworks system and plant which supplies not only the city and county of Denver proper, but adjacent areas in Arapahoe, Adams, and Jefferson Counties, with a total population approximating 600,000 who are served by this plant.

I have reduced this statement to writing in order to facilitate my appearance before this committee. I will have to refer to the proposed amendment to the bill which Mr. Aspinall has presented to the chairman as a part of the basis for the text of what I have to say.

Mr. ASPINALL. Mr. Chairman, I have presented it only for filing. It is not a presentation of this amendment on my part.

Mr. HARRISON. That is correct. It would have to be presented to the committee in our sessions by one of the members of the committee and not from the outside.

Also, I want to call attention to the fact that we as committee members do not have a copy of either the original proposed amendments or the suggested ones. So all of us not having that will have to be dependent upon any explanation that you would like to make of those amendments.

Mr. SAUNDERS. I think that the character of the amendment will appear from my statement.

Mr. HARRISON. That will be fine.

Mr. SAUNDERS. By this proposed amendment, Denver will request the United States to loan Denver \$75 million to build its Blue River project for the purpose of supplying the Denver metropolitan area with water for urban uses. The project includes a reservoir at Dillon, Colo., which will catch water from the Blue River, a tributary of the Colorado River—by the way that Dillon Reservoir is located upstream from the Green Mountain Reservoir, which has been mentioned here, and which Green Mountain Reservoir is a part of the Colorado-Big Thompson Reservoir and now in operation—a 23-mile transmountain tunnel which will carry this water from the western side of the Continental Divide, and a reservoir at Two Forks, southeast of Denver, on the South Platte River to impound such water, together with a hydroelectric plant at Two Forks to use Blue River and South Platte water to generate electricity for use in the Denver area. The provisions with respect to the construction loan may be summarized as follows:

We will propose that:

(a) Over a maximum period of 15 years, the United States will advance funds 3 months ahead of their need for construction.

(b) Moneys advanced for each unit will be interest free until the unit itself is completed. On completion of each unit the loan, with respect to the unit in question, becomes immediately repayable, or, at Denver's option, may be repaid in 50 equal installments plus interest at the going rate for long-term Federal money.

Next following in the statement I have is a flow chart to show the probable chronological schedule of construction and a rate of investment table based on the flow chart.

(The documents referred to are as follows:)

CITY AND COUNTY OF DENVER CONSTRUCTION FLOW CHART BLUE RIVER PROJECT

UNIT	1955	56	57	58	59	1960	61	62	63	64	1965	66	67	68	69
MONTEZUMA TUNNEL			\$ 35,000,000												
TWO FORKS RESERVOIR										\$ 25,000,000					
TWO FORKS HYDRO PLANT												\$ 3,000,000			
CHANNEL IMPROVEMENTS SOUTH PLATTE RIVER							\$ 1,500,000								
DILLON RESERVOIR												\$ 10,500,000			

City and county of Denver, anticipated rate of advances, Blue River project

Year	Monte- zuma Tunnel	Two Forks Reservoir	Channel improve- ment and hydro- plant	Dillon Reservoir	Total	Cumula- tive total	Value of advances at 3-percent interest
1955.....	\$4,375,000				\$4,375,000	\$4,375,000	\$131,250
1956.....	4,375,000				4,375,000	8,750,000	262,500
1957.....	4,375,000				4,375,000	13,125,000	393,750
1958.....	4,375,000				4,375,000	17,500,000	525,000
1959.....	4,375,000				4,375,000	21,875,000	656,250
1960.....	4,375,000				4,375,000	26,250,000	787,500
1961.....	4,375,000		¹ \$750,000		5,125,000	31,375,000	941,250
1962.....	4,375,000		¹ 750,000		5,125,000	36,500,000	1,096,000
1963.....		\$4,166,667			4,166,667	40,666,667	125,000
1964.....		4,166,667			4,166,667	44,833,334	250,000
1965.....		4,166,667		\$2,625,000	6,791,667	51,625,001	453,750
1966.....		4,166,667	² 1,000,000	2,625,000	7,791,667	59,416,668	687,500
1967.....		4,166,667	² 1,000,000	2,625,000	7,791,667	67,208,335	921,250
1968.....		4,166,665	² 1,000,000	2,625,000	7,791,665	75,000,000	1,155,000
Total.....	35,000,000	25,000,000	4,500,000	10,500,000	75,000,000	75,000,000	8,385,000

¹ Channel improvement.

² Hydroplant.

You will notice that the first thing in the flow chart is the Montezuma Tunnel, the 23-mile tunnel, which will take from now until 1962 to complete. It could be completed in a little shorter time, but not economically.

Following that we would plan to build Two Forks Reservoir, its hydroplants, and in the meantime certain channel improvements.

The next table I have inserted is the report of the anticipated rate of advances by the Government to the city of Denver and the value of those advances at 3 percent interest. In other words, if we assume that Federal money is worth 3 percent, the column on the right-hand side of this page indicates the amount of subsidy from the Federal Treasury, a total potential subsidy, of \$8.3 million.

The reason that Denver believes she is entitled to this subsidy appears next in my statement. The factual justification for the loan may be summarized as follows:

1. The Denver Water Board supplies water, not only to the area within the political limits of Denver, but also to almost the entire metropolitan area around Denver. Within the political limits of Denver there is located \$36,902,000 of tax-exempt federally owned property. Had this property been taxed at the 1953 mill levy for city purposes of 39.55 mills, the Federal Government would have paid Denver \$145,947.41 in taxes.

This, I may say, is a subsidy to the Federal Government which has been going on in Denver for many years. There are more federally owned buildings within the Denver city limits than any other city in the United States, save Washington, D. C., I believe.

Denver has a split water rate, one rate applying to Denver citizens who have invested almost \$70 million in their water plant, and the other, a higher rate, applying to users outside the city who have not made such investment. However, the city grants to Federal Government installations outside the city cheaper, inside rates in almost all cases. The next following table shows for the year 1953 the water revenue from Federal Government installations located outside the city and losses of revenue, \$82,433.19, to the city by reason of the favorable rates:

(The document referred to is as follows:)

City and county of Denver, loss of revenue from Government installations outside of Denver, 1953

Federal installations	Consumption, thousand gallons	Actual		Normal rate schedule		Loss from service to Federal installations
		Rate per thousand gallons	Revenue	Rate per thousand gallons	Revenue	
Rocky Mountain Arsenal.....	409, 449	\$0. 106	\$43, 523. 83	\$0. 203	\$83, 107. 30	\$39, 583. 47
Fort Logan Hospital and housing project.....	46, 189	. 135	6, 245. 73	. 233	10, 781. 29	4, 535. 56
Federal correctional institution...	44, 096	. 130	5, 711. 04	. 223	9, 836. 64	4, 125. 60
Fitzsimons Army Hospital.....	361, 739	. 110	39, 926. 99	. 205	74, 115. 55	34, 188. 56
Lowry Air Force Base (partly inside and partly outside of city).....	578, 338	. 104	60, 320. 96	. 104	60, 320. 96	-----
Federal center.....	168, 480	. 213	35, 967. 40	. 213	35, 967. 40	-----
Rocky Flats atomic plant (unfiltered water).....	63, 562	. 108	6, 878. 96	. 108	6, 878. 96	-----
Total.....	1, 671, 853	. 119	198, 574. 91	. 168	281, 008. 10	82, 433. 19

You will notice that in this table we have the Rocky Mountain Arsenal. I should stop there for just one moment and say to you according to information furnished us by the United States Army, if we ever get into a chemical warfare situation, this arsenal will be manufacturing chemicals for such warfare at a rate which will require one-third of the entire water supply of our city. We don't see how we are going to do it, but we will have to if we are in that kind of a war. There are a number of installations listed there.

Going on to the next page of my statement, Denver is known as the second capital of the United States. The population of metropolitan Denver, 650,000 includes 19,500 non-military Federal employees and 16,500 military personnel and approximately 70,000 dependents of such employees and personnel. This group of more than 100,000 people represents a very substantial segment of Denver population for which Denver performs all municipal services without benefit of a corresponding industrial tax base, the most prolific source of revenue to meet the costs of government.

I think we all know that the resident sections rides on the industrial sections and the cost of schooling, policing, fire protection and the like in the resident sections is much greater than the amount of take from taxes.

Diversion of a maximum of 177,000 acre-feet of water into the Denver water system will result in return flow to the South Platte River through Denver sewers of 140,000 acre-feet of water per year. If reservoirs are built to catch and hold this return flow, which, by the way, must be left in the river, as it does not belong to the residents of Denver, for release during the irrigating season, more than 50,000 acres of what is now dry, unproductive land northeast of Denver can be irrigated, and the annual benefits thereby derived, computed in the same manner as those reported for H. R. 236, Fryngpan-Arkansas project, are as follows:

Direct benefits each year-----	\$1, 330, 000
Indirect benefits each year-----	2, 206, 000
Total-----	3, 626, 000

If no reservoirs are built, only the return flow to the river during the irrigating season could be used beneficially. Under these circumstances, only 21,000 additional acres could be irrigated and the annual benefits would be:

Direct benefits each year-----	\$558, 600
Indirect benefits-----	964, 300
Total-----	1, 522, 900

It means that the Government will get back involuntarily in further subsidy from the city of Denver as a result of building this project enough money to repay the subsidy Denver asks every 6 years. This is a better return than the Federal Government gets on any of its reclamation projects—a direct irrigation benefit.

The construction of the city's project, the tunnel, a dam at Dillon and a dam at Two Forks provides the core of a large Blue-South Platte project proposed by the United States Bureau of Reclamation to bring an additional 270,000 acre-feet of water to the upper South Platte Valley, and thereby creates a potential for improving the feasibility of that reclamation project, provided that the Bureau is able to

negotiate appropriate agreements with Colorado water users on the western and eastern slopes.

SUMMARY

Denver is requesting a construction loan of \$75 million for a necessary, worthwhile and justifiable project with repayments to be made on a sound business basis. Denver's only request, which might be called a subsidy, is that the money be interest free during the construction period until the various units of the project go into operation. Generally, money advanced by the Federal Government for projects of this type, is interest free during the construction period. During this 15-year construction period, Denver is giving the Federal Government subsidies as follows:

Tax-free use of land and improvements-----	\$2, 190, 000
Bargain water rates-----	1, 237, 000
Total-----	3, 427, 000

Based on present water rates and the present tax structure, during the 50-year payout period, the United States will receive from Denver the following subsidies:

Tax-free use of land and improvements-----	\$7, 300, 000
Bargain water rates-----	4, 125, 000
Total-----	11, 425, 000

In addition, there will accrue to irrigation users in the South Platte Valley, without building any storage, during such 50-year period, values of \$75,150,000 which in part will return to the Treasury in the form of income and other tax collections.

PRECEDENTS

The legislation which the city and county of Denver now seeks has ample precedent in similar laws enacted by Congress from time to time in the past to assist municipalities in the development of their waterworks, especially in situations where it is necessary for the municipality to go a long distance to obtain an adequate water supply for the expanding population and industry.

Such assistance by Congress has been amply justified to aid in the development of commerce and trade within the country, for the public welfare, to permit the construction of defense projects at selected strategic locations, and to assist in the settlement of public lands in the surrounding area. The nature of this assistance has been in the form of loans and also in the form of grants and subsidies which meet a part of the cost of a project by recognizing secondary and incidental benefits of the project to the public in general, such as flood control and preservation of fish and wildlife.

To aid commerce and trade, the Reconstruction Finance Corporation was created. Under such a law, Denver would be eligible for the loan. That law (15 U. S. C. A. 604 (3)) provided:

In order to aid in financing projects authorized under Federal, State, or municipal law, to purchase the securities and obligations of, or to make loans to, (A) States, municipalities, and political subdivisions of States, (B) public agencies and instrumentalities of one or more States, municipalities, and political subdivisions of States, and (C) public corporations, boards and commissions: Pro-

vided, That no such purchase or loan shall be made for payment of ordinary governmental or nonprofit operating expenses as distinguished from purchases and loans to aid in financing specific public projects.

Restrictions were placed upon such loans. The obligations purchased were required to be of sound value and secured, and not exceed \$200 million. Interest rates were determined by the Secretary of the Treasury (15 U. S. C. A. 606). If the RFC were still active, Denver would qualify for the loan from such agency.

In hearings before the subcommittee on Irrigation and Reclamation of the Committee on Interior and Insular Affairs, House of Representatives, 82d Congress, held May 18, 21, and 22, 1951, Mr. D'Ewart pointed out at page 32 that the State of Montana has a water board which issues bonds and builds irrigation projects financing such bonds through RFC or through the various agencies for that purpose. He also pointed out that this board had irrigated more acres in the State of Montana, through such projects, than through Bureau of Reclamation projects.

Another analogous law, the Defense Public Works Act, 42 U. S. C. A. 1531 ff., provides in part:

Sec. 1531. Declaration of policy; definition of "public work." It is declared to be the policy of this subchapter to provide means by which public works may be acquired, maintained, and operated in the areas described in section 1932 of this title. As used in this subchapter, the term "public work" means any facility necessary for carrying on community life substantially expanded by the national-defense program, but the activities authorized under this subchapter shall be devoted primarily to schools, waterworks, sewers, sewage, garbage, and refuse disposal facilities, public sanitary facilities, works for the treatment and purification of water, hospitals and other places for the care of the sick, recreational facilities, and streets and access roads.

Sec. 1532. (c) To make loans or grants, or both, to public and private agencies for public works and equipment therefor, and to make contributions to public or private agencies for the maintenance and operation of public works, upon such terms and in such amounts as the Administrator may consider to be in the public interest.

* * *

Sec. 1533. (3) Public works shall be maintained and operated by officers and employees of the United States only if and to the extent that local public and private agencies are, in the opinion of the Administrator, unable or unwilling to maintain or operate such public works adequately with their own personnel and under the loans or grants authorized by this subchapter.

The provisions above quoted terminated 6 months after the end of the national emergency.

Let us consider the water problem of the city of San Diego. In 1947 a conduit from the aqueduct of the Los Angeles Metropolitan Water District was completed to supply the city with a flow of 85 cubic feet per second. This unit was planned by the Bureau of Reclamation and built by the Navy with the city to repay the cost, approximately \$15 million, over a 40-year period. However, the needs of the city expanded so rapidly that the 82d Congress, first session, authorized (Public Law 171) the Secretary of the Navy to build a second conduit. The assistance was justified (H. Rept. 907, 82d Cong.) on the grounds that San Diego had grown in population, had a large aircraft industry, a large naval establishment and a limited water supply. The cost of this second conduit is to be repaid by the city over a 40-year period.

Denver likewise has grown rapidly in population, has a large military establishment and important national-defense industry including one installation of the Atomic Energy Commission.

Another group of analogous laws is found in the statutes on public lands which created the Bureau of Reclamation. The Bureau is authorized to furnish water to municipalities, 43 U. S. C. A. 485h (c) providing:

The Secretary is authorized to enter into contracts to furnish water for municipal water supply or miscellaneous purposes: *Provided*, That any such contract either (1) shall require repayment to the United States, over a period of not to exceed forty years from the year in which water is first delivered for the use of the contracting party, with interest not exceeding the rate of 3½ per centum per annum if the Secretary determines an interest charge to be proper, * * *.

Denver's request that it not be charged interest until the development period has expired, finds ample precedent in section 485h (d) where it is stated:

(3) That the general repayment obligation of the organization shall be spread in annual installments, of the number and amounts fixed by the Secretary over a period not exceeding forty years, exclusive of any development period fixed under subsection (d) (1) of this section, for any project contract unit, or for any irrigation block, if the project contract unit be divided into two or more irrigation blocks.

(4) That the first annual installment for any project contract unit, or for any irrigation block, as the case may be, shall accrue, on the date fixed by the Secretary, in the year after the last year of the development period or, if there be no development period, in the calendar year after the Secretary announces that the construction contemplated in the repayment contract is substantially completed or is advanced to a point where delivery of water can be made to substantially all of the lands in said unit or block to be irrigated; and if there be no development period fixed, that prior to and including the year in which the Secretary makes said announcement water shall be delivered only on the toll charge basis hereinbefore provided for development periods.

A number of projects supplying municipal water in part have been built under this law. For example, the Canadian River project in Texas, which specifically is authorized under 43 U. S. C. A. 600b and 600c, supplies primarily municipal and industrial water, and also water for irrigation, flood control, fish and wildlife and facilities for silt retainment. The cost allocable to flood control and fish and wildlife is nonreimbursable.

The repayment period is 50 years from the date of completion of the municipal and industrial features, and the interest rate is the same as the rate paid by the United States on long-term bonds, and title to the municipal features will pass to the municipalities when payment is completed.

Use of money to build a project, interest free until the project is completed and operating, is a subsidy. The reclamation laws, the Defense Public Works Act, and other laws give ample precedent for this type of subsidy.

In addition, subsidies are given in the form of nonreimbursable expenditures when the project produces incidental benefits to the general public such as flood control, preservation of fish and wildlife, and sometimes silt control.

Two Forks Reservoir can be used for flood control purposes and for the preservation of fish and wildlife, and return flow from Denver sewers will benefit downstream lands. The United States contributed \$4 million or \$5 million to San Francisco for flood control benefits incidental to the construction of its Cherry Valley project, a part of its municipal water system (hearings before Subcommittee on Irrigation and Reclamation, May 18, 21, and 22, 1951, 1st sess., 82d Cong., p. 33).

In the precedents we point out the very purpose of the Colorado River storage project is the construction of sufficient facilities so that Colorado may fully develop. Denver is the only Colorado appropriator of water for which a specific allocation of water might be said to be made in the Santa Fe compact. Elwood Bannister presented Denver's claim before the Hoover Commission for the water at that time, and I think the only specific request for water under the Colorado River compact.

Denver at the present time would be totally unable to continue to exist without transmountain water. Approximately half of our water just has to come from the western slope of Colorado. Half of our people, including these Government installations, are supplied with water from the western slope. Without it, we could not live.

We are faced with a growth condition which is not a theory but which is very real. It is to meet that growth that Denver seeks some assistance from the Federal Government which is itself a large beneficiary.

Mr. HARRISON. Does that complete your statement?

Mr. SAUNDERS. Yes.

Mr. HARRISON. Mr. Engle.

Mr. ENGLE. Do you believe that the Bureau of Reclamation should constitute itself as an RFC for loaning money to metropolitan areas?

Mr. SAUNDERS. No. I think the Bureau of Reclamation should live entirely within the law. If the Bureau is to supervise the expenditure of this money, it should only be done at the direction of Congress. That is the reason for this bill, so the Congress will make the direction and will control it.

Mr. ENGLE. You acknowledge this proposal is not within existing reclamation law?

Mr. SAUNDERS. That is right.

Mr. ENGLE. And that it requires special legislation?

Mr. SAUNDERS. Yes, sir.

Mr. ENGLE. Do you think that we can justify to the members of the House constituting the Bureau of Reclamation as an RFC to finance water projects for metropolitan areas?

Mr. SAUNDERS. I would rather liken this to a public works administration than RFC. There is a great body of precedent for such supervised expenditures by local government of Federal finances which are of great benefit to the Federal Government. The benefits to the Federal Government in this case are such that it seems to me that it would be very good business for the United States to undertake what we have proposed.

Mr. ENGLE. How about the benefits of supplying water to cities like New York or Cleveland?

Mr. SAUNDERS. There are two benefits particularly in this case, one which I have pointed out, and that is on the basis of the usual irrigation return with which you are very familiar as a longtime member of this committee, the Government will be paid back instead of \$8 million of subsidy, \$75 million over 50 years in income taxes and all the benefits that come from the development of irrigated agriculture.

Usually considered proper for allocation of money for reclamation projects, this development will more than pay back the Federal

Government in indirect benefits. The other basis is the one that the United States Government is itself a large user of this water. A large part of the water which is to be developed by this project will be sold directly to the Federal Government. The Federal Government has no other means of equal efficiency for securing the supply of water for its needs in this area.

Since the Government cannot pay us in advance for water which is not yet delivered, this is a reasonable way of allowing the city to go ahead and develop these facilities for use outside the city limits.

Not a drop of this water will be used inside the city limits of Denver. The whole development is for areas outside unable otherwise to efficiently supply themselves.

Mr. ENGLE. How does the city of Denver get into the picture outside the city limits?

Mr. SAUNDERS. By our charter we are authorized to lease water on a temporary basis to users outside the city limits.

Mr. ENGLE. Is that for irrigation or use?

Mr. SAUNDERS. For domestic use, urban uses.

We may also temporarily lease water for agricultural purposes, but we cannot afford to do that. Agricultural water only brings about \$2 an acre-foot and this water costs us about \$12.

What we are developing is water for urban uses, not agricultural uses.

Mr. ENGLE. Did you not refer to agricultural benefits?

Mr. SAUNDERS. That comes from the return from our uses. We return about 80 percent of all the gross diversions to the Platte River. It runs on downstream and the United States Army engineers, in a survey they made in conjunction with the State engineer have estimated that this water, or some of it, is reused seven times before it goes outside the State of Colorado. It is that reuse of return flow which is of great benefit to agriculture downstream.

Mr. ENGLE. These agriculturalists will not pay for the benefit?

Mr. SAUNDERS. No; no more than they do from the return flow from the Colorado-Big Thompson project from which there is great return-flow benefit, an involuntary benefit which nevertheless accrues to the United States by reason of the prosperity which it creates and the tax base which it thus broadens.

Mr. ENGLE. You calculated that. That is what you base your figure on?

Mr. SAUNDERS. Yes, sir; on the same basis that the Bureau of Reclamation used in the Fryingpan-Arkansas plan.

Mr. ENGLE. It is difficult to calculate?

Mr. SAUNDERS. I think it probably was. This was done by engineers who were quite competent to do this.

Mr. ENGLE. Aside from the internal rumpus in Colorado, and I understand not everybody is not in sweet harmony and accord on this proposition, I have grave doubts about Congress being willing to get into the business of financing cities and municipal water supplies.

Mr. SAUNDERS. We have been concerned about that ourselves, but we have been the beneficiaries of the Federal Treasury heretofore, in the days of PWA and WPA. I think we did a good job with the money advanced to us.

Mr. ENGLE. Wouldn't it be smarter to just offer a bill to reconstitute the RFC for the specific purpose? I notice you are saying if the RFC was still in existence, you would apply to them for a loan. I assume this is desperation procedure.

Mr. SAUNDERS. Not desperation from the standpoint of Denver so much as our concern for the general welfare. If the Federal Government comes to us as they have through a Senator a short time ago and says, "We want a commitment for 10 percent of the supply of water which Denver has," we want to be in a position to say, "Yes, we can supply that."

What that 10 percent was for I don't know because the Senator who approached us said, "This is top secret and I cannot tell you what it is for, but I want the water at this point. Can I get it?"

We want to have that water available when some agency of Congress or rather Uncle Sam says, "Will you supply it?"

Mr. DAWSON. I take it you are complaining about the fact that the Government has those installations in Denver. They are the people who are responsible for your being in this dilemma? Now you are telling us that you want to be in a position to take care of them if they come there.

Mr. SAUNDERS. We have no complaints. We simply are in the water business. Whether Denver grows is not a matter of concern. Whether the Government applies for water or not, is not a matter of concern. The thing of concern to us is that regardless of who requires this water, that we be in a position to serve them. It is not a matter of complaint, happiness, or displeasure; it is simply a situation we feel we ought to be in a position to meet.

Mr. ENGLE. If we should include this provision that you suggest in this bill, what answer would we have to the city of San Francisco or any other great city? It seems to me we open a Pandora's box of all sorts of applications.

Mr. SAUNDERS. I would think that the best thing that could ever happen would be to have a number of such applications if they will return to the Federal Government profits such as we have returned here. But I don't believe that we are likely to have such a situation, because there is no other city which has such a proportion of the responsibility to the Federal Government as the city of Denver has.

Mr. ENGLE. You talk with some of the others and you will find out. Even conceding for the moment and without argument that you are right, that it would be a good thing, it still remains a question whether or not it is appropriately a part of the reclamation work and within the province of this committee. I see you mentioned San Diego. The San Diego bill was authorized by the Armed Services Committee. There have been some special circumstances where that has occurred, but not to my knowledge has this committee ever gone out to the field deliberately financing municipal water supplies except as incidental perhaps to projects for other purposes.

Mr. SAUNDERS. The particular thing about this situation is that what the Bureau proposes is the comprehensive development of the upper basin of the Colorado River and we believe that is an essential part of a comprehensive development. If the Army engineers were undertaking this development, then we would be seeking participation in the comprehensive development undertaken by the Army engineers.

But since it is the Bureau which is undertaking it, it is an appropriate agency for undertaking the supervision of these expenditures.

Mr. ENGLE. Of course that argument could be applied. If you get the word "comprehensive" broad enough, you can take in a lot of territory. The municipal water supplies for the city of Sacramento which sits in the middle of the Central Valley project, would logically fall within the same category. Leaving that for just a moment and just one more question, have the official agencies, water agencies, and the officials of the State of Colorado ever spoken with reference to the current controversy in regards to this transmountain diversion? That is, have the local people decided among themselves that this water should be diverted to the harm and detriment of western Colorado as a matter of local decision?

Mr. SAUNDERS. Yes. The Colorado Water Conservation Board, the official State agency of Colorado, has held hearings throughout the State on this subject and various local groups have expressed themselves. Those whom we class as nature lovers have expressed themselves very vigorously with respect to some of the projects. Those people who live in a certain geographical area have expressed themselves. But the whole State has officially expressed itself as in favor of this method of developing the Denver water resource.

The Water Conservation Board of Colorado made tremendous efforts to have as much harmony as possible. In a democracy we do not have unanimity on everything. I suppose the only way to get unanimity is by having a dictatorship and having the price of your life the price for dissent. We fortunately do not have that.

So there are many, who, for various reasons, oppose various parts of this whole scheme. By a vote of 10 to 3 the board of Colorado has approved Denver's inclusion in this project.

Mr. HARRISON. The time of the gentleman has expired. Do you need additional time?

Mr. ENGLE. No, thank you.

Mr. HARRISON. Mr. D'Ewart.

Mr. D'EWART. I am not sure you are before the right committee. I am inclined to think that you ought to be before the committee on Federal-State relations.

Mr. SAUNDERS. We consider anything regarding water development part of this committee's work because it is so difficult to separate development for hydroelectric purposes—agriculture, municipal uses, and the others.

Mr. D'EWART. Some of your basic data goes way beyond that. Before this committee of which I am chairman, I have some 15 or 20 bills that have been referred proposing as payment in lieu of taxes because of Federal property. It is quite a different problem and difficult.

I do have one question. Does the State Constitution of Colorado permit either the State or the city to guarantee a loan to the Federal Government?

Mr. SAUNDERS. Yes, sir. We would do it by a vote of the people just the same as the private bondholder would be backed by a vote of the people.

Mr. D'EWART. Some States do not permit it. I believe Utah does not.

Mr. HARRISON. Mr. Aspinall.

Mr. ASPINALL. Continuing after Congressman Engle, have the people of Denver ever been given an opportunity of expressing themselves in this matter?

Mr. SAUNDERS. Yes. The official representatives of the people are the five members of the board of water commissioners—

Mr. ASPINALL. I did not ask about the representatives. Have the people themselves had opportunity to express themselves?

Mr. SAUNDERS. I was going to complete my answer. All meetings of this board by charter are required to be open to the public.

We have members of the public come to these meetings and express themselves from time to time.

Mr. ASPINALL. But your answer would have to be "No" in regard to the general public of Denver having expressed itself by affirmative vote on this certain procedure?

Mr. SAUNDERS. There has never been a referendum on it.

Mr. ASPINALL. You do not have opportunity for that, except when it comes to floating bonds, is that true?

Mr. SAUNDERS. That is right.

Mr. ASPINALL. When we were talking about the way this time should be divided for these hearings, we divided it into those who supported the legislation and those who might oppose the legislation generally. Are you in favor of the upper Colorado River storage and development program as it is proposed to us in the bills now before us?

Mr. SAUNDERS. Very much so. We do not see how western Colorado can develop without it. We think that is going to be a great thing for Denver when western Colorado finally begins to develop.

Mr. ASPINALL. You personally are in favor of it?

Mr. SAUNDERS. I surely am.

Mr. ASPINALL. How long have you been in favor of it?

Mr. SAUNDERS. For several years.

Mr. ASPINALL. You are well acquainted with what is now known as Senate Document 80 which was agreed upon during the discussions of the Colorado-Big Thompson project?

Mr. SAUNDERS. I am familiar with Senate Document 80 but not that it was ever agreed upon. It was published as a Senate document, I believe and not as a contract.

Mr. ASPINALL. Is it not your understanding that it was an agreement between the people of the two slopes who were interested that it should be used in the future as a criterion for the determination of transmountain diversion in Colorado?

Mr. SAUNDERS. No. I think it is exactly what it says it is—a synopsis of a report by the Bureau of Reclamation of the Department of Interior. That is what it says it is and that is what it is.

Mr. ASPINALL. Do you understand that it provides for what is known as a compensatory storage for western Colorado for the waters that are delivered to eastern Colorado?

Mr. SAUNDERS. Well, the words of the Senate document are that the storage is for the benefit of users on both slopes.

Mr. ASPINALL. Do you make any provision in view of the proposal now before this committee for such construction?

Mr. SAUNDERS. Yes. We have already built compensatory storage into our system and under Colorado law I think we have to do that.

Mr. ASPINALL. What is the name of the project, the name of the reservoir, which you have in mind which would serve as a storage in western Colorado to protect their water rights?

Mr. SAUNDERS. William's Fork Reservoir.

Mr. ASPINALL. Is it your position that the water from the William's Fork Reservoir will be allowed to flow westward for the benefit of all users in Colorado below that?

Mr. SAUNDERS. Yes. It has been so operated.

Mr. ASPINALL. What will happen to the waters in the Green Mountain Reservoir?

Mr. SAUNDERS. I would assume that at least 52,000 acre-feet of those waters will also be used for a like purpose.

Mr. ASPINALL. Would that result in a minimum amount of water in the William's Fork Reservoir?

Mr. SAUNDERS. No. It has seven strong tributaries below our diversion point and above Green Mountain Reservoir from which it can fill each year, even if it empties with very few exceptions.

Mr. ASPINALL. You state that as a fact and you are well aware of the fact that there will be witnesses who will follow you that may disagree on that?

Mr. SAUNDERS. I have the runoff records and they had better stick to those, I would think.

Mr. ASPINALL. I think they will.

How many water users in Denver at the present time are on meters?

Mr. SAUNDERS. All commercial.

Mr. ASPINALL. Does the city of Denver believe the use of meters makes for efficient use of water by the domestic customers of the city?

Mr. SAUNDERS. The city of Denver has not taken an official position on that. The city of Colorado Springs, however, did make a hundred percent metering and after 3 years they found that they were still using exactly the same per capita water they had before.

Mr. ASPINALL. Will you explain to us what the difference was in the revenues received?

Mr. SAUNDERS. I do not know about the revenue. We were thinking only in terms of water consumption. We have that evidence—and metering does not seem to make any difference in the amount of water used.

Mr. ASPINALL. That is all.

Mr. HARRISON. Mr. Rhodes? Mr. Young.

Mr. YOUNG. You state there are \$36 million worth of Government installations in the Denver area and they get \$135,000 in tax exemption every year. You do not know what the annual governmental wages paid are, do you, in that area? You say that is one of the justifications for getting Federal aid?

Mr. SAUNDERS. No, I do not, but the difficulty is most of the governmental employees who work downtown, live outside the city limits.

Mr. YOUNG. Does the city of Denver want those installations moved away from the vicinity of Denver, even though they receive a tax exemption?

Mr. ROGERS of Colorado. The answer is "No."

Mr. SAUNDERS. I can say the Denver Chamber of Commerce, on one of the very large Federal installations that was proposed during the war, said that they would do everything to cooperate with the Government if the Government decided that Denver was the place to locate it, but that they did not invite it because the burden was far in excess of any benefit.

It is not an unmixed blessing.

Mr. YOUNG. It is not so bad that you would like to see them move?

Mr. SAUNDERS. Congress would have spoke officially. Personally I have perhaps a different view.

Mr. ASPINALL. Will you yield?

Mr. YOUNG. Yes.

Mr. ASPINALL. I wish to pay a compliment to my colleague from Denver. My colleague from Denver has secured the average benefits for Denver's situation as it refers to the Federal employee residents out there than any other city in the United States has and has done a very good job on that. Contributions made by the Federal Government to take care of Denver's situation is what I mean.

Mr. YOUNG. Is it possible to float a bond to finance this water project?

Mr. SAUNDERS. It might be possible. It looks pretty difficult to us to ask people of Denver to bond themselves for \$75 million to supply water for users entirely outside the city limits and for uses which are very substantially for the Federal Government because the average taxpayer thinks that Uncle Sam has plenty of money and realizes how poor he is.

Mr. YOUNG. That is all.

Mr. HARRISON. Mr. Hosmer?

Mr. HOSMER. I have no questions but I want to compliment the witness on a most ingenuous explanation of how you can spend more than you can take in and be better off in the end.

Mr. RHODES. If so many people live outside of the city limits, why don't you extend them?

Mr. SAUNDERS. The city council and planning commission have wrestled with that one for 2 years as to whether they should. They are not certain it is a good thing. The city council has been willing to accept applications for extension, but in Colorado under our law they have the final volition in the matter. The original volition must come from the territory to be annexed. Until that territory petitions for annexation to a municipality, it cannot occur. Certain of the local residents outside the city limits are so pleased with their local governments and the local controls that it gives them, that they prefer not to annex. It leaves areas beyond them which might like to annex unable to come in because of a lack of contiguity.

Mr. RHODES. Perhaps they also prefer not to buy water from the city of Denver.

Mr. SAUNDERS. That might be so, but they had no alternative. There is no water supply available. The Denver rate is reasonable enough so that they cannot afford to secure it from any other source.

Another thing is that wells are not adequate for the vast quantities of water that are required for a big city in that area. Our wells are not prolific sources of water as they are in the East.

Mr. RHODES. I compliment the city of Denver on its charitable attitude in furnishing water for those people who would rather not join the club.

Mr. SAUNDERS. We make a little profit.

Senator WATKINS. I understood they had to pay twice the rates. Is that right?

Mr. SAUNDERS. No. Most cities in Colorado do charge exactly outside the city limits as inside. Denver's outside rate is only approximately 30 percent above the inside rate.

Mr. HARRISON. Thank you very much, Mr. Sanders.

The next witness will be Frank Merriell. I believe Mr. Merriell is chief engineer of the Colorado River Water Conservation District. We welcome you back, Mr. Merriell.

STATEMENT OF F. C. MERRIELL, CHIEF ENGINEER, THE COLORADO RIVER WATER CONSERVATION DISTRICT, GRAND JUNCTION, COLO.

Mr. MERRIELL. Mr. Chairman and members of the committee, as my statement says, I am the chief engineer of the Colorado River Water Conservation District, a quasi-municipal corporation in eight counties in western Colorado. I might also say that for 60 years on the 7th of next April, I will have lived in the Colorado River Basin and for 30 of those years I have been concerned with this water problem.

It is proposed to call to the attention of the committee several matters which apply to the proposal to authorize and construct the Colorado River storage project.

These are:

1. The reasons why the people of the upper basin of Colorado River strongly desire and greatly need the Colorado River storage project;

2. The proposal of the city and county of Denver that there be included in the authorization of this project a diversion from Colorado River Basin, for the use and benefit of the city, of the water of Blue River at Dillon, this project to be financed by a grant of funds from the United States;

3. The opposition of wildlife bodies to the erection in Dinosaur National Monument of the Echo Park Reservoir, a very essential element in the plans for the storage project, and the reasons why such opposition is ill advised and not in the public interest.

NEED FOR THE STORAGE PRODUCT

The first interstate compact dealing with the water of a western river, was the Colorado River compact of 1922. Its purpose was to allot the use of the water of Colorado River to the basin States, if possible, but when that proved impracticable, an allotment was made between two arbitrary divisions of the drainage area called the upper and lower basins.

The map there before you shows only the upper basin. That has an area of about 109,000 square miles. The lower basin has an area somewhat larger than that, about 130,000 square miles, and the total basin area is 242,000 square miles.

The upper basin principally in Colorado, New Mexico, Utah, and Wyoming was all the area draining into the river above a point called Lee Ferry, near where Colorado River crosses the Arizona-Utah boundary, 1 mile above the mouth of a tributary called Paria River, from which area not less than 86 percent of the total flow of the river is furnished; the lower basin, principally within Arizona, California, and Nevada is all area draining into the river below Lee Ferry. By a compact negotiated and signed in 1948 between the upper basin States, an actual allocation of water to each of them was made. Several applicable provisions of the 1922 compact will now be cited as bearing on the need for, and the purpose of, the Colorado River storage project.

COMPACT PROVISIONS

In article III (a) the 1922 compact ostensibly allots to both upper and lower basins beneficial consumptive use of 7,500,000 acre-feet of water each, annually, in perpetuity. By "beneficial use" we mean the complete consumption.

The effect of this allotment is, however, illusory as to the upper basin, for article III (d) provides that "The States of the upper division (Colorado, New Mexico, Utah, and Wyoming) will not cause the flow of Colorado River to be depleted below an aggregate of 75 million acre-feet for any period of 10 consecutive years reckoned in continuing progressive series beginning with the 1st day of October next succeeding the ratification of this compact."

This is a firm guaranty to deliver to the lower basin an average of 7,500,000 acre-feet a year, even though it is drawn in terms meant to take advantage of high flows in every succeeding 10-year period, with the hope that it would not penalize the upper basin nor restrict its use of water. The explanation that follows will show how signally it fails to safeguard upper basin use of water, because of variations in flow of the river which could not have been reasonably foreseen.

Just how the provision of article III (d) squares with the directive in article III (e) that, "The States of the upper division shall not withhold water, and the States of the lower division shall not require the delivery of water that cannot reasonably be applied to domestic and agricultural uses," has never been seriously studied in either basin, particularly the lower one, where, in all the years since the compact was ratified (because neither basin was consuming much of its allotment) use for generating electricity (which according to article IV (b) of the compact cannot acquire a priority of right to use), has been made of large surpluses of water not necessarily deliverable to the lower basin under the terms of article III (e). The lower basin has had a pressing need for the electricity produced by this surplus water and has come to regard such surplus as its accostomed due.

A word about the general properties of Colorado River Basin may not be amiss at this point. In its drainage area of 243,000 square miles it embraces one-eighth of the whole, and much of the driest, area of the United States. Unfortunately it has much less than one-eighth of the total water supply in the United States and the flow of Columbia, Missouri, Mississippi, Ohio and many other regional rivers exceed its total outflow many times. Colorado River has less than enough water for the needs that even now are foreseen for it. The people of the whole basin must therefore, practice the most rigid economy in their use of its water if practicable and nationally necessary needs for the use of that water cannot be developed because of lack of it.

RECORD OF LEE FERRY FLOW

In the light of the foregoing compact provisions and the great need for water the exact flow of the river at Lee Ferry for a long recent period should be set out. This will also be useful in assessing the effect of the guaranty of flow to the lower basin on uses in the upper basin, particularly if a series of years of subnormal flow should occur, as in the last 24 years it certainly has.

Total annual flow, Colorado River at Lee Ferry (compact point)—Estimated 1912-21; actual 1922-53

[Thousands of acre-feet]

Year:	Stream flow	Year—Con.	Stream flow	Year—Con.	Stream flow
1914-----	19,334.8	1929-----	19,223.4	1944-----	¹ 13,221.4
1915-----	¹ 12,500.4	1930-----	¹ 13,070.1	1945-----	¹ 11,545.4
1916-----	17,324.8	1931-----	² 6,738.5	1946-----	¹ 8,744.8
1917-----	21,893.1	1932-----	15,286.3	1947-----	¹ 13,514.5
1918-----	¹ 13,469.6	1933-----	¹ 9,745.4	1948-----	¹ 13,687.3
1919-----	¹ 10,858.4	1934-----	¹ 4,396.4	1949-----	14,359.1
1920-----	19,738.7	1935-----	¹ 9,912.1	1950-----	¹ 11,057.2
1921-----	20,714.8	1936-----	¹ 11,970.3	1951-----	¹ 9,830.6
1922-----	16,302.4	1937-----	¹ 11,896.9	1952-----	17,975.5
1923-----	16,261.3	1938-----	15,440.0	1953-----	¹ 8,825.0
1924-----	¹ 12,481.1	1939-----	¹ 9,393.7	Averages:	
1925-----	¹ 11,341.1	1940-----	¹ 7,081.6	1914-30----	15,918.4
1926-----	14,008.5	1941-----	16,052.0	1914-53----	13,480.7
1927-----	16,586.9	1942-----	17,029.4	1931-53----	11,678.9
1928-----	15,323.3	1943-----	11,363.0		

¹ Single years or sequences of years when flow at Lee Ferry is not sufficient to supply the upper basin 7,500,000 acre-feet of consumptive use, without storage in the upper basin, after consumptive use of both basins reaches the maximum.

CONCLUSIONS FROM LEE FERRY FLOW

Even a casual inspection of the sequence of annual flows at Lee Ferry shows several significant conditions. The yield of the river naturally divides itself into two very different periods. The first, ending actually in 1929, but for convenience taken as ending in 1930, is that of highest flow in all the record of the river. During this period, which included the time when the Colorado River compact was drafted, lower river deliveries could easily have been made, with a surplus in all years except 5 out of 16, which surplus would have, however, been wiped out in 1931, a year of exceedingly low flow.

At no time after 1930 could article III (d) have been complied with, unless storage of large capacity had been built in the upper basin and had been reasonably well filled. The flow of Colorado River, as the table shows is very erratic, ranging from 157.5 percent of average in the highest year to 29.5 percent in the lowest year. Also the table shows that in the later period, from 1931 to 1953 flow of the river has been only 74 percent of that in the former and higher period. During the former period in only 5 years out of 16 was there a deficiency, while in the later period in only 6 years out of 24 was there a sufficiency of water for the allotted use of both basins.

This later period of subnormal flow has lasted 24 years and current evidence is that it will be at least 25 years, and the present outlook being for a very dry year in 1954. It is thus longer than a period of drought said to have extended from 1276 to 1299 A. D., as is evidenced by a band of narrow tree rings for that whole period found in old trees in every part of the Colorado River Basin. How much longer it will last the science of meteorology cannot foretell. If, or when, several years of increased flow in steady sequence have occurred, it might be said that low flows have ended, but there will be, even then no means of knowing that such low flows will not recur.

Actual delivery to the lower basin at Lee Ferry has not yet been less than that contemplated by article III (d), but only because the upper basin is consuming only about 25 percent of its maximum al-

lotment. The completion of any large project in the upper basin, particularly a large transbasin diversion project, will probably reduce delivery to the lower basin below that required and further necessary delivery can only then be made by curtailing what is already an inadequate supply, at certain seasons of the year, in the upper basin.

REMEDY FOR ANTICIPATED DEFICIENCY

The foregoing conditions are those that have led to the strong desire of upper basin people to get started with the Colorado River storage project, and have some stored water on hand to meet emergencies when they arise, as seems inevitable. The project will consist of a series of large reservoirs in which surplus water from years of high flow can be retained for delivery in years of low flow, with attendant powerplants, the revenue from which will pay for the whole enterprise, and while there are local conditions which color the views of people in some parts of the upper basin, all are in accord in wanting the storage project in its main features, as quickly as it can be begun.

On a chart inserted opposite this page are shown graphically the conditions described above. At the bottom of the chart is shown the 7,500,000 acre-feet of water annually owing the lower basin in a cross-hatched band extending across the drawing. Next above is the water, ostensibly equal in amount, supposed to be usable in the upper basin. (The chart referred to is herewith inserted.)

The water to be apportioned between the basins is not the historical or measured flow, shown in the previous table, but a hypothetical quantity called the virgin or undepleted flow, being the amount of water in the river if no human use were made of it. Plotted above these 2 bands, but extending down even into the lower band in 1 year, and into the upper band in many years, is shown the virgin flow with its wide variations, derived by adding to the actual or historical flow the best estimate of water consumed by human use in the upper basin in each of the years shown.

It seems obvious from the situation shown on this chart that if the upper basin is to enjoy the uses of even the average flow shown there, it will be necessary to have much usable storage in the upper basin to overcome the effect of the years when outflow is 10 million acre-feet or less. With such storage a reduced use in the upper basin, probably somewhat less than is shown in the note to the right of the upper basin allotment, is possible. Recent studies indicate that the upper basin might use as much as 6,100,000 acre-feet minus whatever evaporation loss from storage might occur. It is thus apparent the storage project is vitally needed although perhaps its first effect will not provide 7,500,000 acre-feet but will make firm a somewhat lesser supply, until or unless a succession of high flows makes more storage available.

The smaller cross-hatched area in the upper portion of the upper basin allotment is the deficit this basin would suffer during the period 1930 to 1953, if there were some storage on hand and filled in the upper basin, with no such storage the deficit would be much increased in the years of lowest flow because it merely shows the average value without allowance for obvious operating difficulties.

6,369,000 Acre-feet
minus Res. Evap. }

Guaranteed Delivery
to Lower Basin =
7,500,000 AF Ave.

STATE OF COLORADO
THE COLORADO RIVER WATER CONSERVATION DISTRICT

COLORADO RIVER
DIVISION AT LEE FERRY
WITHOUT STORAGE PROJECT

Studies of the anticipated power revenues, given in detail in the project report, indicate that this project will fully repay the United States its entire cost, within 50 years after the last power unit is installed and, in fact, accumulate a surplus which might most properly be spent in aiding water users on irrigation projects in the same locality, who are unable to pay the full cost of their project works. Such subsidies will become more and more necessary in the West, where, after 100 years of settlement very few projects can be found that can be built for a cost cheap enough to be fully repaid by the water users on the projects. But the production of food and fiber which these projects will assure, is only a wise provision for the time not far distant where there will be a vital need for all such products the United States can produce.

I should like to add that does not comprehend all of the additional irrigation that will be done. We very recently had a chance to check in western Colorado 42 percent of the irrigated area and in that 42 percent we have found that individuals, by their own means, without help from the United States or the Bureau of Reclamation, have increased the irrigated land since 1938 by 18.8 percent. That sort of development will continue on a small scale.

DEMANDS OF DENVER

As a very late comer, the city and county of Denver now demands that there be included in this project bill an authorization of a diversion project by which water from Colorado River Basin, in Blue River at Dillon shall be authorized to be built by the city itself, with Federal funds to be repaid by the city.

The municipal water system of the city and county of Denver is administered by a board of five members who, after their appointment by the mayor of the city, are an autonomous body whose only connection with the city is the necessity of the use of the city's credit for expenditures exceeding the net revenue of the water system, which revenue is entirely at the disposal of the board of water commissioners. They also, without a check of any kind fix the policy of enlargement of the system and have been carrying out such policy within the amount of net revenue at their disposal.

The occasion for this hasty move is the fear that within a few years the city will have exhausted its present supply of water. In fairness it must be said that if this supposition is correct, its cause must be laid at the door of the water board. Such a crisis did develop in 1934-36, and was cured by a hasty building of Denver's first diversion from Fraser River, through the Moffat tunnel, with PWA funds, which included grants of considerable amounts. Sound policy would then have dictated that this new source of water supply should be exploited in a sane and conservative manner, but this was not so done.

With the cheapest installation possible, which included only 10,000 acre-feet of storage, Moffat tunnel water was brought into the city. As the collection system was expanded, there has been during the last 17 years an average of about 40,000 acre-feet capable of diversion, but the city has realized an average of a only 29,050 acre-feet, or only 71 percent of the usable water, largely because the system had not sufficient storage.

In recent years the water supply of Denver has been furnished to the extent of some 25 to 33 percent from transbasin diversion.

The necessity for storage seems so obvious it is difficult to see how it can be neglected; over 70 percent of the annually usable water of any natural stream in the Rocky Mountain region will be delivered in 6 to 10 weeks in May, June and July. The use of the water by the city must of necessity be spread over a period several times as long, and eventually over the whole year. Obviously, therefore, there is much divertible water that cannot be utilized if the city has no place to store it. So far as western Colorado is concerned, this water not diverted, is a total waste, for in some years the city diverts all that is usable and in other years as little as 25 per cent of the usable water; no enterprise in western Colorado can be set up on such a supply as Denver may not see fit to, or is unable to, divert, store, and use.

Until very recently Moffat tunnel water seemed to be an adequate supply, but now the lack of storage, which good policy dictates, is making itself apparent, and while the city is now belatedly trying to remedy this by building a 42,000 acre-foot reservoir on South Boulder Creek, that is still poor policy, for this reservoir, to perform the needed function, should be at least 3 times the size being built.

It is felt that the demand by Denver for sources of water that will be enough, if properly used and conserved by adequate storage for a city 3 times its present size, or 1,500,000 people, is simply an attempt to perpetuate the niggardly policy of trying to utilize flowing water instead of providing sufficient storage. This accusation has been leveled against the water board, which they vehemently disclaim, but their actual performance is quite sufficient warrant for saying that while it may not be their deliberate intent to make wasteful use of water by depending solely on flowing supplies, their course of action has the same result and what they now propose is set up in the same wasteful manner.

If Denver is going to rely solely on direct-flow supplies and neglect storage, there is not enough water in western Colorado within divertible distance to supply even the population it may have within the next 10 years. In addition, such a course is filled with grave danger any time several years of low flow occur on both sides of the mountain Denver will be without water, which could only be supplied for such a contingency by large and adequate storage kept well filled. At present Denver has of such hold-over storage less than 200,000 acre-feet and to be safe should have not less than 600,000 acre-feet in this category. The large sums that this storage would cost is the safest and cheapest safeguard to an adequate supply of water for any contingency that Denver can acquire.

It is true that Denver, since some time during the last World War has made a phenomenal growth and therefore, claims this growth will continue indefinitely. The history of most cities in the United States shows exactly the opposite tendency, and only two cities, Chicago and Los Angeles, have had a continuous and high rate of growth without a break. Any decrease in the rate of growth would leave Denver with a proposed water system of inordinate size which would be a grievous financial burden, for it would be too large for a lesser rate of growth.

Finally, about all that Denver now has to offer this committee in the way of a concerted plan for this proposed big enlargement is a series of disconnected statements, for there is not now in existence any sound, well-engineered plan for all this big work. Granting the present request of Denver would, therefore, be in effect the signing of a blank check in its favor, which does not seem consistent with the usual policies of the Congress nor of the United States.

WILDLIFERS AND DINOSAUR MONUMENT

All the nature lovers in the country seem to have rallied here to defeat the purpose to build a reservoir in Green and Yampa Canyons. This is not unexpected. They appear in force every time western people want to use some of the natural resources of their own country to further their material welfare and if possible contribute to the strength and prosperity of the whole Nation. Their slogan is that every unusual canyon or other natural phenomenon should be left in its primitive state for the enjoyment of a mythical horde of sightseers. There are too many phenomenal places in the West for this to be sensible and if, as in this case, the sightseers have to be physical giants it is, moreover, not very practical.

It would seem, however, that they are raising this uproar over a case that has already been decided. The original Dinosaur Monument was only 80 acres, which did contain some unusual fossil remains. In 1936, upon the insistence of local people the National Park Service reluctantly undertook the enlargement of the monument, primarily to prevent unregulated use of this area by local stockmen over whom there would otherwise be no control by either State or Nation.

Before acting, however, the Park Service sent an authorized representative to hold meetings in nearby towns to determine the public sentiment. Such meetings were held in Vernal, Utah, and Craig, Colo. in June 1936. At these well-attended public meetings the idea of the local people was that grazing and other uses of the area should be controlled, but that the ultimate use of these river canyons for storage should not be jeopardized. They were given the firm assurance of the Park Service representative that water uses would not be hindered, as has been read into the record in the hearing held by former Secretary Chapman in 1950.

In spite of this evident recognition of the sound ideas of the local people, the Park Service at that hearing claimed it was surprised by the effort, soundly backed by official action at every step of the way to make the Park Service stand by its promises to the local people.

The duplicity of the Park Service is further attested by the fact that the dedication of the enlarged monument contains a reservation for water use and that, further, there is in Interior Department files an interagency agreement to the same effect. Apparently, therefore, this large delegation of wildlifery is here on a mission that is contrary to executive sight of the prime requisite of this project. If the exposition made earlier in this statement is convincing, the prime object of the storage project is the salvage of the last drop of water Colorado River is capable of yielding, even at a somewhat higher cost.

None of the alternative sites compares with Echo Park in quantity of evaporation loss. These deep canyons, one narrow and running roughly north and south, will admit sunlight in very few places for

more than a few hours a day, and in many places not at all. The other canyon running roughly east and west is so deep it will shade the water most of the time. It is quite evident the wildlifera do not understand this, and moreover do not care about it, but the people who must underwrite the storage project must save every acre-foot of evaporation loss possible, and know how to do it without, in their opinion, doing an injury to canyons which will still be unique.

When the wildlifera appear in this hearing they will claim that to allow Echo Park to be built is a threat to every other national park and monument in the country. There is exactly no foundation for such a statement, for the reason that in this instance, and this is the only known instance where this is true, a valid reservation has always been in the record from the earliest connection of the Park Service with this monument. The preliminary meetings held in Vernal and Craig in 1936, before the Park Service decided upon the enlargement, show that the wise decision of the local people enforced upon the Park Service then, and the reservation is still binding, the right to use these providentially provided canyons for their most obvious human use, the storage of water.

Finally, the people who live in this basin are not insensible to its beauties, if they were they would leave it, but of this no wildlifer can probably be convinced. But they are also well aware that this and many other resources of this region must be utilized by storage of water in the most strategic spots, of which Echo Park is the chief. They, therefore, favor a wise, conservative use of these unusual facilities nature has provided and expect that, as at Lake Mead, many more people will visit and enjoy this area when the Bureau of Reclamation makes it available to visitors, which the Park Service has not yet started to do although the area has been under its jurisdiction for 15 years.

Mr. HARRISON. Thank you very much. I think that is a very fine statement. Do you have any questions, Mr. Aspinall?

Mr. ASPINALL. Inasmuch as Denver has now stated that they are willing to pay interest, would you be willing to have that part withdrawn from your statement?

Mr. MERRIFELL. Yes, I will withdraw that from the statement.

Mr. HARRISON. Senator, do you have any questions?

Senator WATKINS. I have no questions.

Mr. HARRISON. Thank you very much.

Judge Hughes from Colorado will be the next witness. His testimony will not exceed 10 minutes and then we will adjourn promptly at 4:30 and take up at 9:30 tomorrow morning, at which time we will hear the representatives from the Navajos.

Mr. ASPINALL. Before Judge Hughes begins his testimony, may I state for the record he is one of the judges of the State of Colorado and has served in the capacity of a lawyer and has been successful for many years. He is also a very successful livestock man.

Mr. ROGERS of Colorado. And a member of the Colorado Water Conservation Board for a number of years.

STATEMENT OF DAN H. HUGHES, MONTROSE, COLO.

Judge HUGHES. I am Dan H. Hughes of Montrose, Colo.

The question has come up about what is the water policy of the State. I think probably the committee should be advised on that. In 1935 at the call of Colorado's then Governor, the Honorable Edwin C. Johnson, now the senior United States Senator from Colorado, some 300 of our citizens met to formulate a long-range policy for Colorado. They drafted a policy for water. Briefly, this policy was that waters originating on the western slope were to be available for the development of the western slope and none was to be exported to the eastern slope, except it be established that such waters were available in excess of that needed for the present and future development of western Colorado.

At that same meeting Mr. Malcolm Lindsey, the then city attorney for Denver, introduced a resolution in connection with the request for Federal moneys for the Blue River transmountain diversion project, which is the same project that Denver is now talking about, which moneys were to finance the survey "to secure the necessary data to determine all pertinent questions relating thereto, including adequate protection to the present rights and future needs of the western slope."

I put that in to show that at that time in 1935, under Governor Johnson, Denver recognized the need for this transmountain diversion and that it must be accompanied by provisions which would adequately protect the present and future users of water on the western slope.

In 1937 the Colorado State Legislature passed an act which provided for water conservancy districts. This act provided in part that any plans designed for exportation of western slope water to the eastern slope shall be, and I quote: "designed, constructed, and operated in such a manner that the present appropriations of water, and in addition thereto prospective uses of water for irrigation and other beneficial consumptive use purposes within the natural basin of the Colorado River in the State of Colorado, will not be impaired or increased in cost."

I particularly call the attention of the Committee to those words "increased in cost."

In 1952 the Colorado Water Conservancy Board had before it the Fryingpan-Arkansas River diversion project and as a part of the approval of such diversion, restated and adopted the principles above set out and agreed that no more water should be exported until the needs of western Colorado were fully determined and the quantity of water fixed to serve such needs. That was only a short year or 2 years ago, in February. The record is therefore clear on the Colorado policy.

Now you have a question, was that policy wise? It has been a long time and we have not been developed. Most of us on the western slope feel that western Colorado is an area of development. It sounds like a dream, like a fairy tale. Our own University of Colorado in a very recent pamphlet states that in the opinion of the men of the university

who made the investigation, in the near future western Colorado will have a population of 2 million people. You have already been told about the tremendous oil-shale reserves. The experts meeting at Glenwood Springs estimated that somewhere between 1955 and 1975 it would be necessary to start the extraction of oil from the shale. When that is done, there will be an operation of from 1 to 2 million barrels minimum a day. That is the smallest operation which can be carried forth on an economical scale.

That would require some 200,000 men working in the oil shale. They tell us when the oil-shale development commences, western Colorado will be the center for the United States for the synthetic industry.

So you go on. Aluminum will come in. It will require, if my memory serves me correctly, 100 tons of explosives a day to carry on the oil-shale industry.

So unquestionably there will be a plant for the manufacture of explosives right there. The people will have to be fed also. You have the uranium industry advancing today on the western slope.

I know that I must be brief in my statement. I want to read very briefly and quote from a recent document prepared by Tell Ertl who is a mining engineer of national standing, a doctor of philosophy, and who was with the United States Bureau of Mines when he gained the information contained herein. He is now dean of engineers of the University of Ohio. He says:

Numerous industries subsidiary to the oil shale—power, chemical, fertilizer and aluminum industries—will be required. As one example, the oil-shale mines will need 1 million pounds of explosives daily. To supply the mines an explosive-manufacturing plant will be set up in the oil-shale area. Foundries, fabricating plants, special manufacturing plants and perhaps even a steel plant will supply the primary industries. The industrialization resulting from oil shale will require another half-million people to migrate into western Colorado. More than 1 million inhabitants will live along the Colorado River between Glenwood Springs and the Grand Junction. These people will spend roughly 1 billion dollars annually for such things as food, furniture and fishing tackle. New consumers will arise and present ones expand throughout Colorado. The taxes and other economic returns derived from the oil-shale and allied industries will be of tremendous benefit to the entire State of Colorado. But this industrial development will take place only if the State of Colorado reserves water in the Colorado River.

He goes on to prove his point. Then a conclusion which I want the record to show:

Those who have studied the availability of liquid fuels to supply future domestic demands are confident that part of the demand will be met by synthetic fuels from oil shale. Their conclusions indicate the inception of an oil-shale industry in western Colorado within a decade and rapid expansion into a mature industry. The assumption underlying these conclusions is that unless water for this vast industrial development is retained in the Colorado River, no such industrialization can ensue.

We of western Colorado had hoped to come here and say that we approve the bill now before this committee and each part and parcel of it. We don't know now just what amendments have been offered. I understood this afternoon that a second set of amendments had been offered. We have no objections to Wyoming getting the Kendall Reservoir or any other development it can possibly get.

The reservoir that will develop my section of Colorado, that is, Gunnison, Montrose at Delta County, will have to be on the upper reaches of the Gunnison River. It should be the Curecanti Reservoir.

We have no objection to Denver or any other municipality or water user on the eastern slope getting all of the water they possibly can, provided it is water in excess of the present and future means of western Colorado. We want to support the bill as it was brought in. We don't want foreign matters brought in here which are going to delay the passage of this bill, possibly tie it up, and then have you get into a squabble.

Neither do we want appropriations recognized by this committee which in all probability will curtail the Green Mountain Reservoir property on the Blue River and any waters taken under the Blue River project by Denver must necessarily interfere. That plant is operating and delivering firm power. Gunnison is getting it. It should not be interfered with.

But in the main, as far as I am advised, and I am on the official water board for western Colorado—I am on the water board for the Valley Water Users Association. I was attorney for that association for a long time. I am an active irrigator irrigating around 4,000 acres with my son.

There is no objection to the bill before this committee. There is no objection in western Colorado, as far as I am advised to Wyoming getting the Kendall Reservoir. Any development that goes along with the Colorado River storage project, we believe is worthwhile. We know the development of western Colorado depends on this storage project getting started, and well on its way.

Mr. HARRISON. Thank you very much, Judge Hughes. We appreciate your being before us. We appreciate your statement and your opinions.

Mr. ASPINALL. If the judge wishes to file an additional statement, I suppose that he could.

Mr. HARRISON. He may have that privilege.

I want to make a statement that the proponents starting at 10:15 a. m. this morning proceeded until 11:30 at the time that Mr. Johnson of California took over the stand. So we had 1 hour and 15 minutes this morning and 2 hours and 30 minutes this afternoon.

At the present time there have been 3 hours and 45 minutes consumed by the proponents of the bill. I make that statement so we will have no misunderstanding later. Both sides will have equal time. I want to comply with that procedure.

We will adjourn until 9:30 tomorrow morning.

(Whereupon, at 4:35 p. m., the committee recessed, to reconvene at 9:30 a. m., Friday, January 22, 1954.)

COLORADO RIVER STORAGE PROJECT

FRIDAY, JANUARY 22, 1954

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION,
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to recess, at 9:35 a. m. in the committee room, New House Office Building, Hon. William H. Harrison (chairman) presiding.

Mr. HARRISON. The committee will come to order.

I have a statement by the Honorable Dan H. Hughes who testified yesterday, and without objection, I will ask this be made a part of the record.

Mr. REGAN. No objection.

(The document referred to follows:)

STATEMENT BY DAN H. HUGHES

I am Dan H. Hughes of Montrose, Colo. I started the practice of law at Montrose in 1911, and continued in the law as attorney or district judge to the present time. I have operated irrigated farms and livestock since 1916.

My experience with water matters in Colorado has been as attorney for the Uncompahgre Valley Water Users' Association, which operates the Uncompahgre project, a Federal reclamation project. I am, or have been, a member of the following boards: Colorado State Conservation Board until 1952; Uncompahgre Valley Water Users' Association Board, present time; Colorado River Water Conservancy District, present time.

With my sons I now own and operate some 4,000 acres of irrigated land. This includes valley farms and mountain pastures.

Years back, the foresighted men of Colorado could and did see the future of the western slope. That here was a wealth of natural resources—mineral, land, and water. That the only limitation of future development was water.

Of minerals or oil, mainly in shale, there is an estimated 600 billion tons—coal, uranium, copper, iron, and all other minerals too numerous to name.

Our land was and is mountain pasture available during the summer season for grazing livestock, valley lands which, with water for irrigation, raise all types of crops, low broken areas for winter grazing.

In 1935 at the call of Colorado's Governor, the Honorable Edwin C. Johnson, now Senior United States Senator from Colorado, some 300 of our citizens met to formulate a long-range policy for Colorado. They drafted such a policy for water.

Briefly, this policy was that waters originating on the western slope were to be available for the development of the western slope and none was to be exported to the eastern slope except it be established that such waters were available in excess of that needed at present and future development of the western slope.

Mr. Malcolm Lindsey then city attorney for Denver, introduced a resolution in connection with the request for Federal moneys in Blue River transmountain project, which moneys were to finance a survey "to secure the necessary data to determine all pertinent questions relating thereto, including adequate protection and the present rights and future needs of the western slope."

The 1936 Colorado State Legislature passed an act which provided for water conservancy districts. This act in part provided that any plans designed for exportation of western slope water to the eastern slope shall be "designed, constructed, and operated in such a manner that the present appropriations of water and in addition thereto, prospective uses of water for irrigation and other beneficial consumptive use purposes * * * within the natural basin of the Colorado River in the State of Colorado, will not be impaired or increased in cost."

In 1952 the Colorado Water Conservancy Board had before it the Fryingpan-Arkansas River diversion, restated and adopted the principles above set out and agreed that no more water should be exported until the needs of western Colorado were fully determined and the quantity of water fixed to serve such needs.

The record was clear on the Colorado policy. Was such policy wise and necessary? Will the development occur which will need and be limited by the available water on the western slope? For the answer to these questions, we must go to the engineers and various experts.

The time is at hand when oil must be recovered from shale. And it is agreed that the mining operation will be one that produces from 1 to 2 million barrels per day; that some 200,000 people will be required for such operations.

It is agreed that incidental production such as synthetic material, fertilizers, electric power, will require or support another 200,000 people immediately adjacent to the oil-shale production. Oil-shale operation alone will mean a city of a minimum of 500,000 people. Mining and treatment of uranium ore is expanding each day. Again, the experts say western Colorado will be the center of the synthetic material treatment and production. Food must be produced for these cities. The research staff at the University of Colorado estimate a population of 2 million people in this area in the near future.

The United States Bureau of Mines, working with their own engineers, some of whom have now left, such as Tell Ertl, now dean of engineers at the University of Ohio, a graduate of the University of Washington and Columbia, and who holds the degrees of bachelor of science in mining engineering, a master's degree and the degree of doctor of philosophy, and who was formerly with the Bureau of Mines as Chief of the Oil Shale Mining Section of Rifle, Colo., tell us that we must prepare for tremendous increases in our own population and in our industries.

I wish to quote Dr. Ertl in this connection very briefly:

"Numerous industries subsidiary to the oil-shale, power, chemical, fertilizer, and aluminum industries will be required. As one example, the oil-shale mines will need 1 million pounds of explosives daily. To supply the mines, an explosive manufacturing plant will be set up in the oil-shale areas. Foundries, fabricating plants, specialty manufacturing plants, and perhaps even a steel plant will be built to supply the primary industries.

The industrialization resulting from oil shale will require another half million people to migrate into western Colorado. More than 1 million inhabitants will live along the Colorado River between Glenwood Springs and Grand Junction. These people will spend roughly 1 billion annually for such things as food, furniture, and fishing tackle. New consumer industries will arise and present ones expand throughout Colorado. The taxes and other economic returns derived from the oil-shale and allied industries will be of tremendous benefit to the entire State of Colorado. But this industrial development will take place only if the State of Colorado reserves water in the Colorado River.

In a pamphlet published by Dr. Ertl under date of July 17, 1953, which was mainly for the information of the Union Oil Co. of California who employed him in connection with research in the oil-shale industry, the doctor states:

"Those who have studied the availability of liquid fuels to supply future domestic demand are confident that part of the demand will be met by synthetic fuels from oil shale. Their conclusions indicate the inception of an oil-shale industry in western Colorado within a decade (10 years) and rapid expansion in mature industry. The assumption underlying these conclusions is that unless water for this vast industrial development is retained in the Colorado River, no such industrialization can ensue."

At a recent meeting at Glenwood Springs, eight of the major oil companies had experts present. They fixed the latest date that oil production from shale must begin as 1975. The earliest date is fixed at 1965.

They estimated the minimum production as being from 1 to 2 million barrels per day. Their explanation was that to meet economy in this development and production, it must be on a very minimum scale of 1 million barrels per day.

The experts do not agree on all details. But they do recognize that within 10 years the start of a tremendous development will occur, and they agree on one fundamental principle, and that is when the water will be the element or factor that limits the growth and development of western Colorado.

How is this water to be made available? First and foremost by not exporting it. Next we must rely on the Bureau of Reclamation and its engineers for the best location for dams and reservoirs and the construction of the best works to make the water available.

The bill now before this committee was drawn as the result of years of investigation and study and should be accepted without amendment.

Mr. HARRISON. Are the gentlemen from Utah ready to testify at this time?

Mr. CLYDE. Yes, sir; Mr. Chairman.

Mr. HARRISON. I want to alternate a little bit so that everybody will have a chance and one State's delegates will not be kept waiting until the end.

You may proceed, Mr. Clyde.

STATEMENT OF GEORGE D. CLYDE, COMMISSIONER OF INTERSTATE STREAMS FOR UTAH

Mr. CLYDE. Mr. Chairman, before beginning my testimony, I would like to express for one of the upper basin States, Utah, our appreciation to the members of your committee who were so kind as to take out time this last summer and come out and see these projects and see the conditions under which we have to operate. I want to express to you our appreciation for coming out and taking a look at this firsthand.

My name is George D. Clyde. I am a civil engineer and commissioner of interstate streams for Utah and appear here as a representative for the State of Utah. I have spent 35 years in the field of irrigation, hydrology, and water supplies and their utilization in the 17 Western States. I am familiar with the characteristics of flow and uses of water from western streams and particularly the Colorado.

Utah is one of the four upper division States. The only source of water in these States is the precipitation which falls upon them. That water is essential to human, animal, and plant life and basic to the welfare of the State. It is necessary to public health. It is required for the processing of raw materials. These are all consumptive uses and for such uses there is absolutely no substitute for water. There are other uses for water such as power, navigation, and recreation. These are nonconsumptive uses and there are substitutes for them. For example: Steam power for hydro power; rail, highway, and air transportation for navigation and innumerable recreation sites along the Colorado and throughout the West. The construction of Echo Park Dam, which is absolutely essential for river regulation, silt control and power, for example will not decrease but will greatly increase the recreational facilities in the area by making accessible many other recreational areas along the Green and Yampa Rivers.

Utah in order to enjoy its rights to the waters of the Colorado must be supported in its efforts to provide the facilities needed to put them to use and be permitted to use them consumptively. Such use was recognized in the Colorado River compact when the upper basin States were allocated 7½ million acre-feet annually for beneficial consump-

tive use. Utah's share of the water allocated to the upper basin States as fixed by the upper Colorado River compact is 1,725,000 acre-feet decreased slightly by a proportion of Arizona's share.

Utah is an arid State. Irrigation agriculture as an industry was born in Utah, and has played a major role in the development of the State and the West. Its arable land is limited but the lack of water is the real bar to its future growth. Mr. Chairman, in this presentation, I will show the urgent need for additional water and power in Utah, the unanimous endorsement by the people of Utah of the plan for the development of the upper Colorado River, prepared by the United States Bureau of Reclamation, and as set forth in the 1950 report of the Colorado River storage project and participating projects as revised and what each of the participating projects in Utah means to the State. In the interest of saving time and with your permission, I will brief this presentation and submit for the record such supporting documents as are pertinent.

Utah's land area consists of the rugged Wasatch Mountain Range running north and south through the center of the State, the high Uinta Mountains running east and west along a portion of the north boundary of the State, valleys of deep fertile arable soil and extensive desert areas for the most part nonarable due to topography, soil or salt accumulations. The Wasatch Range divides the State in two parts: the west half the Bonneville Basin and the east half the Colorado Basin. The greater portion of the population and the arable land is in the Bonneville Basin, while the undeveloped waters are in the Colorado Basin. The raw materials basic to industrial development are in both basins. Of Utah's total land area (52 million acres), 6.1 percent is arable, 3.2 percent is cropped, 2.2 percent is irrigated. Possibly 600,000 acres of additional land in the entire State may ultimately be irrigated, most of which will be in the Bonneville Basin.

Utah's water supplies are derived from five major drainage basins. The principal source of the water is the snow which accumulates on the high watersheds. Runoff from snow-fed streams does not coincide with irrigation or power demands. On streams not regulated by storage most irrigation water supplies are exhausted by midsummer. In Utah in spite of considerable development of storage more than 60 percent of the currently irrigated land suffers severe water shortages annually. In total, there is ample water in the State of Utah to satisfy reasonably well its municipal, agricultural, and industrial needs. This water, however, is not available in the right amounts, at the right time or in the right places. It must be controlled by storage and conveyed from points of storage to points of use. Adequate water supplies are available for the development of the Bear River and the Weber-Ogden drainage basins within the Bonneville Basin. However, the full development of the Utah Lake—Jordan and Sevier River drainages, which are also in the Bonneville Basin, and the Colorado Basin depends upon the control by storage of water in the Colorado River and its conveyance to points of use in the Colorado Basin and by transmountain diversion to the Bonneville Basin. There is ample water within Utah's share of the Colorado River to satisfy all of the needs of the Colorado drainage in Utah and to provide water for transmountain diversion to the Bonneville Basin.

Exhibit A, which I now introduce for the record, describes Utah's climate, land area and agriculture and sets forth in detail the agri-

cultural water uses and potential water requirements in Utah's participating projects.

(The material referred to follows:)

EXHIBIT A

UTAH'S AGRICULTURE, IRRIGATION WATER USES AND POTENTIAL IRRIGATION WATER REQUIREMENTS

The climate of Utah is arid. The annual precipitation varies from about 5 inches on the desert areas to as much as 40 inches in the high mountains. Most of the precipitation occurs during the winter months and comes in the form of snow which accumulates on the high watersheds and forms the principal source of the streams and springs. The runoff from the melting snow usually occurs before July 1 and the remaining late season runoff is not sufficient to meet the water requirements for agricultural or other purposes.

The topography of the State is mountainous with large and small valleys interspersed among the mountains. Except for the large alkali and salt deserts in the western part of the State, these valleys are very fertile and when supplied with adequate water become very productive.

Agriculture is the basic industry in the State in spite of the fact that only about 6 percent of the State is arable. This includes all cropped land and land pastures on arable land. This cropped land produces the forage necessary to carry livestock through the winter and this makes possible the utilization, through the livestock, of the large areas of winter, spring, and summer ranges which make up the bulk of the area of the State. Figure I shows graphically the major land uses in Utah.¹

Table 1 shows the total area of the State broken down into land and water areas.

TABLE 1.—*Utah land and water areas*

Item (1)	Total (2)	As a percent of—	
		Land in State (3)	Total (4)
Area of State, total ¹	<i>Acres</i> 54,346,240	<i>Percent</i> -----	<i>Percent</i> 100.0
Land in State ²	52,701,440	100.0	97.0
Inland water ¹	1,644,700	-----	3.0
Total.....	54,346,240	-----	100.0

¹ Agricultural Experiment Station Special Report No. 4, Utah's Land Resources, June 1951.

² United States Census of Agriculture, U. S. Department of Commerce, Bureau of the Census, vol. III, pt. 16, 1950.

¹ Water for Utah, Utah Water and Power Board, July 1, 1948, p. 16.

LAND AREA ACCORDING TO USE, UTAH

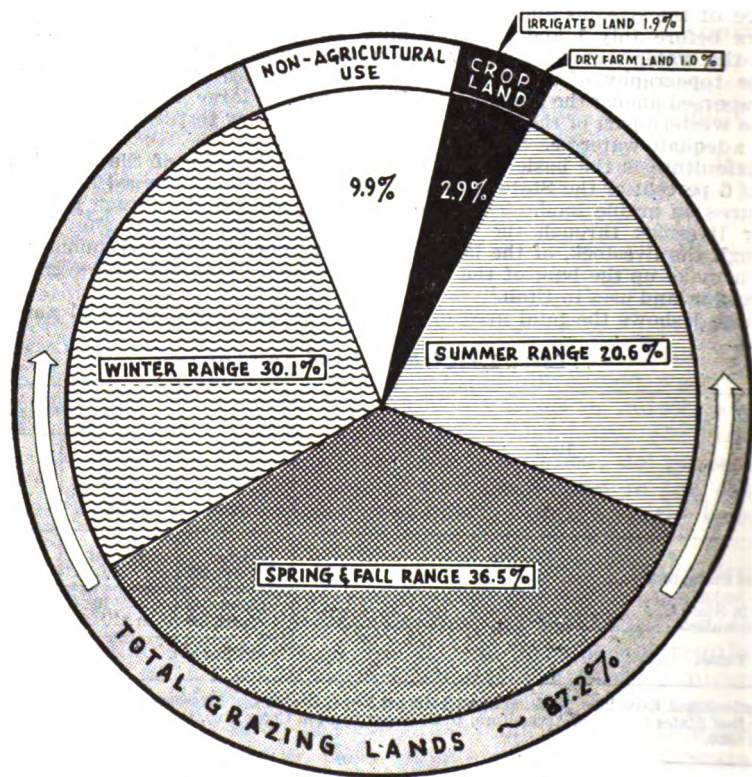


Table 2 shows the major land uses in Utah. Only 3.2 percent of the State is considered cropped, including irrigated pasture.

TABLE 2.—Major land uses in Utah

Item (1)	Acres (2)	Percent (3)
Cropland, including irrigated pastures ¹	1,683,548	3.19
Range land open for grazing ²	46,286,500	87.83
Special-use areas ²	3,205,900	6.08
Barren land ²	815,500	1.55
Not accounted for.....	709,951	1.35
Total.....	52,701,440	100.00

¹ United States Census of Agriculture, U. S. Department of Commerce, Bureau of the Census, vol. III, pt. 16, 1960.

² Agricultural Experiment Station Special Report No. 4, Utah's Land Resources, June 1961.

Table 3 is a breakdown of the special use area shown in table 2. This area does not include national forests or the Bureau of Land Management lands.

TABLE 3.—Special use areas ¹

Item (1)	Use of land		
	Total (2)	As a percent of—	
		Land in State (3)	Total (4)
Special use areas, 1949, total.....	3,205,900	6.1	100.0
Urban areas, cities, towns, villages.....	140,000	0.27	4.4
Transportation, communication.....	207,600	0.39	6.5
Recreation and wildlife reserves.....	416,000	0.78	13.0
Experimental areas (FS-SCS).....	90,900	1.72	2.8
Military installations.....	2,110,900	4.01	65.8
Watershed protection reserves.....	207,500	0.39	6.5
Miscellaneous.....	33,000	0.063	1.0

¹ Agricultural Experiment Station Special Report No. 4, Utah's Land Resources, June 1951.

Table 4 shows a breakdown of the use of land included in irrigated farms. These irrigated farms include range or pastureland as well as irrigated land. Less than 21 percent of the total land in irrigated farms is cropped and of the cropped land only about 67 percent of it is harvested. Shortage of water limits the harvested cropped land.

TABLE 4.—*Land in irrigated farms in Utah—United States Agriculture Census, 1950*

Item (1)	Total (2)	As a percent of—	
		Land in State (3)	Land in farms (4)
Land in irrigated farms, total.....	<i>Acres</i> 8, 150, 540	<i>Percent</i> 16. 47	<i>Percent</i> 100. 00
Cropland, total.....	1, 683, 548	3. 19	20. 66
Cropland harvested.....	1, 098, 611	2. 08	13. 48
Cropland not harvested and not pastured.....	316, 779	0. 60	3. 89
Cropland used only for pasture.....	268, 194	0. 51	3. 21
Land pastured, excluding cropland used only for pasture, total.....	5, 029, 336	9. 54	61. 71
Woodland pastured.....	971, 856	1. 84	11. 92
Total land pastured, including cropland used only for pasture.....	6, 269, 386	11. 90	76. 92
All other land, total.....	197, 570	0. 37	2. 42
Total land in irrigated farms.....	8, 150, 540	16. 47	100. 00

Table 5 shows the land ownership in Utah. Only 20 percent is privately owned, more than 72 percent is federally owned, and the balance is State owned.

TABLE 5.—*Landownership by major class of owners, Utah, 1949*¹

Class of owner	Acres	Percent
Private land assessed for taxes.....	11, 026, 300	20. 92
Private land tax exempt.....	16, 500	. 03
Total private land (including tax exempt).....	11, 042, 800	20. 95
Municipal.....	25, 700	. 05
County.....	74, 400	. 14
State.....	2, 800, 900	5. 31
Total State and local government.....	2, 901, 000	5. 50
Federal.....	38, 111, 400	72. 32
Total public.....	41, 012, 400	77. 82
Not accounted for.....	646, 240	1. 23
Total.....	52, 701, 440	100. 00

¹ Agricultural Experiment Station Special Report No. 4, Utah's Land Resources, June 1951, table 5.

Out of more than 52 million acres in Utah, only about 3,250,000 acres are arable. Of this area, slightly less than one-half is classed as cropland. Table 6 shows a breakdown of the arable land.

TABLE 6.—*Arable land*PRELIMINARY ESTIMATE OF ACREAGE OF KNOWN ARABLE LAND IN UTAH¹

	Known arable land		
	Total	Cropland	Land not cropped
Utah State.....	3, 250, 000	1, 563, 200	1, 686, 800

¹ Utah Agricultural Experiment Station Rept. No. 4, Utah Land Resources, June 1951, p. 31, tables 32 and 33.

TABLE 6.—*Arable land*—Continued
PERCENT USE OF ARABLE LANDS

Land use	Area	
	Acres	Percent
Land not cropped (rangeland).....	1,686,800	52
Cropland, total.....	1,563,200	48
Irrigated cropland (except wild hay).....	894,700	27
Dry-farm cropland harvested.....	314,500	10
Idle and fallow.....	250,800	8
Wild hay land.....	103,200	3
Total.....	3,250,000	100

Out of a total of 3,250,000 acres of arable land in Utah, only 1,167,000 acres are classed as irrigated. This represents less than 2.2 percent of the State's area. Table 7 shows a breakdown of the irrigated areas in Utah.

TABLE 7.—*Irrigated land in farms according to use in Utah extracted from United States Census of Agriculture, 1950*

Item (1)	Total (2)	As a percent of	
		Land in State (3)	Total (4)
Irrigated land, total.....	1,166,972		
Irrigated land in farms according to use, total.....	1,137,995	2.16	100.0
Irrigated cropland harvested.....	847,271	1.61	74.45
Irrigated pasture.....	271,063	.54	23.82
Irrigated wild grass pasture.....	(149,672)	.28	(13.16)
Irrigated tame grass pasture.....	(121,391)	.23	(10.67)
Irrigated cropland not harvested and not pastured.....	19,661	.004	1.73
Other irrigated land.....	28,977		
Total land irrigated.....	1,166,972		

Utah's agriculture is characterized by the production of general farm crops, fruits and vegetables for canning, and sugar beets. It is intimately tied up with livestock, dairying, and poultry production. It is the irrigated area in Utah that makes it possible to utilize the large areas of range and forest lands for grazing purposes. The crops produced in Utah are not in competition with the major crops of the Nation, namely, wheat, tobacco, cotton, peanuts, etc. Except for fruits, vegetables, canning crops, and sugar beets, the crops are harvested largely through livestock. The total crop production in Utah will not influence the total national production. Much of Utah's agricultural production is consumed locally but the west coast States represent a growing market. Some fruits and vegetables and processed foods, together with livestock, still go to the Midwest and eastern markets.

The total irrigated area in Utah is less than 2.2 percent of the State. Table 8 shows the currently irrigated areas and the land proposed for irrigation development in the principal irrigated areas of Utah. The proposed projects—central Utah, Gooseberry and Emery County—cover the area included in the Bonneville Basin, and upper Colorado River Basin in Utah. In these basins, slightly over 1 million acres are irrigated but some 600,000 acres have only a partial supply of water. Within the proposed central Utah, Gooseberry and Emery County projects, there are nearly 400,000 acres of land that can be given a supplemental water supply and nearly 600,000 acres of new land that are

irrigable. Even under full development, there is not enough water in the Colorado and Bonneville Basins to meet the needs of this million acres of land. The total of new land irrigated will probably not exceed 210,000 acres with supplemental water supplied to an additional 250,000 acres. This still leaves nearly one-half million acres of irrigable land in the Colorado and Bonneville Basins needing either a full or partial supply of water.

TABLE 8.—Current and potential irrigation development in Utah exclusive of pasture

[In thousands of acres]

Item	Bear River area ¹	Weber River area ¹	Bonneville Basin area ²	Upper Colorado River Basin ²	Total Colorado Bonneville Basins ²	Virgin River Basin ²	State total ²
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Land now irrigated:							
Adequate supply	77	68	338.3	66.0	404.3	3.5	407.7
Partial supply	163	57	429.2	167.1	596.3	15.4	611.7
Total irrigated	240	125	767.5	233.1	1,000.6	18.9	1,019.4
Land proposed for irrigation development:							
Area needing full or supplemental supply	119	99	588.3	404.7	993.0	21.2	1,014.2
Partial supply	36	40	237.5	161.1	398.6	8.2	406.8
Not irrigated	83	59	350.8	243.6	594.4	13.0	607.4
Total irrigated, new land proposed for irrigation	323	184	1,118.3	476.6	1,595.0	31.9	1,626.9
Percentage increase in irrigated acreage (full development)			46.0	105.0	59.0	69.0	60.0

¹ Agricultural Experiment Station Special Rept. No. 4, Utah's Land Resources, June 1951.

² Water for Utah, Utah Water and Power Board, July 1, 1948.

It is proposed to serve under the central Utah (initial phase), Gooseberry and Emery County projects 32,200 acres of new land and 168,670 acres with a supplemental supply. These areas constitute only 42 percent of the area needing a supplemental supply and 5 percent of the irrigable land in the area served by the central Utah (initial phase), Gooseberry and Emery County projects.

Mr. CLYDE. Utah is a vast storehouse of metallic and nonmetallic minerals. She has great deposits of coal, iron, copper, lead, zinc, oil, oil shale, gas, lime, basic chemicals and rare metals including uranium, all of which are not only basic to our national economy but the maintenance and development of national defense. These raw materials require large quantities of water for processing and manufacturing. To develop these resources both water and power are required in large quantities. Exhibit B, which I submit for the record, sets forth in detail the industrial potential and the water and power requirements to vitalize it. This analysis shows that, based on current trends, by 1970, the Utah power market will absorb nearly the entire power output of the Echo Park and Glen Canyon powerplants. The water requirements for industrial development and related domestic and municipal uses is estimated to reach a total of 200,000 acre-feet by the year 1970.

(The material referred to follows:)

EXHIBIT B

UTAH'S INDUSTRIAL POTENTIAL AND ITS POWER AND WATER REQUIREMENTS

UTAH'S INDUSTRIAL POTENTIAL

Utah has vast stores of raw materials, both metallic and nonmetallic. It is a storehouse of basic chemicals. It has major supplies of coal, oil shale, ferrous and nonferrous minerals, oil and gas, sand and gravel, limestone and salt. It lacks adequate supplies of water and power.

Utah has long been a feeder State. Its raw materials have been shipped to other centers for processing. Its children have had to seek employment elsewhere. The development of Utah's industrial resources will provide urgently needed processed materials for use nationally and provide employment for its people. It will expand and stabilize the State's economy.

The following is a list of minerals that occur in commercial quantities:

Alunite, antimony, arsenic, asphaltum (including gilsonite and mineral waxes), bentonite, bismuth, brines and salt, building stones, cadmium, carbon dioxide, cement materials, clays, coal, copper, fluorite, fluorspar, gold, gypsum, helium, iron, lead and zinc, limestone, magnesium salts, magnesite, molybdenum, oil shale, phosphate rock, potash, pumice and perlite, pyrite, silver, sulfur, tungsten, radium, vanadium, and uranium.

Nonferrous metals

Utah has for many years been one of the main ¹ producers of nonferrous metals in the United States. In 1947 it ranked second in copper, third in lead, seventh in zinc, second in silver and first in gold. The Kennecott Copper Co. operates the largest open pit copper mine in the world at Bingham, Utah. Utah's production of nonferrous metals in 1947 had a value of over \$157 million.² The milling and smelting of these ores required at the 1947 level of production more than 5,000 acre-feet of water and 600 million kilowatt-hours of electrical energy each year.³

Utah has great deposits of magnesium in Great Salt Lake and underground in southeastern Utah. These deposits carry a far greater percentage of magnesium than the seawaters now being processed for magnesium metal. Alunite and high aluminum clays are found in abundance in Utah and form large potential supplies of aluminum. Both of these metals require large amounts of power for processing.

The processing of building materials, brick, gypsum products (plasterboard, lath, wallboard, and building plaster) is a rapidly growing industry in Utah.

Ferrous metals

Utah's position in the iron and steel industry has changed drastically since 1940. The State prior to 1940 produced significant quantities of iron ore, coking coal, pig iron, and high pressure cast iron pipe, but no steel. During recent war Utah became the center of steel production in the Western States. In 1940 there was only 1 steel plant in the 11 Western States. Today there are 3 steel plants: Colorado Fuel & Iron Co., at Pueblo, Colo.; Geneva Steel, near Provo, Utah; and the Kaiser Co., at Fontana, Calif.

In 1940 there was only one blast furnace in Utah. Today Utah has five.

Paralleling the increase in blast-furnace capacity has been the increase in coke production and coking plants. The construction of steel mills at Geneva and Fontana was accompanied by construction of byproduct coke ovens at the same locations, to supply coke for the steel mills in Utah and California.

Utah's coal, iron ore, and steel are the foundations on which the major steel production in Utah and other Western States is based. The iron ore of southern Utah supplied in 1947, 75 percent of iron ore produced and consumed in the 11 Western States.⁴

¹ Water for Utah, Utah Water and Power Board, July 1, 1948, pp. 57 and 60.

² Water for Utah, Utah Water and Power Board, unpublished data, Utah's Mining Industry 1947, p. 4.

³ Water for Utah, Utah Water and Power Board, Unpublished Data—Utah's Mining Industry, 1947, p. 3.

Shipments of iron ore from Utah's mines, 1932-52¹

Year:	Gross tons	Year:	Gross tons
1932-----	136, 874	1950-----	3, 111, 167
1938-----	169, 947	1951-----	4, 640, 000
1942-----	319, 834	1952-----	4, 000, 000
1946-----	1, 321, 334		

¹ Utah Economic and Business Review, vol. 12, November 1952, p. 4.

In 1931 employment in the steel industry in Utah averaged 69 workers. In 1951 this number increased to 616 workers, with a total annual payroll of \$2,664,000.⁴

The Geneva steel plant consumes approximately 50,000 acre-feet of water per year. It circulates through its plant 146,000 acre-feet per year.⁴

The production of ferroalloy is becoming of major importance. These alloys are manufactured in the electric furnace and include ferromanganese, ferrochrome, ferrosilicon, ferrovanadium, and ferrotungsten. The production of ferroalloys consumes large quantities of electric power. It is reasonable to assume that future ferroalloy furnaces in Utah might consume as much as 250 million kilowatt-hours per year.

Chemicals

"Of the 34 basic materials required for the development of chemical industries, Utah possesses all but a very few. In terms of relative importance the chemical industry stresses water, air, coal, sulfur, salt, limestone. With these basic raw materials, together with fuel and electric power, technology has wrought wonders of diversified production for a myriad of items, from the commonplace to the rarest."⁵

Utah's existing water and power supplies are not now sufficient to provide for the establishment of a chemical industry consistent with the abundance of raw materials that are available.

Coal is probably the most versatile of all raw materials. It provides heat, its carbon makes possible many metallurgical industries. It is, however, in the tars distilled from coal that are found the most chemical substances. Utah's coal reserves are estimated at 200 billion tons.⁶

Sulfur and its byproducts enters a large proportion of chemical processes. Sulfur deposits are mined in Beaver and Emery Counties although in terms of tonnage production, the quantity in mineral form cannot compare with that which is contained in the fumes of Utah's nonferrous metal ore smelters. The Garfield smelter of the American Smelting & Refining Co. in Utah is one of the largest single producers of sulfuric acid in the Western States. Its capacity of 6,000 tons per month in 1947 has now been expanded to 9,000 tons per month.

Salt as a mineral ranks fifth in the list of 150 most important chemical raw materials. Utah has tremendous reserves of salt.

The occurrence of limestone in Utah is widespread. Up to the present its major use has been in building industry although it is necessary in the steel, sugar, and cement industries. Lime as a basic raw material in the chemical industry is found in Utah in large quantities.

Other materials needed to support a chemical industry are chlorine, caustic soda, and calcium carbide. Raw materials from which these materials come are abundant in Utah. Processing plants for these materials consume large quantities of electrical energy and water.

Fertilizers

Utah processes in large quantities the three major mineral fertilizers: nitrates, potash, and phosphorous. Nitrates are available as byproducts of the steel industry. Potash is obtained from the salt flats in western Tooele County. Large deposits of phosphate rock are found in Utah, Colorado, and Wyoming. As the native plant foods are used up by the crops they must be replaced if continued production of food and fiber is to be maintained. This replacement is made through the application of fertilizers. Nitrogen, phosphorous, and potash are essential plant foods. Therefore, Utah is bound to develop the fertilizer

⁴ Utah Economic and Business Review, vol. 12, November 1952, p. 4.

⁵ The Steel Fabricating and Steel Using Industries of Utah, Utah Economic and Business Review, vol. 11, September 1951, p. 102.

⁶ Water for Utah, Utah Water and Power Board, July 1, 1948, pp. 64 and 65.

industry. Phosphorous is probably the most critically short of all fertilizers. The largest known deposits of phosphate rock are in the Upper Basin States. To produce 125,000 tons of elemental phosphorous per year would require 1,500 million kilowatt-hours of electrical energy.¹

Carbons and hydrocarbons

There is a greater concentration of high quality coal, bituminous and sub-bituminous in the Colorado River Drainage Basin than in any similar known area in the world. The estimated reserves in the Green River area alone are 800 billion tons. The portion that lies in Utah is estimated to be slightly less than 200 billion tons.

The Utah coals have good physical and chemical characteristics. Those that are not suitable for coking are high in volatiles. An average ton of coal if distilled by low-temperature distillation, will yield about 30 gallons of oil, 2,000 cubic feet of gas, and 1,300 pounds of smokeless fuel. A sizeable portion of the future synthetic liquid fuel industry is likely to become established in Utah. It is estimated that an economic plant unit for making synthetic fuel from Utah's coals would produce 30,000 barrels per day. Each plant would require 5,400,000 tons of coal per year. The water required for processing, cooling, and culinary purposes for each such plant unit would be about 22,000 acre-feet per year. Power consumption by such a unit would vary between 275 to 500 million kilowatt-hours.¹

Utah has recently taken its place as one of the potential oil reserve areas of the United States which include the oil reserves locked up in the oil shales and coal deposits. As these reserves are needed, refineries requiring large quantities of water and power will be required. It is estimated that it requires 20-30 gallons of water to produce a gallon of gasoline.

UTAH'S POWER MARKET TO 1970

The future power market in Utah can be determined best by examining current power uses and projecting into the future the growing demand for power. During the last decade the power supply has been unable to keep pace with the market demand.

Population and industry has been increasing rapidly in the West. The demand for power has grown faster than the population and the number of new industries because of many new uses for power that are being developed. The principal users of power are:

1. Rural farm customers
2. Urban residential customers
3. Commercial customers
4. Industrial customers
5. Other requirements

1. Rural customers

In 1940, 78 percent of the farms in Utah were wired for electricity. It is estimated that by 1970 electric energy will be available to 95 percent of the farms. Table 1 shows the past and estimated future electric energy requirements in rural areas in Utah.

TABLE 1.—*Past and estimated future electric energy requirements in rural areas in Utah*¹

Year	Number of farms	Percent of farms served	Farm equipment, thousands of kilowatt-hours	Home appliances, thousands of kilowatt-hours	Total energy used on Utah farms, thousands of kilowatt-hours
1930.....	27,159	.....	.....	.....	.....
1940.....	25,411	78.3	.....	.....	.....
1950.....	27,650	85.0	15,229	42,734	57,963
1960.....	29,300	90.0	29,572	77,412	106,984
1970.....	31,155	95.0	45,813	111,333	156,760

¹ Power Requirements Survey, State of Utah, by Federal Power Commission and Colorado River Committee of Utah, December 1946, pp. 94 and 108.

¹ Water for Utah, Utah Water and Power Board, July 1, 1948, pp. 75 and 80.

2. Urban residential customers

Urban and nonfarming communities are considered residential customers. With the development of new electrical appliances such as washers, ranges, refrigerators, freezers, water heaters, radio, television, and air conditioners, coupled with low rates for electrical energy, the total consumption by residential customers has increased rapidly.

Table 2 shows the past and estimated future residential energy requirements in urban and nonfarming communities.

TABLE 2.—*Past and estimated future residential electric energy requirements in urban and nonfarming communities in Utah¹*

Year	Total population in State	Percent of families having electric service	Total residential electric energy requirements, thousands of kilowatt-hours
1930.....	508	87.6	-----
1940.....	550	89.9	-----
1950.....	750	97.0	337,132
1960.....	950	97.0	746,785
1970.....	1,100	98.0	1,199,000

¹ Power Requirements Survey, State of Utah, by Federal Power Commission and Colorado River Committee of Utah, December 1946, pp. 94 and 108.

3. Commercial requirements

During the period 1930 to 1945 the commercial electric energy load increased from 47.9 to 115.8 million kilowatt-hours, an increase of 142 percent. New developments in electrical services, lighting, air conditioning, and power equipment have greatly increased the commercial powerload since 1940. Table 3 shows the past and estimated future commercial uses of electricity.

TABLE 3.—*Past and estimated future uses of commercial energy in Utah¹*

Year	Number of commercial workers	Annual use per worker, kilowatt-hours	Total annual commercial use, thousands of kilowatt-hours
1930.....	68,987	695	47,921
1940.....	69,902	1,144	79,989
1950.....	110,660	1,550	171,010
1960.....	150,120	2,160	324,000
1970.....	181,060	2,760	499,840

¹ Power Requirements Survey, State of Utah, by Federal Power Commission and Colorado River Committee of Utah, December 1946, p. 98.

4. Industrial requirements

Large-scale industrial users of power are the ferrous and nonferrous mining, smelting, and refining companies and the fabricating plants using these materials. Coal mining is a heavy user of electrical energy. The fertilizer and chemical industries are heavy consumers of electricity, and both of these have great potential opportunities in Utah. In addition to these there are electrolytic processes for refining zinc, copper, alloy steel; for extracting magnesium, caustic soda, and chlorine from the brines of Great Salt Lake; and the manufacture of fertilizers from the great phosphate deposits of eastern Utah. These new potential industries require great quantities of water and power. Table 4 shows some typical industries with their past and estimated future power requirements.

TABLE 4.—Past and estimated future industrial energy requirements in million kilowatt-hours

Year	Coal mining	Other mining	Petroleum and coal products	Iron and steel	Nonferrous metal smelting and refining	Stone clay glass	Chemicals	Food	Other plants	Total
1940.....	24	470	5	12	63	16	4	17	83	693
1950.....	42	493	22	150	68	18	60	25	150	1,028
1960.....	52	579	26	230	87	22	130	39	200	1,367
1970.....	63	651	31	300	116	25	400	50	225	1,862

The total industrial load anticipated in 1970 is approximately 1.86 billion kilowatt-hours. Of this amount probably 1.1 billion will be supplied by utilities and the balance by generating plants owned and operated by the industrial concerns.¹

5. Other requirements

This classification includes highway lighting, railroads, and railways, and all utility operations and miscellaneous operations not covered by any of the above classifications.

It is estimated in 1960—54,435,000 kilowatt-hours will be consumed in this classification. The 1970 consumption will have increased to 62,962,000 kilowatt-hours. This includes all uses in this classification except railway electrification. Due to the urgency of conservation of our petroleum resources and the inherent advantages of railroad electrification it is possible that Utah's railroads may be converted to full electrification by 1970 provided power supplies at reasonable rates are made available.

The total energy requirements by 1970 in the State of Utah will probably reach 3,724,060,000 kilowatt-hours including 651,650,000 kilowatt-hour losses.

TABLE 5.—Summary of present uses and potential energy requirements¹

[In thousands of kilowatt-hours]

	1940	1950	1960	1970
Rural.....	15,099	57,925	107,010	156,760
Residential.....	119,633	337,220	747,090	1,199,000
Commercial.....	79,989	171,010	324,000	498,840
Industrial.....	660,414	518,300	742,750	1,164,850
Other.....	44,740	46,355	54,435	62,960
Subtotal.....	919,875	1,125,810	1,975,285	3,072,410
Losses.....	173,195	239,370	421,450	651,660
Total.....	1,093,070	1,365,180	2,396,735	3,724,060

¹ Power Requirements Survey, State of Utah, by Federal Power Commission and Colorado River Committee of Utah, December 1946, pp. 100 and 107.

UTAH'S CURRENT AND POTENTIAL POWER SUPPLY

The three largest privately owned electric utilities in Utah are: Utah Power & Light Co., Southern Utah Power Co., and the Telluride Power Co. These utilities provide over 90 percent of the total utility-assured capacity of the State. The remainder is publicly owned powerplants representing primarily small municipal operations.

In 1947, there were 55 hydroelectric powerplants in Utah with a total installed capacity of 92,445 kilowatts. In addition there are 41 internal combustion generating plants and 4 steam electric plants having a combined capacity of 14,099 and 68,750 kilowatts, respectively.

Of the total installed capacity in the State in 1947,² 52.9 percent was in hydroplants, 20.8 percent in generating steam plants and 8 percent in internal combustion plants.

² Power Requirements Survey, State of Utah, by Federal Power Commission and Colorado River Committee of Utah, December 1946, pp. 100 and 107.

³ Water for Utah, Utah Water and Power Board, July 1, 1948, p. 94.

The Utah Power & Light Co., the major utility, is interconnected with the Telluride Power Co. on the south and the Idaho Power Co. and the Montana Power Co. on the north. These two power companies transfer energy to the Utah Power & Light Co in Utah for each other. Most of the energy transferred is incoming from the Idaho Power Co. and the Montana Power Co. Table 6 summarizes the electric energy available and required in the past and the estimated future supply without the proposed Colorado River development compared with the estimated power requirements in Utah in 1970. Table 7, the generating capacity available and needed by 1970.

TABLE 6.—*Electric energy requirements estimated to 1970 for Utah*¹

[In thousands of kilowatt-hours]

Item	1944	1950	1960	1970
Energy available from assumed existing plants.....	1, 150, 220	1, 312, 916	1, 257, 916	1, 217, 916
Assumed additions.....		11, 390	130, 530	316, 680
Retirements.....		0	130, 630	346, 250
Total energy available.....	1, 150, 220	1, 324, 306	1, 257, 816	1, 188, 346
Total energy requirement.....	1, 193, 114	1, 651, 080	2, 900, 085	4, 491, 140
Net additional energy requirement (energy requirement, energy available).....	42, 894	326, 774	1, 642, 269	3, 302, 794

¹ Power Requirements Survey, State of Utah, Federal Power Commission and Colorado River Committee of Utah, December 1946, pp. 131 and 132.

TABLE 7.—*Capacity requirements*¹

[In thousands of kilowatt-hours]

Item	1944	1950	1960	1970
Capacity available from existing or assumed plants.....	254, 864	261, 264	248, 664	239, 464
Assumed additions.....	0	2, 600	18, 600	43, 600
Retirements.....	0	0	18, 622	50, 350
Total capacity available or assumed.....	254, 864	263, 864	248, 642	232, 714
Total capacity required.....	269, 539	337, 600	605, 000	939, 500
Net additional capacity required.....	14, 675	73, 636	356, 358	706, 786

¹ Power requirements survey, State of Utah, Federal Power Commission and Colorado River Committee of Utah, December 1946, pp. 131 and 132.

It appears from tables 6 and 7 that the power market in Utah by 1970 will absorb a total installed capacity of 706,786 kilowatts. In addition the power pump load is expected to be about 40,000 kilowatts. Table 8 shows the estimated hydroelectric capacity and energy requirements by 1970 and how these requirements can be met.

TABLE 8.—*Estimated hydroelectric capacity and energy requirements by 1970*¹

Item	Kilowatts	Kilowatt-hours (million)
Load requirement:		
For utilities.....	939, 500	4, 491
For pumping.....	40, 000	77
Total.....	979, 500	4, 568
Possible power supply from existing plants plus normal development.....	246, 700	1, 328
Proposed hydroelectric plants (Echo and Glen Canyon).....	788, 100	3, 766
Total power available.....	1, 034, 800	5, 094
Needed in Utah by 1970.....	706, 786	3, 302

¹ Power Requirements Survey—State of Utah, by Federal Power Commission and Colorado River Committee of Utah, December 1946, p. 133.

The State of Utah is not the entire power market in the upper basin States. The United States Bureau of Reclamation report of Central Utah Project, 1951, shows a power¹⁰ demand of 5.4 million kilowatt-hours by 1970 as compared to 5.1 million kilowatt-hours supply above. By 1970 the upper basin States can consume the entire power output of Echo and Glen Canyon plants.

If the Echo and Glen Canyon powerplants, the only ones involved in Colorado River storage project, were to be started within a year it would be 1960 before much power would come from these plants. During the succeeding 10 years it is believed the entire output of these plants would be required in the Utah and adjoining power market area.

CONSUMPTIVE WATER REQUIREMENTS

It is extremely difficult to estimate the water requirements for the potential industrial development in Utah. The largest users of water will be the steel industry, fertilizer industry, chemical industry and in the reduction of oil shale and coal to liquid fuels and chemicals.

Oil shale and coal may ultimately use as much as 100,000 acre-feet per year. All other industries including the domestic requirements of the people working in the industries will probably not use more than 100,000 acre-feet per year, making a total potential water requirement for industrial development in Utah of 200,000 acre-feet.

Mr. CLYDE. Since 1940 the population of Utah has increased 27.9 percent and by 1970 is expected to be 1,100,000. Population increases mean more water for municipal and industrial uses and bigger power demands. More people require more food and fiber and more job opportunities. Increased agricultural production made possible by more water means more food and fiber. At the recent Midcentury Conference on Resources for the Future it was ably demonstrated that within 25 years this country will urgently need 40 to 45 million additional acres of productive land. It will take 25 years to fully develop even the initial phase of the central Utah project. Therefore the construction of these proposed projects will not create overproduction.

The Colorado River is Utah's last waterhole. The proposed Colorado River storage project and the participating projects in Utah will make possible the beneficial consumptive use of Utah's share of the river. The proposed Echo Park and Glen Canyon Dams will provide the storage necessary for the initial regulation of the river in order that the upper basin States may meet its commitments to the lower basin States as set forth in the Colorado River compact, provide for silt control, and provide for the generation of power, the revenues from which, after the power facilities are paid for with interest, will be used to help pay the reimbursable costs of the participating projects allocated to irrigation.

These two dams and the reservoirs created by them will provide the bulk of the storage and power requirements; there are no substitute sites for either of them. It has been determined by many engineering investigations that any site, other than the Echo, used with any combination of reservoirs or powerplants will result in increased power costs and net water losses in excess of 300,000 acre-feet per year. This is enough water to meet the consumptive use requirements of 100,000 acres of land. Such water losses cannot be tolerated in order to satisfy those who would in the name of conservation bottle up forever urgently needed resources.

¹⁰Central Utah Project—Utah, by United States Department of the Interior—Bureau of Reclamation, Project Planning Report No. 4-8A-50-2, February 1951, p. 109.

Utah's participating projects as set forth in the bills which are the subject of this hearing are: (1) Central Utah (initial phase); (2) Gooseberry; (3) Emery County.

The central Utah project, initial phase, will provide for the storage and conveyance of water from the Colorado River drainage, for use in both the Uinta Basin, which is a part of the Colorado River Basin in Utah, and the Bonneville Basin, where limited water supplies are preventing agricultural, municipal and industrial development. Transmountain diversions and developed waters in this initial project will amount to some 224,000 acre-feet annually. This will provide water for 21,650 acres of new land, 97,350 acres of partially irrigated land, 48,800 acre-feet of water for municipal and industrial uses and 373 million kilowatt-hours of electrical energy annually for municipal and industrial uses and for irrigation pumping. It will provide flood protection and reclaim Provo Bay, a 9,000 acre swamp and mosquito breeding area near Provo, Utah. It will provide both water and power for the rapidly growing iron, steel, metal alloy, chemical, and fertilizer industries.

The Gooseberry project located in central Utah, consists of a storage reservoir on the Price River, a tributary to the Colorado and a transmountain diversion tunnel to the San Pitch River, a tributary to the Sevier River in the Bonneville Basin. The Sanpete Valley which is supplied with water from the San Pitch River is an established agricultural area. Its agricultural production, however, is limited to subsistence by annual water shortages. These annual water shortages will be practically eliminated on 16,400 acres of land by the construction of this project which will provide supplemental water from this area and stabilize its agriculture.

The Emery County project is located in the Colorado River Basin and is similar to the Gooseberry in that it will provide a supplemental supply of water to an established agricultural area, except that in the Emery County project some new land will be included. The project consists of a storage reservoir, a diversion dam and a main canal to distribute the storage water to the existing irrigation companies. The Emery County project will provide a supplemental water supply for 20,450 acres of land and a full supply for 3,630 acres. This additional water will expand the agriculture of the area through the introduction of late season crops and stabilize both the production of forage and the livestock industry which is dependent upon it.

These projects have been shown by the United States Bureau of Reclamation to have both engineering feasibility and economic justification when measured by the criteria established for considering participating projects. The irrigation water users can pay their annual operation, maintenance, and replacement costs and that portion of the reimbursable costs fixed by the ability of the farmers to pay. The costs allocated to power and municipal water will be paid out with interest at 2½ percent in 50 years. The revenues from the Colorado River storage project, after repayment of storage project costs with interest will be available to pay that portion of the construction costs of irrigation facilities above the ability of the farmers to pay.

The benefit-cost ratio of each of these projects is greater than one. Mr. Chairman, with your permission, I submit for the record exhibit

C, which is a brief statement covering each of Utah's participating projects, showing briefly what it means to Utah.

(The material referred to follows:)

EXHIBIT C

**SUMMARY STATEMENT RELATIVE TO THE CENTRAL UTAH (INITIAL PHASE)
GOOSEBERRY AND EMBURY COUNTY PARTICIPATING PROJECTS OF COLORADO RIVER
STORAGE PROJECT**

Based on reports by the United States Bureau of Reclamation

CENTRAL UTAH PROJECT (INITIAL PHASE)

Location

This project is located in the central part of Utah and includes all or parts of Uinta, Duchesne, Wasatch, Utah, Salt Lake, Tooele, Millard, and Sevier Counties. It will serve the most thickly populated area as well as the principal agricultural areas of the State.

General plan

The initial phase of the project would intercept streams draining the south slope of the Uinta Mountains in the Uintah Basin and would convey the water by gravity flow through the Wasatch Mountains to the Bonneville Basin. The water would be collected by an aqueduct leading to a storage reservoir high in the Wasatch Mountains. From the reservoir, the water would drop through a series of hydroelectric plants before being used in the Bonneville Basin for irrigation, municipal and industrial purposes. Replacement water and water for new development in the Uinta Basin in the initial phase would be provided by development of storage in local streams.

Principal features

1. Uinta Basin:

- (a) Storage reservoirs (total capacity 1,617,800 acre-feet)
- (b) Diversion dams
- (c) Irrigation system extensions
- (d) Drainage systems

2. Bonneville Basin:

- (a) Storage reservoirs (total capacity 86,390 acre-feet)
- (b) Strawberry Aqueduct (Rock Creek to Strawberry Reservoir)
- (c) Strawberry Reservoir enlargement (1,370,000 acre-feet)¹
- (d) Two tunnels to Bonneville Basin
- (e) Four powerplants
- (f) Aqueducts to Utah and Juab Counties
- (g) Bates Reservoir
- (h) Provo Bay Dyke and irrigation drainage system
- (i) Enlargement of Jordan River

	Bonneville Basin	Uinta Basin	Total
Water supply (acre-feet annually):			
1. Diversions from Uinta Basin to Bonneville Basin.....	141, 400	0	141, 400
2. Provo River water by exchange.....	70, 800	0	70, 800
3. New water developed in Uinta Basin for local use.....		50, 700	50, 700
4. New irrigation water supply return flow and savings from evaporation.....	129, 000	46, 200	175, 200
5. New municipal supply.....	44, 300	4, 500	48, 800
6. Depletion to Colorado River.....	156, 200	33, 200	189, 400
Irrigated area (acres):			
1. New lands receiving full supply.....	21, 650	6, 890	28, 540
2. Lands receiving supplemental water.....	97, 350	34, 490	131, 840
Power:			
1. Installed capacity (kilowatts).....	61, 000		61, 000
2. Average annual generators (millions of kilowatt-hours).....	373	0	373

¹ Dual capacity, also included in Uinta Basin storage reservoir total capacity.

*Costs and repayment**Central Utah project (report revisions based on Jan. 1953 conditions)*

[Thousands of dollars]

Purpose	Con- struction cost alloca- tion	Source of repayment revenue ¹							Total
		Irriga- tion	Munic- ipal	Power ²	Irriga- tion deficit	Non- reim- burs- able	Inter- est	Other	
Irrigation.....	\$127,354	\$15,191			\$112,163				\$127,354
Municipal.....	45,500		\$45,500				\$34,712		80,212
Power.....	46,699			\$46,699			33,819	\$31,782	112,299
Recreation.....	2,830					\$2,830			2,830
Forest service.....	48					48			48
Flood control.....	3,113					3,113			3,113
Investigation (Colorado River development, Nonreimbursable).....	603								
Initial phase subtotal.....	226,147	15,191	45,500	46,699	112,163	5,991	68,531	31,782	325,856
Ultimate phase.....	5,500								
	231,647								

¹ Irrigation and municipal payments considered over a 50-year period. Power revenues considered over a period of 47 years after the last initial phase power began operating.

² Power revenues estimated at 6.0 mills a kilowatt-hour for firm energy, 3.5 mills for nonfirm and 3.0 mills for irrigation pumping energy.

Repayment period

Fifty years plus 10-year-development period.

Benefit-cost ratio

1.23 to 1.00.

Benefits (local, State, National)

The central Utah project (initial phase) will provide water from the Colorado River for use in the Bonneville Basin where limited water supplies are preventing agricultural, municipal and industrial development. This will provide water for 21,650 acres of new land and 97,350 acres of partially irrigated land. It will provide power for municipal and industrial uses and for irrigation pumping. It will provide flood protection and reclaim Provo Bay, a swamp area near Provo, Utah. It will provide water for the rapidly growing iron, steel, metal alloy, chemical, fertilizer, oil, and gas industries and for the many service facilities resulting from such industries.

The central Utah project covers the most thickly populated areas of the State, the best agricultural areas and the source of raw materials basic to new industries. Water and power are the two resources necessary to the continued growth of Utah and this project will provide both in initial amounts.

From a military standpoint, this project is important nationally. Central Utah already houses several large defense installations: Dugway Proving Ground, Deseret Mound Chemical Depot, Tooele Ordnance Depot, Ogden Arsenal, general supply depot, naval supply depot and Hill Field. This area is 600 miles from either border and the west coast. The entire economy of this area and its ability to maintain a strong strategically located source of supplies is dependent upon plenty of water and power. The central Utah project will bring both to this area.

GOOSEBERRY PROJECT

Location

Price River, Gooseberry Creek, Carbon, and Sanpete Counties, Utah.

General plan

To store water in Mammoth Reservoir on Gooseberry Creek, convey it through a tunnel to Sanpete County for irrigation purposes.

1. Would provide 11,700 acre-feet storage water and 2,300 acre-feet return flow.
2. Furnish supplemental supply to 16,400 acres.
3. No new lateral distribution system would be required.
4. Drainage of wet lands would be provided.
5. Flood protection on Gooseberry and Cottonwood Creeks would be provided.
6. Hydroelectric power could be developed but is not recommended at this time.

Project works

1. Mammoth Reservoir and Dam: Capacity 17,200 acre-feet.
2. Mammoth tunnel, 2.4 miles: Capacity 150 cubic feet per second.
3. Gooseberry diversion dam: Capacity 650 cubic feet per second.
4. Gooseberry highline canal, 10.4 miles: Capacity 104 to 19 cubic feet per second.
5. Rehabilitation 50 miles of existing canals.
6. Drains: 8.4 miles.
7. Improvement of approximately 2 miles San Pitch River Channel.

Project costs

1. Total cost, \$5,781,000.
2. Annual operation, maintenance, and replacement, \$10,300.

Water supply

1. Average annual requirement: 2.9 acre-feet per acre.
2. Average annual supply (present): 1.4 acre-feet per acre.
3. Mammoth Reservoir, average yield: 11,700 acre-feet per acre annually.
4. Return flow: 2,300 acre-feet per acre.
5. Total new water, 14,000 acre-feet annually: 0.8 acre-foot per acre per year; need, 1.5 acre-feet per acre per year. Average shortage: 0.7 acre-foot per acre per year.
6. Water rights are adequate (applications in good standing) (upper Colorado River compact) (Scofield-Mammoth Reservoir agreement); average annual depletion of Colorado River 12,500 acre-feet.

Lands

16,440 acres included, all class 1 or 2.

Agricultural economy

General agriculture and livestock.

Cost allocations and repayment

1. To irrigation: Construction, \$5,727,500; operation, maintenance, and replacement, annual, \$11,020.
2. To recreation: Construction, \$33,000; operation, maintenance, and replacement, annual, \$2,540.
3. Nonreimbursable past, investigation cost: \$20,500.
4. Ability of farmers to repay irrigation costs: current annual operation, maintenance, and repair, 60 cents per acre per year; increased annual operation, maintenance, and repair, 67 cents per acre per year; construction, \$2.90 per acre per year; total, \$4.17 per acre per year.
5. Total repayment for irrigation, \$2,375,000 in 50 years (\$47,500 per year).
6. From revenues from Colorado River storage project, \$3,352,500.

Benefit-cost ratio

1. Annual benefits: Direct, \$218,700; indirect, \$30,800; public, \$18,300; total, \$267,800.
 2. Equivalent costs: \$223,400.
- Benefit-cost ratio: 1.20 to 1.00.

Eligibility as Colorado River participation project

1. All criteria set up in the 1950 report of the Colorado River storage project for participation projects are met by the Gooseberry project.

- (a) Project cannot pay out alone.
- (b) Project in the Colorado Basin.
- (c) Benefits exceed cost.
- (d) Irrigators can pay operation, maintenance, and replacement plus irrigation allotment in 50 years.
- (e) Assistance to pay balance can come from Colorado River storage project.
- (f) Project will not jeopardize Colorado River storage project.
- (g) Engineering feasibility and economic justification is shown.

Conclusions

- 1. Gooseberry project plan has engineering feasibility.
- 2. Water for project is physically available and water rights are adequate and within Utah's share of the upper Colorado River.
- 3. Project is economically justified; benefit-cost ratio 1.20-1.00.
- 4. Project meets all criteria for selecting participating projects for Colorado River storage project.
- 5. Payout can be made in 50 years (irrigation costs).
- 6. Assistant in payout can come from Colorado River storage project.

Benefits (local, State, and national)

- 1. The economy of the area to be served is established.
- 2. Full realization of the productive capacity of the land cannot be reached because of water shortages every year after midsummer. No late-season crops can be matured and forage crops dry up early.
- 3. Supplemental water for the lands in the project will firm up the agricultural production, strengthen the local economy, and result in general benefits to the State and Nation.
- 4. No new investments are needed for schools, churches, roads, and government.
- 5. The additional water provided by this project will change the farm income from a subsistence to a normal profitable income.

Recommendations

- 1. That plan of development proposed be approved.
- 2. That authorization be secured for Secretary of Interior to construct project.
- 3. That the Secretary of Interior be authorized to handle all recreational facilities.
- 4. That the Secretary determine the portion of costs to be paid by water users in 50 years and all reimbursable amounts in excess of these to be paid out of the revenues from the Colorado River storage project.

EMERY COUNTY PROJECT

Location

East-Central Utah on the east slope of the Wasatch Plateau near the town of Huntington, Castle Dale, and Orangeville, Utah, in the upper Colorado River Basin.

Purpose

To supply supplemental water for lands now irrigated and to furnish a full supply to new lands.

General plan

- 1. To control flow of Cottonwood Creek by storage at Joe's Valley.
- 2. Divert controlled flow above the town of Orangeville.
- 3. Convey water through a new canal to existing distribution systems.
- 4. Provide extensions to irrigation distribution systems and drainage systems where necessary.

Project works

1. Joe's Valley Dam and Storage Reservoir (capacity 57,000 acre-feet).
2. Swasey diversion dam 10 miles below reservoir.
3. Cottonwood Creek-Huntington Canal (17 miles long) capacity 250 to 175 cubic feet per second.
4. Drainage system and extensions to irrigation systems.
5. Increased transmountain diversion to existing Sanpete project (1,000 acre-feet).

Area served

1. 24,080 acres of land (new and supplemental).
2. Supplemental supply to 20,450 acres.
3. Full supply to 3,630 acres.
4. 1,000 acre-feet for transmountain diversion.

Water requirement

Total diversion requirement 91,500 acre-feet annually (3.8 acre-feet per acre).

Water supply

	<i>Acre-feet annually</i>
From natural flow.....	56,000
From proposed project:	
Natural flow.....	3,900
Storage.....	27,500
Net shortage with project.....	4,100

The Emery County project would deplete the flow of the Colorado by 15,500 acre-feet annually at the sites of use. Water rights are adequate for this project.

Lands

Classes 1 and 2.

Cost allocations

	Construction	Operation, main- tenance, and replacement
Irrigation.....	\$9,636,500	\$21,870
Recreation.....	229,000	15,110
Nonreimbursable past investigation cost.....	17,500	-----
Total.....	9,883,000	26,980

Repayment—Amortization capacity

	Acres	Average per acre	Total project
Payment capacity:			
Emery County, water users.....	24,080	\$3.90	\$93,910
Sanpete project, water users.....	2,000	1.15	2,300
Total.....			96,210
Operation, maintenance, and replacement:			
Emery County water users.....		.91	21,870
Sanpete project water users.....		0	0
			74,340
Rounded to.....			74,300

Repayment period (years).....	50
Total payment by irrigation.....	\$3,715,000
From revenues of Colorado River storage project.....	\$5,921,500

Benefit-cost ratio

1.38 to 1.00.

Benefits (local, State, National)

The supplemental water and new land will firm up the general farming which centers around the livestock industry. More late-season forage can be produced and the winter, spring, and summer ranges used more effectively. Late water

will make the dairy industry feasible. The farms in the area will be changed from subsistence farms to profitable economic units. A profitable agriculture makes for a strong State and National economy.

Mr. CLYDE. The projects will do more than bring into production new acres, provide supplemental water for acres now irrigated and provide power for industrial development. The new water will stabilize the agriculture of the State by increasing the number of late season crops that can be grown. It will increase the value of the fall, summer, and spring ranges which make up the greater portion of the State's area by making possible the production of more feed to carry the livestock through the winter. The new water and power will provide the basic elements for an expanding industrial development in the fields of ferrous and nonferrous metals, chemicals, fertilizers, carbons and hydrocarbons and synthetic fuels.

From a military standpoint, these projects are important nationally. Central Utah already houses several large defense installations such as, Army Supply Depot, Naval Supply Depot, Deseret Chemical Depot, Tooele Ordnance Depot, Ogden Arsenal, and Hill Air Force Base. The entire economy of Utah and its ability to help maintain a strong, strategically located source of military supplies is dependent upon adequate water and power.

The initial plan on the Colorado River storage project and the participating projects in Utah as set forth in the bills now under consideration will upon authorization and ultimate construction provide for the initial stages of the development of Utah's remaining water, land, raw material, and power resources.

This project has the full and complete endorsement of the people of Utah. This endorsement consists of a resolution passed by the Utah State Legislature, in special session, December 1953, a copy of which is herewith submitted for the record; a letter from J. Bracken Lee, Governor of the State of Utah, directed to this honorable body, which is already in the record. And in addition to this, Mr. Chairman, it consists of endorsements in the form of letters from individuals, groups, communities, counties, water users associations, county commissions, labor unions, and others representing to have more than 700,000 people, which is essentially the population of the entire State. With your permission, Mr. Chairman, I will submit exhibit D for the record, which is a list of these people who are urging the favorable consideration by your committee of this proposal.

(The material referred to follows:)

EXHIBIT D

SUMMARY STATEMENT RELATING TO ENDORSEMENT OF THE COLORADO RIVER STORAGE PROJECT AND PARTICIPATING PROJECTS IN UTAH BY WATER USERS, STATE, COUNTY, AND CITY GOVERNMENTS, CIVIC ORGANIZATIONS, INDUSTRIAL GROUPS AND EDUCATIONAL INSTITUTIONS

The Colorado River storage project and its participating projects, as they relate to Utah and as set forth in the bills which are the subject of this hearing, have the unanimous endorsement of the people of Utah at all levels.

The following is a list of letters endorsing, and resolutions passed in support of, H. R. 4449 relating to the Colorado River storage project and participating projects. These letters and resolutions come from individuals, water users associations, farm groups, canning crop associations, county commissions, cities and towns, industries, educational institutions, chambers of commerce, women's clubs, civic clubs, wool, cattle, and horse growers associations, sportsmen's organiza-

tions, soil conservation districts, labor unions, and parent-teacher associations. These groups represent in total more than 700,000 people in the State of Utah.

LETTERS

1. Gooseberry Project Water Users, Mt. Pleasant, Utah
2. Salt Lake Chamber of Commerce, Salt Lake City, Utah
3. Utah State Agricultural College, Logan, Utah
4. Uintah Basin Water Users, Vernal, Utah
5. Federated Women's Clubs, Provo, Utah
6. Utah Canning Crops Association, Logan, Utah
7. Emery County Project Water Users, Orangeville, Utah
8. Orem Chamber of Commerce, Orem, Utah
9. Utah County Civil Defense, Provo, Utah
10. Pacific States Cast Iron Pipe Co., Provo, Utah
11. Sterling Price—National Wild Life Association, Provo, Utah
12. Ashley Farmers Union Cooperative, Vernal, Utah
13. W. R. Wallace, Salt Lake City, Utah
14. Henry Roberts, chairman, Central Utah Projects Committee
15. Provo Electric Power Co., Provo, Utah
16. J. A. Howell, Ogden, Utah
17. University of Utah, Salt Lake City, Utah
18. Sevier County Groups, Richfield, Utah

COUNTY COMMISSIONERS

- | | |
|---------------|--|
| 1. Salt Lake | 11. Juab |
| 2. Sanpete | 12. Iron |
| 3. Utah | 13. Kane |
| 4. Sevier | 14. Emery |
| 5. Garfield | 15. Millard |
| 6. Tooele | 16. Wayne |
| 7. Carbon | 17. Grand |
| 8. Washington | 18. Wasatch |
| 9. Uintah | 19. San Juan |
| 10. Duchesne | 20. Utah Association of County Officials |

STATE AND COUNTY WATER USERS ASSOCIATIONS

1. Wayne County
2. Iron County
3. Garfield County
4. Beaver County
5. Sanpete County
6. Uintah County
7. Wasatch County
8. Plute County
9. Salt Lake County
10. Utah Water Users Association
11. Colorado River Development Association (21 counties)
12. Springville Irrigation District and Springville Drainage District
13. Juab County
14. Weber County Water Users Association
15. District No. 2—Utah Water Users Association
16. Cache County Water Users Association
17. Pleasant Grove Irrigation Co.
18. Utah County Water Users Association
19. Salt Lake County Water Users Association
20. Uintah County Water Users Association

COUNTY COMMITTEES (POLITICAL)

1. Washington County Democratic Central Committee
2. Washington County Republican Central Committee
3. Kane County Republican Central Committee
4. Uintah County Republican Central Committee
5. Utah County Republican Central Committee
6. Garfield County Republican Central Committee
7. Committee for Young Men in Government (Grant S. Thorn, Springville, Utah)

INDUSTRIAL GROUPS

1. Utah Mining Association, Salt Lake City, Utah
2. Associated General Contractors, Salt Lake City, Utah
3. Greater Utah Valley, Provo, Utah
4. Park City Consolidated Mines, Park City, Utah
5. Springville Banking Co., Springville, Utah

CITIES AND TOWNS (UTAH)

- | | |
|----------------|---------------------------|
| 1. Payson | 14. Salt Lake City |
| 2. Springville | 15. Grantsville |
| 3. Orem | 16. Murray |
| 4. Nephi | 17. Richfield |
| 5. Vernal | 18. Fillmore |
| 6. Roosevelt | 19. Fairview |
| 7. Duchesne | 20. Salina |
| 8. Price | 21. Marysville |
| 9. Milford | 22. Mount Pleasant |
| 10. Meadow | 23. Pleasant Grove |
| 11. Eureka | 24. Provo, Utah |
| 12. Scipio | 25. Utah Municipal League |
| 13. Ephraim | |

CHAMBERS OF COMMERCE

- | | |
|-------------------------|-----------------|
| 1. Salt Lake City, Utah | 7. Price |
| 2. Richfield | 8. Cedar City |
| 3. Roosevelt | 9. North Sevier |
| 4. Wasatch | 10. Nephi |
| 5. Vernal | 11. Springville |
| 6. South Salt Lake | 12. Ogden |

JUNIOR CHAMBERS OF COMMERCE

- | | |
|---------------|--------------------|
| 1. Vernal | 5. Gunnison Valley |
| 2. Utah State | 6. Pleasant Grove |
| 3. Nephi | 7. Provo |
| 4. Delta | |

EDUCATIONAL GROUPS

1. Central Utah Vocational School
2. Associated Students, Brigham Young University (6,500 students)
3. Students of the Uintah High School

WOMEN'S CLUBS

1. Utah Federation of Women's Clubs (member)
2. Mrs. Gene G. Talbot
3. Federated Women's Clubs of Nephi
4. Women's Safety Council (Salt Lake County)
5. East Millard Fine Arts Guild
6. Murray Women's Club
7. Panguitch Women's Club
8. Progressive Arts Club
9. Price Federated Women's Clubs
10. Richfield Study Club
11. Richfield Culture Club
12. Athenian Club of Lehi
13. Utah Federation of Women's Clubs (Sanpete-Sevier)
14. Utah Federated Women's Club (State)
15. Roosevelt Culture Club
16. Current Topic Club of Vernal
17. Uintah Basin District, Federated Women's Clubs
18. Mothers Study Club, Pleasant Grove, Utah
19. Executive committee, Utah Federated Women's Clubs

20. Junior Ladies Literary Club, American Fork, Utah
21. Federated Clubs of Utah (Alpha Beta Club)
22. Ogden District Federation of Women's Clubs
23. Provo Council PTA
24. Timpanogos First District Federated Women's Clubs

CIVIC CLUBS

- | | |
|-------------------------------|--|
| 1. Kiwanis Club of Nephi | 14. Lions Club of Roosevelt |
| 2. Kiwanis Club of Provo | 15. Lions Club of Bingham Canyon |
| 3. Kiwanis Club of Roosevelt | 16. Lions Club of Wayne County |
| 4. Lions Club of Beaver | 17. Lions Club of Moab |
| 5. Lions Club of Union | 18. Lions Club of Duchesne |
| 6. Lions Club of Marysvale | 19. Lions Club of Mount Pleasant |
| 7. Lions Club of Park City | 20. Lions Club of Pleasant Grove |
| 8. Lions Club of Fairview | 21. Associated Civic Clubs of Southern
and Eastern Utah |
| 9. Lions Club of Vernal | 22. Kiwanis Club of Eureka |
| 10. Lions Club of Grantsville | 23. Associated Civic Clubs of Northern
Utah |
| 11. Lions Club of Panguitch | 24. Cadmus Club of Pleasant Grove |
| 12. Lions Club of Milford | |
| 13. Lions Club of Salina | |

MISCELLANEOUS

1. J. D. Smith, Provo, Utah
2. American Legion, Springville, Utah
3. Central Utah Association of Engineers, Provo, Utah
4. Utah Wildlife Federation
5. Vernal Rod and Gun Club
6. Petition of individuals
7. A. B. Snyder, Springville, Utah
8. Mount Nebo Wildlife Association
9. Utah Cattle and Horse Growers' Association
10. Uintah Basin Soil Conservation District
11. Floyd Gardner
12. Petition, Santaquin, Utah
13. Utah County Central Labor Council, Provo, Utah, AFL
14. Provo Real Estate Board, Provo, Utah

Mr. CLYDE. In summary, I say again, the full development of the land and raw material resources of Utah is absolutely dependent on an increased supply of regulated and controlled water for irrigation, municipal, industrial and other miscellaneous uses and on a greatly increased supply of electrical energy. The central Utah Gooseberry and Emery County participating projects will provide the water and power needed in the State and the only means by which the State of Utah can make beneficial consumptive use of its share of the water and power resources of the upper Colorado River Basin.

Now, Mr. Chairman, the clerk, I am sure, has passed out to each of the members of your committee a statement which includes, in addition to the statement I have just given, the three exhibits, plus mimeographed copies of many of these resolutions. These resolutions are for your information only, they are for your files, but they do express the feeling of the State of Utah in connection with this proposal which is pending before your body.

I thank you.

Mr. HARRISON. The letter from the Governor of Utah has already been made a part of the record and the resolution which you have submitted there will also be made a part of the record, without objection. The balance of the material which you have submitted and which was not offered for the record will be received and made a part of the file.

(The resolution referred to follows:)

STATE OF UTAH

EXECUTIVE DEPARTMENT, SECRETARY OF STATE'S OFFICE

I, Lamont F. Toronto, secretary of state of the State of Utah, do hereby certify that the attached is a full, true, and correct copy of Senate Concurrent Resolution No. 3, as appears on record in my office.

In witness whereof, I have hereunto set my hand and affixed the Great Seal of the State of Utah at Salt Lake City, this 7th day of January 1954.

[SEAL]

LAMONT F. TORONTO,
Secretary of State.

By WENDELL L. COTTRELL,
Deputy.

S. C. R. No. 3

By Messrs. Stringham and Mabey

A CONCURRENT RESOLUTION of the First Special Session of the Thirteenth Legislature of the State of Utah, the Governor concurring therein, reaffirming S. J. R. No. 10 of the Thirtieth Legislature memorializing the Congress of the United States of America to proceed with the development of the Colorado River in the Upper Basin States by authorizing the Colorado River Storage Project and Participating Projects.

Be it resolved by the Legislature of the State of Utah, the Governor concurring therein:

WHEREAS the Thirtieth Legislature of the State of Utah passed on March 9, 1953, Senate Joint Resolution No. 10; and

WHEREAS the Congress of the United States of America has still taken no action; and

WHEREAS the development of the Colorado river in the upper basin states, consisting of Arizona, Colorado, New Mexico, Utah, and Wyoming, is of foremost importance to the future development and general welfare of said states and of the western United States; and

WHEREAS the allocation of the waters of the Colorado river apportioned to the upper basin by the Colorado river compact has been amicably settled by and between the above states; and

WHEREAS the upper Colorado river compact commission, comprising one member each from the states of Colorado, New Mexico, Utah, and Wyoming and the federal government is a functioning body and has already completed a dynamic plan for the development of the project; and

WHEREAS a report of the participating projects has been compiled by the United States Bureau of Reclamation, approved, with modifications, by the Secretary of the Interior, and submitted by him to the Congress of the United States; and

WHEREAS this desirable development cannot be commenced without the authorization of the Congress of the United States of America: Now, therefore, be it

Resolved by the first special session of the thirtieth legislature of the state of Utah, its governor concurring therein, That the Congress of the United States of America, be and it is hereby memorialized to promptly, diligently, and fairly consider and act upon at this session, legislation to authorize the Colorado river storage project and participating projects; and be it further

Resolved That certified copies hereof be promptly transmitted to the President and Vice President of the United States, the Speaker of the House of Representatives of said Congress, United States Senator Arthur V. Watkins, United States Senator Wallace F. Bennett, Representative in Congress William A. Dawson and Representative in Congress Douglas R. Stringfellow, to the Secretary of the Interior, the Commissioner of Reclamation, the upper Colorado river compact commission, and to the governors and legislatures of the following states: Arizona, Colorado, New Mexico, and Wyoming.

The foregoing S. C. R. No. 3 was publicly read by title and immediately thereafter signed by the President of the Senate, in the presence of the house over which he presides, and the fact of such signing duly entered upon the Journal this 15th day of December 1953.

MARK PAXTON,
President of the Senate.

Attest:

QUAYLE CANNON, JR.,
Secretary of the Senate.

The foregoing S. C. R. No. 3 was publicly read by title and immediately thereafter signed by the Speaker of the House, in the presence of the house over which he presides, and the fact of such signing duly entered upon the Journal this 17th day of December 1953.

Attest :

MERRILL DAVIS,
Speaker of the House.

W. D. CALLISTER,
Chief Clerk of House.

Received from the Senate this 17th day of December 1953. Approved December 17th, 1953.

J. BRACKEN LEE,
Governor.

Received from the Governor and filed in the office of the Secretary of State this 18th day of December 1953.

LAMONT F. TORONTO,
Secretary of State.

Mr. HARRISON. Dr. Miller, do you have any questions?

Chairman MILLER. Yes, it is a pleasure to have Mr. Clyde representing the State of Utah and to know that Utah comes here with a united front relative to the development of the upper basin. I believe the upper basin compact allotted Utah approximately 1,700,000 acre-feet of the 7½ million acre-feet allotted to the upper basin.

Mr. CLYDE. 1,725,000 less the proportionate share allocated to Arizona. It amounts to about 1,714,000.

Chairman MILLER. 1,714,000?

Mr. CLYDE. Yes.

Chairman MILLER. And the water is ordinarily in the mountain ranges, the Wasatch Range and other ranges, and it is a matter of catching the water to be used at the right time and the right place?

Mr. CLYDE. Yes, sir.

Chairman MILLER. There is one thing which I think bothers some members of the committee. As you look over the program for the development of the upper Colorado Basin, the main purpose seems to be that of developing power, not the consumptive beneficial use of water for domestic purposes or for irrigation. I believe power pays back about 85 percent of the overall cost of the Colorado River Basin development. I believe that was testified to by Mr. Dexheimer.

In the Utah phase of it, I note you say the central Utah initial plan of new water, new storage, will provide water for 21,650 acres of new land.

Mr. CLYDE. That is right.

Chairman MILLER. And 97,350 acres of partially irrigated land?

Mr. CLYDE. That is right.

Chairman MILLER. That is the extent of the irrigation?

Mr. CLYDE. Yes, in the initial phase.

Chairman MILLER. What would it be in the completed stage?

Mr. CLYDE. You mean in the ultimate phase of the central Utah?

Chairman MILLER. Yes. You say the initial stage is 21,000 and 97,000 plus. What would it be when it is finally completed? How many acres of land do you expect to irrigate?

Mr. CLYDE. I think it is in the order of 200,000 acres, Mr. Miller, but I will have to check my figures on that. It is in the Bureau report. My figures come from the Bureau of Reclamation report.

Chairman MILLER. And when it is finished, the complete development of electrical energy is about 373 million kilowatt-hours?

Mr. CLYDE. In the initial phase, that is right.

Chairman MILLER. What will it be when completed?

Mr. CLYDE. I cannot answer that. I would have to go back to the Bureau of Reclamation report.

Chairman MILLER. Do you know what part power repays on the initial phase of the central Utah project? What part does power pay back of the overall cost?

Mr. CLYDE. I cannot give you the figure on central Utah alone.

Chairman MILLER. What is the cost allocated to the central Utah project? What will be the total cost?

Mr. CLYDE. \$231 million, approximately.

Chairman MILLER. Is that the completed phase or the initial phase?

Mr. CLYDE. That is the initial phase.

Chairman MILLER. Do you know what the completed phase would be?

Mr. CLYDE. No, I do not, Mr. Miller.

Chairman MILLER. Would it be considerably more than that?

Mr. CLYDE. It would be considerably more than that.

Chairman MILLER. And you do not know what part power plays in the paying back of the cost?

Mr. WESTLAND. Will the gentleman yield there?

Chairman MILLER. Yes, I will yield.

Mr. WESTLAND. A lot of those figures, Doctor, are contained in Mr. Larson's report, if you have that.

Chairman MILLER. Yes, I have looked it over. Very well, I will not follow that questioning any further. I remember it is in Mr. Larson's report. But I believe only the initial phase is in Mr. Larson's report.

Mr. WESTLAND. Yes.

Chairman MILLER. And I was trying to get a little farther to find out the cost of the completed phase. After all, when we start on it once, it seems important that the thing be finished. We have had some experiences in the past of getting started on projects where costs pyramided to a place where it was not expected to go by Members of Congress.

The costs allocated to power and municipal use will be paid out with interest at $2\frac{1}{2}$ percent over a 50-year period. I believe Mr. Larson or Mr. Dexheimer testified that of the total cost of the upper Colorado River project about 85 percent would be repaid by production of electrical energy.

Mr. D'EWART. Would the gentleman yield?

Chairman MILLER. I will yield the floor to you.

Mr. D'EWART. I want to bring out the fact that the actual average rate on long-time loans to the Government at the present time is not 2.5, it is 2.61 percent. And if we carried out the Collbran formula, which is ordinarily the formula used in these projects, and used the figure of 2.61, it will make quite a difference in repayment schedules of these projects. I think we should have an explanation from those who are promoting the project.

Chairman MILLER. I did have one other thought, Mr. Clyde. Of course, the people of Utah were the pioneers really in the matter of

irrigation in the early days and gave other States the idea as well as Kansas—to determine which way water would run, and to put water on those lands. Had it not been for this irrigation development, we would not have the cities, Salt Lake City or Ogden, Utah, or the fertile valleys and the production you now have in the State of Utah?

Mr. CLYDE. That is right.

Chairman MILLER. And if you could bring another 200,000 acres of land under production, or any portion of that, it will create new wealth, which means new taxes and new industry?

Mr. CLYDE. That is right.

Chairman MILLER. And a more abundant life for the people who live in the United States, not only Utah but the United States and perhaps the world?

Mr. CLYDE. Yes, sir.

Chairman MILLER. As someone said the other day, in another 15 years we will have more than 200 million people living in the United States and we could find ourselves, like other countries, short of food unless we move ahead with feasible irrigation projects and the idea of developing more food for people who would be in the world, not only the United States, 20 or 30 or 40 or 50 years from now?

Mr. CLYDE. That is right.

Chairman MILLER. And the people of Utah are united in wanting to go ahead with this particular project so they can develop not only power but irrigation projects, is that right?

Mr. CLYDE. Mr. Chairman, there remain in Utah undeveloped but arable about 600,000 acres of land.

Chairman MILLER. Of arable land?

Mr. CLYDE. Of arable land; yes.

Chairman MILLER. Can you irrigate it?

Mr. CLYDE. We can irrigate it if we had the water. But under the central Utah project we cannot reach all that land because there is just not enough water available in the Colorado River to reach all of that. We go as far as we can and make the best use of the waters that we have.

The total area in the State of Utah which can be irrigated is very, very small, in the order of 3 percent of the State's area for irrigation purposes. The balance of it is mountains and rocks and deserts and rangelands. So that we have to put that water which we have to the most beneficial use on the lands that we have.

Chairman MILLER. I think that is all.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. Mr. Clyde, I am concerned about you putting this water to beneficial use to which you are entitled in the upper basin States. As I said a couple of days ago, we have heard a lot here in this committee about the Colorado River, or particularly the lower basin, and the upper basin also. We could not hear about the lower basin without considerable discussion of the upper basin.

You have now put less than about 50 percent of the water you are entitled to to beneficial use. You come here now and propose to spend about a billion and a half dollars to build reservoirs to store some 15 million acre-feet of water, and yet at the very best you cannot put more than 1 percent of that stored water to beneficial use on land.

The law under which we would authorize this is supposed to be based on irrigation and reclamation of land. These bills are more for the development of power. I have failed to see the need of all this power that you propose to develop under these bills. You are going to go in competition with coal, of which you have a great supply in that country, and some of the dams, according to the schedule before us, will have a higher cost for developing power through hydroelectric than it does to develop power by coal, which is there now, and of which you have a great abundance.

After all, you say that probably in 20 years you will need this electricity. Well, you are going to spend in these bills over \$200 million for transmission lines to get that to some place where they might use it. That is a considerable sum of money to ask the taxpayers of this country to put in this project and yet not putting the water to beneficial use on the land.

I am for helping those States through Federal subsidies, you might say, or a loan, grants that will be paid back, to put the water on the lands, but I do not know as I am yet ready to support such a tremendous program of developing power that is not needed in competition with coal of which you have an abundance.

I notice one place in your statement you say "through transmountain diversion." That has not appeared in these bills that I have noticed. Once you store this water, where is the program for this transmountain diversion? Is that to come before us later or is that in the bill now?

Mr. CLYDE. Mr. Regan, permit me to say—and if I may elaborate on this in an attempt to answer your question—that the upper basin States are limited by nature in the amount of arable land that they have which is capable of producing food and fiber, and they cannot use that limited supply of land without first having available to them sufficient water to make those lands produce.

Now in total number of acres, that number is not large. In total acre-feet of water, that number is not large as compared with the flows of the Mississippi and the Columbia and some of our other larger streams. But it is the key to the development of those resources which are wrapped in these mountains. First we must develop the water for agricultural and human consumption, human consumption first. And we must have water for domestic purposes. Secondly, we must have water for agricultural development. There is only one source of that water, and that is the rain which falls from the skies, largely in the form of snow.

Mr. REGAN. That is not uncommon, though, to that area, that is all over the country.

Mr. CLYDE. That is right. But there is this point: There is no other source in the upper basin States than that rain which falls upon them. There is a source to lower basin States because they can tap the rivers which come down to them. If we cannot use that water beneficially in the upper basin States, we have destroyed an economy and we have destroyed the right of people to live in the upper basin States.

Mr. REGAN. The point I make—are you using it beneficially?

Mr. CLYDE. Yes, we are using it beneficially for this reason:

The Colorado River is a deep-cut stream. Physically it is a stream difficult to get the water out of and get it on to the land, and we have to exercise some rather unusual devices to do it. And the device which

is commonly used—and it is not a new device—is the device of providing water by exchange. I will explain that this way: That we may build a reservoir on the lower regions of the stream and store water in it and use water which results from that storage, divert it at points above that reservoir to lands which are way and far above the location of that reservoir. And in that stream right there [indicating], the Colorado River, the Glen Canyon Reservoir is at the lower end of the basin. People have said, "How can you use water out of the Glen Canyon Reservoir for irrigation purposes?"

Mr. REGAN. And that is a natural question.

Mr. CLYDE. That is a natural question. And may I explain how you can do it?

If you will look at that map up there, Uinta Basin area in Utah, which drains the south slope of the Uinta Range, those waters ultimately under virgin conditions reach the Green River and then the Colorado River and finally end up in Glen Canyon, and rights to those waters, a portion of them, have been established as far down the river as Yuma, Ariz.

Now if we should come up here and divert that water out of the Duchesne River, which diversion would take the water away from the people down below who are entitled to its use, we must first provide a replacement. We provide that replacement by putting storage in at Glen Canyon, and then we take a diversion canal and trap the waters out of the Uinta Mountains and take those over across the range into the Bonneville Basin.

Mr. REGAN. How much of an operation is that, Mr. Clyde?

Mr. CLYDE. That is a major operation. It involves a feeder canal leading from the Strawberry Reservoir in central Utah, which is located at an elevation of somewhere between 7,500 and 8,000 feet. The feeder canal will be higher than that and may get as high as 8,000 feet, and it will go along that range and intercept each of those streams which come off the high Uintas, which reach heights sometimes of 13,000 and 14,000 feet. That water which, if left alone, would ultimately get down to the lower river, we take it out up there, but we have to put storage in down below to provide other water to replace the water which we took out. And the principle of exchange, Mr. Regan, is the basis of this whole project. We must store water where we can store it. We must divert at other points.

Mr. REGAN. That is not now in the proposal before us. is it?

Mr. CLYDE. Yes.

Mr. REGAN. The whole scheme is in there?

Mr. CLYDE. Yes, that is the whole scheme.

Mr. REGAN. That is what I wanted to get.

Mr. CLYDE. The whole scheme is to provide storage at Glen Canyon and Echo Park, and we will divert water off the tributaries of these streams for use. But the compact to which we are all committed says that the upper basin States must deliver at Lee Ferry $7\frac{1}{2}$ million acre-feet. You understand that?

Mr. REGAN. Yes.

Mr. CLYDE. In order for these States to meet that commitment, they must provide the storage which will make it possible for them to divert at points above for beneficial consumptive uses of those waters which would otherwise have to go down to supply the other part.

Mr. REGAN. This entire program of some billion and a half dollars will take care of all of those things? You will not have to come back here for another half billion dollars to complete the project to put those waters to beneficial use from the Strawberry Reservoir?

Mr. CLYDE. Mr. Regan, this proposal on the Colorado River is a basinwide proposal. That in itself is unique. It is a proposal to develop a river system, and these river systems cannot be developed quickly. I venture to say it will be a hundred years before the Colorado is fully developed. I venture to say it will be 25 years before the central Utah is fully developed in its initial phase, and maybe a hundred years before it is developed in its ultimate phase.

Let us take a look at that cost of central Utah—\$231 million. It will take at least 15 years to build it; 15 into 231 is not a very big expenditure annually in a country like ours. And we are providing the means for people to get food and fiber and for posterity coming along. Our country did not get the way it is waiting for certainty.

Mr. REGAN. I subscribe to that.

I only have a minute, and I would like to follow up a little bit your Senator Watkins' statement here that you have 50 million acres and only 3 percent is in cultivation. Your topography is such that even if you had the water there, you could not put more than 600,000 additional acres in cultivation?

Mr. CLYDE. That is right.

Mr. REGAN. So the 50 million acres could not be cultivated under any circumstances, or any great part of it?

Mr. CLYDE. No.

Mr. REGAN. I think that is all.

Mr. HOSMER. Mr. Chairman, I will yield 5 minutes of my time if the gentleman would like it.

Mr. REGAN. That is very nice of you. I have a couple more questions I wanted to ask, but I was trying to wind up here.

You say there are other uses for water, which is power, navigation, and recreation. Of course, we have no navigation in this project?

Mr. CLYDE. Of course, those are nonconsumptive uses, Mr. Regan.

Mr. REGAN. And I think, Mr. Chairman, I have developed all of the questions I wanted to. I wanted to find out the amount of acreage that would actually be put to beneficial use, which is at the very best about one percent of the water stored in the reservoirs.

Thank you, Mr. Clyde.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. I think in view of my remark a few minutes ago, I should put the Collbran formula in the record at this point, because it is a formula adopted by the act of July 3, 1952, governing the rate of interest to be charged on reclamation projects. The formula reads as follows:

Repayment of that portion of the actual cost of constructing the project which is allocated to municipal, domestic, and industrial supply, and interest on the unamortized balance thereof, at a rate, which rate shall be certified by the Secretary of the Treasury—

and here is the important part—

equal to the average rate paid by the United States on its long-term loans outstanding at the time the repayment contract is negotiated, minus the amount of such revenues as may be derived from temporary water supply contracts or from other sources prior to the close of the repayment period shall be assured by the contract or contracts satisfactory to the Secretary.

That is the important part of it. And using that formula, the interest rate on this project as of today would have to be 2.61, and I think the proponents of the project should answer where we would come off with that formula before payment is completed.

I will yield the balance of my time to the gentleman from Pennsylvania.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Chairman, I have one question. This matter of storage dams, as such, is not a new procedure in the Bureau of Reclamation, is it, Mr. Clyde?

Mr. CLYDE. No, it is not.

Mr. ASPINALL. The actual case is, as the Story of the First Fifty Years of Reclamation, publicized by the Bureau itself states, that of the total 173 dams which have been completed since 1902, it shows 110 of those dams were for storage only and 63 for diversion purposes. And it has been a regular procedure of the Bureau ever since it started?

Mr. CLYDE. Yes.

Mr. Aspinall, may I amplify at this point?

Mr. ASPINALL. Certainly.

Mr. CLYDE. The necessity for storage reservoirs.

Western streams are characterized by the name "Snow-Fed Streams." The major portion of the water running in these streams comes from snows which fall on these watersheds, is accumulated throughout the winter, and melts during the early period of the spring. The runoff does not coincide with the demand for the water, and therefore, without storage, the waters that are available for consumptive use are limited to the low-water flows.

The purpose of storage is to capture the peak flows and hold it until the time comes when it can be used consumptively and that is the purpose of the storage reservoirs. They are absolutely essential. You could not begin to develop these water resources without holdover storage.

Mr. ASPINALL. And these storages that are proposed in the upper basin under the legislation now before us make it possible for the diversions in the lower basin farther down; is that right?

Mr. CLYDE. Yes, sir.

Mr. ASPINALL. That is all.

Mr. D'EWART. Mr. Saylor, you have 8 additional minutes from Mr. D'Ewart.

Mr. SAYLOR. Mr. Clyde, just for the purposes of the record, I would like to correct the impression which I am afraid you have left that all of the people in Utah are in favor of this. I have not had time to tabulate my mail, but for the first time since I have been a Member of Congress the Post Office Department is delivering mail to me in sacks. And a lot of it is coming from upper Colorado, Utah, and the so-called upper basin States. I do not think there is any doubt about it that the press has fully informed the people of that area of what my stand is on this. My staff informed me this morning that the mail is on the basis of about 15 to 1, as far as it has been opened, thanking me in behalf of those western people for having a voice here in Congress representing their opposition to the upper Colorado River Basin.

I might say, sir, that it is my rare privilege to have been present yesterday at the launching of the atomic submarine, and there hap-

pened to be several people who came from the upper Colorado River Basin who met me and congratulated me on my stand. So that I think for the benefit of the members of this committee, you are slightly in error in your statement that the people in the State of Utah are unanimous in their support for this proposition.

Mr. CLYDE. Mr. Saylor, may I make this statement? I have before me here original copies of statements representing the counties of Utah, the Water Users Associations, the cities and towns of Utah, the chambers of commerce of Utah, the civic clubs of Utah, the Farm Bureau, the labor organizations and every other type active group, and many, many individuals, numbering over 200. And I still maintain my position that I have the full and complete endorsement of the people of the State of Utah in favor of this project.

Mr. SAYLOR. I would like to have you designate for this committee the total number of acres in Utah that is the initial phase of the central Utah project will receive water.

Mr. CLYDE. 21,650 acres receive a full supply, and 97,350 acres receive a partial supply in the Bonneville Basin.

Mr. SAYLOR. Wait a minute—21,000?

Mr. CLYDE. And 650.

Mr. SAYLOR. Full supply?

Mr. CLYDE. Receiving a full supply; 97,350 receiving a partial supply in the Bonneville Basin. In the Uinta Basin, 6,890 a full supply; 34,490 a partial supply. A total of 28,540 full supply; 131,840 partial supply.

Mr. SAYLOR. Now the total of one hundred-forty thousand-odd acres is now receiving some water; is that correct?

Mr. CLYDE. Yes, sir.

Mr. SAYLOR. From what source do those 140,000 acres receive their water?

Mr. CLYDE. Mr. Saylor, when the State of Utah was developed the settlements were placed on every stream that issued from the mountains. These streams furnish those waters which are now being used on these 131,000-plus acres of land.

Mr. SAYLOR. Now you will bring into production in the initial phase a full supply for 28,540 additional acres of land; is that right?

Mr. CLYDE. That is correct.

Mr. SAYLOR. How many acres of land will be brought into a full supply of water in the second phase of the central Utah project?

Mr. CLYDE. Some 200,000 acres. I beg your pardon, Mr. Saylor. That 200,000 is the total, including the initial.

Mr. SAYLOR. So you would say there is 171,500 that would receive full supply of water in the second phase?

Mr. CLYDE. Essentially so.

Mr. SAYLOR. How many acres of land in Utah will receive a supplemental supply of water in the second phase?

Mr. CLYDE. It will be 239,000 less that in the initial phase. It is about 108,000 approximately.

Mr. SAYLOR. 108,000 acres will receive a supplemental supply, and those 108,000 acres are actually now in production?

Mr. CLYDE. Yes, sir.

Mr. SAYLOR. You are familiar, I think, Mr. Clyde, with the report that Mr. Larson made on February 28, 1951, on the central Utah project?

Mr. CLYDE. Yes, sir.

Mr. SAYLOR. There is a map preceding page 1 of the synopsis. Does that map indicate, as near as you understand it, the full undertaking of both the central Utah project's initial phase and the central Utah project's comprehensive plan?

Mr. CLYDE. As I understand it, the development to date is reported in the 1950 report. That map shows the initial phase and the ultimate phase.

Mr. SAYLOR. You have stated to us that the cost of the initial phase according to present figures is \$231 million; is that correct?

Mr. CLYDE. Yes, sir.

Mr. SAYLOR. What is the present estimate, if you know, of the cost of the comprehensive plan or the complete phase?

Mr. CLYDE. I do not know, sir.

Mr. SAYLOR. I think the Bureau has been asked to submit that figure. Are you willing to have this committee be guided by the figure they submit?

Mr. CLYDE. Yes, sir, I will rest on the report of the Bureau of Reclamation.

Mr. SAYLOR. Have you, as an engineer, figured out the value of these 28,540 acres of land which are in the central Utah in the initial phase which will receive a supply of water?

Mr. CLYDE. I do not understand your question, Mr. Saylor.

Mr. SAYLOR. In other words, what is today's value of 28,540 acres of land which are unirrigated and not in production which are contemplated to receive the full supply of water in the initial phase of this project?

Mr. CLYDE. I think I understand pretty much what the value of that land is.

Mr. SAYLOR. What is the value today?

Mr. CLYDE. It will vary materially, depending on where you are, the value of the crops that come from it.

Mr. SAYLOR. Today there are no crops being produced on this 28,000 acres, are there?

Mr. CLYDE. Not on the 28,000, except some range grass, if you want to call that a crop.

Mr. SAYLOR. What I am trying to figure out is what is the value of that 28,000 acres of land today. In other words, you are here trying to ask this committee to spend \$231 million.

All I am trying to find out is what benefit is to be received directly by the people of Utah and indirectly by the people of this country from the expenditure of the \$231 million. Now what is the value of that land today?

Mr. CLYDE. I would say the value of that rangeland today may be \$50 an acre.

Mr. SAYLOR. \$50 an acre. Now when that land is in production, what would the average value of that land be when it receives the full supply of water?

Mr. CLYDE. That is a difficult question to answer, Mr. Saylor, but for the record I will say it may be as high as \$500, it may be as high as \$700, and it may be as high as \$400.

Mr. SAYLOR. So that you would say that the range, then, would be from \$400 to \$700?

Mr. CLYDE. That would be the market value of the land if you wanted to sell it.

Mr. SAYLOR. Taking your figures, what would be the value of a farm of 160 acres receiving a full supply of water?

Mr. CLYDE. It would be 160 times whatever figure you used there.

Mr. SAYLOR. What is 160 times \$700?

Mr. CLYDE. Do you want me to multiply that out?

Mr. SAYLOR. Yes, sir.

Mr. CLYDE. \$112,000 for \$700 an acre.

Mr. SAYLOR. What would it be for \$400 an acre?

Mr. CLYDE. \$64,000.

Mr. SAYLOR. Mr. Clyde, do you know what farms in Utah of 160 acres that today have a present market value from \$64,000 to \$112,000?

Mr. CLYDE. If I could pick my spot, I think I do.

Mr. SAYLOR. I asked you, sir, whether or not you know of farms in Utah that have sold for from \$64,000 to \$112,000.

Mr. CLYDE. I know of land which has sold as high as a thousand dollars an acre. I cannot put my finger on any particular transaction. I do not know that, but I do know that land has sold for as high as \$1,000 an acre in those irrigated areas.

Mr. SAYLOR. I do not deny that, sir. I am only trying to figure out whether or not you have come here to ask the Federal Government to spend \$231 million and have any basis in fact for what this land will be worth.

Mr. CLYDE. Yes, I do.

Mr. SAYLOR. Now I want to know where you can point to farms in that area that are receiving a full supply of water, not isolated acres, that have sold for \$1,000. I want to know where farms have sold, because this is for farms.

Mr. CLYDE. That is right.

Mr. SAYLOR. That is the purpose of this water—it is for farms. I want for you to point out to this committee where farms have sold for from \$64,000 to \$112,000.

Mr. CLYDE. Mr. Saylor, let me call your attention to one fact—

Mr. SAYLOR. Answer the question, sir, and then call anything to my attention you wish.

Mr. CLYDE. Let us deal with farms of 25 to 40 acres instead of 160. Unfortunately, we do not have that kind of land there in those kinds of areas. Our average sized farm is about 23 acres. I can take you to Salt Lake County, Weber County, Davis County, or Utah County, and I can find farms that will compare with these figures, but they will not be 160 acres.

Mr. SAYLOR. In other words, you cannot tell this committee of any farm that you know of of 160 acres that is receiving a full supply of water that has sold for from \$64,000 to \$112,000?

Mr. CLYDE. I cannot name the name of the man's farm; no.

Mr. SAYLOR. In other words, according to your figures, there will be 130,000 acres of land that will receive a supplemental supply of water. How much water do you contemplate in your supplemental supply?

Mr. CLYDE. Mr. Saylor, that will depend on how much they already have. We merely give them enough additional water to bring their supply up to a full supply.

Mr. SAYLOR. Then a farmer who is receiving almost sufficient water at the present time would not be nearly as much interested in an additional supply of water as a man who barely has enough to get along with, would he?

Mr. CLYDE. That is right.

Mr. SAYLOR. Then how many acres of this 130,000 are almost getting enough water now?

Mr. CLYDE. Mr. Saylor, the only figures I can give you on that are these: That for the State of Utah, as a whole, approximately 25 percent of the area has a full supply, approximately 25 percent has half a supply, and the balance will be a little bit less than half a supply. I cannot nail it down closer than that.

Mr. SAYLOR. Would that figure which you have given us for the farms in the entire State of Utah apply to this 130,000 acres?

Mr. CLYDE. I think so.

Mr. SAYLOR. So that 25 percent of the farms are receiving now almost enough water?

Mr. CLYDE. That is right, but they are not included. That 25 percent is not included. They have a full supply.

Mr. SAYLOR. They already have a full supply?

Mr. CLYDE. That is right. They would not get any, you see. They are not included in this 131,000.

Mr. SAYLOR. Now suppose you have, as will be necessary, farms in the area that are receiving a full supply of water, what would be the effect upon that farm if you formed an irrigation district?

Mr. CLYDE. The irrigation districts, as they are set up in the State of Utah, the people within the districts have to benefit from the district or they are not a part of the district. If they receive no benefit, they would have no costs against them. If they receive benefits, they would have to help pay for them.

Mr. SAYLOR. What are construed as benefits under the laws of Utah?

Mr. CLYDE. In irrigation districts, those who receive water.

Mr. SAYLOR. In other words, if my good friend, Mr. Dempsey, Congressman from New Mexico, owned a farm in an irrigation district in Utah that was today receiving a full supply of water and this project went through and you formed an irrigation district which included within its boundaries his farm, there would be absolutely no charge against Mr. Dempsey because his neighbors receive some benefits in the way of additional water?

Mr. CLYDE. If that were an irrigation district, Mr. Dempsey would receive no charges. Now do not be confused because I am not talking about a water conservancy district.

Mr. SAYLOR. Now what what would be the effect if there is a water conservancy district?

Mr. HARRISON. The gentleman's time has expired.

Mr. WESTLAND. I will yield the gentleman 5 minutes.

Mr. SAYLOR. I appreciate that.

What would be the effect if you had a water conservancy district?

Mr. CLYDE. If there is a water conservancy district, Mr. Saylor, Mr. Dempsey would have to pay his prorated share of it.

Mr. SAYLOR. And what would those charges be based upon?

Mr. CLYDE. That would be in the form of an ad valorem tax upon his property, the same as a doctor, dentist, or business corner in town within the district.

Mr. SAYLOR. So that the people of Utah who are today receiving a full supply of water and would receive absolutely no benefit as far as water is concerned in this area, would have an additional tax levied against their properties because of this project being put through?

Mr. CLYDE. That is right; if they organized a conservancy district, they would be in it, and they would have to help pay for it.

Mr. SAYLOR. Now you have stated—I do not have the pages numbered on your statement—but you have stated here at the bottom of one page that the Colorado River is Utah's last waterhole. You stated that the Echo Park and Glen Canyon dams would provide the necessary storage. Then you go on to say later on in the paragraph that these two dams and reservoirs created by them will provide the bulk of the storage and power requirements. Then there appears this: "There are no substitute sites for either of them."

Now I want to know whether or not you have made a survey of the 200 and—

Mr. ASPINALL. Fifty-three.

Mr. SAYLOR. Two hundred and fifty-three dam sites in the upper Colorado River Basin.

Mr. CLYDE. Mr. Saylor, I am not a superman, but I will say—

Mr. SAYLOR. Answer the question and then explain all you wish.

Mr. CLYDE. I studied the Larue report and—

Mr. SAYLOR. Answer the question, sir. Have you made—

Mr. ASPINALL. Mr. Chairman, I think the witness—

Mr. HARRISON. I think he is entitled to answer it in his own way.

Mr. SAYLOR. I want an answer, Mr. Chairman, as to whether or not he has made a survey. Then he can explain all he wants.

Mr. CLYDE. I have not made a survey, Mr. Saylor.

Mr. SAYLOR. Now explain, sir.

Mr. CLYDE. Mr. Saylor, I have examined over the last 30 years, beginning with the Larue report on the Colorado then followed by the Woolley report on the Colorado, and subsequent reports on the Colorado, in which they have shown profiles of those rivers, exploration of various reservoir sites, and I am convinced as a result of my long years of experience and study of this matter that they have fully and completely explored the potentials for storage along the river and that there are no sites in the upper reaches of the river of sufficient size or magnitude to serve the purposes for which Glen Canyon and Echo Park dams will serve.

Mr. SAYLOR. That is all. I yield back the balance of my time to Mr. Westland.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. No questions.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Mr. Clyde, how long have you been serving as an engineer?

Mr. CLYDE. Mr. Dawson, since 1923, 30 years.

Mr. DAWSON. And you have also served as dean of engineering and research at Utah Agriculture College?

Mr. CLYDE. For 23 years I was on the faculty of the college, and for many years dean of engineering.

Mr. DAWSON. You have over the years, as you say, made a considerable study of this upper Colorado project and its development?

Mr. CLYDE. Yes, sir.

Mr. DAWSON. Could you tell the committee what in your opinion would be the effect of continued delays of this project?

Mr. CLYDE. Mr. Chairman, when the West was settled, this country had no established law of water. The doctrine of riparian rights was found to be inadequate to meet the needs of the people because it did not make provision for beneficial consumptive uses of the water. The riparian doctrine says that any man when he lands on the bank of a stream is entitled to have the water flow by his property undiminished in quantity and unpolluted in quality for all time by virtue of his ownership of land. Now that is the basic principle.

When we found we had to divert water for irrigation in the West, the water had to be taken out of the stream and used up consumptively, and therefore, there had to be established a new law of water. It is commonly called the doctrine of appropriation—first in time is first in right. And beneficial use is the basis of the measure of the right.

Then we come to the Colorado River, and the Colorado River by virtue of its characteristics, the physical conditions which surround it, made it extremely difficult to divert water from the stream for beneficial consumptive uses. You people will recall up until about 1930 the principal methods of moving dirt were with a slip scraper, and we could not build the dams that we are building today.

Now that situation brought about the Colorado River compact because all of the people in those States recognized the fact that some States by virtue of their physical position would be able to develop water quicker than others, and with no bars the doctrine of appropriation would apply—first in time is first in right. Yet it was felt that all of the States were entitled to a share of the waters of the Colorado. And these seven States got together and agreed upon the Colorado River compact, under which terms they divided the waters between the upper basin and the lower basin. And later the upper basin, carrying that principle further, divided the waters allocated to the upper basin between the upper basin States.

Now you come to the question of what will happen if we do not put these waters to beneficial consumptive use.

It has been 30 years since the compact was signed, 32 years, and a little development has taken place in the upper basin States. Much development has taken place in the lower basin States. It is my personal opinion that we cannot continue indefinitely into the future and not put the waters to beneficial use and maintain a claim to them. They should not be left to run wild, they must be put to use.

Mr. DAWSON. Mr. Clyde, in connection with the matter you mentioned a moment ago about the doctrine of appropriation of the water, you mentioned something about the obligation regarding the quality of the water. Now my friend from California has raised some questions about that. Would you care to make any comments in that regard as to the obligation of the upper basin States to deliver a certain quality of water to the lower basin States?

Mr. CLYDE. Of course, quality of water is an important aspect of any stream that is used consumptively, but I cannot see why, 32 years after the Colorado River compact was signed, when the conditions under which it was signed have not changed, the upper basin States should be requested to guarantee water of any given quality. I do not know, and I do not think anyone else knows, just exactly what the

conditions will be 50 years from now on this river. I have my own opinion, but there are no measurements on which you could predicate a firm assurance. All we can do is judge the future by the past, and the indications today are that regulation of the waters of the upper basin will not materially deteriorate the quality of the water which ultimately gets to the lower basin.

Mr. DAWSON. In regard to the private users, you pointed out that the law was, at least in the State of Utah, that the quality of the water should not be impaired and —

Mr. CLYDE. No, I recited that in connection with the riparian doctrine.

Mr. DAWSON. Would that have any application as far as the Colorado compact is concerned?

Mr. CLYDE. The riparian doctrine was abrogated in these Western States, particularly the intermountain States, since the beginning of settlement. It has never been recognized.

Mr. DAWSON. Another question. I was not here at the time this was brought up, but on the basis of the information that you have furnished here in regard to land values that were involved in the transaction by Mr. H. T. Godfrey, who was here, would you please repeat that again? I did not hear it.

Mr. CLYDE. I advised Mr. Saylor, who was questioning me, that I could not put my finger on a particular transaction, but I knew that land in those counties—Weber, Davis, Salt Lake, and Utah—had sold from a thousand dollars an acre down, to my personal knowledge. And since I made that statement, Mr. Saylor, I have been advised by a man in this audience that he purchased in 1947 93 acres for \$53,000, which was \$570 an acre. That may help on that question.

Mr. DAWSON. I might add at this point, too, that I can refer you to at least a half a dozen of my neighbors who sold their land in my own county for amounts in excess of a thousand dollars an acre. Of course, not 160-acre plots but I might state that most of our farming land in Utah, the land that we are irrigating, is in garden and row crops and is very valuable land.

Mr. REGAN. Will the gentleman yield right there?

Mr. DAWSON. Yes.

Mr. REGAN. I might supplement it by saying I know of many instances where tracts were sold of more than 160 acres in El Paso Valley in excess of \$1,000 an acre in the last few years.

Mr. DAWSON. The question has been raised in regard to power that is produced there by hydro. Do you have any comment as to the exhaustion of our coal reserves for producing electric power as compared with the loss that might be resulting from the use of hydropower?

Mr. CLYDE. Mr. Dawson, coal is an exhaustible resource. Hydropower is a renewable resource. It seems to me good business on the part of this country to use its renewable resources to their fullest extent and to hold their exhaustible resources in reserve.

In addition to that, under the present state of conditions and cost, I am advised that it costs more to produce power by steam, using coal, than it does by hydropower. So, economically, at the present time the balance is in favor of hydropower. No one knows how long that will continue, but judging again from the past, I think we will go a long, long ways into the future, and I think this country will develop its

hydro resources to the limit and they will still have the edge over steam power.

Mr. DAWSON. You feel that the emphasis should be placed on the hydro production of power?

Mr. CLYDE. Yes.

Mr. HARRISON. The gentleman's time has expired.

Mr. RHODES. I will yield the gentleman 5 minutes.

Mr. DAWSON. Do you think that the purpose of the project is for consumptive uses of water or for power?

Mr. CLYDE. The production of power in this project is incidental. It is merely a means to an end and not the end in itself. We have much testimony to the effect this looks like a power project per se. Power in this case is incidental and a means to an end, and it is the means, and the only means, by which we can ever develop that water resource for beneficial consumptive uses.

Mr. DAWSON. Someone has said that the power projects look feasible, that they are a good financial investment, they will pay out in 44 years. Why not go ahead with the two big dams and produce the power and forget about the participating projects? Would that be good policy?

Mr. CLYDE. We should not and cannot forget about those projects which will produce the food and fiber this country is going to need in the next 25 years.

Mr. DAWSON. Thank you. That is all I have.

Mr. HARRISON. Mr. Westland, you have 7 minutes left.

Mr. WESTLAND. I would like to know, since you say power is incidental to this project, what percentage of this project are you charging to power?

Mr. CLYDE. Mr. Westland, I cannot answer that figure specifically. I do not try to keep those figures in mind.

Mr. WESTLAND. According to these figures here, you have \$46,699,000 as reimbursable from power out of a total cost of \$231 million. You have \$127 million as chargeable to irrigation. Yet irrigation is only going to pay \$15 million of that back. I gather that power, then, is going to repay about \$158 million out of this \$231 million charged. So it would hardly seem to me that power is incidental, but, in fact, is the basis of this thing.

In other words, you are subsidizing the farmers on 28,000 acres, plus the supplemental, by the sale of power. That is actually what it amounts to. Is that not right?

Mr. CLYDE. No, it is not quite that, I do not think, Mr. Westland. May I try to explain that in this way?

I said that power was incidental and the means to an end. We have this water resource. This water resource must be used consumptively. The only way that it can be used consumptively is to get it out of the river and transport it from the river to the point of use, which in this case means transmountain diversions.

Now in order to do that, we must provide storage first to replace the waters which will be diverted above those points to the points of beneficial consumptive use. Now it does not make any difference whether we provide storage alone or whether we provide it in conjunction with another resource. It seems to me that it would be wise to provide that storage in such a way that we will get the greatest re-

turn from it. I am speaking now in terms of "we"—this country. We have a resource here, which resource, if developed, will not only make possible the water and make it available for beneficial consumptive uses, but it will provide power to enable us to develop this tremendous storehouse of raw materials in the field of metals, chemicals, fertilizers, which are so essential to the welfare of this Nation. This is not limited to these intermountain States.

Mr. WESTLAND. I understand some of that, Mr. Clyde. It looks to me as though you are charging approximately 80 percent or more of this project to power.

Mr. CLYDE. I believe that is right.

Mr. WESTLAND. I would like to know whether or not you are getting any complaints from any public utility associations as to that percentage of charge to this project to power.

Mr. CLYDE. I have no complaints personally, and I am advised, Mr. Westland, that there will be submitted into this hearing an answer to your question.

Mr. WESTLAND. Now do you have any evidence to present—I have heard some testimony—but I would like to know whether or not you have any evidence to present that you have a market for the sale of this power.

Mr. CLYDE. Yes, sir.

Mr. WESTLAND. In other words, I can visualize certainly that if you do not sell all of this power, you are in a pretty tight spot.

Mr. CLYDE. Mr. Westland, in my statement in exhibit B, I have made a careful analysis of the power market in the State of Utah.

Mr. SAYLOR. This one [indicating]?

Mr. CLYDE. Yes, that is exhibit B in that report, Mr. Saylor.

The power market in the State of Utah—and this analysis was made based upon data in two public reports, one by the Federal Power Commission and the other by the Utah Water and Power Board. And summarizing that analysis, it appears that by 1970 the State of Utah alone can absorb in a firm power market the entire output of Glen Canyon and Echo Park. Now they cannot have it, but they could absorb it.

Mr. WESTLAND. One last question. Is this power to be sold at approximately 6 mills?

Mr. CLYDE. That is my understanding from the Bureau's report.

Mr. WESTLAND. That is all. I will yield the balance of my time to the gentleman from California.

Mr. HARRISON. Mrs. Pfost, do you have any questions?

Mrs. PFOST. I do have a question or two with regard to how the power is going to be sold. Will it be sold to the REA's and to private power utilities, or in what manner do you plan distribution of the power?

Mr. CLYDE. Madam, it is my understanding that the preference provision will be adhered to; it will be available to preference customers first.

Mrs. PFOST. And the 6-mill rate will be available throughout?

Mr. CLYDE. That is right. The 6-mill rate, as I understand, is reported in the Bureau's report as the figure which they have arrived at as a result of their analysis, and it will be the basic figure upon which they operate.

Mrs. FROST. Thank you. That is all, Mr. Chairman.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. Mr. Clyde, are you a lawyer or engineer by profession?

Mr. CLYDE. I am an engineer, Mr. Young.

Mr. YOUNG. In your opinion, would there be any legal claim for the upper basin to charge part of the evaporation of the storage projects in this bill to the lower basin?

Mr. CLYDE. Mr. Young, I am sure that the upper basin States will take care of their own knitting and take care of their own losses out of their share of the river. I do not think any claim can ever be made, no chance for any claim to be made. The compact specifically tells them what they are entitled to, and they will carry on within the framework of that compact.

Mr. YOUNG. You mentioned that you did not feel that the upper basin can guarantee any particular quality of water. On the other hand, do you feel it is unfair for the lower basin to demonstrate some concern about the quality of the water that comes down?

Mr. CLYDE. I did not say it was unfair for them to demonstrate some concern. I would be concerned myself. I said, after my careful consideration of the available record—and they have kept records on the Colorado River at Yuma for many, many years on salinity.

Mr. YOUNG. Do you have any statistics on that which you could present to us?

Mr. CLYDE. I do not have the statistics with me. I know the source of them—the Geological Survey.

Mr. YOUNG. Only the central Utah in the initial phase is included in this bill. Why do the proponents of the bill not include the entire project?

Mr. CLYDE. There are two reasons, as I understand it, and I am interested in it from the standpoint of Utah. The first is that it is going to take a long time to develop this project, but in order that we might develop it logically so that we do not make any mistakes in the beginning that will hinder us in the end, it should be planned. They have investigated this river for many years and have come with a plan now in which they have been able to screen out those things which are most feasible at the moment and which will satisfy the needs of the country for a reasonable distance into the future. They are continuing to work on the balance of those projects. They have only a skeleton picture of what the ultimate will be. The details must be done in the future. It is being done as rapidly as possible.

Let me give you a clear example of what I mean. In the early days, when these streams were first developed, in many instances power plants were built on the lower end of the stream. By a "power plant" in those days, I mean a breast waterwheel in which they would come in and put in a wheel and turn a grist mill. The presence of that grist mill at the lower end of the stream has effectively over the years prevented the diversion of the waters upstream from that to the better land that could have been served.

Now that illustrates the idea that we have here in planning this thing in the future, screening out those projects which are most feasible and which are most badly needed, and doing those to meet the conditions as the economics of the country develops.

Mr. YOUNG. The initial phase takes about 189,000 acre-feet. I understand the comprehensive development will take 800,000 acre-feet in addition. Is it the plan of Utah to develop additional areas which will become participating projects in the overall comprehensive scheme for the development of the upper Colorado?

Mr. CLYDE. I am not sure of your figure of 800,000. But the principle there is that there are lands in Utah that are not encompassed in the central Utah and may some time in the future be recipients of water within the limit of the amount allocated to the State of Utah for beneficial consumptive use.

Mr. YOUNG. Would they also share in the power assistance to be economically feasible?

Mr. CLYDE. Part of the Colorado development.

Mr. YOUNG. Would they be chiefly on the western side of the Wasatch Mountains in the Bonneville or Uinta Basin?

Mr. CLYDE. The great bulk of arable land lies west in the Bonneville Basin.

Mr. YOUNG. Out of the Colorado Basin altogether then?

Mr. CLYDE. Yes.

Mr. YOUNG. I notice in the central Utah initial phase project there is construction of hydroelectric plant to produce 61,000 kilowatts and the great portion of that would be utilized in pumping water in furtherance of the irrigation.

Mr. CLYDE. My understanding is there will be some pumping projects and, of course, they will use power from these plants as needed to pump the water.

Mr. YOUNG. Would that be sold at a 6-mill rate to the company organized or would that be a further power subsidy to the irrigation project?

Mr. CLYDE. I would have to refer to the report. I cannot answer that question.

Mr. YOUNG. Going back to that initial phase idea and the failure to include the ultimate development in the project, you feel that was chiefly because it is of a long-range nature and cannot be planned far enough in the future to have it included at this time?

Mr. CLYDE. Yes, sir.

Mr. YOUNG. I notice in your testimony you say that the people of Utah apparently favored the report issued by the Bureau of Reclamation in 1950. Is that right?

Mr. CLYDE. 1950, as revised.

Mr. YOUNG. 1950, as revised?

Mr. CLYDE. Yes, sir.

Mr. YOUNG. Is not that somewhat different from Mr. Dawson's bill?

Mr. CLYDE. Not greatly different; no.

Mr. YOUNG. When you say "support," you mean chiefly support the project insofar as you are concerned?

Mr. CLYDE. The central Utah, the Gooseberry, and Emery County project. I might say that the Gooseberry project was not included in the 1950 report. Yet due to the mechanics of delay and engineers getting the surveys made and the report out, that report is now in the hands of the Secretary, it has been recommended as a participating project of the Colorado River storage project and is included in the bill.

Mr. YOUNG. Now the contribution to the farmers will be based on their ability to pay. Could you briefly describe how that is computed? Does it vary from year to year?

Mr. CLYDE. The contribution of the water users will be based upon their ability to pay, and this value is arrived at by making an economic analysis of the farm operation, in which they would take a certain typical farm or farms and determine—I am not an economist—as I understand it determine the costs, determine the returns, determine the difference which they will have available for paying for this development. In other words, the farm will produce a certain amount before the water is available to them, it will produce a certain amount after the water is available to them, and at least a portion of that difference will be available for paying the costs of making the changeover.

Mr. YOUNG. If any of these farm areas are already in financial straits, would that be taken into consideration, too, in their ability to pay?

Mr. CLYDE. Yes, that is taken into account. The financial condition, the obligations they have are all taken into account.

Mr. YOUNG. That is all the questions I have.

Mr. HARRISON. Mr. Hosmer, you have yielded 1 minute to Mr. Regan and you gained 2 minutes from Mr. Westland, so that you have 11 minutes as of the present time.

Mr. HOSMER. Thank you. I do not think I will take it all, Mr. Clyde.

I was interested in your review of the background of the Colorado River compact of 1922. I believe—and correct me if I am wrong—you stated that at the time, due to the physical and other conditions, portions of the river could be developed more quickly than other portions of the river.

Mr. CLYDE. Yes.

Mr. HOSMER. And that as a person actually makes use of these waters, their consumptive or riparian rights develop; is that right?

Mr. CLYDE. That is right—their appropriative rights develop.

Mr. HOSMER. And for the purpose of equalizing out, why, this compact was made where some State could go ahead and develop them without appropriating the rights that other States could not appropriate at the particular time.

Now the appropriative rights, what are they, appropriation of a riparian right?

Mr. CLYDE. No. The doctrine of appropriation says that “first in time is first in right.” And the waters of the West, or the titles to the waters of the West are acquired through the States by making application to the proper State authorities.

You have this situation: In California a man can make application to appropriate water as of a certain date. Up in Utah we can make application to appropriate water of a certain date. Supposing you make application to appropriate water down there in the year 1925 and I made one up here in 1926, now I applied for the water through my State and was given title to use that water, but I am above you on the river and I can divert that water and you cannot get it.

Mr. HOSMER. What is the difference between appropriative rights and riparian rights?

Mr. CLYDE. Riparian rights are based on the ownership of land adjoining the bank of the stream.

Mr. HOSMER. And the effect of the rights with respect to the water, are they similar?

Mr. CLYDE. Basically and originally the riparian doctrine did not provide for consumptive use.

Mr. HOSMER. But the effect of the right in either case is to the user of the water, is it not?

Mr. CLYDE. Under the interpretations which have since been made in those States on the west coast, particularly California, Oregon and Washington, Montana, and the States in the Middle West, they have modified the riparian doctrine by statute, by court decree, by interpretation, to make it essentially fit the consumptive use principle. In other words, they can use water consumptively.

Mr. HOSMER. Once the consumptive use is established, it gives the owner of that use a certain right, does it not?

Mr. CLYDE. Within that State; yes.

Mr. HOSMER. And it establishes certain obligations of others toward it?

Mr. CLYDE. Within that State.

Mr. HOSMER. Yes. And does it establish rights and obligations which are comparable to those arising from riparian rights doctrine?

Mr. CLYDE. No, I think not.

Mr. HOSMER. In what respect do they differ?

Mr. CLYDE. The riparian doctrine does not provide for consumptive use.

Mr. HOSMER. It provides for the use, however, of a certain amount of water?

Mr. CLYDE. Under the modified interpretation, but the basic riparian doctrine did not.

Mr. HOSMER. And a certain amount of usable water?

Mr. CLYDE. That is right.

Mr. HOSMER. I think you used the term with respect to riparian rights—water undiminished in quantity and unpolluted in quality?

Mr. CLYDE. That is right.

Mr. HOSMER. And does that also apply to the consumptive use doctrine?

Mr. CLYDE. No, I would not say that applies. That is not a part of the doctrine of appropriation.

Mr. HOSMER. What does a man get when he gets the right of appropriation?

Mr. CLYDE. He gets the right to use the water available at his head-gate in proportion to his established right.

Mr. HOSMER. That right is established as of the time it is acquired, is it not?

Mr. CLYDE. That is right.

Mr. HOSMER. And it is not subject to change thereafter?

Mr. CLYDE. I think that would be correct.

Mr. HOSMER. Pardon me?

Mr. CLYDE. I think that would be correct.

Mr. HOSMER. And it is a right with respect to water itself as it is at the time this right is established?

Mr. CLYDE. Subject to reasonable changes that might take place with changes in flow conditions.

Mr. HOSMER. And your statement is correct, is it not, in that you are here as a representative of the State of Utah?

Mr. CLYDE. Yes, sir.

Mr. HOSMER. And in official capacity as officer and agent of that State?

Mr. CLYDE. Yes, sir.

Mr. HOSMER. That is all. I will reserve the rest of my time to yield.

Mr. HARRISON. Mr. Rhodes?

Mr. RHODES. I do not have any questions, Mr. Chairman.

Mr. HARRISON. Anybody else?

I want to recognize Senator Watkins, particularly, as the Senator from Utah.

Senator WATKINS. I appreciate that, because I do want to ask some questions of Dean Clyde.

I have noted all along in the discussions here, Mr. Clyde, that reference is made continually to a subsidy from electric power to the farmers.

Mr. CLYDE. Yes.

Senator WATKINS. I would like to get a little further explanation of that, so I want to ask you some questions about that subject.

This program contemplates not only letting water go to the farm but also furnishing water to cities and towns that happen to be in the area?

Mr. CLYDE. That is right.

Senator WATKINS. And also to industries that happen to be in the area?

Mr. CLYDE. That is right.

Senator WATKINS. And if any new industries come in, they will be furnished whatever water they need for that industrial use?

Mr. CLYDE. Yes, sir.

Senator WATKINS. Now the power, as has been explained here repeatedly, will likely be sold in the upper basin States?

Mr. CLYDE. There is a sufficient power market in the upper basin States to absorb it all.

Senator WATKINS. Eventually this bill sort of gives them a preference to the power?

Mr. CLYDE. Yes, sir.

Senator WATKINS. And the people who will be buying that power will be largely the same people who will be getting some of the water for industrial use, for municipal use, culinary use, and for irrigation?

Mr. CLYDE. That is right.

Senator WATKINS. And irrigators will be buying power. All of these various groups will be buying power from these plants?

Mr. CLYDE. It just happens in the State of Utah, due to the physiography that the industrial centers and the agricultural areas are consolidated in a very small portion of the State. The irrigated land is occupied by the communities and the industries, of course, are located there. They are altogether as one.

Senator WATKINS. The irrigators, for instance, in Salt Lake Valley operate farms outside the city but live in Salt Lake City, and the irrigators in Utah Valley operate farms outside but live in the cities and towns?

Mr. CLYDE. Yes, sir.

Senator WATKINS. That is true all along the Wasatch front?

Mr. CLYDE. Yes.

Senator WATKINS. And I mean the territory east of the Wasatch Mountains, which run north and south through central Utah.

Can it be truly said that electric power in that situation is subsidizing irrigation any more than it is subsidizing the people who use it for municipal uses, use it in their homes or for industries such as the steel plant and other industries?

Mr. CLYDE. That power is subsidizing the entire population that lives in that area. They all get benefits from it.

Senator WATKINS. The same people buy the water and pay for the water that pay for the power?

Mr. CLYDE. Yes, sir.

Senator WATKINS. And I mean the power itself would be of little use to anybody without the water first?

Mr. CLYDE. That is right. We could not develop either agriculturally or industrially without the water.

Senator WATKINS. And we could not have additional population there without the water for human consumption?

Mr. CLYDE. That is right.

Senator WATKINS. So it is all tied in closely together?

Mr. CLYDE. Yes, sir.

Senator WATKINS. So in planning this project, it is planned upon the basis of taking as assets the income that will come from all the uses of the water to which we are permitted on one side of the ledger—the income, first, from what the farmers can pay, what the cities and towns can pay, what the industries can pay. All the power is sold to these same people?

Mr. CLYDE. Yes, sir.

Senator WATKINS. On the other side of the ledger you have the total cost of all the projects?

Mr. CLYDE. Yes, sir.

Senator WATKINS. Those that are on the mainstem of the river, those large storage projects, the large amounts of power they develop; then the participating projects which come in the next category and which have to have help; and then the third category are those that are not yet fully explored and definitely planned for in their construction?

Mr. CLYDE. It is an integrated project, Senator, and no one leg can stand without the other two. It has got to be carried out together.

Senator WATKINS. And the rights involved here belong to the people of these upper basin States, whether to use the falling water for power or use it for irrigation or use it for industry or use it for human consumption?

Mr. CLYDE. These upper basin States maintain that the waters allocated to them belong to them and they can use them any way they choose, and they are going to use them beneficially and for consumptive uses.

Senator WATKINS. Is it not a fact that the constitution of most of those States say that the water belongs to the people of the State and private use can be obtained through application to the State, and the use of it is only acquired and not the actual water itself?

Mr. CLYDE. Yes, sir; that is right.

Senator WATKINS. I wanted to make that perfectly clear so that we get a picture of what we are trying to do in this project. It is a comprehensive program for the development of all of the resources that come from the use of the water. Is that not right?

Mr. CLYDE. That is right.

Senator WATKINS. And it is designed to make it possible to put to a beneficial use, either for consumption or for development of electricity, all of the rights of the upper basin States which they have left that are not fully used at the present time?

Mr. CLYDE. Yes, sir, that is right.

Senator WATKINS. I would like you to explain a little more in detail just how these mainstem reservoirs, the large ones, actually are a part of the irrigation scheme and are essential to the irrigation of the lands.

Mr. CLYDE. Mr. Senator, these main storage reservoirs—Echo Park and Glen Canyon—that are proposed in this bill benefit irrigation through the principle of exchange of waters.

Senator WATKINS. Explain what that is. Many people, I am sure, do not know what it means.

Mr. CLYDE. By exchange of waters, I mean this: That you may divert water at any point, which point may be above the reservoir involved. And in return for the waters which you divert at that point above the storage reservoir, you will provide water in that storage reservoir to replace the waters which you took out at some point above the reservoir.

Senator WATKINS. Can you give a concrete illustration as to how it works?

Mr. CLYDE. In this particular case the waters which would be transported by transmountain diversion from the Uinta Basin to the Great Basin will be intercepted along the streams draining the south slopes of the Uinta Mountains. Those waters prior to interception will ultimately reach the Green and the Colorado Rivers and ultimately, if left alone, would go on down to the lower users in the lower basin. We propose to intercept those waters, but by such interception we must provide for replacement so that we will not interfere with the lower basin rights by such diversions. That is what I mean by the principle of exchange.

Senator WATKINS. The same thing would happen over in Colorado and in Wyoming and in New Mexico?

Mr. CLYDE. Yes, sir. We can cite many examples—the Green Mountain diversion, for example. Practically every irrigation project involving storage of any degree involves some exchange of water rights whereby the original rights would be supplied by storage and the new rights would be supplied by direct diversion at some point above the reservoirs.

Senator WATKINS. The State of Utah has that in its law, does it not?

Mr. CLYDE. Yes, sir; and without it we could not develop the resources to which we are entitled.

Senator WATKINS. Are you acquainted with the water laws of other States involved in this?

Mr. CLYDE. In general, I am.

Senator WATKINS. You have had vast experience in the study of application of water to land and the best methods of diverting and storing and all that sort of thing, have you not?

Mr. CLYDE. For practically 10 years I was in charge of irrigation research in 17 Western States and under that assignment had the opportunity to visit most of the reclamation projects and most of the irrigated lands in the western half of the United States.

Senator WATKINS. What position did you hold with the Government at that time?

Mr. CLYDE. I was Chief of the Division of the Irrigation and Research for the 17 Western States.

Senator WATKINS. And that is part of the Department of Agriculture?

Mr. CLYDE. Yes, sir.

Senator WATKINS. Now in connection with the legal setup, it is necessary, for instance, in the State of Utah, to organize so there will be an agency to repay the costs that will be repaid. The use of the conservancy district is contemplated, is it not?

Mr. CLYDE. Yes, sir.

Senator WATKINS. And that law provides that cities and towns and counties and various types of organizations involved in the use of water, individuals, private canal companies, and all that sort of thing can join together and form that type of organization?

Mr. CLYDE. Yes, sir.

Senator WATKINS. And the cities and towns and counties and even the State can under that, if it joins, levy a tax to help carry the program?

Mr. CLYDE. Yes, sir.

Senator WATKINS. That is on the theory that the cities and towns and States and counties and these other public organizations derive a great deal of benefit from the application of the water to the farms?

Mr. CLYDE. There are many, many indirect benefits resulting from an irrigation development. The irrigation development is only a part of the total development accruing to the economy of a community or a county. But these indirect benefits, we believe, should be assessed against those who enjoy those indirect benefits, and one way of getting at it is through the organization of water conservancy districts, under which we can levy a tax against all of the properties within the area.

Senator WATKINS. Other States in this area which will be benefited by this project have a similar law, have they not?

Mr. CLYDE. I understand they do, but I am not familiar with that.

Senator WATKINS. I think I can say without contradiction that Colorado has it. I think we borrowed it from Colorado. And New Mexico. I am not sure about Wyoming. But the plan is to have all of the people who get the benefit contribute to pay as much as they can pay?

Mr. CLYDE. That is right.

Senator WATKINS. It is a plan to have the irrigators pay every dollar they can economically pay for the water they use?

Mr. CLYDE. The irrigators will be charged to the maximum of their ability to pay.

May I make this observation, Senator?—that it is tragic when a man plants a crop and carries it to the middle of July and the stream supply diminishes, and he is lost—he loses his crop, he loses his labor, he loses his investment. And by putting a little storage in and firming up his water supply you can complete that cycle and mature those crops, and you completely change the economy of the area when you bring in these little quantities of water necessary to supplement those natural flows from those streams.

Senator WATKINS. It is true, of course, that the utility companies which may purchase this power in the communities in Utah, Colorado, New Mexico, and Wyoming will be greatly benefited by the use of irrigation water in those areas?

Mr. CLYDE. Yes, sir.

Senator WATKINS. It will make a better market for them, and without the extra water for the industrial, the use by human beings, the consumptive use, they would not get the same return they would if the people of Utah have that water to put on their lands. Under those circumstances they would have a greatly increased market, and private enterprise would benefit along with everybody else in connection with this program?

Mr. CLYDE. That is right. I have here a file of letters, which I referred to a minute ago, pleading—from individual farmers who are faced with this problem of short water supply—"give us some help."

Senator WATKINS. I apologize for spending as much time as I have on this, but judging from the comments I have heard from some members of the Senate and other members from the House, I am quite certain they have not quite understood the position of the upper basin States on this very important matter.

On the one side you have the income, and power is just as much a part of that as irrigation, and money comes from that. On the other side you have total cost. And if the assets overbalance the cost, then the project is feasible. And the ratio is what?

Mr. CLYDE. The benefit-cost ratio in all of these participating projects in Utah is greater than 1.

Senator WATKINS. And we feel, as a matter of fact, no one outside should have any concern how we spend the money if we pay for it all as allocated?

Mr. CLYDE. That is right.

Mr. SAYLOR. If the gentleman will yield for an observation, the folks outside will not care how you spend your money, or do anything else, if the area up there wants to float a bond issue for \$1,518,096,300, as proposed, and pay for it. But you have shown right here—you try to justify everything in expenditures in the area—but you are not in a position to do it and you have got to call on the rest of the people of the country to foot the bill and finance it.

All I am saying in the questions I have directed to you is that I do not think it is feasible or right as to the other people of this country to spend that amount of money.

Senator WATKINS. Mr. Chairman, I would like to reply to that observation if I may.

Mr. HARRISON. The chairman would be glad to yield part of his time to the gentleman.

Senator WATKINS. For many years, a long time before reclamation was started by the Federal Government—and it has only been a little over 50 years—the people of this United States, the taxpayers everywhere, have been contributing to flood control. As I remember, they did contribute to flood control in the very district the Congressman comes from, up in Johnstown. We contributed to flood control to keep the water in rivers in this area. All we want to do is get out the water, which is beyond our capacity to do. We do repay the costs, but the people in the East do not repay the costs of flood control. [Applause.]

Mr. HARRISON (gavelling for order). There will be no demonstrations whatsoever here in this hall. I have issued those orders to apply completely through; and if there are any more such demonstrations, I must ask the hall be cleared.

Senator WATKINS. And I would like to say we have been very glad to help the people of the eastern part of the country with their flood problems, because many, many corporations, millions of private individuals have benefited directly from flood control.

I sat on the Public Works Committee for this body for several years, and every year we had project after project coming from those States to help them control the water. Now it has a great application, of course, to private rights and a great benefit. And up until a year ago no one from this area, from those flood-control States, ever moved or offered a bill of any kind to require the contribution from the people who were benefited. Senator Douglas finally, after we had prodded him time and time again, came in and he said: "I am introducing a bill now, Senator, that will require us to pay one-half." Not all, but one-half of it, one-half of the cost of flood control, from the people who really benefit in keeping the water in the rivers and off their lands.

That is my observation.

Mr. SAYLOR. I am perfectly glad to have your observation.

As I say, the people in Pennsylvania, all they do, the folks in the East, as far as flood control is concerned, is pay the bill.

Senator WATKINS. The taxpayers pay the bill.

Mr. SAYLOR. The taxpayers pay the bill and——

Senator WATKINS. But——

Mr. HARRISON. The time of both gentlemen has expired.

Mr. REGAN, do you have a statement you wish to make at this time?

Mr. REGAN. I would just like to say to Mr. Clyde, in reference to his opening remarks concerning our going out there last fall, that you and all of your organization were very hospitable, had the thing organized. We did get to see a lot of the area in which we are interested.

As there has been so much talk about the proposition of Echo Park Dam, I would like to add that we saw that. About all we saw of the monument which was set aside originally as 80 acres—and I am sure at the time it seemed important to set aside the clay bank washed down from melting glaciers, which brought in the carcasses of the dinosaurs, all of which have been dug out, and many of which were sent to the State of Pennsylvania where the people of the United States can now see them. The only thing I saw was an imprint supposed to be—I do not know—a three-toed sloth or something, but it represented a track of an old dinosaur. I have my doubts.

We went up into the park, a dusty road almost impassable when it is dry, and highly impassable when it is wet. I do not see that the do-gooders of this country—they do some good, but we have too many of them writing to Members of Congress to plead with us to vote against Echo Park.

In my opinion you people out there would be well served by the creation of this Echo Park Dam. I want to say to you that is my view of the thing, despite all the letters we are getting to the contrary.

The Department of the Interior through the Bureau of Reclamation has done a wise thing in selecting this place in lieu of some other smaller and lesser site where the evaporation will be greater and the result would not be nearly as favorable.

Mr. HARRISON. Thank you.

On behalf of the committee, Mr. Clyde, I want to thank you for your very fine statement, your patience, and your willingness to answer the questions which were put to you by the committee. You have the subject well in hand, and we also want to congratulate you upon the way it was presented.

Mr. CLYDE. Thank you, Mr. Chairman.

(COMMITTEE NOTE.—The following report by J. H. Ratliff was submitted by Congressman Dawson for inclusion in the record at this point:)

POWER MARKET DEMAND, UPPER COLORADO RIVER BASIN

By J. H. Ratliff

ACKNOWLEDGMENT

Most of the basic information used in this report has been taken from the Federal Power Commissions' Power Market Survey, Colorado River, upper basin, San Francisco regional office, September 1947.

United States Geological Survey: Water resources reports.

United States Bureau of Mines: Reports of investigations by Colorado, Wyoming, New Mexico, and Utah, mining associations of the several States, and material published in newspapers and reports by the United States Reclamation Service covering this great project.

To my many friends, the miners, I am indebted for their offerings of factual material and their freely expressed opinions both by letter and verbal communication. It is these workers, the miners, those who helped me by doing the spadework, that I am especially under an obligation to recognize, for without their help the large amount of material and information could not have been gathered, studied, sorted, assembled and put into written form within the time limit imposed. To these other men and women my thanks are also due:

Clarence E. Manion, geologist and engineer, Denver, Colo.

Merrill Welker, engineer, Denver, Colo.

J. V. Thompson, engineer, Denver, Colo.

G. E. Untermann, geologist and paleontologist, Vernal, Utah.

Mrs. B. R. Untermann, geologist and paleontologist, Vernal, Utah.

Edward D. Dickerman, mining engineer, Denver, Colo.

L. J. Brewer, Atomic Energy Commission, Grand Junction, Colo.

Otto Roach, artist for the pictures used, Denver, Colo.

Leon P. Christensen, civil engineer, Vernal, Utah.

Bus Hatch, a wonderful boatman, Vernal, Utah, who piloted the river expeditions with me.

Ralph Goodrich, engineer, Upper Colorado Compact Commission, Grand Junction, Colo.

Edward P. Chase, attorney and counselor at law, Albuquerque, N. Mex.

J. M. Cates, attorney at law, Rye, N. Y.

Miss Betty Barnes, Denver, Colo., for her continuous help, gathering dependable information during 3 years of research.

Mrs. Evanna Merkley, Vernal, Utah, for her long hours of tedious toil, sorting, classifying, and typing.

Fred Reynolds, game warden, and Utah Fish and Game Commission, Vernal, Utah.

Gilbert N. Hunter, game manager, Denver, Colo.

Lawrence Siddoway, secretary of the Vernal Chamber of Commerce, Vernal, Utah, whose questionnaires brought information to me from many, many places and people—and to the group of able and experienced men composing that body, I wish to give thanks.

INTRODUCTION

This is a report which presents evidence upon which I have based the conclusion that the upper Colorado River storage project is necessary to meet the demands for hydroelectric power by the mining industry of the four States containing the upper Colorado River drainage basin.

The report is presented at the request of the Upper Colorado River Compact Commission through its executive secretary, John Geoffrey Will, by letter dated October 3, 1953.

Because of the widely separated interests and regional activities, much of the evidential material is related to power requirements of activities other than mining. These requirements are intertwined and dependent upon each other—as for instance, pumping water for irrigation and domestic use, rural electrification, transportation—all jointly consumers of power.

Indeed the scope of the subject is beyond my ability to cover adequately in the short time remaining between October 3, 1953, and January 18, 1954. This I realize fully, and because of the limited time available and the expense involved, have not been able to make a complete survey of the mining resources and power demands.

This report discloses factual material within my knowledge and material furnished by persons which I believe to be true, concerning mineral resources within the upper Colorado River Basin, also similar resources in the adjacent territory, known as the fringe area. All of the region dealt with herein is within the States of Colorado, New Mexico, Utah, and Wyoming.

It is an interesting and obvious fact that the greatest obstacle to expansion of mineral production is cost. Cost of equipment, cost of labor, explosives, and cost of power and water.

It stands to reason that this is so. Where mechanical methods can be applied, mass production is more or less accomplished, whether underground or at the surface, changing from pack burros to trucks, from trucks to rail transport; changing from hand drilling (single jacks) to machine drills; changing from arrastre to modern milling; changing from burros and mule power to electric power; changing from wheelbarrows to rail transport—as for another instance, changing from the gold pan and rocker to a modern dredge. Regardless of the activity, power is required.

Compare production costs of mining, milling and smelting where power is abundant and costs are low, 3, 4, and 5 mills per kilowatt-hour, with costs ranging from 1 cent to 2 or 3 cents per kilowatt-hour of energy. Cost, Cost, Cost. This word pounds continuously in our ears.

Go into our mountains and our valleys, navigate our rivers—notice the great ore bodies and needed deposits of nonmetallics such as phosphate, potash, shales, coal—dormant—static—sleeping giants of commerce. Look at the constant waste of the one necessary but lacking substance—water—running to waste—water—flowing to the sea.

Our population is growing at a tremendous rate. Human wants are growing ever larger, are insatiable. Our population growth crowds our resources of production. The percentage of population growth of Western States tops the Nation.

The Government should be, I believe, as heroic as our industrialists in meeting the demands upon Colorado River water which are beyond private interests' ability to meet. These are multipurpose demands, both regional and national. Read what the miners say. See the news items from widely separated places. Examine the pictures of wasting water.

I am stating what I believe: I believe the lack of adequate power is responsible for the slow and retarded development of the upper basin region as a whole, and mining in particular.

SUMMARY

My report on the power requirements of the mining industry of the upper Colorado River Basin, of necessity, contains brief references to other natural resources whose economic development depends upon low-cost power.

The region involved

The region considered contains the entire State of Colorado, all of Utah, all of Wyoming and New Mexico; the portions of these States not within the upper Colorado River Basin are known as fringe areas.

Natural resources

Land area, within the basin, over 100 million acres.

	<i>Percent</i>
National forests, parks, monuments and other public lands.....	80
Privately owned.....	20
Farm land irrigated	17

Complete utilization of water resources would add 1,538,000 acres or over 65 percent to the area of irrigated farmland.

Mineral resources

Twenty-five percent of all known bituminous coal reserves are in the upper Colorado River Basin.

Oil, natural gas and hydrocarbons in the form of shale, gilsonite, wurtzelite, ozocerite, sand asphalt, are present in large quantities.

Utah has produced 30 percent of the copper mined in the United States.

Iron ore in Wyoming and Utah—in great abundance. The steel industry has made phenomenal growth.

The largest known bodies of phosphate and potash deposits are in the basin. (See appendix for complete information.)

Attention is especially directed to the metallic element—titanium, and to the titanium-magnetite deposits in Colorado, Gunnison region and Wyoming in the Laramie region.

The lack of titanium threatens the United States leadership in the air—and its scarcity is a great national concern. The following indicates this:

Salt Lake Tribune, November 26, 1953. WASHINGTON: "A Senate subcommittee, pondering testimony that lack of titanium may cost the United States military leadership in the air, has arranged to hear from Secretary of the Air Force Harold Talbott on Friday. Titanium is a light, heat-resisting metal much in demand for jet aircraft manufacture."

Salt Lake Tribune, November 27, 1953. WASHINGTON: "Secretary of the Air Force Harold Talbott urged Friday that the Government take immediate steps to boost domestic production of titanium, the new metal vital for production of jet-age aircraft.

"Talbott told a Senate Interior Subcommittee the United States is 'woefully weak' in supplies of titanium. He added he was ashamed the shortage 'hasn't come to my attention sooner.'

"Brig. Gen. Kern D. Metzger of the Air Force, testified earlier this week that maximum anticipated supplies of titanium would produce 2,000 fighter planes a year within the next 5 years, but no bombers and no supporting planes.

"Titanium is a lightweight metal of great strength and with high heat-resistance qualities. Aircraft designers use it to replace stainless steel in jet engines and airframes.

"Talbott agreed with Senator George Malone (R., Nevada), the subcommittee chairman, that the American Air Force would be in an inferior position in the future without quantity production of titanium.

"Malone said his subcommittee had been told that substitution of titanium for stainless steel would cut the weight of 8-engine intercontinental bombers by as much as 4,000 pounds.

"Some experts, he said, believe this could mean the difference between reaching a target and returning, or being unable to get back.

"Talbott testified the Government should offer aids to potential producers of titanium at once so that they could begin increasing their output."

Uranium

The need of uranium has at last come to be another national problem and exploration is roaring along, stimulated by subsidies, bonuses, thus throwing the economy of mineral research out of balance. There is at this time a real

stampede of farmers, clerks, mechanics, doctors, lawyers, and promoters, who are capitalizing on the excitement to peddle their papers to the uninformed and credulous public.

Economic activities

Since the earliest years of modern man's occupancy, agriculture has been the region's principal pursuit, coupled with the production of raw materials for export. Irrigation has been and is of paramount importance, especially where extensive farming is practiced.

Great areas of land are suitable for grazing use only, and other lands are barren; with irrigation, these lands would greatly increase the production of foodstuffs.

New steel plants, fertilizer from phosphate, are examples of the region's growth.

Population

For Upper Colorado River drainage area only:

Year:	
1890	287,027
1940	828,719
1970	¹ 1,462,000

¹ Estimated.

Source: Federal Power Commission, Power Market Survey, Colorado River Upper Basin, Part I, Power Requirements, February 1948.

Water

The United States Geological Survey engineers report the amount of water that passes a point on the Colorado River known as Lee Ferry, the average discharge being 16,270,000 acre-feet as shown by stream measurements taken from 1897 to 1943—a period of 46 years.

This is the water that the upper basin States—Colorado, New Mexico, Utah, and Wyoming—supply to the Colorado River. This is the water totally wasted insofar as these upper basin States are concerned. This is the water that the United States Government has given in part, by treaty, to a foreign Government, Mexico, 1,700,000 acre-feet, and to the States of Arizona, California, and Nevada, 7,500,000 acre-feet. (See Mexican-United States Treaty.)

Here we have water enough to generate 9 billion kilowatt-hours annually. (See ch. II, p. 20, Colorado River Storage Project, published by the United States Department of the Interior, Bureau of Reclamation, December 1950) or a generating capacity of 1,622,000 kilowatt-hours by the proposed hydroelectric plants, as recommended by the Reclamation Bureau.

We are now confronted with use of this water, by whom and how. The highest use is domestic, and includes water for household, stock, municipal, mining, milling, industrial and other like purposes, but specifically excludes use of water for generation of electrical power. I believe this should be because domestic use, as a rule, consumes water, while power merely extracts locked-up energy for use.

In this presentation of my belief, water and all the word contains or implies, is paramount. It dominates all else.

It is my belief—

That there is just as much water available for every use of mankind as as there ever was. Man has never added 1 gallon to the quantity of water, originally bestowed upon the earth—nor has he destroyed any.

That the distribution of water by natural agencies is erratic, unstable, and wasteful in the extreme.

That the Colorado River is an outstanding example of nature's rampant and wasteful extravagance in certain regions, and its stingy, discontinuous delivery of the substance so necessary to all life in other places.

That the greatest obstacle to regional, State, or National growth is water. It is also the greatest benefactor.

That we can survive without fire, clothes, or shelter, but without water we must die.

That water for drinking, cooking, and sanitation must be provided, first of all.

That animal and plant life must have water or perish; so we have irrigation and stock water use.

That into the category of domestic use also fall municipal use and transport, industrial, mining, milling, smelting, chemical production, synthetics, etc.

That following mankind's progress from stone implements to modern mechanical devices, and from burro transportation to trucks, railways (see frontispiece), we require minerals, metals, and nonmetals—so we have mines.

That during man's progress, he has developed and used every cheaply constructed water utility in our Nation.

That his progeny has so compounded that it is forsaking its birthplaces and is hunting for room to expand.

That our Western States offer space to occupy if it contains usable water for such expansion.

That water—flowing from mountain tops to valley floors—contains recoverable power.

That we must look to power, in the form of electrical energy, to supply mankind's expanded need of water for drinking, for irrigation, for production of food; we need this same power for beneficiation and conversion of raw materials for his use and employment.

That from deep snows piled up during winter months on the mountains surrounding the upper Colorado River Basin, come floods that fill the canyon floor—10, 20 feet and more, these pass, uncontrolled, on to the ocean, the Gulf of California. Onward—downward—these floods roar, and in a few weeks the canyons are dry, or relatively so.

That human wants are growing ever larger and more insatiable. Our population growth is overrunning, outstripping our resources of production. Our Government should be as heroic as our industrialists in resolving these national problems.

That the present administrative policies and plans now in effect and operating are hindering and obstructing development of our western and intermountain resources, by (a) imports of foreign metals and minerals, (b) by bonuses and subsidies, instead of developing power and roads that will promote production and lower costs, so that our own great reserves of lower grade mineral deposits can be converted from dormant deposits to profitable producers.

That there is so much violent floodwater in the rivers for such a short time that all, or most of it, is lost to all beneficial use.

That the people that live in this basin region know this—and the region is doing everything it can to put this wasting water and its wasting power to use—these needs are demands! Demands for power. From where?

Power requirements

The energy requirements in the mining theater of operation in the upper basin and dependent fringe areas, are set out below. This requirement is minimum—a total of 2,065,000 kilowatt-hours by 1960.

	<i>Kilowatt-hours</i>
Colorado-----	1, 000, 000
Utah-----	515, 000
New Mexico-----	50, 000
Wyoming-----	500, 000
Total-----	2, 065, 000

¹ Needed by 1960.

The Federal Power Commission's estimate is for commercial and industrial requirements, 2,753,511 kilowatt-hours by 1970. However, communities and towns arrange themselves at sites convenient to places of employment, and public service (electric) is closely connected to industrial activity; a reasonable allocation from mining power supply must be available for residential use. I believe the important things to be resolved are:

- (1) Is the power needed?
- (2) Where is it available or potentially available? and
- (3) By whom should it be developed?

To the first question, "Is the power needed?" the answer is emphatically "Yes." Increased demands of domestic use for water can only be met by regulation and control of Colorado River discharge. Regulation by storage for domestic and irrigation use alone would cost more than the user can pay, but by the

sale of power the cost can be equalized and consumptive water provided at a price domestic and irrigation users can afford to pay—as should other users, at the site or downstream, pay for the benefits including every benefit to every sharer.

Use by industry, mining, and equalizing of flow for more distant downstream users, should be paid for by these users. Since water use carries the use of its power, each project must be a part of the whole plan, intertwined and locked—three purposes in one great plan—storage, consumptive use, and power.

A breakdown of power consumption by classes. (Source: Federal Power Commission, et al., shows that:)

Year	Billion kilowatt-hours	
USED		
1950	328,997	Total, United States.
1952	342,425	Total, United States, sold.
USERS		
1952	95,316	Residential and rural.
1952	12,000	Federal, State, and local governments, including street lighting for cities.
1952	5,000	Railways, cross-country and local.
	112,316	Metal industries.
	38,818	Chemical industries.
	16,000	Machinery—except electrical.
	6,034	Stone, clay, and glass.
	7,715	Fabricated metal products.
	4,793	Petroleum and coal.
	4,724	Electrical machinery
	3,888	Automobiles and trucks (transport).
	6,987	Railways, transport operations, partial dependency upon mining (estimated but not included).
	10,800	Food and food product groups.
	10,700	Textile-mill products: Small commercial and industrial shops and offices.
	62,000	

A total of 172,459,000,000 kilowatt-hours required to meet the demand of mining and dependent industries. To meet this demand, according to the Bureau of Reclamation proposed plan of development, the following power and storage sites are recommended.

Site	Installed capacity, kilowatts	Annual production, kilowatt-hours
Cross Mountain.....	60,000	330,000,000
Split Mountain.....	100,000	710,000,000
Flaming Gorge.....	72,000	337,000,000
Echo Park.....	200,000	985,000,000
Glen Canyon.....	800,000	2,992,000,000
Total.....	1,232,000	5,364,000,000

The supplemental report on Colorado River storage project and participating projects, upper Colorado River Basin, October 1953, recommends for immediate construction Echo Park and Glen Canyon projects having 1 million kilowatts installed capacity to produce 3,987 million kilowatt-hours annually.

The Bureau of Census, Edison Commonwealth system, and 1953 estimates disclose that in 1950 industrial power production was 387,993,683,000 kilowatt-hours and 342,425 million kilowatt-hours were sold—deducting 172,459 million kilowatt-hours required to meet the demand of mining and dependent industries leaves 169,966 million kilowatt-hours consumed by all other users in the United States, which shows the relationship of power use by mining and dependent industries to all other users combined a ratio of 16+ to 17+ approximately, and establishes the national importance of mining and the dependency upon power production for mining operation.

The supplemental report of Reclamation Bureau above referred to recommends immediate authorization of 2 power and water storage projects, which will produce from 1 million kilowatts installed capacity 3,987 million kilowatt-hours. The estimate for power needed in the upper basin States including fringe areas (but not power for coal and shale processing) is by States 2,500,000 kilowatt-hours. This demand cannot be met by the limited installations proposed for immediate construction, however this power requirement and demand can probably be satisfied from coal and oil consuming power plants.

COST

The first question asked by the buyers is: How much will it cost us? This is a legitimate and logical question: Cost—how much?

No power site known or at least described by engineers, whether private or employed by the departments of our Government, have come forth with figures that show that any of the remaining, undeveloped projects can, from the sale of its power project alone, justify its capital investment with its earning capacity based upon a sale price the user can afford to pay, or compete in the power market with coal, gas, or oil—on the other hand, power plants operated by coal, gas, or oil for power production only will not store water during flood times, or at any time, or provide drinking water or water for irrigation—nor will such coal, gas, and oil generating plants serve to reclaim the million or more acres of desert lands bordering the Colorado River and its tributaries in the upper basin. Here intrudes the doctrine of multipurpose use of water—and of such use, I believe, drinking water, irrigation water, water for our towns and cities, mining, milling and industrial uses, comes first. To accomplish these higher uses the floods must be stopped. To stop them dams must be constructed—and the users of this stored water should help pay for this stored water, whether in the upper basin, the lower basin or in regions outside of the basin, as for instance, Los Angeles, central Utah, central Arizona, the plains east of the Continental Divide in Colorado, and by Mexico.

California should pay its just share of the cost of storing water for her use. Arizona should pay her share, central Utah its share, and Colorado her share—and Mexico her just portion.

Those communities or individuals getting water by direct diversion or by pumping should pay for the stored water used and the power to pump it.

The matter of recreational use and Federal benefits, game refuges and sanctuaries, should properly bear the cost of the service received, all of which will, I believe, permit power to be sold in bulk or retail at a price the buyers can afford to pay.

The buyers (mining only)

	<i>Installed capacity demand, in kilowatts</i>
Colorado:	
Titanium, iron, Gunnison County.....	250,000
Use—mining-milling, transportation.....	5,000
Tungsten:	
Ouray County.....	10,000
San Miguel County.....	5,000
Summit County.....	5,000
Front Range districts.....	50,000
Breckenridge district.....	50,000
Silver Plume, Georgetown Empire.....	50,000
Clear Creek, Central City.....	
Boulder County.....	100,000
Park County, Alma, Horseshoe, Tarryall.....	100,000
Central Colorado, Cripple Creek.....	100,000
Subtotal.....	725,000
(Estes Park Chamber of Commerce, Estes Park, Colo.) (See attached letter, Oct. 23, 1953.)	
Upper Blue River Kokomo, Summit County.....	50,000
Leadville, upper Arkansas, Twin Lakes, Lake County.....	10,000
Gilman, Eagle County.....	100,000
Ouray, Telluride, Silverton, San Miguel, San Juan County.....	50,000
Rico, Delores County.....	10,000
Red Mountain district, Ouray County.....	10,000
Durango, La Plata County.....	10,000
Hahns Peak, Farewell Mountain, Coffee Ridge, Whiskey Park, Slovonia district, Upper Elk River, Routt County.....	5,000
Blue Mountain, Douglas Mountain and oil pumping, transportation, etc., Moffat County.....	10,000
Slate River Mining Co., Crested Butte.....	(¹)
(Source: personal knowledge and Colorado report on mineral districts.)	
Colorado needs for mining and milling.....	² 980,000
Utah:	
Uintah County (see appendix).....	5,000
Uintah County, phosphate (H. P. Co., J. V. T., J. H. R.).....	250,000
Sterling district (Manti Chamber of Commerce).....	10,000
Manti district (Axonite Co., Kennecott Copper Corp.), shortage of water.....	
Duchesne County.....	5,000
Park City district.....	50,000
Utah needs for mining and milling.....	² 320,000
Wyoming:	
Laramie, Wyo., area.....	315,000
Green River district, phosphate.....	250,000
Wyoming needs for mining and milling.....	² 565,000
New Mexico: Hillsboro district, New Mexico (Haile Mines Co.).....	² 50,000
Recapitulation:	
Colorado.....	² 980,000
Utah.....	² 320,000
Wyoming.....	² 565,000
New Mexico.....	² 50,000
Total.....	² 1,915,000

¹ Not estimated² Installed.³ Capacity demand.

The buyers (mining only)—Continued

Miscellaneous uses:	Kilowatts
Dewatering flooded mines, placer dredge operations, surface construction work, access roads, surface transport -----	65,000
Total mining market demand -----	1,980,000
Fringe areas not included in above; Colorado, New Mexico, Utah, and Wyoming, chemical plants, etc. -----	500,000
Total power needs for mining upper basin States consumption alone -----	2,480,000

* Hours.

New power demand

This demand can be met by the 1,622,000 kilowatts as shown by the estimates given by reputable engineers of the Water Resource Branch of the United States Geological Survey, United States Reclamation Bureau, and engineers representing the States concerned, and installations using fuels.

No estimate made for beneficiation of oil shales and coal mining, but if this is added it will vastly increase the above figures.

Government resource development

I know that national safety and defense are imperative ventures—at least at this time. This is evidenced by over \$9 billion appropriated during the period of 1949-53 for the development of atomic energy, wholly unreturnable. I know also that less than \$3 billion has been spent for reclamation of desert lands, lighting homes in the country and cities—power for industry during 51 years, 1902 to 1953, of which over \$2 billion have been or will be returned to the National Treasury. I believe the equilibrium of national development by appropriated moneys and authority by regions and resources, is out of balance. Without electric power, atomic energy would be as impotent as an infertile egg.

Not one drop of water is manufactured by reason of atomic energy development—not a gallon is stored, but the consumption of water in production of atomic energy is a removal of just exactly the amount needed to convert the raw materials by chemical and electrolytic processes into end products of atomic conversion. Other instances of unbalanced authority and money allocations are subsidies, which, in the end, smother initiative and encourage inefficiency and loafing—money spent to control and regulate river runoff at downstream river mouth locations, instead of at the upstream headwater locations where the water could and should be impounded before it gathers and goes roaring through the canyons into the valleys to spread destruction, disease, and death. The upper Colorado River Basin has 70,330,000 acres in it of which but 1,657,000 acres are farmed, yet we have 13,378,000 acres in national forests and the areas in national parks and monuments and other miscellaneous areas, amount to nearly 60 million acres—a ratio of 1.6 to 60.

Another example of unbalance; over 1,500,000 additional acres are capable of producing crops if supplied with water. (See General Development Report, Colorado River, p. 9.)

I have confidence in the engineers who have so courageously met and overcome the difficulties encountered in the canyons while navigating the raging torrents of the Colorado and Green Rivers. I believe the statements contained in their reports. I refer especially to the Geological Survey and Reclamation Bureau engineers. The conclusions drawn by these engineers should have consideration above political party lines.

Presented for consideration are the multipurpose fields of employment as practiced in western mining regions. Many of our farm employed men find work in the nearby mines during winter months and seasons of slack demand for farm help, a matter that has been overlooked. Farmers in the Uintah Basin, Utah, go to the gilsonite mines; those near the coal mines in Routt County, Colo., in the vicinity of Rock Springs, Wyo., Gallup and Silver City, N. M., near the copper mines of Arizona and Bingham, Utah, depend upon the wages of the boys and men to round out and supplement the family income from farms. Mines, smelters, chemical plants, as well as factories, supply wage income; all these industries are dependent upon water and cheap, low-cost power—which is reflected in taxes, mortgage payments; in modern home equipment, refrigerators,

stoves, plumbing, radios, television, automobiles, tractors, farm equipment, sanitation, and good roads to travel to and from places of employment.

Dependable employment in every State is not the result of subsidies.

The Government has committed itself in the matter of Columbia River, Missouri River, and Tennessee River control. Huge monsters of water control and power production, where private enterprise could not provide the capital to construct. They are multipurpose projects. Single purpose projects, realizing their income from sale of power alone, cannot compete with private enterprise projects which have already claimed and completed the noteworthy cheaply constructed projects.

CONCLUSIONS

The upper Colorado River storage project is multipurpose.

Its objective is the conservation of water for the highest and most beneficial use by mankind—domestic and all the word implies.

This multipurpose objective recognizes and emphasizes the dependency of the present and future generations upon water.

It considers, as it must, the need of the born and unborn—more homes for immediate housing, and the housing of new families, as the Census Bureau statistics accurately prove.

It provides the water these fathers and mothers and their children must have if our national population's increased rate of growth continues, as it surely will.

It contains the mechanics of expansion by placing all of water's resources into one system, operating to put unused water into consumptive use by people.

It provides the mechanics by which the water itself, by the extraction of its contained power, will deliver the substance to those who need it and want it.

This plan puts the power of water at the service of that higher and dominant use, and in the scheme of utility, stream control is accomplished by storage of surplus and floodwaters, resulting in a continuous delivery of water to the consumptive users, household, irrigation, industrial; resulting in power at a price that will encourage venture capital to develop large, low-grade mineral deposits, which in turn require ore—mills and smelters, chemical works, factories and processors of other raw materials and a host of industries subsidiary or belonging to major activities.

I believe the facts alone prove that the plan for developing the upper Colorado River as proposed by the United States Reclamation Bureau is needed now, and that had this development been an accomplished development at this time, the time consumed in development of projects exclusively for national defense would have been less—and their cost lowered. Indeed it is probable that this saving would have amounted to more than the entire development of upper Colorado would have cost—and in addition, the water would have now come to beneficial use by mankind industry and would be a national asset, earning instead of wasting.

I believe that the United States Government is legally, morally, and from a defensive standpoint, obligated to construct and complete the development of the upper Colorado River at the earliest practical time and should commence this development at once.

The demand for power for mining and beneficiation of mineral resources is but one of the many uses now waiting for power in the upper Colorado River Basin States.

Mr. HARRISON. The next witness will be Mr. G. E. Untermann.

Will you give your name and title to the reporter. I do not have your title and would like to have it in the record.

STATEMENT OF G. E. UNTERMANN, DIRECTOR, UTAH FIELD HOUSE OF NATURAL HISTORY, VERNAL, UTAH

Mr. UNTERMANN. Mr. Chairman and members of the committee, my name is G. E. Untermann. I am the director of the Utah Field House of Natural History. I am also a geologist and former ranger at Dinosaur National Monument. With my wife, Mrs. Untermann, who is also a geologist and former ranger-naturalist at the monument, we have mapped the monument and the entire area.

I would like to ask indulgence with respect to my voice. It seems a number of us who have come here recently have acquired sniffles and sore throats, and we strongly suspect the opposition of germ warfare. It is a matter we will take up with the United Nations later.

Frederick C. Othman generally tries for humor in his syndicated newspaper column. In 1950 when he wrote about the Echo Park Dam and the Dinosaur National Monument hearing before the Secretary of the Interior he was funnier than even he knew. Listen to this:

On the rocky walls of the river are the footprints of the giants that roamed the jungles in an ancient age. These marks are known as petroglyphs.

In the first place there are no dinosaur footprints in the monument. Those you referred to, Mr. Regan, are a slab which did not come from the monument and precedes in age the dinosaurs of the national monument by several millions of years. They were carted in from somewhere else. They used to be one of the settler's doorsteps.

In the second place they would not be going up the sheer canyon walls, if there were; and in the third place, a petroglyph is not a dinosaur footprint in the first place. Petroglyphs are cliff murals of prehistoric Indians. This form of primitive art incised on the sandstone walls of canyons, represents for the most part, ceremonials and hunting scenes. They have nothing to do with dinosaurs.

Mr. Othman goes on to say that *camarasaurus* was the only dinosaur to come from the monument. Actually, there are 12 different types recovered from the world-famous quarry.

I do not cite the above inaccuracies to ridicule Mr. Othman. I mention them to show how irresponsible, misguided, and uninformed some publicity can be and how such misinformation can cause a nationwide protest over something that doesn't amount to a hill of beans.

It is unfortunate that much of the widespread objection of the conservationist and wilderness lover, in this controversy over dams versus dinosaurs, scenery and violated principles, has been of this careless nature.

Congress does not have time to look into the merits of every protest and anguished outcry of the folks back home and has a right to assume that such complaints are based upon more than petulance and poorly authenticated sources of information. When someones sees a bunch of kids in space helmets and starts a nationwide hullabaloo over the heavy and unregulated traffic to Mars and letters and telegrams flood an overworked Congress in protest, Congress in self-defense can only assure the outraged citizenry that such travel will be regulated and will not be permitted at all unless, and until, foot-long hotdogs, coca-cola, and a comfort station are available at least every 100 miles.

Conservation groups have reluctantly conceded that the dinosaurs are in no danger at the monument as a result of proposed dams. However, this false rumor was once widely broadcast and accepted by the general public as a justifiable reason for opposing the project. The belief still lingers in some quarters and refutation is required almost daily. Rumor is more relentless than truth so that the maligned victim seldom lives down its invidious effect.

Of one thing there can be no doubt: The dinosaurs are definitely dead, and inasmuch as they are buried in what is Dinosaur National

Monument 140 million years ago, have had a decent period of mourning.

Some other claims and charges of the opposition groups have been as baseless and fantastic as the "Save the Dinosaurs" movement, and just as misleading. These people are natural-born crusaders who are always ready to "save" anything which they feel is worthy of their best efforts. Having gone off half-cocked with respect to the dinosaurs which they found snug and comfy where they are, they proceeded to come to the valiant defense of western outlaws whom they felt were in danger of historical "liquidation." We were soon to learn that the proposed dams in Dinosaur National Monument would flood such famous bandit hideouts as Hole-in-the-Wall and Robber's Roost. It was quite a shock to these well-meaning saviors when they were informed that Hole-in-the-Wall is in the Powder River country of northern Wyoming, 150 miles away from the monument, and that Robber's Roost is in the San Rafael swell of Utah, at least 150 miles to the south.

Undaunted by two false starts the "old college try" was given to a great emotional appeal. Someone thought he had figured out a surefire protest that wouldn't boomerang. Since the eccentric old hermit, Pat Lynch, had lived in the area now bearing his name, Pats Hole, it seemed safe to assume that he died there.

I think most of you saw the rather eccentric-looking gentleman who was in here yesterday with long hair. If I were superstitious and believed in reincarnation, I would have sworn that was Pat Lynch. He was a dead ringer both for style of haircut and beard and general appearance. Incidentally, I think it was one of those flour sacks he made his shirt of.

And if he died there he must be buried there. So we were told, "That surely you wouldn't bury a poor old Irishman under 500 feet of water. Have you no reverence for the dead? Is nothing sacred to you?" There was great gloom in camp when we informed our friends that Pat wasn't buried in Pats Hole. In fact, what was worse, he wasn't even buried in the monument. Several years before Pat was called to the Great Beyond a fellow Irishman by the name of Moran—I am sure no relation to Mr. Moran who testified for Wyoming yesterday—an early exponent of free private enterprise, chased Pat from the holdings on which he had squatted, with the persuasive muzzle of a .30-30. Pat went to live with the Baker family in Lily Park, 50 miles up the Yampa River, where he was buried, high and dry, in 1917. But even in death the fates were unkind to Pat, for the only other occupant in the burial plot with the old Irish Catholic was a Mason. And adding insult to injury, the Masonic emblem was carved on his neighbor's tombstone. On quiet evenings, when not a breath of air is stirring, the sagebrush growing on these graves can be seen to shake violently, and from this we know that these departed souls still have not reconciled their earthly differences.

With true missionary zeal nearly 200 members of the Sierra Club, in three separate groups, came to Vernal last summer to make the trip through the canyons of Dinosaur National Monument under the guidance of competent river pilots. Their avowed purpose was to enjoy the thrill and excitement of the river run, but a member of the first group spilled the beans by revealing the real purpose. He stepped

forward and made the following introduction: "We represent the Sierra Club of California and we have come to Vernal to save Dinosaur National Monument for you people so they won't build those dams in there." "Well," I replied, "that's certainly very nice of you, and I'm sure you are prompted by the best of motives, but did it ever occur to you that we might not want to be saved? As it so happens, we don't. We want to be dammed."

Headlines and pictures in the second section of the Sunday Los Angeles Times, under date of August 30, 1953, clearly showed what the Sierra Club was up to. "Children in Boats Run Utah Rapids. Californians Refute Claim That Wild Green River Is Dangerous," blared the headlines.

The text of the article would lead one to believe that infants kick the slats out of their cribs and cry for a trip down the Green River. That sweet old ladies drop their knitting to man the boats dashing through the canyons. But all these people were passengers, not river runners. A corpse could make the trip if Bus Hatch, ace riverman, wanted to take it through. No ability is required of the passengers other than that they can get in and out of the boats, and if an infirmity prevents they can be lifted in and out. While most of the Sierra clubbers made the entire trip, although the water was the lowest in years, some of them left the river at Island Park or Rainbow, rather than go through Split Mountain Canyon which has a couple of sockdolager rapids. Moonshine, the upper rapid, has had its loss of life, and S. O. B. lower down has shared in disaster. For politeness sake, S. O. B. is pronounced "sob," as in cry, but when used by rivermen, has the same meaning given it by Harry Truman in speaking of music critics. When approaching such rapids it is too late to exclaim, "O, mamma! Why did I ever leave home?" There is only one thing to do and that is to go on down the river. Making the run through the canyons is like marriage; you don't know what you're getting into until you make the trip. In all fairness to the river pilots, we gladly concede that these competent men know their business, and that anyone who likes this sort of thrill is probably in no more danger than in taking trips of other kinds. I, for example, still like to drag one foot on the ground when traveling by plane, yet it doesn't seem to bother a lot of people at all.

However, in spite of all that may be said of a canyon voyage through Dinosaur National Monument, running the rivers will continue to appeal to relatively few people. Such trips will never be popular with the general public and this portion of the monument's interior will remain little known.

I would like to mention at this point that my wife's grandmother was 95 years old last September. She had lived at Island Park on Green River practically all her life, and Island Park is situated between the mouth of Whirlpool and Split Mountain Canyon. She had never seen those canyons. Bus Hatch, as a birthday present, took her through Split Mountain. Now the point, which I am sure has escaped no one, is that if grandmother, living right there, had not seen those canyons in 95 years, what chance has the average visitor of seeing that back country as long as it remains as it now is.

If wilderness groups are trying to prove that the rivers are safe for just everyone, and therefore lakes are not needed for easy access

to the canyon areas, they are wasting their time. No one has advocated building the dams because they will produce safe still-water bodies. These lakes will be the result of the dams being built; not a reason for building them. Any attempt to justify them on such a flimsy pretext would be utterly ridiculous. The dams are needed for stream regulation, holdover storage, power development, and so forth. Echo Park Dam, particularly, is one of the most important sites on the entire river system and meets all the requirements of adequacy. Nature has provided good dam sites sparingly and these must be used where they are.

Postmarked December 18, 1953, the president of the Sierra Club sent the following frantic message to members:

Urgent: Immediate action needed. Secretary of Interior McKay has just recommended to President Eisenhower the destruction of Dinosaur National Monument—construction of Echo Park Dam. Arguments of conservationists have been passed by. Alternative sites exist that will spare the national park system. What to do: Write, as an individual, or wire the President, White House, Washington, D. C., asking that he act to protect the national park system and disapprove dams in Dinosaur. Send a copy to your Congressman, and your chapter chairman, please. There is no time to lose. You know the facts: more will follow—the next bulletin will suggest further steps for you to take. Every conservationist must speak at once. The chips are down for sure.

Now yesterday I believe Congressman Johnson mentioned there were no pressure groups among these folks. This does not exactly sound like a light caress.

The claim of the wilderness people that the dams will destroy the scenic and inspirational values of the canyon portion of Dinosaur National Monument is wide open to serious challenge. The charge has been repeatedly made by this group, in text and pictures, that "these canyons will be filled with water." If we fill a bucket with water we have a bucketful of water. If we fill a canyon with water we should have water up to the brim. Let us take a realistic look at the situation and see what we really have. At Echo Park Dam the water will actually be 500 feet deep, plus or minus. Whirlpool Canyon, in which the dam site is located, rises 2,500 feet above this point. Thus the canyon depth will be diminished one-fifth at the dam.

In Lodore Canyon, the deepest and most rugged of all the canyons in the monument, the average depth of reservoir water will approximate 350 feet, while the walls rise more than 3,000 feet, resulting in a diminution in height of only one-tenth. On the Yampa River the still-water lake will not even go all the way through the canyon but will leave rushing white water at the upper end. If our friends had said that the dams will fill the bottoms of the canyons they would have made a factual statement. What they overlooked in their eagerness to be alarming, was the fall of the river which causes backed-up water to become shallower as you go upstream. The lakes produced by Echo Park Dam will modify the character of the canyon country but will little affect their grandeur and scenic qualities.

But wilderness groups object to lakes in Dinosaur for still another reason. They say, "How will posterity be able to tell how these canyons were formed if the active streams which carved them are no longer in existence?" If, when posterity stands on the rims of the monument and can't tell that the canyons they are looking at were carved by stream action, they will be mighty dumb and certainly no credit to their progenitors.

The fact that the alpine glaciers which carved the high Sierras and Yosemite are no longer active, does not impair the enjoyment of the Sierra Club, and others, of this majestic area. For this very reason is the area accessible to large numbers just as the canyon areas of the monument will become easily accessible after the rivers which formed them have been tamed in their headlong flight to the sea.

The terrific fuss and fury over the partial inundation of Steamboat Rock in Echo Park, would mislead one to believe that this was the only scenic feature in the whole of Dinosaur National Monument. Nothing is ever said about some of its other magnificent areas which are unaffected by proposed dams. So flagrant is this omission by writers on the area who are in opposition to Echo Park, that I felt impelled to make the following reply to one staunch defender who sent me his article, "This Is Dinosaur," in the hope of converting me to his viewpoint. "Although your article is entitled, 'This Is Dinosaur,' I noted that you make no mention at all of Dinosaur quarry and the headquarters area, while the wilderness section is featured entirely. The wilderness area of the monument is vast by comparison with the quarry area, but it is, nonetheless, secondary in importance to the quarry development. Unless the dams are constructed, in our opinion, the primitive area of the monument will remain relatively unimportant, as it is today, so far as sharing in the number of visitors is concerned."

You will be interested to know that as things are now, 99 percent of the visitors come to the quarry and headquarters area, which represent 1 percent of the total monument area. The 99 percent remaining are visited, and we are being very generous, by the remaining 1 percent if they learn about their presence. [Reading:]

I also note another glaring omission, conspicuous by its absence, especially since you are writing entirely about the primitive portion of Dinosaur National Monument. You utterly fail to mention the Jones Hole area. For the most part, itinerant scribes like yourself will visit those areas of the monument which can be reached while sitting on soft cushions, even if it practically wrecks a car to do so, but we can't get you into an area which involves a horseback ride and may mean that you're going to have to eat off the mantelpiece.

Jones Hole, probably the most spectacular and scenic wilderness section in the monument, has received the most consistent and persistent "brushoff" of any area in the region. And yet, it has been considered worthy of setting apart as a national monument by itself alone.

That is a Park Service report of 1935.

Its location and solitude, its lack of gas fumes and horn blowing, is the very thing which should make it irresistible to you wilderness people who are always yelling that you want to get away from it all. Well, here's your chance. Better come back and take another look at Dinosaur National Monument and finish your job. Jones Hole is something you'll really rave about, and best of all, it is unaffected by either dam.

Let's get some realism into this thing and quit the visionary daydreaming which may make for poetic writing but which certainly ignores the facts as though they were a plague.

It can be said for this particular writer that he did spend a week or more at the monument gathering the material for his article. Most of them camp there only overnight and then rush home to dash off a "masterpiece" on why Echo Park Dam will ruin Dinosaur.

I have lived in or adjacent to Dinosaur National Monument for over 30 years and with Mrs. Untermann—as mentioned in the beginning—also a geologist, have mapped the geology of the entire monument. This publication entitled, "Geology of Dinosaur National Monument

and Vicinity, N. E. Utah, N. W. Colorado," is now in press and should appear soon as Bulletin No. 42, of the Utah Geological and Mineralogical Survey.

As mentioned before, Mrs. Untermann was formerly a ranger-naturalist at Dinosaur and I have been ranger there. In spite of our long association with the region and our intimate knowledge of it, there still are a lot of things that we do not claim to know about it. How these hit-and-run scribes who only camp overnight and then take a potshot at the monument, can know so much, is too deep for me.

The rivers of the monument now inundate 3 percent of the area. After both Echo Park and Split Mountain Dams are constructed only 11 percent of the entire region will be inundated, leaving the remaining 89 percent a wilderness untouched by man.

Does this sound like the destruction of Dinosaur National Monument? It does, however, raise the old question of just how much wilderness do the wilderness people want? In the national park system is already encompassed an area nearly as large as the State of Maine. Canadian national parks preserve an area larger than Scotland or nearly 30,000 square miles. The national forests of the United States administer a wilderness of approximately 20,000,000 acres. In his excellent and comprehensive article on the West in the December 25, 1953, issue of Collier's, Bernard DeVoto tells how Idaho has 3,000,000 acres of primitive area accessible only by saddle trail. In Utah 71 percent of the land is federally owned, which includes 2 national parks and 9 national monuments. No one out in that country is going to shed any tears over the modification of a small portion of this Federal land, especially when it makes the area more accessible and advances the development of a rapidly expanding West. There is a good reason for such a viewpoint, which is at wide variance with that held by conservationists in general.

Thomas Munro in this discussion of "The Aesthetic Appreciation of Nature," has this to say:

A man who must wrest a difficult living from the land is forced to take a different attitude toward it from that of the leisurely vacationist. He must, in other words, take a practical attitude toward nature.

The vacationist enjoys our rugged mountains and scenic splendor for 3 months out of the year, then he goes back home to make his living where things are easier. The native lives out there the year round and has to scratch for his living where he is. These people who are opposing the development of our country only come out there to play. We have to work there. You can't blame a man like Ebenezer Bryce, for whom spectacular Bryce Canyon was named, for not going overboard for the scenic aspects of the region when he took a more practical attitude by saying that it was a hell of a place to lose a cow. If some of this vast western wilderness can be put to work doing something useful, instead of being merely ornamental, it should not be looked upon as a national calamity.

At that point I would like to enlarge on that playing-out-there business. Dr. Russell G. Frazier, a riverman or a man who enjoys running the rivers rather, has been very frank and outspoken in public hearings when he stated that, "I have a selfish reason for wanting the

area left as it is." He said, "I like to run those rivers, and if you fellows put lakes in there, you are spoiling my fun."

In the *Living Wilderness*, a publication of the Wilderness Society—I have an excerpt here I would like to read, by a Mildred Baker, who made the trip through the canyons in 1940. After mentioning how her boat was locked on a rock for 45 minutes before she could free herself, she said:

Had the water been higher, it would have been dangerous as the boat would sure crash itself against the wall—

and so on. Then she mentions how they go on down the river, and they made only the 12 miles, and—

it was certainly 12 miles well behind us—

and so on. Then in closing she says:

There is little that I can add to the splendid articles in the *Living Wilderness* and *National Parks* magazine and other publications against the ill-conceived scheme to ruin our heritage in this sublime wilderness region by flooding these canyons, forever making it impossible for anyone to enjoy the thrills of fighting the river and pitting their puny strength against all the forces of the wilderness. To one who has experienced the lifelong inspiration of this awe-inspiring area, the mere thought of its flooding is sickening beyond belief. Is nothing safe?

I can answer one thing, Miss Baker, that isn't safe—the river.

If the Park Service finds it distasteful to administer Dinosaur and its dams as a national monument, it might do well to consider a change of status to a recreational area, as was done at Hoover Dam and Lake Mead.

There is still another alternative which the Park Service may wish to consider, with profit to itself. The National Park Service is a victim of its own overexpansion, with a budget that simply does not get all the way around. Its excessive growth is not essentially of its own doing. What happens is something like this: People will enthuse over some historical or scenic area and immediately exclaim, "Oh, this should be made a national park," and pretty soon the wheels start rolling and the next thing the Service knows it has another mouth to feed and no more money to feed it with. It is like having your relatives move in with you. For a while you can put more water in the soup, but that works just so long. After that you have to spend some money for more food, and if you haven't got it things are tough. Because the Park Service is "land poor" it may wish to consider relinquishing the canyon unit of Dinosaur National Monument altogether and putting its limited funds to work elsewhere. Either a recreational area status or a complete relinquishment would be a simple answer to the present controversy and the principles of no one would be violated.

What of archeological and mineralogical values which may be inundated by dams in the monument? Archeological exploration at Dinosaur dates from 1921. The principal work of study and excavation was carried on by the University of Colorado Museum in cooperation with the National Park Service.

Considerable material has been recovered, especially in the Castle Park area, with a paper covering the work published by the University of Colorado Press in 1948, the *Archeology of Castle Park, Dinosaur National Monument*. Prehistoric Indian sites, mainly Basket Maker II and III, ranging from A. D. 200 to 700, are widespread in north-

east Utah and northwest Colorado, both inside the monument and outside. There is no danger, as a result of the dams, or erasing lost civilizations. They are too well represented.

In our 5-year survey of the monument we could find no minerals of economic value and this includes oil. The formations which produce oil in this region are exposed on the surface and do not have a sufficient cover to trap oil if it were present in the first place. An independent investigation can easily verify the truth of these statements.

Since arriving at this hearing we have received a letter from the Geology Department of the University of Utah mentioning something of the character of geology involved in the monument. They have this to say:

To the writer's knowledge no uranium deposits have yet been found in it. The percentage of areal exposure that the impounded waters would cover is negligible, and it is entirely improbable that future geological interpretations of structure or stratigraphy would be hampered.

Then he concludes:

A good topographic and geologic map has been made of the entire Dinosaur Monument, the geologic map having recently been published (Utah Geological and Mineralogical Survey, University of Utah)—

That is an advance sheet we got out on Bulletin No. 42, which I mentioned—

All geologic information believed worth while at present is, therefore, at hand. It is probable that research on certain details in the Dinosaur Monument area will be made in the future but it is entirely unreasonable to anticipate that any impediments to research will be thrown up as a result of the dam construction and the impounding of the waters back of it.

After telling of the archeology represented there and some of the work already undertaken, has this to say, after also mentioning the need for salvage ahead of inundation:

On purely scientific grounds, therefore, if there is assurance that a sample salvage program will be incorporated into the dam construction project, there is no reason to oppose dam construction.

Mr. DAWSON. Do I understand that may be entered in the record?

Mr. HARRISON. Without objection.

No objection being heard, it will be received for the record.

(The letter referred to follows:)

UNIVERSITY OF UTAH,
Salt Lake City, January 15, 1954.

Dr. A. RAY OLPIN,
President, University of Utah.

DEAR PRESIDENT OLPIN: The following brief report concerns the geological implications of the Echo Park Dam. It reflects the opinions of the staff of the department of geology.

The dam itself and the waters impounded back of it will not cover the dinosaur bone beds. The dinosaur fossils occur in the Morrison formation, and the site from which the skeletons in the Museum of the University of Utah, in the Carnegie Museum, the Denver Municipal Museum, and the National Museum came, will not be impaired in any way. There is very little fossil material at the monument for the tourist to see at present, but the Park Service has made plans to quarry out in relief the dinosaur bones from a large sandstone slab at the quarry site, and this will make an imposing exhibit when completed. A sheet-metal structure has been built over the slab but excavation of the bones has not yet started because of lack of funds. Professor Stokes of the Department of Geology, University of Utah, was the chief consultant on the plan, and our curator, Golden York, was to have directed the actual excavation. The

site of such proposed excavation is several miles from the proposed dam and the waters collecting back of the dam would extend away from the bone beds and not toward them and over them. Moreover, the Morris formation extends in belts of outcrop from New Mexico to Montana, and at several places in it various species of dinosaurs have been found. We can see no way in which research on fossil reptiles will be impaired by the building of the Echo Park Dam, and no way in which possible naturally occurring exhibits for the general public will be covered or made less attractive.

The waters will cover short stretches of some of the Paleozoic formations, but only a little more than the present Green River and White River. For the most part the waters will spread along the bottom of the Green River Canyon over the Precambrian Uinta series which makes up the core of the Uinta Mountains. So far no commercial mineral deposits have been found in the Uinta series. No petroleum geologist would spend time on the Uinta series in the search for oil. To the writer's knowledge no uranium deposits have yet been found in it. The percentage of areal exposure that the impounded waters would cover is negligible, and it is entirely improbable that future geological interpretations of structure or stratigraphy would be hampered.

The small extent of the Weber sandstone and underlying shales and limestones that would be covered is of no geological concern. Although the Weber sandstone is the chief producer of oil in the nearby Rangely and Ashley Valley fields, the structure at the place where the Weber would be covered by the waters of the dam is not suitable for oil accumulation, and as far as I know, no geologist has designs on the dam site area.

A good topographic and geologic map has been made of the entire Dinosaur Monument, the geologic map having recently been published (Utah Geological and Mineralogical Survey, University of Utah). All geologic information believed worthwhile at present is, therefore, at hand. It is probably that research on certain details in the Dinosaur Monument area will be made in the future but it is entirely unreasonable to anticipate that any impediments to research will be thrown up as a result of the dam construction and the impounding of the waters back of it.

Respectfully yours,

A. J. EARDLEY,
THOMAS W. CHRISTIANSEN,
WM. LEE STOKER,
NORMAN C. WILLIAMS,
Staff of the Department of Geology.

UNIVERSITY OF UTAH,
Salt Lake City, January 15, 1954.

Dr. A. RAY OLPIN,
President, University of Utah.

DEAR PRESIDENT OLPIN: Herewith is my brief response to your request for a statement regarding the archeological resources which would be jeopardized by the construction of Echo Dam in Dinosaur National Monument.

1. In the portions of the Yampa and Green River Canyons involved in the reservoir there are known to be scores of aboriginal sites, ranging from at least 2000 B. C. to A. D. 500-700. Earlier ones may well be there. More of these known sites lie in the Yampa Valley than in the Green; this reflects only the fact that the Yampa has been surveyed more carefully for cultural material than the Green.

2. At least two cultures are represented in the area. The earlier, and least spectacular, is the nonagricultural and relatively low-level way of life showing relationships with the material recovered from caves in western Utah and the rest of the arid West.

The second and later manifestation, called the Fremont, is a recognizable, but very poorly understood variant of the Pueblo culture of the Southwest. It is less flamboyant (than Pueblo) in overall development, but was an agricultural, pottery-making culture. In my opinion (and we plan to do research on this problem), the Fremont culture developed from the desert cultures of the arid West and may prove to be of somewhat greater age than the long sequence of better publicized southwestern cultures. Actually, archeologists know the potential and wealth of resources more fully than they know the cultures of these canyons.

3. Two good reports of the work at two small sites in Castle Park, on the Yampa, are available. These are:

Burgh, Robert F. and C. R. Scoggin, *The Archeology of Castle Park Dinosaur National Monument*, University of Colorado Studies, Series in Anthropology No. 2 (1948), and

Lester, Robert H., *Excavations at Hells Midden, Dinosaur National Monument*, University of Colorado Studies Series in Anthropology No. 3 (1951).

A third general report by Marie Wormington on the Fremont culture will soon be available from the Denver Natural History Museum.

In addition there are three extensive manuscript reports of archeological surveys within Dinosaur National Monument on file at the monument headquarters at Vernal, Utah. These are of value in this connection because these manuscripts contain full inventories of the known aboriginal sites in the reservoir site and other parts of the area.

4. There is now a precedent—begun in the TVA days and continued since World War II—that Government agencies recognize an obligation to salvage, on a sampling basis, archeological, historical, and paleontological data threatened with inundation because of reservoir construction. We could expect a similar arrangement, I suspect, in the case of Echo Park Dam. (In fact, this university would perhaps have opportunity to contract to conduct salvage archeological work in the reservoir area.)

5. In summary, there are important archeological values to be considered; these are known and understood in the most limited and incomplete way. These, by precedent, can be salvaged ahead of inundation and the ends of science would thus be served. On purely scientific grounds, therefore, if there is assurance that a sample salvage program will be incorporated into the dam construction project, there is no reason to oppose dam construction.

If no provision for salvage is made, however, there will be loss of rather significant anthropological data and values—the more important because of our present incomplete knowledge about the remains of the two cultures found in the region. The scientific necessity for arrangements for salvage should be, I think, emphasized as being the crucial factor in the position I have taken.

6. The above statements are very hastily put together. A more detailed and informative statement can be prepared, if desired, by travel to Dinosaur National Monument where the detailed survey reports can be consulted.

Sincerely,

JESSE D. JENNINGS,
Head, Anthropology Department.

MR. UNTERMANN. The grave concern over the presence of economic values in Dinosaur National Monument has always been a source of secret amusement to us. If the monument were made of uranium and was studded with diamonds no one would be permitted to develop these resources, because they would be in a Park Service area. The same uproar over "invasion" and precedents would be furiously hurled by the conservationists as are now being hurled over the proposed dams. While the Park Service would permit no "development" at Dinosaur, the local stockmen claim that the Monument has a development project of its own: that of raising coyotes, mountain lions and bobcats to prey on their young stock. The Park Service has a wildlife publication which shows that coyotes don't eat sheep. An autopsy was made on the stomachs of a couple of coyotes which proved that they ate only rabbits, prairie dogs, and other natural food animals. However, one of the stomachs contained a strange and exotic item—a shoelace. From this we must conclude that while these particular coyotes did not eat any sheep—at the time of their examination, one of them certainly must have eaten the herder.

In this concern over "inundated values," the Park Service has, inadvertently introduced an item of confusion on its own. On page 47 of the National Park Service report which forms a portion of the 1950

Colorado River Storage Report, under Geological Program is the following:

To excavate two important dinosaur sites in Echo Park and Split Mountain Canyon respectively; recovery, preservation and storage of artifacts and plan for subsequent public exhibit.

Twenty-five thousand dollars annually, for a 2-year period, are requested to make this study.

I wrote the then Secretary of the Interior pointing out the error in referring to this material as dinosaurs. Inasmuch as the canyons referred to are carved in formations which antedate the dinosaurs of the monument by at least 100,000,000 years, no fossil dinosaurs could be present. The Assistant Secretary replied that they regretted the error and that the statement should have read "fossils" instead of dinosaur fossils. I in turn replied that using only the term "fossils" was still very confusing, since any fossil in the monument would immediately be interpreted as a dinosaur fossil by the average reader. It would be better to say what they mean, which was invertebrate fossils; in other words, marine mollusks of the Carboniferous period. We had had such a difficult time refuting the rumor that dinosaurs would be flooded by the dams that we didn't want to see this bugaboo raise its head again through the use of any misleading statements. Besides, \$25,000 a year seemed to give these "seashells" an exaggerated importance which was sure to cause additional needless controversies. Especially, when the same material in exactly the same beds could be studied in many other localities within the monument and on the outside. Within the monument the identical geology occurs at these among other places: Round Top, Martha Peak, Tanks Peak, Wild Mountain, Bear Valley, Thanksgiving Gorge, East Cactus Flat, Douglas Mountain, Zenobia Peak, Harpers Corner, and Jones Hole. Outside the monument these same fossils can be studied on Diamond Mountain, Lena Peak, Brush Creek Mountain, Taylor Mountain and others, all of which are wholly unaffected by any dams. This duplication of values within the monument and on the outside is typical of practically every feature which seems to cause some quarters so much concern, and applies not only to the geology, fossils and archeology but to faunal and floral and mineral values as well.

All this makes one wonder what all the shouting is about.

It comes as no great surprise that conservationists are divided among themselves inasmuch as the wilderness people, because of their esthetic appreciation of nature, are not opposed to the dams in Dinosaur National Monument. In our State we have such organizations as the Utah Federated Artists, Utah Federated Women's Clubs and the Wasatch Mountain Club who do not see eye-to-eye with the conservationists.

With your permission, I would just like to read a few of the excerpts from the Wasatch Mountain Club statement. I will not read them all.

The Echo Park-Split Mountain controversy, when its relationship to the development of the Upper Colorado River watershed is concerned, quickly loses its deceptive aspect of simplicity. The popular impression of a bureaucratic monster suddenly bent upon a dam-building foray, while superior sites are available elsewhere, is likely to undergo substantial revision.

Not only is this area in our "backyard"—the current dispute is not without an ominous portent for our front ones as well.

The present conflict between inherently idealistic organizations presents a golden opportunity to enemies of the Bureau, and these implacable forces, now cloaked by association in a mantle of righteousness, contribute insidiously to gain their own unholy ends. Thus it is not surprising that the zealous conservationist should lapse into the line of attack of his predatory allies.

One favored subject is "construction costs which exceed project estimates." The intended inferences are probably a lack of reliability in the Bureau's cost data, and deliberate underestimating to more easily secure congressional approvals.

Some embarrassment from estimate errors is freely admitted, but when a completed project report is subjected to committee hearings, investigations, et cetera, for a period often exceeding 4 years, before it is even presented to Congress, this type of error, during an inflationary period, can hardly be regarded as reprehensible. If there be any real basis for the second innuendo, it becomes less a reflection on the integrity of the Bureau of Reclamation than on the vision of Congress, which, in its dereliction, is ever mindful of the desires of the powerful taxpaying utilities, and has shackled this category of public works with heavy repayment requirements.

Other comparable endeavor, such as "noncompetitive" harbor activity, and the levee building "antics" of our flood-control specialists, the Army Corps of Engineers need make no repayment at all.

One example of increased project cost which is cited, employs a stratagem "worthy" of a politician. The Colorado-Big Thompson project was plagued with difficult construction problems, and ran the gamut of the inflationary spiral as well. It is truly stated that the increase in costs over the original estimate is too large to be accounted for in this manner, but omitted, in the best tradition of the half-truth, is any reference to the power generating facilities, including two reservoirs, which were added later, with congressional approval, to meet the rapidly growing demands of the region.

Then I will skip a couple of paragraphs.

There is more to the problem than water storage, power generation, and cost, but this trio alone seems more than capable of promoting endless contention. With some help from Senator Watkins, Gen. U. S. Grant III publicly acknowledged one of the errors of his ways. The general is somewhat handicapped by his lack of knowledge of the Colorado River system, and his dependence upon reports which he had no hand in preparing. Costs which he found to his liking for his favorite projects, Bluff New Moab, and Desolation—not the new set of alternatives—

were taken from a report compiled in 1940, but for an Echo Park and Split Mountain comparison, he went to a 1949 report. Although both were plainly dated, the transition from a prewar to a postwar economy, where construction costs were more than doubled, was neglected in his figures.

To placate those who recognize the validity of reservoir evaporation comparisons, still another phase of the chameleonic attack is resorted to. It is claimed, in direct contradiction of the Bureau of Reclamation's records of river flow, that there is ample water available for upstream needs. Unexpected exposures of this fallacy, and substantiation of the Bureau's data, came with the disclosure, during the Mexican Treaty deliveries of 1945, of the Hoover Dam document.

To all appearances the Bureau of Reclamation confidently expects full vindication of its methodical procedures, and conclusions; but not being permitted to publicize its case, can only await congressional hearings—

I understand they have had it—

The opposition has received relatively profuse publicity, and paradoxically, little scrutiny of its discomfitures and nebulous counterproposals; and it seems, may need even more generous treatment in each subsequent encounter with reality.

Even individual members of opposing groups can't stomach some of the antics of the leaders of these organizations. Listen to this from a member of the Sierra Club, no less:

I do not see eye-to-eye with the club. The entire club is led by a few who do the thinking for them and hold sway over the membership. A speaker at

a recent meeting told of a film, Boom Town, which showed the vice and immorality that goes with the boom conditions of a large project. They were going to use this film to discourage the people in the vicinity of the dams from supporting this sort of thing in their midst. Well, Vernal has gone through the oil boom O. K., so I guess they can maintain law and order while the dam is being built. I think reclamation is in its infancy and should not be blocked by a few individuals, or groups led by a few individuals, who know nothing of the needs of a land so far away.

My most unpardonable sin, in the eyes of the wilderness people, is that, I, a museum man who himself preserves the beauties of nature, should be on what they are pleased to call the wrong side in this controversy. My reply has been and will continue to be, that it merely goes to show that one can love nature and still be rational about it.

In view of all the consideration that has been given to posterity, I only hope they appreciate it when they finally arrive. I am sure they will be far more grateful to those forebears who leave them a means of making a living than to those of whom it can only be said, "They left us a wilderness."

That concludes my statement.

Mr. HARRISON. Thank you very much.

We will now stand in recess until 2 o'clock.

Mr. ASPINALL. Mr. Chairman, before we adjourn, I ask permission of the committee to insert before the next Colorado witnesses appear a statement by Mr. Francis M. Peterson, who must leave on the plane this afternoon.

Mr. HARRISON. Without objection.

I would like unanimous consent for the introduction of a resolution from the board of directors of the Chamber of Commerce of the city of Casper, Wyo.

(The documents referred to follow:)

STATEMENT BY F. M. PETERSON

Mr. Chairman, members of the committee, my name is F. M. Peterson. I am a citizen of Delta County and have been a resident of Delta County, Colo. all my life.

I am interested in the welfare of western Colorado and of course particularly the Gunnison Basin. Western Colorado has, if water is made available, a glorious future. We are situated in the very center of the greatest known deposit of natural energy-producing resources of the world. This is, of course, a broad statement but nevertheless true. Western Colorado has more energy-producing resources than even the Ruhr Valley in Europe.

It should be systematically produced for the protection and welfare of all of the people of this great Nation. A few of these natural resources are coal, lead, zinc, copper, iron, gold, silver, tungsten, manganese, molybdenum, sulfur, gypsum and, adjacent to the Gunnison Basin, lies the Colorado Plateau which now produces 85 percent of the vanadium and uranium processed in the United States.

The Gunnison River is the largest tributary of the Colorado River arising and ending within the State of Colorado. Notwithstanding this fact the major proportion of the river is short of water 9 months of each year. This is due to the fact that 65 percent of the runoff of the Gunnison drainage area occurs during the months of April, May, and June. During the remaining 9 months of the year the flow is reduced to a point that existing irrigation decrees deplete the flow to a point where there is not even a sufficient amount of water to fill these decrees. How then can our natural resources, which are vital to the security of the Nation and to the economy of the area be developed? This great development cannot come about without storage high up on the Gunnison River to regulate the stream.

I believe that with very little additional investigation the Curecanti project can be found to be feasible under the present reclamation law and criteria.

The Bureau of Reclamation while making a study of the Gunnison Basin had in mind primarily only one benefit or reason for the dam, that was for holdover storage, and therefore their investigations were limited to this benefit. With the reduction in size of the Curecanti as requested by the people of Gunnison County, this reduction in holdover storage naturally did not show up in the Bureau's report as favorable to holdover storage as the large, originally proposed reservoir.

It is my idea that by utilizing additional head in the 9-mile stretch of the river below the Curecanti dam site, a more feasible project could be achieved.

It is my opinion that a limited amount of investigation would produce a plan for the Curecanti project which would make it a very desirable part of the upper Colorado River development program. This does not mean that the original plan should be scrapped, as the proposal I have just made is only in addition to the dam and reservoir. This plan only makes use of the additional falling water below the dam which has not heretofore been given careful consideration.

Although the Bureau reports do not indicate a definite beneficial use of the water stored in the Curecanti Reservoir, I am sure that testimony produced at this hearing by local people of the area will definitely indicate that there is a great need for both the power and water that Curecanti will provide to the advantage of both the Gunnison Basin and the Nation as a whole.

I have heard mentioned during these hearings of electric energy being delivered to load centers at a rate of 6 mills per kilowatt-hour, and I have heard that competitive steam electric generation delivered to load centers for approximately 7.5 mills per kilowatt-hour. I wish this committee to know that the REA cooperative operating in the Delta-Montrose area of western Colorado is forced to pay more than an average of 12 mills per kilowatt-hour for the electric energy it purchases in quantities exceeding 6 million kilowatt-hours annually.

The people of the western slope of Colorado have long planned for the river development contained in the bill before this committee. We are concerned with our future. We therefore ask that you give favorable consideration to the Curecanti unit of the Colorado River storage project as proposed for initial construction.

RESOLUTION

Whereas the Upper Colorado River Compact Commission, comprising one member each from the States of Colorado, New Mexico, Utah, and Wyoming, and one from the Federal Government, has completed and approved a plan for the development of the Colorado River in the upper basin States, consisting of those States hereinabove named, and said plan is known as the Colorado River storage project and participating projects; and

Whereas included in said plan and as part of said projects are the Seedskaadee and Kendall projects on the Green River in southwestern Wyoming, the former of which will provide irrigation for about 60,000 acres of land, and the latter of which is required to provide storage for Wyoming participating projects; and

Whereas the entire program of development of the Colorado River in the upper basin States, in accordance with the plan proposed by the Upper Colorado River Compact Commission is highly desirable and urgently needed to supply power and irrigation requirements in the area; and

Whereas the development of the Colorado River in the upper basin States will be of enduring value to the entire State of Wyoming: Now, therefore, be it

Resolved by the board of directors of the Chamber of Commerce of the city of Casper, Wyo., in meeting assembled this 12th day of January 1954, That we do hereby urge upon the Congress of the United States the prompt consideration of legislation necessary for the authorization and construction of the Colorado River storage project and participating projects, and that such legislation be enacted by the Congress of the United States as early as practicable; be it further

Resolved, That copies of this resolution be sent to the Wyoming Senators and Congressmen, and to the Interior and Insular Affairs Committees of the Congress.

Senator WATKINS. May I ask the witness one question about his qualifications?

Mr. HARRISON. We expect to have him back this afternoon.

Senator WATKINS. I thought the committee ought to know this man not only served as a ranger, but was working for the Park Service. Is that right?

Mr. UNTERMANN. That is correct.

Mr. HARRISON. The committee will stand in recess until 2 o'clock.

(Whereupon, at 12:15 p.m. the subcommittee recessed until 2 p.m., of this same day.)

AFTERNOON SESSION

Mr. HARRISON. The meeting will come to order.

Mr. Untermann is still on the stand and he will come forward for any questions the committee members would like to ask him.

STATEMENT OF G. E. UNTERMANN, DIRECTOR, UTAH FIELD HOUSE OF NATURAL HISTORY, VERNAL, UTAH—Resumed

Mr. HARRISON. Mr. Miller, have you any questions?

Mr. MILLER. I have a few. I wish you would take all my mail and answer it for me. This is a half day's mail. I am going to read you 3 or 4 of the letters and you tell me how you think they should be answered. I will read portions of them. They are all about the same after you get over the first half dozen.

Mr. UNTERMANN. I had to do the same for the Governor of Utah. I don't want to start for somebody else, but go ahead.

Mr. MILLER. This is from Brooklyn, N. Y. About half of them are from New York and Brooklyn:

The Echo Park and Split Mountain Dams are not necessary for the development of the upper Colorado Basin, since substitutes are shown by the reports of the Bureau of Reclamation which will cost less.

Then they say that Dinosaur National Monument and others should be held in trust for future generations to enjoy, and rather than allow private interests to encroach upon it we should be appropriating more money so they could be properly developed for more people to enjoy. How should I answer it and how should you answer it?

Mr. UNTERMANN. Well, that, of course is a rather difficult question. What they bring up there is largely a matter of opinion, but I would certainly say that there were no irreplaceable treasures involved, because you have a duplication of everything that is involved there, and you certainly have plenty of time to remove from inundation any values that might be worth saving.

Mr. MILLER. Most of these letters say that there are other sites that can be developed and should be developed.

Mr. UNTERMANN. That is the controversial issue, again. I only know what I have read in reports and so on. I am not an engineer with respect to the merits of those particular sites. I can repeat what I have read and have heard from people in whom I have confidence.

Mr. MILLER. Many of them say you should not cover up a lot of the rocks and scenery and things. I think I heard you testify that in Echo Park, the water will actually be 500 feet deep plus or minus. Whirlpool Canyon, in which the dam site is located, rises 2,500 feet above this point. Then you go on down the canyon further where it will be 350 feet high and the walls rise 3,000 feet. Was that your testimony?

Mr. UNTERMANN. That is correct. Yes, sir.

Mr. MILLER. That is your testimony?

Mr. UNTERMANN. Yes, sir.

Mr. MILLER. In other words, it does not cover it all up.

Mr. UNTERMANN. No, the point is there seems to be a great deal of concern over actually inundating something that will be lost. You have to keep in mind that the river itself is actually crossing the same formations and due to the dip of the beds they are still exposed after you have an increase in the depth of the reservoirs or the sites.

Mr. MILLER. A young lady wants this included in the record :

Please, oh please, don't allow Echo Park Dam to be built in Dinosaur National Monument. Why take from the people a beautiful wilderness area such as this. The needless construction of Dinosaur is a threat to our national park system. It is known that there are other suitable sites and that these would cost less.

Mr. UNTERMANN. Well, there again you have that controversial issue with respect to alternates. I wouldn't be in a position to answer that.

Mr. ASPINALL. Will my colleague yield?

Mr. MILLER. Yes.

Mr. ASPINALL. Did you keep any of the dust that you got on your coat when you went down in the park there last summer? You might send her some of that.

Mr. MILLER. There was considerable dust. I went down into Pat's Hole. I took that ride down to Steamboat Rock and looked it over, and really enjoyed the scenery. I wondered then how much of it would be covered up. I think you say about 10 or 12 percent.

Mr. UNTERMANN. Eleven, yes, in the bottoms.

Mr. SAYLOR. I think that is 12 percent of the area, is that it? Not of Steamboat Rock.

Mr. UNTERMANN. No, of the entire area. That is correct.

Mr. MILLER. I think people should write in about these public questions. As I say, we get so many of these letters and they are all about the same. There are a few here that say why should Congress cover up the valuable dinosaur bones that are out there. Does this dam do that?

Mr. UNTERMANN. No, sir. The dinosaurs occur in what is called the Morrison formation, which is at the quarry side. The Morrison also occurs in the Island Park region which will be partially inundated by Split Mountain Dam. There are no dinosaur beds involved or dinosaur formations involved in the Echo Park setup at all. However, with reference to the Morrison formation that is the point, again, that you have a great duplication. That, incidentally, is exposed from Montana to New Mexico. In our immediate area you have 150 miles of it that you can walk out.

Mr. MILLER. Do you know how much money the Park Service appropriates now for the care of the dinosaur portions?

Mr. UNTERMANN. I am sorry, sir, I don't. I don't know what that would be.

Mr. MILLER. Do you know whether this site had been approved for construction under previous administrations?

Mr. UNTERMANN. This particular site, no. The documents which will appear shortly do allow for a withdrawal which, of course, involves the same principle. I am having reference to the Browns Park

site. You still have a dam within a monument area, and I should think the same principle would be involved there. In other words, if there is no objection to Browns Park in principle, why there should be elsewhere other than a matter of degree.

Mr. MILLER. The public has an interest in it, of course. Of course you are going to cover up 13 or 14 percent of the canyon. They object to that. What benefits do the public get from building a dam of this type?

Mr. UNTERMANN. Well, accessibility, mainly. Do you mean as far as the area itself goes?

Mr. MILLER. Yes.

Mr. UNTERMANN. Accessibility would be the major one. As I have said, that is no reason for building it, of course. That is a result or outcome of its being built.

Mr. MILLER. Of course the water stored up there would yield some beneficial purpose.

Mr. UNTERMANN. Yes. As a part of the Colorado River project, surely in that sense it is very essential. You have my sympathy in answering those letters, because I know I have had to answer a number. I don't say I have done it successfully. I have given my views. That doesn't mean anything.

Mr. MILLER. Well, I guess we will just have to make out a mimeographed letter.

Mr. UNTERMANN. You better get a stereotyped one.

Mr. MILLER. We have a girl busy all the time addressing envelopes and pushing them in. It is a nice letter.

Mr. UNTERMANN. That is the only kind of a letter to write.

Mr. MILLER. "We will take it under careful consideration." You know, one of those letters. It is the only way we can handle it, I guess. But it is interesting to me. As a physician, I wonder what happens to the mob psychology of people and how they are able to stir up so many people all over the country. All Members of Congress receive very much mail, and I have had them call me and tell me they are receiving more mail on that particular Echo Park Dam than any other and "what is your opinion about it, doctor?" It is really quite an effort by some organization to get people informed. I am glad they do. I think sometimes they get a bit of misinformation.

Mr. UNTERMANN. That is right.

Mr. MILLER. And sometimes they do not weigh objectively the pros and cons as we would hope they would do. I think there is a lot of emotion on both sides for the Echo Park Dam, and then there are those who are opposed to it. It seems there is a tendency to overlook the careful objective approach to the problem as to what is the best thing to do. I think the committee, when they finally settle down to digest all of the testimony that is here that we depend upon, will lay aside emotions and lay aside that element that does not really enter or should not enter into the picture, and we will be able to give it careful consideration. That is all.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. Do you not think it would be a nice idea if the chamber of commerce could have the names and addresses of all these people who have written in and protested against dams, to invite them out

there to see it before it is inundated? I would bet that most of the people who are writing us have never been near the monument. There would be quite an influx of people. I thought with your great sense of humor, you would suggest to the doctor that probably the best answer to those who are not constituents would be that short, quick word that the general at the Battle of the Bulge used when he replied to the German general.

You were a ranger there at the monument?

Mr. UNTERMANN. That is correct, sir.

Mr. REGAN. Do you ever feel embarrassed for your successor who is the ranger there now?

Mr. UNTERMANN. Yes, very definitely. Do you mean with reference to the degree of development, I imagine?

Mr. REGAN. And what he has to show?

Mr. UNTERMANN. That is right. Well, we were apologetic and I am quite sure he was, but we made the best of what we had.

Mr. REGAN. Do you not think that if this dam were built, constructed and a beautiful lake were created there, that the people of this country would get much more out of the scenery of those sheer cliffs than they can possibly get today, and it would be made more accessible and more attractive and would be of much more value than today?

Mr. UNTERMANN. Well, the average visitor coming to the monument headquarters area now is wholly unaware of the existence of this back country, doesn't even know it is there. He sees some of the rough country from the highway, but as far as accessibility goes, or even the thought of entering it, I don't believe that occurs too often. I agree that would be my personal opinion with the view you have expressed.

Mr. REGAN. That is all. I would just like to hear more of your testimony, though. You entertained us very well this morning while giving us some very good facts in some of your statements. That is all, Mr. Chairman.

Mr. HARRISON. Mr. Saylor?

Mr. SAYLOR. I want to concur in what my friend Mr. Regan has said in regard to having at least colored this hearing with a little humor and relieved the tension that might have arisen in the audience. I appreciate your testimony for another reason, that you blandly come forward and admit that there are two sides and that you have taken up one of the sides.

Mr. UNTERMANN. That is right.

Mr. SAYLOR. I think that that is the best factual approach that anybody has had here so far. Up until your testimony, at least as far as what I have heard, you would have never known there was another side. But you admit that there are two sides and that you have, after a considered opinion, carefully weighing them, think that the merits are more on your side than on the other. Is that not just about the conclusion you have come to?

Mr. UNTERMANN. That is correct. That is all I can do as an individual, express my own opinion with respect to that.

Mr. SAYLOR. And your testimony, which you have given here today, points out some of the facts that some people have put out misinformation with regard to the fact that the place where the dinosaur bones are located will be inundated, and that your best, considered professional opinion is that as far as dinosaur bones are concerned,

if Echo Park is built, Split Mountain, that those fossil remains or any others in the area would not be inundated.

Mr. UNTERMANN. That is correct.

Mr. SAYLOR. You have confined your testimony almost wholly, I believe, to the situation at Echo Park.

Mr. UNTERMANN. That is right.

Mr. SAYLOR. And has there been any consideration of a geological study with regard to the other dam sites in the area?

Mr. UNTERMANN. Well, the only two—do you mean outside the monument, sir?

Mr. SAYLOR. Outside the monument.

Mr. UNTERMANN. Well, with reference to that, there are geological data by the survey on those dam sites as far as I know, yes.

Mr. SAYLOR. I might say that I have noticed here with interest your publication, which is supposed to be bulletin 42, and I will tell you right now I am enough interested so that you can put me down to like to secure a copy or buy a copy from you.

Mr. UNTERMANN. It will be complimentary, I assure you.

Mr. SAYLOR. I don't ask for it. I am interested enough that I would like very much to have it.

Mr. UNTERMANN. Sure.

Mr. SAYLOR. In other words, your testimony is the part of those proponents of this development of the Upper Colorado River Basin, and it has been a realistic approach, as you say, toward Dinosaur National Monument.

Mr. UNTERMANN. Based on factual data. That is, as I see it at least.

Mr. SAYLOR. As you see it.

Mr. UNTERMANN. That is right.

Mr. SAYLOR. And you have used the best professional ability which you and your good wife, whom I gather occupies about an equal position with you, possess?

Mr. UNTERMANN. That is correct.

Mr. SAYLOR. And as between the Park Service and Bureau of Reclamation, you have come to the conclusion that the Bureau of Reclamation is more nearly correct than the Park Service?

Mr. UNTERMANN. In this particular instance, for various reasons.

Mr. SAYLOR. All right. That is all.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Chairman, I wish to follow my colleagues to express my personal pleasure on the presence of Mr. Untermann here.

At certain times I have heard you, and I enjoy it better each time, Mr. Untermann. I find myself so much in harmony with the position you take, I will join myself with you. I love nature just the same as anybody else. This area, although it might not be recognized by the hearings in this committee, lies largely in my congressional district, as you know. I have had to weigh the values that are present in this question, and I have had to make my determination just as you have, that the values are on the side of building a reclamation project in that area. I also wish to advise you, Mr. Untermann, that I have not been deluged with mail such as my colleagues apparently have, for which I am very grateful. There are only three from my district in this ses-

sion of Congress that have seen fit to write to me up to this time about this matter. If my colleagues have any mail from my district in opposition, of course in accordance with our procedures back here, they will advise me later on and I shall be able to tell you if there is any difference in our correspondence.

Mr. UNTERMANN. Thank you.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. I would just supplement what Congressman Aspinall has said by saying that I have had several letters from my district, people who are very much interested in this proposition, apparently, from a conservation standpoint, who live at least 1,500 miles way, or maybe more than that, but at least 1,500 miles, and who have never been there, but who have been very much interested in it, apparently from outside sources. I was interested not only in your testimony but in your statement to Mr. Saylor that this was purely an opinion weighed by years of experience. It brought to mind the fact that you must be expressing an opinion when you called that trail that we went down a highway, too.

Mr. UNTERMANN. I was.

Mr. BERRY. I just want to again express the appreciation of myself and I am sure of the committee, for your very fine treatment that you people at Vernal showed to us when we were out there this summer.

Mr. UNTERMANN. Thank you.

Mr. BERRY. That is all.

Mr. HARRISON. Mr. Rogers, would you like to ask a question?

Mr. ROGERS. No, thanks.

Mr. HARRISON. Mr. Dawson.

Mr. DAWSON. How many years did you say you and your wife have spent out in that area?

Mr. UNTERMANN. Well, since 1919, for myself. Mrs. Untermann was born in the Island Park area there in what is now the center of the monuments. Her folks had the Island Park Ranch. She was born and raised in the monument. I have been either in or adjacent to it since 1919.

Mr. DAWSON. Would I be correct in saying that the combined years that you and your wife have spent there and serving as naturalists in that area would probably exceed the years that any other park service employees had spent during the entire history of the monument?

Mr. UNTERMANN. Heavens, yes, many times.

Mr. DAWSON. Many times over?

Mr. UNTERMANN. Yes. That is correct.

Mr. DAWSON. It just occurs to me that the farther away people get from this, the more attractive it seems to become to them. The fact is that you folks have been right on the grounds and, of all people who should be interested in preserving the fossils and the other remains they speak of, you are the people who would be as much interested, I think, as anyone.

Mr. UNTERMANN. That is correct.

Mr. ASPINALL. Would my colleague yield at that point?

Mr. DAWSON. Yes.

Mr. ASPINALL. In as much as there has been a little humor at this part of our hearing, I would like to read a letter which the committee

has received and ask Mr. Untermann if he has any suggestions as to how he would answer this one:

DEAR SIR: I think on the Echo Park Dam matter that the House of Representatives and whoever thought up those dams should be requested to move their dam water somewhere else, preferably a space such as the Pacific Ocean. That is, if those other sites are not available. Otherwise, I disapprove of the dams.

And it is signed. It comes from some place around 1,200 miles from our area. It would be rather difficult, would it not, Mr. Untermann, to educate that individual as to what is concerned in this matter?

MR. UNTERMANN. I have never been very optimistic. That is why I wasn't too concerned over the answers.

MR. HARRISON. Any further questions, Mr. Dawson?

MR. DAWSON. Nothing further, other than to state to the chairman that I, too, have received hundreds and hundreds of letters and resolutions and every one that I received, with the exception of about three, have been endorsing this project. They do come from my district but they have come from people who have been out there and who have seen it for themselves.

I might say among that list is every fish and wildlife group and every naturalist group in existence. I will put them into the record at the proper time.

MR. REGAN. Did you ask Mr. Untermann if his wife shared his views with respect to this project?

MR. DAWSON. I assume a man of his intelligence could not answer that but one way.

MR. UNTERMANN. The safest way; yes.

MR. DAWSON. That is all.

MR. HARRISON. Senator Watkins?

SENATOR WATKINS. I have no questions.

MR. HARRISON. Mr. Rhodes?

MR. RHODES. I just want to compliment you on your statement. I enjoyed listening to you in Vernal and I enjoyed listening to you just as much today. When we were in Vernal and going down that trail that you called a highway, I heard a theory as to why the dinosaur remains happened to be in the particular spot that they are in. I do not find in your testimony anywhere any explanation of why they occur in that particular spot. Have you covered that before this committee?

MR. UNTERMANN. No, sir, I haven't. I never thought it of any particular importance here, but I would be very glad to.

MR. RHODES. I sort of wonder if it isn't, because I have heard a lot of people wonder if maybe behind some of those rocks down in Echo Park, if you chipped off the rocks you might not find a few dinosaur fossils.

MR. UNTERMANN. From higher up?

MR. RHODES. Yes.

MR. UNTERMANN. That is a very good question. With all due respect to Sunday supplement writers, we occasionally get stories about the dinosaurs feeding along the Green River and so on, the present drainage pattern goes back to the Grand Canyon time roughly 15 million years ago. The dinosaurs as such have been extinct for 60 million years and those at the dinosaur quarry, those that are buried at the

dinosaur quarry, of course, the particular individuals we are dealing with, were gone long before that.

Now, the quarry or the Morrison formation represents an old stream channel. They were washed down no doubt during flood stages, the carcasses and so on were washed down and lodged on these sandbars and quiet coves and accumulated there in quite large numbers.

Mr. RHODES. They probably died farther upstream?

Mr. UNTERMANN. They fed in an ancient stream of that time. That particular river has no name but there is evidence that it was running in a directly opposite direction from the river which is there at the present time. That is the reason for their presence, where they are. There is evidence that perhaps one individual actually walked into this quicksand in place and the others probably were as a result of drift and then caught in this cove.

Mr. RHODES. This was sort of a cove?

Mr. UNTERMANN. That is right, in all probability.

Mr. RHODES. And they were deposited there in this cove.

Mr. UNTERMANN. Yes.

Mr. RHODES. Is there any great likelihood in your mind that there might be dinosaur remains in any other part of the monuments?

Mr. UNTERMANN. If there are, with the exception of the Island Park section, it wouldn't make any difference so far as this controversy goes, in the Rainbow section where the same formation occurs, you have some fragmentary evidence of bones. But as I mentioned before, the Morrison formation occurs from Montana to New Mexico, intermittently.

It is covered up in some places. And in the immediate vicinity of the monument, inside and outside, are 150 miles of exposure. There is hardly a mile of that that you cover that you don't find some bone fragments. But it is a very exceptional set of circumstances that would accumulate and preserve the fossils as they were there. Recurrence is very, very unlikely.

Mr. RHODES. You do not feel, then, that the extinct dinosaur would be made more extinct by the building of this dam?

Mr. UNTERMANN. No, sir. In fact, as much as they love to wade around in water, I think they would enjoy it.

Mr. RHODES. That is all, Mr. Chairman.

Mr. HARRISON. Thank you very much, Mr. Untermann. I also appreciate your testimony and on behalf of the committee I want to thank you. You have been a very patient and a very good witness, and not only interesting but you have given us a pretty comprehensive idea of your views on this matter.

Thank you very much.

Mr. UNTERMANN. Thank you. And I wish to express my personal appreciation for being able to present the material and for the time you have given us. Thank you very much.

Mr. HARRISON. The next witness will be Mr. J. E. Broadus, naturalist and conservationist from Salt Lake City.

Mr. DAWSON. A suggestion was made by Mr. Saylor, I think, or one of the members of the committee, asking for a report on the power market demand in that area. As a part following Mr. Clyde's testimony, I would like to submit a study made by Mr. J. H. Ratliff, a

civil engineer licensed in Utah and Colorado on this very question as part of Mr. Clyde's testimony.

Incidentally, there is a copy for each member of the committee.

Mr. HARRISON. Do you want that made a part of the record?

Mr. DAWSON. Yes.

Mr. HARRISON. Without objection it will be so ordered.

(COMMITTEE NOTE.—See p. 405.)

STATEMENT OF J. E. BROADDUS, SALT LAKE CITY, UTAH

Dr. BROADDUS. Mr. Chairman and members of the committee, my name is Dr. J. E. Broadus. My home is in Salt Lake City, Utah. My life work and hobby has subjected me to much experience having to do with growth and development of our national park system.

It is with real satisfaction that I can look back on a lifetime of work in the exploration and development of scenic areas which for the most part have become either monuments or parks in our great national park system.

In 1916, I had the privilege of showing pictures of Bryce Canyon to Mr. Stephen Mather, and I shall always recall his interest as I described that area to him. With colored slides used in lectures I started publicity for Bryce Canyon that year. I did the same for Cedar Breaks in 1918 and for Zion Canyon the same year. In 1922, in cooperation with the United States Forestry Department, I started publicity for the Kamas-Mirror Lake Road in the western end of the Uinta Mountains in Utah. That same year I assisted in the establishment of Timpanogos Cave Monument. In 1924, at the invitation of Bishop E. P. Pectol, I started publicity for the area that is now Capitol Reef National Monument in Wayne County, Utah.

Under the supervision of the Utah State Planning Board, I photographed and assisted in the development of the Wayne Wonderland, the Circle Cliffs, Brown's Park, Swallow Canyon, Sheep Creek Canyon, Red Canyon, and Flaming Gorge.

In 1937, I made the trip by boat from Lily Park, Colo., down the Yampa River to the Green River and down that river to Jensen, Utah, a distance of more than 100 miles.

I give these facts to emphasize the statement that I believe the present boundaries of Dinosaur National Monument contains more varied and magnificent scenery than any equal area in the national park system.

From Lieutenant Ives, in 1857, and Captain Macomb in 1859, from Ashley, Major Powell, Manley and the late Bert Loper, all have expressed themselves as to the geology and grandeur of some part of the Colorado River and its tributaries.

Bert Loper had navigated the Colorado River a number of times as well as all its tributaries with the exception of Yampa River. When he came into my office to ask me about it, I told him that he had left the best to the last and that he would see more wonderful things than ever. He was somewhat skeptical but on his return he did not hesitate to say that Yampa Gorge surpassed anything on the Colorado or any of its tributaries.

In my opinion, there is only one answer to the problem of making this area available to travel and that is by building the dam at Echo Park, Colo.

Automobile roads are impossible as there is nothing on which to build a road. Sheer walls with the river filling the space between does not lend itself to roadbuilding.

Connecting side roads could touch at a few places but would not reach the real points of interest nor make the river as a whole available. Such points as the Great Fold in Yampa Gorge, the overpowering cliffs terminating at Warm Springs Draw, and the huge monoliths below that point would never be seen.

May I say here, Mr. Chairman, I am somewhat susceptible to scenery. When I came down below Mantle's Ranch and saw that great fold—I have seen folds in Sheep Creek, in Rainbow Park, in the Wasatch Mountains and many places—to see that magnificent fold towering up there a thousand or fifteen hundred feet, twisted as it was twisted millions of years ago, probably 20 or 30 miles from its original spot, colored in all shades, and sweeping down one side across the river and then up the other side—and the river has cut through that fold—the great cliffs lower down in the gorge, you could put five Washington monuments one on top of the other and they would still be 250 or 300 feet from the tops of those cliffs, those great monoliths there at Warm Springs Draw, they took my breath away. They tower two or three thousand or 3,500 feet above you, and on one of the great walls is spotted a bridge.

We could look up through it and see the sky and so from on top you could look down and see those great cliffs and the curves of the river itself. I don't think in all my experience I have seen anything comparable to the Yampa Gorge itself. When they make light of a river trip as it is today, they are foolish. Bert Loper traveled for years and years and yet on that one trip he slipped into the Colorado for some reason no one knows why, but the river is always just reaching out, waiting for you to make that one mistake.

The upper part of Dinosaur Monument must be reached by water. There is no chance to reach it in any other way. Rim roads may be made which will look down into the canyon, but the beauty and the magnificence of scenery lies in the inspiration of looking up to it, and not down upon it.

In addition to needed water for irrigation and power, the Echo Park Dam would provide 126 miles of incomparable fishing waters and would make available to millions the inspirational glory of the greatest scenery in the United States.

If I may, Mr. Chairman, I would like to submit this for the record.

Mr. HARRISON. It will be received without objection.

Mr. SAYLOR, have you any questions?

Mr. SAYLOR. I would like to say that I wish to congratulate Dr. Broaddus on his statement. Anyone who is familiar with the history of our national parks and monuments knows of the good doctor's interest in the establishment of them. I appreciate the fact and concur in what he has said, that the only way to actually appreciate and understand the beauties of the Yampa Gorge is to actually go down in it. I disagree with his conclusion that it would be enhanced by making it more accessible by a dam than it is at the present time.

I think that the beauties that will remain above water, it is true, will not be changed. But I am afraid that a great deal of grandeur

and glory which the good doctor has so eloquently testified to will be lost by taking the river away from its present form.

That is all.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. I would like to say to Dr. Broaddus, who has spent almost a lifetime in the interest of preserving the beauty spots for national parks, that I notice he did not join in the publicity and the work of establishing the Dinosaur Monument originally.

That wasn't listed among your works.

Mr. BROADDUS. No.

Mr. REGAN. But you as a nature lover, and one who has spent all the time you have in inducing our Government to set aside these various places of beauty, you feel that this will be enhanced rather than hurt by the building of Echo Park Dam?

Mr. BROADDUS. I do.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. I have nothing except to commend Dr. Broaddus on his very fine statement.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. No questions.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Nothing, but to state that I think Dr. Broaddus has been as much responsible as any single man in making Bryce Canyon and others what they are today. I think that there is no other man who is better qualified to come here and tell the story that he has told on these beautiful points of interest.

Mr. HARRISON. Are there any other questions? Senator Watkins?

Senator WATKINS. I would like to join with my colleague, Congressman Dawson, in the statement he made about the great things Dr. Broaddus has done for the park system of our State and the West.

Mr. HARRISON. Mr. Rogers?

Mr. ROGERS. No, thank you?

Mr. HARRISON. In behalf of the committee, Dr. Broaddus, I thank you for appearing here and giving us your testimony. We appreciate what you have done to help the West and the parks there and those historic and picturesque areas. We receive your statement with a great deal of pleasure.

Mr. BROADDUS. Thank you.

Mr. HARRISON. The next witness will be the Honorable Briant H. Stringham. He is listed here as chairman of a 21-county committee and a State senator from Utah.

Following this gentleman, there will be two witnesses from Colorado who want to be heard.

STATEMENT OF BRIANT H. STRINGHAM, CHAIRMAN, COLORADO RIVER DEVELOPMENT ASSOCIATION, VERNAL, UTAH

Mr. STRINGHAM. Mr. Chairman and members of this important committee, and Senator Watkins and Senator Bennett, my name is Briant H. Stringham. I have lived near the area of the Echo Park dam site in Vernal, Utah, all my life. My chief business is stock raising and farming. I am presently chairman of the Colorado River Development Association, an organization representing 21 counties.

that are directly affected by the Colorado River storage project and participating projects.

May I here, Mr. Chairman, extend my thanks as a representative of 21 counties for the splendid visit of your committee out to our area last year. We are also very happy to have had Mr. Saylor come out, although he was in a different group.

We were not aware that you were present, Mr. Saylor. We are sorry. And also you men who were unable to come, we know that you had very pressing business or you would have been with this group.

There are in attendance at this hearing 52 citizens from the State of Utah alone, who have traveled 124,000 man-miles, a distance of five times around the world and at an approximate cost of \$23,500. They are giving of their time, some are paying their own expense, others are being sponsored by county, city, commercial clubs, chambers of commerce, water organizations, farmers groups, and other local interests.

We are just ordinary citizens coming to you with the hope that we can do something to impress upon you and the Congress, that the development of potential resources in the West is long overdue, and that if we in that area are to assimilate the population that is moving westward and at the same time provide for our own best crop, our children, provision for the future should be begun immediately.

I shall dwell on the problem of the Echo Park Dam, one of our greatest resources.

Ample documentary evidence exists to show that the construction of Echo Park Dam, in Dinosaur National Monument, does not constitute a threat to the principles of the National Park Service nor will it establish a precedent in violation of these principles.

On June 11, 1936, at Vernal, Utah, and at Craig, Colo., on June 13, 1936, in mass meetings, both of which I personally attended, David H. Madsen, then acting superintendent of Dinosaur National Monument, made in substance the following statement in my presence in the meeting:

If you people will not resist the enlargement of the Dinosaur Monument, I will promise you in the name of the National Park Service that the right to graze the area and the right to construct reclamation and power projects within the area will not be interfered with.

Grazing by both cattle and sheep still continues on the monument.

In an affidavit, dated March 27, 1950, Mr. Madsen reaffirms his statement made earlier and the attitude of the Park Service toward dams within the monument, stating in part as follows:

I was authorized to state, and did state as a representative of the National Park Service, that grazing on the area would not be discontinued and that in the event it became necessary to construct a project or projects for power or irrigation in order to develop that part of the States of Colorado and Utah, that the establishment of the monument would not interfere with such development.

Herewith is submitted for the record, a copy of Mr. Madsen's affidavit along with copies of five supporting affidavits, including my own.

(The affidavit referred to follows:)

(This is a copy of the affidavit of one David H. Madsen, former manager of Dinosaur National Monument and the man who held a series of meetings in Utah and Colorado prior to the time the monument was enlarged. P. 148 of the official transcript of the Secretary of the Interior.)

AFFIDAVIT

STATE OF UTAH,

County of Utah, ss:

David H. Madsen, being first duly sworn on oath, deposes and says that he is over the age of 21 and a citizen of the United States, and a resident of Utah County, Utah. That at the time the area of the Dinosaur National Monument was enlarged to include the canyon unit I was employed by the National Park Service under the title of supervisor of wildlife resources for the national parks. Among my other duties I was acting superintendent of the Dinosaur National Monument and in that capacity was ordered by the National Park Service to arrange for hearings at Vernal, Utah, and Craig, Colo., for the purpose of securing the approval of the citizens of that area for the expansion of the Dinosaur National Monument to include the canyon unit. Meetings were accordingly held at Vernal, Utah, June 11, 1936, and Craig, Colo., June 13, 1936. A large representation of the citizens of the area were present at these meetings.

Among other things discussed was the question of grazing and the question of power and of irrigation development which might be deemed essential to the proper development of the area at some future date. I was authorized to state, and did state as a representative of the National Park Service, that grazing on the area would not be discontinued and that in the event it became necessary to construct a project or projects for power or irrigation in order to develop that part of the States of Colorado and Utah, that the establishment of the monument would not interfere with such development.

The first part of this agreement with reference to grazing has been carried out and the residents of the area involved are entitled to the same consideration with reference to the development of power or irrigation at the Echo Park and Split Mountain Dam sites, and any other development that may not duly interfere for the purpose of the establishment of the Monument and which is necessary for the development of the area.

DAVID H. MADSEN.

Subscribed and sworn to before me this 27th day of March A. D. 1950.

KARL H. BENNETT,

Residing at American Fork, Utah.

My commission expires December 25, 1950.

AFFIDAVIT

STATE OF UTAH,

County of Uintah, ss:

J. A. Cheney, being first duly sworn, deposes and says:

That he is a resident of Vernal, Uintah County, State of Utah.

That he attended a meeting called by the National Park Service for the purpose of obtaining public reaction relative to the withdrawal of public lands to provide additional acreage to be added to the Dinosaur National Monument.

That said meeting was held at Vernal, Utah, on June 11, 1936.

That a stenographer was present at this meeting and that a record of the proceedings of the meeting was kept on a stenotype machine;

That during the course of this meeting the National Park Service representative assured the residents of these areas that if the Dinosaur National Monument were enlarged, that the National Park Service would not prevent or stand in the way of future reclamation projects or water-development projects on the Green River or the Yampa River within the boundaries of the Dinosaur National Monument, for irrigation or power purposes.

J. A. CHENEY.

Subscribed and sworn to before me this 27th day of March 1950.

[SEAL]

RUTH ASTLE.

Notary Public, Residing at Vernal, Utah.

My commission expires March 8, 1954.

AFFIDAVIT

STATE OF UTAH,
County of Uintah, ss:

Joseph Haslem, being first duly sworn, deposes and says:

That he has been a resident of Jensen, Uintah County, State of Utah, for the past 35 years.

That he attended two meetings called by the National Park Service for the purpose of obtaining public reaction relative to the withdrawal of public lands to provide additional acreage to be added to the Dinosaur National Monument.

That said meetings were held at Vernal, Utah, on June 11, 1936, and at Craig, Colo., on June 13, 1936.

That a stenographer was present at both of these meetings, and that a record of the proceedings of the meetings was kept on a stenotype machine.

That during the course of these meetings, and at both meetings, the National Park Service representative assured the residents of these areas that if the Dinosaur National Monument were enlarged, that the National Park Service would not prevent or stand in the way of future reclamation projects or water-development projects on the Green River or the Yampa River within the boundaries of the Dinosaur National Monument, for irrigation or power purposes.

JOSEPH HASLEM.

Subscribed and sworn to before me this 27th day of March 1950.

[SEAL]

RUTH ASTLE,

Notary Public, Residing at Vernal, Utah.

My commission expires March 8, 1954.

AFFIDAVIT

STATE OF UTAH,
County of Uintah, ss:

Leo Calder, being first duly sworn, deposes and says:

That he is a resident of Vernal, Uintah County, State of Utah.

That he attended a meeting called by the National Park Service for the purpose of obtaining public reaction relative to the withdrawal of public lands to provide additional acreage to be added to the Dinosaur National Monument.

That said meeting was held at Vernal, Utah, on June 11, 1936.

That a stenographer was present at this meeting, and that a record of the proceedings of the meeting was kept on a stenotype machine.

That during the course of this meeting the National Park Service representative assured the residents of these areas that if the Dinosaur National Monument were enlarged, that the National Park Service would not prevent or stand in the way of the future reclamation projects or water-development projects on the Green River or the Yampa River within the boundaries of the Dinosaur National Monument, for irrigation or power purposes.

LEO CALDER.

Subscribed and sworn to before me this 27th day of March 1950.

[SEAL]

RUTH ASTLE,

Notary Public, Residing at Vernal, Utah.

My commission expires March 8, 1954.

AFFIDAVIT

STATE OF UTAH,
County of Uintah, ss:

H. E. Seeley, being first duly sworn, deposes and says:

That he has been a resident of Vernal, Uintah County, State of Utah, for 30 years.

That he attended two meetings called by the National Park Service for the purpose of obtaining public reaction relative to the withdrawal of public lands to provide additional acreage to be added to the Dinosaur National Monument.

That said meetings were held at Vernal, Utah, on June 11, 1936, and at Craig, Colo., on June 13, 1936.

That a stenographer was present at both of these meetings, and that a record of the proceedings of the meetings was kept on a stenotype machine.

That during the course of these meetings, and at both meetings, the National Park Service representative assured the residents of these areas that if the Dinosaur National Monument were enlarged, that the National Park Service would not prevent or stand in the way of future reclamation projects or water development projects on the Green River or the Yampa River within the boundaries of the Dinosaur National Monument, for irrigation or power purposes.

H. E. SEELY.

Subscribed and sworn to before me this 27th day of March 1950.

[SEAL]

RUTH ASTLE,

Notary Public, Residing at Vernal, Utah.

My commission expires March 8, 1954.

AFFIDAVIT

STATE OF UTAH,

County of Uintah, ss:

B. H. Stringham, being first duly sworn, deposes and says:

That he has been a resident of Vernal, Uintah County, State of Utah, for the past 40 years.

That he attended two meetings called by the National Park Service for the purpose of obtaining public reaction relative to the withdrawal of public lands to provide additional acreage to be added to the Dinosaur National Monument.

That said meetings were held at Vernal, Utah, on June 11, 1936, and at Craig, Colo., on June 13, 1936.

That a stenographer was present at both of these meetings, and that a record of the proceedings of the meeting was kept on a stenotype machine.

That during the course of these meetings, and at both meetings, the National Park Service representative assured the residents of these areas that if the Dinosaur National Monument were enlarged, that the National Park Service would not prevent or stand in the way of future reclamation projects or water development projects on the Green River or the Yampa River within the boundaries of the Dinosaur National Monument, for irrigation or power purposes.

B. H. STRINGHAM.

Subscribed and sworn to before me this 27th day of March 1950.

[SEAL]

RUTH ASTLE,

Notary Public, residing at Vernal, Utah.

My commission expires March 8, 1954.

In his proclamation establishing the enlarged monument, under date of June 20, 1938, Franklin D. Roosevelt included this paragraph. I think Senator Watkins read part of this yesterday. This is Roosevelt's proclamation:

The Director of the National Park Service, under direction of the Secretary of the Interior, shall have the supervision, management, and control of this monument as provided in the act of Congress * * * except that this reservation shall not affect the operation of the Federal Water Power Act of June 10, 1920, as amended, and administration of the monument shall be subject to the reclamation withdrawal of October 17, 1904, for the Brown's Park Reservoir Site in connection with the Green River Project.

Herewith is submitted for the record a copy of President Franklin D. Roosevelt's proclamation enlarging the Dinosaur National Monument.

(The proclamation referred to follows:)

[From the Federal Register, vol. 3, No. 140, July 20, 1938, issue]

ENLARGING THE DINOSAUR NATIONAL MONUMENT, COLORADO AND UTAH

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

WHEREAS certain public lands contiguous to the Dinosaur National Monument, established by Proclamation of October 4, 1915, have situated thereon various objects of historic and scientific interest; and

WHEREAS it appears that it would be in the public interest to reserve such lands as an addition to the said Dinosaur National Monument:

NOW, THEREFORE, I, FRANKLIN D. ROOSEVELT, President of the United States of America, under and by virtue of the authority vested in me by sec. 2 of the act of June 8, 1906, ch. 3060, 34 Stat. 225 (U. S. C., title 16, sec. 431), do proclaim that, *subject to all valid existing rights*, the following-described lands in Colorado and Utah are hereby reserved from all forms of appropriation under the public-land laws and added to and made a part of the Dinosaur National Monument:

Legal Description Not Copied

Warning is here expressly given to any unauthorized persons not to appropriate, injure, destroy or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

The reservation made by this proclamation supersedes as to any of the above-described lands affected thereby, the temporary withdrawal for classification and for other purposes made by Executive Order No. 5684 of August 12, 1931, and the Executive Order of April 17, 1926, and the Executive Order of September 8, 1933, creating Water Reserves No. 107 and No. 152.

The Director of the National Park Service, under the direction of the Secretary of the Interior, shall have the supervision, management, and control of this monument as provided in the act of Congress entitled "An act to establish a National Park Service, and for other purposes," approved August 25, 1916, 39 Stat. 535 (U. S. C., title 16, secs. 1 and 2), and acts supplementary thereto or amendatory thereof, except that this reservation shall not affect the operation of the Federal Water Power act of June 10, 1920 (41 Stat. 1063), as amended, and the administration of the monument shall be subject to the *Reclamation Withdrawal of October 17, 1904, for the Brown's Park Reservoir Site in connection with the Green River project.*

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE at the city of Washington this 14th day of July, in the year of our Lord nineteen hundred and thirty-eight, and of the Independency of the United States of America the one hundred and sixty-third.

[SEAL]

FRANKLIN D. ROOSEVELT.

By the President:

CORDELL HULL,

The Secretary of State.

(No. 2290)

The Brown's Park Reservoir Dam site is located within the confines of the Dinosaur National Monument.

Mr. STRINGHAM. Since a reclamation withdrawal was acknowledged in the original proclamation establishing Dinosaur National Monument, no adverse precedent is involved even though the present dam site, now being considered, is further downstream than the Brown's Park site and in a much more strategic location. Both sites are within the boundaries of the monument.

In a letter to Dr. J. E. Broadus, one of Utah's outstanding conservationists and the man who has just testified, under date of May 2,

1946, the then Director of the National Park Service, Newton B. Drury, has this to say:

I am intensely interested in your statement about the possible beneficial effect of the proposed Echo Park Reservoir in Dinosaur National Monument as a means of access for visitors to see the Green and Yampa Canyons. Dinosaur is one of the few areas in the system established subject to a reclamation withdrawal and this may have some bearing on the proposed Echo Park project * * * we are pleased to have your expression as to the possible beneficial effects.

I herewith submit for the record a copy of Mr. Drury's letter to Dr. Broadbuss.

(The letter referred to follows:)

UNITED STATES DEPARTMENT OF THE INTERIOR,
NATIONAL PARK SERVICE,
Chicago, Ill., May 2, 1946.

DR. J. E. BROADBASS,
Salt Lake City, Utah.

DEAR DR. BROADBASS: I appreciate your courtesy in writing me as you did about your continued interest in preserving the park and monument areas in Utah, and giving me an evaluation of the scenic qualities of the canyon country within Dinosaur National Monument. Through my long association with conservation organizations, including this Service, I am well acquainted with your work and with the contribution you have made toward bringing the outstanding scenic areas of Utah to the public attention which led to their protection and preservation.

I am intensely interested in your statement about the possible beneficial effect of the proposed Echo Park Reservoir in Dinosaur National Monument as a means of access for visitors to see the Green and Yampa Canyons.

The extensive river basin surveys now being conducted by the several agencies of Government are of concern to us, as some proposals may adversely affect areas of the national park system. Dinosaur is one of the few areas in the system established subject to a reclamation withdrawal and this may have some bearing on the proposed Echo Park project. While we would regret to see this non-conforming use in the national monument, we are pleased to have your expression as to the possible beneficial effects.

As I have never had an opportunity to visit Dinosaur, I have not formulated any personal opinion of its scenic qualities. I know that it is regarded highly by Regional Director Merriam, of region 2, and others in the Service. It is hoped that there will be an opportunity for me to visit the area sometime this summer and to get in touch with you in Salt Lake City at the same time.

Sincerely yours,

NEWTON B. DRURY, *Director*.

Mr. STRINGHAM. In his decision regarding the Dinosaur National Monument controversy, dated June 27, 1950, former Secretary of the Interior, Oscar L. Chapman, stated:

Weighing all the evidence in thoughtful consideration, I am impelled in the interest of the greatest public good to approve completion of the upper Colorado River Basin report, including the construction of the dams in question, because: (a) I am convinced that the plan is the most economical of water in the desert river basin and therefore is in the highest public interest; and (b) the order establishing the extension of the monument in the canyons in which the dams would be placed, contemplated use of the monument for a water project, and my action, therefore, will not provide a precedent dangerous to other reserved areas.

I herewith submit, for the record, a copy of Secretary Chapman's decision.

(The decision referred to follows:)

DECISION BY OSCAR CHAPMAN, SECRETARY OF THE INTERIOR, REGARDING THE
DINOSAUR NATIONAL MONUMENT CONTROVERSY

JUNE 27, 1950.

The preparation of a comprehensive report for the development of the upper Colorado River Basin has posed the question of whether Echo Park and Split Mountain Dams should be built in the canyon sections of Dinosaur National Monument. I will not have the final say, but I must determine whether, as Secretary of the Interior, I shall approve and recommend to the Congress a plan that includes these dams.

The history of the issue is well known to you and is well documented in the transcript of proceedings of the hearing I held on April 3, 1950. I shall not review it here.

I am impressed with the fact that the waters of the Colorado River constitute a resource of paramount importance to the region and that in view of the arid nature of the area, my approved plan for the development of the upper basin must make every practicable provision for the conservation and multiple use of these waters in the interest of the people of the West and of the whole Nation.

I am not unmindful of the public interest in the inviolability of our national parks, and in the status, only a little less austere, of the national monuments. By no precedent of mine would I wish to endanger these places.

Weighing all the evidence in thoughtful consideration, I am impelled in the interest of the greatest public good to approve the completion of the upper Colorado River Basin project, including the construction of the dams in question, because:

(a) I am convinced that the plan is the most economical of water in a desert river basin and therefore is in the highest public interest; and

(b) The order establishing the extension of the monument in the canyons in which the dams would be placed contemplated use of the monument for a water project, and my action, therefore, will not provide a precedent dangerous to other reserved areas.

I note that the fossils are not in the areas of the monument proposed to be flooded and that the creation of the lakes will aid the public in gaining access to scenic sections of the Green and Yampa River Canyons. Much superb wilderness within the monument will not be affected, excepting through increased accessibility.

The importance to the growth and development of the West, of a sound upper Colorado River Basin program can scarcely be overemphasized. I hope that this decision on my part will promote quick solution of all other problems connected with this matter so that we may proceed with such a program.

I ask the National Park Service and the Bureau of Reclamation to cooperate fully in making plans that will insure the most appropriate recreational use of the Dinosaur National Monument, under the circumstances.

OSCAR L. CHAPMAN,
Secretary of the Interior.

Mr. ASPINALL. May I make this suggestion, Mr. Chairman: Where these submissions that Mr. Stringham refers to have been placed into the record previously, that they be placed in the file and reference be made to the fact that they are in the record.

Mr. HARRISON. That is the Chair's thought in the matter, that without objection that material or those letters or affidavits which have not previously been made a matter of record will be admitted and made a part of the record, but those which have already been introduced will be received and made a part of the file and not appear as repetition in the record.

Mr. STRINGHAM. This is the first case, Mr. Chairman, that I recall this one I just read.

The present Secretary of the Interior, Douglas McKay, after thorough investigation by his Department, has sanctioned the construction of Echo Park Dam, thus making two Secretaries of the Interior who have made the same decision, under two different administrations.

All these statements by highly placed Government officials give every reason for public confidence in them, and because of this reliance placed upon such clearly stated agreement, much money has been spent in the belief that they would be honored. On July 10, 1939, a year after the establishment of the enlarged monument, the Colorado River Great Basin Water Users Association, a Utah citizens' organization, made two filings in Dinosaur National Monument at a cost of \$1,000 per filing. Also in 1939 the State of Utah appropriated \$62,500 matching Bureau of Reclamation funds, for the resumption of studies and investigations of dam sites in the monument and elsewhere. Studies in the monument, or rather what is now the monument, had begun in 1917, and were accelerated in 1939 after the appropriation by the State of Utah.

I hereby submit for the record a copy of water filing No. 12934 to appropriate 2,170,000 acre-feet of water for irrigation and filing No. 12935 for 11,200 second-feet of flow for power purposes as they appeared in legal notices of the Salt Lake Tribune in 1939.

(The legal notice referred to follows:)

LEGAL NOTICES

NOTICE TO WATER USERS

Colorado River-Great Basin Water Users Association, Salt Lake City, Utah has filed Application No. 12934 to appropriate 2,170,000 ac. ft. of water from Green River and tributaries in Daggett, Uintah, and Duchesne Counties, Utah. Said water will be diverted during the entire year from the respective sources at points and in quantities as follows: (1) Green River—S. 3650 ft. & W. 2050 ft. from NE Cor. Sec. 11, T. 4 S., R. 24 E., SLB & M (1,500,000 ac. ft.); (2) Brush Creek—N. 21,000 ft. and E. 1500 ft. from NW Cor. Sec. 3, T. 3 S., R. 21 E., SLB & M, (40,000 ac. ft.); (3) Ashley Creek—N. 10,600 ft. and W. 5,200 ft. from NE Cor. Sec. 1, T. 3 S., R. 20 E., SLB & M, (55,000 ac. ft.); (4) Dry Fork—N. 1,000 ft. and E. 500 ft. from NW Cor. Sec. 6, T. 3 S., R. 20 E., SLB & M, (40,000 ac. ft.); (5) Mosby Creek—W. 2,100 ft. from NE Cor. Sec. 20, T. 3 S., R. 19 E., SLB & M (20,000 ac. ft.); (6) Whiterocks River—W. 600 ft. from N $\frac{1}{4}$ Cor. Sec. 19, T. 2 N., R. 1 E., USB & M, (60,000 ac. ft.); (7) Farm Creek—W. 1,600 ft. from NE Cor. Sec. 23, T. 2 N., R. 1 W., USB & M (30,000 ac. ft.); (8) Pole Creek—W. 2,400 ft. from NE Cor. Sec. 25, T. 2 N., R. 2 W., USB & M (20,000 ac. ft.); (9) Uintah River—N. 2,200 ft. from NW Cor. Sec. 26, T. 2 N., R. 2 W., USB & M (110,000 ac. ft.); (10) East Fork of Lake Fork—W. 1,200 ft. from E $\frac{1}{4}$ Cor. Sec. 29, T. 1 N., R. 4 W., USB & M (60,000 ac. ft.); (11) West Fork of Lake Fork—N. 2,100 ft. from SE Cor. Sec. 30, T. 1 N., R. 4 W., USB & M, (60,000 ac. ft.); (12) Rock Creek—E. 1,200 ft. from W $\frac{1}{4}$ Cor. Sec. 35, T. 1 N., R. 6 W., USB & M, (100,000 ac. ft.); (13) Duchesne River—N. 600 ft. and W. 1,200 ft. from SE Cor. Sec. 19, T. 1 N., R. 8 W., USB & M, (75,000 ac. ft.).

The water will be conveyed by aqueduct 235 miles to the west side of the Wasatch Mountains, distributed through Thistle Creek and Spanish Fork River in Utah County, San Pitch River in Sanpete County, and Salt Creek in Juab County and other natural channels to which said streams are tributary and used from March 15 to October 15 inclusive of each year to irrigate 600,000 acres of land located in Salt Lake, Tooele, Utah, Juab, Sanpete, Millard, Sevier, Uintah and Duchesne Counties, Utah.

In order to insure a continuous flow at all times into the aqueduct, two reservoirs will be constructed on the channel of Green River as follows: (1) Flaming Gorge reservoir, 3,476,000 ac. ft. capacity, formed by an impounding dam, 226 ft. high, at a point N. 850 ft. and E. 1750 ft. from the SW Cor. Sec. 31, T. 3 N., R. 21 E., SLB & M; and (2) Island Park reservoir 2,900,000 ac. ft. capacity, formed by an impounding dam, 425 ft. high, at the aforesaid point of diversion from Green River. The water from the Flaming Gorge reservoir will be released into the natural channel and allowed to flow to the Island Park reservoir from which it will be pumped into the conduit at times when insufficient water is available to fill the aqueduct from the other sources named.

Water conveyed by the conduit will be stored before being used where practicable in reservoirs as follows: (1) Sevier Bridge reservoir with capacity of

600,000 ac. ft. by means of dam, 120 ft. high at point S. 870 ft. and E. 436 ft. from NW Cor. Sec. 1, T. 17 S., R. 2 W., SLB & M; (2) Fool Creek reservoirs with capacity of 57,000 ac. ft. by means of two dams 40 and 30 ft. in height respectively at points (a) N. 84 deg. 35 min. W. 1716 ft. from SE Cor. Sec. 1, and (b) S. 1,000 ft. from NW Cor. Sec. 19, all in T. 16 S., R. 5 W., SLB & M. The Fool Creek reservoirs will be supplied by canal diverting from Sevier River at a point N. 2385 ft. and E. 1757 ft. from SW Cor. Sec. 28 T. 14 S., R. 3 W., SLB & M; (3) Sterling or Gunnison reservoir with capacity of 20,260 ac. ft. formed by impounding dam, 40 ft. high at point N. 55 deg. 15 min. W. 1110 ft. from NE Cor. of SW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 32, T. 18 S., R. 2 E., SLB & M; (4) Utah Lake with capacity of 1,197,000 ac. ft. formed by means of dam, 10 ft. high, at point E. 2640 ft. and S. 950 ft. from NW Cor. Sec. 25, T. 5 S., R. 1 W., SLB & M; (5) Mona (Elberta) reservoir with capacity of 96,000 ac. ft. formed by dam 60 ft. high at point S. 1100 ft. and E. 2100 ft. from NW Cor. Sec. 7, T. 11 S., R. 1 E., SLB & M.

All protests resisting said application must be in affidavit form with extra copy and filed with T. H. Humpherys, State Engineer, 403 State Capitol, Salt Lake City, Utah, with \$1 filing fee on or before December 29, 1939.

T. H. HUMPHERYS,
State Engineer.

LEGAL NOTICE

NOTICE TO WATER USERS

The Colorado River-Great Basin Water Users Association, Salt Lake City, Utah has filed Application No. 12935 to appropriate for power purposes 11,200 sec. ft. of water from Green River in Daggett, Uintah, Carbon, and Grand counties, Utah. Said water will be used during the entire year through a series of seven power plants served by means of impounding dams, the heights, the location of the centers of which, and the points where water after use is returned to Green River are respectively as follows:

(1) Flaming Gorge Dam—226 ft. high, at point N. 850 ft. and E. 1750 ft. from SW Cor. Sec. 31 T. 3 N., R. 21 E. SLB & M return—N. 700 ft. and E. 1950 ft. from said SW Cor. Sec. 31.

(2) Red Canyon Dam—270 ft high at point S. 1000 ft. and E. 150 ft. from NW Cor. Sec. 20, T. 2 N., R. 23 E. SLB & M; return—S. 700 ft. and E. 250 ft. from said NW Cor. Sec. 20.

(3) Swallow Canyon Dam—200 ft high, at point S. 950 ft. and W. 1600 ft. from NE Cor. Sec. 9, T. 1 N., R. 25 E., SLB & M; return—S. 1050 ft. and W. 1350 ft. from said NE Cor. Sec. 9.

(4) Island Park Dam—425 ft high, at point S. 3650 ft. and W. 2050 ft. from NE Cor. Sec. 11, T. 4 S., R. 24 E., SLB & M; return—S. 4100 ft. and W. 1950 ft. from said NE Cor. Sec. 11.

(5) Split Mountain Dam—135 ft high, at point N. 6850 ft. and W. 50 ft. from NE Cor. Sec. 36, T. 4 S., R. 23 E., SLB & M; return—S. 3700 ft. and W. 550 ft. from NE Cor. Sec. 35 T. 4 S., R. 23 E., SLB & M.

(6) Ouray (Rock Creek) Dam—275 ft. high, at point N. 62,150 ft. and W. 2000 ft. from the NW Cor. Sec. 3, T. 17 S., R. 17 E., SLB & M; return—N. 61,800 ft. and W. 2000 ft. from said NW Cor. Sec. 3.

(7) Rattlesnake Dam—300 ft. high at point S. 3150 ft. and E. 50 ft. from NW Cor. Sec. 31 T. 18 S., R. 17 E., SLB & M; return—S. 3500 ft. and E. 200 ft. from said NW Cor. Sec. 31.

A total of 1,646,000 horsepower of electrical energy developed at the seven plants will be used for pumping water in the operation of the proposed Colorado River-Great Basin Project and any surplus remaining will be marketed within the State of Utah or the area contiguous to the development for industrial or other purposes

Protests resisting said Application must be in affidavit form with extra copy and filed with T. H. Humpherys, State Engineer, 403 State Capitol, Salt Lake City, Utah with \$1 filing fee on or before December 29, 1939.

T. H. HUMPHERYS,
State Engineer.

NOTE.—The Island Park Dam (4) mentioned above (425 ft. high) would have been downstream from the location of the presently proposed Echo Park Dam and would have inundated comparable areas of canyon within the Monument. The Split Mountain Dam (5) mentioned above would have been in close proximity to the location presently proposed for Split Mountain Dam.

Mr. STRINGHAM. If these two dams contemplated had been built, the water would have covered practically the same area that the water will cover when Echo Park and Split Mountain Dams are constructed.

The Federal Government, through two of its agencies, the Bureau of Reclamation and the National Park Service, along with the people and the State government of Utah, demonstrated complete reliance on the broad promises made by the National Park Service, when it allowed the Bureau of Reclamation to drill and dig test holes and do other work in the monument over the years. The ladders up the sides of the cliffs and walls of the canyons still stand as mute evidence of this complete reliance. The National Park Service was fully aware of these activities, and would not have permitted them had it not been in agreement with the allowances made for future development of the area.

I have before me photostatic copies of front pages from three different issues of the Vernal Express, a local paper published weekly at Vernal, Utah. I should like to present these for the information of the committee.

Mr. HARRISON. They will be received for the file.

(Publications referred to follow:)

[From the Vernal Express, July 21, 1938]

UNITED STATES EXTENDS UINTAH BASIN DINOSAUR AREA

The Dinosaur National Monument in Uintah County, Utah, and Moffat County, Colo., Wednesday has been enlarged by 203,885 acres with the signing of an order to that effect by President Roosevelt.

The announcement was made by the National Park Service and carried in an Associated Press dispatch from Washington.

The new land is rich in scenic, archeological and scientific features, Park Service officials said.

In bringing the 318 square miles into the national monument, which heretofore covered only 80 acres, the Park Service agreed to permit the division of grazing to continue operating on the land and recognized power and reclamation rights. [Emphasis supplied.]

The new area is traversed by the scenic Green and Yampa Rivers. Several hundred caves are located in the region and archeologists assert these once were the homes of cave dwellers.

Park Service officials said they planned to hold road building to a minimum to preserve the wilderness but would construct horseback trails into the more isolated regions.

I certify that the above story appeared as copied in the July 21, 1938, issue of the Vernal Express.

JACK R. WALLIS.

[From the Vernal Express, July 28, 1938]

DINOSAUR AREA TO BE SCENIC ATTRACTION

Includes an area of 318 square miles of most picturesque river canyon scenery in North America. To become added attractions to Dinosaur.

"The Dinosaur Museum some day will be as big an attraction to tourists as Yellowstone National Park," are the words of Dr. Barnum Brown, world-famous anthropologist and curator of the Museum of Natural History at New York, during a visit at Vernal some time ago. The enlargement order signed last week by President F. D. Roosevelt brings this prediction much nearer to reality.

The order created of the obscure area of 80 acres a region of 203,885 acres, extending from the present Dinosaur National Monument along both sides of the Green River, taking in the famous canyons to within a few miles of Brown's Park. It also includes an area up the Yampa Canyon to within 5 miles of Lily Park. The boundary line runs west 2 miles from the Dinosaur, north 4

miles, east 8 miles and follows a northeasterly direction about 1 mile from the river. Three-fourths of the area is in Colorado while only one-fourth is in Utah.

J. A. Cheney, cashier of the Uintah State Bank, has worked on the enlargement and the development of the Dinosaur National Monument for a number of years representing the Vernal Lions Club. It was through the efforts of Mr. Cheney that the power and grazing rights were protected in the opening of the new scenic region. [Emphasis supplied.]

Arno B. Cammerer, Director of the National Parks Service, under whose direction the new scenic area was created, has conferred with the Dinosaur committee of the Lions Club regarding the planning of the new scenic area.

In the near future an administrative force for the new area will be located here to oversee development work to be undertaken, according to a letter from the Park Director.

The Dinosaur National Monument is world famous and in its undeveloped condition attracts on the average of 1,000 visitors a month, according to Dr. A. C. Boyle, superintendent. During the month of June there were 1,300 registered visitors, he said.

The name of the new scenic region will be the Dinosaur-Yampa Canyon National Monument, according to a letter received by Mr. Cheney.

The State road commission will be asked to improve the road between Jensen on U. S. 40 and the quarry, as the initial step in a program to encourage people to visit the quarry.

Preliminary work is about completed on the proposed quarter of a million dollar museum which will house the dinosaur bed in bas relief. When the museum is finally completed, the prediction of Dr. Brown will see its fulfillment and tourists by the thousands will come from all parts of the world to spend days at the world-famous dinosaur home.

I certify that the above story appeared as copied in the July 28, 1938, issue of the Vernal Express.

JACK R. WALLIS.

[From the Vernal Express, August 4, 1938]

\$37,698 TO CONTINUE WORK AT DINOSAUR

Federal funds will make possible continued work at world-famous quarry. Enlarged area to be big tourist attraction.

Federal funds in the amount of \$37,698 were released Wednesday for the continued work at the Dinosaur quarry for paleontological reconnaissance and excavations under the direction of Dr. A. C. Boyle, superintendent.

The Executive order signed by President Roosevelt, enlarging the Dinosaur area has created nationwide interest in the Dinosaur and the Green and Yampa River Canyons.

Possibility that the area would become one of the West's most popular tourist centers within the next few years was seen by observers, as the added acreage is rich in archeological and scientific features and includes the narrow, precipitous canyons of the Yampa and Green Rivers, with queerly carved, delicately tinted walls.

The national monument, which formerly included only 80 acres a few miles north of Jensen, now extends into Moffat County, Colo., although almost all the monument is located in Uintah County, Utah.

Several hundred caves lie within the area, and are believed to have been the most northerly occupied by cave or cliff dwellers.

The National Park Service intends to keep most of the wilderness in its primitive state, building chiefly horse trails, with few roads. Motorists, however, will be afforded opportunity to view some of the panoramas from advantageous observation points.

Under the order enlarging the monument, grazing will continue in areas which previously have been used by stockmen, and power for irrigation rights will be recognized. [Emphasis supplied.]

I certify that the above story appeared as copied in the August 4, 1938, issue of the Vernal Express.

JACK R. WALLIS.

Senator WATKINS. May I inquire of the dates of those publications?

Mr. STRINGHAM. I will give them to you as I go along. July 21, 28, and August 4, 1938.

Senator WATKINS. In other words, they were published at the time this discussion was on with reference to the Dinosaur National Monument?

Mr. STRINGHAM. That is right.

On July 21, 1938, at the time the monument was enlarged, the Express stated:

In bringing the 318 square miles into the national monument, which heretofore covered only 80 acres, the Park Service agreed to permit the Division of Grazing to continue operating on the land and recognized power and reclamation rights.

On July 28, 1938, the Vernal Express printed:

* * * J. A. Cheney, cashier of the Uintah State Bank, has worked on the enlargement and the development of the Dinosaur National Monument for a number of years, representing the Vernal Lions Club. It was through the efforts of Mr. Cheney that the power and grazing rights were protected in the opening of the new scenic region.

And then again on August 4, 1938, the Vernal Express announced in another article:

Under the order enlarging the monument, grazing will continue in areas which previously have been used by stockmen, and power and irrigation rights will be recognized.

In support of our contention that it was expressly intended to preserve the use of the national monument for irrigation development and power production, I hereby desire to submit for the record three excerpts from the newspaper, the Vernal Express, dated July 21, July 28, and August 4, 1938. We agree that monuments and parks should not be invaded promiscuously, but in this case it was definitely understood by all concerned that development within the Dinosaur would some day go forward.

Our confidence that dams be constructed in the monument area was not based upon illusion but upon well-documented evidence. In asking the United States to break its agreement with its citizens the wilderness groups are asking the Government, knowingly or not, to stoop to a dishonorable act. In their eagerness to uphold one principle the conservationists are asking the Government to violate another—the honoring of an agreement, made in good faith and acted upon by citizens of the United States because of their reliance in the honor and pronouncements of their Government. We considered the promises made by our Government a sacred trust and we would have opposed the enlargement by every known means at our command had we thought for a moment that the great potential resources of power and water given to us by a gracious providence were to be sealed up forever in the confines of a monument, in a semidesert area.

The wilderness people hold out the lure of a national monument with unlimited visitors if only the area is not made accessible by placid waterways. Since the establishment of the original monument in 1915, the local residents have listened to glowing predictions of what was going to be done to develop the area to make it one of the most attractive in the entire Park Service system. After 39 years of waiting for something to happen the monument is still in such an undeveloped condition, with just two shacks there, and I do mean shacks

with only dirt roads leading to it, that we are embarrassed over directing visitors to the headquarters. A United States Congressman on a recent visit declared it a national disgrace. We think the Antiquity Act gives our President too much authority because with one swoop of the hand he can set aside 318 acres with no other reason than it is unique in some way.

Mr. DAWSON. It is 318 square miles, is it not?

Mr. STRINGHAM. Yes, 318 square miles.

Mr. DAWSON. You said acres.

Mr. STRINGHAM. Excuse me. I am confused.

In Utah and Colorado we have expansive areas taken up by monuments, parks, forests, Bureau of Land Management, Indian reservations, all tax-free. And now some would deprive the common people of that area of one of the few resources which is available for development and use.

We people of the West concerned with the Echo Park problem have implicit faith in the promises made by our Government and the decisions and orders given subsequently by highly respected officials as enumerated above, and we firmly believe that you, our good Representatives, will see to it that the matter is dealt with honestly and honorably and in such a manner that we may proceed with the development of our potential resources, sometimes referred to as a "Yawning Giant" ready to rise. Echo Park Dam in action will add strength to the West and to the Nation.

Thank you very much.

Mr. HARRISON. Do you have any questions, Mr. Saylor?

Mr. SAYLOR. Yes, Mr. Chairman.

Mr. Stringham, I appreciate your coming in here and giving us your testimony. However, I am sure that as a representative of the area which you come from, when your committees have hearings you feel free to ask questions when people disagree or when you try to bring out some points.

Mr. STRINGHAM. That is right. We welcome them.

Mr. SAYLOR. I have seen some statements here in your statement that I would like to ask you about just to clear up the record a little bit.

On the bottom of page 2, the last three lines on the page, there appears this statement:

Since a reclamation withdrawal was acknowledged in the original proclamation establishing Dinosaur National Monument—

Do you mean by that that in the act of 1915 under which this park was established, that there is a reference to a withdrawal?

Mr. STRINGHAM. There is an error, Mr. Saylor, I am sorry. I should have said the "enlarged."

Mr. SAYLOR. In other words, in the original act there is nothing that says withdrawal?

Mr. STRINGHAM. That is right. I am sorry.

Mr. SAYLOR. When I saw that, I asked because I read this and I have no recollection whatsoever of that.

Now, then, you refer in your statement to the withdrawal which was made by President Roosevelt in 1938?

Mr. STRINGHAM. That is right.

Mr. SAYLOR. In the copy of that reservation which you handed up, you will note these words:

The reservations made by this proclamation superseded as to any of the above described lands affected thereby the temporary withdrawal for classification and for other purposes made by Executive Order No. 5684 of August 12, 1931, the Executive order of April 17, 1928, and the Executive order of August 8, 1933, creating water reserves No. 107 and No. 152.

Is there anything in those withdrawals that you know of that specifically states that any water rights were reserved or recognized in this area that is set aside in this proclamation?

Mr. STRINGHAM. No, I do not know.

Mr. SAYLOR. So that the only thing that appears in the proclamation of 1938 are the three lines which you have underlined, and I read them—

and the administration of the Monument shall be subject to the reclamation withdrawal of October 7, 1904, for Brown's Park Reservoir site in connection with the Green River project.

Mr. STRINGHAM. That is right.

Mr. SAYLOR. Might it not be that since no one from the Bureau of Reclamation has come forward to interpret this order as you have interpreted it, that that clause might be an excluding clause, and therefore be only the right to put in a dam at Brown's Park and at no other place?

Mr. STRINGHAM. That is my contention, sir. I don't contend that it means another project.

Mr. SAYLOR. So that the only thing that any one can ever find of record—and if this is incorrect, I will be glad to be corrected because that is what I have discovered—the only reservation that anyone can find anywhere in the official documents of the Federal Government is the right to build a dam at Brown's Park?

Mr. STRINGHAM. That is correct, except what does it matter if the dam is down the stream a short distance from Brown's Park, at a better site, according to engineers.

Mr. SAYLOR. It may make a great deal of difference, sir. I just might point out this to you, that the monument might not have been set aside if it would not have been a matter of exclusion and inclusion.

I would like for the record at this point to have a chronological list of all the items in the National Park Service dealing with the original creation of Dinosaur National Monument and everything leading up thereto.

Mr. HARRISON. How many items would that be, Mr. Saylor?

Mr. SAYLOR. It is only a table of those that are there. They are not the items themselves.

Mr. HARRISON. It is not voluminous?

Mr. SAYLOR. It is about 3 or 4 typewritten pages long.

Mr. HARRISON. Without objection it is so ordered.

(The data referred to follow:)

DINOSAUR NATIONAL MONUMENT CHRONOLOGY

1909: Interest was first focused on the area now embraced by Dinosaur National Monument by the discovery by Prof. Earl B. Douglas of the Carnegie Museum of Pittsburgh, Pa., of a large deposit of fossil remains of dinosaurs and other prehistoric animals.

March 15, 1912: The Carnegie Museum was issued a permit by the Department of the Interior to undertake excavation of the fossil beds for scientific purposes.

October 4, 1915: The President, on recommendation of the Secretary of the Interior, signed a proclamation establishing Dinosaur National Monument under the authority of the Antiquities Act of June 8, 1906. The area contained 80 acres, all in Utah.

It later became apparent that the monument was not of sufficient size for efficient administration and proposals were made to add certain lands to provide for administrative buildings and an access road.

August 8, 1931: The Secretary of the Interior transmitted to the President a draft of Executive order temporarily reserving certain public land (7,890.72 acres) adjacent to and surrounding Dinosaur National Monument for classification to determine its suitability for addition to the monument.

August 12, 1931: The President signed the Executive order.

September 1930: Frederick S. Dellenbaugh, in the Colorado Magazine, No. 5, in an article entitled "The Canyon of Lodore," urged establishment of the canyon as a national park.

August 24, 1933: F. Martin Brown, director of Colorado Biological Survey, after conducting archeological research recommended setting Yampa Canyon aside as a national monument.

October 1933: Yampa and Green River Canyons were investigated by the National Park Service.

December 26, 1933: Ralph L. White, clerk of the district court, Craig, Colo., urged a park including Yampa and Lodore Canyons.

January 2, 1934: Representative Edward T. Taylor wrote, referring to White's letter and asking what progress had been made toward establishment of the area since he first discussed it with the Service "2 or 3 years ago."

January 18, 1934: F. H. Reid, president of the Colorado Association, wrote to the Department giving wholehearted approval of the Yampa Canyon monument proposal.

January 26, 1934: Gov. Edwin C. Johnson of Colorado to the Director, National Park Service:

"In my estimation, for grandeur of scenery, expanse of territory, and color of formations, this section is exceeded only by the Grand Canyon in Arizona.

* * * * *

"Citizens of northwestern Colorado and northeastern Utah have, for a number of years, been urging the establishment of either a national park or a national monument in the 'Canyon Country.' Congressman Edward T. Taylor of Colorado has been particularly active in pushing this project, as he has personal knowledge of the grandeur of this region.

"The State government will be glad to cooperate with your Department in every possible manner to secure such additional information as you desire, or in a highway improvement program should this area be given official designation."

March 12, 1934: C. A. Stoddard of Craig to Congressman Taylor enclosed an option on private land in Pats Hole, and stated:

"I want to assure you that the people of this district appreciate your active interest in this matter. We feel that it is going to be a big thing for the country once its development is assured.

"We hope that it will be possible to have the monument created soon. * * *

July 1934: Trail and Timberline, the official journal of the Colorado Mountain Club, devoted nearly the entire issue to the Yampa-Lodore region.

October 30, 1934: Congressman Lawrence Lewis' secretary (of Denver) indicated that the Congressman favored the project.

November 1934: Trail and Timberline featured Lodore Canyon again:

December 13, 1934: The Federal Power Commission said power potentialities too great to vacate, but had no objection to monument establishment subject to power developments.

February 12, 1935: The Craig Lions Club wrote Congressman Taylor further as to the monument project and objected to what it believed to be the opposition of the Utah Light & Power Co.

May 8, 1935: Colorado Mountain Club notified Director of Park Service that they were deeply interested in the establishment of Yampa Canyon National Monument.

December 14, 1935: Craig Lions Club, in letters to Congressman Taylor and Secretary of the Interior, again urged monument establishment and referred

to accounts of the project in the Denver papers indicating that it should extend as far west as the Dinosaur National Monument.

January 22, 1936: Governor Blood of Utah wrote to Senator King referring to the Interior Department's annual report, in which certain project studies (including Yampa) were mentioned, and urged that if parks or monuments were to be established, proper reservations be incorporated in the proclamations or bills to permit the development of the other resources—power, water, minerals.

January 24, 1936: Craig Lions Club asked for information regarding proposed monument.

February 1, 1936: and subsequent thereto, project was discussed with Senator King of Utah.

February 25, 1936: Director explained monument project to Senator Costigan of Colorado.

March 2, 1936: Craig Lions Club advised this Service on boundaries and to confer with Mr. Carpenter, Director of Grazing, which the Service had been doing.

June 11, 1936: Public meeting sponsored by Grazing Service and Park Service was held in Vernal, Utah, to discuss Yampa project; a somewhat smaller area was approved.

June 13, 1936: Public meeting was held in Craig, Colo., at which monument proposal was supported, provided grazing would be permitted.

Subsequently, proposed boundaries were restudied by this Service.

January 1937: Lodore Canyon number of Trail and Timberline.

March 23, 1937: Project explained in letter from Director of Park Service to Senator Edwin C. Johnson of Colorado.

October 28, 1937: Regional graziers held meeting at Grand Junction to consider Yampa project.

November 29, 1937: Director informed Representative Abe Murdock of Utah of the project, explained it and indicated proclamation would be drafted soon.

November 18, 1937: Vernal Lions Club stated in letter to Director:

"* * * We contacted Congressman Murdock and took him out over the grounds and he assured us that he would do everything he possibly could to have the area of the monument enlarged."

November 22, 1937: Senator King in letter to the Director stated:

"It is my understanding that application has been made by various civic organizations in Uintah County, Utah, to have enlarged the boundaries of the Dinosaur National Monument. * * *"

"I shall be very glad if this matter may receive due consideration at the hands of the National Park Service. * * *"

November 29, 1937: The Director informed Senator King of the nature and status of the project and told him that a proclamation would be drafted soon.

December 17, 1937: In reply to the Director's letter of November 29, G. A. Cheney, chairman, Dinosaur committee, Vernal Lions Club, requested that proposed name "Green River National Monument" be changed to "Green River Dinosaur National Monument" to avoid confusion with towns of Green River.

March 1, 1938: Nation Park Service and Grazing Service recommended establishment of area to Secretary of the Interior.

March 18, 1938: Craig Lions Club upbraided Service for long delay in monument establishment and requested explanation.

March 26, 1938: Director replied, sending map showing boundaries the Service was recommending.

May 20, 1938: Congressman Taylor was notified in Director's letter that the Secretary had approved monument establishment, subject to water power provisions and reclamation withdrawal.

May 24, 1938: Senator Edwin C. Johnson was likewise notified, and others.

June 7, 1938: Senator Johnson replied, quoting from constituents in Craig who urged that certain areas outside and south of monument be included.

June 10, 1938: Vernal Lions Club wrote Director that proposed name Dinosaur Canyon and proposed boundaries were satisfactory. "We trust that the proclamation enlarging the boundaries of the area can be forthcoming very shortly."

January 13, 1938: Director wrote Representative Murdock that Vernal Lions Club objected to the name "Green River National Monument" and suggested "Dinosaur-Yampa Canyon National Monument."

March 18, 1938: Secretary Ickes objected to proposed hyphenated name.

March 29, 1938: Director recommended "Dinosaur."

May 20, 1938: Director wrote Senator King, bringing him up to date on the project.

May 25, 1938: Senator Thomas, Representative Murdock, and Senator Adams likewise so notified.

July 14, 1938: President signed proclamation.

At the request of the Federal Power Commission, the proclamation contained a provision " * * * that this reservation shall not affect the operation of the Federal Water Power Act of June 10, 1920 (41 Stat. 1063), as amended * * *" in which act the Congress excepted the national parks and monuments from the issuance of power project permits by the Federal Power Commission. This exception by the Congress applies, of course, to Dinosaur National Monument, regardless of the attempt in the proclamation to save the jurisdiction of the Federal Power Commission.

At the request of the Bureau of Reclamation, the proclamation was made " * * * subject to the reclamation withdrawal of October 17, 1904, for the Brown's Park Reservoir Site * * *" The Brown's Park Reservoir site is in the upper end of Lodore Canyon, a few miles within the monument boundary, whereas the Echo Park site is many miles downstream, in the most spectacular portions of the monument.

Chronology

Dates of establishment and subsequent changes	President	Acres
Oct. 4, 1915.....	Wilson.....	1 80
July 14, 1938.....	Roosevelt.....	209, 664
Gross area.....		209, 744

¹ The original monument was all within Utah.

Present status of acreage

State	Federal area	Non-Federal area	Total
Colorado.....	144, 915. 68	14, 398. 35	159, 314. 03
Utah.....	46, 046. 45	4, 383. 52	50, 429. 97
Total.....	190, 962. 13	18, 781. 87	209, 744. 00

Mr. SAYLOR. The reason I asked for that to be introduced is that a number of organizations in Vernal and thereabouts have sent me copies of the affidavit which is attached to the statement which we have just had presented by Mr. Stringham, and I was interested in finding out whether or not anywhere in the Department there is anything that would indicate that there is a record to show that this is the authority, or whether there is any documentary evidence for the authority for the statements which are contained in the affidavit. I do not doubt for one moment that the affidavit is made in good faith. But as we all know, it is not the province of any Federal employee to have the authority to bind the Federal Government in his dealings unless there is some definite record made or authority for him to make that statement. At the present time, a careful search of the matters in the files of the National Park Service fails to disclose any such authority.

Mr. Stringham, you too have confined most of your remarks to the Echo Park Dam site, and in turn to the Split Mountain Dam site which is just below it and both within the monument?

Mr. STRINGHAM. That is right.

Mr. SAYLOR. If there were other sites within the upper Colorado River Basin which might produce a comparable amount of power for a comparable cost, so that the people in the upper basin would be

in a position to have some beneficial use of all or a part of the water allocated to them in the Colorado River compact, then what would be your position, sir?

Mr. STRINGHAM. Well, I would say build it and do not invade a monument, if this is invasion.

Mr. HARRISON. May I just interrupt a minute? The time of the gentleman from Pennsylvania has expired, but through the courtesy of the gentleman from South Dakota, Mr. Berry, he has an additional 10 minutes.

Mr. SAYLOR. If other engineers would come forward and tell you that there are dam sites which might have not all of the assets which these two referred to as Echo Park and Split Mountain have, but which would enable the upper Colorado River project to become a reality, then do you believe that the position of the people in the Colorado River Basin would be prejudiced or should be prejudiced by the insistence of the building of the dam at Echo Park?

Mr. STRINGHAM. I do not.

Mr. SAYLOR. So that if it is possible to secure alternate sites which would enable the upper Colorado River Basin to be developed, even though they might not have all of the attributes that Echo Park has, we should go ahead and authorize those rather than invade the national monument.

Mr. STRINGHAM. They should have the major attributes and then I would say "Yes."

Mr. SAYLOR. I appreciate that, because I would not ask you to substitute for alternate sites dam sites which would not give you in substance what you would get at Echo Park, and by substantial I mean a good bit more than 51 percent. In other words, I mean that would make not only the storage on the river, but actually the participating project which have been outlined not only for this initial phase but the secondary phase to come into existence.

Do you feel, Mr. Stringham, that the views which you have just expressed reflect the opinion of the people that you represent in the State?

Mr. STRINGHAM. I do; yes.

Mr. SAYLOR. That is all.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. No questions.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. No questions.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. I have just one question.

I take it what the witness is saying is not that we are contending that the President gave through his proclamation his approval to construct the Echo Park Dam, but merely that a precedent was set at that time. In other words, it was provided in the proclamation that a dam could be built within the confines of the Dinosaur National Monument.

Mr. STRINGHAM. That is right.

Mr. DAWSON. In other words, the President set the precedent by proclamation when the monument was enlarged.

Mr. STRINGHAM. That is right. My personal interpretation of that underlined sentence is that we can build more than one. That is my personal interpretation.

Mr. Dawson. At least that was the view of the people who attended the hearings as indicated by the press releases which came out at the time the hearings were in progress. That is indicated by your exhibits, is it not?

Mr. Stringham. That is right.

Mr. Young. No questions.

Mr. Harrison. Mr. Hosmer?

Mr. Hosmer. No questions.

Mr. Harrison. Mr. Rhodes?

Mr. Rhodes. No questions.

Mr. Harrison. Senator Watkins?

Senator Watkins. At the time that proclamation was made, there had been discussions on working out a program for the development of the upper Colorado, had there not, Mr. Stringham?

Mr. Stringham. Sir?

Senator Watkins. I said at the time this proclamation had been made by the President, there had been discussions for a long period of time about building on the river for a long time?

Mr. Stringham. As far back as I can remember there have been discussions.

Senator Watkins. I can join with you in that, because I was living in that same area, and at that time I believe I was on the Vernal Express. I remember writing stories about it at that time.

As I understand, Mr. Stringham, the President is the one who made this proclamation, signed by President Franklin Roosevelt. I have not examined the law recently, but I wonder if you have, with respect to the power of the Secretary of the Interior to permit development of that kind to be made in a national monument.

Mr. Stringham. I have examined, as far as a sheepherder could, that law, and I have it here in my pocket. That is why I am alarmed about it and that is why I made the statement.

Senator Watkins. We have all heard the testimony that the engineers have been in there, and they have drilled the dam site, and made investigations up and down all through Echo Park. They must have had permission from somebody so that they could go in there and do that work.

Mr. Stringham. That is right.

Senator Watkins. Then we had the decision made by Mr. Chapman that it could be done. I think that was an exercise of authority granted by the statutes. We have had two decisions, I think, that the project could be built. Now, is it proper to overrule these people by the Congress. It should be kept in mind also that the Congress did not set apart or make the monument for Dinosaur Monument. It was not the Congress, it was the act of one official.

Mr. Stringham. That is right.

Senator Watkins. Thank you very much.

Mr. Harrison. Senator Bennett, do you want to ask some questions?

Senator Bennett. I would like to ask Mr. Stringham this question: Mr. Stringham, at the time this extension of the monument was discussed and finally became a fact, was there any feeling that the Brown's Park Dam site was the most important? I will ask it another way. Was that the only available dam site that the people of Utah at that time considered? Was it the thought in Utah at that

time that the Brown's Park Dam site was the most desirable and maybe the only possible successful site? Was there great agitation to build a dam at Brown's Park? Why is the Brown's Park Reservoir site mentioned in the withdrawal? Do you know these things?

Mr. STRINGHAM. Well, I do not know. But I presume because there was a filing made there by, I understood, the Utah Power & Light.

Senator BENNETT. I have the impression, reading the President's statement, that that filing was made as early as 1904.

Mr. STRINGHAM. That is right. That is what the proclamation states.

Senator BENNETT. Wasn't there further study on the river between 1904 and 1938?

Mr. STRINGHAM. The studies began in 1917, according to the records, the study of the river. There were workings at that time along Split Mountain and up through the canyons, from 1917 on.

Senator BENNETT. Could it have been that the language of the withdrawal reflects the kind of study that would be made by a minor functionary in the Bureau who did not know about these current and recurring studies? Somebody may have said to him, "What withdrawals have there been in the monument in the past" and he went back to the records and found only one in 1904. So he put that into the report without any consideration of the general problem?

Mr. STRINGHAM. It could have so happened.

Senator BENNETT. Were you engaged in the practice of the law in 1938?

Mr. STRINGHAM. The law?

Senator BENNETT. I mean were you engaged in business in Vernal in 1938?

Mr. STRINGHAM. Yes, I was.

Senator BENNETT. Was there great public agitation to save the State's privilege in the Brown's Park Dam site? Did anybody talk about the Brown's Park Dam site in 1938?

Mr. STRINGHAM. Only incidentally, though.

Senator BENNETT. They were more concerned about maintaining their rights on the river system as a whole?

Mr. STRINGHAM. That is right.

Senator BENNETT. I have no further questions.

Mr. HARRISON. Mr. Rogers, do you want to ask any questions?

Mr. ROGERS. No, thank you, Mr. Chairman.

Mr. HARRISON. Thank you very much, Mr. Stringham. We appreciate having you before us and receiving your testimony.

The next witness will be Mr. George Pughe, of Colorado.

STATEMENT OF GEORGE A. PUGHE, CRAIG, MOFFAT COUNTY, COLO.

Mr. PUGHE. Mr. Chairman and gentlemen of the committee, I regret very much that I do not have sufficient copies for the reason that my mimeograph agent broke down. But I have four copies. I mailed out to you some statements, but I have deleted some of it so as to make it brief.

I am down here on my own, although I am a member of the Colorado Water Conservation Board, representing the Yampa and White Rivers in western Colorado.

My neighbors and friends, when I advised them that it looked like they were going to build two big dams in my county, the Echo Park and Cross Mountain, they thought I better come down here. I will give you my views on it.

My name is George A. Pughe, and I reside at Craig, Moffat County, in northwestern Colorado and the Echo Park and Cross Mountain projects are within the limits of that county.

I wish to discuss the matters before this committee and I will segregate it into three sections. I will try to be brief and I will not digress very far from the manuscript I have before me and which was briefly revised from copy which has been furnished to each of you. However, if there are any questions when I have finished, if capable, I will be glad to answer them.

I have resided in that area since 1909 and even on my first trip out of town I made a trip to Brown's Park and saw the Lodore Canyon. A few years later I was on Douglas Mountain and could see the Yampa Canyon and down into the lower part of the Lodore Canyon. I have seen from the high mountain walls nearly every section of the Yampa and Green Rivers that is situated within the Dinosaur National Monument and also from the Canyon floor.

In 1929 I was a member of a committee of our local service club attempting to get a national monument established or the enlargement of the Dinosaur National Monument to include the beautiful canyon country of the Yampa and Lodore. It was first projected out by the Park Service to include a great portion of northwestern Colorado. It also included a lot of grazing land which was worthless as a national monument and was such an elaborate affair that we could not tolerate taking in so much territory.

Under the suggestion of the late Congressman Ed. T. Taylor and direction of Secretary Ickes we worked out what we thought was a reasonable boundary line and finally in June 1938 or July 1938 by Presidential order, the Dinosaur National Monument was extended to include the Yampa and Lodore Canyons. In all the time we were working on this matter, it was our vision and all discussions held at Craig, Colorado, and also Vernal, Utah, indicated that some day a dam would be placed in one or both of these canyons and would create a lake whereby we would be able to see some of this beautiful scenery.

Now I want you to understand that I believe that these beautiful canyons and cliffs are not going to be disturbed by any water impounded in the canyon. Many places the high cliffs have crumbled off to leave considerable rubble along the side of the canyon and the high waterline will not reach even the top of that, so that our beautiful cliffs at Warm Springs, Johnson Draw, Hell's Canyon and several other high points will not be materially impaired.

I realize the good engineering that the Bureau of Reclamation has done in picking a narrow canyon where evaporation losses will be reduced to a minimum. True enough, it will spread out considerably in the upper reaches of the Green River in Brown's Park and there will be considerably more evaporation due to that. But the main storage will be between these sheer canyon walls, some places where the sun never shines.

My familiarity with this area is largely from the love of the outdoors, deer hunting and fishing and I observe that there will be very

little reduction of the deer population in that area. I can visualize a wonderful summer resort, also a winter resort because the mountains on both sides reach to 9,000 and 10,000 feet above sea level which is only a little over 5,000 feet. There will be skiing and all other winter sports that we can enjoy.

We realize that there will be no irrigation for Colorado out of the Echo Park Dam for many years to come, but the power revenues and the power itself can be threaded back upstream to industrial use in the other localities.

I would like to see the Dinosaur National Monument made into a recreational area under the direct supervision of either Federal or State jurisdiction so that the place will be kept clean and not be left to the destruction by the careless campers, and I do not know any better way to improve the Dinosaur National Monument than to construct the dam at the proposed site by the Bureau of Reclamation and construct a road from Highway 40 from near Cross Mountain down to and along the south shoreline of the impounded water, thence across the dam to reunite Highway No. 40. That is the plan we have visualized for many years in that country and we hope that it will mature, and that the National Park Service will cooperate on that plan of development.

I know there will be a lot of statements in the record from the Wilderness groups opposing the Echo Park project, for sentimental reasons; I support it for reasons above stated and the further reason that we have many days of blistering sunshine while you in the East are in a fog.

There are a few minor Indian tracks, but they were smart enough to get out of there about 50 years ago and went down to the Ute Reservation 75 miles west where the game was just as plentiful, and they have not returned and now there are two families in the 44-mile canyon and they are about to get out.

At this writing I have been impressed with the statement of the Wyoming and Utah Senators. I will comment on that later.

Now I will discuss Cross Mountain. I am much more familiar with that area for the reason that the backwater will come up to within about 3 or 4 miles of the town of Craig. That has been the chief place where I have hunted ducks and geese for over 40 years and I think I know every bend in that river. At least, I know where the ripples are, where we can wade across.

This Cross Mountain project has rather suddenly come into the picture as a reality. I had been holding back on making any recommendations to our water conservation board for the reason that I did not want to see about 243 of my neighbors get washed out of that area. I had heard some objection to it, and I had heard some talk favorable to it. I, therefore, deeming it my duty as a member of the water conservation board, should make some effort to enlighten the people in the area as to what they might expect. Hence, I procured a sketch of the map from Mr. E. O. Larson, regional chief of the Bureau of Reclamation, Region 4, Salt Lake City, Utah, and I proceeded to mark out several ranches on the shoreline of that projected lake and I called a meeting of the citizens living in that area at Maybell, Colo., on December 30, 1953. There was a fairly good attendance of about

60 people there. I let them look at the map. Many of them wanted to know what would be paid for land values, which I could not answer; then they brought up the matter of paying for the entire livestock units. Some of the land is meadowland; some of it is situated upon the hill-sides above the waterline. In addition to that, they have several State and Federal leases for grazing in order to make a complete livestock unit.

I understand that there is no law permitting any allowance for the taking of land held under what is known as the Taylor Grazing Act, and yet the ranch along the river that supports the hay for feed in the wintertime would be valueless if it didn't have a bunch of cattle and the cattle must have summer grazing in the adjacent area. Hence I will draft an amendment to the authorization bill which I think you can place following line 1, section 9, on page 12, or it may require a separate legislation relative to public land. At any rate, the ranchmen seem to be interested in getting a fair value out of what their property is worth. They might not figure the value of that which was not taken to be too much damaged. It would not be flooded, but it would be worthless.

Likewise, the permits on the public domain and the leases are of a great value. The whole livestock unit should be taken into consideration so that those seeking to acquire the right-of-way, representatives of the Government, would be able under law to capably and reasonably award compensation.

Now in the latest report on the Cross Mountain project it states "that it will flood out 100 people." That is erroneous. I have called it to the attention of the Bureau that from a pretty accurate check which I have made, there will be 243 people. Those are families pursuing general livestock business. And about 4,800 head of cattle will be deprived of winter quarters by the construction of the Cross Mountain Dam.

Mr. SAYLOR (presiding). Is that families or people?

Mr. PUGHE. 243 people, that is right.

Another factor is the relocation of the oil pipeline. I have gone over it with the engineer for the oil company and I think it can be relocated, but it is going to be expensive and the Government is going to have to pay for it.

Likewise, United States Highway 40 must be relocated for a distance from 20 to 25 miles. I have two reconnaissance surveys on that whereby they can detour to the south and follow the south side of Lay Creek instead of the north side as it now exists and then cross the Yampa River some place at Juniper Canyon and then go on down and come back into Highway 40 near Cross Mountain, which consists of one filling station and is about 4 miles from the dam site.

These safeguards, or some of them at least, I think should be written into the bill and I am going to discuss that with some members of your committee to try to work this out whereby it can be enacted into law whereby the Government agent seeking the right-of-way will have ample authority to deal fairly with the individuals and not resort to a condemnation.

The people at the Maybell meeting decided that they wanted to vote on it, and they were evenly divided. Sixteen voted for it and 16 voted against it. However, they did not want it used as a trading

post so that Denver could get 177,000 acre-feet from the western slope, which you heard about.

Then I had a meeting in Craig on January 5, 1954, at which there were about 75 to 100 who attended that meeting, and about the same reaction. But in talking to many individuals they seem to be willing to go either way on it. They are all reasonable ranchmen and I think there will be no bickering in settling on terms if we have the law sufficient to pay them the worth of their base property coupled with the commensurate property, even though some of the Federal lands are held only on a temporary lease, but nevertheless, it is renewable from year to year and it is a part of an asset to the base property.

Thus, I have brought this before the members of the Colorado Conservation Board on last Thursday, January 14, at our meetings in Denver. I am passing it on to you for your consideration. I know I am talking to men and women of knowledge especially on the law of the public domain. I am satisfied that we can work out a reasonable amendment if the one I have submitted is not sufficient.

I presume that you have been wondering where is the money going to be provided. Yesterday I listened to the Senator from Wyoming say that State contributed \$100 million under the Federal Leasing Act of February 25, 1920. Some of that has been spent in the State of Wyoming. From the information which I have received, Colorado has poured into that fund during the past 10 years, for the Bureau over \$21 million, and Utah over \$4 million; and over 90 percent of that amount was derived from the Rangle, Elk Springs, Vernal and Wilson Creek oilfields and they are all located within a short distance from the dam sites and we in northwestern Colorado believe that when a natural resource is extracted from the earth, never to return, that some part of that money should be returned to the locality and I know of no better chance to make that return than in authorizing the Echo Park and Cross Mountain projects and a substantial appropriation for each so that construction could get underway and this fund will be enriched over \$2 million each year in the future.

Now then, ladies and gentlemen, while I have actively favored the Echo Park and Cross Mountain projects, however, if that appears to be feasible from an engineering standpoint, we will go along with it if the safeguards to the ranchmen are in the authorization bill.

Mr. SAYLOR. Mr. Pughe, thank you for coming here. The chairman has asked me to preside during his temporary absence and I said I would provided I could ask you a few questions, and he told me to go ahead. I promised that I would ask my good friend Mr. Aspinall of Colorado to keep the time.

Mr. HOSMER. Mr. Chairman, I will yield you my time.

Mr. DAWSON. I will yield mine.

Mr. SAYLOR. I assure you I am not going to keep you here and ask you questions for a half hour.

I appreciate your coming here and telling the committee that your findings in the area are that there are some people who are in favor of the project and some people who are opposed to the project.

Mr. PUGHE. That is the Cross Mountain.

Mr. SAYLOR. What about the other projects? What have you found in your area?

Mr. PUGHE. I have only found three people in the whole county who are opposed to the Echo Park project.

Mr. SAYLOR. Now, were you here in the initial stages and heard the people from the Bureau testify that this was part of an overall development and, while this was the initial stage, that to come to full fruition it would be necessary to put in nine storage dams including Cross Mountain?

Mr. PUGHE. Yes.

Mr. SAYLOR. If Cross Mountain is put in, of necessity, the ranches which you have referred to will be flooded out; is that correct?

Mr. PUGHE. Yes, sir.

Mr. SAYLOR. What is the area of the ranches that are affected by the Cross Mountain Reservoir? By that I means could you tell us how many acres are involved in the area wherein these 243 people are affected?

Mr. PUGHE. I thing the Bureau report shows that to be 52,000 acres that will be covered. That is not all patented land, it is not all owned land, but it is fringe land and is used for grazing.

Mr. SAYLOR. In other words, there are 52,000 acres either homesteaded or patented that will be inundated by the dam?

Mr. PUGHE. Yes.

Mr. SAYLOR. Do you know how it is divided between private ownership and public domain? If you don't sir, that is all right.

Mr. PUGHE. I might estimate it for you, that probably a third of it is patented land and that two-thirds is federally owned.

Mr. SAYLOR. Approximately how many families are there in this 243 people that live in the area?

Mr. PUGHE. Well, some of them are large families and some of them are old bachelors, but they are ranchers. I would say there are probably—

Mr. SAYLOR. Are there 50?

Mr. PUGHE. Yes, about 50 or 60 families.

Mr. SAYLOR. So that when the Government went in to deal they would have to deal with approximately between 50 to 60 people that are in the area right now?

Mr. PUGH. Yes. In addition, there would be the Standard Oil Co. and the State highway department.

Mr. SAYLOR. And the State highway department is because of the relocation of United States Route 40?

Mr. PUGHE. Yes, that is right.

Mr. SAYLOR. It goes through Craig?

Mr. PUGHE. Yes, sir.

Mr. SAYLOR. Could you tell us what is the approximate value of a typical ranch in the area affected by Cross Mountain Dam?

Mr. PUGHE. Well, depending upon the size of it. I happen to have some appraisals on some lands. One instance I know of is in two sections. One is right down almost at the dam site, and another section of that ranch is 8 or 10 miles above. That land in there was appraised by an insurance company making a loan at \$42,000. He only wanted a loan of \$10,000 or \$12,000, so they did not go clear up to the limit on that.

Mr. SAYLOR. Could you tell us about what was the value per acre?

Mr. PUGHE. Well, it is about 1,600 acres in both tracts and it was appraised at about \$42,000, sir. I think that is it. I am just testifying from memory now, but that is the best of my recollection.

Mr. SAYLOR. Now, if competent engineers would testify that there were alternate sites to Echo Park and Split Mountain Reservoirs that would produce a comparable amount of electricity and a comparable amount of water storage, even though at an increased cost, what do you believe your position would be with regard to using the alternate sites for those dams rather than Echo Park and Split Mountain?

Mr. PUGHE. Well, I have not studied Split Mountain so much, but I believe probably 10 years ago, more than 10 years ago, as a matter of fact, 30 years ago they got to talking about the Echo Park Dam. I think some of us in Craig thought about that before the Bureau did, and we thought that that was a pretty good project because a dam at Echo Park will capture the water of both rivers instead of one in the Lodore Canyon and another one some place up around Lily Park. That is just an ordinary man's idea of an engineering problem, but that is the way we were taught and there has been considerable discussion about it. I feel that the Bureau has done a good job in selecting the Echo Park site, and the only thing they say is that the Cross Mountain is a little better from the standpoint of the power cost. That is true. But then they ought to take into consideration the matter of evaporation losses because evaporation from Cross Mountain will be much more than from Echo Park, and that is a factor that I think should be taken into consideration.

Mr. SAYLOR. As I stated to you in my hypothetical question, all of these matters should be considered, and if substantially the same results could be arrived at at other sites what would be your position with regard to Echo Park and Split Mountain?

Mr. PUGHE. I would like to know who the engineers are going to be.

Mr. SAYLOR. I can probably tell you who they are going to be.

Mr. PUGHE. I think the Bureau of Reclamation has got the best engineers. They are beginning to prove it in the last 10 years, it has been my observation. That is just an observation of mine.

Mr. SAYLOR. Those are all the questions I have.

Mr. HARRISON (presiding). Mr. Aspinall?

Mr. ASPINALL. Mr. Pughe, I have a question to ask.

You have been taking your own time and going to your own people without any material recompense to you to find out what their feelings are with respect to the two projects?

Mr. PUGHE. That is right, and I am down here the same way.

Mr. ASPINALL. And you have been a resident of Craig since 1909?

Mr. PUGHE. 1909.

Mr. ASPINALL. That is in the county of Moffat?

Mr. PUGHE. Moffat County; yes, sir.

Mr. ASPINALL. And you state that among all of the residents, as far as you know, there are only three people in the county of Moffat who would oppose Echo Park?

Mr. PUGHE. That is all I heard who have expressed themselves to me.

Mr. ASPINALL. Those must be the three that wrote to me; I don't know.

Mr. PUGHE. The newspapers, they wobbled a little bit on it. One of them is in favor of it, one is opposed to it. One of them says to build Cross Mountain and leave Echo Park out of it. But I would say that if you make a survey of the county you might find a dozen, you might find a hundred, I don't know. I have not been out digging for them. Nearly everybody who has contacted me says, "When is Echo Park going to be built?"

Mr. HARRISON. Are there any further questions?

We have with us, as a matter for the record, Congressman Chenoweth from Colorado. We are glad to have you here.

Thank you very much, Mr. Pughe, for your statement. We appreciate your appearing before us, particularly when you say you have come on your own. I think it is very commendable, and I hope we will have more citizens who are as interested as you are in the welfare of the country.

Mr. PUGHE. Thank you very much for the opportunity of being here. I almost forgot the most important thing.

This committee is invited by the board of county commissioners to appear in Craig some day this summer, and we will take you down there. We will give you a ride. We are not going down the easy way some of them went.

Mr. HOSMER. Is that part about the ride for Mr. Saylor?

Mr. SAYLOR. I am not afraid of the people out there. They are all good people.

Mr. PUGHE. We would not hurt anybody. Some of you have gone down the easy way. All you have to do is go down Sand Canyon Pool Creek. And if you come you want to turn off at Elk Springs and see the Mantle Ranch. If you have not seen the Mantle Ranch you have not seen the canyon.

Mr. SAYLOR. I have seen it, and I had quite a discussion with that charming young lady. I have been there. She has the prettiest eyes I ever saw on a woman in my life, and that is for the record.

Mr. PUGHE. You are a good judge of women, I see.

The board of county commissioners extends an invitation to any member of this committee, and any of your scientists that you want to bring along. Give me notice and I will arrange it, but they will pick up the check at the hotel—that is, for the lunch.

I may be sticking my neck out too far, but we did it with a group of them. Some of you flew out there and you were only there for an hour or two, and we did not get acquainted with you very much. I did get acquainted with Mrs. Pfost and told her we had better potatoes than she had. I have not proved it yet.

Mrs. PFOST. He certainly has not. I am still telling him our Idaho potatoes excel all others.

Mr. HARRISON. Thank you very much, Mr. Pughe. It was a pleasure to have you.

Mr. PUGHE. Thank you, Mr. Chairman.

Mr. HARRISON. The next witness will be Mr. George Cory.

Mr. ASPINALL. When Mr. Cory takes the chair more than likely he is going to speak orally and leave his statement. I wish to state what I think he will more than likely fail to say.

He is the operator and owner of two of the radio stations in this area, one in Montrose where he lives, and one in Craig. He is a very successful operator of radio stations.

Mr. HARRISON. Proceed, Mr. Cory.

STATEMENT OF GEORGE CORY, MONTROSE, COLO.

Mr. CORY. Mr. Chairman and members of the committee, the sheaf of papers that you are getting is rather formidable, but I assure you I am going to take very little time. Most of the material that I had intended to present has been presented bit by bit. However, being interested principally in the Curecanti project, I believe that one very important aspect generally has been overlooked. That aspect relates to proving the feasibility of that type of project.

Let me say first for Curecanti that it is above the vast coal resources of the North Fork Valley and other portions of a three-county area. Undoubtedly there will be a time when those coal resources must be brought into play in the national economy. It would behoove the Government to have water stored above them.

Curecanti, I believe, has the least evaporation of any of the projects of the upper Colorado, it has a very low sedimentation, and it does offer some direct benefits to irrigation.

Mr. Kuiper, city manager of Delta, told you yesterday that Curecanti would provide an exchange of water. I suggest that his statement be given very careful consideration because water from Curecanti that could be used lower down the river would replace late season water that presently has to come down the river but could be used on Mountain Meadows. There is a considerable amount of that type development in our area.

The Honorable Judge Dan Hughes, who spoke to you yesterday, I think, was too modest in speaking of his own operation there. As he told you, he has put 4,000 acres under irrigation. I believe, all together, he runs sheep and cattle on approximately 36,000 acres. I know another sheepman who has put considerable land under irrigation and is putting more. One other Colorado witness told you about a 42-percent sample taken on the western slope that showed an increase in irrigation of approximately 18.2 percent over the past 15 years.

Now this is the basic thing that I want to convey to you with respect to Curecanti, gentlemen: It provides water at the highest point of storage in the system. Now you get the water up there and have faith in the ingenuity of the citizens of the area to find a means of using that water. That aspect of this has not been looked into.

In cooperation with another gentleman I spent approximately 5 months trying to develop a report on the impact on the local economy of such a project, assuming that at one time we would need considerably more agricultural development, and that was assumed because in the decade from 1940 to 1950 Colorado put approximately 3,800,000 acres under cultivation. The western slope in that period put approximately 2 million acres under cultivation. Now, we would have had a serious shortage during the war years without that development. It is only safe to assume with the population increase that the 107,000 acres of new land offered by the participating projects of the Gunnison Basin and the 95,000, approximately, acres that will be supplied supplemental water will be needed in the national economy.

Assuming the completion of those projects, and developing the thinking strictly along the lines of the economy that exists, we came up with a conservative figure that \$22 million annually would be added to the national gross income at some future date.

Now, I was very much interested when Congressman Fernandez of New Mexico proposed that some study be made of what this would do, taxwise, for the Nation. I called one of the officers here in Washington yesterday and got the information that, depending on the particular area and other factors, taxes to the Federal Government would equal between 3 and 21 percent of additions to the national gross income. On that basis, with the completion of this entire project, we could assume a minimum of \$600,000 in Federal taxes, and could bring it on up to an amount of approximately \$4 million. That seems to me to be good business, it is definitely good business, and I would like to suggest that that facet be developed thoroughly when you consider the feasibility of Curecanti.

Another reason I would like to see it, gentlemen, is that we have some youngsters coming up in our family, and we want to see them stay on the western slope and enjoy the country that we enjoy. Unfortunately, our country, from 1940 to 1950, lost 1 percent in population while the Nation increased 15 to 20 percent.

I take objection to the exportation of water from the area until our development is reached, but I take a much more serious objection to the exportation of our young people. We have had little in the way of Federal tax money spent in our area. We would be very happy, gentlemen, most happy to subsidize some Government installation by supplying them water. We really would.

We support the bill that is presently before this committee. We have no objection, of course, to the Kendall unit in Wyoming, but we support the bill as it is before you now on this basis. That bill was arrived at by diligent, conscientious study, and it has in it none of the last-minute efforts to circumvent or introduce, inject something new.

We enjoyed very much having many of you visit us in Montrose this summer. We would like to have you come back again. I might add that just adjacent to Montrose we have the Black Canyon. Speaking of river running, the Indians called that a taboo area. They did not go into it. The first white man to go all the way through the Black Canyon did so in 1950. And our radio station there each year since has had the responsibility of organizing a rescue party to go out and pull out of the river the one or two other parties who have tried it. It is a pretty serious business. And they went through there when there was just 300 to 400 feet coming down the canyon. Anyone who feels like river running, we invite them to come out. If you get the opportunity to come back, we certainly would be happy to have you.

I am reminded of this one thing. One of the ladies that was on your party asked me as we drove down through the beautiful Uncompaghe Valley as she looked out at the haystacks, "Goodness, don't you have a lot of surplus hay?"

I said, "No, not if it does not rain in the Midwest this year."

We have exported, to this time, approximately 3,000 tons of that hay to go back and help the drought areas. I have heard the comment that we have a surplus of agricultural commodities. If you have 11 carrots and you only need 10 you have a surplus; if you have 9 and you need 10 you have a shortage. I submit it is a pretty fine line. Due to this vast increase we have had we will need more. I sincerely ask your support of the Curecanti project.

Thank you very much for your consideration and your courtesy.

Mr. ASPINALL. Did you not wish to have this statement made part of the record?

Mr. CORY. Yes, I would, Congressman.

Mr. HARRISON. Without objection, the statement will be received and made a part of the record.

(The statement referred to follows:)

SECTION I, ARTICLE E. GENERAL ECONOMY

The general economy section of this report was compiled and written for the purpose of eliminating guess work, rumor, and distortion of facts in consideration of Curecanti as it will effect the economy of the Gunnison Basin.

It was necessary to consider the effect of Curecanti (a) during the construction period, and (b) during the post construction period.

Background statistics were compiled and related in dollar figures to the Gunnison Basin projects. Previous considerations of Curecanti have been so limited in scope that no cognizance was taken of the distribution of the money spent in the area for construction. The building of new farmhouses, the additional income from crops and increased cattle production were not considered.

This report on general economy sets forth in considerable detail the breakdown costs, the allocation of project payroll to various types of consumer expenditures, the breakdown of participating projects costs and the allocation of participating projects payroll to various types of consumer expenditures. The capital farm increase as a result of construction of Curecanti and its participating projects is developed. The allocation of annual farm expenditures at the retail level is projected. And, many other significant economic factors are brought to light.

The studies from which these facts and estimates were obtained depend upon official data for their basis. In developing this section we have taken a positive approach to the question of, what does Curecanti mean to the area?

TABLE B-7.—Totals all counties under Curecanti development

Project	Costs	Irrigated new lands in acres	Irrigated lands supplemental in acres	Capital costs new land per acre	Capital costs supplemental per acre	Total annual costs per acre	Repayment capacity per acre	Ratio benefits to costs per acre	Name of reservoir
Delta County.....	\$43,682,000	22,500	45,485	-----	-----	-----	-----	-----	-----
Gunnison County.....	26,216,000	39,370	28,420	-----	-----	-----	-----	-----	-----
Montrose County.....	24,978,000	14,600	10,850	-----	-----	-----	-----	-----	-----
Mesa County.....	5,720,000	5,570	3,320	-----	-----	-----	-----	-----	-----
Ouray County.....	10,760,000	10,750	3,905	-----	-----	-----	-----	-----	-----
Small scale development.....	-----	8,000	-----	-----	-----	-----	-----	-----	-----
Saguache County.....	7,182,000	6,780	5,190	-----	-----	-----	-----	-----	-----
Total.....	89,265,000	107,570	96,360	-----	-----	-----	-----	-----	-----

NOTE.—We have left out 1,230 acres of supplemental land in the North Delta project which is presently irrigated and 110 acres under Cebolla which will not be included.

SECTION 1, ARTICLE B, POINT 3. NEW FARMS CREATED BY PARTICIPATING PROJECTS

There follows under this portion of the report two tables which are designated as follows:

Table 1-B-3a and table 1-B-3b.

Each of these tables is preceded by an explanation of the table's purpose.

Factual, official information has been used at the conclusions set forth in the tables. All values have been determined on the belief of 100 percent completion of the entire Gunnison River project.

INCREASED VALUE

Of farm lands, buildings, implements, machinery and livestock with full development of the Gunnison River project in the following counties: Gunnison, Montrose, Delta, Mesa, Ouray, and Saguache.

In the following table each county is handled separately. The year 1945 is used in arriving at values, the latest year for which figures are available from the Bureau of the Census.

The legend used on the table is as follows:

1. Colorado Yearbook, 1948-50.
2. Gunnison River project, Colorado No. 48a, 82-0 (the Jex Report).
3. Best available reports from experts in the field such as the county agent, civil engineers, etc.

The column headings are self-explanatory except as listed below:

6. *Average irrigated acres per farm*.—Obtained by dividing the total number of farms of a county into the irrigated acres of the county.

7. *Size and number of new farms made possible by project*.—Due to the lack of dry farming land in these counties, it is assumed that the additional acres of land on a farm in excess of the irrigated land, is grazing land. The average number of acres of grazing land per farm has been determined. The assessed valuation of grazing land has been compared with that of irrigated land to arrive at the approximate worth of grazing land to a farm. The worth thus established is translated into irrigated acres and added to the average "irrigated acres per farm" to make the worth of the "new farms" equal to "average farms" now in existence in the counties.

The above procedure compensates completely for the smaller size of the new, completely irrigated farms. This new number of farm units is even more conservative when it is considered that additional grazing lands adjacent to them will be utilized. It is impossible to determine the amount of these grazing lands so they are not being computed in this report.

It is to be noted that the value of the land is tied directly to assessed valuation, which is a most reliable criterion. The material used in establishing the number of new farms made possible by the Gunnison River project was taken from the Colorado Yearbook, 1948-50, and the Gunnison River project, Colorado No. 48a, 82-0 (Jex Report).

8. *Increased value of lands and buildings*.—

9. *Increased value of implements and machinery*.—

10. *Increased value of livestock*.—

obtained by applying the percentage increase of new farms to the actual 1945 value of lands and buildings on farms, of implements and machinery on farms, and of livestock on farms, as shown by the 1948-50 Colorado Yearbook.

11. *Number of acres supplied supplemental irrigation and value increased caused by supplemental irrigation*.—There follows a letter from the Montrose County agent, who did research in arriving at the increased valuations caused by supplemental irrigation. His recommendations have been used in determining such values. It will be noted that no increase was used in farmland and buildings, in farm implements and machinery—that only a 50-percent increase in livestock valuation is used, thus making the report very conservative.

13. *Additional tax levies*.—the Montrose County assessor supplied the information that the average mill levy for all counties considered in this report was approximately 45 mills. Considering, however, that increased valuation would cause a lowering of mill levy, a 40-mill levy is used in arriving at the additional tax revenue to each county, when the Gunnison River project is completed. The abstracts of assessments for the various counties may be examined to support the correctness of the 40-mill levy.

GENERAL COMMENTS ON TABLE 1-B-3A

In developing the figures on new farms arrived at in column 7 of this report, the writer was aware of these discrepancies:

- (1) Land taken out of use because of rights-of-way was not considered.
- (2) Land taken out of use because of the home and barn site was not considered.
- (3) The dry acreage converted to irrigated acreage was not deducted. The total of these three factors were computed and did not exceed more than a 3-percent loss. Due to the difficulty of obtaining any official data, and the small percentage involved, these computations were not made in arriving at the final figures.
- (4) The additional grazing land adjacent to the participating projects was not considered. It is estimated that these additional grazing lands will compensate to some degree for the preceding three points.

TABLE 1-B-3-a.—Increased value of farmlands, buildings, implements, machinery, and livestock with full development of the Gunnison River project in the following counties

Counties	Farm land and buildings ¹	Farm implements and machinery ¹	Livestock on farms ¹	Total	Average irrigated		Size and number of irrigated new farms made possible by project ²
					Number of farms ¹	Acres per farm ¹	
Gunnison.....	\$4,359,028	\$402,420	\$2,500,576	\$7,262,024	258	139	198 acres, 200 new farms, less 15 percent (170).
Saguache.....	6,846,548	781,267	2,520,808	10,157,743	259	200	323 acres, 21 new farms.
Montrose.....	10,024,303	1,339,640	3,644,260	15,008,132	1,463	575	88 acres, 214 new farms.
Delta.....	11,726,082	1,342,028	3,077,066	16,145,176	1,686	36	40.5 acres, 555 new farms.
Ouray.....	1,350,170	133,956	648,849	2,130,975	118	95	166 acres, 65 new farms, less 11 percent (68).
Mesa.....	20,869,024	2,180,259	3,999,883	27,049,166	2,624	36	43 acres, 129 new farms.
Total.....	55,175,955	6,226,600	16,400,561	77,803,116	6,508	-----	1,147 new farms.

¹ Colorado Yearbook, 1948-49.

² Gunnison River project, Colorado, No. 4-Sa, 82-0 (the Jex report).

NOTE.—Best available reports from experts in the field such as the county agent, civil engineers, etc.

TABLE 1-B-3-a.—Increased value of farmlands, buildings, implements, machinery, and livestock with full development of the Gunnison River project in the following counties—Continued

Counties	Increased value of farmland and buildings (8)	Increased value of farm implements and machinery (9)	Increased value of livestock (10)	Number of acres supplied supplemental irrigation and value increases caused by supplemental irrigation (11)	Total increase in dollars and percentage (12)	Additional tax revenue (13)
Gunnison.....	\$3,356,451.56	\$309,863.40	\$1,925,443.52	28,420 acres, \$962,721.76.....	\$6,554,480.24, less 15 percent by inundation: net \$5,571,308.19, 71 percent.	40 mills, \$111,426.17; 45 mills, \$125,354.43
Saguache.....	410,792.88	46,877.82	151,793.88	5,190 acres, \$75,896.94.....	\$685,361.52, 67 percent.....	40 mills, \$13,707.23; 45 mills, \$15,420.63
Montrose.....	1,503,630.45	200,946.00	546,643.35	10,850 acres, \$273,321.67.....	\$2,524,541.47, 15 percent.....	40 mills, \$50,490.83; 45 mills, \$56,802.18
Delta.....	3,869,904.06	456,069.24	1,015,431.78	45,485 acres, \$228,034.62.....	\$5,569,439.70, less 75 percent by inundation: net \$5,527,668.90, 32 percent.	40 mills, \$110,553.38; 45 mills, \$124,372.57
Ouray.....	742,593.50	72,575.80	356,866.95	3,905 acres, \$507,715.89.....	\$1,679,752.14, less 11 percent by inundation: net \$1,494,979.40, 49 percent.	40 mills, \$29,899.69; 45 mills, \$33,637.03
Mesa.....	1,043,451.20	109,462.95	199,964.15	3,320 acres, \$99,997.07.....	\$1,452,905.37, 5 percent.....	40 mills, \$29,058.10; 45 mills, \$32,698.37
Total.....	10,926,823.65	1,195,795.21	4,196,173.63	\$2,147,687.95.....	Gross, \$18,466,480.44; net, \$17,256,784.85.	40 mills, \$345,135.30; 45 mills, \$388,277.23.

NOTE.—The valuations shown in this table are from the 1945 census. Had these values been based on 1949 or 1950, additional tax revenue for each county would be increased approximately 35 percent. In figuring additional tax revenue only $\frac{1}{2}$ the total increase in dollar valuation was used. This was done on the recommendation of the Business Research Bureau, who pointed out that a study of Colorado counties revealed that assessed valuation equaled approximately 50 percent of actual valuation.

INCREASED FARM INCOME AND RETAIL EXPENDITURES

With full development of the Gunnison River project in the following counties: Gunnison, Montrose, Delta, Mesa, Ouray and Saguache.

In the following table each county is handled separately. The year 1949 is used in arriving at increased farm, income and retail expenditures, the latest year for which figures are available.

The legend used in the table is as follows:

1. SRDS Consumers Markets 1950-51. (Consumers Markets is recognized as a national authority in reporting factual information on every county in the United States. The official source of all data is given in the opening pages of Consumers Markets.

2. Colorado Yearbook, 1948-50.)

3. Gunnison River project, Colorado, No. 4-Sa, 82-0—Jex report.

All column heads have been numbered for ease of examination in determining how figures were reached. Column heads are self-explanatory, with the exception of columns 6 and 11. The explanations follow:

6. *Additional farm income from supplemental irrigation to present land.*—Income in this column was arrived at by:

1. Considering the worth of supplemental irrigation per acre at 50 percent of a newly irrigated acre.

2. Translating supplementally irrigated acres into farm units and dividing by 2 to arrive at 50 percent value.

3. Multiplying the number of units established in 2 above, by the income per household in column 2.

11. *Additional farm retail expenditures from supplemental irrigation to present land.*—Expenditures in this column were arrived by:

1. Considering the worth of supplemental irrigation per acre at 50 percent of a newly irrigated acre.

2. Translating supplementally irrigated acres into farm units and dividing by 2 to arrive at 50 percent value.

3. Multiplying the number of units established in 2 above by the expenditures per household in column 8.

TABLE 1-B-3b.—Increased farm income and retail expenditures with full development of the Gunnison River project in the following counties
[1949 figures]

Counties	House- holds on farms ¹	Income per house- hold ¹	Total farm income ¹	Additional farm house- holds resulting from proj- ect ^{2,3}	Additional farm income resulting from new farms (col- umn 2 times column 4)	Additional farm income from supple- mental irri- gation to present land	Total farm additional income (columns 5 and 6)	Expend- itures per house- hold ¹	Farm retail expendi- tures	Additional farm retail expenditures resulting from new farms (col- umn 4 times column 8)	Additional farm retail expenditures from supple- mental irri- gation to present land	Total farm expendi- tures (columns 10 and 11)
	1	2	3	4	5	6	7	8	9	10	11	12
Gunnison	320	\$9,653	\$3,089,000	170	\$1,641,010	\$692,796	\$2,333,806	\$5,916	\$1,893,000	\$1,005,720	\$425,952	\$1,431,672
Saguache	580	12,188	5,850,000	21	255,948	97,918	353,866	6,250	3,000,000	131,250	50,000	181,250
Montrose	1,710	6,130	10,516,000	214	1,316,100	490,647	1,806,747	3,173	5,425,000	678,022	253,840	932,862
Delta	2,080	6,035	12,553,000	555	3,349,425	3,388,954	6,738,379	3,540	7,364,000	1,964,700	1,989,480	3,954,180
Ouray	170	6,018	1,023,000	58	349,044	70,772	419,816	5,312	7,903,000	308,096	63,744	871,840
Mesa	3,140	5,754	18,067,000	128	742,266	222,162	964,428	3,275	10,285,000	422,475	127,725	550,200
Total	7,900	-----	51,098,000	1,146	7,653,493	4,963,249	13,581,470	-----	28,870,000	4,511,263	2,910,741	7,422,004

¹ SRDS Consumers Markets, 1940-51. (Consumers Markets is recognized as a national authority in reporting factual information on every county in the United States. The official source of all data is given in the opening pages of Consumers Markets.)

² Colorado Yearbook 1949-50.

³ Gunnison River project, Colorado, No. 4-8a, 82-0, Jax report.

TABLE F-26.—Estimated percentage breakdown of total project cost

Item:	Percent of total cost
Payroll	30-35
Equipment ¹	15-18
Maintenance, repair and operation of equipment	12-15
Permanent materials	25-30
Overhead	2-12

¹ Includes interest, insurance, taxes, and depreciation. Of the total equipment cost, 2 percent is estimated as taxes, 2 percent as insurance, and 6 percent as interest.

Source: Rhoades, W. C., licensed engineer, Horner & Switzer Construction Co., Denver, August 1951.

TABLE E-27.—Estimate of breakdown of Curecanti project costs

Item	Estimated cost	Source of estimate
Costs, in terms of 1949 prices:		
Reservoir and dam	\$66,691,000	U. S. Bureau of Reclamation, Colorado River projects and participating projects, Upper Colorado River Basin, Project Planning Report No. 4-82, 81-1.
Blue Mesa powerplant	5,520,000	Do.
Transmission system	7,290,000	Do.
General property	900,000	Do.
Total cost estimate	80,391,000	Do.
Less:		
Right-of-way	700,000	Do.
Powerplant equipment	2,548,000	Do.
Balance, to be allocated	77,143,000	Do.
Increase to correspond to current prices (18 percent).	13,886,000	W. C. Rhoades, licensed engineer, Horner & Switzer Construction Co., Denver, August 1951.
Cost in current prices	91,029,000	Do.
Breakdown of costs:		
Payroll, 33.3 percent	30,313,000	Do.
Equipment, 16.7 percent	15,202,000	Do.
Maintenance, repair, etc., 14 percent	12,744,000	Do.
Permanent materials, 28 percent	25,488,000	Do.
Overhead, 8 percent	7,282,000	Do.
Breakdown of equipment cost	15,202,000	Do.
Insurance	276,000	Do.
Taxes	276,000	Do.
Interest	830,000	Do.
Depreciation	13,820,000	Do.

TABLE E-31.—Estimate of breakdown of Curecanti and participating project's costs

Item	Estimated cost	Source of estimate
Total cost, Curecanti and participating projects	\$166,243,000	U. S. Bureau of Reclamation, Colorado River Projects and Participating Projects, Upper Colorado River Basin, Project Planning Report No. 4-82, 81.
Increase cost 18 percent to correspond to Curecanti price.	193,379,000	W. C. Rhoades, licensed engineer, Horner & Switzer Construction Co., Denver, August 1951.
Breakdown of costs:		
Payroll, 33.3 percent	64,396,000	
Equipment, 16.7 percent	32,398,000	
Maintenance, repair, etc., 14 percent	27,073,000	
Permanent materials, 28 percent	54,146,000	
Overhead, 8 percent	15,470,000	
Breakdown of equipment costs	32,398,000	
Insurance, 2 percent	620,000	
Taxes, 2 percent	620,000	
Interest, 6 percent	1,862,000	
Depreciation, 90 percent	29,296,000	

TABLE E-28.—Allocation of Curecanti project payroll to various types of consumer expenditures

Item	Percent of total income ¹	Estimated expenditures ²
Food.....	24.6	\$7,457,000
Housing, fuel, light and refrigeration.....	13.2	4,001,000
Household operation.....	3.9	1,182,000
Furnishings and equipment.....	5.8	1,758,000
Clothing.....	10.7	3,243,000
Transportation, auto and others.....	11.1	3,365,000
Personal care.....	1.9	576,000
Medical care.....	5.4	1,637,000
Recreation.....	3.2	970,000
Tobacco.....	1.2	364,000
Reading.....	.7	212,000
Education (formal).....	.3	91,000
Miscellaneous.....	2.2	667,000
Gifts and contributions.....	3.9	1,192,000
Insurance.....	4.2	1,273,000
Net surplus.....	0.	0
Personal taxes.....	7.6	2,304,000

¹ Based upon U. S. Bureau of Labor Statistics' breakdown of expenditures for Denver families with 2 or more persons in 1948. The average of all income groups receiving less than \$10,000 used in this computation.

² Based upon the total estimated project cost made by the Bureau of Reclamation and increased to current price levels as recommended by W. C. Rhoades, Horner & Switzer Construction Co. Payroll estimated as 33.3 percent of total project cost as suggested by W. C. Rhoades.

TABLE E-29.—Estimate of breakdown of participating project's costs

Item	Estimate cost	Source of estimate
Cost participating projects.....	\$89,000,000	U. S. Bureau of Reclamation, Colorado River projects and participating projects, Upper Colorado River Basin, Project Planning Report No. 4-82, 81.
Increase cost 18 percent to correspond to current prices.	102,350,000	W. C. Rhoades, licensed engineer, Horner & Switzer Construction Co. Denver, August, 1951.
Breakdown of costs:		
Payroll, 33.3 percent.....	34,083,000	
Equipment, 16.7 percent.....	17,196,000	
Maintenance, repair, etc., 14 percent.....	14,329,000	
Permanent materials, 28 percent.....	28,658,000	
Overhead, 8 percent.....	8,188,000	
Breakdown of equipment costs:	17,196,000	
Insurance, 2 percent.....	344,000	
Taxes, 2 percent.....	344,000	
Interest, 6 percent.....	1,032,000	
Depreciation, 90 percent.....	15,476,000	

TABLE E-30.—Allocation of participating project's payrolls to various types of consumer expenditures

Item	Percent of total income ¹	Estimated expenditures ²
Food.....	24.6	\$8,384,000
Housing, fuel, light and refrigeration.....	13.2	4,499,000
Household operation.....	3.9	1,670,000
Furnishings and equipment.....	5.8	1,977,000
Clothing.....	10.7	3,408,000
Transportation, auto and other.....	11.1	3,783,000
Personal care.....	1.9	648,000
Medical care.....	5.4	1,840,000
Recreation.....	3.2	1,091,000
Tobacco.....	1.2	409,000
Reading.....	.7	239,000
Education (formal).....	.3	102,000
Miscellaneous.....	2.2	750,000
Gifts and contributions.....	3.9	1,670,000
Insurance.....	4.2	1,431,000
Net surplus.....	0	0
Personal taxes.....	7.6	2,590,000

¹ Based upon U. S. Bureau of Labor Statistics' breakdown of expenditures for Denver families with 2 or more persons in 1948. The average of all income groups receiving less than \$10,000 used in this computation.

² Based upon the total estimated project cost made by the Bureau of Reclamation and increased to current price levels as recommended by W. C. Rhoades, Horner & Switzer Construction Co. Payroll estimated as 33.3 percent of total project cost as suggested by W. C. Rhoades.

TABLE E-32.—Allocation of Curecanti and participating projects payrolls to various types of consumer expenditures

Item	Percent of total income ¹	Estimated expenditures ²
Food.....	24.6	\$15,841,000
Housing, fuel, light and refrigeration.....	13.2	8,500,000
Household operation.....	3.9	2,852,000
Furnishings and equipment.....	5.8	3,735,000
Clothing.....	10.7	6,651,000
Transportation, auto and other.....	11.1	7,148,000
Personal care.....	1.9	1,224,000
Medical care.....	5.4	3,477,000
Recreation.....	3.2	2,061,000
Tobacco.....	1.2	723,000
Reading.....	.7	451,000
Education (formal).....	.3	193,000
Miscellaneous.....	2.2	1,417,000
Gifts and contributions.....	3.9	2,862,000
Insurance.....	4.2	2,704,000
Net surplus.....	0	0
Personal taxes.....	7.6	4,894,000

¹ Based upon U. S. Bureau of Labor Statistics' breakdown of expenditures for Denver families with two or more persons in 1948. The average of all income groups receiving less than \$10,000 used in this computation.

² Based upon the total estimated project cost made by the Bureau of Reclamation and increased to current price levels as recommended by W. C. Rhoades, Horner & Switzer Construction Co. Payroll estimated as 33.3 percent of total project costs as suggested by W. C. Rhoades.

Expenditures and payrolls in the preceding tables are the result of the construction. Once the construction is over, obviously these will cease. However, it is estimated that farm incomes and expenditures will increase as a result of the projects. However, before the additional farms made possible by the projects can get into production it will be necessary for the farmers to make certain expenditures for farm building and for farm implements and machinery. In table 33 the increase in value of farm buildings and equipment is presented, being taken from work previously done by Mr. George Cory. The same source estimates that the annual increase in farm expenditures as a result of these projects, will amount to \$7,422,000. In table 34 the allocation of this annual farm expenditure to various types of expenditures is presented.

TABLE E-33.—*Capital farm increase as a result of construction of Curecanti*

County	Increase value of farm land and buildings ¹	Increase value of farm implements and machinery	Increase in total in- come ²
Gunnison.....	\$3,356,000	\$310,000	\$3,666,000
Saguache.....	411,000	47,000	458,000
Montrose.....	1,504,000	201,000	1,705,000
Delta.....	3,870,000	456,000	4,326,000
Ouray.....	743,000	73,000	816,000
Mesa.....	1,043,000	109,000	1,152,000
Total.....	10,927,000	1,196,000	12,123,000

¹ Column headings and figures corrected as suggested by Mr. George Cory in telephone conversation of Sept. 4, 1951.

² Totals changed as a result of corrections.

Source: Mr. George Cory.

TABLE E-34.—*Allocation of annual farm expenditures (corrected)*

Item	Percent of total ¹	Expendi- tures ²
Food.....	24.6	\$1,827,000
Housing, fuel, light, and refrigeration.....	13.2	960,000
Housing operation.....	3.9	290,000
Furnishings and equipment.....	5.8	431,000
Clothing.....	10.7	795,000
Transportation, auto and other.....	11.1	835,000
Personal care.....	1.9	141,000
Medical care.....	5.4	401,000
Recreation.....	3.2	238,000
Tobacco.....	1.2	89,000
Reading.....	.7	52,000
Education (formal).....	.3	22,000
Miscellaneous.....	2.2	164,000
Gifts and contributions.....	3.9	290,000
Insurance.....	4.2	312,000
Net surplus.....	0	0
Personal taxes.....	7.6	565,000
Total.....		7,422,000

¹ Based upon U. S. Bureau of Labor Statistics' breakdown of expenditures for Denver families with 2 or more persons in 1948. The average of all income groups receiving less than \$10,000 was used in this compilation.

² Total farm expenditures of \$7,422,000 obtained from Mr. George Cory in telephone conversation of Sept. 4, 1951.

TABLE E-36.—*Allocation of estimated farm building payroll*

Item	Percent of Total ¹	Expenditures	
		Payroll \$1,500,000	Payroll \$2,000,000
Food.....	24.6	\$369,000	\$493,000
Housing, fuel, light, and refrigeration.....	13.2	198,000	265,000
Household operation.....	3.9	59,000	78,000
Furnishing and equipment.....	5.8	87,000	116,000
Clothing.....	10.7	160,000	214,000
Transportation, auto and other.....	11.1	166,000	222,000
Personal care.....	1.9	29,000	38,000
Medical care.....	5.4	81,000	108,000
Recreation.....	3.2	48,000	64,000
Tobacco.....	1.2	18,000	24,000
Reading.....	0.7	11,000	14,000
Education (formal).....	0.3	5,000	6,000
Miscellaneous.....	2.2	33,000	44,000
Gifts and contributions.....	3.9	59,000	78,000
Insurance.....	4.2	63,000	84,000
Net surplus.....	0	0	0
Personal taxes.....	7.0	114,000	152,000

¹ Based upon U. S. Bureau of Labor Statistics' breakdown of expenditures for Denver families with 2 or more persons in 1948. The average of all income groups receiving less than \$10,000 was used in this compilation.

TABLE E-37.—Estimated annual costs of Curecanti unit, in December 1949 prices

Feature	Operation and maintenance	Replacement	Total
Dam and reservoir.....	\$19, 000	\$12, 100	\$31, 100
Powerplant.....	112, 900	49, 600	162, 500
Transmission system.....	102, 100	82, 400	184, 500
Total.....	234, 000	144, 100	378, 100
Allocated to:			
Irrigation and other water consuming uses.....			18, 900
Power.....			359, 200
Total.....			378, 100

Source: U. S. Bureau of Reclamation, Colorado River Storage Project and Participating Projects, Upper Colorado River Basin, p. 29 and p. 92.

SECTION 1, ARTICLE F

Recreation

Curecanti.....	¹ \$970, 000. 00
Participating projects.....	¹ 1, 091, 000. 00
Annual farm expenditure.....	² 225, 000. 00
Total, direct recreation.....	2, 286, 000. 00
Annual service expenditure.....	225, 000. 00
Total, direct and indirect recreation.....	2, 511, 000. 00

¹ During construction period.

² Annual expenditure.

Increased farm families—Annual recreation

County	Increase in farm population	Percent	Annual recreation expenditure, farm
Delta.....	1, 970	48. 4	\$108, 900
Gunnison.....	604	14. 8	33, 300
Ouray.....	206	5. 1	11, 475
Montrose.....	760	18. 6	41, 850
Saguache.....	75	1. 9	4, 275
Mesa.....	454	11. 2	25, 200
Total.....	4, 069	100. 0	225, 000

INCREASED SERVICE FAMILIES, ANNUAL RECREATION

The same figures that apply above are considered as correct and conservative. Total direct and indirect recreational expenditures reported for increased farm families and increased service force: \$450,000 a year with benefits per county as follows:

Delta.....	\$217,800
Gunnison.....	66,600
Ouray.....	22,950
Montrose.....	83,700
Saguache.....	8,550
Mesa.....	50,400
Total.....	450,000

Colorado tourist spending 1947 and 1950

	Percent of total	Amount, 1947	Amount, 1950
Item:			
Food.....	23.3	\$51,663,090	\$47,980,292
Accommodations.....	19.0	42,128,700	39,125,560
Clothing and accessories.....	13.0	28,824,900	26,770,120
Gas, oil, and auto expense.....	12.4	27,494,520	25,534,576
Recreation.....	11.0	24,390,300	22,651,600
Public utilities, transportation.....	10.3	22,878,190	21,210,172
Drugs and sundries.....	5.0	11,086,500	10,296,200
Professional and personal services.....	4.0	8,869,200	8,256,960
Laundry and cleaning.....	2.0	4,434,600	4,118,460
Totals.....	100.0	221,730,000	205,924,000
Second-round destinations:			
Wholesalers and manufacturers.....	45.4	100,665,420	93,489,496
Payroll.....	23.3	51,663,090	47,980,292
Rent.....	6.3	13,968,990	12,973,212
Depreciation.....	5.2	11,529,960	10,708,088
Heat, light, and power.....	2.1	4,656,330	4,324,404
Advertising.....	1.7	3,769,410	3,500,708
Property taxes.....	1.3	2,882,490	2,677,012
Telephone and telegraph.....	1.0	2,217,300	2,059,240
Laundry and cleaning.....	1.0	2,217,300	2,059,240
Interest.....	1.0	2,217,300	2,059,240
Insurance.....	0.8	1,773,840	1,647,592
Office supplies.....	0.7	1,552,110	1,441,468
Legal expense.....	0.3	665,190	617,772
Profit and all other items.....	9.9	21,951,270	20,386,476
Totals.....	100.0	221,730,000	205,924,000
Miscellaneous data:			
Supports capital investment of.....		368,071,800	341,833,840
Real and personal property tax.....		3,769,410	3,500,708
Gasoline tax.....		3,547,680	3,294,784
Sales tax.....		2,305,992	2,141,610
Game and fish license fees.....		542,020	500,142
Income tax.....		665,190	617,772
Liquor tax.....		399,114	370,663
Parimutuel tax.....			345,000

NOTE.—All percentages obtained from the most exhaustive study to date of the tourist industry made by a private research organization in California, adjusted and applied to total Colorado tourist spending figures. The total value of the tourist industry to Colorado in 1950 was \$15,806,000 below that of 1947, a drop of 7.1 percent.

Source: Prepared by Colorado State advertising and publicity committee.

Summary of gross annual income for area

Gross income	Prior to construction of Curecanti and participating projects	After construction of Curecanti and participating projects	Increase
Farm income, increase based on 1,147 new farms and supplemental irrigation	\$51, 098, 000	\$64, 679, 470	\$13, 581, 470
Retail sales, increase based on estimated permanent service population increase of 4,069 persons at average per capita sales for area in 1948 of \$732.52, plus estimated increase of \$1,125,000 for increase in tourist trade of 225,000 persons at \$5 each (does not include additional sales arising from increase in manufacturing or tourist trade payrolls)	73, 505, 000	77, 610, 624	4, 105, 624
Manufacturing, increase based on estimated 20 percent increase in light manufacturing due to availability of cheaper power and additional water	4, 843, 000	5, 811, 600	968, 600
Hotels, tourist courts, and amusement, increase based on increase in tourist trade of 225,000 persons at \$5 each	2, 522, 000	3, 677, 000	1, 125, 000
Total	131, 998, 000	151, 778, 694	19, 780, 694
Power cost: Savings in electric energy costs—decrease based on availability of cheaper power from dam at 1956 kilowatt-hours requirements.....	4, 114, 319	2, 156, 792	¹ 1, 957, 527
Gross annual income for area	127, 883, 681	149, 621, 902	² 21, 738, 221

¹ It is assumed that savings realized through cheaper electric energy will result in additional income in the area.

² It is likely that the area will experience some expansion of mine, lumber and other industry as a result of construction of the proposed facilities, but no figures are included for increased activity from these sources as the amounts cannot be estimated. The proposed projects will make water and electric energy available for synthetic fuel plants, and if development of this nature occurs, trade in the area could easily increase double the figure of \$127,883,681.

Note.—No figures are included for the increased trade activity relative to construction of the proposed facilities. It is believed that trade in the area will increase materially as soon as construction begins, and will remain at a high level throughout the construction period. It is expected that the level of trade from this source will be lower, however, than the estimated permanent annual trade increase of \$21,738,221.

Summary of increase in value of farm property in area

	Prior to construction of Curecanti and participating projects	After construction of Curecanti and participating projects	Increase
Farm property, at 1945 values:			
Land and buildings.....	\$55, 175, 955	\$67, 040, 751	\$11, 864, 796
Implements and machinery.....	6, 226, 600	7, 422, 395	1, 195, 795
Livestock.....	16, 400, 561	20, 596, 735	4, 196, 174
Total	77, 803, 116	95, 059, 881	17, 256, 765

NOTE A.—It is expected that increase in population and gross annual income in the area will result in an increase in the number and value of business buildings for retail stores, service industry, hotels and tourist courts, etc. Such an increase in trade will probably cause increases in inventories, equipment, and fixtures as well. As a result of increases in farm and retail trading, it is believed that there will also be some increase in other personal property in the area. In view of the study made for Grand County, schedule included in this report, it is believed that the area will realize a substantial increase in capital investment if the proposed projects are built.

NOTE B.—Increases in capital investment in the area will probably result in an increase in the assessed valuation for ad valorem tax purposes. It is expected that construction machinery and equipment used to build the proposed projects will increase the assessed valuation of the area by approximately \$750,000 after deduction of the assessed valuation of property taken for reservoir right of way. It is estimated that ad valorem tax levies at 40 mills on the net increase of \$750,000 in assessed valuation will produce additional tax revenues of approximately \$30,000.

SECTION I, ARTICLE D. INDUSTRY

The communities of western Colorado have been slow to develop all of their resources when compared to the communities of eastern Colorado and many other parts of the Nation. This slowness holds advantages and disadvantages. They are as follows:

1. The advantage is that the undeveloped areas can profit from the mistakes of others who have developed faster and further.

2. The disadvantage is that political strength lays with population and more advanced industry. This gives the stronger ones the advantage to take from the weaker.

This is the position we in western Colorado find ourselves. Transportation, accessibility to markets, and other such economic factors have kept western Colorado in the background industrially up to this time. The more accessible resources were developed and communities grew around this development. This pattern of growth is, of course, apparent to everyone.

This growth of communities in other parts of the Nation, plus the growth of population in the Nation as a whole, plus two major world wars has placed a heavy drain on the resources of the Nation. This coupled with the fact that many areas outgrew their resources, makes it necessary now to decide whether or not the people of the Nation want to face the adjustments necessary to stabilize the country as a whole or whether the small underdeveloped areas are to be suppressed in order that the larger, more populated areas can continue to live the life of "Riley" until national disaster occurs.

The pattern of economics in the Nation is so complicated now and the public is so confused that they understand but little of the factors of their existence and future. No wonder that fear and misunderstanding exist. No wonder people develop selfish attitudes which create tendencies to live for today only.

Production has been pointed to by many economists as the solution to maintaining our standard of living. Actually there are three factors. They are in order, natural resources, production, and a stable market. We cannot maintain production in the United States without resources. Resources of the Nation and world are being used up at a rapid rate. We, in this area, are fortunate in having many important undeveloped resources. Many of these resources are important to the future national economy. Their development will depend upon available, usable water and for that reason we are attempting to argue and plead for fair play in the consideration of the case of water storage in the upper part of the upper basin of western Colorado. We would be pleased to have the following points reviewed before a decision is made on water storage facilities in the Gunnison River valley.

1. That the compact of 1922 had as its intent the division of water between the lower and upper basin States and among the States themselves.

2. That this division guarantees the lower basin States a certain amount of water, leaving the upper basin States to divide the remaining amount.

3. That the upper basin States need storage for 48 million acre-feet of water in order to make accessible to them the amount of water supply intended for them in the compact.

4. That this storage is imperative for the growth and development of the upper basin States.

From an economic viewpoint it cannot be denied that it is desirable for each community to develop its industry and agriculture in a diversified fashion and within the limits of the available resources in that area. The extent of such development should depend upon the stable markets for products produced and the amount of resources or resources available.

Some of the communities in the Gunnison River Valley are now evaluating their resources and find that no new permanent industry of any consequence can be established in the area without water storage.

The so-called available water in Colorado exists in that portion of the runoff that occurs generally in the months of April, May, and June. During the remainder of the year the water is fully (or more so) appropriated by existing uses. Thus no storage of water in the upper part of the Gunnison River means no new industry in that area of any consequence because of lack of water for that industry and the population growth resulting therefrom.

5. There has been too much emphasis placed on normal flow in the discussion of available water. Minimum flow figures must be used until such time as adequate storage will allow additional water to become available during periods of drought. Even then it is dangerous to depend entirely upon storage to guarantee any certain amount of water for permanent industry.

An example of this is the Salt River Basin of Arizona. Apparently the people there built up too much hopes in normal flow and storage. Permanent industry was established with the assumption that water was and would always be available. We have all read about the long drought in that area that has now almost ruined the agriculture and industry there. The fact is that new

minimum flow records have probably now been established and permanent industry there would have been better off if it had been established more in line with minimum flow rather than normal flow.

The Lee Ferry water measurement in 1934 was 3,966,000 acre-feet. In 1909 it was 23,295,000 acre-feet. The average up to and including 1943 was 14,400,000 acre-feet. Therefore permanent industry must live within the minimum flow until storage makes more water available. Large investments are impossible in the area under such conditions because, as stated before, there is not always enough water now to fill appropriations 9 months out of each year under normal flow conditions.

It would only be practical to assume that under present conditions, with very little water storage, that further diversions from the Colorado River Basin would endanger the entire economy of western Colorado.

To have several years like 1934 would be disastrous if the emphasis is continued on water available as normal flow.

Under State law the western slope can be placed in a squeeze with the east slope on one side and the lower States on the other.

Without proper storage on the west slope, making the surplus water which exists in April, May, and June available to it, the east slope can divert this so-called surplus under State law. If this water that is diverted is placed to beneficial use it is lost forever to the west slope. This is morally wrong although it may be legal. The only fair thing is to plan usable storage of water for western Colorado and then provide a potential for industrial development of untouched resources on the west slope. If, and only, after the needs of western Colorado are safeguarded, and a surplus then exists in Colorado water, should diversions be considered. As it now stands the diversions apparently will be based on surplus water under normal flow conditions which will place western Colorado in a further squeeze during years when the watersheds produce below normal. Eastern Colorado can argue that the east slope just as well have the water because according to the compact "further equitable apportionment" to the Colorado River Basin States can take place after 1963.

In simple words, if we do not get storage in western Colorado, very soon, we have lost forever the surplus water that supposedly exists in the water that flows past us in April, May, and June. If this happens, western Colorado cannot grow to any great extent—ever.

6. If western Colorado had little to offer to the wealth of the Nation, besides water, it might be planwise to ignore its existence. However, it does have vital resources that will be needed to bolster the Nation's economy. However, these resources cannot serve much use if water is not established for their development. If western Colorado is ignored in matters of water it may result in many vital mineral resources remaining with old Mother Nature because of the lack of water to make them available. That will affect the national economy as well as that in western Colorado.

Mr. HARRISON. Mr. Saylor, do you have any questions?

Mr. SAYLOR. Yes. I would like to congratulate Mr. Cory. It was not my privilege of meeting him, because I was not with them. But you have made an excellent witness, and I am glad to hear something besides Echo Park and Split Mountain.

I might ask if there is a difference with regard to Curecanti. Mr. Cory, are you in favor of a low Curecanti Dam or a high Curecanti Dam?

Mr. CORY. I am in favor of both.

Mr. SAYLOR. Sir, as much as I think of you, we cannot give you both.

Mr. CORY. Well, Congressman, let me explain that when the 2½ million acre-feet Curecanti was proposed there were ranchers whose property would have been inundated by that reservoir who objected on the western slope, and we did not want to come back to Washington and confront this committee with a divided position. Our neighbors to the east of us said 330,000 acre-feet. We got together and worked very, very hard and came out with 940,000 acre-feet. Now I would have held out for the 2½ million acre-feet as a member of the Gunnison Basin committee that resolved that problem. The Bureau

of Reclamation came out with a proposition of probably 425,000 acre-feet of consumptive use out of Curecanti, or need for the development of these vast resources and other things in the area. You cannot say to your neighbor, "We are going to pour water down your back" just for the sake of pouring water, and in fairness and in consideration, attempting to see both sides of the question, we withdrew from our position on the 2½ million acre-feet and settled on the 940,000 acre-foot dam.

But I will tell you this: If they relax their position east of us, I will be most happy to go back to the 2½ million acre-feet.

Mr. SAYLOR. I think you stated—and correct me if I am wrong—that, according to the survey which you made, you found that those people who were able to place their land under irrigation themselves had an 18-percent increase in production. Is that what I understood you to say?

Mr. CORY. Yes. That statement, sir, was taken from the work of Clifford Jex, who was an engineer for the Bureau of Reclamation, and who made the Jex Study which is a reconnaissance report on the Gunnison Basin. He now is employed by a group of districts, so to speak, on the western slope of Colorado, and he took a 42-percent sample of land there from various parts of the western slope and came up with that figure of an 18.2 increase.

Mr. SAYLOR. Do you feel that an 18-percent increase in the production in your area, which would now be supplied by irrigation waters, would enable the farmers of your area to pay for the water charges on that Curecanti project?

Mr. CORY. I look at the feasibility of this project, Congressman, a little different probably than anyone else, and that is the purpose of submitting 30 pages out of a 400-page report. I do not know whether it would be payable directly out of irrigation. According to A47, the presently promulgated rules, I would say it would not. However, there is this consideration here, and you have to go to personal analogy if you want to answer a question correctly.

When I went into that area and tried to establish small radio stations I was told that you could not get enough revenue to make those stations operate, and, according to all the rules, it could not be done. But we went in, carefully worked, and tripled what was the expected revenue from that size of operation. We have had a very successful operation through that area. We operate now in three towns and will be in a fourth very shortly.

So what is the difference there? The difference lies in ingenuity. It is what you are willing to look for and what you are willing to do. And I am very confident of the ingenuity of the people.

You know, we were over in Congressman Chenoweth's district just recently, and I saw a sign that I did not like. We were putting up a tower and we had to get some men to do the work. So I thought, "Well, we will have to go down to the employment service today and put in an application and maybe we can get some men the day after tomorrow." We went in and around the walls there were 10 people sitting there just waiting for someone to come in and offer them a job. Well, we hired 4 or 5 of them and used them for about a month. I found them to be very excellent workers, fine in every respect, doing the best they could within the limit of the talents given them.

Now, I think those people have to have something to do. And I think the people who could take a look at this project and say, "Now, if we had a greater minimum flow we could establish this certain industry," they would do it. It would give those other people work.

In this proposition you are getting paid back in 50 years or a 100 years. The time is immaterial, but you are getting paid back and you are going to provide employment to people that will have to gain their subsistence in some other way.

I have gone around about, Congressman, but I hope that my philosophy has carried through.

Mr. SAYLOR. I understand your philosophy, and I think there is a great deal to be said for it. The question I am trying to figure out is whether or not these farmers out there are in a position to pay—not all of it, because I know they cannot pay all of it—but I want to know whether or not they are willing to pay this increased 18 percent, for example. There is a question of following out the very philosophy you have. People have ingenuity and they are willing to work, and that is fine. But when you are through working you want to have something for yourself. Now, if by the expedient of going through and building this project and putting water on the land they can only get an increase of 18 percent in production and they have to pay out 25 percent or more of what they have taken in for water charges, then what is the attitude of the people in the area?

Mr. CORY. I think I have been misunderstood there, possibly. I said that over the period of the past 15 years, approximately, on a 42-percent sample taken on the western slope, that private initiative had developed the irrigated land to get an increase of about 18.2 percent. That was done with no aid from anyone. Of course, we come to a time when that is limited. The area where we live is the last frontier, so to speak, or was the last frontier of this Nation. But as early as about 1888 the Uncompaghere River, which flows by Montrose, was fully appropriated.

Now we are living within the minimum flow right at the moment. I cannot answer you directly on how those costs will be allocated. I don't know. But I know the principle back of it is much bigger and more important to the Nation than that particular end to a means, and I trust the wisdom of this committee and the Congress to determine that.

Mr. SAYLOR. That is all.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. No questions.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Thank you, Mr. Cory, and I want to thank you and the fine group of ladies who were so kind as to take care of us when we were out in Montrose. We received a most hospitable reception.

Mr. CORY. I will convey your thanks to the ladies.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. I too would like to convey my appreciation of the splendid way we were received and treated on that trip down through the canyon.

Mr. CORY. Thank you, sir.

Mr. D'EWART. And I think you have made a splendid record and a good statement.

Mr. HARRISON. Mrs. Pfost?

Mrs. PFOST. No questions.

Mr. HARRISON. Mr. Rogers?

Mr. ROGERS. No questions.

Mr. HARRISON. Mr. Chenoweth?

Mr. CHENOWETH. I want to call attention to the fact that Mr. Cory has not confined his activities to Mr. Aspinall's district. He now has a radio station in my district also.

Mr. HARRISON. The committee also thanks Mr. Cory.

Mr. CORY. Thank you very much, Mr. Chairman. It has been a pleasure to be here.

Mr. HARRISON. We have approximately 20 minutes until time to adjourn, and I would like to adjourn on time this afternoon because of the strain on the committee members over the week. I realize that you people in the audience have been very patient. A lot of you have come long distances and it is a hardship for you to be here for the period of time which you have been. It has been my hope that we would start in on the so-called opposition tomorrow. It does not look as if we will reach that point. However, I have assured that group that the one witness who is coming in who will only be here for tomorrow will be heard.

Starting tomorrow morning I would like to call some of the representatives from New Mexico, holding back our good friends the Navahos until Monday morning.

I can assure the other group that they will get the same amount of time that is being consumed by the group which is now testifying.

Mr. D'EWART. Would the chairman announce the program for tomorrow, the time of meeting and so on?

Mr. HARRISON. We will meet at 9:30 a. m., as usual, and adjourn at noon. We will not have any meetings tomorrow afternoon. We will start again at 9:30 on Monday morning and will meet again in the afternoon providing we can secure the permission of the House, which I anticipate will be granted. And we will go through the rest of the week on the same schedule under the same conditions until we have given both sides an equal opportunity and an equal number of minutes for the presentation of their case.

I might say to those who will testify next week that they will have an equal amount of time. They may divide that time in any way they want. They may have a few speakers or they may have as many as they want, with the understanding, of course, that the time will be equal on both sides. I think that is as fair as we can possibly be in the committee. We would like to have a list of the witnesses from the other side as soon as possible the first of the week so that we will be able to call them in the proper order.

The next witness will be Mr. Clifford Jex from Colorado.

STATEMENT OF CLIFFORD H. JEX, ENGINEER FOR THE WESTERN COLORADO WATER ASSOCIATION, GRAND JUNCTION, COLO.

Mr. ASPINALL. I believe I am correct when I state that Mr. Jex has been before this committee before. Is that not right?

Mr. JEX. That is right, Congressman, about 2 years ago.

Mr. HARRISON. We welcome you back.

You may proceed, Mr. Jex, and any additional information about any position that you hold you may give to the reporter.

Mr. JEX. Mr. Chairman, it is quite regrettable that at this time it will be necessary to turn from some of the peaceful matters in Colorado to one that is somewhat controversial. That is a matter that was somewhat discussed yesterday and has to do with the Denver-Blue River diversion.

My name is Clifford H. Jex. I am engineer for the Western Colorado Water Association representing the water interests of western Colorado in the drainage basin of the Colorado River. I have lived in western Colorado at Grand Junction the 12 years since 1942.

Western Colorado urges the construction of the Colorado River storage project as planned by the Bureau of Reclamation prior to 1950 and discussed throughout western Colorado in 1951 and 1952 by the officials of the State of Colorado and by Mr. Larson, director of region 4, Bureau of Reclamation. We oppose the inclusion of the Denver-Blue River diversion in the project at this late date. The city of Denver has destroyed unity within the State of Colorado in this attempt to secure for itself a diversion of water on which it has never, to our knowledge, been able to submit a complete engineering report showing either a need for the water or the feasibility of the proposed plan of construction.

Western Colorado is relatively young in water development. Settlement of the basin started about 1880. And I may say there that our sister State, Utah, 30 years earlier than western Colorado, and also eastern Colorado started irrigation approximately 20 to 30 years earlier than western Colorado.

In recent years we have witnessed the uncommitted water supply of the basin dwindle from millions of acre-feet to hundreds of thousands. It is now very evident to us that every section of the State of Colorado is competing for this resource and attempting to set up large reserves of water for future development. If a condition of unengineered and hasty competition is allowed to prevail unchecked in the future allotment of this vital water resource, we may handicap forever the development of a basin to which this Nation must turn for its future oil from shale and uranium so vital to the security of the Nation.

Study of recent agricultural development within the basin has shown that within the past 15-year period an expansion of 18.8 percent has taken place by private initiative. If water is permitted to remain available in the natural streams of the basin this expansion will continue and large acreages of land will come into production without Federal assistance.

As regards the city of Denver-Blue River diversion, we hold the view that if the city of Denver's only desire is to provide municipal water for its citizens a diversion of not to exceed one-third the 177,000 acre-feet as now proposed would supply the requirements of the city beyond the year 2000. By Denver's own testimony in present pending litigation, the city now holds command of sufficient water for a population of 777,000 people. The proposed diversion would add to this sufficient water for an additional 750,000, for a total of 1,527,000 people. In light of the information at hand, we are compelled to conclude that although the diversion is presently under the sponsor-

ship of the city, the water in large measure can only be used for irrigation purposes.

As further support to our belief that the diversion will largely be used for irrigation, Denver has never, to our knowledge, prepared complete engineering studies of alternate opportunities for the diversion of water to meet only its municipal requirements. The only information now available to us is the announcement that it is Denver's intention to construct a transmountain diversion tunnel from western to eastern Colorado, which happens to be the key unit of the Blue-South Platte diversion project, as studied over the last 10-year period by the Bureau of Reclamation. The Blue-South Platte project would divert a total of 430,000 acre-feet of water to eastern Colorado.

The report of the Bureau of Reclamation on the Blue-South Platte project, dated June 1948, shows that Denver will require 49,000 acre-feet of additional water for its use by the year 2000. A study of the total subsidy to irrigation under the Blue-South Platte project after allowance of water user repayment is \$1,320 per acre for the lands irrigated. This is 3 to 4 times the present value of irrigated land in the south Platte River Basin with a full water supply.

In the interest of a proper and economic development of one of the Nation's few undeveloped river basins, we should not permit the starting of a plan of construction which will later require costly adjustments and which in overall conception is contrary to that which will best serve the interests of the citizens affected.

Mr. HARRISON. Do you have any questions, Mr. Dawson?

Mr. DAWSON. I have no questions.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Jex, referring to your statement, it is to the effect that one-third of the 177,000 acre-feet of water which Denver desires with the Blue River diversion would serve their needs. I understand that figure, one-third, or approximately 60,000, is based on the report that the Bureau of Reclamation made relative to the Blue-South Platte diversion, giving credit to the increase that Denver has had and may have in the future. Is that right?

Mr. JEX. I think that is right, Congressman. It is a little in excess of the 49,000 they speak of here, but it appears that that would well take care of the city beyond the year 2000.

Mr. ASPINALL. That is all.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. Just one brief question.

On page 2, the second paragraph, you state:

Study of recent agricultural development within the basin has shown that within the past 15-year period an expansion of 18.8 percent has taken place by private initiative.

You are referring, I gather, to the upper Colorado Basin?

Mr. JEX. In this study right here, Mr. Congressman, I refer to western Colorado. I had occasion here in recent months to make a study to determine the increase in irrigated lands in recent years, and in doing that I referred back to a study that had been made in 1937 and recent studies, and by comparing the two I was able to find out that about 18.8 percent expansion had taken place. And in analyzing

the area from which I made the study I concluded there was no Federal development. So I concluded it was all by private initiative.

Mr. D'EWART. And you are referring to irrigation development?

Mr. JEX. That is right.

Mr. D'EWART. The number of acres under irrigation?

Mr. JEX. It all refers to number of acres.

Mr. D'EWART. That was done without help from the State also?

Mr. JEX. I don't think there was any State money in it. There was undoubtedly some borrowed money from finance companies and banks.

Mr. D'EWART. I think it is a very good record and deserves comment.

Mr. HARRISON. Mrs. Pfost, do you have any questions?

Mrs. PFOST. No questions.

Mr. HARRISON. Mr. Rogers, would you like to ask any?

Mr. ROGERS of Colorado. Yes, I have quite a few.

Mr. HARRISON. We have a few minutes left.

Mr. ROGERS. Mr. Jex, first directing your attention to page 1 of your statement, you make the statement:

The city of Denver has destroyed unity within the State of Colorado in this attempt to secure for itself a diversion of water on which it has never, to our knowledge, been able to submit a complete engineering report showing either a need for the water or the feasibility of the proposed plan of construction.

Now, when you limit yourself to "our knowledge" to what do you refer?

Mr. JEX. Congressman, I sat through several of the meetings that were held in an effort to analyze the water situation in eastern and western Colorado, and, as I recall, on a number of occasions the question was asked if there was an engineering report available, and I don't believe that there was anything produced in the hearings there.

Mr. ROGERS. Then I would assume that your knowledge is limited to the hearings that you attended where this matter was discussed?

Mr. JEX. Well, of course, in one sense you might say that is right. I do live in Colorado, and I have talked to many other people.

Mr. ROGERS. Are you aware of the fact that the State Legislature of the State of Colorado appropriated \$100,000 to the water conservation board for the purpose of making a survey of that type, and that as a result thereof there was employed this firm from Los Angeles that prepared the Hill report?

Mr. JEX. Yes, sir; that is right. I have it right here.

Mr. ROGERS. And did not that report show that there was sufficient water to supply the needs of the western slope, not only for the present uses but for the future uses and leaving an excess of approximately 300,000 acre-feet that would not be used of the allotted 51.75 of the water that was allotted to the State of Colorado under the upper Colorado River compact division?

Mr. JEX. Mr. Congressman, I am certainly acquainted with this report.

Mr. ROGERS. Doesn't that report show just the statement that I have made?

Mr. JEX. I think the report, coming directly to your answer, states that there is available for additional exportation certain quantities of water. However, reading back into the information contained in the report, there are limitations placed on the use in western Colorado,

and, further, we people in western Colorado who have analyzed this report and conducted studies of our own, having lived there a long time and realizing that Mr. Hill is unable to thoroughly cover the matter here in a few months, do not agree with all of the facts contained in this report.

Mr. ROGERS. Well, you do agree that that report, as prepared by Mr. Hill and his group, does reflect that there could be the 177,000 acre-feet diverted across the Continental Divide and still leave 300,000 acre-feet that would not be used even on the potentials that are now considered?

Mr. JEX. That is right, setting up the standards on which he writes the report here.

Mr. ROGERS. Yes. Now, at the same time, you are familiar with the report that was prepared by the University of Colorado, are you not?

Mr. JEX. Mr. Congressman, I barely had an opportunity to glance through that.

Mr. ROGERS. Then you are not familiar with it?

Mr. JEX. I know some about it, but not much.

Mr. ROGERS. Then you are not familiar with it.

Now directing your attention to page 2 of your statement, you say:

As regards the city of Denver-Blue River diversion, we hold the view that if the city of Denver's only desire is to provide municipal water for its citizens, a diversion of not to exceed one-third the 177,000 acre-feet as now proposed would supply the requirements of the city beyond the year 2000.

Are you familiar with a survey conducted by the Denver Planning Board for the city and county of Denver within the past year?

Mr. JEX. No, sir; I am not acquainted with that.

Mr. ROGERS. Was that ever directed to your attention for study?

Mr. JEX. No, sir.

Mr. ROGERS. If that survey should reflect that the present water supply would be absolutely exhausted in 1962 would you be in a position to dispute that?

Mr. JEX. I don't think I would, Congressman, but let me add this, that during the meetings we held on this matter I think it was represented by those in Denver that possibly by the year 1990 or the year 2000 that the city may reach a population of 1 million people. And should they reach a population of 1 million people certainly this water here, by its own diversion requirements, will supply that many people.

Mr. ROGERS. Now, in the next sentence you say:

By Denver's own testimony in present pending litigation, the city now holds command of sufficient water for a population of 777,000 people.

Are you familiar with the territory served now by the Denver Water Board and the amount of people that they now serve?

Mr. JEX. Only by comments of the engineers in Denver and the Denver city attorney. As I remember, he said about 600,000 people.

Mr. ROGERS. About 600,000 people. Now that would include the metropolitan district, which the city and county of Denver is supplying at the present time. According to the survey made, it shows that there are approximately 650,000 people within the confines of the water district of the city and county of Denver at the present time. Now you have made no survey or attempted to ascertain the

future growth of the city and county of Denver and the suburbs in connection therewith, have you?

Mr. JEX. Personally I have not. I was relying on their statements on that.

Mr. ROGERS. You know of your own knowledge, do you not, that most of the major oil companies in the United States have moved to that community recently?

Mr. JEX. I am not acquainted with that fact.

Mr. ROGERS. You say you are not acquainted with it. You do, however, make the statement here that with one-third of the 177,000 acre-feet there would be sufficient water to supply their use to the year 2000, do you not?

Mr. JEX. That is right, Congressman.

Mr. ROGERS. On what do you base that?

Mr. JEX. I base it on this, that your own engineers and your own water board attorney made a presentation in which they said that the city and county of Denver, through its waterworks system, would probably have to supply a million people by the year 1990 or the year 2000. Now, if you take simple arithmetic and you take the water supply they have here, and you take the requirement as present of 0.236, as I recall the figure, you can work this out and see that a third of this quantity of water will supply the city and county of Denver until the year 2000.

Mr. ROGERS. If they came up with different figures you would disagree with those figures?

Mr. JEX. Well, I have nothing except their figures. I have tried to interpret those figures.

Mr. ROGERS. You state, on page 3 of your statement, that—

As further support to our belief that the diversion will largely be used for irrigation, Denver has never, to our knowledge, prepared complete engineering studies of alternate opportunities for the diversion of water to meet only its municipal requirements.

Now, will you state for the committee what your knowledge is of the studies made by the city of Denver?

Mr. JEX. I don't profess to be a thorough student of that, Congressman. I attended meetings and I went through the explanation. I have endeavored to analyze here in light of that information, and I did not see any testimony the other day that would indicate that alternate plans have been considered. Certainly in our hearings they didn't—

Mr. ROGERS. All I am asking you is what is your knowledge.

Mr. HARRISON. Mr. Rogers, may I interrupt? How many more questions do you have? We will be glad to give you time in the morning.

Mr. ROGERS. All right.

Mr. HARRISON. Will you be in town, Mr. Jex?

Mr. JEX. I can be. I have a reservation to go out on the morning plane.

Mr. ROGERS. If he has, that is all.

Mr. HARRISON. I do not want to cut you off.

Mr. ROGERS. No. Well, then, there is one other question.

First of all, getting back to the question of your knowledge, you say "to our knowledge." All I want to know is what knowledge do you have that caused you to make the statements?

Mr. JEX. Of course, Congressman, I am not a student; I don't profess to be a student of your waterworks system. I have had the opportunity in the last several months to sit through your meetings.

Mr. ROGERS. Let's be honest about it, that you don't have the knowledge and you have not made a study. Isn't that right?

Mr. JEX. I think that is right.

Mr. ROGERS. Yes. Now, at the end of the paragraph you said:

The Blue-South Platte project would divert a total of 430,000 acre-feet of water to eastern Colorado.

Aside from the proposal of 177,000 acre-feet to Denver, where is the proposal for the balance of the 430,000?

Mr. JEX. I take it from study of the report that the balance, or the difference between the 177,000 and the 430,000, is to be used for irrigation purposes in the South Platte River Basin.

Mr. ROGERS. My question to you is: do you know of any other proposed project to divert from the Blue-South Platte other than to the city and county of Denver of 177,000 acre-feet.

Mr. JEX. Yes, the Bureau of Reclamation studies over a 10-year period in their report show that.

Mr. ROGERS. Do you know of anybody that has initiated or offered to initiate such a program?

Mr. JEX. All I know is the report that is out. It was studied over a 10-year period. And I don't know that anybody has pushed the consideration of that report.

Mr. ROGERS. Well, frankly, I am startled at that point when you said that 430,000 acre-feet is to be diverted out of the Blue. First of all, I did not know there was that much in there.

Mr. JEX. Did I say out of the Blue?

Mr. ROGERS. Yes, on page 3 of your statement.

Mr. JEX. I say the Blue-South Platte project would divert a total of 430,000 acre-feet of water to eastern Colorado. That is not all out of the Blue. A part of that water is out of the Eagle River and part of it out of Piney Creek, and a complete collection system across the entire area watershed.

Mr. ROGERS. Then that clarifies it. Like the Big Thompson and all the rest?

Mr. JEX. That is right.

Mr. ROGERS. And then that would come to 430,000. But when you confine it to the Blue-South Platte I did not know there was that much water there. If there was we missed a bet.

Now I would like to ask you one other question. To quote from your statement:

The report of the Bureau of Reclamation on the Blue-South Platte project, dated June 1948, shows that Denver will require 49,000 acre-feet of additional water for its use by the year 2000.

Now, all you know is what you quote from the Bureau's report of that date on page 3 of your statement?

Mr. JEX. Yes, I am quoting the Bureau report at that point, Congressman.

Mr. ROGERS. I think that will be all, Mr. Chairman.

Thank you.

Mr. HARRISON. Thank you very much, Mr. Jex.

Mr. SAYLOR. Those same reports that you are using are the reports that the other people are relying upon to substantiate their position in this upper Colorado River storage project, are they not, Mr. Jex?

Mr. JEX. I don't know that I follow you on that, Congressman.

Mr. SAYLOR. Mr. Rogers just asked you whether or not the only thing you had to base your assumptions on here were the Bureau of Reclamation reports. I ask you whether or not those same reports are not the facts that these other people up here are basing their support of the upper Colorado River project on.

Mr. JEX. Oh, yes. And the city of Denver doesn't have that.

Mr. HARRISON. Thank you very much, Mr. Jex, for appearing before our committee.

Mr. JEX. Thank you, Mr. Chairman.

Mr. SAYLOR. Mr. Chairman, I would like to inform the committee that I have directed to the Bureau of Reclamation today five rather soul-searching questions for the Bureau to present answers on to the committee. When the answers are received, I would like them put in the record.

Mr. HARRISON. Without objection, it is so ordered.

(The material referred to follows:)

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington 25, D. C., February 12, 1954.

Hon. JOHN P. SAYLOR,
House of Representatives, Washington, D. C.

MY DEAR MR. SAYLOR: By memorandum of January 22, 1954, you requested certain information in connection with the hearings on H. R. 4449, 4443, and 4463 before the Subcommittee on Irrigation and Reclamation of the House Interior and Insular Affairs Committee.

For ease of reference, the five questions you asked are repeated below, with the replies thereto.

1. "Do the costs of construction of Echo Park and the Glen Canyon and the 12 participating projects include costs of investigations?"

Answer. The estimated costs of construction furnished the committee for Echo Park, Glen Canyon, and the 12 participating projects include the cost of all investigations except past investigation expenditures, which were financed from the Colorado River development fund and which, under the law, are non-reimbursable.

2. "Under the Boulder Canyon Project Act, \$500,000 per year is set aside for Colorado River investigations. Exactly what are the terms of use of this fund? How has this fund been expended in the past? How much has been spent on investigations of each storage unit and each participating project?"

Answer. The Boulder Canyon Project Adjustment Act of July 19, 1940, set up the Colorado River development fund of \$500,000 annually (to be derived from the receipts of Hoover Dam) beginning with the year ending May 31, 1938, and continuing thereafter until and including the year ending May 31, 1987. The receipts for the first 3 years (1938, 1939, and 1940), amounting to \$1,500,000, were authorized for the continuation and extension, under the direction of the Secretary of the Interior, of studies and investigations by the Bureau of Reclamation for the formulation of a comprehensive plan for the utilization of water of the Colorado River system for irrigation, electric power, and other purposes, in the States of the upper division and the States of the lower division. 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 in and equitably distributed among the four States of the upper division. 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 States of the lower division. In 1948 the law was amended by the Barrett bill (62 Stat. 384), to pro-

vide that commencing with fiscal year 1949 the fund on investigation and construction of projects in the four States of the upper division shall be distributed "as nearly equal as practicable" among the four States. Past expenditures from the fund, broken down by storage units and participating projects, are given in the tabulation furnished in reply to question 3.

3. "The Bureau of Reclamation should furnish a detailed year-by-year table showing for each project and each State of the upper basin the expenditures from this fund."

Answer. See attached table.

4. "For each of the 12 participating projects, what is the subsidy per acre for each acre of new land? For each acre of land needing supplemental water?"

Answer. The investment in irrigation facilities is not normally divided between new and supplemental lands. Under reclamation law, the cost paid by the irrigators is based on repayment ability and a suballocation of irrigation costs to new and supplemental lands is not needed. Such an allocation would show only a very general relationship and would require a great deal of additional calculations based upon arbitrary assumptions. In the circumstances, it is hoped that a comparison of irrigation subsidies per acre, shown by dividing the costs or the irrigation allocation assigned for repayment from net power revenues by the total project area, will serve your needs. A summary of such costs is shown as follows:

12 participating projects	State	Average costs per acre assigned for repayment from net power revenues
Central Utah.....	Utah.....	\$700
Emery County.....	do.....	245
Florida.....	Colorado.....	250
Hammond.....	New Mexico.....	525
La Barge.....	Wyoming.....	150
Lyman.....	do.....	465
Navaho project, Shiprock division.....	New Mexico.....	1,500
Paonia.....	Colorado.....	255
Pine River extension.....	do.....	195
Seedskaade.....	Wyoming.....	305
Silt.....	Colorado.....	310
Smith Fork.....	do.....	220

5. "What method is used in calculating these subsidies?"

Answer. Combined in reply to question 4 above.

We presume that you will forward this material to the committee for inclusion in the printed record of the hearings if so desired.

Sincerely yours,

W. A. DEXHEIMER, *Commissioner.*

Enclosure.

Colorado River development fund costs for period fiscal year 1943 through fiscal year 1953 for projects in upper division States
 [Parentheses indicate transfer to other feature accounts and thus the item appears as a credit in the column and is so reflected in the totals at right and bottom]

Feature No.	Name	Fiscal year 1942	Fiscal year 1943	Fiscal year 1944	Fiscal year 1945	Fiscal year 1946	Fiscal year 1947	Fiscal year 1948
Sa.0.	Upper Colorado River Basin, general.	\$7,727.12	\$56,963.71	\$26,546.93	\$102,503.97	\$41,869.78	\$28,508.57	\$14,536.09
Sa.2.	Florida, Colorado.	3,681.19	118.73	118.73	4.07	1,893.64	5,680.03	5,626.28
Sa.3.	La Plata, Colorado-New Mexico.	3,658.95	2,393.26	2,393.26	49.03	3,236.13	18,277.86	6,791.66
Sa.4.	Paonia (Leroux division), Colorado.	1,860.97	465.24	344.96	19,265.25	22,587.78	9,981.40	(2,745.15)
Sa.5.	Collbran, Colorado.	6,718.68	4,479.10	4,574.35	204.23	11,994.05	44,036.62	38,466.94
Sa.6.	Silt, Colorado.	1,538.83	271.56	134.10	204.96	2,844.19	3,601.38	4,133.20
Sa.7.	Troublesome, Colorado.	12.19		22.27				
Sa.8.	Piceance, Colorado.	980.64		1.01		2,565.58	1,311.02	(86.27)
Sa.88.1.1	West Divide, Colorado.	1,590.06		1,062.40	465.57	1,093.02	15,973.68	1,971.28
Sa.88.2.	Cedarledge, Colorado.	1,834.86		(1.81)				
Sa.11.	Montrose Power, Colorado.	9,003.43	3,001.14	5,551.23	151.30	1,101.13	1,030.98	5,589.79
Sa.12.	Dolores, Colorado-Utah	5,000.00	9,974.34	3,268.66		3,948.83	3,989.49	14,771.08
Sa.13.	Pine River extension, Colorado-New Mexico.	200.97						
Sa.88.1.3	Four Mile, Colorado.	2.50						
Sa.15.	Wessels, Colorado.	1,406.80		36.44				
Sa.88.1.2	Hunter Mesa, Colorado.	1,849.65		584.09		16,477.22	1,625.80	109.84
Sa.19.	Savery-Fot Hook, Colorado-Wyoming.	1,797.41	599.14	313.42	3,022.46	1,826.34	3,030.68	(109.50)
Sa.22.	Hammond, New Mexico.	1,775.93	4,170.50	1,042.69	99.05			
Sa.23.	Colorado River-Great Basin, Utah.	7,371.87	20,939.27	6,775.84	602.32	2,298.41	3,416.67	4,528.68
Sa.81.4.1.	Dewey, Utah.	4,376.11	1,968.60	1,473.84	30.76	847.99		
Sa.26.	Emery County, Utah.	4,338.46		4,596.76	16,265.92	1,386.49	3,529.07	77.57
Sa.27.	Moon Lake project extension, Utah.	3,844.12	909.60	4,208.03	269.00			
Sa.29.	Gooseberry, Utah.							
Sa.81.2.1.	Cross Mountain.	386.13		(386.13)				
Sa.35.	Blue Bench, Utah.	366.21			208.56	62.55	(93.61)	
Sa.36.	Manila, Utah-Wyoming.	31.06						
Sa.37.	Pinedale, Wyoming.	2,000.00	765.48	417.80	1,074.16	23,546.12	13,383.40	15,826.82
Sa.38.	Lyman, Wyoming.	496.24				8,164.56	48,196.80	69,697.99
Sa.39.	Seedskadee, Wyoming.							
Sa.40.	Sublette, Wyoming.							
Sa.41.	Opal, Wyoming.	20.04						
Sa.43.	La Barge, Wyoming.					(6,014.20)		3,912.17
Sa.47.	Scotfield, Utah.	174.19	5,077.59	762.51		3,071.36	198,670.26	118,487.85
Sa.50.	Central Utah.			16,017.26		12,736.75	24,854.76	11,291.27
Sa.51.	Vernal, Utah.			301.21	141.91	3,996.01	4,217.80	3,361.28
Sa.55.	Minnesota, Colorado.				7.06	5,449.05	25,890.25	
Sa.50.1.1.	Jensen, Utah.				2,621.15	15,347.96		
Sa.64.	Bonneville Basin trans mountain division, Utah.				35,947.40	(35.62)		
7.1.	Malad Valley, Utah.				12.18	(12.18)		
7.15.	Weber-Delta, Utah.				804.10			
7.19.	Provo River extension, Utah.				1,587.16			
7.20.	Strawberry extension, Utah.				2.55			
Sa.21.	Shiprock, New Mexico.	5.16			22.22			

Colorado River development fund costs for period fiscal year 1942 through fiscal year 1953 for projects in upper division States—Continued
 [Parentheses indicate transfer to other feature accounts and thus the item appears as a credit in the column and is so reflected in the totals at right and bottom]

Feature No.	Name	Fiscal year 1942	Fiscal year 1943	Fiscal year 1944	Fiscal year 1945	Fiscal year 1946	Fiscal year 1947	Fiscal year 1948
8a.50.1	Echo Park, Colorado.....					\$19,551.83	(\$19,551.83)	
8a.81.1.2	do					2,582.48	(2,582.48)	
8a.50.2	Uinta, Utah.....					7,867.60	(7,867.60)	
8a.50.3	Diamond Creek, Utah.....					2,268.21	(2,268.21)	
8a.50.4	Wasatch, Utah.....					4,852.51	23,363.89	\$29,051.18
8a.52	San Miguel, Colorado.....					176.18	93.61	
8a.40.1	Buecklin, Wyoming.....					156.63	10,019.33	(39.28)
8a.40.2	West Side, Wyoming.....					23.82		
8a.50	Paradise, Wyoming.....					3,808.09	52,722.90	38,890.92
8a.63	South San Juan, New Mexico.....					676.26	23,885.78	31,009.17
8a.68	Smith Fork, Colorado.....					730.42	46,002.74	106,893.47
8a.81.5	San Juan (Bluff).....					84.82	81.98	11.09
8a.75	Saucer Valley, Colorado.....					698.38	8,601.26	235.30
8a.76	Nuclea, Colorado.....					197.35	728.04	95.12
8a.09	Paradox, Colorado.....					2,534.16	715.75	
8a.02	Yampa and White Basin, Colorado-Utah-Wyoming.....					21,783.76	519.50	
8a.77	Gunnison Basin, Colorado.....						155.06	116.14
8a.78	Dulce-Colorado-New Mexico.....						50.64	12.32
8a.79	Carracas, Colorado.....						298.22	117.88
8a.81	O'Neal Park, Colorado.....						29,662.33	14,285.56
8a.81	Colorado River storage.....						51,117.08	45,717.13
8a.82	Gunnison River, Colorado.....						2,426.70	46.57
8a.83	Yampa River, Colorado-Wyoming-Utah.....							
8a.01	Upper Colorado River Compact Commission							
8a.81.1.3	Split Mountain.....							
8a.46	Eden, Wyoming.....							
8a.81.4.2	Glen Canyon.....							
8a.84	White River, Colorado-Utah.....							
8a.81.3.4	Whitewater.....							
8a.81.3.3	Gunnison-Black Canyon.....							
8a.81.1.1	Flaming Gorge.....							
8a.83.1.1	Savery-Pot Hook, Colorado-Wyoming.....							
8a.81.3.1	Curcanti.....							
8a.81.3.2	Crystal.....							
8a.81.3.3	Nado.....							
8a.88	Cliffs-Divide, Colorado.....							
8a.40.1.1	Forsen, Wyoming.....							
8a.40.1.2	Pinedale, Wyoming.....							
8a.81.5.2	Navajo, New Mexico.....							
8a.91	Fruitgrowers Dam extension, Colorado.....							

\$a.62	Pack Creek, Utah.....									
\$a.63	Hearys Fork, Wyoming-Utah..									
	Subtotal, region 4.....	63,682.67	110,586.46	80,159.12	185,726.46	246,279.56	677,065.81	586,897.24		
\$a.70.	Glen Canyon.....									
\$a.48.	San Juan-Chama, New Mexico.						1,000.00	118,085.98		
\$a.48.	Colorado-Rio Grande, Colorado.						56,672.84	23,189.01		
\$a.57.	Blue-South Platte, Colorado.						39,240.66	363.24		
\$a.51.	Gunnison-Arkansas, Colorado.						83,642.00	71,288.00		
\$a.49.	South Pass, Wyoming.....						94,726.00	37,196.00		
\$a.60.	Yampa-North Platte, Wyoming.						7,128.00			
\$a.61.	Power Market Studies, Colorado.						3,401.00			
\$a.80.	Subtotal, regions 3, 5, and 7....					3,055.00	1,113.00			
	Grand total, investigation projects.			2,242.07	351,596.72	413,163.80	286,923.50	250,122.23		
	Transfers of prior year costs to construction projects.	63,682.67	110,586.46	82,401.19	537,323.18	659,443.36	963,989.31	837,019.47		
	Total costs.....	63,683.00	110,586.00	82,401.00	537,323.00	665,457.00	963,989.00	837,020.00		
	Distribution by States:									
	Colorado.....	38,168.00	58,372.00	32,619.00	414,451.00	486,811.00	483,386.00	419,999.00		
	New Mexico.....	5,582.00	9,912.00	7,656.00	23,827.00	66,056.00	133,682.00	94,792.00		
	Utah.....	14,620.00	30,636.00	36,796.00	82,030.00	63,386.00	249,120.00	197,274.00		
	Wyoming.....	5,313.00	11,666.00	5,390.00	17,015.00	49,204.00	97,801.00	124,955.00		

NOTE.—Since fiscal year 1947, investigations of sites such as Dewey, Desolation, New Moab, and Chinle have been included under 8a.81, Colorado River storage project. Figures in parentheses are transfers to other features or construction projects.

Colorado River development fund costs for period fiscal year 1942 through fiscal year 1953 for projects in upper division States—Continued
 [Parentheses indicate transfer to other feature accounts and thus the item appears as a credit in the column and is so reflected in the totals at right and bottom]

Feature No.	Name	Fiscal year 1949	Fiscal year 1950	Fiscal year 1951	Fiscal year 1952	Fiscal year 1953	Total
88.0	Upper Colorado River Basin, general	\$46,994.15	\$10,418.28	\$467.09	(\$89.82)	-----	\$336,445.87
88.1	Florida, Colorado	3,691.33	100.58	(58.13)	(5.68)	-----	20,352.23
88.2	La Plata, Colorado-New Mexico	4,691.82	390.41	27,717.32	26,952.45	\$43,019.38	137,148.30
88.3	Paonia (Jeroux division), Colorado	(51,790.45)	-----	-----	-----	-----	0
88.4	Colbran, Colorado	17,279.88	2,951.26	14,749.22	617.91	11.20	146,082.54
88.5	Silt, Colorado	223.50	3,832.61	(89.23)	-----	-----	16,795.10
88.6	Troublesome, Colorado	(32.90)	-----	-----	-----	-----	0
88.7	Piceance, Colorado	(31.46)	-----	-----	-----	-----	0
88.8	West Divide, Colorado	3,855.00	25.22	-----	(5.68)	-----	4,771.98
88.81.1	Cedarledge, Colorado	(833.65)	-----	-----	-----	-----	26,037.22
88.82	Montrose Power, Colorado	2,258.04	41.50	-----	-----	-----	0
88.11	Dolores, Colorado-Utah	12,522.08	(96.61)	(7.97)	(14.21)	13,118.12	40,846.75
88.12	Pine River extension, Colorado-New Mexico	-----	-----	-----	-----	-----	53,355.66
88.13	Four Mile, Colorado	2.50	-----	-----	-----	-----	200.97
88.88.1.3	Wessels, Colorado	-----	-----	-----	-----	-----	0
88.15	Hunter Mesa, Colorado	(22,669.00)	-----	74.35	(3.98)	-----	1,443.24
88.88.1.2	Savery-Pot Hook, Colorado-Wyoming	22.21	-----	-----	-----	-----	0
88.19	Hammond, New Mexico	(5,388.17)	-----	-----	-----	-----	7,696.79
88.22	Colorado River-Great Basin, Utah	-----	-----	-----	-----	-----	0
88.23	Dewey	2.27	3,002.30	393.26	-----	-----	35,708.48
88.41.1	Emery County, Utah	(26,049.13)	-----	-----	-----	-----	17,490.90
88.26	Moon Lake project extension, Utah	8.44	-----	106.66	(4.55)	-----	0
88.27	Gooseberry, Utah	11,571.42	13,515.09	356.07	-----	3,724.47	21,127.74
88.21	Cross Mountain	(574.77)	-----	-----	-----	-----	25,442.58
88.81.2.1	Blue Bench, Utah	-----	-----	-----	-----	-----	-----
88.35	Manila, Utah-Wyoming	952.03	444.35	1,706.72	(16.20)	-----	60,100.68
88.37	Pinedale, Wyoming	48,868.83	14.54	4,898.28	(47.77)	-----	180,243.47
88.38	Lyman, Wyoming	-----	120.03	9,895.51	82,226.03	67,501.63	159,743.20
88.39	Seedskaade, Wyoming	49,025.42	8,069.04	3,817.12	251.97	-----	20.04
88.40	Sublette, Wyoming	130,940.80	84,620.88	107,030.15	78,261.15	85,219.51	822,319.22
88.41	Opal, Wyoming	5,700.45	(325.07)	(3.70)	-----	-----	54,697.58
88.43	La Barge, Wyoming	1,426.10	820.85	(49.48)	(3.98)	-----	15,633.42
88.47	Scofield, Utah	-----	-----	-----	-----	-----	49,418.11
88.50	Central Utah, Utah	-----	-----	-----	-----	-----	35,947.40
88.51	Vernal, Utah	-----	-----	-----	-----	-----	-----
88.55	Minnesota, Colorado	-----	-----	-----	-----	-----	-----
88.50.1.1	Jensen, Utah	-----	-----	-----	-----	-----	-----
88.54	Bonneville Basin trans mountain division, Utah	-----	-----	-----	-----	-----	-----
7.1	Malad Valley, Utah	(804.10)	-----	-----	-----	-----	-----
7.15	Weber-Della, Utah	(1,887.16)	-----	-----	-----	-----	-----
7.19	Provo River extension, Utah	-----	-----	-----	-----	-----	-----
7.20	Strawberry extension, Utah	(20.03)	-----	-----	-----	-----	-----
88.21	Shiprock, New Mexico	-----	-----	-----	-----	-----	-----

8a.50.1	Echo Park, Colorado	30,272.63	2,178.12	6,832.45	45,301.48	24,005.31	128,589.99
8a.51.1,2	do.						
8a.50.2	Ulna, Utah						
8a.50.3	Diamond Creek, Utah						
8a.50.4	Wasatch, Utah						
8a.52	San Miguel, Colorado	4,490.58	11,560.12	2,307.39	8,811.17	12.78	84,489.62
8a.40.1	Buckslin, Wyoming	22,991.62	57,718.13	(53,182.69)	19.55		27,816.40
8a.40.2	West Side, Wyoming	(1,203.88)	280.64				9,216.44
8a.59	Paradise, Wyoming	(25.82)					
8a.63	South San Juan, New Mexico	81,332.03	85,695.22	50,883.23	80,313.48	61,344.80	454,900.67
8a.68	Smith Fork, Colorado	4,493.59	4,593.59	1,413.73	539.33		71,605.89
8a.81.5	San Juan (Bluff)	9,498.03	(500.00)		(19.50)	19.50	1,477.42
8a.74	Sauter Valley, Colorado	521.27		1,299.53			9,644.23
8a.75	Nucla, Colorado			109.29			1,012.74
8a.76	Paradox, Colorado			(7.77)			
8a.09	Yampa and White Basin, Colorado-Utah-Wyoming	(3,249.91)					271.20
8a.02	Gunnison Basin, Colorado	(22,303.26)					62.96
8a.77	Dulce-Colorado-New Mexico						416.10
8a.78	Carraças, Colorado						293,358.08
8a.79	O'Neal Park, Colorado	54,639.76	13,446.45	61,932.30	52,633.20	66,738.48	113,524.38
8a.81	Colorado River storage	8,105.10	8,454.83	120.09	10.15		7,716.91
8a.82	Gunnison River, Colorado						38,811.20
8a.83	Yampa River, Colorado-Wyoming-Utah						13,249.09
8a.01	Upper Colorado River Compact Commission						
8a.81.1,3	Split Mountain	38,811.20	2,642.54	8,633.23	270.84		
8a.46	Eden, Wyoming	1,702.48		(11,299.17)			
8a.81.4,2	Glen Canyon	11,257.13	42.04	28,528.75	29.64		
8a.84	White River, Colorado-Utah	34.46	19,454.24			7,408.16	126,254.82
8a.81.3,4	Whitewater	31,493.51	(1,289.27)	(134.70)		34.46	30,074.54
8a.81.3,3	Gunnison-Black Canyon	4,073.50	(4,073.50)				
8a.81.1,1	Fleming Gorge	9,083.87	28,977.09	19,846.54	3,608.94		61,406.44
8a.83.1,1	Savery-Pot Hook, Colorado-Wyoming	43,239.23	16,126.54	16,997.37	43,873.47	60,636.32	180,875.93
8a.81.3,1	Curcanti		4,697.27	9,590.15	19,112.75	14.56	33,414.73
8a.81.3,2	Crystal		1,357.77	1,620.01			2,977.78
8a.81.3,3	Nado		21,236.53	433.85			21,670.38
8a.88	Cliffs-Divide, Colorado		5,610.84	52,596.03	64,628.82	30,204.80	153,040.49
8a.40.1,1	Farson, Wyoming			11,191.51	60.25		11,251.76
8a.40.1,2	Pinedale, Wyoming			134,531.14	1,179.37		135,710.51
8a.81.5,2	Navajo, New Mexico			12,550.25	1,196.86		13,747.11
8a.91	Fruitgrowers Dam extension, Colorado			83.38			83.38
8a.92	Pack Creek, Utah					6,120.95	6,120.95
8a.93	Henry Fork, Wyoming-Utah					694.46	694.46
	Subtotal, region 4	649,134.45	409,178.06	527,849.13	509,713.12	475,118.07	4,521,390.15
8a.70	Glen Canyon	6,397.47	26,655.12	15,000.00			167,138.57
8a.48	San Juan-Chama, New Mexico	25,590.49	17,632.19	44,552.55	40,042.39	56,620.28	330,278.44
8a.57	Colorado-Rio Grande, Colorado	15.50	2,473.37				75,204.67
8a.1	Blue-South Platte, Colorado	18,457.00	15,890.00	8,765.00	(73.00)		585,074.00
8a.49	Gunnison-Arkansas, Colorado	47,190.00	57,773.00	10,212.00			524,849.00
8a.60	South Pass, Wyoming						7,128.00

Colorado River development fund costs for period fiscal year 1942 through fiscal year 1953 for projects in upper division States—Continued
 [Parentheses indicate transfer to other feature accounts and thus the item appears as a credit in the column and is so reflected in the totals at right and bottom]

Feature No.	Name	Fiscal year 1949	Fiscal year 1950	Fiscal year 1951	Fiscal year 1952	Fiscal year 1953	Total
88.61.....	Yampa-North Platte, Wyoming.						3,401.00
88.80.....	Power Market Studies, Colorado.						4,108.00
	Subtotal, regions 3, 5, and 7.	97,650.46	120,423.68	78,529.55	39,969.39	55,610.28	1,697,241.68
	Grand total, investigation projects	746,784.91	529,601.74	603,378.68	519,682.51	531,738.35	6,218,631.83
	Transfers of prior year costs to construction projects	51,760.45		11,299.17			69,073.91
	Total costs.....	798,545.00	529,602.00	617,678.00	519,683.00	531,738.00	6,287,706.00
	Distribution by States:						
	Colorado.....	198,047.00	156,191.00	152,128.00	140,141.00	122,380.00	2,702,683.00
	New Mexico.....	191,025.00	138,108.00	160,194.00	165,241.00	164,045.00	1,160,108.00
	Utah.....	186,684.00	125,875.00	145,754.00	108,474.00	122,261.00	1,362,880.00
	Wyoming.....	222,790.00	109,430.00	159,602.00	135,827.00	123,062.00	1,092,025.00

NOTE.—Since fiscal year 1947, investigations of sites such as Dewey, Desolation, New Moab, and Chinle have been included under 88.81, Colorado River storage project. Figures in parentheses are transfers to other features or construction projects.

Mr. HARRISON. At this point, without objection, there will be inserted the statements of Congressman Byron G. Rogers (1st District, Colorado); Congressman William S. Hill (2d District, Colorado); Congressman J. Edgar Chenoweth (3d District, Colorado); and Congressman Wayne N. Aspinall (4th District, Colorado), author of H. R. 4443.

STATEMENT OF BYRON G. ROGERS, MEMBER OF CONGRESS, FIRST CONGRESSIONAL DISTRICT OF COLORADO

I appear in support of legislation to develop the waters of the upper Colorado River. The States of the Colorado River Basin have supported a program of utilization and consumptive use of the waters of the Colorado River. When the States of the Colorado River Basin entered into a compact at Santa Fe, N. Mex., in 1922, it then became possible to make proper uses of the waters of the river. This compact made possible the construction of the Hoover Dam. All States in the Colorado River Basin have worked together to develop the uses of waters in the river. When Congress amended the Boulder Canyon Project Act in 1940, funds were made available for surveys and studies of feasible projects in the upper river basin. The Bureau of Reclamation has found many feasible projects. It is my hope that you will report legislation authorizing the construction of these projects.

The States in the upper Colorado River Basin were allotted 7,500,000 acre-feet of water in perpetuity. The upper basin States have divided this water among themselves by compacts. The State of Colorado was allocated 51.75 percent of the 7,500,000 acre-feet. It is the hope of the people of the State of Colorado that they may be given the opportunity to make consumptive use of the waters allocated to them.

The Continental Divide from Wyoming to New Mexico follows through the middle of the State of Colorado. The lands to the east of the Continental Divide are level, and all waters available have been put to beneficial use. The high mountains and deep valleys limit the use of waters in the western half of the State of Colorado. There is not sufficient land to justify feasible projects that would permit the full consumptive use of the waters of the western slope.

The Colorado Water Conservation Board is composed of leading citizens of the State of Colorado, who are authorized by statute to make studies and investigate the uses of water within the State of Colorado.

The board, pursuant to an act of the 39th General Assembly, caused to be made an independent survey of the available water in the Colorado River within the State of Colorado. Leeds, Hill & Jewett, consulting engineers, of Los Angeles, Calif., after giving due allowance to any dry-cycle years, states that there was 3,100,000 acre-feet per annum for consumptive use in the State of Colorado. At the present time Colorado is consumptively using 1,450,000 acre-feet per year. Allowing for an increased depletion of 200,000 acre-feet to be used for irrigation and power, and allowing 300,000 acre-feet for possible consumptive use for oil shale, there is still available 1,150,000 acre-feet to be consumptively used within the State of Colorado.

I am herewith submitting to the interim committee for its files the analysis of the engineers. The University of Colorado also issued a report on the economic potential of western Colorado, which I respectfully request also be considered by the committee in its study of this proposed legislation.

It is the desire of the people of the State of Colorado to make beneficial use of the 1,150,000 acre-feet of water. The people of the city and county of Denver believe that an amendment should be made to the legislation you are now considering. This would authorize the United States Government to loan to the city and county of Denver \$75 million. The city would construct the Blue River project and divert from the western part of Colorado 177,000 acre-feet. The money would be repaid by the people of the city and county of Denver with interest. No interest would be charged pending the completion of the project. When Boulder Dam was constructed the Metropolitan Water District of California agreed to repay the cost of construction.

The need for the water in the metropolitan area of Denver is not seriously challenged. Surveys and studies indicate that the metropolitan area of Denver will have insufficient water for municipal purposes after the year 1963.

The Colorado Conservation Board has approved this project, and I trust that you will include it in this legislation.

Diversion of water from one watershed to another is a common practice in all States of the West. The diversion from the Hoover Dam to the Metropolitan Water District of Los Angeles is a good example. The construction of the Big Thompson project in Colorado is another example. The city and county of Denver now gets water from the Colorado River shed through the Moffet tunnel and construction of ditches in the upper reaches of the river.

This proposed project will not deprive the people of the Colorado River Basin of any water that they can make beneficial use thereof. Ample protection is afforded them in Senate Document 80, act of Congress, August 9, 1937 (50 Stat 595).

Reservoirs have been constructed to protect water users in the Colorado River Basin. It is not the desire of the people of the city and county of Denver to deprive the people in the Colorado River Basin of any waters that they can consumptively use. As previously indicated, studies and surveys have been made that show conclusively that there is sufficient water for all the people in the State of Colorado. All efforts to protect the people of the Colorado River Basin have been made by all officials of the State of Colorado.

If the people of Colorado are to make beneficial use of the waters allotted to them under the various compacts, then it is essential that diversions be made to the eastern part of the State. Over 80 percent of the people reside east of the Continental Divide. The amendment suggested is feasible in every particular. It will be beneficial to all of the people of the State of Colorado. It will bring about greater development and consumptive use of the waters of the Colorado River Basin. It is my hope that you amend this legislation to include the project that will make additional municipal water supply to the metropolitan district of Denver.

STATEMENT OF WILLIAM S. HILL, MEMBER OF CONGRESS, SECOND DISTRICT OF COLORADO, IN SUPPORT OF THE COLORADO RIVER STORAGE PROJECT

Mr. Chairman and members of the subcommittee of the Interior and Insular Affairs, it is a privilege indeed to appear before you this morning and place myself on record in support of the development of the Colorado River storage project and participating projects of the upper Colorado River Basin. We, of Colorado, appreciate the splendid cooperation of this committee and the opportunity you have provided us to outline and explain the projects of the upper Colorado River development program.

In January of this year the Colorado Water Conservation Board adopted a resolution consisting of 14 points. I wish to make them a part of my record, and ask that I be permitted to file them at this point in the record.

"Be it resolved by the Colorado Water Conservation Board, the official State agency which is charged by law with the duty and responsibility of promoting the conservation of the waters of the State of Colorado in order to secure the greatest utilization of such waters and the utmost prevention of floods that:

"1. It is the position of the State of Colorado that all waters of the Colorado River system available for use in the State of Colorado under the various instruments constituting the law of the river shall be put to beneficial consumptive use in Colorado as expeditiously as orderly economic development will permit.

"2. Because of Lee Ferry delivery obligations imposed by the Colorado River compact of 1922, substantial quantities of regulatory holdover storage must be provided in the upper basin if that basin is to be able to put to beneficial consumptive use its allotted share of Colorado River water.

"3. The Colorado River storage project will provide such necessary storage and is essential to the full economic development of the water resources of the upper basin.

"4. The plan of the Colorado River storage project to finance the construction of the necessary holdover reservoirs through the revenues derived from the sale of power generated at hydroelectric plants and to utilize a portion of such revenues to assist in the financing of so-called participating projects which meet certain fixed criteria is approved.

"5. In connection with the Glen Canyon Reservoir, Colo., directs attention to the fact that this reservoir, which is located but a short distance above Lee Ferry, will yield substantial benefits to the lower basin, one of the most important of which is the detention of silt and the resulting prolongation in the useful life of Lake Mead. The official representatives of Colorado should strive to obtain

some recognition by the lower basin of these benefits and, if possible, a sharing by the lower basin of such matters as reservoir losses.

"6. The Echo Park unit is a desirable feature which has the full support of Colorado.

"7. Authorizing legislation should contain appropriate provisions for the recapture for use within the upper basin of power generated by the Colorado River storage project when and if any of such power is sold or transmitted for use within the lower basin.

"8. Specific provision should be made in authorizing legislation to assure that no rights vest in the use of water for power generation in units of the project which will prevent or handicap the beneficial consumptive use upstream of the waters of the Colorado River system to which any upper basin State is entitled.

"9. Colorado has no objections to the report of the Secretary of the Interior on participating projects except that Colorado urges that further study be given to the La Plata and San Miguel projects which are urgently needed, in order to develop, if possible, a feasible plan therefor and except as hereinafter noted.

"10. The report and the supplemental report of the Secretary of the Interior practically ignores any development of Colorado River system water in Colorado. For this reason, Colorado cannot accept the report and supplemental report as now submitted. As conditions precedent to Colorado approval of the report, provisions must be made therein, or in the authorizing legislation, which will assure the following water development in Colorado:

"(a) The Cross Mountain unit must be included within the initial authorization for construction as a part of the first phase of the project.

"(b) There is no doubt that further consumptive use of water in Colorado is directly dependent upon high upstream storage. To provide therefor there must be included in the initial authorization approximately 3 million acre-feet of total new storage on the Colorado River and its tributaries above Grand Junction, Colo., a substantial portion of which shall be located on the upper reaches of the Gunnison River. The known reservoir sites which might accomplish this objective are Curecanti on the Gunnison and deBeque on the Colorado River. Additional investigations may disclose other sites. There is little doubt but that the stated amount of storage will be needed. The Secretary of the Interior is urged to expedite the investigation and study of projects which will furnish the requested storage.

"11. Denver, the capital city of Colorado, desires to divert water from the Blue River, a tributary of the Colorado River, for use for municipal and industrial purposes in the metropolitan Denver area. The rights of Denver to take and divert such water are alleged to be in conflict with rights for the use of water stored in Green Mountain Reservoir and taken through the Green Mountain powerplant for the generation of power. Green Mountain Dam, Reservoir, and powerplant constitute a unit of the Colorado-Big Thompson project of the United States Bureau of Reclamation. The controversy over the relative rights of Denver and the Green Mountain project are in litigation in a lawsuit now pending in the Supreme Court of the State of Colorado and in another lawsuit now pending in the United States District Court for the District of Colorado. It would be improper for this board to attempt to invade the process of the courts or to influence the pending litigation. The board has no intention of doing either. The feasibility of the proposed Denver-Blue River diversion depends, among other things, on the outcome of this litigation, or on some alternative thereto which satisfactorily protects the Colorado-Big Thompson project. Upon the condition that the legal availability of a reasonable quantity of water for the Denver-Blue River diversion be established, either by litigation or some other arrangement, and the condition that such project be otherwise feasible, the board approves the Denver-Blue River project for inclusion as a participating project in the authorization of the Colorado River storage project or for such other Federal legislative or administrative action as may be requested by Denver.

"12. The board recommends that Denver and the representatives of the west slope in Colorado make every effort to arrive at a harmonious solution of the unfortunate transmountain diversion controversy which for years has created dissension in Colorado. The board pledges that it and its staff will be ready to assist in the amicable settlement of this prolonged conflict.

"13. The director of the board and the Colorado member of the Upper Colorado River Commission are directed to do all things necessary and proper to effectuate this resolution.

"14. Copies of this resolution shall be forthwith transmitted to the Governor of Colorado and to the members of the Colorado congressional delegation."

Mr. Chairman, I appreciate your own background and the practical experience you have had and the interest you have taken in the support of water conservation and the multiple-power projects of the West.

Wyoming, as does Colorado, occupies a strategical position in the Rocky Mountains area where such projects are so important to our national economy.

Residing, as I do, under the Colorado-Big Thompson project, I also have actual experience and direct contact with the important Bureau of Reclamation projects as they are conceived, promoted, finally started, and eventually completed. The Colorado-Big Thompson project at this moment is more than 90 percent finished.

I am sure you know of the great benefit already received by every citizen, not only in the conservancy district but the entire State, as our whole economy benefits from the supplementary water we have been receiving under the Colorado-Big Thompson program.

Mr. Chairman, I am convinced no agricultural project is more important than those programs that promote the protection of our soil, the prevention of erosion, the extension and development of the land area in the upper stretches of all our mountain rivers, streams, and lakes. To those who live on flatlands with little slope, it is hard to realize the destructive forces of water on a rampage down mountain sides and mountain gullies on its race to the lower flatlands.

I subscribe to and support these developments which prevent torrential floods, erosion, and provide reservoirs, power-plant locations, and a continuous improvement and protection of our watershed areas.

As you will notice, our Committee on Agriculture has introduced a bill by our chairman, Congressman Hope, which would fit in with the plans you are here promoting under this legislation.

Under this bill as reported by our Committee on Agriculture, the Federal Government would cooperate with States and their political subdivisions to form soil or water-conservation districts, flood prevention or control districts, for the purpose of preventing damages and for furthering the conservation, the development, the utilization and disposal of water, and thereby preserve and protect the Nation's land and water resources.

No other State in the Union affords a better opportunity to conserve our watersheds and develop them on a scientific basis than our own State of Colorado.

Examining the map of Colorado we find that five great river watersheds have their beginning in the mountainous sections of Colorado. Therefore, every citizen of Colorado has a personal interest in this legislation. We know firsthand what has been going on by way of watershed development and at the moment we notice the activity of the city of Denver in planning for the developing and extending of additional watersheds to supply water not only for the city of Denver but for surrounding areas.

I am sure, Mr. Chairman, you understand that the legislation proposed by Congressman Hope would supplement the program as suggested under the Colorado River storage project and participating projects. Throughout the mountainous areas small dams and watershed development should be a part of our watershed extension which would provide additional water for the cities and farms in the lower stretches of the river basins.

With the upper Colorado River storage project and participating projects all finished, followed by carefully planned soil conservation in the lower agricultural areas, we would then be able to save most of the water that falls on the Colorado River watershed area.

In closing, let me urge that these projects be promoted and developed as rapidly as possible. It might be that this area now under consideration could well develop into a pilot-plant project which other river watershed areas could consider as typical of what can be done when proper thinking and forward-looking programs are adopted.

My hope is that the divergent views (differences of opinion, and actual misunderstandings) be resolved by your committee, and that the legislation be promptly reported.

STATEMENT OF J. EDGAR CHENOWETH, MEMBER OF CONGRESS, THIRD DISTRICT OF COLORADO, IN SUPPORT OF THE COLORADO RIVER STORAGE PROJECT

Mr. Chairman, and members of the committee, I appreciate this opportunity to appear before you in behalf of H. R. 4443, H. R. 4449, and H. R. 4463, which authorize the Secretary of the Interior to construct, operate, and maintain the Colorado River storage project.

Mr. Chairman, I am for this project and intend to give this legislation my full support. I realize there are differences of opinion as to what projects should be included in the first phase of construction. In this brief statement I do not propose to enter into this controversy. I believe that this is a matter for this committee to decide. I have full confidence that the committee will act wisely, and for the best interests of all concerned.

Last September I had the great pleasure of accompanying members of this committee on an air trip over the sites of the participating projects that are included in the Colorado River storage project. The committee had the opportunity to see the location of these projects in Wyoming, Colorado, Utah, Arizona, and New Mexico. This was a most interesting and informative trip. I am sure the committee gained much valuable information by visiting these sites, and viewing them from the air.

It is obvious that some holdover storage reservoirs must be constructed in order for the States in the upper Colorado River Basin to obtain the full benefits of the Colorado River water to which they are entitled. We are anxious in Colorado to make full use of the water that has been allocated to us. I am sure that the same situation prevails in the other States in the upper Colorado River Basin.

Some of these participating projects are very controversial, and have precipitated considerable discussion. I fully realize that the committee has a difficult task in composing these conflicting viewpoints. However, I feel certain that the committee will be able to reach a satisfactory decision on the projects that should first be authorized.

Mr. Chairman, none of the projects contained in this legislation are in my congressional district. However, the people in my area are for this project, as evidenced by a resolution adopted by the Water Development Association of southeastern Colorado on July 9, 1953.

The committee will recall that this is the organization sponsoring the Fryingpan-Arkansas transmountain water diversion project, on which this committee held hearings in June 1953. This project is not a part of the Colorado River storage project, but is a separate and distinct undertaking. Members of the committee taking the trip last September also had the opportunity of inspecting the sites of this project. I wish to include this resolution as part of my remarks herewith.

“RESOLUTION

“Whereas the Water Development Association of Southeastern Colorado has, since its inception in 1943, promoted as of prime interest the approval and authorization of the Fryingpan-Arkansas transmountain water diversion project, which project when approved will export a very small amount of surplus water from the upper Colorado River basin;

“Whereas the Water Development Association of Southeastern Colorado has considered the desirability of and the acute need for the authorization of the Colorado River storage project and participating projects;

“Whereas the Water Development Association of Southeastern Colorado believes that the first stage of said Colorado River storage project and participating projects, now proposed for authorization, is sound in all respects;

“Whereas the Water Development Association of Southeastern Colorado realizes that the holdover storage that would be provided by the Colorado River storage project and participating projects is essential, if the upper Basin States of Arizona, Colorado, New Mexico, Utah, and Wyoming are to be in position to make the full consumptive use apportioned to them, as a group by the Colorado River compact of 1922 and by the upper Colorado Basin compact of 1948: Now, therefore, be it and it is hereby

“Resolved, by the board of directors of the Water Development Association of Southeastern Colorado:

“(1) That the Water Development Association of Southeastern Colorado approves of and urges the prompt authorization of the Colorado River storage project and participating projects, as recommended by the upper Colorado River Commission.

“(2) That the officers of the Water Development Association of Southeastern Colorado be, and they are hereby, requested to cooperate in all suitable and practicable ways, with the Upper Colorado River Commission, its officers, its staff, and its committees in securing the authorization of the said Colorado River storage project and participating projects.

"(3) That certified copies of this resolution be supplied to the congressional delegations for the five upper Basin States."

"Done at Pueblo, Colo., July 9, 1953, in regular meeting assembled.

"D. P. Ducy, President."

Mr. Chairman, I wish to again thank you and the members of the committee for permitting me to present my views on the Colorado River storage project. I hope that this legislation will receive favorable consideration by this committee.

STATEMENT OF WAYNE N. ASPINALL, MEMBER OF CONGRESS, FOURTH DISTRICT OF COLORADO, IN SUPPORT OF THE COLORADO RIVER STORAGE PROJECT

Mr. Chairman, my statement in support of H. R. 4443, 4449, and 4463, similar House bills, shall be exceptionally short. I have no desire to be repetitious nor to unnecessarily enlarge a record which is already too voluminous. At the beginning of these hearings, when members of the committee and Congress were given time to make their personal statements, I refrained from doing so with the stated objective that I desired that the representatives present before the committee from my congressional district, be given the opportunity to present their various views on the legislation authorizing the Colorado River storage and development project. This they have been permitted to do, their testimony is a part of the record. I am pleased to make their position my position and advise this committee that, in my opinion, the people of my congressional district, with but a few exceptions, support the bills hereinabove enumerated.

We are for the integrated and intelligent development of the water resources of the upper Colorado River Basin. We believe that the legislation now being considered, or something substantially akin to it, is vitally necessary and basic to such development. We wholeheartedly desire that the authorizing legislation be written according to the terms of and in harmony with the provisions of the Colorado River compact of 1922, the upper Colorado River Basin compact and all statutes passed in compliance therewith (the law of the river). We desire that our obligations to the lower basin be met by us as heretofore agreed. At the same time, we sincerely hope that the people of the lower basin shall be willing to meet with our representatives in the upper basin at the very earliest possible opportunity for the purpose of settling amicably the few remaining differences on procedures which are presently disturbing residents of each area. The people of the upper basin, who have waited so long for development of their area, rightly expect that further delays be no longer than absolutely necessary. As a matter of equity and justice, the residents of the upper basin should be able to expect that the benefits guaranteed to them under the compacts and statutes herein referred to be permitted to go to them now. Already the lower basin has largely been developed while the upper basin has as yet received practically no attention whatsoever. In my opinion such present situation is not as originally desired by the commissioners at the Santa Fe meeting.

The upper basin's share of water has by mutual agreement been divided between them. The question as to where such water should be used within the boundaries of the States entitled to the water rightly calls for State decision. The people of that part of Colorado lying west of the Continental Divide, in which 70 percent plus of all the water of the Colorado River rises, contend that they should have Colorado's share of the water of the Colorado River to the extent necessary to take care of western Colorado's present and future needs, maintaining that this area in the State of Colorado is one of the great natural resource treasuries of the Nation. It is my feeling that western Colorado people are perfectly willing that any of Colorado's share of waters surplus to the needs just mentioned should go to uses in eastern Colorado. Also, I feel that they are willing that necessary water for domestic purposes in metropolitan areas be transported across the Continental Divide, with whatever safeguards are necessary to protect the uses within the natural basin of the Colorado River.

Private enterprise has done a magnificent job in its contribution up to now in the development that has taken place in the upper Colorado River Basin. Hundreds of small reservoirs and ditches have been constructed and are in use. An understanding and beneficent Federal Government has helped in a few instances where users in individual Federal reclamation projects have been able to afford the benefits provided and the projects have shown economic feasibility. However, the era of further development by individuals or single-purpose reclamation projects is practically ended. The last single multiple-purpose project that can stand alone on its own feet has been authorized. If this vast area

with its great storehouse of natural resources and comprising one-thirtieth of the entire area of continental United States is to develop further and make its almost unlimited beneficial contribution to our national welfare and security, then this legislation, or something substantially similar to it, must receive the approval of our National Congress and Chief Executive.

By giving its approval to the legislation now under study by us, our Federal Government is but following through with its promises, direct and indirect, contained in the approving legislation to the Colorado River compact and the upper Colorado River Basin compact, and statutes in conformity therewith.

By this legislation our Federal Government is called upon to make some large contributions. In my opinion the economic values alone, which will flow to the Nation as a whole, will more than compensate for the financial aid required.

I wish it understood by the conscientious and informed conservationist of our Nation (all of whom have rendered great services to our people) that in my opinion, we are not breaking faith with them or establishing a new precedent in giving favorable approval to the Echo Park project. Benefits for the good of all must be weighed here as in all cases. The benefits to the citizens of the area concerned as compared to the disadvantages which might flow to those who seriously and honestly, and I might add unselfishly, desire to retain the wilderness qualities of this area, should be resolved in favor of the local beneficiaries.

There has been some indication that a proposal will be presented to this committee by representatives of the city of Denver having for its purpose the inclusion of a domestic water supply program for such city as a participating project in this legislation. I wish to advise my colleagues that western Colorado and its Representatives in Congress unanimously oppose such proposal at this time. In doing so, we do not wish to appear as opposing any future request which may be made by the citizens of our State capital when they are in actual need of waters for municipal purposes. We shall, as it has always been our desire, try to determine fairly the equities at that future time when the water shall be needed by the city of Denver.

Mr. HARRISON. Before we adjourn the Chair wants to announce that we consumed 5 hours and 10 minutes today and 3 hours and 45 minutes yesterday, which is a total of 8 hours and 55 minutes which have been used by proponents of the bill. We will start at 9:30 in the morning, and we will first hear some of the representatives from New Mexico.

(Whereupon, at 4:40 p. m., the committee was recessed, to be reconvened at 9:30 a. m., Saturday, January 23, 1954.)

COLORADO RIVER STORAGE PROJECT

SATURDAY, JANUARY 23, 1954

**HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
*Washington, D. C.***

The subcommittee met, pursuant to recess, at 9:30 a. m. in the committee room, New House Office Building, Hon. William H. Harrison (chairman) presiding.

Mr. HARRISON. The committee will come to order.

The first witness this morning will be the Honorable John R. Erickson, commissioner for New Mexico, on the Upper Colorado River Commission.

STATEMENT OF JOHN R. ERICKSON, COMMISSIONER FOR NEW MEXICO, UPPER COLORADO RIVER COMMISSION

Mr. ERICKSON. Before I proceed, Mr. Chairman, I would like to add my thanks and appreciation to those members of this committee who made the trip to the upper basin last September. It was my very great honor and privilege to have attended them for the entire length of that trip.

Before I proceed, I would like to say that representatives of the Navaho Tribal Council were invited by the Governor to participate in these hearings with the New Mexico group. They accepted that invitation and we are very proud that they are here to participate. These men have gained a nationwide reputation for their excellent leadership, and we are very happy that they are a part of our presentation, although they will not be heard until Monday morning.

Mr. REGAN. They will speak for the proposal?

Mr. ERICKSON. They will speak for the proposal concerning the Shiprock division of the Navaho project and their specific problems among the Navaho people.

Mr. REGAN. Their names have been presented as appearing?

Mr. ERICKSON. Yes, sir, they have.

Next, I would like to ask that three statements be inserted in the record after Mr. Murphy's statement. They are those of the Honorable Tom Bolack, mayor of Farmington, N. Mex., Ed Foster, a resident of San Juan County; and Jack Cline, a resident of San Juan County.

Mr. HARRISON. Have they been presented?

Mr. ERICKSON. They have been presented. And a fourth statement to be inserted in the record after the statement of Mr. John Murphy, a statement of the Honorable Clyde Tingley, mayor of Albuquerque.

Mr. HARRISON. He is not going to appear?

Mr. ERICKSON. He is not going to appear.

Mr. HARRISON. The reason I asked, I had his name down here and I wanted to make sure.

Mr. ERICKSON. He is not here.

Mr. HARRISON. Without objection, those statements will be made a part of the record.

(Statements referred to will be found after Mr. Murphy's statement. See p. 526.)

Mr. Chairman and members of the committee, my name is John R. Erickson. I am the New Mexico member of the Upper Colorado River Commission and State engineer of New Mexico. My home and office are in the capital city of Santa Fe. This statement is made on behalf of the Governor.

We strongly support the authorization of the Colorado River storage project and its participating projects substantially as now before you in H. R. 4449 and similar bills.

Our situation is somewhat unique among the States of the upper basin, and for your information we shall briefly explain our peculiar problems.

New Mexico is one of the very arid States of the Union. Its mountainous high water producing areas are limited in extent and the productive low-lying lands receive only about 6 to 12 inches of precipitation annually. Although the State is fourth largest in size, covering about 77,700,000 acres, its limited water resources have permitted the irrigation of less than 1 percent of the total land area to date. Of the 701,000 acres irrigated, about 414,000 are served by surface waters, the remaining 287,000 being supplied from underground water sources. Almost two-thirds of the groundwater development has been made since the close of World War II. In spite of the recent development of 40,000 acres of new lands under the Tucumcari project, there has been a 10-percent net decline in the total acreage irrigated from surface waters since 1920. Except for the San Juan River, the surface waters of the State have been almost completely appropriated within the State's allocations under its various interstate compacts and court decrees.

Superimposed on this critical water condition has been a phenomenal growth in the population of the State. In the last 40 years it has more than doubled, increasing from 327,000 persons in 1910 to 681,000 at the time of the last census in 1950. Most significant is the fact that almost half of that increase has occurred during the period from 1940 to 1950. Since the last census the growth has increased at an even faster rate. This recent population increase has placed a strain on an already critical water situation. The outlook for the future is even more serious.

In addition to the general situation briefly outlined above, and of vital importance to the State and to the Nation, is the urgent need of the Navaho people for water for irrigation and domestic water supplies. During the course of these hearings you will hear from the Navahos themselves about their problems.

Some new irrigation development is possible through conservation and better use of the available supplies but this source is definitely limited. The only significant water supply remaining to New Mexico

is that in the San Juan River. Authorization of the Colorado River storage project and participating projects will assist the State in utilizing a portion of its allocated water.

Upon the recommendation of the Commissioner of Indian Affairs the Secretary has recommended for authorization the Shiprock division of the Navaho project and has not asked for like consideration of the south San Juan division and the San Juan-Chama projects. Feasibility grade reports are not available for any one of these three.

In the Bureau's original report and in the bills now before this committee, the Shiprock (Indian) reclamation project and the south San Juan project are treated as separate entities. Actually the two are inseparable units of the same project, the only difference being that part of the lands to be irrigated lie within and part outside of the Navaho Reservation. In its official comments, the State has requested that the two be recognized as units of a single large project. New Mexico feels that the relative sizes of the Shiprock Indian and south San Juan divisions of such project can only be determined by a proper balancing of the gravity and pumping portions of the Navaho project. The gravity portion is largely within the Navaho Reservation and the pumping portion is divided between Indian and white lands.

In his supplemental report of October 1953, the Secretary recognizes this situation and recommends that the Shiprock (Indian) division of the Navaho project, including Navaho Dam and Reservoir, be authorized for construction, operation and maintenance in accordance with laws applicable to the development of irrigation projects on Indian reservations including the provisions of the act of July 1, 1932 (1947 Stat. 564, 25 U. S. C., 1946 edition, 368a), and that it receive financial assistance as a participating project of the Colorado River storage project. Initiation of actual construction to be deferred until a report establishing the feasibility of the division has been made available to the affected States and approved by the Congress.

The State has pointed out that the Navaho project and the San Juan-Chama transmountain diversion project are closely interrelated because of a common source of water supply and because the two will divert most of the water in that common source. The State feels that the two projects cannot properly be considered separately. Their sizes must be mutually determined in order that the best and fullest use of the State's compact allocation may be made. Also, the State firmly believes that the Shiprock (Indian) division cannot be considered separately, but that the complete Navaho project including the south San Juan division should be considered by the Congress at this time.

New Mexico is in full accord with the urgent request of the Navahos and the Secretary with regard to the Shiprock (Indian) division. However, because of their interrelation and because of the status of the investigations, New Mexico feels that the proper course is to seek concurrent conditional authorization of both divisions of the Navaho project and the San Juan-Chama project at this time.

We have requested feasibility reports of the Secretary on all three. These are now in course of preparation and will show the engineering and economic feasibility of the projects and the availability of water

for each. The reports must disclose and set out operational principles for the use of San Juan water as affects both Navaho and San Juan-Chama projects. There also exists an operational problem with regard to the Rio Grande waters which must be developed in the plan for the San Juan-Chama project. As soon as these reports are available and have been circulated among interested parties for review and comment we expect to return to the Congress for further consideration of these projects.

At this juncture the bill asks authorization of Navaho Dam as a storage unit. In the supplemental report of the Secretary the original recommendation has been changed to place Navaho Dam as a structure in the Navaho participating project. This dam is a key unit in the development of these projects. We urge authorization of Navaho Dam at such time as its size can be accurately determined and among the initial units, if at all possible.

Thank you.

Mr. HARRISON. Do you have any questions, Mr. D'Ewart?

Mr. D'EWART. In addition to the question of feasibility, has the matter of water rights all been cleared up on these three projects?

Mr. ERICKSON. Mr. D'Ewart, the question of the water rights has not come into the picture. We are proceeding by cooperation with the various independent parties in trying to determine the size of the project that will meet the feasibility requirements.

Mr. D'EWART. Has New Mexico made a determination as to where they want the water of the San Juan River used?

Mr. ERICKSON. Under our statutes and constitution, I do not believe that the State of New Mexico can make that determination. We can suggest where there is need for the water and the projects would have to be developed as they can be.

Mr. D'EWART. That is all.

Mr. HARRISON. Mr. Regan.

Mr. REGAN. Mr. Erickson, why is it that we get this very comprehensive bill here, 17 dams in it, and all these proponents say you cannot take one without taking the full program?

Now you come along and say we cannot, that the San Juan-Chama and the Navaho projects must go together, cannot be separated. I cannot understand that. Why cannot they be separated?

Mr. ERICKSON. I have tried to say, Congressman, that they cannot be considered separately because of the close interrelation. They take their water from a common source, and the development of these projects, if developed to their full extent as now contemplated, would substantially take all of the water from that source. When you get to that condition you have competition, one project against another, which could have a material effect on one or the other.

Mr. REGAN. In closing your statement you say:

We urge authorization of Navaho Dam at such time as its size can be accurately determined and among the initial units, if at all possible.

You are not urging the diversion of the San Juan-Chama project at the same time, you urge the Navaho project now; is that right?

Mr. ERICKSON. Yes, sir. I do not think we can ask the Congress to go ahead with the diversion until there is sufficient information to show what the project is and what it will do.

Mr. REGAN. So they can be handled separately?

Mr. ERICKSON. They could be, but I say, if you consider them separately, you reach a point where one might jeopardize the eventual construction of the other.

Mr. REGAN. In other words, is it your feeling that if the Navaho were built, the other might be forgotten? So you want them both at the same time?

Mr. ERICKSON. The Navaho might be built to such a size that the other could not be built. I am not saying that it might be forgotten.

Mr. REGAN. The Navaho might be built of such size that there would not be any water left to divert?

Mr. ERICKSON. That is correct; that is, you would not have enough to develop a feasible project, let me say.

Mr. REGAN. Now you say you have asked the Department for a feasibility report on four projects at the earliest possible time?

Mr. ERICKSON. Yes.

Mr. REGAN. Can you tell me what additional land will be contemplated to put into production or cultivation under the San Juan-Chama project.

Mr. ERICKSON. It is the position of the State that there should be no new land development in that project, that the water should be used for supplemental municipal and industrial purposes.

Mr. REGAN. So there is no new land contemplated to be put under cultivation under this 235,000 acre-feet of water?

Mr. ERICKSON. It is the State's position that there should not be.

Mr. REGAN. But what beneficial use, then, for the 235,000 acre-feet will be in the three proposed dams—to generate electric power and for municipal purposes, to supplement irrigation water for projects now in existence?

Mr. ERICKSON. Yes, sir, that is correct.

Mr. REGAN. What are the capacities for those three new proposed dams—total?

Mr. ERICKSON. Mr. Regan, I do not have the details, the present details, of the project before me. If you wish the details, there are members of the Department here to give them to you.

Mr. REGAN. In addition to the three new proposed dams, is it the plan to also increase the capacity of the El Vado Dam on the Chama?

Mr. ERICKSON. I do not believe that has been considered, no.

Mr. REGAN. You do not believe it is a point of the program?

Mr. ERICKSON. I am speaking purely from memory now. I do not have the present information concerning those studies before me.

Mr. REGAN. Do you have figures on the total cost of this diversion project, total overall cost?

Mr. ERICKSON. The original estimates were around \$225 million.

Mr. REGAN. And when were those estimates made?

Mr. ERICKSON. They were made about 2 years ago.

Mr. REGAN. Do you think there would be some increase now if they were authorized at this time?

Mr. ERICKSON. Yes, sir, there would be some increase.

Mr. REGAN. How would that money be repaid to the Government with interest? Is it all to be repaid or is there some chargeoff for the nonreimbursables?

Mr. ERICKSON. There are no nonreimbursables in this project.

Mr. REGAN. So the entire amount would be repaid the Government with interest. In what period of time?

Mr. ERICKSON. I have not the latest figures on that. The last information I had was that it would pay out in a 50-year repayment period.

Mr. REGAN. Fifty years, through the sale entirely of electricity or the sale of water?

Mr. ERICKSON. The sale of water for supplemental purposes to the extent of the irrigators' ability to pay, the sale of water to municipalities—

Mr. REGAN. Who arrives at the amount that the irrigators are able to pay? How is that arrived at?

Mr. ERICKSON. Eventually it would be arrived at by contract, I would think.

Mr. REGAN. But there is no specific program now as to what the irrigators will pay for the supplemental water?

Mr. ERICKSON. I have nothing before me officially, Mr. Regan, at this time.

Mr. REGAN. What percent of the repayment will be made from the sale of electrical energy generated in the three new dams? Do you know?

Mr. ERICKSON. Percent?

Mr. REGAN. Yes, the percent to be repaid through the sale of electricity.

Mr. ERICKSON. I can give you the figures that were available—

Mr. REGAN. We can get them, I guess, from other sources. I just thought you might know.

Mr. ERICKSON. It is a substantial portion. I will say that.

Mr. REGAN. It is a substantial portion?

Mr. ERICKSON. Yes.

Mr. REGAN. Do you think it is more than 85 percent that will be repaid through the sale of electricity?

Mr. ERICKSON. I do not believe that much.

Mr. REGAN. You do not believe it will be that much?

Mr. ERICKSON. No, sir.

Mr. REGAN. But it is more than 50 percent?

Mr. ERICKSON. Fifty percent or more.

Mr. REGAN. I think that is all, Mr. Chairman.

I would like to say, Mr. Erickson, in the trip we made out there you played a very important, and able part. I enjoyed it.

Mr. ERICKSON. Thank you, sir.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. No.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Chairman, I wish to supplement my colleague's remarks about our enjoyment of the time in New Mexico. We especially enjoyed that experience of four different kinds of wild meat.

Mr. Erickson, what is the advantage in your opinion of authorizing conditionally certain parts of the upper Colorado River program, then leaving the final authorization for continued study by this committee and final determination by this committee? Where is there any advantage to the projects which are left out in the air dangling for further study?

Mr. ERICKSON. Congressman, I think probably the only advantage would be that there has been recognition of the project and it might be easier for us to proceed more rapidly with our investigations.

Mr. ASPINALL. I can understand why they are brought before this committee.

Mr. FERNANDEZ. Will the gentleman yield to me?

Mr. ASPINALL. I will yield, with the understanding, of course, that we folks in the area which I represent are in the same position.

Mr. FERNANDEZ. Exactly.

Mr. ASPINALL. Which you folks are in in new Mexico. I was wishing to have a member of the Upper Colorado River Commission give any thought he has upon this very strange procedure which is brought before this committee.

Mr. FERNANDEZ. I will not interrupt at this time then. I will let the witness continue his answer to the question, and when he is through I would like the gentleman to yield to me in the hope I may throw a little light on exactly that question so far as our State is concerned.

Mr. ERICKSON. Mr. Aspinall, I said in my statement that our situation is somewhat unique in this respect: that the Secretary is asking for just that kind of an authorization for the Shiprock project, the Shiprock division of the Navaho project.

Mr. FERNANDEZ. That is the Indian division?

Mr. ERICKSON. The Indian division; yes sir. The State feels that if there is anything that can be done to expedite the authorization and final construction of the Navaho project, we are very much for it. At the same time, I have tried to explain that because of the inter-related conditions concerning water supplies, the interrelation of the competing projects, that they have to be considered together to determine how much each will eventually divert. Now I do not think that that necessarily set a precedent for any other area or any other State, because we have a unique situation, I believe.

Mr. ASPINALL. Of course, you understand, I am sure, that this committee has taken a very definite stand in this Congress upon the question of secretarial authorization of reclamation projects.

Mr. ERICKSON. Yes, sir.

Mr. ASPINALL. This committee has passed out a bill to the Rules Committee against such a program. Now what is proposed in many instances in the legislation now before us, and the testimony which has been given, would be to conditionally authorize, then bring back to this committee for final authorization by the same procedure. And whether this committee wishes to accept a dual process of authorization, I suggest that we determine. But it is rather unique.

Now I will yield to my colleague from New Mexico.

Mr. FERNANDEZ. First addressing myself to the question directly affecting New Mexico, probably the best answer to that is given by the Governor in his letter of December 28, 1953, to the Secretary of the Interior when this supplemental report was submitted to the States.

On page 2 of that letter, with which I am sure you are familiar, Mr. Erickson, the Governor says:

Since authorization of large Federal projects is sometimes considered to be identical to a declaration of intent to use the water, and is sometimes felt to

constitute a priority date, it appears that concurrent authorization of these projects is necessary. The feasibility reports should indicate to what extent the authorizations can be sustained.

Mr. Chairman, he is talking about the feasibility reports which, under the recommendation of the Bureau of Reclamation, all three of them—the Shiprock Indian project, the South San Juan project, and the San Juan-Chama project would be submitted to this committee at a later date for its approval and for approval by the Congress before appropriations are made.

Now as to all projects, this administration has been stressing, and rightly so, I think, a partnership between the Federal Government and the States. One of our big difficulties has been that the Bureau of Reclamation has not assigned to our regional engineer enough funds to go forward and make a very complete feasibility report on this project, and consequently we are lagging behind in some of them, both in my State and in other States.

Under this partnership between the Federal Government and the State, if the provisional authorization recommended by the Bureau of Reclamation as to the Shiprock project, and in the bill as to the other two also, the people from San Juan in the South San Juan project, our good friends, the Indians, the tribal government, the people of the Rio Grande Valley and the State of Mexico could raise as much funds as they can possibly raise to make them available to the Bureau of Reclamation to work with the Bureau of Reclamation along with its fund so that our engineer can make these feasibility reports; if we know what plans will be approved by this committee and this Congress and have some assurance by such action of provisional authorization for the State to be planning along those lines.

Mr. ASPINALL. Now my colleague, do I understand if such a project were included in this legislation, then the only thing that this committee would have to decide when the matter is brought before us again would be purely the question of feasibility?

Mr. FERNANDEZ. That is correct, in the San Juan-Chama project. When that feasibility report comes up in complete form—it is very complete as to costs and a few other things—but when it comes up in full and complete form, if it is determined that less than 235,000 acre-feet of water can be used, that is all then authorized. But at least we know that we can be working toward that objective in furnishing money to make these plans, and they will not be wasted.

Mr. ASPINALL. My colleague realizes there may be other matters which should be decided at the same time, and that this committee, if tied with just the question of feasibility—

Mr. FERNANDEZ. I do not think this committee would be tied because the whole thing would be open to investigation, excepting that insofar as our State is concerned we can be assured that this committee does recognize and will recommend by the provisional authorization the agreement which has been reached by the State people after long struggle to divide some of that water with the Rio Grande Valley.

Mr. ASPINALL. Of course, we have already recognized that principle.

Mr. FERNANDEZ. The Bureau of Reclamation has, but we would like to have the provisional authorization from the committee to know that the committee and the Congress will also recognize it. We feel that the Members of the Congress, too, should realize it.

Mr. ASPINALL. I will yield to the gentleman from Montana.

Mr. D'EWART. I do not think we ought to let the record indicate that this committee in any way recognizes a water right can be established by this Congress authorizing a project. In this committee's view a water right has to be established under State law by beneficial use and in no other way, and a simple authorization of a project does not establish the water right under State law.

Mr. FERNANDEZ. I fully agree with my colleague, except that the Governor probably fears that the authorization of this project may at a future date by the courts be considered as the initial authorization of the water, and therefore, to guard against that, I assume the Governor makes that statement and recommends that all three be authorized now.

Mr. ASPINALL. That is all.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. How much water is allotted to New Mexico by the Santa Fe compact, do you know?

Mr. ERICKSON. Which Santa Fe compact do you refer to?

Mr. YOUNG. The 1948 compact, I presume, is where you are getting the water for the three projects you are referring to this morning.

Mr. ERICKSON. The upper Colorado River compact. Yes, sir. 11¼ percent of the upper basin allocation.

Mr. YOUNG. What does that amount to in acre-feet?

Mr. ERICKSON. 11¼ percent of 7,450,000 acre-feet is about 838,000 acre-feet.

Mr. YOUNG. Would all that water be utilized by two projects of the Navaho and the San Juan-Chama?

Mr. ERICKSON. No, sir.

Mr. YOUNG. You would have additional water to be utilized?

Mr. ERICKSON. That is correct. That would utilize approximately 60 percent of the allocation, I would say.

Mr. YOUNG. And you would have about 40 percent left?

Mr. ERICKSON. Yes.

Mr. ASPINALL. Will the gentleman yield?

Mr. YOUNG. Yes.

Mr. ASPINALL. I want my colleague to understand what is involved here—providing that 7½ million acre-feet is left in the upper basin after the delivery to the lower basin. You always must keep that in mind because there is not any formula here by which you can say that any part of the upper basin is entitled to so much water and will obtain so much water annually.

Mr. YOUNG. Is it varying between certain ascertainable amounts? Can you say it varies between 4 million and 7½ million?

Mr. ASPINALL. We would like to know. With the facts that we have, with the last several years, it is almost impossible to make the amounts of historical flow vary uniformly over a certain number of years. We have not had that a long enough time, apparently, to study it.

Mr. ROGERS of Colorado. If I may inject myself at that point. When you refer to the division made with the upper basin States, they went on a percentagewise of the production without reference to acre-feet. Therefore, as pointed out by my colleague from Colorado, it is only a percentage of what we have left after the 10-year period of

delivery of 75 million to Lee Ferry. And it is a percentage proposition in which we have attempted to estimate on the history heretofore given.

Mr. YOUNG. Thank you.

Now the Hammond project, also in New Mexico, is it tied into the Navaho project in any way?

Mr. ERICKSON. The Hammond project has been considered as an individual project. It could be tied in physically, I think. Plans have not gone that far with the Navaho.

Mr. YOUNG. Is that contiguous to the South San Juan or Navaho?

Mr. ERICKSON. It lies below them along the river. It lies below the diversion canal.

Mr. YOUNG. It looks like it lies up the river from the Navaho here.

Mr. ERICKSON. Yes, it is up the river from the Shiprock division and lies close to the South San Juan division of the project.

Mr. YOUNG. Are you advocating the inclusion of that as one of the participating projects, too?

Mr. ERICKSON. Yes, sir. There is a feasibility report on that project.

Mr. YOUNG. On the San Juan-Chama project, how many acre-feet would be diverted to that project by the plan that you are advocating? Do you have any idea?

Mr. ERICKSON. There is a possibility of diverting as much as 235,000 acre-feet.

Mr. YOUNG. How far would that be transferred by the transmountain diversion system?

Mr. ERICKSON. It would depend, Mr. Young, on where it would be used in the Rio Grande Basin. A definite plan has not yet been developed.

Mr. YOUNG. Do you have any idea, roughly, how far it would be transferred by canal? Would it be 20 miles or 120 miles or 200?

Mr. ERICKSON. From the point of diversion to the city of Albuquerque, say, which is one of the municipalities that is interested in the water, it would be about 180 miles.

Mr. YOUNG. About 180 miles?

Mr. ERICKSON. That would not be in canals, however.

Mr. YOUNG. Some existing ditches and the river?

Mr. ERICKSON. Delivery through the river to some point accessible to the city for diversion.

Mr. YOUNG. I understand you now get part of your water for San Juan-Chama out of the Rio Grande; is that right? Where does the dispute lie between Texas and New Mexico here?

Mr. ERICKSON. I believe the concern of Texas is in the regulation of Chama water incidental to the regulation of the transmountain water if it is to be brought in. The reservoirs regulating the transmountain would be on the Chama River, which is a tributary of the Rio Grande which supplies water to New Mexico and Texas.

Mr. YOUNG. And Chama supplies two-thirds of the water to the Rio Grande?

Mr. ERICKSON. About one-third.

Mr. YOUNG. That is all the questions I have.

Mr. HARRISON. We have Congressman Dempsey of New Mexico here. Do you wish to ask any questions?

Mr. DEMPSEY. No, thank you, Mr. Chairman.

Mr. HARRISON. Mr. Rogers of Colorado?

Mr. ROGERS of Colorado. Only one. In response to a question asked by the gentleman from Texas, Mr. Regan, as it may deal with the overall bill that is being considered here, are you familiar with the meetings that have been carried on with the lower basin States and the upper basin States about the development of the Colorado River over the last 20 years?

Mr. ERICKSON. Yes, sir.

Mr. ROGERS of Colorado. And is not this bill, or the three that have been introduced here, an attempt to spell out to the upper basin States their water development that they have been striving for for the last at least 30 years, and that is the reason they are all put together here?

Mr. ERICKSON. Yes, I think that is what we are attempting to do.

Mr. HARRISON. Thank you very much, Mr. Erickson. We appreciate having you with us, and I, too, enjoyed my visit to that area.

Mr. DEMPSEY. I would like to ask one question, Mr. Chairman.

Mr. HARRISON. Yes. I thought you did not have any.

Mr. DEMPSEY. It follows the question of Mr. Rogers. Mr. Erickson, would it be feasible or possible to select one project and go on with that without taking others into consideration? You do not think it would be feasible to take one of these projects on the Colorado of all that are set up and do one without the consideration of the other, would you?

Mr. ERICKSON. Do you have reference to the participating projects?

Mr. DEMPSEY. Yes.

Mr. ERICKSON. Yes, in some instances, I think. Perhaps in general through the basin you can proceed.

Mr. DEMPSEY. I am considering those to be considered in connection with this bill which is before this committee. They should go hand in hand, should they not?

Mr. ERICKSON. We feel they should, yes.

Mr. DEMPSEY. And I feel they should.

Thank you.

Mr. HARRISON. Thank you very much, Mr. Erickson.

Mr. ERICKSON. Thank you for the opportunity.

Mr. HARRISON. The next witness is Mr. John Patrick Murphy, executive secretary of the Middle Rio Grande Flood Control Association. Proceed, Mr. Murphy.

**STATEMENT OF JOHN PATRICK MURPHY, EXECUTIVE SECRETARY,
MIDDLE RIO GRANDE FLOOD CONTROL ASSOCIATION**

Mr. MURPHY. Mr. Chairman and members of the committee, my name is John Patrick Murphy. I am executive secretary of the Middle Rio Grande Flood Control Association. This association has been authorized by the people in the middle Rio Grande Basin and the upper Canadian Basin, to appear on their behalf and present the statements prepared by the various communities and areas, showing the desperate need for supplemental water. I have filed with the clerk of the committee 35 copies of these statements.

This organization represents 400,000 people living within that portion of the Rio Grande Valley lying between Elephant Butte Reservoir

on the south and the Colorado State line on the north. This area includes the counties of Taos, Rio Arriba, Santa Fe, Sandoval, Bernalillo, Valencia, Socorro, and Sierra. We also represent the people of the upper Canadian Basin which includes the counties of Colfax, Mora, and San Miguel.

Several large meetings were held in the principal cities and county seats of each and every one of these counties.

In every instance the pleas for supplemental water for irrigation purposes were actually pitiful. The plight of these farmers is serious and in most cases desperate. It is difficult to imagine anyone in a more discouraging situation than a farmer attempting to make a living from an irrigated farm with only a partial supply of water.

Ofttimes he cannot raise the crops for which the land is peculiarly adapted and for which there is a ready market at a fair profit. On the contrary, he is forced to raise only those crops which can be matured with a limited water supply regardless of the need or market value for such crops. He cannot plan rotation of crops which is universally recognized as the essence of good farming.

He watches his cost of operations mount steadily, but his income is held down by an inadequate water supply. In short, he finds himself facing an almost impossible situation.

I would like to point out that in a report rendered December 11, 1950, by the President's Water Resources Policy Commission, they stated that "the Rio Grande Basin was a sick area" and "importation of water from other basins is essential." In the recommendation of importation of water they were referring to the San Juan River waters recently allocated to New Mexico.

All of the waters in the Rio Grande are completely appropriated. In fact, they are overappropriated. Therefore, it follows that we also have grave water problems developing in our municipalities. Citing one instance: The 1950 Bureau of the Census report declared Albuquerque a metropolitan area with a population of 146,013. Within the corporate city limits, a population of 97,012.

The Albuquerque metropolitan area registered the most rapid population growth of any of the 168 metropolitan areas listed by the Federal Government between 1940 and 1950. The increase was 110.4 percent. The statistical department of the Southern Gas Co. have released estimates of expected population for Albuquerque by 1960 to be 250,000. Other cities in the valley show similar growth.

There is consequently a tremendous amount of pumping of water for municipal supply in the Middle Rio Grande Valley; and the present interpretation of, and operations under, the Rio Grande compact, results in New Mexico being in continuous debt to Texas.

As stated by the chief engineer of the Middle Rio Grande Conservancy District:

At the present time we are faced with the problem of transporting almost 100 percent of the waters in this area to the State of Texas, and the only possible source of water available which might be used in part to correct a percentage of this shortage is the San Juan River water.

All of the cities and towns in the valley continue to show tremendous growth in population and it has been estimated that during 1953, over 60,000 acre-feet of water was used for domestic purposes, and within the very near future this consumption will increase to well over 100,000 acre-feet per year.

Therefore, as pointed out by the chief engineer of the conservancy district:

Since practically every drop of this water is pumped from the valley floor adjacent to the Rio Grande, it amounts to what is practically direct diversion from the water supply which has been heretofore available for agricultural purposes.

We believe, since this water very definitely is subtracted from the water available to the agricultural interests, that every effort should be made to replace Rio Grande water, or to directly supply the various municipalities, which are the major users of water for domestic purposes. The only source available to us for this purpose is the waters of the San Juan River.

INDIANS IN THE VALLEY

There are 6,000 Indians in the valley living in 9 pueblos. Agriculture is the principal economy of these 6,000 Indians, who are now being seriously threatened by a shortage of water along with their valley neighbors. These Indians would directly benefit, and be assured of a continuance of their long-established livelihood, with the proposed program of a San Juan-Chama diversion of additional water.

NATIONAL DEFENSE

New Mexico is one of the most vital areas in the national-defense program.

We stress the national-defense angle of our project, because, extremely important defense establishments have been located in the middle valley. Some of these installations include Los Alamos atomic laboratories, Sandia atomic laboratories, Sandia Armed Forces special weapons project, Kirtland Air Force Base, Ordnance Research Division and experimental range, and others.

These important installations all consume great quantities of precious water, and it is essential to do everything in our power to assure these endeavors of an adequate supply of this water for future expansion in behalf of national defense. Therefore, they too are in need of this San Juan-Chama project.

The solution of these water problems is one of the most pressing needs of the State of New Mexico. The only hope for maintaining the existing economy and providing for a normal, continued growth in these areas is to import additional waters. The San Juan River is the only source available. It truly is our last water hole.

The tremendous growth of the cities and towns in the Rio Grande Valley, and the foreseeable continuation of this remarkable growth, also emphasizes the needs for large new supplies of water for municipal and industrial purposes. This need is urgent even today.

From here on, New Mexico's future growth will be limited only by its water supply, therefore it is imperative for us to develop this new water to its optimum beneficial use, and to conserve every drop of this precious resource.

Multiple-purpose projects such as the San Juan-Chama project for municipal, industrial, and irrigation water as well as power development are not matters to be put off pending a recession or depression. On the contrary, such projects should be constructed as rapidly as possible so as to contribute toward continued prosperity and a high standard of living. New Mexico, in fact, needs this project now to preserve its land and water resources.

Literally thousands of farmers, businessmen, and city and county officials attended meetings in unifying their efforts to obtain this urgently needed San Juan-Chama project. They raised money to send witnesses from each community to these hearings. We persuaded them, however, not to burden this committee with so many oral presentations and they agreed. We then acquired written statements from each county on our assurance that we would present them to this committee.

Therefore, we have taken these statements and bound them in this folder for your convenience, and out of deference to these splendid but anxious people, I respectfully request that their statements be made a part of the printed record.

In conclusion, we join the other witnesses in urging favorable action on the request for authorization of the Colorado River storage project and participating projects, which, for reasons clearly stated in our letter to this committee, definitely must include the San Juan-Chama project.

I appreciate very much this opportunity to appear before your committee, and on behalf of the Middle Rio Grande Flood Control Association and the 400,000 persons whom we represent, I wish to say, thank you.

Mr. HARRISON. Mr. Miller?

Chairman MILLER. No.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. I do know as I have any questions, Mr. Chairman, but I would like to say briefly to Mr. Murphy that we in Texas find ourselves in opposition to the Chama project, unfortunately, because we usually try to cooperate and do get along very nicely with our neighbors. But in this water you propose to bring over from the reservoir you propose to build, you do not seem to have the same objective that the people of the upper basin of the Colorado River have—of wanting to put in reservoirs to store water so they can deliver their commitment to the lower basin. You want to put in reservoirs to bring beneficial use into New Mexico, despite the fact you say here that you are in debt to Texas under the Rio Grande compact for water.

Now we want to do the same thing in our compact that the Colorado River people want to do. The upper basin wants to store water so they can deliver their commitment to the lower. But you do not have that objective; you are going to put all of that water to beneficial use, despite the fact that each year you go increasingly in debt to Texas for the water due it under the compact.

I would just like to know if you know how much additional water of the Rio Grande has been put to beneficial use by New Mexico since the compact between the three States was drawn. How much additional water is New Mexico using out of the Rio Grande?

Mr. MURPHY. I rather imagine our State engineer could answer that, but I would not be qualified to. But I would like to, if I may, explain a little something on your preamble to that question.

Mr. REGAN. Yes.

Mr. MURPHY. I believe that the folks in New Mexico would just love it if they could send the first few issues of that water straight on through to Texas to get ourselves cleared away. But, according to the upper Colorado River compact, we have to consume that water

within the State of New Mexico; therefore, we cannot use that to pay any debts to Texas, although we would love to.

Mr. REGAN. Do you feel that water will put you in shape so that out of the waters now being divided—

Mr. MURPHY. We would be in a position where we could use less of the Rio Grande water and send it on to you and supplement that with water from the San Juan.

Mr. REGAN. One other question that I would like to ask you, Mr. Murphy. Mr. Erickson indicated that in his opinion 235,000 acre-feet would be the maximum. Is there some much less figure that you might really expect to get delivered?

Mr. MURPHY. Mr. Regan, to the best of my knowledge—I am not an engineer—but to the best of my knowledge these particular technical committees who were appointed about 2 years ago worked out a distribution of water so that it would receive the maximum use and benefit the most people, on a premise that 235,000 acre-feet could be made feasible, but probably less than that we would have a hard time justifying. We could use a lot more than 235,000.

Mr. REGAN. I understand. But it is your belief that you will have almost a constant year-to-year supply of 235,000 acre-feet?

Mr. MURPHY. Yes; if we are allowed to build those storage dams so that the years that we could only take over 80,000 acre-feet, the following year possibly we would get what you might call a real coverage on the watershed or a windfall, so to speak, and we would be able to get 400,000 acre-feet. But over a period of 10 years, on an average of only 235,000 acre-feet per year.

Mr. REGAN. Can you tell me why you would need those 3 dams to put that 235,000 acre-feet of water you expect to beneficial use?

Mr. MURPHY. No, I cannot. But Commissioner Dexheimer told us that in the event that you wanted any detailed explanations, he would allow the engineer from our region to explain those things to you. I would not be qualified.

Mr. REGAN. Let me ask it this way then: If you were to succeed in getting this San Juan-Chama diversion of 235,000 acre-feet a year and it flowed into the Chama River and on down the Rio Grande, where you could put those waters to supplemental and irrigation use, and municipal use, you could do that without the need of having these three additional reservoirs, could you not?

Mr. MURPHY. No. You have to control the flow because Albuquerque, for instance, is standing about 4 feet below the river, and if we just let that water come on down without any control up there, we had better leave it up in the Colorado Basin.

Mr. REGAN. Is it going to take additional storage for some forty-seven-hundred-thousand-odd acre-feet to store possibly 235,000?

Mr. MURPHY. I imagine the engineers have it figured out it would take that; and they also figure in there that in that way they could guarantee to Texas the release of this Chama water, so there would be no interference with the flow of the Chama. So those things are essential to take care of the lower valley, to build those dams, so we can assure you we are going to get that water through to you. Without them we could not give you that assurance.

Mr. REGAN. And you are serious in feeling that if you had this diversion, you would be able then to more properly respond to your obligations to the Elephant Butte Reservoir District?

Mr. MURPHY. Yes, if these municipalities—for instance, Los Alamos has already filed for water, Albuquerque has filed for water, Truth or Consequences has filed for water, Taos filed for water. If these municipalities file for some of this water, they will not be draining the Rio Grande water to use, and it will go on through as soon as we get the San Marcial swamps cleared up so it can get through.

Mr. FERNANDEZ. Will the gentleman yield for an observation?

Mr. REGAN. Of course.

Mr. FERNANDEZ. My good colleague assumed in the preamble to his question that in storing water in the Chama we would not follow the concept being followed at the other reservoirs, they would not aid in delivering water below. I know he is sincere about that, but he is slightly in error. Because when we build these dams and when we receive our water in the good years to fill the dams, then in the lean years the normal flow is allowed to go down the Chama and into the Colorado River past San Juan-Chama.

Mr. REGAN. You mean into the Rio Grande?

Mr. FERNANDEZ. No, sir, into the Colorado River. To the extent we have in the good years water excess to our share, to that extent in the bad years the main stem of the Colorado River would be able to deliver to Arizona its share of it without harming us, because we have by this providential storing of water in the good years made that possible. You see, it is the same concept.

Chairman MILLER. The Chair, acting for Mr. Harrison, observes the time of the gentleman from Texas has expired unless other time is yielded to him.

Mr. REGAN. I do not need more time.

Chairman MILLER. The Chair recognizes Mr. Aspinall for 10 minutes.

Mr. ASPINALL. I just want to make an observation. I like the statement of Mr. Murphy. All the waters which are going to be diverted by this proposed diversion arise within Colorado; do they not?

Mr. MURPHY. That is right.

Mr. ASPINALL. And New Mexico has a right to a certain percentage of the waters of the Colorado River, and this is about the only way that you can get it?

Mr. MURPHY. That is right.

Mr. ASPINALL. You also appreciate the fact that there are people in southwestern Colorado who are looking a little bit askance upon this particular diversion because they can see that their future development will possibly be limited by this sort of a diversion. Is that not correct?

Mr. MURPHY. Yes, but that water was allocated to New Mexico.

Mr. ASPINALL. I am not asking you that question.

Mr. MURPHY. O. K.; yes.

Mr. ASPINALL. I just wanted to make the observation—when you say it is your last waterhole, referring to New Mexico—there is not any reason to particularly confine that to New Mexico because it is Colorado's last waterhole, too.

Mr. MURPHY. That is right.

Mr. REGAN. And the Rio Grande is our last waterhole.

Mr. ASPINALL. If we could just get the people in the East to appreciate this situation.

Mr. REGAN. That is right.

Mr. ASPINALL. That is all.

Chairman MILLER. Mr. Rogers?

Mr. ROGERS of Colorado. No questions.

Chairman MILLER. Mr. Dempsey?

Mr. DEMPSEY. No questions.

Chairman MILLER. Mr. Dawson?

Mr. DAWSON. I have no questions, but I just have a suggestion: There are some of us getting a little confused about where this water runs. Reference is made it will go into the Colorado if it were not diverted down into the Rio Grande. I was just wondering if there was not someone here—the regional director or someone—who could show us on the map exactly where this Chama comes in. The best map I find is right on the front cover of this pamphlet [indicating]. We have looked on the inside and are getting a little confused.

Mr. ASPINALL. If my colleague will yield, that map in the pamphlet shows very definitely all the tributaries to the San Juan River and the fact that it flows as suggested there on the map [indicating].

Mr. DAWSON. In other words, the San Juan naturally flows into the Colorado?

And your plan is to divert it to the San Juan-Chama through the various dams you speak of over into the Rio Grande?

Mr. ASPINALL. That is correct. Right above the little town of Pagosa Springs as it appears on the map.

Mr. DAWSON. Then I am wondering what my friend from Texas is concerned about. It looks to me as if they got more water in the Rio Grande, you would be happier; would you not?

Mr. REGAN. I would ordinarily, yes, but they propose to put in three more dams to put that water in and we fear additional water to their own use, and further deny us the water to which we are entitled under the three-State compact.

Chairman MILLER. Mr. Young?

Mr. YOUNG. I would like to ask a question with regard to the power features of this San Juan-Chama. Will much of the water that is diverted be used for power purposes? I understand the project has a generating capacity of 145,000 kilowatts.

Mr. MURPHY. Water will be held at high elevations, and as it is dropped we will develop the power because it will be the power that will help to pay for the project.

Mr. YOUNG. Do you have any idea what the minimum amount of water would be which would come to the project as a result of diversion, bearing in mind that New Mexico is entitled only to 11¼ percent of that water which is available in the upper basin?

Mr. MURPHY. I am sorry, I would not have that. I would not be qualified to answer that.

Mr. YOUNG. Are there any scientific studies on the minimum amount of water that would be available?

Mr. MURPHY. That is right.

Mr. YOUNG. The reason I ask that, the project costs \$228 million and irrigation is only paying for about 14 percent of it. And if there is going to be any years when you do not have enough water for power, it seems to me the economic feasibility of the project might be in question.

Mr. MURPHY. That is the reason for the large dams, so that when we do have a large flow we can hold it there.

Mr. YOUNG. But there might be some years——

Mr. MURPHY. We can only release 235,000 acre-feet.

Mr. YOUNG. You can only release 235,000 from where?

Mr. MURPHY. From the dams we use for consumptive use.

Mr. YOUNG. How much can you divert?

Mr. MURPHY. 235,000 acre-feet.

Mr. YOUNG. That amount is available?

Mr. MURPHY. According to the studies, it will be available over a spread of 10 years. Some years we could divert even more.

Mr. YOUNG. You will have an average of 235,000 acre-feet?

Mr. MURPHY. That is right.

Mr. YOUNG. Which could be utilized by New Mexico to convert to the San Juan-Chama project through the canals?

Mr. MURPHY. That is right.

Mr. YOUNG. That has been firmly established by studies?

Mr. MURPHY. That is right.

Mr. YOUNG. That is all the questions I have.

Mr. HARRISON. Thank you very much, Mr. Murphy. I appreciate your coming here and appearing before the committee.

(The statements referred to by Mr. Erickson follow:)

STATEMENT OF TOM BOLACK, FARMINGTON, N. MEX.

My name is Tom Bolack and my home is Farmington, N. Mex. I am an independent oil and gas operator with production and operations in the San Juan Basin. At the present time I am mayor of the town of Farmington. I wish to lend my support to the State of New Mexico and the Upper Colorado River Commission in urging the authorization of the Colorado River storage project and the participating projects substantially as set out in the bills now before this committee.

In that connection I feel that the development of the Navaho project, in particular, would assist in the industrial development of the San Juan Basin and ask that consideration be given to this development in the final project plan.

There is a vast amount of raw materials and undeveloped resources in the San Juan Four Corners area. Along with adequate water resources the area contains the following:

A. 11,170,739,000 thousand cubic feet (11 trillion) of gas reserves, hydrocarbon gas of commercial fuel value, as shown in the New Mexico Oil Conservation Commission Report of December 1, 1953, and that reserve is being increased daily.

B. Several strata or zones of nitrogen gas found at Hogback Pool (near Shiprock), Bountry Butte Pool near Four Corners, and several other widely separated wells in the Four Corners area.

C. Helium and CO₂ gas has been developed in several pools in southwest Colorado and Four Corners. The largest helium well in the world is near Shiprock, N. Mex.

D. Eighteen billion tons of available coal at commercial depths in the Farmington-Hogback area.

E. Forty tons of sulfur per day is now being manufactured from one gas field which is located on Ute Indian lands.

F. Major uranium and vanadium deposits throughout the Four Corners area. All the raw materials for any of the many types of petrochemistry plants are present in sufficient amounts in the area. Phillips Petroleum Co., one of the leaders in petrochemistry, has developed a gas reserve of over 2 trillion cubic feet near Farmington, N. Mex. This gas has no approved market at this time.

Forty-three major companies are now operating 51 petrochemistry plants throughout the United States. These plants are producing alkyl detergents, methanol, glycol, cateic acid, alcohol, acetone, nylon basics, sulfur, butadiene, and many other associated byproducts and various combinations thereof. Among

the 43 companies mentioned, the following majors are active: Atlantic Refining Co., Cities Service Co., Continental Oil Co., Dow Chemical, Du Pont, Firestone, Gulf Oil, Humble Oil, Lion Oil Co., Phillips Petroleum, Shell, Sinclair, and Skelly Oil Co.

If a plant comparable to the Lion Oil Co.'s El Dorado, Ark., plant were to be constructed in the San Juan area, it would have the following water requirement: 28,315,600 gallons per day (674,180 barrels), or 87 acre-feet per day would be consumed. This would require 31,755 acre-feet per year. Specifications of this plant and others are shown in the Oil and Gas Journal, Tulsa, Okla., November 2, 1950, issue.

In view of the hundreds of thousands of acres of oil and gas leases now held under lease in the Four Corners area by the above listed major companies and their presently planned drilling programs, it seems that their requirements of water will greatly increase and a regulated flow would be a necessity in the foreseeable future. It is to be further noted that these companies now hold leases on over 700,000 acres of Navaho lands, and over half of items B, C, and D of this paper are located on Navaho lands.

The following sources have been used for the data included in this statement:

R. R. Spurrier, director, New Mexico Oil Conservation Commission, report of December 1, 1953

Clarence B. Folsom, Jr., assistant professor of petroleum engineering, New Mexico School of Mines, unpublished reports

Oil and Gas Journal, Tulsa, Okla., November 2, 1950, issue (special petrochemical report)

STATEMENT OF JACK CLINE, INDIAN TRADER, SAN JUAN COUNTY, N. MEX.

My name is Jack Cline. I live at Fruitland, N. Mex., where I operate an Indian trading post adjacent to the Navaho Reservation. I have lived there all of my life, my father having been a trader before me. In the 40-odd years of my contact and association with the Navaho people, I have come to know them well and to understand their problems.

I have witnessed the efforts of the Navahos to subjugate such valley lands as they could along the San Juan River and to cultivate and irrigate the fields through their own efforts and without Government subsidy. In the initial construction work on the project, the only assistance they had was from one Government employee who did some dynamiting to assist them in removing rock for the canal head works. They built the canal and distribution system and for a number of years operated the system themselves. Then in the 1930's, Congress appropriated money to construct a new canal and enlarge the irrigated area. This development is known as the Fruitland project. A number of you committee members saw the results of that effort last summer on your tour of the upper Colorado River Basin. Yellowman, the Indian who spoke to you in Navaho at Farmington that day, is one of the farmers under that project.

I am speaking to you today in behalf of authorization of the Navaho project. About four-fifths of the project would be of direct benefit to the Navaho people. In addition to providing a living for about 1,500 families, it would increase the size of the farm units available to them. One of the difficulties of the present projects is the small size of the individual farms. With the development of the new project, this difficulty will be overcome and the Navaho will have sufficient land to make a good living for himself and his family.

In addition to lands under the Shiprock division, the Navaho project will serve a substantial acreage of both white and Indian lands under the south San Juan division. These lands, irrigated largely by pumping, will add a substantial white lands area to adjoin and supplement the Indian project. It is my sincere hope that you will give us favorable consideration and authorize the Navaho project, not only for the benefit of the Navaho people and the State of New Mexico, but for the benefit of the Nation at large.

STATEMENT OF ED H. FOSTER, PRESIDENT, SAN JUAN COUNTY RECLAMATION ASSOCIATION

My name is Ed H. Foster. I have been a resident of Farmington, N. Mex. for 60 years. I have been associated with the San Juan County Reclamation Association for 13 years. We in this association are interested in the protection

and development of our existing irrigated lands and in the development of additional lands wherever possible within the State, but especially within San Juan County.

Through private initiative we have been able to develop only about 40,000 acres of irrigated land in San Juan County. This comprises all of the land which can be easily reached along the river bottoms. In order to bring more land into cultivation it is necessary to divert by means of long canals or to pump from the river to the higher benchlands. This type of project has been beyond the ability of the private investor in the area to accomplish. Our one hope for expansion is through projects such as the Navaho, Hammond, the Animas-La-Planta, and possibly other minor projects which might be feasibly developed.

To accomplish this we recognize that the authorization of the Colorado River storage project, with its participating projects, is necessary and we urge that you give every consideration to passage of the authorization bill now before you. The area is going through a period of significant growth because of the gas and oil development. We know here in San Juan County, however, that the true wealth of the area is in its land and water resources. There will be a time when the gas and oil may have been completely depleted, but as long as the water flows in our rivers and we are able to divert that water to lands to grow crops, we can sustain and maintain a stable economy. We are very much interested in seeing the Navaho placed on a self-sustaining basis and along with that the development of whatever white lands can be accomplished.

STATEMENT OF HON. CLYDE TINGLEY, CHAIRMAN, CITY COMMISSION OF THE CITY OF ALBUQUERQUE, AND EX OFFICIO MAYOR

My name is Clyde Tingley. I am chairman of the city commission of the city of Albuquerque and have been a member of the governing body of the city of Albuquerque for the past 30 years, except 4 years (1935-38) when I was Governor of the State of New Mexico.

I appear before the committee in support of a bill to authorize the Secretary of Interior to construct, operate, and maintain the Colorado River storage project, which includes the San Juan-Chama project as a participating project, to divert a water supply into the Rio Grande Valley from the San Juan Basin.

I am thoroughly familiar with the problems of the city of Albuquerque in reference to its water supply. One of our main problems the past several years has been to plan for an adequate surface water supply to meet the city's future needs.

Albuquerque is one of the fastest growing cities in the United States and is still growing rapidly. In 1950 the official population was 97,012. At the end of 1952, according to estimates based on water connections and other reliable information, it had increased to approximately 140,000. It has shown a healthy growth every year since the first official census in 1860.

Estimates of future population vary widely. For the year 1960, the minimum estimate, lowest of three trends recently calculated by engineers employed by the city, is 165,000. Another reliable estimate made by the Natural Gas Co. is 253,000. Several estimates, including two other possible trends calculated by our engineers, lie between these extremes. Any conservative plan must visualize enough water for 250,000 people by 1960.

The present source of our water supply is from wells located in the saturated valley fill. This source is satisfactory at present; however, we are extending the well fields farther, both up and down the valley, each time we expand the capacity of our system. We are aware that the amount of ground water available for recharge is unknown, and the effect of the pumping on the flow of the Rio Grande has not been determined. We are also aware that all other important cities depending upon ground water as their source of supply have eventually reached the point where the supply becomes inadequate or litigation results over the rights to the limited available supply.

The only source from which Albuquerque can obtain a surface water supply is by means of a transmountain diversion described in the bill now before the Congress as the San Juan-Chama project. The city has cooperated fully with the State of New Mexico in the preparation of a comprehensive plan and report, which shows the city's needs for municipal uses and a reserve for its requirements for future development. I cannot emphasize too strongly the importance of this project to the future of the city of Albuquerque and its inhabitants.

I sincerely hope that this committee will approve the bill to authorize the entire Colorado River storage project, as it is necessary if the four Upper Colorado River Basin States, including New Mexico, are to develop their natural resources. I also sincerely hope the San Juan-Chama diversion will be included as one of the participating projects for the good of the entire Middle Rio Grande Valley.

Mr. HARRISON. This statement on the San Juan-Chama project which has been given to the committee, without objection, will be received and made a part of the file, but it is too voluminous to be made a part of the record.

Mr. MURPHY. Could not the statements be made a part of the record without the other data in the pamphlet?

Mr. HARRISON. Not unless you separate them. The staff will be unable to do so. How many statements will there be?

Mr. MURPHY. One from each county—about 10 statements.

Mr. HARRISON. How long will they be?

Mr. MURPHY. None of them exceed 3 pages; most of them are just 2.

Mr. HARRISON. Without objection, those will be received if you will prepare them, but it is beyond the time of the committee staff.

Mr. MURPHY. There is a lot of statistical data and so forth in there, but I mean just the statements. That is what I requested.

Mr. HARRISON. They will be received.

(The statements referred to follow:)

MIDDLE RIO GRANDE FLOOD CONTROL ASSOCIATION,
Albuquerque, N. Mex., January 4, 1954.

INTERIOR AND INSULAR AFFAIRS COMMITTEE,
House of Representatives,
Washington, D. C.

We urgently request that your committee recommend, and that the House of Representatives authorize the Secretary of the Interior to construct, operate, and maintain the Colorado River storage project and participating projects, as designated in the bill now pending before your committee.

While endorsing the project as a whole, we are especially interested in that portion of the program dealing with the share of the Colorado River water allocated to New Mexico under the Upper Colorado River compact; and we have been authorized to represent the people who are seeking 235,000 acre-feet of water through the San Juan-Chama project. The enclosed brief, therefore, supports the Colorado River storage project and the participating projects, especially the San Juan-Chama Project.

This latter project is of immediate and vital concern to some 400,000 persons in the Middle Rio Grande Basin and the Upper Canadian Basin. We cannot emphasize too strongly the need for this supplemental water.

As you perhaps already know, the San Juan-Chama project is definitely tied in with the Shiprock project, which will include as a unit of such project the South San Juan project. These contain both Indian and non-Indian lands.

The State of New Mexico has declared, and all interested parties agree, that neither the San Juan-Chama project or the Shiprock-South San Juan project can assert a superior right as against the other without virtually destroying the other. Hence, it has been necessary to seek simultaneous authorization, and to make every effort to protect each from encroachment by the other.

This brief, therefore, not only stresses the need for supplemental water in the Rio Grande and Upper Canadian Basins, which will be supplied by the San Juan-Chama project, but pleads for understanding consideration of the interrelationship between the projects as discussed in the preceding paragraph.

Respectfully submitted,

HENRY F. HANNIS, *President.*

JOHN P. MURPHY, *Executive Secretary.*

THE MIDDLE RIO GRANDE CONSERVANCY DISTRICT—THE IMPORTANCE OF
SUPPLEMENTAL WATER TO THE MIDDLE RIO GRANDE VALLEY

Since any distribution of water dealing with the Rio Grande, and particularly that portion of the river lying within the State of New Mexico, starts and stops

with the Rio Grande compact, I believe that a short explanation of this contract is in order.

The Rio Grande compact attempted to divide the waters of the Rio Grande equitably between the States of Colorado, New Mexico, and Texas. The Texas share includes that portion of water used by the Elephant Butte Irrigation District which is immediately south of the Elephant Butte Reservoir. All of this district lies within the State of New Mexico, and is included in the Texas section of the compact for administrative and distribution purposes. The State of New Mexico portion is those waters between Otowi and Elephant Butte Reservoir. The compact also protects that portion of the waters of the river lying between Otowi and the Lobatos gaging station lying near the Colorado State line. That part of the river between Otowi and the Elephant Butte Reservoir is under the supervision of the Middle Rio Grande Conservancy District by authority of the State of New Mexico. Undoubtedly any new waters transported from other watersheds into that portion of the river controlled by the Middle Rio Grande Conservancy District would probably be subject to some supervision by the district under such authority as has been and might be granted in the future by the laws of the State of New Mexico. It would also have considerable effect on the operation of the Rio Grande compact. At the present time we are faced with the problem of transporting almost 100 percent of these waters in this area to the State of Texas. This compact attempted to divide the water, as above stated, through a schedule of supply and deliveries between various States through computations made by gaging stations situated as follows: Colorado deliveries at Lobatos, New Mexico deliveries at Otowi and San Marcial, Tex., deliveries at the Elephant Butte Reservoir. The compact was highly desirable and probably was inevitable, particularly about the year 1939 when it was compiled and agreed to by the various States. The general idea was excellent; however, I do not think that there is any doubt that there are some grave faults with the compact, its interpretation, and method of administration. First, the water-supply records at the time of the drawing of the compact were of such limited scope that the schedules must have been to a considerable degree based on estimates and guesswork. Second, it seems there is considerable doubt as to the investigations that were made concerning prior water rights, which has been established by many water users on the Rio Grande, which the compact would have the effect of nullifying or restricting. Third, the most objectionable feature of the compact is the almost impossible-to-fulfill requirement necessary for major readjustment. It takes unanimous decision of the commissioners to reopen the contract and would probably require re-ratification by the several States and the Congress of the United States.

I have specifically pointed out these problems, since the Rio Grande Conservancy District and the State of New Mexico have tried very sincerely to operate within the compact for the past 14 years since its inception. We find ourselves continuously in trouble for various reasons, the most important of which follows:

First, the compact made no provision for natural losses of water over which the Middle Rio Grande Conservancy District might have no control. This would particularly apply to the San Marcial swamped areas where immense losses of water have occurred for the past several years. This swamped area was a result of the construction and filling of Elephant Butte Reservoir. Due to the rate of storage in Elephant Butte Reservoir prior to 1939 this situation did not become so particularly noticeable until later years. This swamped area particularly aggravated by the record floods of 1941 and 1942, with their resulting loss of water, has placed the State of New Mexico in a most untenable position. The State of New Mexico and the Middle Rio Grande Conservancy District are being forced to spend terrific sums of money to correct this situation, which will result only in a partial solution of its water supply problems. At the present time the Bureau of Reclamation and the Middle Rio Grande Conservancy District, with the approval of the State of New Mexico, are engaged in a tremendous undertaking looking toward the draining of these swamps and the channelization of the river throughout the District in order to prevent as much of these natural losses as possible, which would allow the State more nearly to comply with the terms of the Rio Grande compact.

Second, under the schedule of deliveries as between Otowi gage and the San Marcial gage, the compact very definitely expected that there would be several hundred thousand acre-feet of tributary inflow water within this area. There are no long-time records available on which to base any such assumptions. The weather cycles in this area are of such tremendous length and subject to so many

vagaries that we believe that there must have been an almost 100 percent incorrect guess as to this expected amount of inflow. In other words, it is our belief that the general climatic conditions in this territory would definitely prohibit this inflow from ever reaching a point that would fulfill the Rio Grande compact, except in an occasional or most unusual year. The only possible source of water available to this district which might be used in part to correct a percentage of this shortage is the San Juan River. This water would have to be provided through the construction of the San Juan-Chama transmountain diversion project. This supplemental water, in practically every year, would mean the difference between a normal crop and probably 75 percent of normal average within the Middle Rio Grande Conservancy District. This additional supply would, in part, enable New Mexico to more nearly meet their scheduled deliveries into the Elephant Butte Reservoir. This additional supply in the Elephant Butte District area, plus the increased supply within the Middle Rio Grande Conservancy District area, would undoubtedly result in several million dollars worth of added crop values in a great majority of the years.

Third, the Rio Grande compact did not envision the terrific increase in the amount of water which would be used for domestic purposes. In 1939 the annual use probably did not exceed 20,000 acre-feet within the conservancy district area. We believe that at the present time there is possibly in excess of 60,000 acre-feet used for domestic purposes only, and within the near future this will probably increase to over 100,000 acre-feet per year. Since practically every drop of this water is pumped from the valley floor adjacent to the Rio Grande, it amounts to what is practically direct diversion from the water supply which has been heretofore available for agricultural purposes. There is no desire on the part of any water user of this area to contest the use of water for domestic purposes.

Most certainly, water for human and domestic beast and fowl consumption would be prior to any possible agricultural use on this or any other river. We do believe, however, that since this water very definitely is subtracted from the water available to the agricultural interest of the Middle Rio Grande Conservancy District that every effort should be made to replace Rio Grande water or to directly supply the various municipalities, which are the major users of water for domestic purposes. The only source available for this purpose, as well as agricultural purposes, is the waters of the San Juan River. In view of the above problems we submit the following:

First, New Mexico is entitled to 11¼ percent of the water allocated to the upper Colorado Basin States. This amount of water is considerably in excess of that amount which might be economically and feasibly used within that part of New Mexico lying within the San Juan Basin. Now, we certainly and most sincerely protest that we have never desired or expected to use one single drop of that water which can be put to beneficial use at a reasonable cost in the San Juan Basin. However, we do desire and expect to secure and use as much as 235,000 acre-feet of water within the middle Rio Grande area. It is our firm belief that there is this amount in excess of any possible uses which might be met in the present or in the foreseeable future in the San Juan Basin. The only way that these problems can be solved and this water made available to the many municipalities and farmers within our area is through the authorization and construction of the Navaho Reservoir and the San Juan-Chama transmountain diversion. We realize that the financing of such a tremendous project will be a most stupendous undertaking; however, we submit that the price of water for the above-mentioned purposes is impossible to estimate. People and animals must have water to drink, and a price for water for one purpose might be exorbitant when the same price for another, such as human consumption, might be negligible. There are many other uses to which portions of the water transported over the divide could be placed, such as the development of power, recreational purposes, preservation of fish and wildlife, and industrial uses. However, these subjects, I am sure, will be mentioned more specifically and covered by other witnesses and other statements which will be submitted to you in support of the authorization and construction of units of the upper Colorado Basin projects which are required to guarantee to New Mexico their equitable share of the waters of the Colorado River. The Middle Rio Grande Conservancy District has made a sincere effort to live up to the Rio Grande compact and to distribute, as fairly as possible, water to all of the various users; however, our task would be possible of accomplishment with the authorization and completion of this project. We wish to point out also that all of these things are of an emergency nature, and

that quick action will be necessary to avert what could be a catastrophe to our area as well as the entire State of New Mexico.

Submitted by,

HUBERT BALL,

Chief Engineer, Middle Rio Grande Conservancy District.

TAOS COUNTY AND ITS NEED FOR ADDITIONAL IRRIGATION WATER

The county lies immediately below the Colorado border, and is in the form of a rectangle roughly 78 miles from north to south and 38 miles from west to east.

To the east of the river is the high country of the Sangre de Cristo (Blood of Christ) Mountains. This part of the county has many streams, all flowing west to the Rio Grande, and also it is heavily forested. Most of the land is now in the domain of the Forest Service and the Bureau of Land Management.

Along the valleys of the streams as they come into the Rio Grande are the farms.

HISTORY

This is the oldest settled region of the United States. Just below Taos County is the settlement of San Juan, founded by San Juan de Onate in 1598, thus making it the oldest settlement in the United States.

The town of Taos, not far to the north, the county seat of Taos County, was founded in 1610. It has seen much history, from early traders to Plains Indians, and today represents a rich mingling of three cultures: Anglo, Spanish, and Indian. Famous Taos Pueblo is just outside Taos.

But racially it is mainly Spanish-American, as the descendants of the Conquistadores constitute the bulk of the population.

INDUSTRIES

Farming, cattle and sheep, mining, timber mills—all of a relatively minor nature.

At the time of the last presidential election, the Taos County newspaper attempted a get-out-the-vote campaign. A representative of the paper went on a house-to-house canvass in the settlement of Llano Quemado, just south of Taos proper. Llano is one of the most prosperous of the villages in this part of New Mexico.

From house to house it was the same story; the men of the family were away in the beet fields and mining camps of Colorado, or running the sheep camps of Colorado, Wyoming, and Montana. There are no jobs in Taos County.

Of a population of about 17,000 in Taos County it is estimated that about 50 percent of the heads of households leave their homes and families to find work.

Compared with other sections of the county, there are more than ordinary voluntary enlistments in the Army. A large number of Taos County boys were in the Death March on Bataan; a large number were and are in Korea, Europe, and other United States Army centers. So as an indirect result of the unemployment situation, this section suffers disproportionately in loss of life and in wounded in time of war.

County political chairmen get numbers of requests each day for jobs.

There is no real industry in Taos County, and little agriculture. As a result, nearly every other family in the county is either on relief or broken up by the absence of the menfolk. Brides of a month face such situations as the absence of their husbands in the Army or in the sheep camps for periods ranging from 9 months to 2 years.

The plight of the people here, which has always been bad, is steadily growing worse. Unless improvement occurs, Taos County will become an economic, and therefore human tragedy.

WORTH SAVING

This should not be allowed to happen, as Taos County is one of the beauty spots of the United States, if not of the world. It is famous in Europe as well as in the United States for its magnificent scenery and climate, and its present-day mingling of the three cultures. Its rich historical past shows in its special architecture and fascinating customs. Visitors come from all over the world, and the art colony has been famous since the early 1900's.

But still more important than the preservation of these things is the need of the Spanish-American people for a livelihood. They stem from an old culture, and they are possessed of many natural abilities, from construction work to music. Labor is so cheap amongst them, and so skillful, that a house which would cost about \$50,000 in the East or Midwest can be built here for practically a song. If work is available somewhere, many suitable applicants turn up out of nowhere without benefit of want ads, in such number that it is impossible to hire more than a fraction.

Such people should not have to use as their only resources the unemployment compensation and relief rolls, but should instead be permitted to add their potential to the actual work of the United States. Yet relief is the biggest business in Taos County, totalling at least \$500,000 a year at the latest figures, and as the employment situation is rapidly growing worse, the figure is undoubtedly higher at this writing.

SOLUTION

The situation can readily be cured, as not only are the human resources of the valley great, but so are the natural ones.

The soil potentiality is unusual. For example, lettuce grown around the Questa region won for 2 years in succession a first prize at the Chicago Fair; luscious strawberries can and are grown there in November.

The reason the valley today is not full of productive and prosperous farms, gardens, and orchards is a simple one: Lack of irrigation water.

WHY DIFFERENT NOW?

The question may arise in the minds of those to whom this report is submitted: What has changed Taos from 100 years ago, when it was a prosperous farming community, with no cry for more irrigation water; when it was called the granary of this part of the world, and had great flocks of sheep and great herds of cattle?

There are changes since those days.

1. Then there was no Rio Grande compact, requiring us to send so many thousands of acre-feet of water per year to Texas.

2. Then there was no Forest Service. Of course the Forest Service has saved the forests and preserved the mountain watersheds; at the same time the grazing privileges of the people have been curtailed to the extent that the oldtime herds of sheep and cattle are now impossible.

3. Taos Pueblo has more water rights than it did 100 years ago. It now has rights to the best stream in Taos: the Fernando de Taos stream, which flows freely practically throughout the year.

4. According to some physiographers, the weather cycle has changed, and winters are less severe; thus the mountains send less water to the valleys than in former days.

These factors must be taken into account, and arrangement made to send more irrigation water to the people in the Rio Grande Valley.

LESS THAN 2 PERCENT UNDER IRRIGATION

Today less than 2 percent of Taos County is irrigated. Its total acreage, according to Soil Conservation figures, is 1,442,000. It includes 1,362 farms, of which 1,255 are irrigated, the total irrigated acreage being approximately 27,000 or about 1.8 percent of the total acreage of the county.

Even taking into account sagebrush and wasteland, less than 2 percent is a pitifully small part of the total to have under irrigation, particularly in a country where farming is the chief means of subsistence. The situation becomes still more drastic when one realizes that even such irrigation as there is is inadequate.

There is little or no precipitation through the months of May, June, July, August, and September, or in other words, throughout the growing season.

Water from melted mountain snows forms the bulk of the irrigation water. But when it is most plentiful, during the period of spring floods, New Mexico is not permitted to store it, due to the provisions of the Rio Grande compact.

Last summer, most farmers irrigated once, at the most twice. But even with this cutting down of water privileges, the water debt to Texas is not being met. From this point of view alone the 235,000 acre-feet of now unused water from

the San Juan Basin are urgently needed. They are also urgently needed to save the crops which otherwise die each July and August.

The waters from the San Juan would thus accomplish the following:

1. Enable the contract with Texas to be fulfilled, and permit the storing of water during the spring flood season. (In this way it would benefit all the other counties along the Rio Grande, as well as the County of Taos.)
2. It would assure that crops would receive an adequate and regulated water supply throughout the growing season.
3. In allowing for storage of water for future use, it would appear the injudicious overuse of the spring water when it is immediately available. This practice of immediate and injudicious use is natural, but it is harmful in the fact that it increases seepage and, also, as the local water has a high alkaline content, it increases alkalic accumulation, and so the leaching of soluble plant nutrients from the soil.
4. It would encourage market gardening locally (most fruits and vegetables sold in the markets here come from either Colorado or California) and so in increasing salable output from the farm, would increase the income of the farmer by more than \$30 an acre.
5. It would put to use about 7,000 acres of tillable but idle land.
6. It would reclaim 21,000 acres of what is now wasteland, which with the use of irrigation water would become good grazing land.
7. It would provide a dam with cheap hydroelectric power, encouraging industry, mining, and sugar beet fields.
8. It would change an area of potential tragedy into one of great productivity and prosperity.

Respectfully submitted.

J. Benito Vigil, Ranchos de Taos, rancher-farmer;

Virgillio Trujillo, Llano, merchant-farmer;

Andres A. Martinez, Ranchos, dairyman-farmer;

O. G. Martinez, Arroyo Hondo, dairyman-farmer;

Gil B. Gallegos, Cerro, farmer-sheepman;

Emmett Ellis, Taos, realtor;

E. C. Cabot, newspaper editor and secretary of soil conservation district;

Joe D. Austin, president, Tatos County Farm and Livestock Bureau, and county supervisor, Farmers Home Administration;

Abad Martinez, county extension agent.

RIO ARRIBA COUNTY AND ADJACENT AGRICULTURAL AREA IN THE ESPANOLA VALLEY

Completion of the San Juan project will make the Espanola Valley a better place in which to live. Today, hampered by lack of the life giving water supply, many of the farm operators and workers are not only forced to find work elsewhere in the State, but many find work in the mines and on the farms of neighboring States.

Facts regarding employment released from manager M. D. Garcia of the New Mexico State Employment Service shows that there are now approximately 1,250 unemployed workers in the area served by the office which includes Rio Arriba, Taos, Los Alamos, and part of Santa Fe County. Of this number, 5,768 unemployed workers actively sought employment through that office since July 1947. Many of these unemployed are unskilled laborers who have had experience in building construction, lumbering, and agricultural work.

The agricultural workers yearly leave the above mentioned area to do seasonal work in other States. The report from the employment service also notes that owners of small farms ordinarily must look for private employment elsewhere to supplement the self-employment income. Adequate water supply would give farmers better farming conditions and allow each to spend more time on his farm.

Gilbert R. McAlister, county supervisor for the Farmers Home Administration, writes, "Applications for loans from the Farmers Home Administration in Rio Arriba County often come from individuals who suffer from lack of water. Any means of stabilizing the water situation would help promote and establish sound farming units. Without dependable sources of water, farmers tend to expand or overstock in wet years and go broke or suffer severely in dry years. A depend-

able source of water, in most instances, means the difference between a sound unit and an unsound unit.

"More water for use in the county would help insure the hay crops in this area which are vital to the cattle industry here. In years of drought as we have seen here the past few years the ranchers must find some source of feed to supplement their ranges. The expense of freighting the feed here from other areas often proves to be more than the rancher can afford. A steady source of water would relieve the drought emergencies."

With sufficient water for proper crop growth, unemployment would decrease and farmers would be more sure of making their living from the land; they would depend upon water and have it when it was needed.

The population in the Espanola Valley area, which has increased steadily and greatly in the past 10 years, would continue to increase and possibly double. Tourists would carry back news of the fine farms and show specimens of the fruit produced in the valley.

We visualize a highline community ditch which would irrigate farms in Santa Cruz, San Pedro, Mesilla, and Fairview by a ditch which would dip into the Rio Grande somewhere near Alcalde. This water would be available throughout the year, thus insuring farmers against water shortage which is all too probable if these lands are to be furnished with water from the Santa Cruz River and Dam as is the case today. Santa Cruz Lake has the small storage capacity of 5,000 acre-feet and is at present dry.

Rio Arriba County's 1,472 irrigated farms stand to benefit greatly through the realization of the San Juan-Chama diversion plan. Under the basis of the Colorado River compact signed at Santa Fe, New Mexico, November 24, 1922, the State of New Mexico is entitled to 834,000 acre-feet of water but this figure is only a potential, with most of the water finding its way to the Gulf of California through the Colorado River.

In order that New Mexico may enjoy its just share of the water allocated under the Colorado River compact it is necessary that the San Juan-Chama diversion plan become a reality. The irrigated farms in Rio Arriba County today get from irrigation and rainfall approximately 3 acre-feet of moisture each year. With the aid of the 235,000 acre-feet which the San Juan-Chama plan will offer, farms in Rio Arriba County will be getting approximately $1\frac{1}{2}$ acre-feet of water which would be the 55 inches of water which is necessary for proper crop growth.

It is estimated that with an adequate supply of regulated, supplemental water the farmers who are already irrigating their crops could double their production. This would materially increase the wealth of the valley and its farmers and help to stabilize the county's economy. Better yields of crops brought about by more water would definitely increase the number of farmers who would devote their full time to the farm. Figures made available by the 1950 census show that of the 957 farm operators in Rio Arriba County who worked elsewhere, 670 of them worked 100 days or more during the year. This is an indication in some cases that a good livelihood is not obtainable from the farm alone and must be supplemented by salaries from work off the farm.

For growth of the farming industry in Rio Arriba County, an area primarily agricultural, and the Espanola Valley in particular, we ask the passage of legislation authorizing construction of the San Juan-Chama diversion project.

It will (1) insure farmers of adequate water for their crops; (2) cause them to depend upon the land for their livelihood and not on outside work; (3) decrease unemployment with the increased productivity of the land; (4) serve as a drawing card for people who wish to settle in a prosperous community; (5) raise the standard of living especially for the farmers who live in the valley; (6) cut down the number of loans asked of the Farmers Home Administration, and (7) help the farmer to become self sufficient; this latter is most desirable.

This material prepared by:

C. H. YATES,

President, Espanola Local, Rio Arriba Farm and Livestock Bureau.

SHELDON WELLS,

President, Espanola Valley Chamber of Commerce.

PHIL MAESTAS,

Manager, Santa Cruz Irrigation District.

SANDOVAL COUNTY

GENERAL DESCRIPTION AND LOCATION

Sandoval County, N. Mex., is located in the northwestern portion of the State. A large part of the county is mountainous. The geologic formations range from the Santa Fe sediments in the south to volcanic craters and necks in the north. The Rio Grande flows across the eastern portion of the county where extensive farming operations are carried on. Other streams of importance include the Jemez Creek which rises in the north central part of the county and flows south and east to its confluence with the Rio Grande and the Rio Puerco which rises in the northwestern section of the county and flows south into Bernalillo County.

This section of the State has long been the home of the Pueblo Indians, dating back to before Coronado's trip through New Mexico. Some of the pueblos which are still in existence include the Santa Ana, Jemez, and Zia on the Jemez Creek, and the Cochiti, Santo Domingo, San Felipe, and Sandia along the Rio Grande. Irrigation farming is practiced along the Rio Grande, Jemez Creek, and the upper reaches of the Rio Puerco. There are a number of lumbering operations carried on in the timbered sections of the county.

ELEVATIONS

The elevations range from 5,000 feet above sea level along the Rio Grande to 10,500 feet above sea level in the Jemez Mountains.

POPULATION AND TRANSPORTATION

The population of Sandoval County as shown by the 1950 census report is 12,440 of which 4,400 are Indian. The rural farm population of the county is 5,540 and the rural nonfarm population 6,900. The majority of the population are engaged in agricultural enterprises; however, lumbering operations are important to the economy of the area. Bernalillo, the county seat and the largest town, has a population of 1,920. It is located on the main line of the Atchison, Topeka & Santa Fe Railroad, and is served by United States Highway 85 and State Highway 44.

CLIMATE

The climate is semiarid and precipitation ranges from about 10 inches in the lower elevations to about 30 inches in the mountainous section. A large part of the precipitation in the mountains occurs as snowfall. Since a large portion of the runoff is from snow melt in the higher elevations, the largest flows occur in the spring and early summer and are lost to irrigators in the upper reaches of the tributaries.

Repeated water shortages occur preventing the most beneficial use of resources at hand, water and land. Irrigation has been practiced by the Pueblo Indians for centuries in this area. Their principal crops are: corn, small grain, beans, meadows, and gardens.

SOLUTION

If adequate storage could be provided, to retard the heavy spring runoff for use during the dry season, the agricultural practices and conditions would be greatly improved. With additional water imported into the basin, which would become possible through the San Juan-Chama project, provisions could be made for replacing the new depletions which would occur by furnishing a full water supply to these areas. By providing a much-needed supplemental supply of water in storage reservoirs and rehabilitating distribution systems and drainage works, cropping patterns could be adjusted to satisfy the most economical use of water and land.

Also, the opportunities for fishing and recreation would be greatly improved in an area which has become one of the most favored recreational spots in the State. Because of its accessibility to the thickly populated centers of the State, any improvement in the recreational facilities would help relieve the congested conditions that now exist, and would encourage tourists and vacationers to use this natural recreation area to a great extent.

CONCLUSION

We urgently request the Congress to authorize the San Juan-Chama project, which would permit us to utilize our natural resources more effectively for agricultural and recreational purposes, both of which are important in the economy of our State.

Submitted by:

FILBERT MARQUEZ,
County Extension Agent.

SANTIAGO ARAGON,
Sandoval County Commissioner.

BERNALILLO COUNTY

GENERAL DESCRIPTION AND LOCATION

Bernalillo County, N. Mex., is located about the geographic center of the State. The only major stream is the Rio Grande, which flows from north to south through the county. Other small streams, tributaries to the Rio Grande, are the Rio Puerco which flows south through the western part of the county and the Tijeras Canyon which rises in the Manzano Mountains, east of Albuquerque, and flows west to its confluence with the Rio Grande.

ELEVATION

The elevations range from 4,950 feet above sea level along the Rio Grande to 10,500 feet above sea level in the Manzano Mountains.

COUNTY SEAT

The principal city and supply center is Albuquerque which is the county seat of Bernalillo County. In recent years Albuquerque and suburban areas have experienced a rapid growth due to defense installations and the influx of tourists and health seekers. Other communities and towns in the county also are experiencing growths due to the increased activities in the area.

The United States Bureau of the Census declared Albuquerque a metropolitan area with a population of 146,013.

CLIMATE

The climate is semiarid with an abundance of sunshine. Precipitation in the Rio Grande Valley averages about 8 inches annually increasing to about 20 inches in the mountainous areas. Rainfall usually occurs as sporadic downpours which reach damaging proportions at times, doing more harm than good. Bernalillo County has a mean average annual temperature of 55 degrees and an average frost-free period of 198 days.

AGRICULTURAL RESOURCES

Bernalillo County, according to the Bureau of the Census, has 13,578 acres of farmland under irrigation. This land occupies a narrow strip along the Rio Grande. The valley floor is mostly level and quite uniform and varies in width from a few hundred feet to more than 5 miles.

Bordering on either side of the valley are bluffs, back of which are hilly lands and extensive mesas that are mostly suitable as grazing lands for livestock.

This part of the Rio Grande Valley comprises the oldest cultivated area in New Mexico, dating back more than 300 years.

Bernalillo County is in the Middle Rio Grande Conservancy District which was formed in 1925 as a political subdivision of the State of New Mexico. The purposes of the district were as follows: the construction of works to drain the waterlogged lands; the erection of levees to protect the valley from floods; the construction of works to control the channel; and the construction of a complete system of irrigation works which include diversion dams, canals, and laterals, as well as a storage dam on the Rio Chama, which would regulate the water supply for the district.

Since completion of the district program, farmland under irrigation in the district has risen from 45,000 acres to 82,000 acres. The problem of the silting

and rising river bed has returned, however, and the spring flood danger has increased to a new and more dangerous point.

Increased water use and decreased water supply has created a serious situation in late summer for the past 10 years.

Plans have been approved by the Congress for a new flood control and reclamation program by the Bureau of Reclamation and the Army Engineers, to be superimposed upon the conservancy district works.

Funds are being appropriated annually for the execution of this plan, but when completed it will provide flood control and some water conservation, but it will not supply any supplemental water.

The increase in water use and the urgent need for new supplemental water can only be solved by the San Juan-Chama project.

GENERAL CROPS

While the agricultural conditions are quite favorable (when adequate water is available) for the production of such field crops as alfalfa, small grains, pinto beans, grain sorghums, sweet sorghums, and corn, the county has also become well known for its carrots, potatoes, lettuce, onions, green peas, beets, cabbage, cauliflower, celery, asparagus, spinach, bell peppers, chili peppers, and garlic. Apples, pears, peaches, plums, apricots, and cherries, grapes, and berries also do well in this soil and climate.

Vegetable crops.

Onions are one of the surest and most successful crops for this county. The experienced growers claim that during seasons when water is in sufficient supply, it is an easy matter to produce from 20,000 to 40,000 pounds per acre of good marketable onions of the leading sweet Spanish and other varieties.

Green peas (garden peas) have been grown commercially. This has been found true of both spring and fall plantings. The average production for early peas has been about 5,000 pounds per acre and the late crop about 4,000 pounds.

Sugar beets for sugar: This is another crop that can be grown successfully in this district. The average yield of sugar beets at the experiment station for the three leading varieties were:

U. S. No. 22—21.25 tons per acre with 16.34 percent sugar

U. S. No. 23—20.24 tons per acre with 16.44 percent sugar

U. S. No. 33—17.67 tons per acre with 17.08 percent sugar

Sugar beet seed has also proven to be a profitable crop.

Lettuce: Those who have grown head lettuce for several years, as well as the Albuquerque merchants who have been handling it, claim that its quality compares favorably with that of the lettuce brought in from other areas.

One of the pioneer growers of head lettuce says it is customary to produce up to 250 crates of 5's and 6's per acre.

Carrots are an exceptionally productive and profitable crop in the district. The color, shape, smoothness, and yield of the carrots all are outstandingly good. The average yields run from 15,000 to 20,000 pounds per acre.

Other crops that are being successfully grown in the district show the following yields per acre under normal and sufficient water years:

Bell peppers.....	pounds.....	12,000 to 15,000
Asparagus.....	do.....	2,000 to 4,000
Cauliflower.....	heads.....	5,000 to 6,000
Spinach.....	pounds.....	1,000 to 3,500
Garlic.....	do.....	8,000 to 10,000
Green chili.....	do.....	18,000 to 20,000

LIVESTOCK AND LIVESTOCK PRODUCTS

Livestock of all kinds are produced in the area, and in addition, each fall and winter, feeders of cattle and lambs bring comparatively large numbers of them into the valley from nearby ranges and mountainous areas. Here this livestock is fattened on the alfalfa, corn, sweet sorghums, and grain sorghums, all grown under irrigation in the area.

Dairying is also practiced to a large and considerable extent in this district and the opportunities for expansion would be very inviting if the farmer could only be assured of an adequate, regulated water supply.

DESPERATE NEED FOR SUPPLEMENTAL WATER IN BERNALILLO COUNTY

A major problem is posed by the intensive pattern of our farming by irrigation within Bernalillo County which requires increased water supplies to maintain production. This is a pressing need and must be provided for if we are to maintain agriculture as a basic segment of our economy in this district.

Our problem is further complicated and emphasized by the ever increasing need for water to supply municipal and industrial demands due to population expansion of Albuquerque and its metropolitan area.

When division of the Rio Grande water was made in 1935, allowances for municipal and industrial uses were based on conditions prevailing before 1930. Because no allowance was made to cover present conditions, municipalities have been withdrawing ground water which must be replaced by surface flows set aside for irrigation. Therefore, increased water supplies are needed to satisfy not only the pending additional demands, but to offset the increased withdrawals that have been made by municipalities beyond the allowances provided for in compact negotiations.

SOLUTIONS

In order to avoid further conflicts of water uses, and possible legal entanglement, a dependable supply should be made available to meet the increased requirements. With additional water imported into the basin, which would become possible through the San Juan-Chama project, these conflicts would be avoided. Through a firm water supply other industries would be encouraged to come to the area and the increased municipal depletions would be made available for irrigation. Also, the recreational opportunities afforded by the imported water would be accessible to the residents and tourists who would be attracted to the area.

CONCLUSION

We respectfully urge the Congress to authorize the San Juan-Chama project, which would enable us to take care of our water requirements for municipal, industrial, and irrigation uses. By making this water available agricultural conditions would be improved, a resource for encouraging industrial expansion would be made available, and recreational opportunities would be increased, all of which are important to the economy and growth of Bernalillo County and of our State.

JOE E. COLE,
County Extension Agent.

BERL HUFFMAN,
Manager, Albuquerque Chamber of Commerce.

EASTERN VALENCIA COUNTY

LOS LUNAS, NEW MEXICO

Los Lunas is the county seat of Valencia County, and is located 10 miles north of Belen and 20 miles south of Albuquerque, in the Middle Rio Grande Conservancy District. It is situated on United States Highway 85, New Mexico Highway 6, and the Atchison, Topeka & Santa Fe Railroad.

Los Lunas is the center of the largest irrigated farming area within the Middle Rio Grande Conservatory District and is often called the dairy center of New Mexico. Many range livestock interests, as well as the Indian Pueblo of Isleta with its large range and irrigated farm holdings, are found in this vicinity.

Principal crops are livestock feed forage crops, such as alfalfa, small grains, corn, sweet sudan, grain sorghums, and tame pasture. Pinto beans, carrots, potatoes, lettuce, onions, melons, green peas, beets, cabbage, asparagus, spinach, bell peppers, chili peppers, and garlic are grown largely by home gardeners with only a few commercial growers in the business. Apples, pears, peaches, plums, apricots, cherries, berries, and grapes are also grown on a small scale with only a few orchards or vineyards on a commercial basis.

The population of eastern Valencia County in round figures is 15,000. Included in this figure is the town of Belen with a population of 4,500 according to the 1950 census. The remaining 10,500 consisting of rural farm and rural nonfarm population live within the vicinity of Los Lunas and include 1,300 Isleta Pueblo Indians.

The elevation of the irrigated farming area covered in this report is 4,800 feet above sea level with only a slight variation from this figure at any given location within the valley.

The area covered in this report is located in townships 4, 5, 6, 7 and 8 North range 2 east of the New Mexico principal meridian and very near the geographical center of New Mexico.

The climate for the area is dry with an annual average precipitation of only 8 inches, most of which falls as rain in July or August. The fall and winter seasons are mild and open, summers are often hot and dry, and the spring season brings high winds with flowing dust. The average frost-free period is 6 months and occurs between April 20 and October 20.

The village of Los Lunas has its own municipal water supply which consists of a tower storage tank and two 800 gallons-per-minute wells. These wells are around 375 feet in depth and are considered adequate for the present domestic usage with excellent water quality. The rural homes in the vicinity have their own shallow wells or sandpoints. The quantity and quality of water varies with the sand and gravel formations encountered.

Labor Employed in Agriculture—Entire County

Civilian labor force for Valencia County-----	5, 520
Farmers and farm managers-----	1, 122
Farm laborers, unpaid family workers-----	326
Farm laborers, excluding unpaid, and farm foreman-----	430
Total engaged in agriculture-----	1, 878
Labor employed nonagriculture-----	3, 642

Source: U. S. Census of Agriculture, 1950.

Most of the 3,642 individuals not employed directly by agriculture, are employed in closely allied jobs directly dependent upon agriculture, such as trucking, railroads, food processing, educational services, professional services, etc. By the same token many of the nonagricultural employees own tracts of land which they farm and produce considerable quantity of agricultural products mostly for home consumption. Records for 1950 show 449 persons working off their farms, with 303 working off their farms 100 days or more.

The following summary of farm operating expenses indicates the extent to which agriculture supports the nonfarm population in the Los Lunas area.

1949 Operating Expenditures

Machine hire-----	\$ 75, 000
Hired labor-----	532, 000
Feed for livestock and poultry-----	282, 000
Livestock and poultry purchased-----	298, 000
Seed, fertilizers, etc-----	79, 000
Gasoline and other fuel oil-----	183, 000

Source: U. S. Agriculture Census (rounded \$1,000).

The Soil Conservation Service, United States Department of Agriculture, shows approximately 27,000 acres of cultivated irrigated land in Valencia County within the Middle Rio Grande Conservancy District.

Within the east Valencia agricultural area, farming and its supporting industries comprise nearly 100 percent of the industrial activity. Every man, woman, and child living within the area is dependent upon local agriculture directly or indirectly. This pattern would not likely change by increasing the available irrigation water, but would expand to include additional farm-supported industries, such as alfalfa dehydrating plants, canneries, cheese factories, chili processing plants, sugar refineries, and livestock feeding.

Historically, settlement in the Middle Rio Grande Valley has been on small farms. This is reflected in the large number of legal tracts, approximately 5,000 in 1944, carried on the records of the conservancy district. Title to much of the land came originally through grants made by the King of Spain during that Nation's period of domination. In the case of community grants, the individual holdings of irrigated land were small. Grants to individuals, while relatively large, have been reduced repeatedly by the custom of dividing the land holdings equally among the heirs. The result in both instances is the same—a large number of small irregularly shaped tracts of which, in 1950, approximately 50 percent varied in size from 1 to 9 acres.

There is a crying need in this valley for a substantial supplemental supply of water for irrigation purposes.

Except for the possibility of salvaging water now lost to water-loving plants and conserving small amounts of flood waters at great expense, the San Juan River offers the only opportunity to develop and utilize substantial amounts of surface water in New Mexico.

The Middle Rio Grande Valley has for years been plagued with a shortage of irrigation water at critical periods during the growing season. These periods occur toward the end of July and in August and September after the winter snows have been exhausted on the watershed. Since such crops as alfalfa and truck crops require irrigation about every 2 weeks while corn and grain sorghums require water about every 3 to 4 weeks, it is therefore obvious that these annual dry periods cause decreased crop production of from 50 to 60 percent and even higher during extreme drought years such as 1953.

In addition to the increased yields per acre resulting from supplemental water an additional 15,000 acres of idle land now under ditch could be subjugated and brought into production making a potential of approximately 42,000 acres in cultivation.

With supplemental water alone providing a 100-percent increase per acre in crop production, there is no doubt that many of our marginal farms would become economic units. In turn the reaction caused by increased production would tend toward combining the smaller submarginal farms, which now exist in great numbers, into larger and more productive units. As more family farms are developed, the less will be the dependence of the local population on outside employment.

Approximately 5,000 acres of the idle land under the ditch which could be subjugated with supplemental irrigation water are too alkaline for the production of most crops. However, these areas offer ideal sites for developing improved pastures. Tall wheat grass and Ladino clover do very well on those areas now supporting only a sparse stand of unpalatable salt grass.

The people of the Los Lunas area can expect the following tangible, indirect, and public agricultural benefits providing they are assured an adequate water supply through a transmountain diversion of San Juan River water into the Rio Grande for their supplemental use:

(1) The direct benefits are those which accrue directly to the farmer and consist of his increased net farm income, including his living allowance and a percentage of his increased farm investment.

(2) Indirect benefits are those which accrue to other persons through the increased production and expenditures of the water user. These benefits, representing increases in net income, are calculated as a percentage of the sales for local use without processing, sales of goods for processing, increased farm expenditures, and increased residential land value in the vicinity of the project.

(3) Public benefits represent attempts to measure the improvements in the general welfare which are brought about by the project. These improvements include settlement opportunities, investment opportunities, providing of increased community facilities and services, and the stabilization of the local and regional economy.

The Rio Grande situation is desperate because the waters of the basin are completely appropriated. Throughout the basin water supplies are acutely short.

Not only are the water supplies deficient in terms of the areas in cultivation, but the possibilities of obtaining supplemental supplies by means of storage reservoirs have been prevented by the downstream uses and by the operation of the Rio Grande compact.

It is hoped that the Congress will realize that the alleviation of this situation can be accomplished by their authorization of the San Juan-Chama transmountain diversion project.

This material prepared by:

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RAY C. CLARK,

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County Secretary, Production Marketing Administration.

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BELEN, N. MEX., IN VALENCIA COUNTY

Belen is the largest town in Valencia County, a three-division point on the Atchison, Topeka, and Santa Fe Railroad, 30 miles south of Albuquerque on United States Highway 85 and State Road 6, in the Middle Rio Grande Valley.

Belen, being centrally located in New Mexico and because of its excellent transportation facilities, is popularly known as the Hub City. Within a 10-mile radius of Belen is the largest irrigated farming area in the Middle Rio Grande Conservancy District.

Belen is a very important center on the Santa Fe Railway system, having the largest and most modern switching and blocking yards west of Kansas City, handling well over 3,000 cars per day (24-hour period) the past summer (1953).

Extensive roundhouse and shop facilities are maintained to handle repairs. The yards in Belen consist of approximately 50 miles of tracks, including 22 sets of tracks in the main yard and 6 on what is known as the river track. In addition to the numerous freight trains handled in the Belen yards, eight passenger trains pass daily through Belen. The railroad operation maintains 13 turns and 20 switch engines. Belen is the division point on the coast lines, A. T. & S. F. (Pecos) and New Mexico.

The Santa Fe also owns and maintains its own water wells, powerplant, and iceplant with an output of 600 tons of ice per day at the peak of the icing season.

The Santa Fe Railway furnishes steady employment for more than 600 men, in all departments, with a payroll of approximately \$3 million annually.

Belen has continued a steady growth in population and economic development over the last 20 years, which has been a gradual but steady and sound development in proportion with the expansion and development of the State of New Mexico.

The United States census showed the following population increase in Belen :

Year :	Population
1920.....	1, 308
1930.....	2, 116
1940.....	3, 038
1950.....	4, 510
1953 (estimated).....	5, 250

The population within a radius of 2 miles is considerably greater, since the suburban area is also heavily populated. Conservative estimates place this figure around 7,000 or more. The trade area extends up and down the Middle Rio Grande Valley some 40 miles and includes a population of approximately 17,500 people, Belen being the largest town and most important trade center in this area.

The economy of the area is, in addition to the Santa Fe Railway, mainly agriculture and livestock, ranching, and dairying. Valencia County is one of the largest sheep raising areas in the United States and a wool processing industry in this region is proposed as feasible.

The railroad yards here provide ample space for location of new industries, supported by local production, such as canning, packing, and quick-freezing plants.

Although the role of industry in the economy of this region is not significant at this time, there are indications that the trend of dispersment of industry in the United States will look to this area, among others, for possible new location and expansion. The ideal climate, land area available, manpower for industry in this section, as well as transportation facilities, appear to be favorable factors in attracting industry; however, present surveys indicate an inadequate water supply for future industrial purposes.

It is definitely indicated, based on surveys and interest shown, that industry would be established in this area if a proper water supply is developed.

Studies made by an engineering firm and others substantiate a firm belief that this area is destined to continue a steady growth. Herkenhoff & Turney, Santa Fe consulting engineers, have estimated for Belen a population of 6,000 by 1960 and about 6,700 by 1970. They have estimated the per capita use for 1960 to be 140 gallons per day and for 1970, 160 gallons per day. Other sources have estimated that by 1980 the population would reach 13,000 and by the year 2000 the population would exceed 17,000.

(For agriculture data on this area, please see similar report on Los Lunas, N. Mex., the county seat of Valencia County, only 10 miles north of Belen).

Since the valley is wider at Belen than at any other point, a third of this acreage is within a 10-mile radius of this city. Here small farms of 40 acres or less comprise the majority of irrigated tracts. The country around Belen is adapted to the raising of fruit, truck gardening, and general farming. Alfalfa and feed grains are the most important crops and they provide protein for New Mexico's industry of livestock raising.

The town of Belen has just this year been forced to drill an additional well, install a million gallon storage tank, and make other installations because of the inadequate municipal water supply.

With the attractive transportation facilities here, the large supply of cheap labor, and splendid climatic conditions, Belen has cause to attract industry, a development which cannot come without adequate water supply.

This material was prepared by:

EARL PETER,
Mayor of Belen.
AUSTIN LOVETT,
TIBO CHAVEZ,
GILLIE SANCHEZ,
CARTER WADE,

Committee of the Belen Chamber of Commerce.

SOCORRO COUNTY

Socorro County lies in central New Mexico and is roughly bisected by the Rio Grande. The city of Socorro is the county seat of Socorro County. The lower end of the Middle Rio Grande Conservancy District lies within Socorro County. The New Mexico Institute of Mining and Technology, engaged in research work for the United States Navy, is located at Socorro.

The principal industries of Socorro County are farming, fruit raising, sheep and cattle raising, lumbering, and mining. All farming and fruit raising is done within the boundaries of the Middle Rio Grande Conservancy District except for a small amount of dry farming, principally growing of pinto beans, in the eastern part of the county.

Socorro County

Year:	Population
1950	9,670
1954 (estimated)	10,300
Mean annual rainfall	7 to 8 inches

Municipal water supply of Socorro is obtained from springs and wells. If additional water is needed, additional wells must be drilled.

The majority of farms are family size and furnish a living for the farm family. Supplemental labor is hired for harvesting of cotton and alfalfa.

Under present conditions, farm production is limited by the supply of available water for irrigation. For instance, last year many farms produced only 1 or 2 cuttings of alfalfa instead of 4 or 5 cuttings. This was due entirely to shortage of water. Without question, the provision of adequate water for irrigation would result in an increase of agricultural production from 25 to 50 percent.

The underground water supply and the maintenance of it is another phase that enters into the picture. All of the underground water in the Rio Grande Valley comes from the waters of the Rio Grande itself. Therefore, to maintain the supply of underground water, a flow of water in the river is necessary.

At the present time approximately 10 percent of the valley farms have irrigation wells that are used for irrigation when there is no river water available and to dilute river water that is too heavily charged with sediment to be used on some crops.

Without question, 75 to 80 percent of all farms in the valley will have irrigation wells. Also, if the underground water supply is maintained, several thousand acres of land above the irrigation ditches will be brought into production, some for pasture lands and some as croplands.

Any additional water required for municipal water supplies for the city of Socorro must also come from the underground water.

At present there are two ore treatment plants located in the Socorro area producing lead, fluorspar, and barite. Their supply of water that is used in the milling process is drawn from wells drilled in the valley.

At present the Bureau of Reclamation is engaged in work on the Rio Grande designed to conserve water. This, however, will not add to the supply of water available in this area, but will materially benefit all areas below Elephant Butte Reservoir.

CONCLUSION

The economic welfare of the Middle Rio Grande Valley is dependent on obtaining additional water for irrigation and municipal use.

The only source of unappropriated additional water available to New Mexico is San Juan River water.

This water can be made available to the Rio Grande area by a transmountain diversion works.

We, the people of Socorro County, N. Mex., therefore request the Congress that they give this matter their careful consideration and, if possible, authorize the construction of the San Juan transmountain diversion project.

Respectfully,

HOLM O. BURSUM, Jr.,

Mayor, City of Socorro, New Mexico.

DENNIS HARRIS,

President, Socorro County Farm and Livestock Bureau.

CARL P. OLIVER,

President, Socorro Chamber of Commerce.

SIERRA COUNTY AND TRUTH OR CONSEQUENCES, N. MEX.

The people of Sierra County, N. Mex., respectfully request a portion of the water from the San Juan-Chama diversion project to be put to beneficial use in this county for the following reasons: 1. Agriculture and industry, 2. Municipal, 3. Recreation and health.

The various statistics are briefly outlined in the following pages.

GENERAL DESCRIPTION

Sierra County, N. Mex. is located in south-central New Mexico. The Rio Grande River traverses the county from north to south and is fed by the following intermittent streams: The Alamosa River, Rio Cuchillo Negro, Palomas River, Animas Creek, Rio Percha, and the intervening drainage which flows directly into the Rio Grande. The Alamosa River rises in the San Mateo Mountains in Socorro County and enters Sierra County from the north. All other streams rise in the Black Range and flow eastward to the Rio Grande. The upper reaches of these streams run a small amount of water except in very dry seasons. The lower reaches are dry the year around except during heavy precipitation.

Elevations range from 11,000 feet above sea level in the Black Range to about 4,000 feet along the Rio Grande.

The principal town, county seat, and supply center is the city of Truth or Consequences which is situated on the Rio Grande between Elephant Butte Lake and Caballo Lake. This town is experiencing a rapid growth due to the recreational facilities afforded in the above-mentioned lakes, the climate, which resembles that of Tucson, Ariz., and the presence of natural hot springs which are used in the treatment of certain diseases as at Hot Springs, Ark. The Carrie Tingley Hospital for the treatment of crippled children is located here for this reason and is nationally famous for its work in the treatment of such diseases as polio.

Hillsboro is also a center of population and is situated in a potentially rich mining area. The remainder of the population live mostly in small farming communities in the irrigated valleys and in mining camps in the western part of the area.

CLIMATE

The climate of the area is semiarid. The average rainfall varies from 9 to 18 inches, depending upon the elevation. The mean annual precipitation in the irrigated areas of the county is about 9 to 12 inches, with much variation in individual years. The frost-free (growing) season varies in proportion to

the altitude; in the irrigated areas the average ranges from about 200 to 223 days. Because of the low humidity and frequent high winds, evaporation is rapid; the loss from a free water surface at the lower altitudes amounts to more than 70 inches per year. During recent years the prevailing widespread drought had its effect in this area to as great an extent as in any area in New Mexico.

POPULATION

The population of Sierra County is 7,186 as reported in the 1950 Census. Five thousand permanent residents are located at Truth or Consequences but many more people live here the year-round on account of health reasons, and have their voting address in other parts of the country. It is estimated that the total actual population as of 1953 is 7,500. This population shows an increase during the winter season as is evidenced by the number of tourist courts. There are 126 tourist courts and apartments within the city, 6 hotels, and 9 trailer courts, and these are capable of housing 2,500 people.

Hillsboro has a population of 350, and the remainder are classed as rural farm, 1,097, and rural nonfarm, 1,176.

AGRICULTURE

A high percentage of Sierra County is range area, and livestock production is the principal type of agricultural endeavor. The division of livestock and land resources is such that a few large ranchers dominate the industry. The carrying capacity of the range varies and there are signs that overgrazing has occurred in the past.

Irrigation farming, as a whole, from a monetary point of view is of second importance, but since it supports a large segment of the rural population, it is of primary importance. The Census of 1950 lists the irrigated lands in farms at 4,997 acres. Of this acreage, it is estimated that 550 acres are in the Elephant Butte Irrigation District and receive its water from storage on the Rio Grande. The remaining acreage is located on tributary areas and are dependent upon perennial interrupted streams for their water supply.

With few exceptions, irrigated farms are small, ranging in size from 1 to 30 acres. A large number of the irrigated farms are of part-time or residential type, supplying subsistence needs of the farm families.

INDUSTRY

The city of Truth or Consequences has one manganese mill which processes ore mined within the city limits. This mill is adaptable to process other types of ore, such as fluorspar, which is mined in other parts of the county.

A second manganese mill is located at Lake Valley. Lead, zinc, copper, fluorspar, gold and silver mines are located in the vicinity of Hillsboro.

RECREATION AND HEALTH

People from all parts of the State as well as adjoining States come to Truth or Consequences to fish. The big majority of people who come here for their health use these recreational facilities because of their proximity. The hot baths are used by thousands each year and this is one of the contributing factors to the rapid growth of the city. As mentioned before, Carrie Tingley Hospital is an institution which has already gained international fame and its continued growth and expansion is to be expected.

AREA TO BE BENEFITED

The area to be benefited directly through the San Juan-Chama project would be Truth or Consequences, which has a population of 7,500 and which is increasing in population and is expected to increase considerably in the future. This city already lacks an adequate supply of water for municipal purposes.

Other areas in the county to benefit through the construction of storage facilities which would provide a supplemental supply of water to those areas now receiving water from the direct flow of streams are located in the lower portion of the tributaries into the Rio Grande from both east and west.

Truth or Consequences has been and is increasing as a health and recreational center. Recreation is in the form of fishing, boating, etc., in the Elephant Butte and Caballo Reservoirs. These lakes were constructed primarily for irrigation,

and in the past on several occasions the water level has been drawn down to the extent that fishing opportunities have become practically negligible. It is very important that arrangements be made whereby a sufficient supply can be maintained in the reservoir to at least sustain fishlife during those periods when the reservoirs are drawn down.

As the population of the city increases additional supplies of water should be made available to the city, possibly from Elephant Butte Lake, by means of a pipeline which can be constructed.

Because of its location, the processing of minerals and metals is being accomplished in Truth or Consequencies and water in increasing quantities is necessary for this purpose.

CONCLUSION

The following organizations hereby request that the Congress of the United States authorize the San Juan-Chama project, and that this area be allocated sufficient water to take care of future requirements of the area. The benefits which will accrue if this water is made available will be in the form of improved agricultural production, and facilities to encourage further industrial expansion, and improvement of health and recreational areas, all of which are important enterprises to the State of New Mexico as a whole.

CITY OF TRUTH OR CONSEQUENCES,
By THOMAS B. WILLIAMS, M. D., *Mayor*.

TRUTH OR CONSEQUENCES AND SIERRA COUNTY
CHAMBER OF COMMERCE,
By Dr. H. F. MALONEY, *President*.
By ROBERT B. SMITH, *Commissioner, Sierra County*.

COLFAX COUNTY

LOCATION

Colfax County is located in the northeastern part of New Mexico. The headwaters of the Canadian River originate in the Sangre de Cristo Mountains in the western part of this county.

The principal communities in the county are: Cimarron, Maxwell, Raton, and Springer.

ALTITUDE

The altitude of Colfax County varies from 6,000 feet at Springer to 6,600 feet at Raton and 8,600 feet at Eagle Nest with some peaks much higher.

CLIMATE

The climate of the area is semiarid with moderate summer temperatures and cold winters. Annual precipitation has varied, according to official weather reports, from about 8 inches to more than 33 inches with an average of about 15 inches.

POPULATION

The population of the county, 1950 census, is 16,761, distributed as follows: Cimarron, 855; Maxwell, 404; Raton, 8,241; Springer, 1,558; rural, 5,703.

AGRICULTURAL AND INDUSTRIAL ACTIVITIES

The principal industrial activities of the area are livestock raising, farming, and service operations. Coal mining was at one time extensive, employing more people and providing more income than all others combined. In recent years many mines have closed and others have curtailed operations so this industry is of much less importance than at once was.

Agriculture is one of the leading industries of the region and is one of the primary activities of the county at this time.

Development of the area started shortly after the close of the Civil War when soldiers discharged at Fort Union moved into Colfax County and began placer mining operations in the Moreno Valley.

Needing more water than was immediately available, these people, mostly Irish, constructed at great expense of money and effort the old Red River ditch,

or the Lynch ditch, to bring water from the upper reaches of the Red River into the Cimarron Basin. The ditch had a total length of about 42 miles, of which about 12 miles was in Taos County and the remainder in Colfax. That portion of the ditch located in Colfax County was constructed on the gravelly talus slopes of the mountains and a great deal of the water was lost through seepage and reappeared in the streams below, greatly increasing the flow of water in the Cimarron Creek.

Irrigated farming in the Cimarron Valley has been in progress for the past 100 years and reached its peak during the First World War. The old Red River ditch continued to furnish some of the water directly until about 1918, but water stored in the talus slopes continued to enter the Cimarron Creek for many years thereafter.

In time the irrigators of the Cimarron Valley found their water supply decreasing alarmingly and began making repairs on the old Red River ditch. However, the courts have ruled that no water may be taken from the Rio Grande watershed until it can be replaced with water from other sources.

The results of this diminishing water supply has been disastrous to the Cimarron Valley and a restoration of the old Red River ditch would not only strengthen the economy of the area, but would provide a greatly increased recreation area for the enjoyment of the public generally and supply additional water for domestic and industrial use in Cimarron and Springer where more water is urgently needed.

Approximately 1,533,000 acres of land in the county are in farms, which includes ranches. About 83,000 acres in the county are used for raising crops. Of this acreage, about 60 percent is under irrigation, not all of which has an adequate water supply. Dry farming is hazardous because of low average rainfall and the further fact that there are often several consecutive years when the rainfall is well below the average. The county is a major center for the raising of purebred cattle.

The principal crops raised in the county are small grains, alfalfa, corn, beans, fruit and garden vegetables.

The value of farm products sold as reported in the 1950 census is \$5,425,000, covering crops, \$545,000, and livestock, \$4,880,000.

AREA TO BE IRRIGATED

The area which would benefit directly through the San Juan-Chama project by receiving water would be all of that area within the Cimarron Creek Basin lying between Springer and the headwaters of the Creek, in the vicinity of Eagle Nest, N. Mex.

The farms in this area range in size from 40-acre irrigated farms to large ranches. All the ranches contain some irrigated lands which are used to produce feed crops to provide winter feed for livestock. The total area in the Cimarron Valley under constructed irrigation systems amounts to about 17,460 acres. Under the present conditions 28 percent of this area has only 42 percent of the needed water supply for dependable farming; an additional 23 percent of the land has only 78 percent of the needed water in normal years and the remaining 49 percent has a reasonably adequate supply under present cropping patterns. As a result of the inadequacy of water, even in normal years, as high as 75 percent of the farmers in the valley must seek employment off the farms to supplement their incomes when rainfall is below normal.

With an additional water supply made available to the area these farmers would be able to devote full time to the business of farming and to the improvement of their farm practices. Income from the lands would be greatly increased. The 28 percent of the land under irrigation in the valley which has only a 42 percent adequate water supply should be able to increase its yield by \$21 per acre, gross, and the 23 percent with only 78 percent of the required water should be able to gross an additional \$11 per acre with an adequate water supply. The 49 percent of the land which now enjoys approximately adequate water supply should be able, with full assurance of an adequate supply and by improved cropping practices, to increase its per acre yield.

Some of the crops now produced in the area are as follows: alfalfa, 2 to 3 tons per acre; corn, 21 to 62 bushels per acre; oats 15 to 42 bushels per acre; barley, 16 to 42 bushels per acre; wheat, 10 to 25 bushels; beans, 422 to 1,240 pounds per acre. With adequate water and improved practices, the highest yield in each crop should become the expected yield for the yield has varied with the adequacy of the water supply.

MUNICIPAL NEEDS AND OPPORTUNITIES

The towns of Springer and Cimarron are located within the Cimarron Creek Basin and are centers of supply for farms and ranches in more than half of the total area of the county. They are also the market place for products the farmers have to sell and provide the schools, churches, and social life for the areas served.

These two communities are in need of an increased and assured water supply. With an assured water supply there is an excellent opportunity for the establishing of small industries where the part-time farmers on lands not under irrigation could find needed employment to supplement their income. In the past, the coal mines have provided this opportunity for people of the county who were compelled to supplement the farm income with off-farm work.

That source of income no longer exists here and some substitute for it must be provided if the area is to continue on a sound basis. Any water used for industry or for additional municipal use would, under present conditions, further deplete the water now available for agricultural use, making more necessary the part-time work by farmers. Business and civic leaders of the county are making a serious effort to find the substitute. Also, the importation of additional water into the basin may offer additional opportunity for fishing and recreation, both important to the economy of the area.

CONCLUSION

The Colfax County Planning Board, which has as its principal objective the encouragement of economic development and improvements in this county, requests that the Congress of the United States authorize the San Juan-Chama project. The upper Canadian Basin area is at present almost entirely dependent on agriculture for its economic survival and water is the limiting factor. If we can obtain a supplemental supply of water many benefits will accrue to the area, to the State, and to the Nation. These benefits will be in the form of increases and diversification in agricultural production, and in improvement in the facilities to attract and hold the tourist trade which is fast becoming one of our best sources of income.

THE COLFAX COUNTY PLANNING BOARD,
By NEIL HANSON, *President*,
P. M. BOWEN, *Vice President*.

MORA RIVER BASIN FOR MORA AND SAN MIGUEL COUNTIES

GENERAL DESCRIPTION AND LOCATION

The Mora River Basin is the most southerly of the headwater tributaries of the South Canadian River. The basin embraces portions of Colfax, Mora, and San Miguel Counties. This basin played a decisive part in early New Mexican history. In the early 1820's the Mora region was frequented by American fur trappers whose knowledge of the country had a great deal to do with the later location of trade routes which aided in the development of New Mexico. The principal activity in the area is agriculture. There are some lumber operations in the area. Irrigation farming is practiced in the high mountain valleys and to some extent in the lower valleys.

POPULATION AND TRANSPORTATION

The estimated population of the Mora River Basin is about 11,000. Mora County, which contains about two-thirds of the basin, had a population in 1950 of 8,720. The rural farm population of Mora County was 5,097 and the rural nonfarm population 3,623. The city of Las Vegas, which is the trade center for Mora County as well as for San Miguel and other counties, had a population of 13,763. It is located on the main line of the Atchison, Topeka & Santa Fe Railway, and is on United States Highway 85, State Highways 65 and 3, and is served by Continental Air Lines.

ALTITUDE

The elevations of the various sections of the basin range from 8,500 feet to 6,400 feet at Las Vegas.

CLIMATE

The climate is semiarid and precipitation in the basin averages about 17 inches.

AGRICULTURE

A major problem is posed by the many small irrigated farms in the Mora River Basin. The pressure of population has forced extension of water supply to the last acre possible to serve. The area is characterized by very small holdings and the low income of subsistence-type farming. Irrigation has been practiced since the time of early Spanish settlement.

The United States census shows that in 1939 there were about 25,000 acres of irrigated land in the basin, practically all of which is in Mora County, while in 1949 only 14,000 acres of land were under irrigation. This decrease was due to an inadequate water supply.

Principal crops are: Alfalfa, corn, small grain, beans, and gardens.

SOLUTION

If a dependable, regulated water supply could be provided for the Mora Basin, the gross farm income per acre on irrigated land would amount to a minimum of \$50 per acre based on a continuation of the present cropping pattern. With additional water imported to the basin, which would become possible through the San Juan-Chama project, the way would become open to provide a much needed supplemental supply of water to the fertile lands in the basin, and with the assurance of this water in regulatory reservoirs, the small farms could be converted to intensive type farming enterprises growing vegetables, berries, etc. The many people now seeking employment a great distance from their homes could be gainfully employed in processing these many products.

Through the impetus of the many improvements numerous small industries would be encouraged to come to the area. Also, the opportunities for improved fishing and recreational facilities in reservoirs, etc., would encourage a large influx of tourists into the Mora area, which is a natural area for this purpose. The area possible of improvement lies along the eastern front of the Sangre de Cristo range of mountains from Las Vegas to the upper reaches of Cimarron Creek.

CONCLUSION

We respectfully urge the Congress to authorize the San Juan-Chama project, which would enable us to obtain the much needed supplemental water supply for the Mora River Basin.

In addition to the above essential project, we would need the construction of the Romeroville storage reservoir and other storage and diversion dams to increase and provide ample supply of irrigation water at all times in the Mora River Basin.

This statement prepared by:

PHILIP N. SANCHEZ,
Chairman, Western Mora Soil Conservation District, Mora, N. Mex.
ANSELMO R. SEDILLO,
County Extension Agent, Mora County, N. Mex.

STATEMENT OF HON. ANTONIO M. FERNANDEZ, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW MEXICO

Mr. FERNANDEZ. We in New Mexico appreciate the serious active and careful consideration your committee is giving to this comprehensive plan, which will initiate the development and utilization in the upper Colorado River States of our share of the waters from the Colorado River. May I at this time also thank the committee for visiting our area in New Mexico last fall, which all of our people have appreciated.

As Senator Anderson stated to the committee, we are fortunate in that the various sections of New Mexico who will share in this water are now in complete agreement, and all the members of our delegation

are in full accord on the position officially taken by the State with respect to that share of the water allocated for utilization within our own State.

As the committee is aware, the supplemental report of the Bureau of Reclamation recommends only the very small Hammond project in San Juan County for immediate full authorization. I shall address myself only to the others.

As to these, after long and continued conferences, the people of the areas affected, in a spirit of cooperation, have agreed that we want simultaneous provisional authorization as provided in the bill for the San Juan-Chama project (that is the transmountain diversion into the Chama-Rio Grande), the Navaho-Shiprock project, and the south San Juan project on a provisional basis; that is to say, with the proviso that before actual appropriations for construction are made, full feasibility reports shall be submitted and approved by this committee and by the Congress, after notice to all affected States required by law.

Such provisional authorization is recommended in the supplemental report of the Bureau of Reclamation as to the Navaho-Shiprock project, and although the same recommendation is not made as to the San Juan-Chama project and the south San Juan project, the Bureau of Reclamation Commissioner, Mr. Dexheimer, you will recall said in answer to one of my questions, "We would not object if the Congress saw fit to authorize it at this time." I did not know that he would give me that comforting answer, but I am not surprised at it for he knows the difficulties we had to surmount before full agreement could be reached among the various peoples affected in the State, and he realizes that recognition by provisional authorization is of tremendous assistance in our planning for the future in the same amicable spirit we have so far achieved. He knows we are anxious to keep that record, in what amounts, in effect, to a division of the waters allocated to New Mexico, between the San Juan Basin and the Rio Grande Basin.

That is in fact the official position of the State, as given to the Secretary of the Interior by the Governor of our State on December 28, 1953, when the supplemental report was submitted to the State for its comments.

I want to read the pertinent parts of that letter to the committee. The Governor said:

The record is adequately clear that a Shiprock project or a Navaho project, as now envisioned, cannot be considered independent of the San Juan-Chama transmountain diversion project. It is clear that the operation of either of the projects must be concurrent with the other on a predetermined operational plan. Also, it is apparent that not only the acreage for the Shiprock and south San Juan units of the Navaho project need to be determined, but a limitation must be put on the water supply the same as a limitation must be put on the water supply of the transmountain diversion. These projects cannot in any way be considered separately. It was the intention of the State of New Mexico that feasibility reports on these projects should show how each would operate in relation to the other.

Since authorization of large Federal projects is sometimes considered to be identical to a declaration of intent to use the water, and is sometimes felt to constitute a priority date, it appears that concurrent authorization of these projects is necessary. The feasibility reports should indicate to what extent the authorization can be sustained.

That, Mr. Chairman, is the position of the State as expressed by our Governor, Edwin L. Mechem. He is a Republican governor and our

delegation is a Democratic delegation, but in these matters, as is the case in this committee, we work together irrespective of politics in the hope that we may bring about utilization of these waters which has been so long delayed.

I am very happy that with respect to the Shiprock project, which happens to be the Indian project, the Bureau of Reclamation upon the recommendation of the Bureau of Indian Affairs as stated in the supplemental report, has so recommended it for such provisional authorization as requested by the State. The same treatment should be given by the committee to the non-Indian lands in the south San Juan project, and to the San Juan-Chama project. The surveys, investigations, and reports, summaries of which were placed in the record along with all the other projects by Mr. Larson, are on the same footing insofar as all these New Mexico projects are concerned, excepting the Hammond project which is ready for full and complete authorization.

It was with extreme regret that I heard objection on behalf of the users of water from the Elephant Butte as expressed here by Senator Daniel and my colleague, Congressman Regan. It stands to reason that augmenting the water of the Rio Grande is bound to be of assistance in helping to carry and deliver their own waters on that stream. Unquestionably there could be no possible objection on their part to so increasing the flow of the Rio Grande if properly controlled and managed. Their concern stems from fears that we would unlawfully withhold some of their waters if additional reservoirs are built. When final feasibility reports are submitted to this committee and full and complete determination and disclosure is made as to the manner in which the matter will be handled, I am satisfied, as was Senator Anderson, that the issue can be worked out to the full satisfaction of our neighbors to the south. That is the time for them to object if we cannot so convince them. To do so now is a disservice to themselves as well as to us. To say that at this point they are a little unreasonable is an understatement. I respectfully submit that it would be as reasonable for California and Arizona to object to this comprehensive plan by saying that we can use our share of the waters in the upper Colorado River provided we build no reservoirs.

Let me interpolate here: What our good friends from Texas are asking this committee to do is to assume that New Mexico will unlawfully withhold in violation of the Rio Grande compact waters of the Chama which should go down to Elephant Butte. To deny us the right to build reservoirs on the Chama on the objections of irrigators below Elephant Butte, is to convict New Mexico beforehand of an intention to unlawfully violate the Rio Grande compact. In all fairness, I submit that this committee ought not to be asked to do that.

The Indians there have had long prior rights to any rights of the white settlers, just as the irrigation works now in existence by the early pioneers in San Juan would certainly have prior rights under any operation of the upper Colorado Basin.

May I say here that the splendid development which was carried forward as far as the early pioneers in San Juan could with their own resources, has been of tremendous value to the lower Colorado River in the control of sedimentation, just as the work done by the Indians and early settlers of the Middle Rio Grande, along with the

building of the Elephant Butte Dam, have in a sense protected to a large degree sedimentation of the river below Elephant Butte.

We all appreciate the policy of the upper Colorado River on the part of the Department of the Interior to cooperate with the States in attempting to carry forward their own determination as to the development of this comprehensive program, and I hope the committee will in the same spirit go forward by giving us this provisional authorization which all the States recommend, and for which our own State pleads.

Just one other word, Mr. Chairman. Fear was expressed here as to who was going to control and manage the waters of the reservoirs we are asking for transmountain diversion. It was pointed out in the little El Vado Reservoir and Chama it was not so managed as to fully satisfy the people of lower Elephant Butte in the last drought years and that suit had to be brought in order to determine their rights.

Now I am glad to be able to point out to this committee that as a result of legislation in the last 5 years the Bureau of Reclamation will be in a sense in charge of the Middle Rio Grande, the only large conservancy district above Elephant Butte. It follows also that the Bureau of Reclamation will be in charge of this diversion work on the Chama, if we are given the right to build it. So, as a result of that, the Bureau of Reclamation under the supervision of, or working in cooperation with, the compact commissioners will actually serve in a sense as a water master from the top of the river on the Colorado line clear down to El Paso where the El Paso Irrigation District is located.

You will find in this pamphlet that the flood control association prepared and handed to the committee a very fine map of the entire river, which shows where the waters will go, and which will give you a picture of how the waters will be managed.

So I do not think they will have much to fear about that. I think that when that occurs we will all be able to work in cooperation with each other and will be able to deliver even more of their own water than we are able to deliver now.

Thank you.

Mr. HARRISON. Mr. Dempsey, we will be glad to have you proceed now.

STATEMENT OF HON. JOHN J. DEMPSEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW MEXICO

Mr. DEMPSEY. Mr. Chairman. I first want to express my appreciation to you, Mr. Chairman, and the members of this committee for permitting me to appear at this time, and I shall be very brief on what I have to say in support of, and on behalf of, H. R. 4449.

As your committee knows only too well, water is the veritable lifeblood of my State of New Mexico and its neighbors in the Southwest. Never in the history of the State have the people enjoyed a plentiful and adequate water supply. Our area is described as semiarid. In the last few years it has been so seriously menaced by water shortage and drought that semiarid is almost an exaggeration.

The purpose of the legislation under consideration by you at this time is to grant congressional authorization for the making of sur-

veys and plans so that the State of New Mexico may avail itself of its rightful share of the waters of the San Juan River under the terms of the upper Colorado River compact. New Mexico's allocation under that compact is approximately 838,000 acre-feet of water per year.

At no time in the past has New Mexico been able to utilize more than a very small percentage of the water to which it is entitled under this upper Colorado River compact. As a result approximately 750,000 acre-feet of New Mexico's share of the water under the compact is being irretrievably lost annually to the State. That loss is a severe and disastrous economic handicap, particularly at a time when the State's water supply is barely 50 percent of normal.

Enactment of this legislation now is the only way in which this calamitous situation can be corrected without unnecessary delay. The legislation is merely authorization for the Bureau of Reclamation to make the necessary surveys and preliminary plans to determine the feasibility of the projects involved. It is an essential part and parcel of the overall program for development and proper conservation of the great water resources of the Colorado River and its tributaries.

The language of the bill is specific. The measure provides, and I quote—

that no appropriation for or construction of the San Juan-Chama project or the Shiprock-South San Juan Indian irrigation project shall be made or begun until coordinated (or feasibility) reports thereon shall have been submitted to the affected States * * * and approved by the Congress.

To my mind that provision evidences the good faith of the proponents, the forthrightness of the State of New Mexico, if you please. It is conclusive evidence that my State seeks to act in full good faith and with due consideration for its neighboring States. I believe my State always has done that and I am confident it will continue to do so. If I did not believe that, I would not be here today urging upon your committee the approval of this bill.

Some of the opponents of the San Juan-Chama project item in this legislation have stated to your committee, in effect, that they feel its enactment would put New Mexico in a position to defraud them of water to which they are entitled under existing compacts. To take that position destroys the good faith and the confidence upon which agreements and compacts are based. It definitely is not now, nor has it ever been, our American way. And so it is that I suggest that your committee disregard objections which are clearly based upon distrust and a fear of sharp practice. That is not New Mexico's way of doing business.

It is true that differences have arisen and still exist between New Mexico and her neighbor Texas with regard to the distribution of the waters of the Rio Grande. And we in New Mexico think a great deal of the people of Texas, especially our good friend upon this committee.

Mr. REGAN. Thank you.

Mr. DEMPSEY. He may be in error once in a while, but I do not hold it against him.

The fact is there is a suit pending in the United States Supreme Court at this time wherein Texas alleges that New Mexico has not delivered the water due the projects below the Elephant Butte Reservoir in accordance with the terms of the 1938 Rio Grande compact.

I shall not attempt to try that case before your committee. Certainly I would not expect you to prejudge a matter that is before the highest court of our land. By the same token I would not expect you to give serious consideration to charges made in that case because it is apparent they must be legally baseless until the case has been adjudicated.

I do feel, however, that it is not attempting to be prejudicial on my part, when I point out to you that, through no fault on the part of New Mexico, there has been an annual loss of between 150,000 and 200,000 acre-feet of Rio Grande water in the swamps of the San Marcial area that should get through to Elephant Butte. The salt cedars and other vegetation which have a nonbeneficial use, used more than 50 percent of the waters that arrive there but fail to get through to Elephant Butte Dam.

New Mexico is not responsible for that, nor do I think that Texas is responsible for that. It is a situation that exists that I feel that Congress is more or less responsible for.

Year after year since I first came to the Congress in 1935—yes, long before that—we have been importuned to do something about this deplorable loss of life-giving water. The Bureau of Reclamation and the Army Corps of Engineers have sounded grave warnings every session of the Congress concerning the dangers of floods and the unnecessary loss of water because of the constantly worsening condition. Proper control of the water by construction of channels, dykes, and reservoirs we have been advised by the Nation's best engineers was the only solution. Not until recently have we heeded those warnings and recognized the responsibility of the Federal Government. We have set up an overall Rio Grande program that could cure those ills but we have been so derelict and miserly in providing Federal funds to remedy the situation that the patient may yet die before the operation is completed.

True the channeling work by the Bureau of Reclamation in the San Marcial area is nearing completion. That alone will save a considerable percentage of the water that has been wasted in the swamplands. But we have yet a long way to go before New Mexico and Texas can derive the full benefit of that great water resource. We must not forget either that the Federal Government is committed to conservation of that water by treaty with the Republic of Mexico under which we are bound to deliver to that Nation 60,000 acre-feet of Rio Grande water annually.

It is indeed difficult for me to understand—as it must be for you—how the diversion of about 235,000 acre-feet of San Juan River water into the Chama River and thus into the Rio Grande can work an injury on anyone whose livelihood is dependent upon that Rio Grande water. The people of the San Juan area, both Indians and their non-Indian neighbors have worked out their one-time differences about this diversion project. It took patient and understanding conferences over a considerable period of time for them to reach accord but they did it. There is no reason why the proponents and opponents as far as this legislation is concerned cannot do the same. But they must have definite plans on which to reach agreement. That is all this legislation proposes. It will not build one foot of ditch or one yard of dam until that agreement is reached and the Congress has approved.

Certainly the authorization by the Congress of such surveys and plans as are necessary as the basis for complete understanding is not an unreasonable request. I am confident your committee will not want to delay enactment of such sorely needed legislation.

Mr. Chairman, we cannot start a project without a survey. We cannot have a survey without funds to do the survey work, and that is all that is being asked here. If that is provided, in my judgment our neighbors in Texas will be as happy as we in New Mexico because they will get an additional supply of water that we all need.

In all these years I have been listening here and you have so much more than I, we have had no one ever pointing out a surplus of water. Everybody wants more water. We simply want what we are entitled to, and that is what consideration we are asking of you, Mr. Chairman.

Mr. HARRISON. Thank you, Mr. Dempsey.

Mr. REGAN. The only thing I would like to say, Mr. Chairman, I regret very much to find myself not in accord with my good neighbors and colleagues from New Mexico. I would like very much to see this worked out for you to get the water.

You speak of fear. That fear has been based on past experiences. If we can have some assurance that will not occur, maybe we might yet come to see it. I am sure all of us in Texas would like you to have the water to which you might be entitled.

Mr. DEMPSEY. I want to say to my good friend, I think he looks at the problem about as I do. But there has never been a charge that New Mexico has used any water that failed to get through to Texas. It was nonbeneficial use we could not control. We never have taken one drop of water that was supposed to go to Texas.

Mr. REGAN. In Mr. Fernandez' statement—that we feared illegal use, I do not think entered into it, but we have been impressed with, I will say, the not very efficient handling of the waters.

Mr. DEMPSEY. If the gentleman will go along and recommend this bill and vote to do it, of course, I will do all I can to see the most efficient handling is had.

Mr. REGAN. I regret I cannot so promise.

Mr. DEMPSEY. I will still see the most efficient handling is had.

Mr. ASPINALL. A point of order.

Mr. HARRISON. A point of order has been made and is sustained by the Chair.

Thank you very much.

Mr. HARRISON. At this time I want to make a little change in the order. We have two representatives here for the utilities of Arizona, Colorado, New Mexico, Utah, and Wyoming, Mr. Patterson and Mr. Moffat. I would like to have them come up. I do not know whether they want to testify together, but they can come up at the same time.

STATEMENTS OF DAVID D. MOFFAT, JR., ASSISTANT TO THE PRESIDENT, UTAH POWER & LIGHT CO.; AND L. R. PATTERSON, ASSISTANT VICE PRESIDENT, PUBLIC SERVICE CO. OF COLORADO

Mr. MOFFAT. I am David D. Moffat, Jr., assistant to the president of the Utah Power & Light Co., and I have with me Mr. L. R. Patterson, who is assistant vice president of the Public Service Co. of Colorado.

We have a statement that we have submitted that we would like to have made a part of the record, and comment on that statement.

Mr. HARRISON. Without objection, the statement submitted now before the committee will be made a part of the record.

(The statement referred to follows:)

STATEMENT BY PRIVATE UTILITIES RE COLORADO RIVER STORAGE PROJECT

By and on behalf of Arizona Public Service Co., Public Service Company of Colorado, Public Service Company of New Mexico, Southern Colorado Power Co., Southern Utah Power Co., Southern Wyoming Utilities Co., Telluride Power Co., The Western Colorado Power Co., Utah Power and Light Co.

The following statement made on behalf of Arizona Public Service Co., Public Service Co. of Colorado, Public Service Co. of New Mexico, Southern Colorado Power Co., Southern Utah Power Co., Southern Wyoming Utilities Co., Telluride Power Co., the Western Colorado Power Co., and the Utah Power & Light Co., all operating electric utilities rendering electric service in the upper Colorado River Basin States, sets forth in general terms the factors bearing on potential markets for the disposition of electric energy proposed to be generated in connection with the Colorado River storage project, together with certain proposed principles for cooperation which we think would contribute in a substantial manner to the feasibility of the project in addition to effectuating a substantial savings on the part of the Federal Government in construction costs.

THE BASIN AREA

The upper Colorado River Basin has a drainage area of 110,000 square miles comprising the western part of the State of Colorado, the eastern part of Utah, the southwestern corner of Wyoming, the northwestern corner of New Mexico, and the northeastern corner of Arizona. It is an area of lofty mountains, high plateaus, deep canyons, fertile valleys, and great distances.

The basin is very sparsely populated. The average population density is approximately 3 persons per square mile compared to a national average of approximately 51 persons per square mile. Its largest city is Grand Junction, Colo., with a 1950 population of 14,504 inhabitants.

BASIN RESOURCES

Contrasted with its sparse population is its great wealth of natural resources. These are the measure of its future potential. Here are found large deposits of nonferrous metals and other minerals such as gold, silver, copper, lead, zinc, molybdenum, vanadium, phosphate, gilsonite, limestone, and many others.

Other resources are large forest areas with potential pulp and other forest products industries. Farming including the growing of fruit and vegetables and the livestock industry will continue to provide a basic source of wealth.

However, more important for the future than these is the fact that this basin is one of the greatest sources for thermal energy production to be found anywhere in the world. Here are located vast deposits of coal, great underground reservoirs of oil and natural gas, mountains of oil shale and perhaps more important than all of these are the deposits of uranium ores. The potential thermal power resources of this area stagger the imagination.

But the present need of the basin is conservation and orderly development of its most vital resource—water. Water is scarce throughout the States of the Colorado River, both upper and lower basins. More than 30 years ago a compact was signed at Santa Fe, N. Mex., making an apportionment of the waters of the Colorado River between the upper and lower basins. In 1948 the upper basin States, i. e., Wyoming, Colorado, Utah, New Mexico, and Arizona, effected a compact apportioning among those States the water reserved for their use under the Santa Fe compact. In order to protect and develop its share of the water allocated under the compact, the upper basin must provide certain reservoirs for holdover storage. The Colorado River storage project, among other things, provides this storage.

These companies have a two-fold interest in this project. First of all, they are concerned with the need for development of the water resources for domestic, agricultural, and industrial use within their service areas both within and without the Colorado River Basin. There is no substitute for water to meet these needs. The long-range growth and prosperity of their service areas is

dependent upon additional supplies of water, and such water must of necessity come from the Colorado River and its tributaries.

Their second interest is in the utilization of the power produced in connection with the Colorado River storage project. These companies at the present time are the direct suppliers of electric service to approximately 680,000 electric consumers. Through wholesale service and wheeling service, they are indirect suppliers to an additional 111,000 electric consumers. Their interconnections with other systems further enlarge the electric service areas.

These companies operate 90 power plants with a total capacity of 1,250,000 kilowatts of which approximately 1,000,000 kilowatts is steam capacity. The growth in the service areas of these companies is so great that they are adding more than 150,000 kilowatts of additional steam-generating capacity per year. In other words, it is estimated that in 1960 the combined steam-generating capacity of these companies will be approximately 2,000,000 kilowatts. They presently have 6,150 miles of transmission lines interconnecting their plants and load centers with some 1,900 miles additional planned by 1960.

Furthermore, ever-growing needs for electric power in each of our States will provide a market for the power which the project will produce, provided the new generating facilities are put into production on a schedule in consonance with the growing demands for power. We have consistently kept abreast of these growing needs through the construction of additional generating capacity and the extension of our transmission systems. Our plans for the future necessarily entail continuous additions to our generating and transmission capacity so that we shall always be in a position to fill growing needs. To the extent to which project power becomes available to us at costs reasonably competitive with present or future generating costs, we would be relieved of the cost of constructing an equivalent amount of generating capacity and might be relieved from operating (except for peak and reserve generation) some of the older and higher cost generating plants on our own systems.

We propose to absorb into our systems and to transmit to present and prospective customers in the upper Colorado River Basin States large blocks of electric power from the hydroelectric plants of the Colorado River storage project and participating projects.

We recognize the financial necessity, as an important adjunct to the Colorado storage project and participating projects, for the generation and sale of hydroelectric power. This necessity arises from the obvious need for a primary source of revenues to help return to the taxpayers of the United States the capital investment in the project as a whole. For that reason the output of these project plants should be disposed of on such basis and in such manner as will best assist the financial feasibility of the project.

PRINCIPLES FOR COOPERATION IN THE PROJECT

Careful consideration of the basic situation as outlined above suggests that there is real opportunity for cooperation between private enterprise and the Federal Government in connection with the marketing of power from the Colorado River storage project. The following are deemed by us to be basic principles for such cooperation:

1. Because of the relationship of the water-storage features of this project to the Colorado River compact, the vast areas encompassed, the magnitude and multiple-purpose objectives incorporated including nonreimbursable features, we believe the holdover reservoirs and powerplants should be built by the Federal Government.

2. In order to obtain the maximum amount of firm power, the greatest diversity and flexibility in operation and to make the power accessible to the greatest area, the backbone transmission tie line directly connecting major power plants of the Colorado River storage project, such as Flaming Gorge, Echo Park, and Glen Canyon, except in cases where such interconnections can be more economically and feasibly accomplished through the present and projected transmission systems of the companies, should be an integral part of the generating system, and therefore, should also be built by the Federal Government. The integration of other plants of the project constructed reasonably adjacent to the present and projected transmission systems of the companies should be accomplished through these systems; the benefits of such integration would accrue to the project without additional cost.

3. In order to obtain maximum flexibility and lowest cost in transmission, it is essential that use be made of the then existing transmission systems of the com

panies and in addition the companies construct such new transmission lines from the project plants or project interconnecting transmission tie lines to the various load centers of their respective systems as may be required to market project power, the Government or other agencies to construct necessary and nonduplicating transmission lines to other load centers not within the general service areas of these companies.

4. The private utilities are willing to enter into contracts whereby they will deliver project power to preference customers making such reasonable transmission charges therefor as may be approved by the local regulatory authorities; or, the private utilities are willing to contract directly with the preference customers to supply all their power requirements at rates which will pass on such savings as are obtained through the purchase of project power.

5. We believe that the financial feasibility of the project depends upon the sale to private utilities of the power output of the project plants not contracted for by such customers as may be entitled to preference, and that such sales should be made at the powerplants or along the backbone transmission tie line upon terms such that the cost of project power will not exceed the cost of power from alternate sources.

6. Each company as to its rates and charges is subject to the jurisdiction of the State utility commission in which it is furnishing electric service to the public. Rates charged by such utilities for electric service, taking into consideration the cost of power purchased from project plants, will be subject to the full jurisdiction of the appropriate State utilities commission.

To carry out successfully the foregoing principles, it is essential that an understanding be reached in order that these companies may henceforth plan, design, and construct new generating and transmission facilities to coordinate with the project development. The general premises of this understanding should be incorporated in the legislation authorizing the project.

Mr. MORFAT. This statement by the private utilities is made on behalf of Arizona Public Service Co., Public Service Co. of Colorado, Public Service Co. of New Mexico, Southern Colorado Power Co., Southern Utah Power Co., Southern Wyoming Utilities Co., Telluride Power Co., the Western Colorado Power Co., and the Utah Power & Light Co. While it is not in the prepared statement, since arriving back here in Washington, we have received the concurrence of the Uinta Power & Light Co. So that makes 10 private utilities, all operating electric utilities rendering electric service in the upper Colorado River Basin States.

The statement sets forth in general terms the factors bearing on potential markets for the disposition of electric energy proposed to be generated in connection with the Colorado River storage project, together with certain proposed principles for cooperation, which we think would contribute in a substantial manner to the feasibility of the project in addition to effectuating a substantial savings on the part of the Federal Government in construction costs.

The area of the upper basin States and the great wealth of natural resources have been well described by other witnesses, so we will skip that part. I would like to say that the present needs of the basin are conservation and orderly development of its most vital resource, which is water. I think it has been amply pointed out that water is scarce in this area.

These companies which Mr. Patterson and I represent have a two-fold interest in this project. First of all, they are concerned with the need for development of the water resources for domestic, agricultural, and industrial use within their service areas both within and without the Colorado River Basin. There is no substitute for water to meet these needs. The long-range growth and prosperity of their service areas is dependent upon additional supplies of water,

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3. In order to obtain maximum flexibility and lowest cost in transmission, it is essential that use be made of the then existing transmission systems of the companies and in addition the companies construct such new transmission lines from the project plants or project interconnecting transmission tie lines to the various load centers of their respective systems as may be required to market project power, the Government or other agencies to construct necessary and nonduplicating transmission lines to other load centers not within the general service areas of these companies.

4. The private utilities are willing to enter into contracts whereby they will deliver project power to preference customers making such reasonable transmission charges therefor as may be approved by the local regulatory authorities; or, the private utilities are willing to contract directly with the preference customers to supply all their power requirements at rates which will pass on such savings as are obtained through the purchase of project power.

5. We believe that the financial feasibility of the project depends upon the sale to private utilities of the power output of the project plants not contracted for by such customers as may be entitled to preference, and that such sales should be made at the powerplants or along the backbone transmission tie line upon terms such that the cost of project power will not exceed the cost of power from alternate sources.

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To carry out successfully the foregoing principles, it is essential that an understanding be reached in order that these companies may henceforth plan, design, and construct new generating and transmission facilities to coordinate with the project development. The general premises of this understanding should be incorporated in the legislation authorizing the project.

Mr. PATTERSON. I would like to make some oral comments, if I might, Mr. Chairman.

Mr. HARRISON. Proceed.

Mr. PATTERSON. Between the two of us, we hope that we can answer any questions that might be asked. These comments are made in an effort to try to bring out some of the things that we have observed in the last few days while we have been here.

As stated before, my name is L. R. Patterson and my address is 900 15th Street, Denver, Colo. I am assistant vice president, electric operations, of the Public Service Co. of Colorado.

In my capacity as assistant vice president I am responsible for the future electric power supply and system planning of this company.

In this connection we must very carefully study the future power requirements of our service area and make plans as necessary to meet these requirements when they arise, and on an economically sound basis. We are very proud of our record of meeting these expanding power requirements of our area. We have more than doubled our generating capacity since the end of World War II; and by the end of 1955 we will have tripled our World War II capacity.

The other companies for whom we speak have had generally similar experiences. It is on the basis of this experience that we are able to make the proposal which Mr. Moffat has just submitted; namely, to utilize our existing transmission facilities and to construct such additional transmission facilities from the project powerplants or backbone transmission tie line as are necessary to market electric power from the Colorado River storage project throughout our respective service areas.

In making this proposal, these companies are offering to make a very substantial investment in transmission facilities. We estimate that in the earlier phases of the project the combined investment to be made by the private utilities will probably reach \$75 million, and for the ultimate development this investment in transmission facilities may reach \$125 million.

Referring again to Mr. Moffat's statement, the companies involved have offered two suggested methods of handling the power requirements of such customers as are entitled to preference under the law.

The first method mentioned is commonly known as wheeling. Under this plan the preference customer contracts directly with the Federal Government for the project power which the customer desires. The Government in turn contracts with the company whose transmission system is adjacent to the preference customer, to make delivery of or wheel the project power over the company's transmission system. The Government compensates the company for the use of its transmission facilities, and all charges to the preference customer are made in that case directly by the Federal Government.

Now, the Public Service Co. of Colorado has had some 3 years of experience with wheeling. We wheel Colorado Big Thompson power to 6 preference customers at some 18 different points of delivery. One of these points of delivery is 150 miles distant from the location at which we receive the power from the Big Thompson system. Altogether these preference customers are spread out over a very wide area so that the utilization of our transmission system is a very substantial saving in investment to the Federal Government. We believe that this method has been satisfactory to all parties concerned.

Now, the second means suggested might be called the resale method. Under this the company would purchase the project power from the

Government, and the preference customer would contract directly with the company. The company would sell the power to the preference customer at rates which will pass on to the preference customer such savings as are obtained through the purchase of project power. The advantage to the preference customer under this method is that the company will offer open end contracts which will assure the customer of future power supply without any commitment for a reservation charge.

We have maps of the States of Colorado and Utah, showing existing major transmission systems. The map of the State of Utah is on the easel now. After Mr. Moffat has had a chance to explain that, on the completion of these remarks, then I can show a map of the State of Colorado, and I believe it may help.

Now, after you have seen that, we can say that the same general plan would be followed in the other States.

Now, if this committee reports favorably on our proposal, the respective companies involved will base their future system planning on this premise and make all future transmission line additions of such capacity as will best fit in to this long-range plan. As a result, the companies will begin making substantially higher expenditures for transmission facilities than would be otherwise required.

If the Colorado River storage project is approved by your committee, and your committee believes our proposal merits favorable consideration in the implementation of the project, it is respectfully requested that your committee give recognition to our proposal in its report, either by a specific recommendation thereon, or that the basic principles of our proposal be incorporated in the authorizing legislation. This we believe to be essential from the standpoint of the companies involved because of the very substantial financial undertaking on their part, which is encompassed in the proposal, and also because of the necessity for forthwith programming of future transmission construction to coordinate with the project development.

That is all of our statement, Mr. Chairman. We would be very happy to explain our maps and to answer any questions.

Mr. HARRISON. Mr. Miller, do you have any questions?

Mr. MILLER. Yes. I wanted to go over just a little of your testimony.

I believe you stated that since the end of World War II you will have tripled your need for electrical energy by 1955.

Mr. PATTERSON. That is right, sir.

Mr. MILLER. Has the population of that area changed from 3 per square mile to 8 or 10 or more?

Mr. PATTERSON. I would say that the population in the Denver metropolitan area has increased very substantially. Of course it has not increased by that much, but the interesting thing in the electric business is that the use per capita is constantly on the increase.

I entered the electric business some 30 years ago, and at that time I heard the older men in the business say, "We must be getting near the saturation point." After 30 years I can say that the saturation point seems to be just as far in the future as it ever was.

Mr. MILLER. The nine private utility companies mentioned in the report are in a position to buy all the electrical energy as it comes into production, and make use of it, in the area in which you operate?

Mr. MOFFAT. Congressman, we believe so, provided that the plants are put in on a schedule in consonance with the load growth. If they are all put in at once, of course we could not do it.

Mr. MILLER. It is based on the assumption that you buy your power at 6 mills?

Mr. MOFFAT. Mr. Larson of the Bureau used a figure of 6 mills delivered to load centers. That would include all the transmission costs. I believe that figure is a reasonable figure based on present day fuel and labor prices. What the prices of those commodities will be by the time these plants might be put in, of course we do not know.

Mr. MILLER. Do you know what it is costing you now, approximately, in all of your facilities, both the old and the new, as an average cost per kilowatt-hour to put it on the line?

Mr. MOFFAT. We have thought of it, Congressman, more in terms of the new capacity that is now being constructed. Our most recent plant under construction is a 100,000-kilowatt Gadsby unit at Salt Lake City. The cost of that power we estimate will be about 6 or 6¼ mills.

Mr. MILLER. That is a new steam plant?

Mr. MOFFAT. That is a steam plant. That cost, of course, would include all fixed charges, such as taxes and taxes on income, and insure us a reasonable return.

Mr. MILLER. What is the highest cost in your older steam plants, that you are paying now for the production of power?

Mr. MOFFAT. Well, the operating cost of some of our older steam units is quite high. I do not have that figure in mind at the moment.

Mr. MILLER. Would it be one mill? Two mills?

Mr. MOFFAT. Oh, no, sir.

Mr. MILLER. Ten mills?

Mr. MOFFAT. It would be something better than 10 mills, in general. On the other hand, that plant was built many, many years ago when construction costs were very much cheaper. That plant is used only as a reserve and peaking plant, and it operates only a few hours a year.

Mr. MILLER. Do you take the power out of the Big Thompson now?

Mr. MOFFAT. That is Mr. Patterson's area.

Mr. PATTERSON. We take some power from the Colorado-Big Thompson project now, Congressman, and we also wheel a considerable amount of power from the Colorado-Big Thompson to REA's.

Mr. MILLER. What arrangements do you have now with the preference customers of Colorado, Wyoming, and Nebraska, that they might have power? Is there a withdrawal clause in your contract?

Mr. PATTERSON. Right now we are operating under a temporary contract. The contract situation from the Colorado-Big Thompson project we might say is up in the air at the moment. You probably recall that the Bureau has asked for each contractor to submit an estimate of how much power they want to purchase from the project. As I understand it, they will add those up. Of course, until all of that is added up and allocated it would be pretty difficult to say just what we might obtain.

Mr. MILLER. I believe there are about 53,000 kilowatt-hours going to your group and to the Wyoming area, to the private utilities. I believe the 4 groups are getting about 53,000 kilowatt-hours, mostly

from the Big Thompson, and some from the reclamation areas in Wyoming.

Mr. PATTERSON. I believe that is right.

Mr. MILLER. Are you prepared to surrender the kilowatt-hours you now get to preference customers, if they demand them?

Mr. PATTERSON. As I say, we are operating under a contract which only runs for this one year, so that in effect we have nothing. We have one small contract which was negotiated, but which has never been activated. It calls for 7,000 kilowatts for our Sterling Brush area. That contract has a withdrawal article in it.

However, although the contract was signed it was not to be activated until after the completion of the Big Thompson.

Mr. MILLER. You do have exchange, too, do you not?

Mr. PATTERSON. That is right; we do.

Mr. MILLER. Between the preference customers that have the power?

Mr. PATTERSON. That is right.

Mr. MILLER. What percentage of the power from your units might go to preference customers now?

Mr. PATTERSON. I do not have a figure for all the utilities. If you desire that we could probably get that for the record.

Mr. MILLER. I do not believe it is necessary. Do you have a power commission in these States in which you operate, which sort of regulates your rates and conditions and so forth?

Mr. PATTERSON. Yes, sir; that is right, we do. In the case of our wheeling contracts, Congressman, we submit those to our utilities commission, and obtain their approval of them before we sign them.

Mr. MILLER. In any contract that your nine utilities might sign you would have a withdrawal clause of some kind for preference customers if and when they need electrical energy?

Mr. PATTERSON. I believe, Mr. Congressman, I would have to say that all I know about that is what I read in the newspapers, just about. It seems there is some controversy about that.

I would say that the earlier contracts that we had with the Bureau, say prior to the year 1946, did not have that. Then there were some contracts we negotiated about 1949 or 1950, and they did have it. As to what they would have in the future I do not know.

Mr. MILLER. I think that is all.

Mr. HARRISON. Mr. Regan.

Mr. REGAN. I have no questions.

Mr. HARRISON. Mr. D'Ewart.

Mr. D'EWART. Have you prepared language that you think is necessary to implement your ideas, to be written into this legislation?

Mr. PATTERSON. No, sir.

Mr. MOFFAT. No, sir; we have not. We thought about that, but there seems to be so many other things that have been introduced before the committee that we do not know exactly what projects will finally be recommended by the committee. We thought it better not to submit such language at this time. However, we would be very glad to do so at any time that the committee desires.

Mr. D'EWART. I might say that this committee has held 3 or 4 days of hearings on this whole matter of delivery of power from Federal generating projects to preference customers. That hearing will be printed in a few days. In that hearing at the end will be a general

statement as to a definition of preference customers, load areas, and all those factors, recently put out by the Department of the Interior. I think you would find it most interesting in connection with the statement you have here, and I recommend it for your perusal when it is published.

Mr. MOFFAT. We certainly will look at it.

Mr. PATTERSON. We would be glad to.

Mr. HARRISON. Mr. Aspinall.

Mr. ASPINALL. Mr. Patterson, what you and Mr. Moffatt and the associated private utilities are proposing here is what you as a representative for the Public Service Co. proposed in the Collbran project authorization; is that right?

Mr. PATTERSON. I believe that is right, sir; and also for the Fryngpan-Arkansas.

Mr. ASPINALL. That is correct. In neither one of those did you ask for any legislation. You simply offered testimony to the effect that you would be willing to cooperate under certain conditions.

Mr. PATTERSON. That is right, sir. The total investment which would have to be made on our part in those projects is very small. The size of the project and its relationship to our system is such that we could actually start construction after the project was well underway. In this case we feel that we should begin to build our systems to fit in with this thing as early as possible.

As an example, our system now is built on the basic premise that the major flow of electric energy is from east to west. We would have to completely change our premise and design our system so that the major flow would be from west to east, from the projects of the Colorado River eastward to the large market areas in Denver, Pueblo, Colorado Springs, and along the eastern slope of the mountains.

Mr. ASPINALL. We admit all of that. But the rural area for practically all of this basin, where there is service at the present time, is serviced by REA's; is it not?

Mr. PATTERSON. That is right.

Mr. ASPINALL. Have you taken up a discussion with the Director of the Rural Electrification Administration about your proposal?

Mr. PATTERSON. No, we have not as yet, although I am expecting to see him while I am in Washington now.

Mr. ASPINALL. I sincerely trust that you will.

What you are asking, though, in my opinion, is for this committee to establish a new national power policy which in itself is of enough moment to be decided upon alone, instead of tying it in to this legislation.

May I say to this committee, as I did when the Collbran project was before us, that the relationship between the Public Service Co., the other public companies, and the REA's has been fine in my district; but for this committee at this time to make a determination of policy in this legislation, which amounts to giving to the private utilities of that area a preference on wheeling rights, is rather far reaching. However, I do wish to see the private utilities get their advantages following the private enterprise theory of business. Nevertheless, I wish, also, to see that the REA's get protection and to see that they are allowed to develop, because if it were not for the REA's this area would not be using that much power and would not have had that percentage

of increase of power of which you speak, as far as the rural district is concerned.

Now, Mr. Moffat, a question was asked you about the cost of power. What does the company, your auxiliary company of Western Colorado Power, charge the San Miguel and Delta REA's for their power, which you deliver to them?

Mr. MOFFAT. I do not have the figures in mind for the separate REA's over there, but as I remember it, the average rate that we deliver to all four REA's in western Colorado is about 11 mills.

Mr. ASPINALL. That is correct. To these two in particular I think it is 12 plus at the present time. In other words, with this power being produced at 6 mills, we must see to it that those rural users as well as the municipal users get some of the advantages that are coming to them.

I personally would like to see private enterprise come in and take some of this load, as much load as you suggested, but I still want to see the REA's and especially the administration here in Washington sit down with you folks at a table before we attempt to make any change in policy with this proposal.

Mr. MOFFAT. We certainly intend to contact the REA's.

May I say, Congressman, that in our statement in No. 4 we stated, I think very clearly, that the private utilities are willing to contract directly with the preference customers to supply all their power requirements at rates which will pass on such savings as are obtained through the benefit of purchase of project power.

Mr. ASPINALL. I understand that. I was not referring to that. With that part I am in agreement.

What I am referring to is that once we establish this policy then the private utilities have a preference on wheeling service in this area. Some of the REA's as presently constituted are closer to the production of this power than any private utility.

Now, there must be some arrangement arrived at to protect them in their position, just the same as the private utilities.

Mr. MOFFAT. I agree entirely. Any time an REA or any other preference customer would build a line to take this power I do not see that we would be in any position to oppose any such action as that.

Mr. Chairman, may I say something about that map that has been up there, that we have not had a chance to talk about?

Mr. HARRISON. Yes.

Mr. MOFFAT. I referred in my testimony to a backbone transmission line to be built by the Government, and that backbone transmission line that we have in mind is one of the possibilities under our proposal, which would connect Glen Canyon and Echo Park.

The map, I am sorry to say, is not as large as it should be for the size of this room.

You will see two tap points on that line. One is at La Sal and one is at Loma. That Mr. Patterson will explain later, on the lines they could build.

Then from Echo Park there are two red lines shown there, which would be the lines to take the power from this backbone transmission line to the load center of Salt Lake City, built and paid for by our company.

All the black lines shown on the map are the present lines of the Utah Power & Light Co. and other interconnected utilities in the State of Utah.

Now, one thing we could do is this: We have a plant that is now under construction which will be in service later this year, down near the Carbon County coal fields. We could build a line from that point out to Echo Park, in the first place to supply construction power for that project, if it is authorized. There is no surplus power in the area now. It would be necessary for somebody to put something in there to get construction power to begin with. Then that line would be constructed in such a manner so that later we could take power out from the project.

Mr. PATTERSON. Would you like to see our map now, Mr. Chairman?

Mr. HARRISON. Yes, and then questions will be in order. I hope we can keep them brief.

I have made a commitment to the conservation groups that I shall call one of their witnesses, who could only be here this morning, and I feel that I must carry that out. While I do not want to cut anybody off, and we have not done so yet, I do hope the committee will keep that in mind, because I do not think any of us want to carry this out any longer than necessary.

Mr. PATTERSON. With respect to our map, we show the systems in the State of Colorado which are not interconnected with each other. This includes all high-voltage transmission systems, both privately owned and those owned by REA's and those owned by the Federal Government. They are shown on the base map. They are either dark blue or black there.

Then over that we have an overlay, which shows in red the transmission lines which might be built from the Colorado River storage project. As you can see that would completely integrate all the transmission systems in the State, so that practically every electric user within the State would have whatever advantage he could get from the river storage project.

Now, we could not say, "We will build this line first or that line first," because we do not know just what action your committee will take and just what units will be built first.

I am also sorry that this map is not larger than it is.

Mr. MILLER. May I ask one question at that point, Mr. Chairman?

Mr. HARRISON. Yes.

Mr. MILLER. Do I understand that the Colorado Legislature has made some legal bar to selling your power outside of the State of Colorado?

Mr. PATTERSON. No, sir; I do not know of any.

Mr. HARRISON. Mr. Saylor.

Mr. SAYLOR. Mr. Patterson and Mr. Moffat, have you had any chance to examine the statement that was submitted yesterday for the record? I do not recall who submitted it. but it is the analysis of the power demand of the upper Colorado River Basin, drawn up by one J. H. Ratliff.

Mr. MOFFAT. Yes, sir; we had a chance to look that over last night.

Mr. SAYLOR. Would you care to comment on that?

Mr. MOFFAT. Well, not particularly. There are some errors in it that we could comment on. I think probably they are typographical in most instances.

Regardless of his estimates, Mr. Paterson, myself, and these other companies are constantly engaged in making load estimates, because we cannot wait for any of this power or anything else. We have to be putting in generating units all the time. We have confidence in our own estimates.

Mr. SAYLOR. The only chance I have had to examine this was yesterday. The conclusion that I came to is that Mr. Ratliff assumed in his analysis that there would be no further power development by anyone in the area except as produced by the Federal Government.

Mr. MOFFAT. Well, that assumption has been made by others at other times, too, Congressman. As I said, the utilities that have the responsibility for power supply in the area have to have the power ready when the industries and when the people want it. We are not going to stop. We are not going to wait. We are going to continue to put in powerplants to meet the growing load requirements of our area.

Mr. SAYLOR. Am I correct in my understanding that the public utility commissions of Arizona, Colorado, New Mexico, Utah, and Wyoming, which cover this area, demand of you that if there is a person in the area who needs power you must supply it?

Mr. MOFFAT. Well, if it is within reasonable transmission distance of our existing system.

Mr. PATTERSON. That is right.

Mr. SAYLOR. All of the companies which you represent here today are under the jurisdiction in their respective States of the public utility commission or corresponding body in each one of those States?

Mr. MOFFAT. That is absolutely right, sir.

Mr. SAYLOR. If you are authorized to be in one State and you cross a State line for the sale of power in another State, then you must subject yourself to the jurisdiction of the State in which you sell power?

Mr. MOFFAT. That is right. When you cross those State lines, of course, we are also, in my particular company at least, under the jurisdiction of the Federal Power Commission.

Mr. DAWSON. Will the gentleman yield to me at that point?

Mr. SAYLOR. Yes.

Mr. DAWSON. I assume in connection with the question asked by my colleague from Colorado, as to the rates to the REA's, that you are subject to the regulations of the utility commissions of the States of Utah and Colorado, as to the rates you shall charge these REA's?

Mr. MOFFAT. That is right, Congressman Dawson. Not only do the States regulate the prices that we charge the REA's, but more recently the Federal Power Commission has taken quite a part. We were able to get a small rate increase a little better than a year ago, and we also had to justify that and have that approved by the Federal Power Commission before it could become effective.

Mr. SAYLOR. Thank you, Mr. Dawson. That was the line of questioning I was following.

The next question I want to ask is this: If any power is bought by this group of public utilities from the Federal Government and wheeled and sold to preference customers, then any contract you would enter into must be passed upon by the respective public utility commissions and the Federal Power Commission?

Mr. MOFFAT. That is right. As to any power that we transmit to any preference customers, the charge that we would be permitted to make would be under the jurisdiction of the State utility commission; and I am not sure whether that would be under the Federal Power Commission jurisdiction or not. I think probably it would be, because it would be power that was entered into channels for resale.

Mr. PATTERSON. I would like to make this observation, if I might, Congressman Saylor: That all of the companies in this group are not under the FPC. However, I also want to point out that with respect to a wheeling contract, that is a contract between the utility and the United States, and that must receive the official okay of the Secretary of Interior.

I have negotiated a number of contracts with the Federal Government, and I can assure you that it is arm's-length bargaining.

Mr. SAYLOR. The price which was referred to here for power, of 6 mills, I think was at the bus bar. Would there be a difference, then, between the 6-mill power at the bus bar and the power at the load center?

Mr. MOFFAT. Well, as I understood it, Congressman, the 6 mills that was referred to by Mr. Larson included the charges to deliver it to load centers, and it included the transmission. If we purchased at the bus bar out at Echo Park, why, of course, the price then would have to be less than that.

Mr. SAYLOR. That is all.

Mr. HARRISON. Mr. Dawson.

Mr. DAWSON. Mr. Moffat, I take it your general premise in going along with this project is that you are interested in the development of the entire area and its water resources? That was one of your first statements, I believe?

Mr. MOFFAT. That is right. As an electric utility we recognize that when water is brought in and more population and industry develop, therein lies the economic prosperity of the utility.

Mr. DAWSON. In other words, you will bring more customers in with more development, and that will mean more users of power?

Mr. MOFFAT. That is right.

Mr. DAWSON. It is tied in with the development of this whole area and the project.

Mr. MOFFAT. That is right.

Mr. DAWSON. Now I simply want to take this occasion to commend you and your companies who have joined in this statement for the cooperative attitude you have shown. It seems to me that this kind of an arrangement is in line with the policy announced by this administration, whereby the Federal Government is not going to go into an expensive business of running duplicate transmission lines to compete with private enterprise. I think you are to be commended. This is the very type of plan that has been long needed in this country, whereby private enterprise can work with the Government and at the same time not go into competition with it.

Mr. MOFFAT. Thank you, sir.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. Do you have any idea whether preference customers will be able to utilize all the power generated in this project?

Mr. MOFFAT. I can only speak for our general area in the State of Utah. I think Mr. Larson said the other day that the preference

customers might be of the order of 10 percent of the total electric demands in the area.

Mr. YOUNG. When you speak of the area how far does that extend? Could you possibly serve preference customers in Nebraska or North Dakota or Texas or California or Nevada?

Mr. MOFFAT. No. The plan that we have would use the power developed in this area.

Mr. YOUNG. I do not mean the plan you have. I mean, would it be possible with this power generated here to serve preference customers outside of the States you represent? You have spoken of New Mexico and Arizona and Colorado and Wyoming.

Mr. MOFFAT. No, I do not envision any plans for the power going outside of the States.

Mr. YOUNG. You do not envision any; but I am asking you if it is physically possible.

Mr. MOFFAT. Physically possible?

Mr. YOUNG. Could it be economically accomplished? Could you utilize this power to serve preference customers outside of the States you mentioned?

Mr. MOFFAT. Well, of course, it could be done by a displacement process. For instance, Utah Power & Light Co. is connected with the Northwest power pool, which extends all the way up as far as British Columbia in Canada.

Mr. YOUNG. That is what I mean. In determining the preference demands it seems to me you have to establish the area of economics concerned. I was trying to establish what area could be served. Possibly REA's outside of the area could be involved, and might complain if they do not receive the same service the REA's inside the area receive. Further, if the power is sold to nonpreference customers they might have a legitimate complaint.

I am just trying to establish what would be reasonable under the circumstances, and what you consider to be the area for REA customers.

Mr. MOFFAT. I think generally it would be the States in the upper Colorado River Basin.

Mr. YOUNG. In other words, you would make it geographic rather than the economic transmission of power?

Mr. MOFFAT. Of course that is not our determination, Congressman, as to how far that will go. That will be a matter of law that you determine.

Mr. YOUNG. I was thinking of the economics of it. You, being familiar with power, could give us some information regarding how far it could be transmitted.

Mr. MOFFAT. Physically it is feasible. You could not take this power and transmit it clear up to the Northwest, for instance, but by a displacement process the power that would be generated at Echo Park, for instance, could come into Salt Lake, and some of the power generated at Salt Lake could go on up north. It is possible. It increases the electrical losses every time you do it.

Mr. YOUNG. You think that there should be some dovetailing of the power generated in the project, that the steam generating plants might be required to supplement the hydroelectric power on the part of the Government? In other words, do you think a more economic

mittee would be acting wisely and in a truly national sense if the committee were to request the Bureau of Reclamation to investigate the alternative sites more fully, or that the committee, on its own authority, select an alternative site outside the monument. In making a more thorough investigation, the Bureau, and all concerned, should give proper value and weight to the factors of preserving our park system in general and Dinosaur National Monument in particular.

In this brief statement I would like to elaborate on this point of proper value and weight, particularly as we in New York State interpret it. Recently, we successfully went through an impressive experience there in protecting our forest preserve from an attempt to flood a portion of it for power and alleged river regulation.

We demonstrated beyond any reasonable doubt that, once the public knows the facts, the public will act to protect its parks and monuments, both State and Federal. This is true in New York, and there is no sensible reason why New Yorkers should feel any more or less strongly on the subject than the citizens of the other States. The council believes that a majority of all our citizens, no matter where they live, want the national park system to continue unharmed for all eternity.

Briefly, our New York State experience was this: A power river regulation board, with peculiarly arbitrary powers, proposed to construct a dam known as the Panther Mountain Dam in the State-owned forest preserve. Now the forest preserve in New York State, as you may know, is established under the State constitution, to be preserved, as the constitution itself says, "forever wild." Our state policy regarding the forest preserve is thus remarkably like the Nation's policy for preserving the national park system.

When the conservationists, plus many others, first came onto the scene in 1946, in opposition to the proposed dam in the preserve, they were told that their fight was hopeless. However, as the months went by, the general public learned the truth about the proposal, with the result that tremendous Statewide indignation developed. This popular feeling against the needless misuse of the forest preserve brought about the overwhelming passage of a bill, which was signed by Governor Dewey, prohibiting the construction of the dam.

Moreover, the beneficial results of the popular feeling did not end there. The threat of Panther Mountain Dam had shown the weakness of the constitutional protection of the forest preserve. As a result, the constitution was amended to delete any reference to the use of the preserve for so-called river regulation.

It is not an easy thing to amend the New York State constitution. It requires a favorable vote by two successive, but different legislatures, and it requires a majority vote at the polls. In the fall of 1953, over 1 million New Yorkers voted for the amendment—a tremendous victory. Starting with what we were told was "hopeless" and "quixotic," we ended with our 7-year campaign with total success.

I have taken the liberty of reviewing this recent case history because, in the opinion of the New York State Conservation Council, it demonstrates the public desire, indeed, the public determination, to resist encroachment on the small amount of wilderness and park area the Nation has remaining. The council further feels that these events justify a statement that many New York State citizens will

Of course, if we were going to use it to market this power we would build a line of substantially more carrying capacity than we would build otherwise.

Mr. ROGERS of Colorado. I understand from your testimony that in your opinion the powerload is moving from west to east, so far as Colorado is concerned. If all of these projects are constructed and generation is made will that be the case?

Mr. PATTERSON. If this project were built with these very large capacity generating plants over on the river, then that energy would move generally eastward into the Denver, Pueblo, and Colorado Springs metropolitan areas. That is the large load-consuming area.

Mr. ROGERS of Colorado. If the Secretary of Interior should make contracts with preferred customers to the east, you would be willing to transmit it according to a contract entered into at arm's length?

Mr. PATTERSON. That is right.

Mr. ROGERS of Colorado. I think that will be all.

Mr. HARRISON. Thank you very much, gentlemen.

Mr. MOFFAT. Thank you.

Mr. PATTERSON. Thank you, sir.

Mr. HARRISON. I have received a request from the conservation group that I call the witnesses who were only able to be here this morning.

The next witness will be Michael Petruska of the New York State Conservation Council and vice president of that organization.

STATEMENT OF MICHAEL PETRUSKA, VICE PRESIDENT, NEW YORK STATE CONSERVATION COUNCIL, TROY, N. Y.

Mr. PETRUSKA. Mr. Chairman and members of the committee, I am Michael Petruska, of Troy, near Albany, N. Y., vice president of the New York State Conservation council.

I am honored to have this opportunity to appear before this committee, particularly in connection with legislation of such national importance.

The New York State Conservation Council was organized in 1925. Today its membership numbers about 350,000. The council operates on both the county and state levels, with active units in 59 counties out of 62. I have also been requested by the Membership Corporation of New York State to indicate to the committee that these remarks apply to their organization as well as the council.

I am authorized by council officials to say that the council objects most vehemently to the proposed invasion of Dinosaur National Monument. This decision was based on a resolution that was unanimously endorsed which would forbid the construction of any dams in any national monuments.

The council objects for two principal reasons: First in the light of known plans for the misuse of other parks and monuments, it believes that construction of Echo Park Dam would establish a highly dangerous precedent, regardless of any assurances to the contrary. Secondly, it objects to the gross alteration of this monument, which otherwise will eventually become one of the great nationally cherished and much visited public park areas.

The council is convinced that the search for alternative sites has not been sufficiently pursued. It respectfully suggests that this com-

mittee would be acting wisely and in a truly national sense if the committee were to request the Bureau of Reclamation to investigate the alternative sites more fully, or that the committee, on its own authority, select an alternative site outside the monument. In making a more thorough investigation, the Bureau, and all concerned, should give proper value and weight to the factors of preserving our park system in general and Dinosaur National Monument in particular.

In this brief statement I would like to elaborate on this point of proper value and weight, particularly as we in New York State interpret it. Recently, we successfully went through an impressive experience there in protecting our forest preserve from an attempt to flood a portion of it for power and alleged river regulation.

We demonstrated beyond any reasonable doubt that, once the public knows the facts, the public will act to protect its parks and monuments, both State and Federal. This is true in New York, and there is no sensible reason why New Yorkers should feel any more or less strongly on the subject than the citizens of the other States. The council believes that a majority of all our citizens, no matter where they live, want the national park system to continue unharmed for all eternity.

Briefly, our New York State experience was this: A power river regulation board, with peculiarly arbitrary powers, proposed to construct a dam known as the Panther Mountain Dam in the State-owned forest preserve. Now the forest preserve in New York State, as you may know, is established under the State constitution, to be preserved, as the constitution itself says, "forever wild." Our state policy regarding the forest preserve is thus remarkably like the Nation's policy for preserving the national park system.

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Moreover, the beneficial results of the popular feeling did not end there. The threat of Panther Mountain Dam had shown the weakness of the constitutional protection of the forest preserve. As a result, the constitution was amended to delete any reference to the use of the preserve for so-called river regulation.

It is not an easy thing to amend the New York State constitution. It requires a favorable vote by two successive, but different legislatures, and it requires a majority vote at the polls. In the fall of 1953, over 1 million New Yorkers voted for the amendment—a tremendous victory. Starting with what we were told was "hopeless" and "quixotic," we ended with our 7-year campaign with total success.

I have taken the liberty of reviewing this recent case history because, in the opinion of the New York State Conservation Council, it demonstrates the public desire, indeed, the public determination, to resist encroachment on the small amount of wilderness and park area the Nation has remaining. The council further feels that these events justify a statement that many New York State citizens will

oppose the construction of Echo Park Dam. It and the Panther Mountain Dam are comparable in many respects, disregarding the difference in size, cost, and sponsorship.

The national park system belongs to all of us, for our mutual welfare and enjoyment. It is our obligation to defend it, wherever we live. The council believes that consideration of the parks and monuments as sites for dams is fundamentally a wrong and indefensible position. The park system was not created for the exploitation of the Bureau of Reclamation.

The New York State Conservation Council, therefore, reiterates its respectful request that the most unbiased, unprejudiced, and thorough approach be made to this problem. It hopes that, if this is done, the needs of our fellow citizens in the upper Colorado States may be adequately and justly met, without compromising the national need for an enduring park system.

This is the end of my statement, except to say that I thank you for the privilege of appearing here, and for your courtesy in hearing me.

Mr. HARRISON. Mr. Miller.

Mr. MILLER. With reference to the last statement of the gentleman where he requests "the most unbiased, unprejudiced, and thorough approach be made to this problem." We had hopes of that too, but we find some groups in the country are not very unbiased or unprejudiced in the matter. We find them on both sides of the question, and of course we as Members of Congress have to make a decision as to which side of the pancake we want to look at. I think a pancake never gets too flat but what it has two sides, and you cannot always look at both sides at the same time. But the amount of mail received by Members of Congress would lead you to think that we Members are about to do something terrible to our parks and prairies and are so intensely unbiased and emotional and I was hoping that your organization and similar organizations would try to approach the question in an objective manner. We have not received any letters of that type.

I want to ask you a question relative to your statement, "in the light of known plans for the misuse of other parks and monuments"—if you will tell the committee what plans are now known for what you call the misuse of other parks and monuments in the United States?

Mr. PETRUSKA. We have heard of plans for the building of dams in the Glacier National Park, in the Yosemite and the Grand Canyon; and we feel that until there is a national emergency requiring the use of such national resources which have been set aside for the use of the people, because of its unique value that that would be a misuse to use it for any other purpose.

Mr. MILLER. Those are just rumors; they are not known plans. I want something you have known, some plans; I would like to see them. Now what plans do you know about outside of just rumors. We are not going to build up a lot of strawmen and then tear them down. I am trying to find out what plans you know about, with respect to these or other parks and monuments.

Mr. PETRUSKA. Well I have heard and read—

Mr. MILLER. Oh, no. I quoted from your statement which says, "in the light of known plans for the misuse of other parks and monuments." Now what plans do you know about? Not what you have

read or heard, or had a dream about somewhere or sometime; or the dreams perhaps of other people; but what plans do you know about. That is what I would like to know personally, and I am sure members of the committee would like to know about.

Mr. PETRUSKA. I am sorry that I am not prepared to give you in detail the plans as to that.

Mr. MILLER. Then do you want to correct your statement "in the light of known plans for the misuse of other parks and monuments"; would you like to correct that part of your statement?

Mr. PETRUSKA. I do not think that I made a mistake, because when I read in the newspapers and in magazines that plans are being made I assume that plans are being made.

Mr. MILLER. You assume that?

Mr. PETRUSKA. Yes, sir; of course that is the only way I could approach the subject.

Mr. MILLER. Do you know that they are being made?

Mr. PETRUSKA. Maybe I should say "contemplated" instead of saying that plans are being made.

Mr. MILLER. In your statement you say that "investigations should be made of alternative sites outside the monument." Are you saying that no investigations have been made as to other alternative sites that might be used?

Mr. PETRUSKA. No, sir. I am suggesting that a more thorough study be made of those alternative sites, because we are informed that alternate sites are available and do the job that needs to be done without destroying this monument.

Mr. DAWSON. Will the gentleman yield to me?

Mr. MILLER. Yes, Mr. Dawson.

Mr. DAWSON. I wonder if the witness is aware of the fact that this same demand was made a number of years ago and the Department was directed to make further investigations. It went ahead with that request and made the investigations and they are back at this time with a report, and the report is that the alternate sites are not suitable; and you are asking that they go out again and make another investigation over another period of time, when they have already done it at the request of the Secretary of Interior.

Mr. PETRUSKA. Of course I do not have available possibly all of the information that you might have but it is the knowledge of our groups that there are alternative sites which have been mentioned as possible and would do the same job; and we have no information to show that those sites have been declared not to be available or as usable as those that are proposed.

Mr. DAWSON. I would suggest that you read the testimony that has come before this committee which I think might be helpful to those in your group. I think that is all, Mr. Chairman.

Mr. HARRISON. Mr. D'Ewart.

Mr. D'Ewart. I happen to be chairman of the Public Lands Subcommittee which is charged with the interest of the national parks, monuments, cemeteries, and so forth, in this House. And I think every member of the committee sitting here today is a member of the Public Lands Subcommittee. A year ago we held some hearings on somewhat similar subjects that have been discussed and at that time the top officials of the National Parks Association congratulated the Public Lands Subcommittee on its vigilance in protecting the

interests of the national parks. And it disturbs me a little to have you come here and intimate that we are not doing the job in that respect.

Mr. PETRUSKA. I am sorry if I did give that impression. I did not mean to do that.

Mr. HARRISON. Mr. Aspinall.

Mr. ASPINALL. I do not have any questions, Mr. Chairman; but not having any questions I do not want to appear from the record that I agree on the matters which the gentleman has brought before the committee.

Mr. HARRISON. Mr. Saylor.

Mr. SAYLOR. Mr. Petruska, I might say to you that if your organization does not know about them, I can tell you the definite plans that are being made for the invasion of the parks; and bills have been introduced in this session of the Congress actually calling for the invasion of the national parks.

Mr. HARRISON. Are you referring to the bill which provides for the building of a dam in Glacier Park, introduced by the gentleman from Montana, Mr. Metcalf?

Mr. SAYLOR. That is correct.

Mr. HARRISON. Does not the gentleman agree with me that the action of an individual Member of the Congress is certainly not binding on the other Members of Congress? Nor upon this committee; and that in itself it does not constitute any known plan in the general sense, and that such action is rather the action of the individual and not that of a group?

Mr. SAYLOR. If you will read Mr. Metcalf's bill you will find that he asks to have the plans which have been made for the erection of that dam, revised and reviewed.

Mr. HARRISON. Has there been any action on the bill?

Mr. SAYLOR. There has been no action on it, but the plans have already been made, it is a known fact, by the Bureau of Reclamation, and the Army engineers.

Mr. HARRISON. I would like at this time to have the Bureau of Reclamation representative here appear next week to answer that charge as to whether such plans have been made in other areas.

Mr. ASPINALL. Will the gentleman yield to me?

Mr. SAYLOR. Yes, Mr. Aspinall.

Mr. ASPINALL. I understood the witness to state that he and the people he represents are willing to have these national areas invaded for certain purposes in case of national emergency.

Mr. PETRUSKA. Certainly, as Americans, we have to take that position.

Mr. ASPINALL. That is all.

Mr. HARRISON. Had you finished, Mr. Saylor?

Mr. SAYLOR. That is all, Mr. Chairman.

Mr. HARRISON. Mr. Dawson.

Mr. DAWSON. Have you ever been out to the Dinosaur National Monument?

Mr. PETRUSKA. No, sir.

Mr. DAWSON. You have not?

Mr. PETRUSKA. No, sir.

Mr. HARRISON. Will the gentleman yield to me?

Mr. DAWSON. Certainly.

Mr. HARRISON. What national parks have you visited?

Mr. PETRUSKA. The only national parks that I have visited—there is no national park, no national park. This is a national resource that is common to all of us; I am still a part owner, and so are the members of my group.

Mr. DAWSON. Mr. Petruska, you say you have visited no national park, and yet you say the park system is for all the people.

Mr. PETRUSKA. That is right.

Mr. DAWSON. And you want the parks preserved, and of course we do too.

Mr. PETRUSKA. Yes.

Mr. DAWSON. Are you acquainted with the fact that when this park was set aside by President Roosevelt's proclamation it indicated that dams might be built within the monument?

Mr. PETRUSKA. As I understand it that reservation did not refer to Echo Park Dam.

Mr. DAWSON. No; that is true. But you are seeking to establish a precedent here against any dam being built in the national monument.

Mr. PETRUSKA. But the dam that was referred to, as I understand it, was to be built in an area that was called Brown Bend, or something like that.

Mr. DAWSON. That is right.

Mr. PETRUSKA. And the dam itself would be in the monument but the flood would be out of the monument.

Mr. DAWSON. No. There are several miles within the monument.

Mr. PETRUSKA. At least it would not flood the monument.

Mr. DAWSON. There would be a flooded area of 5 or 6 miles within the monument in the eastern part. So when you speak of a precedent, the precedent was provided when the monument was established.

Mr. PETRUSKA. But only this particular one.

Mr. DAWSON. Surely, that is what we are talking about. You take one side of the issue and we take the other, but the same principle applies, does it not, that the dam was provided to be built in there? Are you also acquainted with the fact that assurances were given by the representatives of the Park Service when the monument was enlarged that it would not interfere with the reclamation program?

Mr. PETRUSKA. The only limitation, as I understood it, was to that one particular site.

Mr. DAWSON. I just suggest again that you read the testimony.

Mr. HARRISON. Mr. Young.

Mr. YOUNG. No questions, Mr. Chairman.

Mr. HARRISON. Thank you very much, Mr. Petruska, for appearing before the committee. We want to be very fair in the matter; we want to hear both sides, and I think you will find that the committee will consider both sides of the matter, and will not be prejudiced in any way.

I think the Chair might say, also in agreement with you on the fact, that the people in the United States have an interest in our national parks. But I think you should make some study of the situation existing in some of the States in the West where great portions of the lands in the States are now owned by the Federal Government, and that those States are paying into the Treasury a great deal of money which it would not get otherwise; and therefore for the economic growth of these States some effort must be made and some plans

be made for their future development. And I think in fairness the folks not living in the areas of the West should make some study of that general proposition. That is not intended as a criticism, of course; I am merely saying that to present the overall picture that the people in other areas should give some thought to what is happening to the West so that we can work together in harmony for the overall progress of that part of the area.

We do appreciate your coming here and giving your testimony.

Mr. PETRUSKA. Thank you, Mr. Chairman.

Mr. HARRISON. I want to state that the committee has received a great many letters, communications, telegrams, and so forth, on this particular subject, objecting to the inclusion of the Echo Park Dam. A good many of those statements have asked that they be included in the record. It is impossible for us to include those statements, those letters and those telegrams in such numbers in the record. They will be received, however, and made a part of the files of the committee. The members of the staff will tabulate the number received and that will be made a part of the hearings indicating the numbers of such communications received.

(The information referred to, as of February 15, 1954, is as follows:)

Letters addressed to Hon. A. L. Miller, chairman, Committee on Interior and Insular Affairs, 1,073.

Letters addressed to Hon. William Henry Harrison, chairman, Subcommittee on Irrigation and Reclamation, 3,658.

Mr. HARRISON. I would also ask that those who testify next week—and we will have, I might say, seven more witnesses, proponents, and then we will go ahead with those who are opponents—and I would ask that wherever possible the witnesses bring prepared statements in sufficient numbers to give the members of the committee a chance to follow the testimony as it is being presented. I assure you that it will be a great help to the members of the committee, and it will be very much appreciated.

Mr. ASPINALL. Mr. Chairman, I have one request, that when the staff tabulates these letters, which are pro and con that they make some kind of a record of any constructive approach that may be found in these letters.

Mr. HARRISON. That will be done.

(The information referred to is as follows:)

Of the 4,731 letters received by the Committee on Interior and Insular Affairs, 53 favored construction of the Echo Park Dam, and the remainder of 4,678 opposed construction. Of the 4,678 opposing construction, 5 were considered as taking a constructive approach to the problem of determining which course of action will be in the best interest of the United States.

Mr. HARRISON. The committee will stand adjourned until 9:30 Monday morning.

(At 11:55 a. m. the committee adjourned to meet at 9:30 a. m. Monday, January 25, 1954.)

COLORADO RIVER STORAGE PROJECT

MONDAY, JANUARY 25, 1954

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON IRRIGATION AND
RECLAMATION OF THE COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to recess, at 9:35 a. m. in the committee room, New House Office Building, Hon. William H. Harrison (chairman) presiding.

Mr. HARRISON. The Subcommittee on Irrigation and Reclamation of the House Interior and Insular Affairs Committee will come to order. We will continue our hearings on the upper Colorado River Basin project.

The first witnesses this morning will be our good friends from the Navaho Reservation. We have with us Sam Ahkeah, who is chairman of the Navaho Tribal Council, which is the governing body of the largest Indian tribe occupying the largest Indian reservation in the United States, which is in Arizona and New Mexico. We also have Mr. Maxwell Yazzie who is chairman of the engineering committee, and Mr. Howard Gorman, chairman of the resources committee, who will testify.

Mr. Ahkeah, if you are ready to proceed, go right ahead.

Mr. BENDER. Mr. Chairman, are we not violating rules of the House by having television here this morning?

Mr. HARRISON. I do not believe so. It has been cleared, and I think everything is in order.

Mr. SAYLOR. Before Mr. Ahkeah testifies, Saturday the question came up and was raised by one of the members with regard to the fact that there had been no other plans made for the invasion of national parks and monuments. I would like at this point to introduce into the record a pamphlet which was prepared almost a year ago by the National Park Service, entitled "Encroachments on and Resource Utilization in Areas of the National Park System." It will be a part of the record which shows that there are at the present time plans by various bureaus and agencies to invade at least a half a dozen of our national parks and monuments.

Chairman MILLER. May I inquire, is that an invasion of dams or for grazing purposes?

Mr. SAYLOR. This is invasion by dams.

Mr. HARRISON. Is there any objection to receiving for the record the material which Mr. Saylor has described?

Mr. ENGLE. May I have a look at that?

Chairman MILLER. I think it ought to be held up until members have a chance to look at it. I doubt if it is invasion by dams, I think it is for grazing purposes. There may be some dams suggested, but I think it covers mainly grazing principles and mining principles and other so-called invasions of the Park Service.

Mr. HARRISON. Mr. Saylor, would you be willing to hold that in abeyance?

Mr. SAYLOR. In view of the fact that my integrity and ability to read has been questioned, I would like to read and show that this is divided into such sections—the first of them is dam proposals.

Mr. ENGLE. If the gentleman would let us look at it.

Mr. SAYLOR. I will be glad to let you look at it. It does cover grazing too, but it also covers dam proposals.

Chairman MILLER. Objection until we have a chance to look it over.

Mr. HARRISON. The objection has been heard. In view of the fact objection has been heard, the paper then will be held for action later by the committee.

Mr. Sam Ahkeah, will you proceed at this time?

STATEMENT OF SAM AHKEAH, CHAIRMAN, NAVAHO TRIBAL COUNCIL, SHIPROCK, N. MEX.

Mr. AHKEAH. Mr. Chairman and honorable committee. [Mr. Ahkeah spoke in Navaho for a short time.] I said—my delegation has traveled a great distance from the West to the East to the city of Washington where there is a Great White Father. We came to the honorable committee of Congress here to plead for our river rights, water rights, and I am sure today our people would be very happy that the delegation will be heard.

I am Sam Ahkeah. My home is at Shiprock, N. Mex., on the Navaho Reservation, and I am chairman of the Navaho Tribal Council. I wish to make a brief statement to you on behalf of my Navaho people.

My people have been waiting for a great many years for the time to come when we would be able to put to some beneficial use the waters which pass through our lands. We are like all other peoples living in the arid western lands, we can have visions of what water placed upon our lands will do, but we cannot translate these visions into effective action without help. It is beyond our means.

Those of you who are familiar with Indian history in the Southwest may know that even 100 years ago and more my people were struggling to grow crops in the area which is still our land. The early white settlers and Army officers who came to New Mexico in the 1840's and 1850's found our ancestors growing wheat, corn, beans, and other crops. They found us with some well-developed peach orchards. They told of these things in their official reports and in their letters to friends.

Kit Carson tells of the destruction of our fields and crops, and of our orchards in 1863 in order to starve us out so we could not fight. What irrigation we had in those days was very primitive, but even then we were trying in our own way to use the waters which God placed in the rivers running through our lands.

When our people were taken to Fort Sumner, it was with the idea that they would be placed upon the land to become farmers. When

we were allowed to return to our homeland in 1868, it was with the idea that we would farm at least some of our lands and thus be able to become self-supporting. We were promised many things, a good many of which have never come to pass. It makes no difference now where the blame may be placed, what is important is that through this great irrigation project many of those promises can at last be kept. We do not wish charity. We do not wish to be supported on a dole. We wish to assume our rightful place as self-supporting citizens of this great country. We think that we have amply demonstrated our ability and willingness to assume the responsibilities of citizenship when we have the chance and the means to do so, both in peace and in war. We know that the Navaho Dam and the entire Shiprock-South San Juan project will cost a great deal of money, but we feel it will be money well spent for all of the taxpayers of this country. It will be less than may be spent if the project is not built to support and maintain us over the years; and in addition it will enable us to support ourselves with the dignity and human satisfaction to which every citizen is entitled. It will enable us to take our rightful place in society.

I would like to be a little more specific. We understand that our Shiprock project will irrigate about 122,000 acres of land. The South San Juan portion of the project will irrigate about 29,000 more acres off of the reservation, but a good deal of it is Indian-allotted lands. Suppose that lands of Navahos in an amount of 125,000 acres are irrigated, both on and off the reservation. They will be concentrated in one agricultural area and bring the Navaho people closer together in their living. There are now about 100 Navaho families living on the lands which will be irrigated, all of whom make for themselves only a substandard living because the land cannot support them. When the land is irrigated, it will make about 1,500 farms of a size to support Navaho families. This means 1,500 families supporting themselves directly from the project, or as near as we can figure it will be about 7,800 people. These people will become self-sufficient and can live with dignity. They will become taxpayers, because even though we do not now pay taxes on our lands, when we make money we pay income tax, and whenever we buy things with the money we have earned, we pay the taxes on these things. Thus you can see some of the money it costs will come back to the Government even indirectly. It will not all be going out.

In addition to the people who live on the farms, there will be many other Navahos who will indirectly make their living out of the project. It will create villages with stores, filling stations, and all kinds of service businesses. We are told that at least 7,800 people not living on the project will be supported by the project. This means a total of about 15,600 of our people will be taken care of. I hope you will realize what a wonderful thing this will be for use, but it will also be wonderful for the United States. It will mean 15,600 more really useful citizens living as we all want United States citizens to live.

Let me point out some additional results. One of the things we are promised in the 1868 treaty was schools and education for all our children. This promise has never been kept. It is a difficult promise to keep in some ways, and expensive because of the large area of our reservation and because our children are so widely scattered. It is

very difficult to build day schools because enough children cannot get there, and boarding schools are very expensive and are not satisfactory to us. We want our small children to live at home and have a family life just as you do. With this irrigation project a great many of our children will be living in a concentrated area and it will be much easier to provide schools and much less expensive to the taxpayers. The more our children are educated the better they will be able to compete in society and in general, the better citizen they will make, and you will no longer hear of an Indian problem. Our people, and especially our children, are one of the great resources of this country, and this resource should not be wasted any more than any other resource.

I want to say just a little more. We know we are not the only people in the West with a water problem. We believe that the water resources of that area should be put to the best possible use. We recognize that in our own State of New Mexico there are other water problems which must be settled, and we will give our support to the most feasible settlement of those problems.

We think that the most important step that can be taken right now to solve the problems of our people is the early authorization and construction of the Navaho Dam and the Shiprock-South San Juan project. We cannot rise above our present status without this help. We know that you will give this project your serious consideration, and we wish to thank you for giving consideration to our problems.

Thank you.

Mr. HARRISON. Thank you very much, Mr. Ahkeah. Mr. Miller, do you have any questions?

Chairman MILLER. I think not. Thank you very much.

Mr. HARRISON. Mr. Engle?

Mr. ENGLE. No questions.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. Senator Watkins and I happen to be two members of the Joint Senate House Committee, as you know, Mr. Ahkeah, which was set up under the special legislation wherein we authorized several millions of dollars for the development of your reservation, including such things as better schools, better hospitals, irrigation, and development of your resources. That program is going along, not as fast as you hope, but reasonably well, is it not?

Mr. AHKEAH. A long-range program you are speaking of there, Congressman?

Mr. D'EWART. That is correct.

Mr. AHKEAH. So far \$84 million has been spent, and we feel that if more money was appropriated each year we could do better and are held up because of the lack of money.

Mr. D'EWART. We have built more hospitals for you, especially the one in southern Utah that has been improved and put into condition, and school facilities have been considerably improved. In fact, I understand that we are building schools better than you think is necessary for the situation which we have to serve.

Mr. AHKEAH. Yes.

Mr. D'EWART. Those schools, some of them, are too expensive, are they not, for your purposes?

Mr. AHKEAH. Yes; we feel that with probably less expensive buildings more schools could be built.

Mr. D'EWART. I agree with that, too. I think we can use that money to better advantage than we have in the past. We have gone ahead quite well in developing your waterholes and your water prospects, do you not think?

Mr. AHKEAH. Yes.

Mr. D'EWART. Your Indian tribe has cooperated in that work and contributed large sums of money to match that put up by the Federal Government, and as a result a lot of stock water has been developed on the reservation?

Mr. AHKEAH. We have tried to help out with the water problems, putting in wells, with the tribal money, and it has been a big success, too.

Mr. D'EWART. This Shiprock project that you speak of is a large project that was not included in that long-range program, it is an objective?

Mr. AHKEAH. No; it was not included.

Mr. D'EWART. That is correct.

How is your road program going forward?

Mr. AHKEAH. The road program is coming fine, but a portion that has been finished is all right, and we need more roads built.

Mr. D'EWART. I think that is true, too, but they are making progress on that road program, and it is going along very well, I think.

Mr. AHKEAH. Yes; with what money we get. Of course, we do not get all the money we would like to have.

Mr. D'EWART. Nobody does in this world. Thank, you Mr. Ahkeah.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. You say there are 1,500 families that would be directly benefited through this Shiprock Project and 122,000 acres of the land would be irrigated. How much of that 122,000 would be put in cultivation?

Mr. AHKEAH. That would be the amount. 122,000, would be cultivated.

Mr. REGAN. Sir?

Mr. AHKEAH. That many acres, 122,000, would be cultivated.

Mr. REGAN. How much of it would be used for grazing land only?

Mr. AHKEAH. This 122,000 is mainly farming, will be farming land. We have plenty other acreage that could be used for grazing, but this would not be in the farming area.

Mr. REGAN. Is there any other land now in cultivation?

Mr. AHKEAH. These lands now are used for grazing by the hundred families that we spoke of here.

Mr. REGAN. The hundred families?

Mr. AHKEAH. Yes.

Mr. REGAN. But you speak in your statement of 1,500 families being benefited through this.

Mr. AHKEAH. If the farming project is realized, then the 1,500 families can use the lands.

Mr. REGAN. Will all of that land then be put in cultivation or will some of it be used for grazing purposes only?

Mr. AHKEAH. Yes; all of this 122,000 acres would be put into farming, irrigated farming.

Mr. REGAN. Thank you, Mr. Ahkeah.

Mr. HARRISON. Mr. Saylor?

Mr. SAYLOR. Mr. Ahkeah, will these farms be operated by the Navaho people themselves?

Mr. AHKEAH. Yes, Congressman; yes.

Mr. SAYLOR. The reason I ask that question, I have noticed on some of the other reservations, some other tribes, when there have been irrigation projects placed on them, have not had their own tribal members do the farming, they have leased these farms to other people.

Mr. AHKEAH. Yes. I have seen that too, Congressman, but we do not do that with the Navaho people. They want to farm.

Mr. SAYLOR. Do you feel that there are sufficient people in your tribes that if this project is authorized these farms would be operated by Navahos?

Mr. AHKEAH. Yes; we want to operate our own farms, our own land. Yes, Mr. Congressman.

Mr. SAYLOR. That is the only questions I have.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Ahkeah, when several of the members of this committee visited Farmington last fall, we listened to a Mr. Yellow Man, and Mr. Yellow Man gave us a very fine explanation of his farming activities and of his needs. Is not he and men like him able to compete in the agricultural industry along with anybody else?

Mr. AHKEAH. Yes. He is an uneducated man, as you probably remember him, Congressman, and he does very well farming. He has told us that he operates around about 20 acres, and he uses rotation on the crops, and he does very well with raising beans, alfalfa, corn, wheat, and like that. He also said that he does heavy fertilizing in the spring when he prepares for farming. So he does compete very well with the farmers just over across the river.

Mr. ASPINALL. We visited his place, and it looked as if it were taken care of by a man who knew what he was doing.

Now you suggest there will be 1,500 families. There have been some statements gone out that the Navaho people were not agriculturists, that they were nomadics, that they liked to graze their domestic animals. Do you think of all of your population you could find 1,500 families who would desire to settle on lands and become agriculturists?

Mr. AHKEAH. Yes; we will find those families. We probably must note that we are getting every year so many younger generation getting education, and they go out to colleges and high schools, and they are studying agricultural business, and they learn about it. But so far we do not have a farming land where they can put their education to use.

Mr. ASPINALL. In other words, the reason that they are nomadic and grazers at the present time is that they do not have any opportunity to become agriculturists with irrigation facilities; is that not correct?

Mr. AHKEAH. I would say that is the most reason, that is the most cause.

Mr. ASPINALL. And if you took care of 15,000-plus people directly and indirectly by this project, you would be taking care of approximately one-fifth of the entire Navaho Reservation at this time, would you not?

Mr. AHKEAH. That is right; yes.

Mr. D'EWART. Will you yield to me?

Mr. ASPINALL. Yes, certainly.

Mr. D'EWART. Mr. Ahkeah, would it not help in getting your tribal members to settle on this project if we gave them a patent in fee to these farmlands instead of a trust?

Mr. AHKEAH. I think it would be better, Congressman; yes, to get a title.

Mr. D'EWART. I agree with you.

Mr. ASPINALL. That is all.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. I was just wondering, do you have any figures on about what it would cost to finance one of these farms, set a family up on one of these irrigated farms, Mr. Ahkeah?

Mr. AHKEAH. Congressman, I believe that is a technical question. Could I call on my engineer to answer that?

Mr. BERRY. Yes, he will be testifying, will he?

Mr. AHKEAH. Yes.

Mr. BERRY. All right. That is all right, I will just wait until he takes the stand.

Mr. AHKEAH. Yes.

Mr. BERRY. This area is that area we saw between Farmington and Shiprock?

Mr. AHKEAH. That is right.

Mr. BERRY. That is all.

Mr. HARRISON. Mrs. Pfof?

Mrs. PFOF. No, thank you.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. No questions.

Mr. HARRISON. Mr. Westland?

Mr. WESTLAND. I have one question, Mr. Ahkeah, and perhaps this should be directed to Mr. Larson. But on page 13 of Mr. Larson's testimony he says that if this Navaho project is included a slightly longer period of repayment or a slightly higher power rate to supply the necessary irrigation assistance will be necessary. I wonder if that means this Navaho project is not feasible by itself, and also how much longer a period and how much of an increase in power rates will be necessary.

Mr. AHKEAH. Congressman, that also is a technical question. We have the technical engineer who has been working on it, and I believe he can answer that question.

Mr. WESTLAND. Could I ask Mr. Larson if he could answer that, Mr. Chairman?

Mr. HARRISON. If you want. Could you answer that, Mr. Larson?

Mr. E. O. LARSON (regional director, region 4, Bureau of Reclamation). I explained in my testimony the net power revenues that would be available, first, to pay off the group of participating projects included in the supplemental report of the Secretary, and then I mentioned if those additional projects were added and the Navaho project, the large one, was added, it might require some extension beyond the 50 years. You see there is only so much power revenue available. The first, Glen Canyon and Echo Park, will pay out in 44 years, and then there would be net revenues up to the 50th year, and keep on. It means if you just keep adding participating projects it may reach

the point where it requires slightly longer than 50 years or an increase in the power rate above the estimated average of 6 mills per kilowatt.

Mr. WESTLAND. Would that be another 5 years, would you guess, or 10 years or 7 mills?

Mr. LARSON. I do not have my files with me, but I believe 16 years, which would include the Navaho.

Mr. WESTLAND. And the mill rate would go up?

Mr. LARSON. Leaving the mill rate at 6 mills, if you raised it a half a mill, of course, that would bring it back down to 50 years, a half mill or so.

Mr. WESTLAND. That is all.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. No questions.

Mr. HARRISON. Mr. Rhodes?

Mr. RHODES. Mr. Ahkeah, I am also on the Permanent Committee for Studying the Navaho-Hopi Rehabilitation Bill, and I was interested in some of your remarks on schools. I have heard it said although we have spent millions of dollars on schools in the Navaho reservation, there are more Navaho children now that cannot go to school than there were when we started because of your rather large birth rate. Is that a correct statement?

Mr. AHKEAH. That is correct, Congressman. Although we send a lot of our children to Washington, Oregon and Nevada, Utah, California, Oklahoma, even then we do not get them all in schools. Those are places where we find schools available for them.

Mr. YOUNG. Do you think a better approach would be to build smaller schools and have them scattered more widely throughout the reservation?

Mr. AHKEAH. That is our thinking, Congressman; yes.

Mr. YOUNG. In other words, go back to the old country school idea?

Mr. AHKEAH. Yes. Cheaper schoolhouses might benefit the people.

Mr. YOUNG. Instead of building \$10 million plants in one place, scatter them around so the children could stay home and still go to school?

Mr. AHKEAH. Yes.

Mr. YOUNG. That is all.

Mr. HARRISON. Mr. Wharton?

Mr. WHARTON. No questions.

Mr. HARRISON. Mr. Pillion?

Mr. PILLION. No question.

Mr. HARRISON. Senator Watkins?

Senator WATKINS. You mentioned in your statement that with this irrigation project, a great many of your children will be living in a concentrated area and it will be much easier to provide schools and much less expensive to the taxpayer. Now you have in mind, of course, the area in and around Shiprock, do you not?

Mr. AHKEAH. Yes, Senator.

Senator WATKINS. Under the 10-year rehabilitation program, at the present time a large school is now being built or nearly finished at that point, is it not?

Mr. AHKEAH. Shiprock?

Senator WATKINS. Yes.

Mr. AHKEAH. It is about being finished now.

Senator WATKINS. You think it is finished about now?

Mr. AHKEAH. It will be opened probably next fall.

Senator WATKINS. Open next fall?

Mr. AHKEAH. Yes, sir.

Senator WATKINS. How many children will it take care of?

Mr. AHKEAH. We like to figure around about a little over a thousand, with double deck beds put in.

Senator WATKINS. About a thousand?

Mr. AHKEAH. Yes.

Senator WATKINS. Of course, that would not take care of very many of the Indian children that are now not in school?

Mr. AHKEAH. No. I think when it was first started the figure was around 750 children that could be accommodated there. So with the double deck beds put in, we think that probably could be raised to a little better than a thousand children to be placed there in school.

Senator WATKINS. As a matter of fact, you have more than 16,000 children now who cannot go to school at all, do you not, children of school age?

Mr. AHKEAH. That is right.

Senator WATKINS. And notwithstanding the fact that the United States agreed in its treaty that you would have one teacher for each 32 and a schoolroom for each 32?

Mr. AHKEAH. That is right.

Senator WATKINS. That has been said many times, but that is the truth, is it not?

Mr. AHKEAH. That is right; that is the truth.

Senator WATKINS. A number of years ago the Congress started what is called the 10-year rehabilitation plan; authorized the appropriation, as I remember, of \$88 million, and at the same time set up a joint committee on the Navaho and Hopi rehabilitation. I happened to be the chairman of that committee, so I am somewhat acquainted with your problems down there.

Mr. AHKEAH. Yes.

Senator WATKINS. Do you have a feeling that the members of your tribe will readily respond and go to this land and fully farm it?

Mr. AHKEAH. Yes.

Senator WATKINS. And that is the sort of pledge you are giving today: If it is built, you will do that?

Mr. AHKEAH. Yes; we will do that.

Senator WATKINS. I understand some people have the idea that the Indians do not like to farm. I think they have gained that impression probably from seeing some Indian reservations where they have land but do not farm it and rent it to white people.

Mr. AHKEAH. I farmed all my life, Senator, although I do not live on it, but I like farming. I want to stay there and farm but the work takes me away, as you know. And I, as a Navaho, like farming.

Senator WATKINS. How many Navaho Indians are there now?

Mr. AHKEAH. We figure around 73,000.

Senator WATKINS. 73,000?

Mr. AHKEAH. Yes.

Senator WATKINS. Is it not a fact that you increase about 1,200 a year?

Mr. AHKEAH. I think so; yes.

Senator WATKINS. With respect to your schools, is it not a fact now that the children do want to go to school?

Mr. AHKEAH. Yes; the children do want to go to school, and also the parents realize that the school is about the only thing. So every year when the school opens a lot of the children have to be sent back, taken back, there would be no room for them anywhere.

Senator WATKINS. A number of years ago the big military hospital at Brigham City, Utah, was fitted up as an Indian school under an authorization of Congress. I have been told that when the busses arrived at the collecting points each year to take the students to this school there are many hundreds of schoolchildren who want to go but cannot go, who come to the collecting point in hopes maybe there will be a vacancy that one of them can go. Is that true?

Mr. AHKEAH. That is true. That is the best school we have there, Senator; a very fine school.

Senator WATKINS. That is the boarding school that trains them for vocations?

Mr. AHKEAH. That is right; yes.

Senator WATKINS. I hope this committee and I hope the Senate committee will take a great interest in this matter of the education of these children. I think this project would go a long way to help provide an area where schools can be built, for instance at Shiprock.

Mr. AHKEAH. Yes.

Senator WATKINS. It is a fact, is it not, Mr. Ahkeah, that in other places on the reservation there are not many opportunities to get water that is suitable for maintaining the schools or supplying the schools?

Mr. AHKEAH. No; there are very few places where there is water enough to build a big school.

Senator WATKINS. At one time the Indians themselves made a survey, and I think they came up with about eight places on the reservation where they could get good water for schools; is that not right?

Mr. AHKEAH. That is right.

Senator WATKINS. So as a matter of fact, it is very difficult to establish these day schools on the reservation?

Mr. AHKEAH. That is right.

Senator WATKINS. Many of the Indians live off of the main highways, and the only way they could get to a school would be by bus; would it not?

Mr. AHKEAH. That is right.

Senator WATKINS. And the buses, of course, many times of the year could not leave these main highways to go out in the areas where the Indians live?

Mr. AHKEAH. Yes. These buses now do a wonderful job hauling children in the Shiprock area, where there are four highways come in, you know, and these buses run a great distance there every morning bringing children.

Senator WATKINS. Then that could be extended. If this project is built and you get the necessary aid from the electrical power that is developed and sold, this could be a very good area for concentrating the educational program of the Navaho Indian children?

Mr. AHKEAH. That is what we feel.

Senator WATKINS. As you said and I want to repeat, there are more than 16,000 children now who cannot go to school at all simply because of the lack of facilities.

Mr. AHKEAH. That is right. As much as we all try to find schools for them even away from home, off reservation in other States. But so far we are not able to put them all in school.

Senator WATKINS. The school at Brigham City, for instance, will only take care of about 2,200 students?

Mr. AHKEAH. About 2,200 or 2,400 there now.

Senator WATKINS. 2,400 there now?

Mr. AHKEAH. I think so.

Senator WATKINS. I think now they have put in all they possibly can and crowded them as much as they dare in order to give more children an opportunity.

Mr. AHKEAH. That is right.

Senator WATKINS. I would like to say to the committee that those children are taking a very active part and respond as few Indian children I have seen in the years that I have been acquainted with the Indian problem. I think they are making remarkable progress and are going to be of great help to you people when they come home and they are trained and able to help you through their vocational training.

Mr. AHKEAH. Yes.

Senator WATKINS. And I want to say, also, the Indians cooperated 100 percent with the program for that school and other schools and all the other matters we have been working on in connection with them through this joint committee.

Mr. AHKEAH. Yes.

Mr. HARRISON. Mr. Fernandez?

Mr. FERNANDEZ. No questions.

Mr. HARRISON. Mr. Rogers?

Mr. ROGERS of Colorado. No questions.

Mr. HARRISON. Thank you very much, Mr. Ahkeah. It is a pleasure to have you here before us.

Mr. AHKEAH. Thank you.

Mr. HARRISON. Our next witness is Mr. Maxwell Yazzie, chairman of the engineering committee.

STATEMENT OF MAXWELL YAZZIE, CHAIRMAN OF THE ENGINEERING COMMITTEE, NAVAHO TRIBAL COUNCIL

Mr. YAZZIE. Mr. Chairman and members of the committee, my name is Maxwell Yazzie. I am only pinchhitting for Mr. Maloney. I am a member of the Navaho Tribal Advisory Committee and chairman of the engineering committee. My home is at Tuba City, Ariz., on the Navaho Reservation.

I come from the western side of the Navaho Reservation where there are many stockless people. These people cannot now get grazing permits and have stock because there is no room on the reservation for more livestock. They have no way to support themselves on the reservation, but it is their home and they do not want to leave and go way off somewhere else. Also many of them would have no way to support themselves anywhere else even if they went. They have not had the opportunity to educate themselves to any other way of life, and to compete in the labor market off the reservation.

We can see no solution to the problem of our people except to make our land resource support more people. We have looked forward for many years to the development of some of our land by irrigation. We now have some very small irrigated areas and some of you may have seen these areas. If you have, you know what a little water can do on our land. Our people have farmed some for many years. Our fathers scratched out some little ditches. We have done the best we could with what is available, but we need help. The Navaho people want to help themselves and live with dignity on their own resources.

If through this Shiprock project we can make less than 1 percent of our land support about 20 percent of our people where it is only supporting less than 1 percent now, we will be achieving much toward self-sufficiency for the Navahos. As you can see, although the project is on the eastern part of the reservation, it will have a big effect upon the living of my people on the western side of the reservation. Many of them want to get on the irrigated land and farm. If they are now using grazing land in the west and move, it will give a stockless Navaho a chance to have a grazing permit. If they have no stock and move to the irrigated land, it will make it possible for them to support themselves.

The Navaho Tribal Council has spent much of its time during the last few years trying to solve the grazing problem. As things are now, there does not seem to be any real solution. This irrigation project will give us a chance to solve the problem. We are now in the process of forming a complete land code for the use of our land. We expect it to provide for the best use of our land resource and to conserve this resource; but the Shiprock project is the most vital part of our land-use code. We have even been negotiating to buy more land around the reservation with our own money so that our people can live. This land, I might say, will not go off of the tax rolls of the States. We will expect to pay the taxes on it. All of what we are doing is tied together, and the Shiprock project is the key to the whole matter. Everyone has a solution to the so-called Indian problem. We think this Shiprock project is one of the ways to solve this problem where the Navahos are concerned. You have the key to at least one door of this problem. We hope that you will open the door to us. Once this door has been opened, many others will follow. One of our problems is education and schools for our children. As Mr. Ahkeah has pointed out, this project will make the education problem more simple and less expensive for everyone. One other thing which has not been mentioned is roads and communication. This problem will be less troublesome in a concentrated population area.

I would like to close by saying that we think that the Shiprock project will have a very good effect upon the economy of the whole four corners area and all of New Mexico. It will create wealth not only for Navahos, but for the whole country. When 75,000 people have a substandard living it pulls the whole area down, but give them a good standard of living and everyone is helped.

Please accept my thanks to you for listening to our story and for the help you can give the Navaho people.

Mr. HARRISON. Thank you very much, Mr. Yazzie.

If there are no questions from members of the committee—

Mr. D'EWART. Mr. Chairman?

Mr. HARRISON. Mr. D'Ewart.

Mr. D'EWART. You say "they have no way to support themselves on the reservation, but it is their home and they do not want to leave and go way off somewhere else. Also many of them would have no way to support themselves anywhere else even if they went."

First, you have quite an extensive sawmill operation that employs Indians, do you not?

Mr. YAZZIE. Yes.

Mr. D'EWART. And then Indians are employed on all the construction work that goes on on the reservation whether it is carried on by the council or by the Federal Government, are they not?

Mr. YAZZIE. They have been taken care of very closely in order to do this if they go off the reservation.

Mr. D'EWART. Then we have quite an extended off-the-reservation program that has found employment off the reservation for large numbers of Navahos. Is that not true?

Mr. YAZZIE. That is true, but only to the younger class.

Mr. D'EWART. I visited the reservation one time when the manpower was so depleted they hardly had enough left to take care of their stock because the Indians had left to go to the vegetable fields, to the railroads, and the points where they were needed for employment, and I think that off-reservation program has been a great help in providing employment for Indians who are willing to take work off the reservation. Do you agree with that?

Mr. YAZZIE. Yes.

Mr. D'EWART. And it has worked reasonably successfully, has it not, and has brought a lot of revenue to the reservation?

Mr. YAZZIE. Yes.

Mr. D'EWART. Not only in employment wages, but also in unemployment benefits?

Mr. YAZZIE. Yes. We have to do that in order to make room for others.

Mr. D'EWART. I would like to make one further comment in regard to Senator Watkins' discussion of the school problem. We have a very fine school at Redlands, Calif., which has 800 or 900 Navaho pupils, as I remember, when I visited it last. It is doing an excellent job in vocational education, and those people who go from there are going home well trained in many lines of work that they can use in useful employment on their reservation.

Mr. HARRISON. If there are no further questions, thank you very much, Mr. Yazzie. We appreciate having you before us.

Mr. YAZZIE. Thank you.

Mr. HARRISON. The next witness before the committee will be Mr. Howard Gorman, chairman of the resources committee for the Navaho Tribal Council.

STATEMENT OF HOWARD GORMAN, CHAIRMAN, RESOURCES COMMITTEE, NAVAHO TRIBAL COUNCIL

Mr. GORMAN. Mr. Chairman and members of the committee, my name is Howard Gorman. I live at Ganado, Ariz., on the Navaho Reservation, and I am the chairman of the resources committee of the Navaho Tribal Council. I would like to add a few thoughts in re-

gard to this irrigation project to those that have been expressed by our chairman, Sam Ahkeah.

I have spent most of my time in the last few years working with my people and with the tribal council, trying to work out a program, and to develop the natural resources of our reservation, and we are fostering this development in every way we can. We are trying to get development of our coal resources, and other minerals such as copper.

Our greatest natural resource, however, next to our people themselves, is our land. We are trying to develop and protect that. We have spent a lot of our own money to try and develop underground water by drilling wells. This program has been a success so far, but it isn't enough. We cannot do enough on our own, nor could any other group of people like us. Our people have struggled to live on a grazing economy and it cannot be done. We would need 10 times the land we have and it is not available. We must have more intensive development of our land resource.

The only way that we can see to get more intensive development of our land resource is through this Shiprock irrigation project. I would like to give you a little idea of what it will do for us.

Our reservation is slightly larger than the State of West Virginia. At the present time less than one-tenth of 1 percent of this vast area is under irrigation and can be farmed. When this Shiprock project is built and the land farmed, there will still be slightly less than 1 percent of the total area irrigated and farmed. However, this area of less than 1 percent will then support directly and indirectly approximately one-fifth, or 20 percent of our people. It does not support 1 percent now.

Our people are increasing at the rate of approximately 2 percent each year. The reservation is becoming more and more overcrowded insofar as the people it will support. More and more people will be without grazing permits and have no way to make a living. Intensive use of this very small percentage of our land will offer vast relief to our people. We will be able to put into effect a real range conservation program, and stop overgrazing. Our people will be able to make a real living for themselves, and enjoy the same standards as other people not living on a reservation. As Mr. Ahkeah has said, we know that this project will cost a lot of money, but in the long run it will be the cheapest thing you can do with the taxpayers' money for us. How far do you think that money would go if used annually to support 75,000 Navaho people at the same standard of living they can be raised to with this project completed. Not very far, and when it was spent it would be gone. We believe it will be more economical to help us help ourselves, and that is the way the Navaho people want it. We will do our part.

Thank you for your consideration of our problem.

Mr. HARRISON. If there are no questions of Mr. Gorman, we thank you very much. We appreciate having you here before us also.

Mr. GORMAN. Thank you.

Mr. HARRISON. The next witness before the committee will be the Honorable I. J. Coury, member of the New Mexico Interstate Stream Commission, from Farmington, N. Mex.

**STATEMENT OF I. J. COURY, INTERSTATE STREAM COMMISSION
MEMBER, SAN JUAN COUNTY, N. MEX.**

Mr. COURY. Mr. Chairman and members of the committee, my name is I. J. Coury. I reside at Farmington, N. Mex., and I am a member of the Interstate Stream Commission of New Mexico. I am adviser to the New Mexico upper Colorado commissioner, and I have served in a similar capacity during the negotiations of the upper Colorado River compact. I am the secretary-treasurer of the Basin Light & Power Co., the electric utility serving all the San Juan County, N. Mex. I am also director of and executive officer for the San Juan Building & Loan Association.

I am a native of New Mexico and have lived in San Juan County for many years. I have been intimately associated with much of the development in our county in recent years. The comparative isolation of our area and difficulties of communication and transportation have been important factors which have slowed our development. In spite of these, there has been a steady growth. Since 1950, when the last census was taken, the area has experienced a tremendous growth. The town of Farmington has more than tripled in the 3 years since the 1950 census was taken. The county in general has shown significant increases in population. The present growth is due to the recent discovery and development of the San Juan gas and oil fields.

Standing as we are at the beginning of a significant era of development in the gas and oil industry and with other potential industrial developments including synthetic liquid fuels from coal and oil shale, we are anxious to see the stabilizing influence of irrigated agriculture expanded in the county. Irrigation in the area has about reached a maximum without significant assistance from Federal financing of projects. We have in San Juan and McKinley Counties a group of citizens who we believe deserve some special consideration for several reasons. I am speaking of our Navaho Indian people.

Let me say first, in this connection, that as far as I am aware our country has never repudiated a treaty, and I am sure we are all proud of our tradition of abiding by our solemn agreements. But, gentlemen, where the Navaho Indians are concerned we are certainly close to breaking the sacred tradition of keeping our word. If we have not repudiated the treaty with the Navahos made in 1868 we certainly have done the next thing. We have failed to carry out its terms and keep its promises.

It is still not too late to rectify some of our failures. The Navaho project which is a part of the upper Colorado River project will be a direct step in fulfilling our obligations and will enable us easily to carry out others.

The Navahos are at present a low-income, underprivileged group. Where such a group of people exist in any area they affect the whole economy. I think we can actually say the economic condition of these people affects adversely the States of New Mexico and Arizona and even the entire Nation.

With the building of this Navaho project you will not only carry into effect solemn agreements which should be kept, but solve a serious economic problem in one area of our country and create vast new wealth.

Most of the land to be irrigated under the Navaho project happens to be Navaho Indian land, but we don't build fences out there, either

physically or socially, between Indian and white lands. There are off reservation lands which logically come within this development and it would be poor planning and economy not to place them in this project. We people living in the area think of this all as one project with two divisions. The difference is only in land ownership.

Citizens of northwestern New Mexico feel that every consideration should be given to justifiable development of the in basin water resources. In that regard we point to the growing needs for industrial and municipal purposes. It is one of three areas in the United States having abundant water, coal, and petroleum products which may be used in the development of synthetic liquid fuel and plastic industries. Construction of the Navaho Dam could make such development possible. Municipal and domestic water shortages in adjacent areas on the Navaho Reservation and at the city of Gallup can be partially served from the Shiprock project.

These possibilities add much to the desirability of the project as a whole.

We strongly urge you to consider favorably the Navaho project including both of its divisions, the Shiprock unit and the south San Juan unit; also the Hammond project. Upon authorization, these all will be participating units of the Colorado River storage project. And, of course, we are here to urge you to authorize the entire project which will do so much to develop a large portion of the United States.

Thank you.

Mr. HARRISON. The Chair will declare a short recess at this time by the committee in order that the room can be straightened up.

(A short recess was taken.)

Mr. HARRISON. The committee will come to order.

Mr. Miller has withdrawn his objections to the introduction of the pamphlet presented by Mr. Saylor earlier. So without objection, the Chair hearing none, it will be received and made a part of the record.

(The document referred to follows:)

[From Park Conservation Problems, National Park Service, March 1, 1953]

ENCROACHMENTS ON AND RESOURCE UTILIZATION IN AREAS OF THE NATIONAL PARK SYSTEM

The following data have been prepared, at the request of the Assistant Secretary for Public Land Management, pursuant to recommendation No. 15 of the April 1952 meeting of the Secretary's Advisory Committee on Conservation, which states:

"15. The Committee has asked the National Park Service and the Fish and Wildlife Service representatives to have prepared before the next meeting a report showing the kinds and extent of the encroachments on and resource utilization in national parks, monuments, and wildlife refuges, together with a statement of policies with regard to each category."

NATIONAL PARK SERVICE POLICIES

Preservation of areas of the national park system is backed by laws relating to a number of individual parks and by the provision of the act of August 25, 1916, that the National Park Service is to "conserve the scenery, the natural and historic objects and the wildlife" in the national parks, monuments and reservations, and "provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." This basic policy is applied to all areas which are a part of the National Park System. All animal species are given equal protection, subject only to such control as may be found necessary after careful study; virgin forests remain

unlogged to go through their natural cycles; grazing is limited and is being steadily decreased, with the ultimate object of eliminating it completely; lands, except where specifically authorized by the Congress, are not subject to mineral entry; impoundment or artificialization of lakes or streams for irrigation, hydro-electric power or other purposes is opposed in accordance with the principle recognized when the parks and monuments were exempted from the provisions of the Federal Power Act. The basic policy is to preserve nature as created.

For the purposes of this report, encroachments are defined to mean long-term or potentially permanent trespasses or commercial uses so inconsistent with the purposes for which the parks were established as to seriously impair or destroy them if they are permitted. In this sense, encroachments are few, but the threat of them is constant and increasing.

Permissible, but not necessarily desirable, resource utilization of the parks is discussed under the heading of use permits.

ENCROACHMENTS

The major categories of pressures directed toward commercial utilization of park resources set aside for preservation, relate to demands to accommodate dams and reservoirs; to permit logging or reduce park boundaries to delete desired forest stands; to yield to similar demands of stockmen for grazing; and to permit mining, including recovery of oil and fissionable materials.

Dams and reservoirs

There are only a few instances in park laws which leave the door open for the Government to undertake dams and reservoirs that were under way or seriously contemplated when the areas were set aside. And, even in these cases, specific congressional authorization and financing are required for the Government to construct such projects. There is no authority for the Federal Power Commission to grant licenses for private parties to construct and operate dams in the areas of the national park system. The greatest peril to the parks from dam proposals comes from the plans and programs of the governmental dam building agencies themselves and the pressures which their activities generate in the various sections of the country.

The following parks have some degree of vulnerability to water control development because of provisions in the acts establishing them:

Grand Canyon National Park

The act of February 26, 1919 (40 Stat. 1175), provides:

"Sec. 7. That, whenever consistent with the primary purposes of said park, the Secretary of the Interior is authorized to permit the utilization of areas therein which may be necessary for the development and maintenance of a Government reclamation project."

Glacier National Park

The act of May 11, 1910 (36 Stat. 354), contains the following proviso (in Sec. 1):

" * * * and that the United States Reclamation Service may enter upon and utilize for flowage or other purposes any area within said park which may be necessary for the development and maintenance of a Government reclamation project * * * "

It may be noted that this provision pertained to a project on the east side of the park for the benefit of the Indians; that minor impoundments for that purpose on the east side existed, were under way, or were contemplated when the park was established. The proviso is not an authorization for the proposed Glacier View Dam on the west side, which, in any case, is not a "reclamation" project.

The following two acts contain provisions identical to the one in the Glacier Park Act quoted above:

Rocky Mountain National Park

Act of January 26, 1915 (38 Stat. 798).

Lassen Volcanic National Park

Act of August 9, 1916 (39 Stat. 442).

At Rocky Mountain National Park and in other areas of the system there are ditches and other minor adjuncts to irrigation which existed (1) before the areas were established, (2) before the lands on which they are located were acquired, or (3) which are necessary to be continued in use and operation in

connection with water rights or continued service to nonpark holdings. In some cases, park purposes and needs are also so served. There is no inventory of the extent of such installations, nor is it feasible or considered necessary to produce one at this time.

There are dams and reservoirs in some of the areas of the national park system. The prime examples, the Hetch Hetchy and Lake Eleanor Dams and Reservoirs in Yosemite National Park, were bitterly but unsuccessfully opposed by conservationists throughout the country. The Congress authorized it and its appurtenances, by the act of December 19, 1913 (38 Stat. 242), for water supply and related purposes of the city and county of San Francisco. Those purposes could have been met without sacrificing Hetch Hetchy Valley, which, were it available now, could absorb some of the overcrowded park use to which Yosemite Valley is subjected.

Jackson Lake Dam and Reservoir, enlarged 1913-1916, antedates Grand Teton National Park which now contains it. The reservoir was included when most of the former Jackson Hole National Monument was added to the park in 1950.

Olympic National Park contains some minor impoundments for domestic water supply which were constructed before the park was established.

There is a privately owned and operated power dam in Sequoia National Park operating on a 50-year license from the Federal Power Commission which will expire in a few years.

Since there is no known authority in the Federal Power Commission or in the Department of the Interior to grant a renewal for this operating installation, presumably an act of Congress will be required if its continuation is to be permitted.

Order No. 2618, issued by Secretary Chapman, was a significant step in protecting national parks and monuments, as well as established wilderness areas in national forests, and national wildlife refuges, against water-control investigations. This order prohibits any such investigations by Interior agencies in those several types of areas unless specifically authorized by the Congress or given prior written approval by the Secretary. The only approval granted for investigation in an area of the system is for continuation, without drilling or other disfigurement, of dam site investigations in Dinosaur National Monument.

The proclamation enlarging Dinosaur National Monument in 1938 was made subject to the reclamation withdrawal of October 17, 1904, for the Brown's Park Reservoir site and relates to a small area in the northern part of the monument. That withdrawal covers only a very small portion of the monument lands now proposed for use to accommodate the Echo Park and Split Mountain Reservoir proposals of the Bureau of Reclamation.

The major current dam proposals which, if authorized and constructed, would seriously impair or destroy nationally significant park values are:

Area affected	Dam proposal	Proposed by—
Glacier National Park.....	Glacier View Dam.....	Both the Corps of Engineers and Bureau of Reclamation have proposals.
Dinosaur National Monument...	Echo Park and Split Mountain units of upper Colorado River storage project.	Bureau of Reclamation.
Kings Canyon National Park....	Several, in and outside Park.....	City of Los Angeles. Bureau of Reclamation also lists basin potentialities, but advances no firm proposals at this time relating to park.
Mammoth Cave National Park... Grand Canyon National Park and National Monument.	Mining City Dam..... Bridge Canyon Dam (central Arizona project).	Corps of Engineers. Bureau of Reclamation.

Forestry Policy

"The service shall retain the primeval and natural forest conditions in all areas under its supervision so far as the protection and enjoyment of the forest will permit." (National Park Service Administrative Manual.)

Wood Utilization Policy

"In conformity with the letter and spirit of the laws relating to national parks and monuments, there shall be no cutting of trees, either live or dead, within the national park system for forest products by the Service, by conces-

sioners, or through sales, free use or donations, except as specifically provided by law or regulations, unless such utilization shall be incidental to necessary clearings for rights of way or for building or development sites, vista clearings, fire hazard reduction, cleanup operations in windfalls and burns, insect and tree disease control, removal of trees dangerous to life or property, or for esthetic effect or portrayal of the historic picture." (National Park Service Administrative Manual.)

Logging

There are those who believe it wasteful to permit large and commercially valuable trees to die, fall down, and rot when they could have been used commercially. Such individuals have in numerous instances advocated selective logging for the national parks, so as to utilize the mature and overmature trees while they are still merchantable. Such logging, no matter how selective or restrictive it may be or how carefully accomplished, is contrary to the principles upon which our national parks and monuments were established. Once logging is introduced, the ecological conditions are changed and the area no longer exists as a superlative virgin forest.

Olympic National Park has been and will no doubt continue to be the prime target of those interests which seek its timber either through selective logging, boundary retraction, or both. Neither can be permitted under present park concept and law, but laws can be changed. The Department and conservationists nationwide have continued to insist that the integrity of the park be not encroached upon.

When feasible, we salvage park timber of commercial value resulting from road right-of-way clearings or other construction. At Olympic and Yosemite National Parks we are salvaging valuable timber from road clearing and blow-downs, from feathering the edges of tracts that were clear cut before we acquired them, and at Olympic, from streams. In these cases, however, the basis for the salvage is the preservation of the adjacent forest, the control of insects or diseases, or the protection of the land or stream itself.

Grazing policy

"Legislative authority to permit grazing in areas of the national park system is contained in the act of August 25, 1916 (39 Stat. 535) which states "That the Secretary of the Interior may, * * * grant the privilege to graze livestock within any national park, monument, or reservation herein referred to when in his judgment such use is not detrimental to the primary purpose for which such park, monument, or reservation was created, except that this provision shall not apply to the Yellowstone National Park."

"Grazing of domestic livestock, including cattle, horses, mules, burros, sheep, goats, and hogs is incompatible with the preservation of natural conditions in areas of the system and grazing in the scientific and scenic parks and monuments is to be eliminated as soon as possible. Where grazing is temporarily permitted because the industry was established before the lands were dedicated for park purposes it shall be eliminated as rapidly as possible by such means as will not cause undue hardship to the individuals concerned.

"In certain areas of historical significance pasturing, like other agricultural use, may be permitted and encouraged because it adds to rather than detracts from the historical setting which should be perpetuated."

"Grazing under permit, while it is but a minor use of the national park system, does present many knotty problems, particularly because we are not purposely or willingly in the grazing business * * * this grazing represents life-long range privileges which were 'inherited' by this service when lands were transferred from national forests, or commitments made to stockmen who were using areas of public domain at the time they were incorporated in the national park system." (National Park Service Administrative Manual)

The act of September 14, 1950 (64 Stat. 849), establishing the enlarged grand Teton National Park, provides for continuing in effect existing grazing (and residential) uses under permit, lease or license in accordance with the terms of such instruments, and for their renewal under conditions and regulations for a specified period of time.

The national parks and monuments usually are included within the several categories of public lands which segments of the livestock industry from time to time seek to control for their especial or sole benefit. Fortunately such threats have been averted, but they will surely recur.

At Badlands National Monument, S. Dak., grazing was authorized in 1943 as an emergency measure in aid of the then critical war food program. There

was established a schedule for gradual reduction of grazing by 15 percent each 3-year period until its termination in 1961. Long contemplated boundary adjustments, which delete some lands chiefly valuable for forage production, were accomplished on October 3, 1952, pursuant to Public Law 328, 82d Congress. Stock growers desire further deletion of grasslands, but make no demands as to the areas on which the badlands formations occur. The whole purpose and significance of the monument is being reviewed to determine its justifiable land requirements, inasmuch as the economy of the region has altered considerably since the monument was established on then submarginal lands in 1939.

The number of current grazing permits applicable in the several natural areas of the system are listed in the attached tabulation.

Mining

Mining is not permitted except in Mount McKinley National Park in Alaska, where the park act continues the mining laws in effect, and, by statute, in three national monuments where the surface may not be disposed of and surface uses are subject to regulation by the Secretary of the Interior. The three monuments are: Glacier Bay National Monument, Alaska; Death Valley National Monument, Calif.-Nev.; and Organ Pipe Cactus National Monument, Ariz. There has not been much mining activity in any of these areas. Of course, privately owned lands, mines or other resources within park boundaries are subject to disposition or use as the owners see fit. We hope eventually to acquire all inholdings, but that necessarily is a long-term program.

There are outstanding, valid oil, gas, and mineral rights and leases covering some of the lands in Everglades National Park, Fla. Some of these antedate the park, others result from the provisions of the act of October 10, 1949 (63 Stat. 733), which was enacted after the initial park had been established.

Upon certification of defense need by the Atomic Energy Commission, the Department issued a permit to the Commission for the recovery of uranium from Capitol Reef National Monument, Utah. Recovery, if undertaken, will be by contract with the Atomic Energy Commission, with regard for the least damage to the monument. The monument was established before the uranium was known to be present. No recovery operations have been undertaken. The Department has advised the Atomic Energy Commission of the Advisory Committee's suggestion and hope that operations under this permit need not be undertaken in view of the discovery of uranium elsewhere. The Department has also recalled to the Commission the understanding reached at the time of the Capitol Reef permit that it would not be considered as a precedent for the similar use of any other areas of the national park system.

Perhaps it should be noted that during the Second World War there were but two instances where the Nation's critical defense needs required the removal of park resources not available from alternative sources—one for the removal of salt from Death Valley National Monument, and the other for the removal of a single tungsten deposit from a remote part of Yosemite National Park. Many other requests were warded off by finding alternative sources.

Joshua Tree National Monument, Calif., by the act of September 25, 1950, was reduced to eliminate known areas chiefly valuable for mining. On the basis of joint surveys by the Bureau of Mines, Geological Survey, and National Park Service, the remaining monument was determined to be of primary importance for national monument purposes and the mineral values remaining therein were found to be of little significance for economic, commercial production. As required by the act, the Congress was so advised. Local interests and segments of the Western Mining Council, however, continue to harass and press for opening the remaining monument to mining. There was pending in the 82d Congress, a measure to permit the removal of pumicite from the Shelikof Strait portion of Katmai National Monument, Alaska.

The Attorney General has held that where oil is being drained by adjoining owners from Federal lands not subject to mineral leasing (such as the areas of the national park system), there is implied authority in the department or agency charged with jurisdiction over the lands involved to take action, including the making of necessary contracts, to protect the Federal interests in the oil being removed from such lands. This does not imply or permit drilling on park lands, although offset drilling to recover underlying oil might be necessary from adjacent nonpark holdings in order to protect the Government's and the public's interest.

Upon a finding by the Geological Survey that some 27 acres of Aztec Ruins National Monument, N. Mex., lie within a surrounding, highly potential gas area

already producing to some extent, the Department has approved the National Park Service's recommendation that applications for oil and gas leases on the monument lands be received and considered, to permit protective action and revenue sharing by the Government. No structures will be erected or wells drilled on monument lands.

Similar arrangements may be necessary for some of the lands of the Olympic coastal strip which is proposed for addition to Olympic National Park. Should oil be discovered in commercial quantities within or affecting Everglades National Park, a measure of protection to State and Federal interests in lands therein not subject to drilling, could be afforded by this method.

Non-Federal Lands: A serious encroachment

Nearly 450,000 acres of land and water within the exterior boundaries of the areas of the national park system remain outside of Federal ownership. The National Park Service can exert no control over the use or misuse of this vast area. Not only does this situation result in undesirable developments, it also means the destruction, in many cases, of natural features such as forests, which should be preserved, and it may result in soil erosion, the effects of which cannot be confined to the non-Federal lands. In numerous cases, such ownerships prevent the construction of roads or other developments needed for the satisfactory use of the parks.

USE PERMITS

"The use of Government-owned lands and buildings in National Park Service areas may be granted only in cases in which such use or occupancy by persons or other agencies will not interfere with the purposes for which the areas were created or with Government activities in the areas. Care must be taken that the permits are so drawn as not to vest any rights in the permittees. To be certain that this is accomplished, the conditions of the various printed forms of permit provide, among other things, for the revocation of the permit at the discretion of the Director. The area covered by the permit must always be subject to entry by the officials of this Service. In addition, conditions which may be pertinent to the particular permit should be inserted in the space provided on the reverse of the printed forms.

"The general authority to issue revocable permits or licenses for the use of Government-owned lands has been recognized in opinions rendered by the Attorney General and the Comptroller General.

"In some areas there is specific authorization for the issuance of permits, licenses, or leases for the use of Government lands. Citations to such authority are as follows:

"The appropriation act for the fiscal year ending June 30, 1932, approved February 14, 1931 (46 Stat. 1154), in making appropriations for the purchase of lands on a 50-50 basis, provides 'that the Secretary may lease lands purchased to granters for periods not exceeding the life of the particular grantor.'

"Section 3 of the act to provide for the uniform administration of the national parks, approved January 26, 1931 (46 Stat. 1043; 16 U. S. C., secs. 162a and 202a), authorizes the renewal of any permit, lease, license, or other authorization for the erection and maintenance of summer homes and cottages in Glacier and Lassen Volcanic National Parks.

"Section 2 of the act of February 4, 1932 (47 Stat. 37; 16 U. S. C., secs. 403e, 404d, and 408c), authorizes the acceptance of title to lands in the Shenandoah, Great Smoky Mountains, Mammoth Cave, and Isle Royal National Parks, subject to leases entered into and granted as part consideration in connection with the purchase of the lands for park purposes for the lifetime of the grantor or grantors" (National Park Service Administrative Manual).

In addition, there are statutory authorizations for agricultural and other uses not inconsistent with the purposes of the national parkways and a number of historical areas. At the suggestion of the advisory committee, such areas and uses are omitted from the attached tabulations.

Special-use permits

Special-use permits in the national parks and monuments, based on a showing of necessity or justifiable convenience, for uses not detrimental to or inconsistent with the purposes of the parks are principally for: Electric power, telephone, and other utility lines and structures; docking and mooring facilities; highway improvement; schools; stream gaging stations; access roads; continued occupancy; reasonable use of park roads; and stock crossings. Grazing permits and defense use permits are also issued as the circumstances warrant or require.

Defense-use permits

Perhaps the greatest constructive contribution of the national park system during World War II was to the 8 million uniformed members of the Armed Forces who, in 4 years, visited and used it without charge for rest, relaxation, conditioning, and training. From this came the realization that in these great places of America was a symbol of the kind of things worth fighting for—a valuable purpose that could be served again by the parks if war should come once more. Members of the Armed Forces are again being admitted free to the parks and, in cooperation with their commanding officers, encouraged by us to do so.

The protection of the areas of the national park system and the maintenance of their integrity insofar as this is possible in wartime is, of course, a matter of primary concern to this Service. Of some 2,200 permits issued during World War II, 6 involved temporary transfer of jurisdiction; 80 were for utilization of minerals, timber, forage, or water; 244 for occupancy and use of land and facilities; 16 for exclusive use of concessioner facilities; 1,058 for field exercises; 52 for rights-of-way; 32 for loan or transfer of material or equipment; 655 for hauling over parkways or park roads; and 61 for miscellaneous purposes. Relatively few of these permitted uses involved even minor damage to the natural or historic qualities of the parks used. In only a few cases were we reduced to outright refusal of applications. The most noteworthy of these involved proposals to log Olympic timber and to open the Sierra parks to grazing.

The principles which governed our handling of requests for wartime use of the parks and their resources were, as they are again, briefly, these:

1. That the parks were to continue to be safeguarded against unjustified impairment of their character because of the fact that they would always be needed for the physical, mental, and spiritual benefit of the people.

2. That requests for genuinely necessary uses, even if somewhat destructive, were to be granted unless there were alternatives outside of the parks to which the Armed Forces or other applicants could be directed. The burden of proof as to necessity was up to the applicant; our responsibility was to exert ourselves to uncover feasible alternatives which would not involve an out-of-reason additional cost, but not necessarily as inexpensive. In the great majority of cases there was a gratifying understanding of the reasons for our position, and willingness to work with us in trying to find alternatives where the projected use would be clearly destructive of what we are enjoined to protect.

3. That, when permits were granted, our personnel were to work closely with the permittees in the location of structures and in planning any temporary modifications of the landscape. In this respect, again, we found the military willing, in the vast majority of cases, to cooperate fully with us in protecting park resources.

Something of the variety of uses in World War II is indicated by the following brief listing: Hospitalization and rehabilitation, rest camps, overnight bivouacs, maneuvers, winter tests of equipment, ski-troop training, continued occupancy by training groups, and defense installations.

Several years ago it became apparent that the National Park Service should again be prepared for possible wartime uses. Based on its World War II experience and the criteria and standards then developed, the Service, along with the other land administering agencies of the Department, established a continuing liaison with designated representatives named by the Department of Defense to work out appropriate solutions to problems as they might arise.

There are 28 defense-use permits outstanding at the present time, including 12 for uses which began before or during World War II.

The attached tabulations list the kinds and numbers of defense use, grazing and miscellaneous other permits for use of the natural areas of the national park system that were current on July 31, 1952.

Use permits current on July 31, 1952 (national parks)

	Defense use	Grazing	Agriculture	Miscellaneous land use (camps, schools, stream gates, stock driveways, docks)	Building use for Indians, doctors, churches, public services, continued occu- pancies	Use of roads	Access roads	Highway improvements	Utility lines	Commercial fishing, fences, telephone connections, miscellaneous
Acadia.....	1			2	1	1		1	1	1
Big Bend.....	4	1		4	1	16				6
Bryce Canyon.....		2			2					
Carlsbad.....		2		1						
Everglades.....				2					1	
Glacier.....				12	2		2		6	5
Grand Canyon.....		1		5	8					4
Grand Teton.....		29	1	1	7				6	2
Great Smoky Mountains.....		26	11	8	20	2		2	6	1
Hawaii.....	3			1	2		1			1
Hot Springs.....	1								1	
Isle Royale.....				6	11					15
Kings Canyon.....		4			2				2	
Lassen Volcanic.....				1	2		1		6	
Mammoth Cave.....		2			2	3			1	
Mesa Verde.....					3				2	1
Mount McKinley.....						2				
Mount Rainier.....				1	1			1		
Olympic (including Olympic strip)			3	7	38	8	15	1	25	1
Platt.....								3	2	
Rocky Mountain.....				2					6	
Sequoia.....	1			1						
Shenandoah.....	1	2		3	2	3	2		7	
Wind Cave.....				1				1	1	
Yellowstone.....	1			1	5				1	1
Yosemite.....				2	14	1			3	
Zion.....		1							1	
Total.....	12	70	16	62	125	36	22	11	78	38

Use permits current on July 31, 1952 (national monuments with natural features)

	Defense use	Grazing	Agriculture	Miscellaneous land use (camps, schools, stream gages, stock driveways, docks)	Building use for Indians, doctors, churches, public services, continued occu- pancies	Use of roads	Access roads	Highway improvements	Utility lines	Commercial fishing, fairs, etc., telephone connections, miscellaneous
Arches.....				4				1		
Badlands.....		32						1	2	
Bandelier.....	8								1	
Canyon de Chelly.....		1								
Capitol Reef.....	1								1	
Casa Grande.....									1	
Chaco Canyon.....				2						7
Chiricahua.....		2								
Colorado.....									2	
Craters of the Moon.....									2	
Death Valley.....	1								6	
Dinosaur.....		22							1	
Fossil Cycad.....		1								
Glacier Bay.....				2						2
Grand Canyon.....		12								2
Joshua Tree.....	1					1	1			
Katmai.....				2						
Lava Beds.....		2								
Lehman Caves.....								1		
Montezuma Castle.....			1					1	1	
Organ Pipe Cactus.....		1		2				1	1	
Petrified Forest.....		1							2	
Pinnacles.....				1					1	
Pipestone.....				2						
Saguaro.....	1	4							2	
Sitka.....									1	
Timpanogos Cave.....								1	1	
Walnut Canyon.....									5	1
White Sands.....	4	1								
Wupatki.....		1								
Zion.....		12								
Total.....	16	92	1	15	0	1	1	5	30	12

Categories of defense use permits current on July 31, 1952

	Full juris- diction over sec- tions of the area	Use of park roads	Lands for maneuvers, bivouacs, studies	Construc- tion of utilities or build- ings	Utilization of minerals
Acedia.....				1	
Big Bend.....			4		
Hawaii.....	1			2	
Hot Springs.....					
Sequoia.....			1		
Shenandoah.....			1		
Yellowstone.....		1			
Bandelier.....		1		7	
Capitol Reef.....					1
Death Valley.....		1			
Joshua Tree.....			1		
Saguaro.....			1		
White Sands.....	1		1	2	
Total.....	2	7	5	12	1

Mr. HARRISON. I also have at this time a telegram, signed by certain members of the House of Arizona Legislature, protesting against anything adverse to Arizona in this legislation, together with two letters

covering the same subject. I ask unanimous consent that these be made a part of the record.

Do I hear any objection? Hearing none, it is so ordered.

(The documents referred to follow:)

PHOENIX, ARIZ., January 15, 1954.

HON. WILLIAM H. HARRISON,
*Chairman, Irrigation and Reclamation Subcommittee,
of the Interior and Insular Affairs Committee,
House Office Building, Washington, D. C.*

The undersigned members of the Arizona Legislature protest against anything adverse to Arizona in the upper Colorado River storage project. We oppose the transmountain diversion units to export Colorado River water out of the river basin, and use of power from Glenn Canyon Dam or other Arizona sites to finance such exportations. We consider it our duty to notify your committee of the opposition within the Arizona legislature to such proposals and of our intention to protect the interests of Arizona in this matter to the fullest extent possible. We ask that this protest be made part of record of hearings on this project which will be conducted by your subcommittee beginning January 18.

Robert Brewer, L. S. Adams, Robert E. Wilson, W. H. Ridgeway, Carl Sims, Sr., D. F. Benson, H. J. Lewis, Sidney Kartus, Fred Dove, David L. (Lucky) Lindsay, Mary Dwyer, Harold W. Tshudy, A. H. Bisjak, Lorin M. Farr, Harold Burton, Douglas Holsclaw, J. Ney Miles, E. L. Tidwell, Enos P. Schaffer, Sherman R. Dent, E. C. Johnson, Etta Mae Hutcheson, Mabel S. Ellis, Norman Lee, Jim Smith, Frank G. Robles, David S. Wine.

STATE LEGISLATURE, STATE OF ARIZONA,
HOUSE OF REPRESENTATIVES,
January 18, 1954.

HON. WILLIAM H. HARRISON,
*Chairman, Irrigation and Reclamation Subcommittee of the
Interior and Insular Affairs Committee,
House Office Building, Washington, D. C.*

DEAR MR. HARRISON: Congressman John J. Rhodes of Arizona informs me by telegram that you will enter into the record of the hearings now being held before your subcommittee on the upper Colorado River storage project our objections to that project.

Accordingly, I have dispatched to you an airmail letter under date of January 16 containing such objections. Also, on January 14, 26 other members of the Arizona Legislature and myself wired you objections to be placed in the record. The following seven other members of the legislature have since added their names to the telegraphic protests as follows: John McInnes, Owen A. Kane, W. W. Franklin, Lewis B. Ellsworth, William S. Porter, Laura McRae, J. P. Stump.

It would be greatly appreciated if you would see that the names of these additional seven protesting members of the Arizona Legislature are added to the list of names on the telegram, as of January 18, 1954.

With thanks for your courtesy in advising us through Congressman Rhodes that our objections would be placed in the record, I am

Sincerely yours,

SIDNEY KARTUS.

STATE OF ARIZONA, 21ST LEGISLATURE,
HOUSE OF REPRESENTATIVES,
January 16, 1954.

HON. WILLIAM H. HARRISON,
*Chairman, Irrigation and Reclamation Subcommittee of the
Interior and Insular Affairs Committee,
House Office Building, Washington, D. C.*

DEAR SIR: Hearings being scheduled to begin January 18, 1954, before your subcommittee on the upper Colorado storage project, I hereby enter protest against said project, in my capacity as a State legislator and as trustee of the

Colter water filings in the Colorado River system made beginning September 20, 1923, before the Arizona State land and water commissioner for and on behalf of the State of Arizona and water users under these filings.

In such capacities, I protest against any units of this project that would export water out of the basin of the Colorado River. I further protest against inclusion of Glen Canyon Dam in Arizona as a unit of such project, and against proposed use of power produced at Glen Canyon Dam to finance a number of participating projects to divert 5 million acre-feet of Colorado River water out of the basin in the upper basin States.

There can be no justification for taking the natural resources of one State—Arizona—for the benefit of other basin States which would be done under this project and the power policy of the upper basin States. I have in mind not only Glen Canyon Dam, but any other dam site or facility located within Arizona.

The water proposed to be transported out of the river system under this project, and the power to be produced at Glen Canyon Dam, are included among the waters and power appropriated since 1923 under the prior and superior Colter filings to irrigate 6 million acres and develop 5 million acres electrical horsepower in Arizona, all entirely within the basin of the Colorado River. Such waters, power, sites, and development in Arizona cannot lawfully be taken or impaired by said project or otherwise in violation of these Arizona water rights and filings which have been kept up with due diligence, and are now vested in Arizona landholders and water users.

We have no objection to the reasonable use of water by the upper basin States on lands within the Colorado River system in accordance with equitable rights, since reflow therefrom will return to the river for use in Arizona and at lower elevations.

We ask an end to the equitable division of Arizona resources among other basin States, and that Arizona receive its commensurate division of Colorado River water in accordance with its inherent natural rights and prior water filings under law.

Yours very truly,

SIDNEY KARTUS.

Mr. HARRISON. Our colleague from Arizona, Mr. Rhodes, has requested permission to insert in the hearing at this point a statement concerning the official position of the State of Arizona on this legislation. If there is no objection, and the Chair hears none, it is so ordered.

(The statement referred to follows:)

Mr. Chairman, may I respectfully thank you and the committee for granting me permission, by unanimous consent, to insert in the record the official position of the State of Arizona in regard to the proposed upper Colorado River basin project.

I have requested this permission solely to clear up any confusion or remove any doubt that might presently exist in the record, or in the minds of my fellow committee members as a result of a petition received by this committee sponsored by one member of the Arizona State Legislature and signed by various other members. This petition stated their objection to use of Colorado River water outside the Colorado Basin and to use of power revenue from the Glen Canyon Dam to help finance such a diversion.

We as Members of Congress certainly realize that it is within the rights of any member, or members, of a State legislature to individually or collectively express his views on any subject he so desires. I know the gentleman who sponsored this petition, and I know that he is sincere in his convictions. I fully realize that in voicing such an opinion he was acting in the manner he thought best to protect and further the interests of a cause to which he has been devoted for many years. However, the fact remains that the position stated by this petition is not the official position of the State of Arizona.

The State of Arizona in signing and ratifying the Colorado River compact, which specifically authorizes water diversions and power production for revenue, pledged to uphold its covenants of the compact. It is unalterably clear that it is not the concern of the State of Arizona how any of the other parties to the compact use the water or power they are entitled to under and by virtue of the terms of the Colorado River compact, as long as such use does not harm the

legitimate interests of Arizona. As stated very succinctly by our Governor, Hon. Howard Pyle, "It's none of our business." This expression represents, in my opinion, the official position of Arizona in this matter.

JOHN J. RHODES,
Member of Congress.

Mr. ASPINALL. Mr. Chairman, I have 1 telegram from the House of Representatives of Colorado and 2 resolutions, short resolutions, from the Western Slope Chamber of Commerce which I would like to ask be made a part of the record.

Mr. HARRISON. If there are no objections, and the Chair hears none, the documents will be made a part of the committee files but not a part of the printed record.

Mr. ENGLE. Did the gentleman from Pennsylvania decide to again offer his document?

Mr. HARRISON. It was received.

Mr. ENGLE. I want to specifically rescind my objection. Although the statement does not completely support the position, it is nevertheless very informing.

Mr. HARRISON. We will proceed with Mr. Coury. Do any members of the committee wish to ask Mr. Coury any questions?

Mr. Miller?

Chairman MILLER. No.

Mr. HARRISON. Mr. Engle?

Mr. ENGLE. No.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWARD. I believe not.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. I was just wondering, Mr. Coury—on page 2 where you say:

With the building of this Navaho project you will not only carry into effect solemn agreements which should be kept, but solve a serious economic problem in one area of our country and create vast new wealth.

What is the nature of those solemn agreements to which you refer?

Mr. COURY. I was referring particularly to that portion of the treaty that promised the Indians 1 school classroom for every 30 children, which they have not kept up. If they build the project, it would help carry that out.

Mr. REGAN. There is no solemn agreement to build this dam. You think that would be a means to accomplish that?

Mr. COURY. That is right.

Mr. REGAN. Thank you.

Mr. HARRISON. Mr. Saylor?

Mr. SAYLOR. You referred on page 3 to something that I do not think has been mentioned so far in these hearings. You say that you urge favorable consideration of the Navaho project, including both of its divisions, Shiprock unit and south San Juan unit, and also the Hammond project. Where is the Hammond project?

Mr. COURY. The Hammond project, Congressman Saylor, is approximately a 3,800-acre project that lies immediately north of the south San Juan project.

Mr. SAYLOR. That is not mentioned in any of the bills that have been before us so far, is it?

Mr. COURY. It is in the bill, yes.

Mr. SAYLOR. The water that would go on to the Hammond project would come from the Navaho Reservoir?

Mr. COURY. Yes, sir.

Mr. SAYLOR. Do the Indians have any established water rights now to water from the Colorado?

Mr. COURY. That is one question, Congressman Saylor, that I am not in a position to answer.

Mr. SAYLOR. Has the State of New Mexico agreed upon the division of the waters allocated to it out of the upper Colorado River Basin?

Mr. COURY. Do I understand you to mean the division of the waters of the San Juan River and its tributaries?

Mr. SAYLOR. Water from both the San Juan and the percentage of the water which the State of New Mexico is entitled to by reason of the recent compact between the upper basin States.

Mr. COURY. To my knowledge, there has been no agreement reached.

Mr. SAYLOR. Has the State of New Mexico allocated any of its water by any official action to the Navaho Reservation?

Mr. COURY. No, not that I know of; no, sir.

Mr. SAYLOR. Then while you urge this committee to favorably consider this unit, we are put in a rather embarrassing position, are we not, in not knowing just what waters are available as far as New Mexico is concerned for this project.

Mr. COURY. I think we know approximately what water is available, sir. If my understanding is correct, the portion of the upper Colorado River water under the 1948 compact allotted to the State of New Mexico was 11¼ percent; and 11¼ percent of 7½ million-acre feet would be approximately 838,000 acre-feet.

Mr. SAYLOR. I understand that, but has the State of New Mexico decided how its 11 percent should be used?

Mr. COURY. At this moment I think not.

Mr. SAYLOR. Since the State of New Mexico is entitled to 11 percent of the water in the upper Colorado River Basin, do you not think it should be incumbent upon the people out there who are entitled to that water to have some say in how that water should be used?

Mr. COURY. I assume that at the proper time proper applications will be filed in the office of the State engineer for the application of these waters for projects that have been authorized or are about to be built.

Mr. SAYLOR. So far you do not know whether or not those applications have been filed or whether or not any official action has been taken by the people of New Mexico?

Mr. COURY. That is right.

Mr. SAYLOR. There has been some discrepancy as to what this water would be used for, as to whether or not it would be used for irrigating grazing land or farm land. Do you know?

Mr. COURY. I do not know; no, sir. I understand it is a combination of both.

Mr. SAYLOR. For your information, that is the information I have received—that it was for a combination of both grazing lands and farming lands.

Mr. COURY. Yes.

Mr. SAYLOR. Do you know what portions of these three projects are divided between grazing lands and farming lands?

Mr. CORY. No, sir; I do not.

Mr. SAYLOR. Before this committee settles upon these projects, do you not think it would be beneficial and absolutely necessary for us to know what portion of these lands are to be used for grazing and what portion are to be used for production of crops?

Mr. CORY. Yes, sir; I believe it would be. I also understand, sir, that the Bureau of Indian Affairs have a report on the Shiprock project in progress now, and the report should be made available very shortly.

Mr. SAYLOR. Now the Bureau of Indian Affairs would not take into consideration these private lands which you have referred to, would you?

Mr. CORY. No, sir.

Mr. SAYLOR. Therefore, the committee would still have to know, in addition to whatever report the Indian Bureau made, what private lands were involved; then the same division with regard to them, would we not?

Mr. CORY. Yes, sir. I understand the Bureau of Reclamation is making a similar report on the San Juan unit, which is comprised mostly of white lands.

If I may add, sir, we are just seeking at the moment a provisional authorization subject to the feasibility report that will be compiled by the various agencies which would be presented later at the appropriate time to the committee.

Mr. SAYLOR. When you say a feasibility report, do you as a person who lives in that area have any idea what should be considered as feasible?

Mr. CORY. If the benefits exceed the cost, I would think that the project would be considered feasible.

Mr. SAYLOR. Do you have any idea what the cost per acre would be on this project?

Mr. CORY. The only way I could answer that, sir, would be to say that I understand that it is going to cost approximately \$1,200 an acre. I do not know it to be actual fact.

Mr. SAYLOR. Do you know of any grazing land in New Mexico in the neighborhood of Shiprock, south San Juan or Hammond that has sold for \$1,200 an acre?

Mr. CORY. Yes.

Mr. SAYLOR. For grazing land?

Mr. CORY. No, not grazing land.

Mr. SAYLOR. What is the highest price that you know of that has been paid for grazing land in that area?

Mr. CORY. I will have to answer that this way: The San Juan County land—92 percent of San Juan County is either federally or State owned, so it leaves very little fee land in the county.

Mr. SAYLOR. Of the 8 percent that is owned in fee, do you know of any land that has sold for \$1,200 an acre for grazing?

Mr. CORY. No.

Mr. SAYLOR. What is the highest price that you know of that has been paid for grazing land?

Mr. CORY. At the moment I cannot—I would just be guessing if I answered.

Mr. SAYLOR. Give us the benefit of your guess.

Mr. CORY. It is going to depend, Congressman, on where it is. I know grazing land that adjoins some of the municipalities that have been growing in the last 2 or 3 years that have brought several thousand dollars an acre.

Mr. SAYLOR. And it would not then have been used for grazing land, would it?

Mr. CORY. No, sir; that is right.

Mr. SAYLOR. It would have been used for subdivisions for sale of property?

Mr. CORY. That is right.

Mr. SAYLOR. And so that any land which you want to put that figure on would not be a fair comparison because we are trying now to use the land not for municipal subdivisions but for irrigation and for grazing.

Mr. CORY. That is right.

Mr. SAYLOR. So that the land that you should use for a comparison is land that is used in the area for grazing.

Mr. CORY. Well, sir, to answer that, I probably should say about \$50 an acre.

Mr. SAYLOR. \$50 an acre.

That is all.

Mr. HARRISON. Mr. Regan, any questions?

Mr. REGAN. No.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. No.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. Just to follow up Mr. Saylor's suggestion, would this land pay off if it were used for grazing? Would it pay off a \$1200 mortgage?

Mr. CORY. Maybe I should qualify that statement by saying, Mr. Saylor, that when I said the Shiprock project would be used both for farming and grazing, what I meant by grazing was the flooding of the land for alfalfa or other similar forage to be fed to the livestock. Now I did not mean to say grazing in the simple sense of the word of using for ranges, but land they are going to flood to raise alfalfa and other crops to be fed to the livestock.

Mr. SAYLOR. I thought you meant usual grass crops.

Mr. CORY. No, sir, I did not mean that.

Mr. SAYLOR. I mean the crops for use for animal feeding.

Mr. CORY. That is right.

Mr. SAYLOR. Hay or alfalfa, clover.

Mr. CORY. That is right. I did not mean to imply that the project was going to be grazing land in the strict sense of the term as it is usually used.

Mr. BERRY. That is all.

Mr. HARRISON. Mrs. Pfost?

Mrs. PFOST. No, thank you.

Mr. HARRISON. Senator Watkins?

Senator WATKINS. One question about Indian water rights. You are acquainted with the fact that the Indian water rights predate all water rights of the Colorado, are you not?

Mr. CORY. That is what has been claimed, sir. [Laughter.]

Senator WATKINS. They were there first, and whatever rights they have predate any other claims. That is true, is it not?

Mr. CORY. Senator, you are asking me a question that I do not think I am the proper person to answer.

Senator WATKINS. There are other people who can answer it. I will make this observation: Indian rights, of course, are aboriginal rights so far as water is concerned, and this project is absolutely necessary to make it possible for them to use those rights. They must have the dams in order to get the electricity to help their project, just the same as the white man's projects.

I also point out to my good friend from Pennsylvania that they predate parks too.

Mr. HARRISON. Mr. Fernandez?

Mr. FERNANDEZ. No.

Mr. HARRISON. Mr. Dempsey?

Mr. DEMPSEY. When land is taken that has formerly been a grazing land and converted into irrigated land, you cannot take the price of the land as grazing land, but you must take the price after the improvements are made to permit crops to be raised?

Mr. CORY. That is right.

Mr. DEMPSEY. And that is several hundred times what the price of grazing land is. Is that not right?

Mr. CORY. The values increase considerably.

Mr. DEMPSEY. They increase because water has been put on?

Mr. CORY. That is right.

Mr. DEMPSEY. That is no small amount of money, is it?

Mr. CORY. No, sir, it is not.

Mr. HARRISON. Mr. Rogers?

Mr. ROGERS of Colorado. In response to questions asked by the gentleman from Pennsylvania about the allocation of this water to these particular groups of people who own this land, you are not a lawyer and not familiar with the operation of the law as it deals with New Mexico, are you?

Mr. CORY. No, sir, I am not a lawyer.

Mr. ROGERS of Colorado. And the general application of our so-called priority system applies to New Mexico as it does in other Western States. You know that?

Mr. CORY. Yes, sir.

Mr. ROGERS of Colorado. And that generally before the right to use the water is ascertained, they must comply with State law and make a proper application, and then apply it to beneficial use before they ever get the right to use it.

Mr. SAYLOR. I appreciate that, Mr. Rogers, because it does not quite agree with what the good Senator has said. He stated whatever the rights of the Indians are, they are not subject to these usual rules and regulations, and that they antedate everything else.

I am just trying to find out whether or not the people of New Mexico have divided and decided whether or not this 11 percent takes care of the Indian needs, and whether there is anything left for anybody else.

Mr. CORY. Congressman Saylor, I would like to mention on that point that in the upper Colorado River compact of 1948, each State

agreed that within their percentage they would take care of whatever rights accrued to the Indians within their borders.

Mr. SAYLOR. That is correct. My only question is whether or not the people of New Mexico have done that, as to whether or not there is enough to take care of the Navaho Indian Reservation, let alone these other projects. We have not seen any report to justify it.

Mr. COURY. In our portion of the State we actually believe that the Indians should have right to the waters of the San Juan River before many others that are purporting to claim rights to it.

Mr. SAYLOR. Before many others, did you say?

Mr. COURY. Yes, sir.

Mr. SAYLOR. Not before any others?

Mr. COURY. No, sir.

Mr. SAYLOR. There is a tremendous difference. In other words, you feel that there are rights in New Mexico which some people who are not of Indian blood have that are equal to any rights that the Indians have?

Mr. COURY. I might qualify my statement, Congressman, in this respect: There are about 55,000 or 60,000 acres of white land in that valley that are under irrigation by white people. And if we follow your premise that the Indians have all the rights, you are going to disfranchise 75,000 acres of the white lands that are being irrigated now, who have a right to that water.

Mr. SAYLOR. I am not trying to tell the people of New Mexico how to divide their water. I am only raising the question here and asking whether or not the people of New Mexico, who in my opinion have the first right to decide this problem, have decided whether or not they have allocated the waters that are due them under the Colorado River compact of 1948.

Mr. ROGERS of Colorado. May I interrupt for an observation?

Mr. HARRISON. I think you had the time. Otherwise Mr. Saylor would be out of order because he had his time.

Mr. ROGERS of Colorado. I think the difficulty of the gentleman from Pennsylvania is that the allocation of the waters of New Mexico and even the Indian rights depends upon the laws of the State of New Mexico. Now this gentleman or no other person that I know of can say that New Mexico has any authority, as such, to now sit down and say, "This reservation shall have that amount and this shall have that amount," because our particular, or I should say, peculiar application of the water as to beneficial use is always tied into the State constitution and the statutes of the various States. Now until a development has been made there cannot be an allocation for beneficial use under any theory, because there has been no beneficial use made of the water.

As to the rights of the Indians, as pointed out by Senator Watkins a moment ago, be it in New Mexico or where it may be, whatever rights that they may have in the application of their water, whether it be under our system or a system that existed prior to the time that we became a State, they are amply protected in the Federal courts and the State courts because they recognize them. So this gentleman or no one else can now say to you how that 11 percent of the upper Colorado River Basin water is going to be allocated in New Mexico until New Mexico applies their law along with the rights that the Indians may have to beneficial use.

I trust that I do not confuse the gentleman, but—

Mr. SAYLOR. You have not confused me, Mr. Rogers. I am very much interested in your observations, because they do not coincide with the position that Arizona has just taken in the case before the United States Supreme Court. I think that is one of the very interesting facets of this entire development of this Colorado River Basin.

Mr. HARRISON. Thank you very much, Mr. Coury, for appearing here.

Mr. REGAN. Before Mr. Coury leaves, I would like to follow that question with just a few more questions.

You say there are now 75,000 acres of land being irrigated by the white people, and that is on the western side there, out of the Colorado River Basin water?

Mr. COURY. That is right, on the San Juan River and tributaries.

Mr. REGAN. Out of the San Juan?

Mr. COURY. Yes.

Mr. REGAN. And this Shiprock Dam contemplates putting another 122,000 acres of land under irrigation, which would be approximately 200,000 acres of land to receive water from the present project and the Shiprock?

Mr. COURY. Yes.

Mr. REGAN. Would not that consume all of the water that New Mexico has the right to, those two projects alone?

Mr. COURY. No, there is the South Juan project, Congressman Regan, that the Bureau of Reclamation has estimated 29,000 acres, in addition to the Shiprock project.

Mr. REGAN. If New Mexico is entitled to 800,000 feet of the water on the average out of this basin, which is the allotment of 11 percent, you already have beneficial uses outlined here with this Shiprock and your present use to use up that 800,000 acre-feet of water that might be available to you.

Mr. COURY. No, I do not think the project would use up all the water allotted to New Mexico.

Mr. REGAN. That is all, Mr. Chairman.

Mr. HARRISON. Thank you very much, Mr. Coury.

Mr. COURY. Thank you.

Mr. HARRISON. The next witness will be Mr. Hamilton.

Mr. DAWSON. Mr. Chairman?

Mr. HARRISON. Mr. Dawson.

Mr. DAWSON. Before the witness commences his statement, at this point I would like to have introduced as part of the record a statement of Dr. J. LeRoy Kay, a very distinguished citizen of the great State of Pennsylvania, curator of vertebrate paleontology, of the Canegie Museum of Pittsburgh, Pa., and I would say the Pennsylvanian who has spent more time in Dinosaur National Monument than any other Pennsylvanian, including my good friend, Mr. Saylor. He was in the monument from 1915 to 1923, a period of 8 years, removing dinosaurs and has been there practically every summer since, indorsing the construction of Echo Park Dam.

Mr. HARRISON. Do I hear objection?

Mr. SAYLOR. In following the pattern that was set a while ago, I will reserve the right to object until I see what that Pennsylvanian has to say.

Mr. HARRISON. Mr. Saylor, you look over the paper and make up your mind, and we will proceed with the testimony of Mr. Hamilton.

**STATEMENT OF RANDY H. HAMILTON, DIRECTOR OF WASHINGTON
OFFICE, AMERICAN MUNICIPAL ASSOCIATION**

Mr. HAMILTON. Mr. Chairman, members of the committee, and Senator Watkins; I am Randy H. Hamilton, the Washington office director of the American Municipal Association. This is the national association representing the municipalites of America through nearly 12,000 member cities and towns in 44 States. I am appearing before you this morning at the specific request and on behalf of the Utah Municipal League, one of the 44 State associations of municipalities which form the basic membership of the association.

Without water people die. Without water communities die. The life of a city depends on its having enough water to provide for its people, for its fire protection, for its commercial establishments, for its industries and for other municipal uses. Throughout the entire country the demand for water is increasing greatly as our population and industry grow.

Utah is an area of the country where water requirements are small in comparison to those of the more heavily populated regions. Its needs for water, however, are greater than its ability to produce water. It is on this point that the cities of Utah need assistance. Of the nearly 700,000 people in Utah, over 75 percent depend on 200 public water supplies for their daily supply of drinking water. Of these 200 municipal water supplies, nearly 75 percent are municipally owned. The construction of the Colorado River storage project will assure the continued protection of the public health of the people living in the affected cities of Utah by providing an adequate supply of water for drinking and sanitation purposes.

The overall reclamation project of the upper Colorado Basin above the San Juan River includes the areas of Utah and Colorado and contains 100 public water supplies. The demand for water in this area is 19 million gallons per day for municipal purposes. Construction of the Colorado River storage project will support the future growth of Utah cities by making available the supplies of water so essential for industrial, municipal, and commercial use.

Each and every city in Utah is interested in an adequate supply of water for its inhabitants and also interested in the industrial growth of the cities and towns of Utah. On behalf of the Utah Municipal League, I present their formal and official statement on this matter, as follows:

The Colorado River proposed development under consideration by your committee is the last water resource available in Utah to supply additional water for culinary and industrial purposes as well as for irrigation. The arid condition of Utah has resulted in a demand for additional water for both municipal and industrial purposes. This demand for additional water for both municipal and industrial purposes can be supplied only from the water resources of this area and the development of the Colorado River to produce the additional water supply is the answer. The cities and towns of Utah, through this association, are all interested in the future growth and development of the municipalities and their industries and, as growth is so dependent upon added water supplies for both culinary and industrial purposes, are vitally interested in the Colorado River development program.

Signed, J. N. Stacy, president of the Utah Municipal League and Mayor of Richfield, Utah, and Tom McCoy, executive director.

I shall be happy to answer questions you may have. Thank you for the courtesy of this time for making known our views.

Mr. HARRISON. Are there any questions from the committee?

Mr. SAYLOR. I have some questions.

Mr. HARRISON. Mr. Saylor.

Mr. SAYLOR. Mr. Hamilton, has your association either on a state or a national basis taken any position with regard to the first and second phases of the central Utah development program?

Mr. HAMILTON. No, sir.

Mr. SAYLOR. Have you taken any position with regard to where the water is to be stored on the Colorado River?

Mr. HAMILTON. No, sir.

Mr. SAYLOR. All then your statement says is that you are in favor of allowing the people of Utah to use their share of the water of the Colorado River?

Mr. HAMILTON. When so developed; yes, sir.

Mr. SAYLOR. When so developed?

Mr. HAMILTON. Yes.

Mr. SAYLOR. It is of no concern to the American Municipal Association whether or not there are dams built at Glen Canyon, White-water, Crystal Reservoir, Curecanti, Gray Canyon, Split Mountain, Echo Park, Cross Mountain or Flaming Gorge?

Mr. HAMILTON. It is no concern to the association nationally but I presume the people of Utah would suggest which developments would be to their benefit.

Mr. SAYLOR. Has the American Municipal Association taken any position with regard to what share municipal water should pay with regard to a development of a project of this kind?

Mr. HAMILTON. No, sir. We are generally in favor, however, of local government paying its just and due share on any development.

Mr. SAYLOR. Has the American Municipal Association taken any position with regard to transmountain diversion of water?

Mr. HAMILTON. No, sir.

Mr. SAYLOR. So that, in substance, all your statement says is that you are in favor of allowing the people of Utah to use or put to beneficial use for domestic, industrial, and agricultural purposes their share of waters of the Colorado River which are allocated to them by the compact of 1948?

Mr. HAMILTON. Yes, with this exception, sir: We make the point that a municipality cannot grow, nor can a number of municipalities in any given geographic area where the water is not available. This is patently obvious. However, we feel the municipal point of view in this matter should be investigated for that reason—that there is also a coterminal interest on the part of the local government in this project.

Mr. SAYLOR. This is not true of just the Municipal Association of Utah for which you are appearing here in behalf of today, but that is true of all of the 48 States; is it not?

Mr. HAMILTON. That is correct.

Mr. SAYLOR. So there is nothing unusual with regard to your statement as far as Utah is concerned; it could be said to equally apply to any of the 48 States?

Mr. HAMILTON. There is, if I may suggest, sir, and we do say in the statement, that the ability of the people in Utah, or rather their needs outstrip their ability to produce. This is not true in your State. This is not true in many other States. But Utah is a State of arid condition where the needs far outweigh the ability to produce water, if I may use that term of "producing water."

Mr. SAYLOR. And the same thing applies then in the entire Colorado River Basin, does it not—they are all arid States?

Mr. HAMILTON. Yes, sir; I would presume that would be true.

Mr. SAYLOR. And the same thing applies to the Western States that are subject to the Bureau of Reclamation?

Mr. HAMILTON. I would presume that would be true.

Mr. SAYLOR. Because they are all arid States?

Mr. HAMILTON. Yes, sir.

Mr. SAYLOR. That is all.

Mr. HARRISON. Any other questions?

If not, thank you very much, Mr. Hamilton.

Mr. HAMILTON. Thank you.

Mr. HARRISON. The next witness will be Mr. Angus MacDonald, representing the National Farmers Union.

STATEMENT OF ANGUS MacDONALD, LEGISLATIVE REPRESENTATIVE, NATIONAL FARMERS UNION, WASHINGTON, D. C.

Mr. MacDONALD. Mr. Chairman and members of the committee, my name is Angus MacDonald. I am assistant legislative representative of the National Farmers Union. I have no prepared statement. I would like to read briefly from a press release which was issued in Denver, Colo., on January 15, by James G. Patten, president of the National Farmers Union.

The National and Rocky Mountain Farmers Union Saturday announced they are strongly in favor of the construction of the upper Colorado storage project and its vitally important Echo Park Dam.

James G. Patton, president, said that contrary to published reports, the farm organization would support construction of the project.

"Our staff has carefully studied the project and we sincerely believe its speedy construction would be in the best interests of the region. While we are perfectly aware of the importance of Dinosaur National Monument as an historic spot and tourist attraction, we have come to the conclusion that the proposed storage project would enhance rather than despoil the area.

"We have been far from impressed with arguments presented so far that there are equally suitable locations for the site of the Echo Park Dam," Patton said. "The area to be covered by the proposed dam contains extremely few farms and ranches.

"For these reasons, as well as the attitude expressed by our members in the area to be served by the project, we will strongly support its development."

That completes my statement.

Mr. HARRISON. Thank you very much, Mr. MacDonald. Do you have anything further to offer?

Mr. MacDONALD. No, sir.

Mr. HARRISON. Any questions from the committee?

Mr. SAYLOR. How many members do you have in this area of Echo Park?

Mr. MacDONALD. I am afraid I am not able to give you that information.

Mr. SAYLOR. Was I not correct in hearing you state that people in the Echo Park area had written to you and asked you to appear here?

Mr. MACDONALD. We have, Mr. Congressman, about a half a million members in some 26 or 30 States, principally located in the Midwest. We have the Rocky Mountain Farmers Union, which includes Colorado and Wyoming. We have some locals, as I understand, possibly with a thousand or two thousand members in Utah. I would say in this general area—and this is merely a guess—that the Farmers Union would have between 20,000 and 30,000 members. When I say “this area” I mean Colorado, Utah, and Wyoming.

As I understand the Echo Park site, the so-called Echo Park development is located in a national monument in a park. Most of it, I understand, and practically all of it is a wilderness. Naturally we would not have members there.

I understand one of the reason why we are for this project is that we favor the development of such projects for public power or irrigation, and we have been assured that building this particular dam—I am referring particularly to Echo Park—would not damage the scenic value of the area. It is our understanding that it might enhance it in a sense by making it maybe possible for more people to get there and see the so-called scenic value.

As far as the dinosaur bones are concerned, I understand that this will not destroy them. There has been some concern, I believe, on that score.

I am frankly a little bit apologetic because I do not have information on the project. I merely have a directive from our Denver office from our national president who called me on the telephone twice and discussed this matter at some little length, and suggested that I come over and tell the committee that the Farmers Union is 100 per cent for these projects, and he also suggested that I might quote a little bit from the press release issued in Denver.

Mr. SAYLOR. I am interested in this because you have appeared here to represent a large national organization. I want to know just what action your national organization took to authorize you to come here and express the views of that association.

Mr. MACDONALD. It is my understanding that the matter was discussed at an executive committee meeting of the National Farmers Union in Denver, Colo.

Mr. SAYLOR. When was that held?

Mr. MACDONALD. I am not able to give you the exact date of that meeting. It is my understanding that this matter has been extensively discussed in the local and country groups of the Farmers Union in these areas I have mentioned.

I have also discussed this matter with Harvey Salberg, who is president of the Rocky Mountain Farmers Union, which includes Colorado and Wyoming. I have also discussed the matter with several of the people who have come from out there to urge support for the project.

Mr. SAYLOR. You see, the reason I ask you these questions is that there is an entirely different attitude to endorsing the upper Colorado River development, the storage projects and the participating projects.

But you have not done that and your organization has not done that. All you have done so far, and according to the directive that you have had from your president, is that you have come in here and asked this committee that we indorse just one little unit of it.

Mr. MACDONALD. I believe, Mr. Congressman, we do include more than Echo Park. If I may repeat one sentence from the press release.

The National and Rocky Mountain Farmers Union Saturday announced they are strongly in favor of the construction of the upper Colorado storage project and its vitally important Echo Park Dam.

Mr. SAYLOR. That is a news release you are reading from?

Mr. MACDONALD. This release is dated January 15, 1954.

Mr. SAYLOR. That is just a few days before these hearings were to start?

Mr. MACDONALD. That is correct.

Mr. SAYLOR. And there has been no information disseminated to all of the members of the Farmers Union throughout that entire area, they have never had a convention or a meeting?

The reason I am asking you these questions is that those seem to be the questions that were asked of the one opponent of the bill that came up. I am trying to find out now just what authority you have to speak. It seems to be the attitude that everybody who objects to anything is being interrogated as to what authority they have to speak. So that is what I want to find out from you and the other people that have appeared here in favor of this development. I am trying to find out just what has happened and what authority you have to speak.

Mr. DAWSON. Will the gentleman yield for an observation?

Mr. SAYLOR. Yes.

Mr. DAWSON. Then do I understand that the witnesses who are to follow representing the various conservation groups have polled their entire membership and have taken it up officially through a plebiscite?

Mr. SAYLOR. Those witnesses, when they appear, Mr. Dawson, will be only too glad to testify; and maybe some of them have. I do not know. But that seemed to be the questions that were asked of the one who appeared in opposition to it. And if the same questions are relevant to those who appear in opposition, I am sure they are relevant to those who appear in favor of it.

Mr. DAWSON. I am sure we will be very interested to find out what action has been taken with these various organizations to get a vote from their entire membership when they come up.

Mr. MACDONALD. I would like to assure the members of this committee that there is no question in my mind, at least, as to whether or not our membership and our officers support this project.

Mr. SAYLOR. Have you studied this proposition to know how much it would cost to put water on land on this area?

Mr. MACDONALD. Mr. Congressman, I do not come here as an engineer, a technical witness. As I indicated at the outset, I have not had the opportunity to make a study of the project, and I do not come here in that role as an expert on the subject. I merely come here to tell you what our national president has said and what he has told me to say here. I told you also about a couple of meetings which have been held out there on this problem. This matter only recently was called to my attention.

Mr. SAYLOR. I am not asking your opinion, sir, as an expert. I am trying to ask you now, as a representative of a large national organization —

Mr. HARRISON. Let the Chair interrupt here. I think the witness has been very fair, and I cannot think we are going to gain anything, Mr. Saylor, by further questioning. I do not want to be arbitrary or unfair. The witness testified very frankly that he comes here on the direction of the heads of the group; he has given what information he has. I think the committee understands the exact situation. If you want more time, I am not going to insist on limiting it. I merely suggest that he cannot clear anything up any better than he has done.

Mr. SAYLOR. I do not know whether he can or not. I am not trying to ask him any questions as an expert. I want to know whether or not his national organization has taken any position as to whether or not it is advisable to spend this amount of money to develop farm lands of this type; whether or not, if it is necessary to spend these amounts of money, it should be spent in areas where you might produce more crops the year around. That is the only question I want to ask the gentleman. I am not asking him to give his opinion as an expert because he told us very frankly he has come here at the direction of his president and the representatives of the Rocky Mountain group.

Mr. HARRISON. Do you know whether that is a fact, Mr. MacDonald?

Mr. MACDONALD. I am afraid I am going to have to ask the Congressman to repeat the question. I have been rather diverted here—and I had assumed, Mr. Chairman—I would like to thank you for interceding—I had assumed that I would not be required to answer such questions. But if you repeat it, sir, I will do my best to answer it.

Mr. SAYLOR. I want to know whether or not your organization has made studies of projects such as this and come to a conclusion that if large sums of money are to be spent to subsidize farm areas, that it should be spent in areas which produce crops of this type, or produce lands such as would be cultivated in this area, or whether it would be advisable to spend that amount of money on lands in other areas where you could have year-around production.

Mr. MACDONALD. In answer to the first part of your question, my organization has made no study. We do not have the facilities to make technical studies.

I would say that we have indorsed both types of projects, those which would produce crops on a year-around basis, and those which would develop land in arid areas, mountainous areas such as this is.

The question I think, Mr. Congressman, here is whether or not the resources of this country may be developed to their maximum capacity, whether they are in the mountainous or arid regions, humid areas, or wherever they are. We have in general favored them where economically feasible. I do not think—I may be wrong—but I do not think there is any subsidy here. If I understand these projects, in this project under present law they do have to be amortized, the money has to come back to the Treasury ultimately. The project is not a subsidy. But we in general have favored the development of such sites as Echo Park and others, because of our expanding population, because of the needs for national defense, because of industrial and

agricultural development. We favor both types of project. We know that demands of agriculture for electricity have been doubling every 4 years. And I understand the demands of urban consumers has been increasing almost as fast. I have received some reports that the Nation may face in the years to come a severe power shortage. Power is needed not only, of course, for agriculture and industrial development, but for national defense.

It is my understanding that at the present time—and this is going a little bit far afield, but it illustrates my point—that the Federal Government is now taking over 50 percent of all TVA power. It is also my understanding that a great deal of power is taken for military and industrial needs in the great Northwest.

Whether or not this project is in an area where crops can be raised on a year-around basis, I would not consider that the only criterion in approving such a project.

Mr. HARRISON. The time of the gentleman from Pennsylvania has expired.

Mr. SAYLOR. Thank you, Mr. MacDonald.

Mr. HARRISON. Thank you very much, Mr. MacDonald.

Mr. MACDONALD. Thank you, sir.

Mr. HARRISON. We have 2 witnesses remaining from Colorado, we have 4 witnesses from Texas who will all be heard today, 2 witnesses from California have asked permission to appear in the morning, stating that they would take 45 minutes. I hope that they can complete their statements in 45 minutes and that the questions of the committee with the statement will not exceed 1 hour.

At this time I will say, if they do exceed that time, we will have to call those witnesses back for interrogation by the committee later because our time is going so fast, in order to keep my word to the other group, I must start their witnesses, and we will start at 10:30 tomorrow morning for the conservation group. The committee will start at 9:30 and we will hear California witnesses up to 10:30.

At this time I would like to ask Mr. Frank Delaney and Mr. John Barnard, they both have statements, if they will both come forward and give their testimony. We will withhold questions until they get through. If they do not complete that by 12, we will take up at 2 o'clock, providing, of course, that we can secure permission of the House to meet. We will take up where we left off.

Mr. SAYLOR. I would like to withdraw my reservation to the statement of J. LeRoy Kay proffered by the gentleman from Utah.

Mr. HARRISON. Any further objections?

Hearing none, the statement will be received and made a part of the record.

(The statement referred to follows:)

STATEMENT OF J. LEROY KAY, CURATOR OF VERTEBRATE PALEONTOLOGY, CARNEGIE MUSEUM, PITTSBURGH, PA.

I am J. LeRoy Kay, curator of vertebrate paleontology at the Carnegie Museum, Pittsburgh, Pa. I spent 8 years excavating dinosaurs at the Dinosaur National Monument—1915 to 1923—and several summers since that time in the area.

There has been considerable controversy in regard to the benefits and damage to the Dinosaur National Monument by the construction of Echo Park and Split Mountain Dams. I have read with much interest the pros and cons of this controversy as I have a deep personal interest in the matter, having spent many

years in the area as a paleontologist for the Carnegie Museum of Pittsburgh, Pa. During this time, I visited by boat, horseback and on foot, most all of the present accessible places in the study of the natural history in which the area abounds. There are rock formations representing several hundred million years of the earth's history within the confines of Dinosaur National Monument.

In the early days of the controversy the opponents of the dams maintained that the backed-up waters would cover the dinosaur beds, for which the monument was primarily established. This argument is no longer used as it is well known that the waters will not cover the dinosaur beds. However, the impounded waters would allow visits to the more or less inaccessible places by boat. There are many such places where one could visit and study the canyon walls and rocks with embedded fossils, which are not accessible at present. The cost of building hanging walks or tunnels with viewing windows along the canyon walls would be prohibitive. It is true that trails, or even roads, could be constructed to the canyon rims where people could view the canyons at a distance but few would ever see many miles of the canyon walls close up where they could study the geological structures and fauna and flora both living and extinct.

There have been a few people that have gone through the canyons of Lodore, Yampa, Whirlpool, and Split Mountain by boat and some have lost their lives in the attempt. Which is the better judgment—to preserve these canyons as they are for a few daredevils to have the thrill of shooting the rapids or thousands of people visiting these canyons by boat on still water? One only needs to compare the additional number of visitors that each year visit the areas of the Hoover Dam in Nevada, the Roosevelt Dam in Arizona, the Grand Coulee Dam in Washington, or the Fort Peck Dam in Montana, to mention a few, to see what the results will be at the Dinosaur National Monument if the Echo Park and Split Mountain Dams are built.

Since the National Park Service took over the Dinosaur National Monument, a few thousand people have visited the monument headquarters at the dinosaur quarry each year and spent a few hours, or less, and a very few have visited other accessible places within the monument. A large percentage of those that visited the headquarters came away disappointed in what they saw for at the present there are few dinosaur bones exposed. This condition is at present being corrected as the Park Service is starting the relieving of the dinosaur bones in the Morrison stratum. This should increase the attendance at the monument considerably.

When the Carnegie Museum was excavating dinosaurs at the quarry there were nearly always many bones exposed, usually the greater part of one or more skeletons. Thousands of people visited there although we did not encourage visitors as it interfered with the work. We did, however, treat the visitors with courtesy and many spent a day or even as long as a week.

The waters backed up by a dam at Echo Park would cover the lower part of the Lodore formation. This formation is nonfossiliferous, at least, no fossils have been found although many workers have searched diligently for them. The formations above the Lodore are younger geologically and most of them contain invertebrate and plant fossils, some in abundance. I know of no way that these fossiliferous localities could be more easily reached than by boat on the waters impounded by Echo Park Dam.

I feel sure that the building of the Echo Park and Split Mountain Dams and the relieving of the dinosaur bones at the dinosaur quarry will make the Dinosaur National Monument one of the outstanding attractions of our national parks and monuments.

MR. ASPINALL. Mr. Chairman, do I understand you want Mr. Delaney and Mr. Barnard to divide the time here at this time?

MR. HARRISON. That is right.

MR. ASPINALL. Will you tell Mr. Delaney when 15 minutes of his time is taken so Mr. Barnard can go on?

MR. DELANEY. What is that time?

MR. HARRISON. 15 minutes.

MR. DELANEY. For both of us?

MR. HARRISON. No, 15 minutes apiece.

STATEMENTS OF FRANK DELANEY, COLORADO RIVER WATER CONSERVATION DISTRICT, GLENWOOD SPRINGS, COLO.; AND JOHN B. BARNARD, MIDDLE PARK WATER CONSERVANCY DISTRICT, GRANBY, COLO.

Mr. DELANEY. Mr. Chairman and members of the committee, I want to say to you that the bulk of this document that has been handed up to you would indicate it is going to be pretty long. Most of it is supporting data and I shall not read all of it.

The statement which I now present to this committee is made in behalf of the Colorado River Water Conservation District, a public corporation created by act of the Legislature of the State of Colorado and empowered, among other things, to—

initiate appropriations for the use and benefit of the ultimate appropriators, and to do and perform all acts and things necessary or advisable to secure and insure an adequate supply of water, present and future, for irrigation, mining, manufacturing, and domestic purposes within said district.

The District comprises all of 7 counties and part of an eighth county in western Colorado and includes all of the 10,180 square miles drained by the main stem of the Colorado River, with the exception of about 1,870 square miles embraced within Grand County. The Middle Park Water Conservation District embraces said Grand County, the Southwestern Water Conservation District which embraces an additional 7½ counties in western Colorado, and the Western Slope Water Users Association, which includes in its membership 3 counties in northwestern Colorado, are in accord with the position we take in opposition to that part of the bill pertaining to the Denver-Blue River diversion now under consideration by this committee. In other words, this feature of the bill is opposed by practically all of the 156,000 people residing in the western one-third of the State of Colorado.

You are entitled to know what special interests, if any, I represent. I have resided in western Colorado for over 50 years, and have been attorney for the Colorado River Water Conservation District ever since the year 1937.

To understand why the Colorado River Water Conservation District is so strongly opposed to the proposal of Denver to have its diversion included in the pending bill requires an explanation of past and existing developments and rights upon the streams herein referred to, and particularly the Blue River, situated almost wholly in Summit and Grand Counties, Colo.

Prior to the year 1937 the Bureau of Reclamation had been investigating a proposed reclamation project, which was subsequently authorized, and is now known as the Colorado-Big Thompson project. As originally planned, it was to divert in excess of 310,000 acre-feet of water per annum from the Colorado River and its tributaries in western Colorado to streams tributary to the South Platte watershed on the Atlantic side of the Continental Divide. It was recognized that the project would change the regimen of the Colorado River and interfere with vested rights downstream unless many protective features were incorporated in and made part of the project. As a result, Senate Document No. 80 of the 75th Congress, 1st session, was agreed to between representatives of western Colorado and of

northeastern Colorado as the plan of construction and operation of the project. Among other features incorporated in the plan and specifically described in said document were the Green Mountain Reservoir and powerplant, situated approximately 14 miles above the mouth of the river at Kremmling, Colo., and 40 miles below the town of Dillon in Summit County, Colo.

In the act of the Congress of the United States which first appropriated money for the construction of the project, special reference is made to Senate Document No. 80 which mentions the features on the western slope which I have just described. Like reference was made in a subsequent appropriation bill. In Senate Document No. 80, page 1, we find a general explanation of the features of the project, including the following:

A hydroelectric plant below the Green Mountain Dam to utilize the flow of the Blue River and water stored in the reservoir for the generation of electric energy.

Senate Document No. 80 also provides that—

52,000 acre-feet of the water stored in the Green Mountain Reservoir shall be available as replacement in western Colorado of the water which would be usable there if not withheld or diverted by said project.

And that while the remaining 100,000 acre-feet of the capacity of said reservoir is to be used for power purposes—

the water released shall be available, without charge, to supply existing irrigation and domestic appropriations of water, including the Grand Valley Reclamation project * * * and for future use for domestic purposes and in the irrigation of lands thereafter to be brought under cultivation in western Colorado. * * * water not required for the above purposes shall also be available for disposal to agencies for the development of the shale oil or other industries.

The powerplant at the Green Mountain Reservoir Dam is designated in said document as powerplant No. 5 and is more particularly described at pages 27 and 28 of said printed document. Said Green Mountain Reservoir and powerplant were constructed in substantial conformity with the provisions of Senate Document No. 80 and were in operation by the year 1943. The cost thereof, with incidental features, was \$9,132,000. The cost of the entire project up to date, including the features just described, amounts to approximately \$160 million.

In the figure there I refer to the tunnel and the works on the eastern slope.

In the year 1950, the United States of America instituted in the United States District Court for the District of Colorado an action wherein the city and county of Denver, Northern Colorado Water Conservancy District, the Colorado River Water Conservation District, and others are defendants. The purpose of the action was to obtain a declaratory judgment as to the meaning and effect of Senate Document No. 80, and to adjudicate relative rights and priorities to the use of water impounded in said reservoir and used in the generation of electricity, as well as direct flow rights from the Blue River for the same purpose. The capacity of said reservoir is approximately 156,000 acre-feet. A direct flow right of 1,726 cubic second-feet from the Blue River is also claimed by the United States in said proceedings.

The city of Denver claims—and I mean in that action—a right prior

to that of the United States to the same waters in an amount in excess of 177,000 acre-feet for both storage and direct flow rights. The direct flow right claimed is for 1,600 cubic second-feet.

This case is now pending and undetermined. We find, from the exhibits filed in said case by the United States in accordance with the pretrial order entered several months ago that, commencing with the year 1948—during which the plant was in operation only a part of the year—up to and including December 31, 1950, the United States derived, as income from the operation of said plant, \$3,693,996.91. The operation and maintenance charges during the same period of time amounted to \$531,134.04. It therefore appears that the net average revenue per year derived from said plant during said period of time was \$395,357.85. It is our further understanding that the gross revenues from the plant up to this time, including the amounts above set forth, amount to approximately \$7 million.

The total discharge of the Blue River below Green Mountain Reservoir for the year ending September 30, 1940, a typical year, was 272,500 acre-feet. Denver claims all of the water which can be intercepted at Dillon, a distance of 40 miles above the Green Mountain Reservoir. It is claimed that this discharge will amount to approximately 177,000 acre-feet. Part of the water of said river must be bypassed to supply prior water rights downstream. It therefore appears that in many years there is not sufficient water to supply the claims of the city and county of Denver and to fill the Green Mountain Reservoir. There would be no water left for the direct flow rights, over and above the capacity of the reservoir, in any year. Hence, it appears that the claim of the city and county of Denver, if recognized and given a priority, will very seriously impair, if not destroy, the utility of the Green Mountain powerplant and very substantially reduce the revenues derived from said plant, and further reduce the water available for storage to such extent as to seriously impair the use of said reservoir to supply water for present users and make water available for future use on lands "thereafter to be brought under cultivation in western Colorado," and certainly no water would be left available for oil shale development.

Let me repeat that Denver claims a priority dating back to the year 1921 for the so-called Denver-Blue River diversion. If Denver succeeds in establishing that date, then her rights become superior to the rights of the United States under the Colorado-Big Thompson project.

If it thereafter becomes necessary to close any diversion to supply lower basin demands under the Colorado River compact, then diversions in the streams will be curtailed in the reverse order of the priority dates; that is, the latest will be closed first. Hence, the Colorado-Big Thompson project and any later reclamation projects now under consideration must be shut down before Denver's diversion is curtailed.

Viewed in the light of the foregoing perspective, the United States, under the terms of this proposed amendment, will be asked to finance and make possible a diversion which will endanger not only the investment the United States has already made in another project, but will also interfere with the manner in which that project was to be operated, to the prejudice of those who were to be the beneficiaries under the first project.

Denver is, in effect, asking the Congress of the United States of America to undermine an investment that the United States has made in a reclamation project and to pass a bill which will, in effect, be a waiver of vested property rights and investments already made by the United States. If, with full knowledge of the facts, the Congress authorizes a bill to allow Denver to take water from the Blue River, and furnish Federal finances for that purpose, the necessary implication is that the United States waives its right to a priority to the use of the water of the Blue River senior to the priority asserted by Denver.

The facts are that Denver did not start any construction work on its project until long after work had been started on the Green Mountain Reservoir, and not until the Green Mountain Reservoir was practically completed. There is not a word in the record of congressional hearings pertaining to the Colorado-Big Thompson project, which indicates that Denver, at any time, asserted that the Green Mountain powerplant would interfere with, or be subject to, Denver's rights.

Under the circumstances, it is submitted that Denver has no right to claim that the priority right of the United States is not superior to the one claimed by Denver.

It is further submitted that the Congress of the United States should not pass an act which will affect, directly or indirectly, the litigation now pending in a Federal court and thereby impede or embarrass the Department of Justice in the performance of its functions until there is a final decision in the courts. Such legislation will inject into the pending litigation other questions as to the rights of the beneficiaries under said Colorado-Big Thompson project.

The United States will have no direct flow rights for the generation of electricity at the Green Mountain Reservoir if Denver is successful in establishing a superior right to the use of the waters of the Blue River. The Colorado River Water Conservation District, acting in behalf of users of water along the Colorado River, including users under the Grand Valley reclamation project, are vitally interested in this phase of the situation. Senate Document No. 80 was made for their protection. The operation and maintenance charges on the Green Mountain Reservoir are paid from power revenues. The revenues from the powerplant will do much to insure the economic integrity of the entire project.

Hence, the district asserts that Denver's claim should not be given consideration, under any circumstances, until the litigation now pending has been completed.

Mr. HARRISON. That has taken up 15 minutes, Mr. Delaney. I regret to say that. We would want you back this afternoon at 2 o'clock for questioning by the committee. Without objection, the balance of your statement will be made a part of the record so we will have it for our information.

Mr. DELANEY. Thank you.

Mr. HARRISON. Mr. Barnard will make his statement and we will ask him to come back at 2 o'clock.

(The balance of Mr. Delaney's statement follows:)

There is an intrastate problem and conflict of interest in which the Congress of the United States is concerned in only an incidental way. In western Colorado we find immense oil-shale deposits and, in the area of those deposits, is a naval oil-shale reserve of the United States. A substantial part of the uranium ore

on which the United States is dependent comes from the area on the Colorado River. In that area of the State are tremendous natural resources which may some day be developed. There can be no development without water. Hence, in every problem of this character it is submitted that the Congress should give proper regard to the expenditure of Federal money to enhance the general welfare of the United States as a whole, and should not use Federal money to render less valuable a project and a property in which the United States has invested such substantial sums of money.

The city and county of Denver asserts, as her justification for the novel and belated request to become a participant in the upper Colorado River storage project, the contention that Denver will soon be without sufficient water for municipal purposes to supply her own needs and that of the metropolitan area surrounding Denver. The facts do not support this contention. The litigation mentioned above has also been in the State courts and, in connection therewith, we have the testimony of J. R. Rifer, now Chief Planning Engineer of the Bureau of Reclamation, formerly Chief Hydrologist of said Bureau, to the effect that Denver has and will have, under her decreed rights, from sources other than the Blue River, a firm and dependable supply of 183,500 acre feet of water, based on a study of a 10-year period when the streamflows were the lowest in any like period in the last 40 years.

Under Denver's own record as to the average per capita consumption of water, namely 0.238 acre-feet per capita, this is a sufficient supply of water to support a population of more than 750,000 people. Works to supply this amount of water to Denver and the surrounding area from the Fraser and Williams Rivers have not been completed for the sole reason that Denver does not at this time need the additional water available from said streams. At the time said testimony was given in 1950 the population of Denver and the surrounding metropolitan area as shown by the last Federal census was, approximately 550,000 people. Therefore, there is sufficient water available to Denver and the metropolitan area to support an additional population of more than 200,000. Denver now asks for sufficient water to supply a population of a million and a half people. There is no substantial basis for a claim by Denver for water for such an increase in population. Denver's trade area considered, it is much more likely that the anticipated increase in population will level off before Denver and the immediate surrounding area attains a population of 750,000. Certainly, the future growth of the city will depend upon its trade area, and there is nothing in the picture to justify the assumption that there will be any great increase in the trade area unless there is a substantial industrial development in western Colorado. Without water there can be no such development.

The Colorado River Water Conservation District is not, by its position before the Congress, interfering with any rights to which the city and county of Denver is entitled under Colorado law. Said city and county has the right, under our constitution and laws to appropriate any unappropriated waters that may be in the Blue River. She has the right, and the financial ability, to finance the necessary work to divert said waters. If the city and county of Denver sees fit to raise money in the manner customarily followed by municipalities in financing the expansion of waterworks, then Denver does not need Federal assistance. It is our position that Denver should not ask for Federal money when she has the right under the law, and the financial ability to construct her own works. The purpose of the amendment to the upper Colorado River storage bill, whereby Denver becomes a participant therein, seems to be intended to have the effect of a waiver, on the part of the United States, of the rights heretofore acquired by the Federal Government in the waters of the Blue River and to make those rights subservient to the claims of the city and county of Denver.

Our position was made manifest to the Colorado State Water Board in a statement presented to that board about December 11, 1953. The said statement is attached hereto as Document No. 1.

For the various reasons set forth above we assert that the claims of the city and county of Denver have no proper place in the pending legislation.

DOCUMENT NO. 1

The Colorado River Conservation District objects to the inclusion in the Colorado River storage project of any feature or plan for the benefit of the city and county of Denver to divert water from the Blue River, a tributary of the Colorado River, to the South Platte River or its tributaries and gives formal

notice that said district will oppose any such plan in Congress and wherever opposition thereto seems appropriate.

In making this formal statement, the Colorado River Water Conservation District is not unmindful of the serious question of policy at stake, and takes this step with full realization of the serious results incident to open opposition by one section on a major question of policy to the charted course of the agency established to protect the interests of every section. Events of the past show it is not the first time that a minority section has been compelled in the protection of claims based on equity and natural justice to oppose those who would override such claims.

A proper respect for the opinion of those who will eventually decide such controversies requires the district to make known its position, now, as it has many times in the past. The principal grounds on which it rests its position follows. There is within the district all of the 10,180¹ square miles drained by the main stem of the Colorado River, except the 1,870 square miles embraced within Grand County.²

The district was created by a statute of the State of Colorado and is authorized to represent, at its level, the appropriators present and future of water used or to be used within its borders. It has a trust to perform in behalf of those whom it represents. At this time the district is a party in two proceedings in the courts in which the city and county of Denver is likewise a party.

One of said cases is now pending in the Supreme Court of the State of Colorado, bearing Nos. 16881-16888, the city and county of Denver et al., are plaintiffs in error, and the Northern Colorado Water Conservancy District and the Colorado River Water Conservation District et al., are the defendants in error. This is a writ of error from the district court of Summit County. The city and county of Denver claims that she should be awarded a priority right earlier than the one awarded by the trial court. In said case, the Colorado River Water Conservation District contends that the court should have awarded a decree for storage rights in the Green Mountain Reservoir and also a direct flow right for the generation of electricity at the Green Mountain hydroelectric plant. The right to the use of water which is the subject matter of Denver's claims before this Board is involved and is to be determined in said case.

The other case is cause No. 2782, now pending in the United States District Court of the District of Colorado, wherein the United States of America is plaintiff, and the Northern Colorado Water Conservancy District, the Colorado River Water Conservation District, and the city and county of Denver et al., are defendants. In this case, the issues made by the pleadings and which are to be decided by the court raise the question whether Denver or the United States of America is entitled to the prior right to the use of the waters of the Blue River under general law, and, in accordance with Senate Document No. 80 of the 75th Congress, 1st session. The use of the same waters, which is the subject matter of the Denver claims before this board, are in litigation in the case in the Federal court.

It should be recognized that the Colorado water board represents the entire State of Colorado, and the interests of all its citizens. At the very least, the water board should remain neutral and impartial regarding matters in litigation between citizens or organizations in different sections of the State. The inclusion of Denver's claims for water from the Blue River as a part of the storage program necessarily presupposes a termination of that litigation in Denver's favor, and is not a proper exercise of the board's function.

If this board, as an administrative agency of the executive department of the State, approves the claim of Denver prior to the determination of the litigation in both the State and Federal courts, such action may legitimately be regarded as an effort to influence the outcome of that litigation and constitutes, directly or indirectly, an interference with the orderly processes of the administration of justice.

We disagree with those who assert that under the Colorado River compact and the Upper Colorado River Basin compact Colorado may lose the percentage of consumptive use of the waters of the Colorado River allotted to her if other States proceed to make prior use of such water. Said arguments are made by those who would use pressure methods to accomplish an immediate end. The use of water allocated to Colorado under the upper Colorado River Basin compact is in perpetuity and permits this State to proceed in an orderly way with a plan

¹ Hill report, p. 4.

² Year Book, State Planning Commission. 1943-44, p. 33A.

of development based on thorough investigation instead of the piecemeal, opportunistic, and propagandized plan now suggested for the benefit of the city and county of Denver.

We realize that many of the members of the Colorado State Water Board are public officials or persons who, in their capacity as members, act as laymen and not as technical, legal, or engineering advisers of the Board. Under such circumstances the Board relies on the advice of its technical advisers.

We apprehend that the Colorado State Water Board approaches the consideration of the request of the city and county of Denver to take water from the Blue River under the impression that an emergency exists. The alleged emergency does not exist, as we have urged in the courts, and will continue to urge in any impartial forum.

The asserted emergency has arisen from the ultimatum of Denver that a feature in the nature of a participating project be included in the proposed Colorado storage project and from the newspaper propaganda which has been fostered by Denver to convince the public and every department of government that might be influenced by public opinion that such emergency is real and not designed.

We condemn as wholly foreign to the proper exercise of their legitimate functions the unusual efforts made by the official representative of Colorado on the Upper Colorado River Commission and by the secretary of said commission to compel acceptance at any cost the belated demand of Denver that a Denver project be included as a feature of the Colorado River storage project.

The recent reports to the effect that the executive intends to appeal to the people on this issue unless a compromise be made, is, in our opinion, another improper attempt to sway public opinion at a time when cases of far-reaching importance, involving the same fundamental facts, are pending in the courts. "Compromise," as it was used, means that western Colorado is to permit the city and county of Denver to take water already appropriated for use in western Colorado, necessary to support future industry in and expand agricultural pursuits in that part of the State.

According to the Hill report,^a the city and county of Denver now states that it is the intention to finance the construction of the works in its plan in the manner customarily followed by municipalities making additions to water systems. If said information was given Mr. Hill in good faith, then Denver needs no assistance from this board. The settlement of Denver's claim should be left to the courts where the merits of her claim is now under investigation.

It should be understood that the Colorado River Water Conservation District does not oppose the Colorado River storage project as originally planned or as subsequently modified to reduce the capacity of the Cuccanti Reservoir.

In the existing state of the investigation of water resources originating in western Colorado (and we assert the Hill report is neither complete nor conclusive), the approval by this board of the Denver claim for inclusion in the Colorado River storage constitutes a repudiation of the policy adopted February 22, 1951, evidenced by a resolution of said date in connection with the report of conference committee on the proposed Fryngpan-Arkansas diversion project.^b

RESOLUTIONS

At the meeting of the Colorado Water Conservation Board on February 22, 1951, the following action was taken, to-wit:

(1) "Director Stone moved, seconded by John W. Beatty, that the resolutions pertaining to the Fryngpan-Arkansas project, as presented by the Colorado River Water Conservation District, including amendatory language as authorized by the spokesmen of the two districts, be included and made a part of the record of this February 22, 1951, meeting of the Colorado Water Conservation Board."

(The two resolutions mentioned in the foregoing motion are attached hereto as Appendixes D and E.)

(2) "It was moved by Judge Dan H. Hughes, and seconded by C. J. McCormick, that the resolution submitted by the Colorado River Water Conservation District, be accepted and approved as a policy by the Colorado Water Conservation Board."

"It was moved by Dan B. Hunter, and seconded by John A. Cross, that the similar resolution submitted by the Southwestern Water Conservation Board be likewise accepted and approved as a policy of the Colorado Water Conservation Board."

^a Hill report, p. 53.

^b See resolutions attached.

APPENDIX D

A meeting of the board of directors of the Colorado River Water Conservation District was held at Grand Junction, Colo., on February 19, 1951, at the request of western Colorado members of the Colorado Water Conservation Board to consider and discuss the proposed Fryingpan-Arkansas diversion project, formerly referred to as the initial phase of the Gunnison-Arkansas project. All members of the board were present except Andrew Lindstrom.

The following resolution was offered by Charles R. Neill:

"Resolution

"The board of directors of the Colorado River Water Conservation District in order to be cooperative in the furtherance of the policy of the State of Colorado, hereby concurs in the complete report of the policy and review committee appointed to consider the Fryingpan-Arkansas diversion project, which report as amended has been submitted to the Colorado Water Conservation Board, subject to the condition that section (Roman) IV be amended to read as follows:

IV. Effect of approval of project report

"The committee recognizes that the approval of this report is not to serve as a precedent or example for the approval of any other transmountain diversion of major proportions not heretofore authorized.

"The policy of the State of Colorado as initiated in statewide meetings held under the auspices of the State planning commission at Denver and Grand Junction, and as evidenced by resolutions dated June 15, 1935, and February 28, 1936, was not adhered to because surveys of the character mentioned in the said resolutions were not available to the committee. Nothing herein contained shall be deemed or construed as a precedent for Federal projects not heretofore authorized until adequate surveys have been made and the necessary data are available so that a general allocation or apportionment of the waters of the Colorado River, allocated for consumptive use in the State of Colorado, under the Upper Colorado River Basin compact may be made, between eastern Colorado and western Colorado, as distinguished from an attempt to execute such State policy by a piecemeal or series of partial allocations, any of which may seriously interfere with a complete, overall State program: Be it further

"Resolved, That in the opinion of the board of directors of the Colorado River Water Conservation District, the Colorado Water Conservation Board should adopt a resolution that no further federally financed transmountain diversions from the natural Colorado River Basin should be approved for authorization until the surveys described in said section (Roman) IV above are completed and the need for the use of water in western Colorado has been determined."

Mr. McNeill moved the adoption of this resolution, which motion was seconded by Mr. Danni, and the motion was unanimously carried and the resolution declared unanimously adopted.

Certified, a true and correct copy.

F. C. MERRILL, *Secretary.*

Grand Junction, Colo., February 19, 1951.

APPENDIX E

THE SOUTHWESTERN WATER CONSERVATION DISTRICT,
Durango, Colo., February 14, 1951.

Re Arkansas-Fryingpan project.

To The Colorado Water Conservation Board.

President Dan B. Hunter presented a request that this board consider and act upon certain changes in the operating principles for the Arkansas-Fryingpan project and especially in section 15 as approved June 15, 1950.

After due consideration, it was moved, seconded, and carried unanimously that because of the fact the matter has progressed so far, this board feels it should interpose no objection to the proposed diversion, but with the clear and distinct understanding this consent shall not be considered as waiver of objections to any other federally financed transmountain diversion of the waters of the Colorado River; and with the further understanding that the State

water conservation board of the State of Colorado shall not approve of any other such federally financed diversion project until the studies of the needs of the western slope be fully completed so that an intelligent decision relative to such needs may be given. We feel that after the many and long delays in making such studies and the promises made by some high in authority in the Reclamation Service, the western slope is entitled to have such studies completed in the very near future, and that no further federally financed transmountain diversions should be made without the completion of such investigations.

This consent and approval is made because this board is aware of the great and urgent need of Pueblo, Colorado Springs, and other nearby cities in the Arkansas Valley for additional water, and our desire to act the part of a good neighbor to these cities.

Respectfully submitted.

THE SOUTHWESTERN WATER CONSERVATION DISTRICT.
DAN B. HUNTER,
IRA E. KELLY,
ARCHIE B. TONEB,
WILLIAM FINNEGAN,
D. LEWIS WILLIAMS,
WILLIAM A. WAY,
D. W. SEXTON.

Mr. BARNARD. I shall have to abridge this statement substantially, which I will attempt to do, and keep the important things in mind.

My name is John B. Barnard. I am an attorney practicing at Granby, Grand County, Colo. I have practiced law in Colorado since 1920, and since about 1925 have devoted much of my time and attention to the laws which relate to water rights and the establishment and administration thereof.

I also own and operate an irrigated ranch taking water out of the Fraser River.

I appear here as attorney for and representative of the Middle Park Water Conservancy District, a Colorado statutory district. This district includes within its boundary Grand and Summit Counties.

The important thing in this matter in connection with this district is that within this area is developed all the water diverted to the eastern slope of Colorado by means of the Colorado-Big Thompson project by the city and county of Denver and the city of Colorado Springs, and all of the water which Denver seeks to divert by means of the project the approval of which is sought here.

These facts place the Middle Park area in a different and more vulnerable position than any other portion of the State; and it is to protect these rights and this position that our district was formed.

We are here for two purposes:

First, to support, in every way we can, and to ask this committee to approve the upper Colorado River storage project and participating projects.

Second, to object to and protest, with equal vigor against the inclusion therein of the proposed Denver Blue River diversion plan. In taking these two positions we think we are entirely logical and consistent, and I shall attempt to explain why I say that.

Now, Mr. Chairman, I have some maps with me. It would delay this presentation too much to present them now. I shall ask to be permitted to put them up at noon so if during the questioning period an opportunity presents itself I can explain those maps.

Mr. HARRISON. Without objection, you may do so.

Mr. BARNARD. Others than I have covered the desirability of, and necessity for, the storage projects which appear on the map here better than I can do it.

The committee then asks this question: "Why do we oppose so strenuously the inclusion of Denver's proposed Blue River project in the upper Colorado project?"

The reasons are several and fundamental. First, the Reclamation Act was passed in 1902 for the primary purpose of making provision for the diversion, storage and distribution of water for the reclamation of arid lands. The underlying theory of the act was that water should be placed upon the lands so that they would produce crops; and that the financing of projects to accomplish this would ordinarily and thereafter be beyond the ability of private investors. The reclamation of arid lands was determined by the Congress to be in the public interest, insofar as the entire United States of America was concerned.

There is a quotation in my statement from the Supreme Court of the United States which I shall not read.

It was found over the years that have intervened that, in working out reclamation projects, water for municipal use could be made available without great additional cost; but only as an incident to the fundamental purposes of irrigation and reclaiming arid lands. We submit it was an entirely proper thing to supply municipalities and communities with water for domestic purposes, but only as an incident to reclamation phases of projects designed to reclaim arid lands.

Denver's demand presents a departure from what has always been our understanding of the intent and purpose of the Reclamation Act, and the one outlined by our Supreme Court. Here the request is made for an allotment of Federal funds to supply water solely for municipal purposes. According to statements attributed to Denver, no irrigation is comprehended in this scheme. Standing alone, as a separate project from the one which we here support, and bearing in mind the original intent and purpose of the Reclamation Act, there is nothing in Denver's request which can commend itself to this committee. The fact that Denver attempts to graft her request upon one which does not entirely conform to reclamation principles and practice does not, as we view it, lend any weight to it or change its character.

In the second place, Denver's request amounts to a demand that this committee approve the lending of Federal aid to a plan for the diversion of water from Middle Park, Colo., to an extent which will seriously endanger the vested rights and future plans of one area, our area, of the State in which this committee of Congress, as we apprehended, is as much interested as in the city and county of Denver. This under the guise of presenting a plan which Denver says only comprehends the diversion of surplus water from the Colorado River system. We want to analyze Denver's intention that she will divert only surplus Colorado River water.

Passing over the next paragraph concerning the Hill report, how it was compiled, and the purposes it serves, then the next is reference to the map which I should like to explain during the interrogation period, Mr. Chairman.

With these conditions in mind—and I shall call that map to the attention of this committee—let us explore the water resources of this area. Let me preface what I now say about the statement that our little district is not sufficiently financed to employ or maintain a corps of engineers or hydrologists to make these estimates for us. We have

done the best we can in our limited ability, but we think that the figures which we shall present fairly accurately reflect our situation, and pretty clearly present to the committee the very real basis for our great fear that the proposed Denver diversions will infringe upon vested rights, and completely close the door to any possible future development in our counties.

Now the map will show that the Middle Park area is completely surrounded by high mountains, with only one break, and that is at Gore Canyon. That is why the words "Gore Canyon" appear in here.

The Colorado River and its tributaries, during the period from 1931 through 1950, developed an average annual flow at Gore Canyon of 988,970 acre-feet of water. It is this amount, not the 6,200,000 acre-feet which forms the basis of the Hill report, that is of importance to this committee in considering Denver's demands. Depletions from that amount of water fall into two classes, which are:

1. Transmountain diversions.
2. In-basin consumptive use in agricultural and for municipal, domestic and industrial purposes.

The records in the office of the State engineer of Colorado disclose that in the year 1953, the following amounts were exported from Middle Park by means of the major transmountain diversion projects then operating.

Without reading them, they total 241,309 acre-feet.

It should be noted that there are additional minor diversions not shown in the table. For the sake of brevity, we do not include them.

The Hill report on page 20 states that the average consumptive use of water per acre of irrigated land in western Colorado is 1.265 acre-feet per acre. We accept that figure as correct.

Senate Document 80, at page 10, tabulates the irrigated lands in western Colorado. Then there are certain towns and villages and a considerable rural population. Therefore the in-basin consumptive use is figured for irrigation at 50,084 acre-feet, and the domestic, municipal, and industrial uses is figured at 3,000 acre-feet, making a total of 53,084. So that the total present depletions is 294,393 acre-feet.

There will be additional depletions by presently existing transmountain diversion works when perfected and completed. For example, in the contract between the United States and the Northern Colorado Conservancy District providing for the construction of the Colorado-Big Thompson project, dated July 5, 1938, the following appears upon page 7:

The project as now comprehended is designed to deliver the annual average supply of 310,000 acre-feet.

Assuming the accuracy of the above statement, and we must assume it if the irrigators in northeastern Colorado are to get value received for the \$25,000,000 they spent on that project, when the Big Thompson project is in complete operation there will be an additional 115,845 acre-feet exported from Middle Park by means thereof.

Our best information is that Denver will divert, through the Moffat tunnel and from the Fraser River watershed, when all diversion and storage facilities are completed, 80,000 acre-feet of water. Deducting her 1953 diversion, she will take an additional 45,231 acre-feet from

the Fraser River alone. Our best information is that Denver also proposes, by means of two additional tunnels and other facilities, to divert to the Jones Pass Tunnel and certain proposed tunnels leading ultimately to St. Louis Creek and thence through the Moffat tunnel, an aggregate of 44,000 acre-feet of water from the Williams Fork River. Deducting her 1953 Williams Fork diversion, she would take from that source an additional 36,473 acre-feet.

In addition to the Moffat tunnel and Williams Fork-St. Louis Creek diversions, Denver now proposes to take 177,000 acre-feet from the Blue River.

Now there follows a tabulation of these depletions from the flow of the Colorado and the Blue Rivers showing a total present of 241,309 acre-feet, plus Denver's 177,000, present in-basin consumptive use of 53,084, and future in-basin consumptive use of 45,415, or a total of 729,499 acre-feet.

Here the Green Mountain Reservoir, and also Denver's Williams Fork Reservoir must be considered. The Green Mountain Reservoir provides replacement for the water exported to the eastern slope by the Colorado Big Thompson project and the Williams Fork Reservoir replaces water exported by Denver through Jones Pass tunnel. But neither structure replaces nor will it replace water for use in Middle Park, and therefore, from our standpoint, must be considered burdens upon the Colorado River and Grand and Summit Counties. They perform no function, as far as Middle Park is concerned; yet they deplete the available supply of Middle Park water by the amount of total storage. Their capacities are, respectively, 152,000 and 6,600 acre-feet.

Therefore, we can tabulate the present and planned diversions and arrive at a total depletion of the flow of the river in Middle Park of 888,096 acre-feet as against the total of 988,000 at Gore Canyon.

Now we have analyzed the amount of water which belongs to the upper basin States and to Colorado passing through Gore Canyon. We base that on Hill's statement that only 6,200,000 acre-feet will probably be available to the upper basin States, and their share is 447,563, which Colorado's share would be 231,614 acre-feet.

Thus, we arrive at these conclusions:

1. 1953 transmountain diversions exceeded Colorado's share of the water at Gore Canyon by 9,696 acre-feet.

2. 1953 transmountain diversions plus future diversions by means of existing works exceeds Colorado's share of the water at Gore Canyon by 222,336 acre-feet and the share of all upper basin States by 6,437 acre-feet.

3. 1953 transmountain diversions plus future diversions by existing works plus Denver's Blue River plan would exceed Colorado's share of the water at Gore Canyon by 399,336 acre-feet, and would exceed the entire share of all upper basin States in the water at Gore Canyon by 183,437 acre-feet; and, if we add present and future in-basin consumptive use, this latter excess would be 281,936 acre-feet.

These are all infringements upon water supplies which Colorado does not own. The deficit must be made up, if at all, out of water developed in other streams of the Colorado River system above Lee Ferry. In the Hill report it is said:

If there should be no limit upon subsidies to irrigation, then the entire surplus available to Colorado could be consumed by irrigation of new lands.

If Hill's speculation should come into reality, then this deficit could never be made up.

Now I want to go to one thing. There has been a statement here that Denver needs that water by 1962 or development will cease. She has got water enough now—and I will not go into the figures here—for a city with a population 50 percent bigger than she has. The 177,000 acre-feet she seeks would give her a supply for a population of 750,000, and she would wind up with enough water for a city three times as big as Denver. It took her a hundred years to get this big, and we do not think she should be asking this committee to allot funds so that they can anticipate her needs for centuries to come.

I want to close with this, Mr. Chairman:

The press, radio, and public officials of Denver have told us that, unless Colorado presents united front on the upper Colorado storage project, including Denver's Blue River diversion—and I have understood those last five words—we will be denied any development of the upper Colorado River. In other words, Denver says:

If you don't give the hitch-hiker a ride, said hitch-hiker will see to it that you don't reach your destination.

We do not believe that. We cannot conceive that Denver has sufficient power or influence that she can control the deliberations of our Nation's legislative body. We in Middle Park cannot willingly assent or yield to the surrender of our water rights in order that some storage and other development works, not including ours, may be constructed, under that threat of reprisal. There are few—I say "no" in the script, I say "no" orally—controversies between eastern and western Colorado which cannot be resolved upon an amicable basis, except that represented by Denver's demand. Were Denver's Blue River diversion scheme not before this committee as a part of the upper Colorado project, Colorado would be here presenting a united front.

I thank you.

Mr. HARRISON. Thank you very much, Mr. Barnard; and without objection your statement will be received and made a part of the record, as a whole. If you also will return at 2 o'clock for questions by the committee and have your maps, we will be most happy to hear from you.

Mr. BARNARD. Thank you; I will have my maps.

(The statement referred to follows:)

OUTLINE AND SUMMARY OF TESTIMONY AND REMARKS OF JOHN B. BARNARD

My name is John B. Barnard. I am an attorney, practicing at Granby, Grand County, Colo. I have practiced law in Colorado since 1920; and since about 1925, have devoted much of my time and attention to the laws which relate to water rights and the establishment and administration thereof.

I am the owner and operator of an irrigated ranch in Grand County, Colo., near the town of Granby, which is irrigated by water out of the Fraser River under a decreed priority right which I own. I have owned this property since 1921, and have resided on it continuously since the year 1946.

I appear here as attorney for and representative of the Middle Park Water Conservancy District, which was organized under the statutes of Colorado applicable to such districts. This district includes within its boundaries Grand and Summit Counties. In this area is developed all of the water diverted to the eastern slope of Colorado by means of the Colorado Big Thompson project, all of the water now diverted from the Colorado River and its tributaries by the city and county of Denver and the city of Colorado Springs, and all of the water which Denver seeks to divert by means of the project, the approval

of which is sought here. These facts place the Middle Park area in a different and more vulnerable position than any other portion of the State; and it was for the protection of the rights of those who live within the boundaries of these two counties, and their vested and future rights that the Middle Park Water Conservancy District was formed.

We are here for two purposes:

First, to support, in every way we can, and to ask this committee to approve the upper Colorado River storage project.

Second, to object to and protest, with equal vigor against the inclusion therein of the proposed Denver Blue River diversion plan. In taking these two positions we think we are entirely logical and consistent; and I shall attempt to explain why I say that.

Reference to a map which we have prepared will clarify in the minds of the members of this committee, better than I can do by words, our geographical and strategical location, with reference to the eastern slope of Colorado and the lower basin of the Colorado River in our State. The Colorado River, below its junction with the Blue River, emerges from Middle Park through Gore Cañon, which is the only break in the mountain barriers which surround us. Hence, no other source of water is or ever can be available to us for irrigation or other purposes. It is, therefore, of the most vital concern to us that the supply of water in Middle Park be not diminished below the absolutely minimum safety point.

If Colorado is to put to full beneficial use that portion of the water of the Colorado River which is allocated to her under the Colorado River and the upper Colorado River compacts, storage on the upper reaches of the stream and its tributaries must be provided. By this means stream flows can be regulated, water developed in years of ample supply be made available for use in dry years, power can be generated from the sale of which a great portion of the cost of the storage projects can be paid, flood dangers and conditions can be relieved and alleviated. Without storage, not only Colorado but all the other basin States, both upper and lower, are at the mercy of the whims of nature, flooded in wet years and burned up in dry years. By others than me the subject of the necessity for storage, as provided in the bill authorizing the upper Colorado project, now before your committee for its consideration, has been or will be more adequately covered than I can.

Why do we oppose so strenuously the inclusion of Denver's proposed Blue River project in the upper Colorado project? The reasons are several and fundamental.

The Reclamation Act was passed in 1902 for the primary purpose of making provision for the diversion, storage and distribution of water for the reclamation of arid lands. The underlying theory of the act was that water should be placed upon lands so that they would produce crops; and that the financing of projects to accomplish this would ordinarily and thereafter be beyond the ability of private investors. The reclamation of arid lands was determined by the Congress to be in the public interest, insofar as the entire United States of America was concerned. By this means, among others, would the national economy be strengthened. As was aptly said by the United States Supreme Court in the case of *Henkel v. United States* (237 U. S. 43, 59 L. Ed. 831 (1915)):

"That act (the Reclamation Act of June 17, 1902) outlines a comprehensive reclamation scheme, and provides for the examination and survey of lands and for construction and maintenance of irrigation works for the storage, diversion, and development of water for the reclamation of arid and semiarid lands."

It was found over the years that have intervened, that, in working out reclamation projects, water for municipal use could be made available, without great additional cost; but only as an incident to the fundamental purposes of irrigation and reclaiming arid lands. And, we submit, it was an entirely proper thing to supply municipalities and communities with water for domestic purposes, but only as an incident to reclamation phases of projects designed to reclaim arid lands.

Denver's demand presents a departure from what has always been our understanding of the intent and purpose of the Reclamation Act, and the one outlined by our Supreme Court. Here the request is made for an allotment of Federal funds to supply water solely for municipal purposes. According to statements attributed to Denver, no irrigation is comprehended in this scheme. Standing alone, as a project separate from the one which we here support, and bearing in mind the original intent and purpose of the Reclamation Act, there is nothing in Denver's request which can commend itself to this committee. The fact that

Denver attempts to graft her request upon one which does entirely conform to reclamation principles and practice; does not, as we view it, lend any weight to it or change its character.

In the second place, Denver's request amounts to a demand that this committee approve the lending of Federal aid to a plan for the diversion of water from Middle Park, Colo., to an extent which will seriously endanger the vested rights and future plans of one area of the State in which this committee of Congress, as we apprehend it, is as much interested as in the city and county of Denver. This under the guise of presenting a plan which Denver says only comprehends the diversion of surplus water from the Colorado River system. We want to analyze Denver's contention that she will divert only surplus Colorado River water.

Recently the engineering firm of Leeds, Hill & Jewett, employed by the Colorado Water Conservation Board, submitted to that board a report on depletion of surface water supplies of Colorado west of the Continental Divide, which is referred to here as the Hill report. Therein are contained estimates of the amount of water developed in the Colorado River system, and the demands thereon (existing transmountain diversions, and consumptive use in the Colorado Basin itself). The Hill report arrives at certain figures which supposedly show the estimated amount of "surplus water" in the Colorado River system. The report then proceeds to speculate upon the amount of water which will be consumptively used on the western slope in the future, for irrigation, industrial and other purposes, in an effort to determine how much water is actually surplus. Whatever that surplus may be (and we believe that, when future requirements in western Colorado are considered, there will be no surplus), it does not exist in Middle Park, from which area alone Denver can and proposes to divert water for her use. We therefore feel it to be our duty to this committee to present an analysis of the amount of water developed and the present and future demands thereon in the Middle Park area.

So that the physical facts and conditions may be visualized more clearly by the committee, we have had prepared a map of Middle Park showing graphically the portions thereof from which water is now exported by transmountain diversions, and from which water is planned to be exported in the future, including water diverted by means of Denver's proposed Blue River plan.

Summit County adjoins Grand County on the south. United States Geological Survey quadrangle sheets are used for Summit County. Since a large portion of Grand County has not been mapped by the United States Geological Survey, we used a plain map for that county. The dividing line between the two counties is shown as a broken line.

The heavy black line shows the crest of the Continental Divide on the north, east and south, and the crest of the Gore Range on the west. You will note that high mountains completely encircle the park, the only break being at Gore Cañon.

The areas in these counties drained by existing and proposed transmountain diversions are shown, the present diversions being in solid colors and the proposed areas in crosshatched sections. These colors are used: Denver, green, United States, orange, Colorado Springs, lavender, Grand River ditch, brown, Loveland, rust. Major diversion tunnels are shown, although there are eight minor projects, now operating, which are not shown. The orange crosshatched area shows that portion of Grand County from which water will be taken through the Alva B. Adams tunnel by means of a pumping plant now proposed to be installed by the Bureau of Reclamation on the Colorado River at the westerly edge of this area. The areas drained and proposed to be drained by these projects all lie above an elevation of 8,500 feet, which is the area of greatest snow accumulation.

With these conditions in mind, let us explore the water resources of this area. Let me preface what I now say by the statement that our little district is not sufficiently financed to employ or maintain a corps of engineers or hydrologists to make these estimates for us. We have done the best we can within our limited ability, but we think that the figures which we shall present fairly accurately reflect our situation, and pretty clearly present to the committee the very real basis for our great fear that the proposed Denver diversions will infringe upon vested rights, and completely close the door to any possible future development in our counties.

The Colorado River and its tributaries, during the period from 1931 through 1950, developed an average annual flow at Gore Cañon of 988,970 acre-feet of water. It is this amount, not the 6,200,000 acre-feet which forms the basis of

the Hill report, that is of importance to this committee in considering Denver's demands. Depletions from that amount of water fall into two classes, which are:

1. Transmountain diversions.
2. Inbasin consumptive use in agricultural and for municipal, domestic, and industrial purposes.

The records in the office of the State engineer of Colorado disclose that in the year 1953, the following amounts were exported from Middle Park by means of the major transmountain diversion projects then operating:

	Acre-feet
Colorado-Big Thompson project.....	194, 155
City of Denver through Moffat tunnel.....	34, 769
City of Denver through Jones Pass tunnel.....	7, 527
City of Colorado Springs through Hoosier tunnel.....	4, 858
Total.....	241, 309

It should be noted that there are additional minor diversions not shown above. For the sake of brevity, we do not include them.

The Hill report on page 20 states that the average consumptive use of water per acre of irrigated land in western Colorado is 1,265 acre-feet per acre. We accept that figure as correct.

Senate Document 80, at page 10, tabulates the irrigated lands in western Colorado. According to this tabulation, and at the time document 80 was prepared, there were 39,600 irrigated acres within the limits of the Middle Park Conservancy District. In addition, there are 11 towns and villages, and a considerable rural population, using water for domestic purposes. There is little industrial use of water in the district, this being limited largely to mining operations. However, based upon the Hill formula and upon our own information, we estimate the inbasin consumptive use as follows:

	Acre-feet
39,600 irrigated acres at 1,265 acre-feet per acre.....	50, 084
Domestic, municipal and industrial uses, estimated.....	3, 000
Total.....	53, 084

Summarizing the above, following are the present depletions of the flow of the Colorado River and tributaries above Gore Cañon:

	Acre-feet
1953 transmountain diversions.....	241, 309
Inbasin depletions.....	53, 084
Total present depletions.....	294, 393

There will be additional depletions by presently existing transmountain diversion works when perfected and completed. For example, in the contract between the United States and the Northern Colorado Water Conservancy District providing for the construction of the Colorado Big Thompson project, dated July 5, 1938, the following appears upon page 7:

"The project as now comprehended is designed to deliver the annual average supply of 310,000 acre-feet."

Assuming the accuracy of the above statement, and we must assume it if the irrigators in northeastern Colorado are to get value received for the \$25 million they spent on that project, when the Big Thompson project is in complete operation there will be an additional 115,845 acre-feet exported from Middle Park by means thereof.

Our best information is that Denver will divert, through the Moffat tunnel and from the Fraser River watershed, when all diversion and storage facilities are completed, 80,000 acre-feet of water. Deducting her 1953 diversion, she will take an additional 45,231 acre-feet from the Fraser River alone. Our best information is that Denver also proposes, by means of two additional tunnels and other facilities, to divert through the Jones Pass tunnel and certain proposed tunnels leading ultimately to St. Louis Creek and thence through the Moffat tunnel, an aggregate of 44,000 acre-feet of water from the Williams Fork River. Deducting her 1953 Williams Fork diversion, she would take from that source an additional 36,473 acre-feet.

The Hoosier tunnel diversion project of the city of Colorado Springs, according to testimony given by her engineers and water experts at Breckenridge, in

the Blue River adjudication case, is designed to export from Middle Park 20,000 acre-feet. Deducting her 1953 diversion she will divert an additional 15,142 acre-feet.

In addition to the Moffat tunnel and Williams Fork-St. Louis Creek diversions, Denver now proposes to take 177,000 acre-feet from the Blue River.

Senate Document No. 80, page 10, tabulates the arable land in Grand and Summit Counties, that is, lands which are capable of irrigation (S. Doc. 80, 75th Cong., p. 9) and arrives at the conclusion that there are 34,320 acres of such land in those two counties. A later survey recently conducted by the Bureau of Reclamation, region 4, materially increases this acreage; but not having these figures we use those contained in Senate Document 80. The irrigation of this land, upon the basis of the Hill formula, would require the consumptive use of 43,415 acre-feet of water. Allotting 2,000 acre-feet to the area for municipal, domestic and industrial uses attendant upon population increase, etc., it would then require the consumptive use of 45,415 acre-feet of water for future use within those two counties. From the above we arrive at the following tabulation of present and future depletions by means of transmountain diversions and inbasin consumptive use in Middle Park:

	<i>Acre-feet</i>
1953 diversions.....	241,309
Present inbasin consumptive use.....	53,084
Future diversions by means of existing works and projects when completed.....	212,641
Proposed Denver Blue River diversion.....	177,000
Future inbasin consumptive use.....	45,415
Total.....	729,499

Here the Green Mountain Reservoir, and also Denver's Williams Fork Reservoir must be considered. The Green Mountain Reservoir provides replacement for the water exported to the Eastern slope by the Colorado Big Thompson project and the Williams Fork Reservoir replaces water exported by Denver through Jones Pass tunnel. But neither structure replaces nor will it replace water for use in Middle Park, and therefore, from our standpoint, must be considered burdens upon the Colorado River in Grand and Summit Counties. They perform no function, so far as Middle Park is concerned; yet they deplete the available supply of Middle Park water by the amount of total storage. Their capacities are, respectively, 152,000, and 6,600 acre-feet.

We can, therefore, complete our computation of present and future depletions of the flow of the Colorado River above Gore Canon, so far as our district is concerned, as follows:

	<i>Acre-feet</i>
1953 transmountain diversions.....	241,309
Present inbasin consumptive use.....	53,084
Future diversion by means of existing works and projects when completed.....	212,691
Proposed Denver Blue River diversion.....	177,000
Future inbasin consumptive use.....	45,415
Depletion by storage in Green Mountain Reservoir.....	152,000
Depletion by storage in Williams Fork Reservoir.....	6,600
Total.....	888,006

We must here repeat the fact that the total amount of water available, measured at Gore Canon, is 988,970 acre-feet. Assuming that each stream in the Colorado River system must bear its proportionate share of the Lee Ferry delivery, and obligations to other upper basin States, we arrive at these results:

	<i>Acre-feet</i>
Upper basin States' share (based upon Hill's conclusion that only 6,200,000 acre-feet of the entire flow will be available to upper basin States (p. 9 Hill report).....	447,563
Colorado's share, 51.75 percent of the above amount.....	231,614

Thus, these facts stand out:

1. 1953 transmountain diversions exceeded Colorado's share of the water at Gore Canon by 9,696 acre-feet.

2. 1953 transmountain diversions plus future diversions by means of existing works exceed Colorado's share of the water at Gore Canon by 222,336 acre-feet and the share of all upper basin States by 6,437 acre-feet.

3. 1953 transmountain diversions plus future diversions by existing works plus Denver's Blue River plan would exceed Colorado's share of the water at Gore Canon by 399,336 acre-feet, and would exceed the entire share of all upper basin States in the water at Gore Canon by 183,437 acre-feet; and, if we add present and future inbasin consumptive use, this latter excess would be 281,936 acre-feet.

These are all infringements upon water supplies which Colorado does not own. The deficit must be made up, if at all, out of water developed in other streams of the Colorado River system above Lee Ferry. On page 35 of the Hill report it is said:

"If there should be no limit upon subsidies to irrigation, then the entire surplus available to Colorado could be consumed by irrigation of new lands."

If Hill's speculation should come into reality, then this deficit could never be made up. And who may now say that such will not come to pass? We venture the assertion that, should future subsidies to irrigation equal those upon which the Fryingpan-Arkansas plan is based, then all of the so-called surplus in the Colorado River system would be consumed by irrigation of new lands. Then there would be no water to make up the deficit Denver wants to create; and we in Middle Park will find our vested rights seriously endangered and the door closed to any possibility of future development.

The clear and inescapable conclusion from the above facts and figures is that there is not water available to meet Denver's demands in Middle Park. If there be surplus water in the Colorado River system, and if Denver is entitled under the law to divert it to her use, she must go downstream and install a pipeline with its intake below the junction of the Colorado and Gunnison Rivers and thence pump water back to the eastern slope.

Our next reason for opposing the inclusion of Denver's Blue River diversion in the Upper Colorado storage project is that Denver does not need the amount of water she seeks to divert. She now has a firm water supply for municipal use of 183,500 acre-feet. With the completion of certain diversion and storage works now in process of construction, this entire supply will shortly be available to her. Based upon Denver's formula for per capita use, this amount of water will supply a city with a population of 777,500 people, which is approximately 50 percent more people than she now claims to have within the limits of the city.

She demands that she be permitted to take from the Blue River 177,000 acre-feet. (We here make the parenthetical observation that, in our opinion, the above amount is less than the amount she will take if her diversion plan is financed by the Federal Government.) Applying Denver's formula for per capita use, the above amount of water will supply a city with a population of 750,000 people. Thus, Denver, with sufficient water for a city with a population 50 percent greater than she now has, demands the right to divert the Blue River, enough water to supply a city three times her present size. It has taken 100 years for Denver to reach her present population; and we do not believe it to be a sound investment of the public funds of the United States of America to subsidize a project for her speculative population growth which is thus computed, not in years or decades, but in centuries.

The press, radio and public officials of Denver have told us that, unless Colorado presents a united front on the upper Colorado storage project, including Denver's Blue River diversion, we will be denied any development of the upper Colorado River. In other words Denver says: "Is you don't give the hitchhiker a ride, said hitchhiker will see to it that you don't reach your destination." We do not believe that. We cannot conceive that Denver has sufficient power or influence that she can control the deliberations of our Nation's legislative body. We in Middle Park cannot willingly assent or yield to the surrender of our water rights in order that some storage and other development works, not including ours, may be constructed, under that threat of reprisal. There is no controversy between eastern and western Colorado which cannot be resolved upon an amicable basis, except that represented by Denver's demand. Were Denver's Blue River diversion scheme not before this committee as a part of the upper Colorado River storage project, Colorado would be here presenting a united front.

Mr. HARRISON. I have a letter from the Yampa Valley Fish and Game Club of Hayden, Colo., and a resolution from the Montrose County Agricultural Planning Committee, Montrose, Colo., which will be made a part of the record.

The committee will stand in recess until 2 o'clock.

(The documents referred to follow:)

(Whereupon, at 12:05 a. m., the subcommittee recessed until 2 p. m., of the same day.)

YAMPA VALLEY FISH AND GAME CLUB.

Hayden, Colo., December 11, 1953.

Whereas the Yampa Valley Fish and Game Club, resolved that no further diversion of water from the western slope of Colorado be permitted until a complete survey then in progress be made; and

Whereas a report of such survey has been issued but has not been submitted to the members of this club: Now, therefore, be it

Resolved, That we reiterate our position that no further diversions be permitted until these surveys be disclosed and studied by the western slope-water users, and that the interests of the western slope be fully recognized and protected; further, be it

Resolved, After a survey shows how much water we have in our streams, it must be determined how much of this water we should retain for slope-wide growth and how much western water can be used by other States or other parts of our State.

The Yampa River and its tributaries irrigated most of the land in their valleys during the 1880's and 1890's up to 1930. Now some land in the Yampa Valley and most of Williams Forks is unirrigated pastureland, not using water for irrigation at present.

We must retain water for this use, someday it will be needed.

We must retain the right to use water in the future to develop our resources.

RESOLUTION

Whereas it is acknowledged by all local, State, and National water agencies that Colorado is using less than one-half of its allocated share of Colorado River water, although it produces approximately 74 percent of all Colorado River water; and

Whereas it is necessary that a number of dams be constructed in Colorado for the storage of water if Colorado is to utilize its allocated share of Colorado River water; and

Whereas such storage dams should be constructed at high elevations so as to reduce the amount of evaporation depletions chargeable to Colorado, and so that said water can be utilized to the fullest possible extent for industrial, agricultural, and domestic purposes; and

Whereas the Curecanti Dam on the Gunnison River will provide the desirable high storage with a low evaporation loss ratio; and

Whereas recent statements made by officials of the State of Colorado and of the United States Government have cast some doubt on the construction of the Curecanti Dam as one of the initial units of the Colorado River Storage Project; and

Whereas the Curecanti Dam is the only project slated for construction in Colorado as part of the Colorado River storage project, which is for the benefit of Colorado, and has the unanimous approval and support of the people in the area or basin in which said dam will be constructed; and

Whereas the Curecanti Dam is economically feasible even under the new criteria enunciated by the Department of the Interior; and

Whereas the Curecanti Dam has not only been approved, supported, recommended, and urged for construction as an initial unit of the Colorado River storage project by the people in the area basin in which said dam will be constructed, but also by the following official water associations representing practically every area of the State of Colorado, to wit: (1) The water advisory committees of the counties of Montrose, Delta, and Gunnison; (2) the Colorado River Water Conservation District; (3) the Southwestern Colorado Water Conservation District; (4) the Water Development Association of Southeastern Colorado; (5) the Colorado Water Conservation Board; and

Whereas the Curecanti Dam has also been approved by the Upper Colorado River Commission and is designated for construction as an initial unit of the Colorado River storage project in Senate bill 1555, endorsed by said Upper Colorado River Commission and introduced in Congress by Senator Eugene D. Millikin on April 2, 1953, which bill is now pending before the Committee on Interior and Insular Affairs; and

Whereas the participating project provided for in the Colorado storage project and enumerated in Senate bill 1555 have all been endorsed and approved by the agencies and associations hereto mentioned; and

Whereas additional storage other than the Curecanti is also needed for Colorado to utilize its full share of its allocated portion of Colorado River water: Therefore be it hereby

Resolved, That this association hereby calls upon the Governor of this State, the Colorado Water Conservation Board and the congressional representatives of the State of Colorado,

1. To reaffirm and stand fast on Colorado's heretofore enunciated position and demand that the Curecanti Dam and the participating projects be constructed in the manner and order presently provided for in Senate bill 1555.

2. That Governor, the Colorado Water Conservation Board and the congressional representatives of this State without delay coordinate their efforts to see that additional storage dams are constructed in Colorado under the Colorado River storage project at the earliest possible time, so that the water stored can be utilized in Colorado for the benefit of Colorado, and that where local objections are raised to any proposed dam, that they coordinate their efforts to see that the objections are fairly and equitably resolved at the earliest possible time; and it is further

Resolved, That a copy of this resolution be sent to Governor Dan Thornton, the Colorado Water Conservation Board, the Upper Colorado River Commission, the honorable Eugene D. Millikin and the honorable Edwin C. Johnson, United States Senators for the State of Colorado, the honorable Wayne N. Aspinall, the honorable Edgar Chenoweth, the honorable Byron G. Rogers and the honorable William S. Hill, United States Representatives for the State of Colorado, Secretary of the Interior Douglas McKay, and E. O. Larson, regional director of region No. 4 of the Bureau of Reclamation.

AFTERNOON SESSION

Chairman HARRISON. The committee will come to order. We will have Mr. Delaney, and Mr. Barnard resume the stand if they will both come forward, please.

Mr. Aspinall, do you have any questions you would like to ask of either one of these gentlemen?

Mr. ASPINALL. Yes, Mr. Chairman.

Chairman HARRISON. You may proceed.

STATEMENTS OF FRANK DELANEY, REPRESENTING COLORADO RIVER WATER CONSERVATION DISTRICT, GLENWOOD SPRINGS, COLO.; AND JOHN B. BARNARD, ATTORNEY AT LAW, GRANBY, COLO.—Resumed

Mr. ASPINALL. Mr. Delaney, in that part of your well documented statement which you were unable to read this morning, which appears on page 6, as I recall, you make a suggestion that the Congress should be very careful in any determination in favor of Denver because of jeopardizing the interests of the western slope as financed by the reclamation as well as interests in northeastern Colorado, the Colorado-Big Thompson, because of investments already made. Is that correct?

Mr. DELANEY. That is right. The two are definitely related.

Mr. ASPINALL. Will you explain that for the record?

Mr. DELANEY. The Colorado-Big Thompson project consists of a number of reservoirs, the Granby is one and the Alva B. Adams tunnel leading from the Granby Reservoir and Grand Lake, to the eastern slope, and something around 265,000 acre-feet of water goes to eastern or northeastern Colorado under that part. Then, when that was authorized it was recognized that the exportation of that amount of water would interfere with vested rights downstream unless replacement storage was provided. That replacement storage was provided in the Green Mountain Reservoir which is on the Blue River downstream.

Then there was further provision for additional waters to be stored in the Green Mountain Reservoir for irrigation of lands downstream and along the main stream of the Colorado which had not been irrigated, and also a part of that was earmarked for possible development of the oil shale industry and a certain stream flow was provided for at Shoshone, which is just above Glenwood Springs, in order that there would be no interference with vested rights at that point.

Mr. ASPINALL. And unless we are very careful in considering these transmountain diversions, those investments already made will be jeopardized?

Mr. DELANEY. That is what I said and that is my opinion.

Mr. ASPINALL. Also, you refer in that part of your statement to some testimony given by Mr. J. R. Riter, relative to Denver's needs. Would you explain that a little bit further, Mr. Delaney?

Mr. DELANEY. Yes, sir. One phase of this has been in the State courts. Mr. J. R. Riter testified as a witness after having made an exhaustive survey of the water rights, evidenced by absolute and conditional decrees which Denver has and under which the city is entitled to use water. He also made a study of the per capita use of water by Denver over past years, and after making this survey he concluded that Denver now has, exclusive of this Blue River claim, a firm supply of 183,500 acre-feet. Part of that, and a large part of it, is from western slope streams which are tributaries to the Colorado River, the principal streams being the Frazier and the Williams.

Denver has not completed the works to take all of that water, although she has conditional decrees, and an absolute supply as to the extent of those streams for the future, that is, a sure supply, because she doesn't need the water.

Now, Mr. Riter came out with this figure that I have in the statement, the per capita use in Denver, point 236 acre-feet. It appears, therefore, that Denver has a supply at this time, a firm supply, for a population of 770,000 people, or a little better. I put it at 750,000 in the statement.

Mr. ASPINALL. Mr. Delaney, as a long-time resident of Colorado and a student for many years of water conditions in Colorado, you are well aware of the fact that this committee of Congress does not wish to decide any differences within State boundaries. Is that right?

Mr. DELANEY. I realize that.

Mr. ASPINALL. Mr. Barnard, this morning you referred to a map, and that part of your statement which we did not get to refers further to the map. Is that the map which you have there by you at this time?

Mr. BARNARD. Yes, sir.

Mr. ASPINALL. Will you explain to this committee as briefly as you can—and I hope that I might have 3 or 4 minutes more, Mr. Chairman, if possible—just what you had in mind in your statement?

Mr. BARNARD. Yes, Mr. Aspinall.

This is a map of the Middle Park. The heavy black line here to the east and to the south and north is the Continental Divide. This heavy black line to the west is the Gore Range. In other words, the Continental Divide and the Gore Range completely segregate the Middle Park from the rest of Colorado and the only opening in that entire mountain chain is at Gore Canyon here in the west. The Colorado River main stem comes in from the northeast, which is now affected by the Colorado-Big Thompson project. The Frazier River comes in there from the northeast and joins at Hot Sulphur Springs. The Williams Fork comes in also from the southeast, joining the Colorado at Parshall. Then the Blue River comes in heading at Hoosier Pass, through Breckenridge and Dillon, and comes to the Colorado River at Kremmling. Here is the Troublesome Creek and the Big Muddy Creek, coming in from Colorado in the north and joining at Kremmling and east of Kremmling.

The shaded areas, the solid colors are the areas now drained by transmountain diversion projects. And I use that word "drained" advisedly.

Mr. MILLER. Where is the transcontinental divide there?

Mr. BARNARD. Along here on this map [indicating].

Mr. ASPINALL. For the record, that is the dark line on the east of your map?

Mr. BARNARD. This is the Continental Divide on the south, Mr. Aspinall. The Continental Divide turns and runs west and then turns north again and goes up into Wyoming. That is the Continental Divide on three sides, sir.

As I say, the orange solid color is the part of the Middle Park now drained by the Colorado-Big Thompson project. This crosshatched orange area is the area proposed, as we understand it, to be drained by means of that same project, by a pumping plant which is planned to be installed—that is we understand that is the plan—at this place here on the map, pumping water into Willow Creek Reservoir, then into Granby and thence into Grand Lake and into the Big Thompson Canyon.

Mr. MILLER. How long a lift will that be?

Mr. ROGERS of Colorado. 190 feet.

Mr. BARNARD. I think it will be greater than that. The surface elevation of Granby Reservoir is 8,820 feet and the elevation at this point is somewhere in the neighborhood of 7,900 feet. Then the solid green color is Denver's diversion from the Frazier River.

The crosshatched area in green in this part of the map, which refers to the upper Williams part, is the additional area Denver proposes to drain by means of their existing works. The green crosshatched area in the Summit County, this is Summit-Grand County line coming through here, that is the area that is proposed to be drained by Denver by means of the plan now before this committee.

I want to add this, a couple of observations, Mr. Aspinall, if I may.

Mr. ASPINALL. Go right ahead.

Mr. BARNARD. I want to say that this line here in Summit County and these lines here and up here on the map, are roughly at an eleva-

tion above 8,500 feet. Now, the heavy snowfall in Middle Park, as in most mountain areas, is found above 5,000 feet. Further, this is all the north and northwest slopes of the mountains through here where that snowfall remains. It doesn't melt early in the year. Your heavy runoff comes from that area. The runoff in here is much lighter. I want to add also that the Troublesome Creek and the Big Muddy are the only two streams in the Middle Park area which are not subject to transmountain diversion except the waters from them would go into the North Platte River, and I hope, Mr. Chairman, Wyoming doesn't get any ideas from that statement.

Chairman HARRISON. The time of the gentleman from Colorado has expired.

Mr. ASPINALL. Would you yield, Mr. Chairman, for a few minutes?

Mr. MILLER. If there is no objection, I yield 2 additional minutes to the gentleman from Colorado.

Mr. ASPINALL. On page 8 of your statement, you make a statement that there are 888,096 acre-feet of water that has already been charged as depletions against the river basin, as I understand it. Is that correct?

Mr. BARNARD. That is right.

Mr. ASPINALL. Will you explain to the committee just what effect the waters of the Troublesome River and nearby tributaries and their existing priorities have upon that figure?

Mr. BARNARD. Yes, Mr. Congressman.

As I said a moment ago, the Troublesome and Big Muddy, which come in the white areas up there, they cannot be diverted eastward through the Continental Divide. They irrigate a comparatively small portion of the lands in Grand County. Those two streams together, if my memory serves me right, flow approximately 100,000 acre-feet, on the average, so that you would have that much water which would not be subject to transmountain diversion.

Mr. ASPINALL. And when does the melting of snows on those two streams take place?

Mr. BARNARD. Well, that is a little earlier than it is on the rest of the watershed.

Mr. ASPINALL. Would there be sufficient water from those two streams and other streams similarly located, as far as altitude is concerned, to satisfy appropriations downstream?

Mr. BARNARD. No, there would not.

Mr. ASPINALL. I think that is all.

Chairman HARRISON. Mr. Miller?

Mr. MILLER. Just 1 or 2 questions for Mr. Barnard.

As I understand it, the city of Denver now takes the water from the Green area that you pointed out on the map?

Mr. BARNARD. That is correct. That is, the solid green area.

Mr. MILLER. And they propose to take additional water from the light green area on the map?

Mr. BARNARD. That is correct, from the cross-hatched area.

Mr. MILLER. Has that been entered into, the agreement between the people of your area and the city of Denver?

Mr. BARNARD. No, sir; it has not, but the city of Denver has sufficient conditional decrees to permit that.

Mr. MILLER. Has what?

Mr. BARNARD. Sufficient conditional decrees out of the Frazier River which will become vested so that they can take more water than they are now taking. That is the reason why my statement says they plan to take 80,000 acre-feet.

Mr. MILLER. Is that the decree before the Supreme Court?

Mr. BARNARD. No. That decree was entered in 1937.

Mr. MILLER. Is there not some litigation before the courts now with relation to division of water?

Mr. BARNARD. The matter before the Supreme Court is the decree to Denver for that project which is marked "Denver Blue River proposed," the relative decrees of that right, the Green Mountain Reservoir and the in-basin rights.

Mr. MILLER. It does really affect that area of the map, then, in light green?

Mr. BARNARD. No. That is why I include that in future diversions from presently existing works.

Mr. MILLER. I think that is all.

Chairman HARRISON. Mr. Saylor?

Mr. SAYLOR. Mr. Delaney, on page 4 of your paper, you state that the costs thereof with incidental features was \$9,132,000. Was that for the Green Mountain Reservoir and powerplants?

Mr. DELANEY. Yes, sir.

Mr. SAYLOR. Is that the same Green Mountain Reservoir and powerplant that you have referred to that is now \$160 million?

Mr. DELANEY. No. The Green Mountain Reservoir and powerplants is just the western slope features of the overall Colorado-Big Thompson project. The Colorado-Big Thompson project as shown there on Mr. Barnard's map is that kind of buff color at the top, while the Green Mountain Reservoir is away down below, many miles below, and was designed, as I explained, as a protective measure to protect among other things vested water rights further downstream. In other words, if the Big Thompson were taking water during certain seasons of the year, that would deprive older rights of the use of that water downstream, so it was necessary to put in some replacement for that purpose. That is in the Green Mountain Reservoir.

Mr. SAYLOR. That is why you have the Green Mountain storage project?

Mr. DELANEY. Yes, sir.

Mr. SAYLOR. And by its release that will enable those who have prior rights downstream throughout the year to get their water in accordance with their water rights?

Mr. DELANEY. And still permit water to go to the eastern slope at that same time that water is being released from Green Mountain Reservoir which otherwise would have had to go downstream.

Mr. SAYLOR. All right, sir.

Now, in your statement, fundamentally I agree with at least your original statements that reclamation as originally worked out was for the placing of water upon land, and that these other features which have come long since are supposed to be incidental to placing water upon the lands. Is that your understanding?

Mr. DELANEY. Yes, sir.

Mr. SAYLOR. Under that basis of being an incidental use, the municipal-water feature has come in as one of those incidental uses; is that correct?

Mr. DELANEY. That is correct.

Mr. SAYLOR. And power has come in as an incidental use?

Mr. DELANEY. That is correct.

Mr. SAYLOR. Now, I am interested in finding out your reasoning as to why, since putting of water upon land is the fundamental purpose of reclamation, how you can come along and say you support this upper Colorado storage project in which the two main features which have been testified to so greatly here over the past week, namely Glen Canyon and Echo Park, have no irrigation features and are solely for the production of power.

Mr. BARNARD. Is that all of your question?

Mr. SAYLOR. Yes, sir.

Mr. BARNARD. I arrive at it this way: If there were always enough water at Lee's Ferry to supply the lower basin, and leave enough water in the upper basin to supply us, we wouldn't have the problem that we have. Unfortunately, that is not true. We have periods of the year when, if we deliver 7,500,000 acre-feet of water at Lee's Ferry, we may have 1 or 2 or 3 million acre-feet to use in the upper basin.

With these reservoirs, whatever immediate purpose they are devoted to, in the periods of high supply, like for example when the river flowed 24 million acre-feet at Lee's Ferry, that surplus water not needed by anyone can be impounded in these reservoirs. Then in a period when we have 5 million-plus acre-feet, as has occurred, the amount necessary to fill the Lee's Ferry commitment can be released from those reservoirs and we can still use our water up in this area. The reason I say that, Mr. Saylor, and why it is vital to us is this, continuing a little further. We, as you know, are under the appropriation doctrine of water use. Our priorities are numbered from 1 upward. 1 being the oldest, 500 being the latest. In periods of short supply, in inverse order of their priority number, when water is needed downstream those priorities are closed down, starting with 500 and going down the line. In our area, we are a young area. Our decrees are generally speaking junior to the downstream decrees. Do you follow me?

Mr. SAYLOR. It could be possible, however, that the development could have occurred upstream and that there would be upstream rights which would be superior to yours?

Mr. BARNARD. I did not get that.

Mr. SAYLOR. If a man had gone into the upper reaches of the Colorado River and acquired a water right, and you and your town were below him, his water right, since it was first in time and appropriation, would be superior to any right which you had because you were lower down the river?

Mr. BARNARD. That is right. The location on the stream doesn't mean anything.

Mr. SAYLOR. That is right, so that the mere fact that the development took place downstream and their rights are superior to yours is because they were first in time, and not because they were lower down the river?

Mr. BARNARD. That is right exactly. That is because they were first in time, and generally speaking those downstream decrees are first in time, ahead of most of our rights. Some of them are old, but most of them are later.

Mr. ASPINALL. Will my colleague yield there for just a minute?

Mr. SAYLOR. Yes.

Mr. ASPINALL. What would happen, Mr. Barnard, if the upper basin were unable to deliver 7,500,000 acre-feet at Lee's Ferry to a decree prior to the Colorado compact which had been given to a user in the upper basin?

Mr. BARNARD. What would happen to a user in the upper basin?

Mr. ASPINALL. Yes.

Mr. BARNARD. Well, the fellow on Nine Mile Creek, who had a late decree, would be required to close his headgate down.

Mr. SAYLOR. Even though his decree were prior in time to the date of the Colorado compact?

Mr. BARNARD. That is my conclusion. Now, I am not an expert in construing that compact, but that is my conclusion, Mr. Aspinall.

Mr. SAYLOR. Mr. Barnard, you still have not answered how you have justified your position of supporting this upper Colorado River storage project in view of the fact that the primary purpose of reclamation was to put water on land and the two main features in this bill don't put a drop of water on land and all they do is produce power.

Mr. BARNARD. I attempted to point out, Mr. Saylor, and I will explain further, that they do put water on lands. They permit us to run our ditches up in the country when those ditches would be closed down in years of short supply to fill the obligation of upper basin States at Lee's Ferry if it were not for this storage. So they do put water on land.

Mr. SAYLOR. Then it is the storage feature of these dams down the river by which you justify your support of the upper basin storage?

Mr. BARNARD. That is right.

Mr. SAYLOR. Do you feel, as a resident of the western slope of Colorado, that the proposal of Denver to divert an additional 177,000 acre-feet of water constitutes a threat not only to you people who live in the upper Colorado River Basin, but to the upper Colorado River storage project and its participating projects?

Mr. BARNARD. I do.

Mr. SAYLOR. Is that fear based upon the fact that it will infringe upon vested rights which are already established by people who live in the upper Colorado River Basin, and which will prevent the future full development of the upper Colorado River?

Mr. BARNARD. Yes, decidedly so.

Chairman HARRISON. The time of the gentleman from Pennsylvania is expired.

Mr. SAYLOR. Mr. Chairman, permit me to observe that this is another example of the unfairness of this rule which we adopted some time ago. I realize that time is important, but when we have a—

Mr. MILLER. If the gentleman please, I will yield him 2 minutes.

Mr. ENGLE. I will be glad to yield the gentleman some time, if I have it to yield.

Chairman HARRISON. The Chair might make this observation: If Mr. Saylor had any complaint to make, he should have made it in the beginning. This rule has been in order for several days.

Mr. SAYLOR. I have made it. We started this hearing out, Mr. Chairman, with the distinct understanding that it was to be for 6 days and no more. The Bureau would present its case in 2 days, the pro-

ponents would have 2 days and the opponents 2 days. We are now in the seventh day of the hearing.

Chairman HARRISON. I will also submit that the chairman has taken very little of the time.

Mr. ENGLE. If the gentleman from Pennsylvania has an important subject to go into further, I will yield him all the time I have.

Mr. SAYLOR. I will decline all of the extra time, sir. I appreciate that. But not wishing to prolong this unduly, if anybody thinks that the questions I have asked are applied only to delay—

Chairman HARRISON. There has been no suggestion that anything was prolonged. The Chair is merely enforcing the rule and the Chair will continue to enforce the rule until such time as the rule is changed.

Mr. ENGLE. Let me say, Mr. Chairman, that the gentleman is pursuing a very intelligent course of inquiry and I want to encourage him.

Chairman HARRISON. The gentleman may proceed. He has been yielded Mr. Engle's time.

Mr. SAYLOR. Now, Mr. Barnard, the analysis which you have made of the depletion required by the transmountain diversion to Denver will not only take Colorado's share as allocated in the compact of 1948, but all of the waters that flow in the Glen River; is that correct?

Mr. BARNARD. In the Colorado River.

Mr. SAYLOR. In the Colorado River.

Mr. BARNARD. Practically all of them, yes. Let me say there that I overlooked this morning—I didn't make it a part of my statement—that to the total that I have there, Mr. Saylor, must be added the figure given us by Mr. Saunders the other day for the proposed Blue-South Platte project of 270,000 acre-feet which is coming up, if there is any water there to get.

Mr. SAYLOR. Have you figured out what that figure, in addition to the original depletions which you estimated, will come to?

Mr. BARNARD. About 1,150,000 acre-feet.

Mr. SAYLOR. What is Colorado's annual share of the waters of the upper Colorado River?

Mr. BARNARD. I cannot answer that, except as to the Middle Park water, the amount developed in Middle Park. I don't have the figure on the other.

Mr. SAYLOR. What is the amount in the Middle Park to which you are entitled?

Mr. BARNARD. To which Colorado is entitled?

Mr. SAYLOR. Yes.

Mr. BARNARD. On Mr. Hill's statement that the upper basin States are entitled to 6,200,000 acre-feet, Colorado's share would be 231,614.

Mr. SAYLOR. And the withdrawals as you have indicated are over 1 million acre-feet?

Mr. BARNARD. 1,150,000. Now, that includes my computation, Mr. Saylor, of in-basin consumptive use, you understand?

Mr. SAYLOR. That is right. Now, exclusive of the amount which you have already indicated is being used in the basin, and available for future development, could you tell us how much water is proposed to be diverted out of that basin?

Mr. BARNARD. Well, it would be roughly 100,000 acre-feet less than the total figure.

Mr. SAYLOR. That would be roughly 1,150,000 acre-feet?

Mr. BARNARD. That is correct.

Mr. SAYLOR. That not only exceeds Colorado's share in the water, it exceeds the amount of water that actually flows in the stream?

Mr. BARNARD. That is correct.

Mr. SAYLOR. Mr. Chairman, I call this to the committee's attention for the simple reason that it has been my belief, and I think supported by some engineers who have been out there, that the people out there have not only overworked this stream, but they have made plans which are so fantastic that it is absolutely impossible for the Colorado to fulfill the requirements that have been made.

I will yield back to the gentleman from California the balance of his time. Thank you very much, Mr. Barnard, for being here, and also Mr. Delaney.

Chairman HARRISON. Mr. Regan?

Mr. REGAN. Mr. Barnard, I would like to ask you how much water Denver gets from this green shaded area now.

Mr. BARNARD. The figure is in there. The 1953 diversion from the Frazier River, which is at the right there, was 34,769 acre-feet, and through the Jones Pass area, you will see that marked below, 7,527.

Mr. REGAN. Are those the principal sources of water supply for Denver?

Mr. BARNARD. No, I think not, not at present.

Mr. REGAN. What is the total availability for Denver at this time, do you know, from the different sources?

Mr. BARNARD. The figure that Mr. Delaney gave you that Mr. Riter computed of 183,500.

Mr. REGAN. That is now available to them?

Mr. BARNARD. Yes, sir. Let me say this, if you will pardon me. By available I mean it is there when and if they will complete their storage and distribution system so as to get it.

Mr. REGAN. When they have completed that. Then in addition to that they want to add 177,000 from the Blue River?

Mr. BARNARD. The Blue River, yes, sir.

Mr. REGAN. I think that is all I want.

Excuse me. Let me follow that a little bit. This upper Colorado River Basin project, overall you are for it with one exception, is that right?

Mr. BARNARD. That is right.

Mr. REGAN. That has not been worked out but it is in the courts now?

Mr. BARNARD. Well, it is in two courts, Mr. Regan, and it has not been decided yet what rights Denver has.

Mr. REGAN. You think that should be eliminated from the overall project at this time?

Mr. BARNARD. Yes, we do. That is what we ask.

Mr. REGAN. Thank you.

Chairman HARRISON. Mrs. Pfost, have you any questions?

Mrs. PFOST. No, but if Mr. Rogers of Colorado would like my time. I will yield my 10 minutes to him.

Mr. ROGERS of Colorado. Addressing my questions to both of you gentlemen, you are aware of the appropriation made by the Colorado legislature of over \$100,000 to conduct a survey on the water beyond the Continental Divide in the State of Colorado?

Mr. DELANEY. I am.

Mr. ROGERS of Colorado. Being aware of it, you know that they did spend a large sum of money and hired an independent engineer to make that survey?

Mr. DELANEY. Yes, sir.

Mr. ROGERS of Colorado. And having made that survey, he came up with a report which shows that Denver could be diverted 177,000 acre-feet and there would still be over 300,000 acre-feet available that Colorado could not consumptively use. Does not that report show that?

Mr. DELANEY. No, sir; not the way I read that report.

Mr. ROGERS of Colorado. First of all, then, both of you disagree with the Hill report?

Mr. DELANEY. No, I disagree with your interpretation of it.

Mr. ROGERS of Colorado. You have studied the Hill report, have you not?

Mr. DELANEY. I have read it and tried to study it.

Mr. ROGERS of Colorado. By that you and I know that as a matter of common knowledge in our State, the allocation of 51.75 for consumptive use in the upper Colorado River Basin is the amount that was given to Colorado under the compact of 1948?

Mr. DELANEY. That is my understanding.

Mr. ROGERS of Colorado. And out of that, that constitutes according to the figures of Mr. Sylmon Smith, 3,855,376 acre-feet, does it not?

Mr. DELANEY. Well, I would have to make that computation. Probably you are right. I won't say what his figures were, but I know what Mr. Hill's are.

Mr. ROGERS of Colorado. Well, Mr. Hill came up with a figure for Colorado of 3,208,500 acre-feet, did he not?

Mr. DELANEY. 3,100,000, roughly, I think.

Mr. ROGERS of Colorado. Yes. But from his report, do you say that he did not come up with the figure that there would be at least 300,000 acre-feet left over?

Mr. DELANEY. That is right. Left over?

Mr. ROGERS of Colorado. Yes.

Mr. DELANEY. He said that there would be between 200,000 and 300,000 available for diversion. That is the 9th paragraph of his conclusions on page 60.

Mr. ROGERS of Colorado. And the amount asked for by Denver is within that 250,000, is it not?

Mr. DELANEY. Denver doesn't ask in excess of that, but would you let me explain?

Mr. ROGERS of Colorado. Well, I want to follow through.

Mr. ASPINALL. I want my colleague to permit him to explain.

Mr. ROGERS of Colorado. He can explain at a later time.

Now, as I understand it, your principal objection to the diversion to Denver at this time is based upon a proposition that it would violate, as you set forth, Senate Document No. 80, isn't that right?

Mr. DELANEY. That is one of my principal objections. The other is that I do not think Denver needs the water.

Mr. ROGERS of Colorado. Well, let's devote ourselves first to Senate Document No. 80. What would your position be if an amendment was offered to this legislation that subject to the provision of Senate

Document No. 80 Denver should be entitled to divert 177,000 acre-feet? What would your position then be if that became a part of the bill?

Mr. DELANEY. Well, now, you say if this was offered?

In the first place, I think I know the facts about the amount of water there, and any kind of a provision that you would put in there would be a waiver by implication, at least, of prior rights that the United States has established not for itself but for its beneficiaries, and it would be a direction by the Congress to relinquish vested rights the United States has already established. That is my answer.

Mr. ROGERS of Colorado. Well, assuming that all the vested rights that the United States has established and that you have set forth, not on one page but several pages of your statement with reference to Senate Document No. 80, if this committee authorized an appropriation to carry out Denver's water diversion it would result in this committee recommending a diminution or a cutting down on the authority or the right to collect back something that they already have. That is your chief argument.

Now, if the United States Government and if the western slope was fully protected as it is in Senate Document No. 80, and that was made a condition precedent to the rights of Denver to divert any of this water, would you then support legislation of that type or would you be opposed to it?

Mr. DELANEY. It would be useless, and for another reason I would be against it, if you will let me explain.

Mr. ROGERS of Colorado. The only thing I know is that your chief objection here is based upon that proposition.

Chairman HARRISON. Does the gentleman want to explain his answer? You have a perfect right to explain all of your answers.

Mr. ROGERS of Colorado. I am running out of time; there are a lot of other questions.

Chairman HARRISON. The Chair will rule that when a witness is asked a question, he certainly has a right to answer, and you certainly cannot shut him off. The person that asks that question takes the chance when he asks the question. I will leave it to the gentleman, Mr. Delaney, whether he wants to answer it or not.

Mr. DELANEY. I would like to make the explanation, Mr. Chairman.

Your questions were premised upon the Hill report. The Hill report says that there is certain surplus water flowing over the lines, the State lines, from Colorado. Now, it is not only the main stem of the Colorado that is involved, but it is the Yampa over north, and the Green comes through and goes into Colorado and goes out again, and there is the White and there is the Gunnison and the Dolores, and down farther is the San Juan. He does not say, Mr. Rogers, anywhere in that report where this surplus water is. And as Mr. Barnard has pointed out to you, there is no surplus water on this main stem. If you take any more water from that, including the 177,000 acre-feet, there is no chance of development of this main stem.

Now, if you Denver people could go over on the Gunnison and take some of that, there might be some surplus, but there is none here.

Mr. ROGERS of Colorado. Directing your attention to your statement on page 3, to the beginning, where it says that Senate Docu-

ment No. 80 also provides that 52,000 acre-feet of water stored in the Green Mountain Reservoir be available as replacement in western Colorado and that the remaining 100,000 feet capacity of said reservoir is to be used for power purposes, am I to take from that that the Green Mountain Reservoir has a capacity of 152,000 feet?

Mr. DELANEY. Approximately. I think there is some back storage that cuts it down to 149.

Mr. ROGERS of Colorado. Now directing your attention to page 5 of your long statement to a paragraph where you say that the total discharge of the Blue River below Green Mountain Reservoir for the year ending September 30, 1940, a typical year was 272,500 acre-feet. Do you consider that the 272,500 acre-feet is the total capacity of the Blue River?

Mr. DELANEY. It was in that year at the Green Mountain Reservoir. There are some small streams down below. There are other years when it was greater and probably the average flow would have been a little greater. But that particular year that is what the actual flow was as shown by the State engineer's records.

Mr. ROGERS of Colorado. You are also familiar with the so-called Williams Fork Reservoir or Dam, are you not?

Mr. DELANEY. Of Denver?

Mr. ROGERS of Colorado. Yes.

Mr. DELANEY. Yes, I know where it is.

Mr. ROGERS of Colorado. And part of that is used for what we refer to as compensating reservoir, is it not?

Mr. DELANEY. That is right.

Mr. ROGERS of Colorado. And how much water is there available in that place?

Mr. DELANEY. About 6,600 acre-feet.

Mr. ROGERS of Colorado. Was Denver under obligation to build that, just a compensating reservoir?

Mr. DELANEY. Yes, Denver was, if she intended to take any water from the Frazier or the Blue in low-water time, because all of the low water of the main stem of the Colorado had been appropriated for downstream uses before Denver built those particular works from the Frazier and the Williams.

Mr. ROGERS of Colorado. The next part of your statement has reference to the pending litigation both in the State Court and in the Federal Court.

Mr. DELANEY. I referred to the Federal suit particularly.

Mr. ROGERS of Colorado. Yes, and you refer to what you visualize if, as an example, the contention of the city and county of Denver for its 177,000 acre-feet should be granted by the Supreme Court of the State of Colorado. Would you then still oppose legislation to authorize them to get their needed water?

Mr. DELANEY. It wouldn't have this direct effect, because probably the United States would not have any right to protect. But just now I think they would.

Mr. ROGERS of Colorado. But their rights are spelled out in Senate Document No. 80.

Mr. DELANEY. Not entirely, no, sir. I won't agree.

Mr. ROGERS of Colorado. That is why I am trying to get you to see whether you are trying to protect the United States interests there.

and if Denver is willing to protect its interests, are you still then opposed to the transmountain diversion?

Mr. DELANEY. I pointed out in another part of this statement, Mr. Rogers, that Denver has the power under our constitution and she has the financial ability to finance and construct these works.

Now, I tried to tell you that there should be a balancing of interests, the overall welfare. We claim that we have great natural resources on the development of which depends this water. It is our contention that neither Denver or any other entity should be able to take this water away and prevent development if the water is not needed. That is the second phase of our presentation here.

Mr. ROGERS of Colorado. Are you familiar with the survey made by the Denver Planning Commission in the year 1953?

Mr. DELANEY. I read about it in the papers, but I wasn't on the mailing list, so I did not see the report.

Mr. ROGERS of Colorado. If by that it should reflect that by 1970, according to competent figures that they have, the anticipated population of the city and county of Denver and its suburbs would approximate 950,000 people, would you have any reason to quarrel with that survey and that plan?

Mr. DELANEY. Well, it is different from the estimates that I have heard made by persons that I thought were competent, Mr. Rogers, but I could not say. I am no expert in that line.

Mr. ROGERS of Colorado. Well, so far as the needs and the possible growth of the city and county of Denver, you have no knowledge; isn't that right, Mr. Delaney?

Mr. DELANEY. Only such as I have obtained by inquiry and in talking with people that ought to know more about it.

Mr. ROGERS of Colorado. Then you are not in a position to dispute the work that has been made by men who are competent to conduct such surveys, are you?

Mr. DELANEY. I won't dispute it, but I would like to see the figures.

Mr. ROGERS of Colorado. I have the figures here which I will introduce here at a later date.

You have talked about the conflict between the possible rights of the city and county of Denver and the Federal Government as to this diversion. Do you not think it is a matter of a practical proposition that if you had the United States Government and the city and county of Denver sitting down and agreeing on this proposition, that it probably would protect the Government much more than if Denver should win its lawsuit, which would be the 177,000 acre-feet?

Mr. DELANEY. No. I don't think so, because the Government made the Colorado-Big Thompson diversion and the project for certain water users. There were certain beneficiaries. Now, those beneficiaries think that they have an interest in this, and that they ought to be entitled to protection, and maybe the protection of the United States, the way you would use the word, would be entirely different to what would happen to these people who are beneficiaries under the project.

Mr. ROGERS of Colorado. I will expand my question to include the beneficiaries, as well as the United States Government, and as well as the water board of the city and county of Denver, so that all rights

would be protected, and what Denver may withdraw, if she is working with the Bureau, according to an allocation that may be given to her under reclamation laws, where the Bureau would have the control of it. Would you still think that that is a bad plan?

Mr. DELANEY. Well, I would not know anything about it, Mr. Rogers, Congressman Rogers. Without knowing what the plan is—I know what the Blue-South Platte is, and the Blue-South Platte contemplates the deactivation of the Shoshone plant of the Public Service Co. which was built about 1902, so that after that powerplant is out of the picture then the water may be exported. Now, along the main stem of the Colorado River, that would be a serious blow. They are only little communities, but it would still take 3 or 4 million dollars of our valuation away, and deprive us of an economic development that has been there for years on which we have depended. Of course we are a little fearful about that sort of a change in our plans, in our economy.

Mr. ROGERS of Colorado. In this development of the contemplated Echo Park and Split Mountain, or the other dams above on the Yampa and the Green as it comes into the Colorado, that would have a tendency to supply more water to those in your area, Glenwood Springs, would it not?

Mr. DELANEY. The building of those reservoirs is necessary to the development of the streams up there. But there cannot be full development either, as we see it, without some more storage reservoirs built by private enterprise or otherwise up in the upper reaches, which might well be illustrated by that reservoir that Mr. Barnard has marked on his map here. With that upstream reservoir, those lands in this area and that area [indicating], can be irrigated. Without it, there can be no such irrigation. And there cannot be that kind of a reservoir, either, until there is downstream storage.

Mr. ROGERS of Colorado. There is nothing in the Hill report or any other report that you know of that says that it would deprive any persons downstream of any of their rights, is there?

Mr. DELANEY. Well, the Hill report isn't documented, as you will remember, Congressman.

Mr. ROGERS of Colorado. You and I know that for at least 20 years in Colorado this has been a constant study and that in the Bureau of Reclamation, starting in 1940, since the Boulder Canyon project act was amended, the surveys and studies, recommendations, were made to ascertain the full amount of all the water on the western slope of Colorado. You and I know that, as a matter of fact, do we not?

Mr. DELANEY. We know that plans have been in progress. I think I also know that they haven't been completed.

Mr. ROGERS of Colorado. Which ones have not been completed?

Mr. DELANEY. The so-called Cliff Divide that takes in all the main stem of the Colorado River. While the fieldwork has been done, the report has never been released up to date, and nothing has been done over on the White and Yampa Rivers, except some lands classification. I think that is pretty largely true of the Dolores River and the San Miguel and several other streams.

Chairman HARRISON. The time of the gentleman has expired.

Mr. ROGERS of Colorado. Thank you, Mr. Chairman.

Chairman HARRISON. Mr. Dawson?

Mr. DAWSON. No questions.

Chairman HARRISON. Thank you very much.

Gentlemen, we appreciate your being here. On behalf of the committee I want to thank you for your time and the very clear explanations that you have given to the questions which have been asked.

Mr. DELANEY. We appreciate the opportunity to be heard.

Mr. BARNARD. We appreciate the opportunity, Mr. Chairman. may I take my map down now?

Chairman HARRISON. You may.

The next witness will be Mr. J. L. Gregg.

Is Mr. Gregg here?

Mr. REGAN. Permit me, Mr. Chairman, to say that Mr. Gregg and the three succeeding witnesses you have there are here in the interest of only one feature of this entire bill. They have no expression to make about the other parts, but they are here in opposition to the San Juan. I hope the committee will consider their views.

Mr. ENGLE. Mr. Chairman, while we are pausing for these statements to get around, I would like to insert a brief statement into the record, as a matter of comparing the upper Colorado storage project with the central valley storage project. I do this for the reason that the Interior Department has not moved with the speed which I think the facts warrant on the Trinity River project. In view of their very vigorous testimony here in recent days in support of this project, I think it would be appropriate for everybody to know and the record to show how these projects compare. I wish that their energies on behalf of the completion of the Central Valley project were equal to the difference between these projects. I would have it authorized next week and appropriated for.

Here is the story on it. I would like to point out for the information of my colleagues that on page 9 of House Document 53, 83d Congress, which was the Trinity project report, and which contains the latest financial studies, it was indicated that the irrigation waters used would return \$317 million out of \$369 million allocated to irrigation, including the Trinity diversion, or 60 percent of the irrigation costs compared with 12 percent returned by the water users in the Colorado River storage projects. Also on table No. 17, following page 98, of this some document, it is indicated that the power allocation of the Central Valley project, including the Trinity project, would be returned in 33 years after the last power unit is in operation, compared with 44 years for the initial units of the Colorado River project and 50 years for the overall Colorado River storage project, but at the rate of 5.1 mills compared with the 6 mills on the upper Colorado storage basin.

Mr. Chairman, I take just this minute to put that factual information into the record, not in derogation, you understand, of the very fine presentation which is being made here on behalf of the upper Colorado Basin, but to show, rather, that the gold-plated Central Valley project of California is still uncompleted and that there is a magnificent project pending out there now which up to this point has not had the kind of enthusiastic and vigorous support from the Interior Department which it deserves and which I hope these comparisons will call to those gentlemen's attention.

Thank you very much.

Chairman HARRISON. I might say to the gentleman from California that his project may be gold-plated, but we have uranium in our basin which I think is a little more valuable.

Mr. DAWSON. Will the gentleman yield to me for a question? Does your report show the comparisons of the total amount that is going to be repaid in the Central Valley project as compared with the total amount that will be repaid to the Government from this project?

Mr. ENGLE. Percentagewise, that is exactly what I am talking about.

Mr. DAWSON. You are talking about the irrigators. I am talking about the overall amount that will be paid back to the Federal Government out of this upper Colorado project compared to the total amount that will be paid back to the Government out of the Central Valley project.

Mr. ENGLE. We are not starting out with quite as big a clip on the Federal Treasury as you are, but we are paying back a hundred percent and no one should have to pay back more than a hundred percent.

Mr. DAWSON. I thought there were some nonreimbursables in the Central Valley of California.

Mr. ENGLE. Well, there are.

Chairman HARRISON. We will proceed with the next witness, Mr. Gregg.

STATEMENT OF JOHN L. GREGG, MANAGER, ELEPHANT BUTTE IRRIGATION DISTRICT, SAN JUAN COUNTY, N. MEX.

Mr. GREGG. Mr Chairman, I would like to submit for the record a resolution approved by the board of directors of the Elephant Butte District of Las Cruces, N. Mex., in opposition to the proposed San Juan-Chama project.

(The resolution referred to follows:)

RESOLUTION FROM ELEPHANT BUTTE IRRIGATION DISTRICT IN OPPOSITION TO PROPOSED SAN JUAN-CHAMA PROJECT

The following resolution was approved by the board of directors of the Elephant Butte Irrigation District on January 5, 1954, as an expression of the attitude of the board regarding the proposed San Juan-Chama project:

The board of directors of the Elephant Butte Irrigation District is opposed to the authorization of the San Juan-Chama project for the principal reason that, in the opinion of the board, construction and operation of the project, as described in the Bureau of Reclamation interim report dated December 1953 will interfere with, and encroach upon, the water supply of the district.

The board calls attention to the fact that authorization of the San Juan-Chama project is being sought in advance of the making of adequate engineering investigations and the preparation of a feasibility report by the Bureau of Reclamation. An attempt to obtain authorization now, on the basis of incomplete information and without recommendation by the Department of the Interior, appears to be premature. The board feels that authorization of this controversial project at the present time, even though subject to restrictions on appropriations, could later be considered a true authorization, and that it would then be difficult for the district to obtain removal of undesirable features that might be included in a future feasibility report.

The board of directors of the Elephant Butte Irrigation District feels that the project should not be submitted for authorization until complete information is available and a feasibility report has been prepared for the consideration of all affected areas.

The board of directors of the Elephant Butte Irrigation District considers certain terms and conditions relating to the furnishing of a temporary supplemental supply of water from the San Juan-Chama project to the Elephant Butte Irrigation district, as set forth in the Bureau of Reclamation interim report referred to

above, to be entirely unacceptable to the district. The board also takes the position that even though a permanent supplemental water supply were offered to the district at reasonable cost, the district could not agree to permit its normal water supply, obtained from within the Rio Grande Basin, to be jeopardized by becoming involved in an overly complicated operation of the type contemplated in connection with the San Juan-Chama project.

The board of directors of the Elephant Butte Irrigation District respectfully requests that authorization of the San Juan-Chama project be denied.

Mr. GREGG. Mr. Chairman, and members of the committee, my name is John L. Gregg, and I am the manager of the Elephant Butte Irrigation District located in south central New Mexico on the Federal Rio Grande project.

The Elephant Butte Irrigation District is opposed to the authorization of the San Juan-Chama transmountain diversion project. The San Juan-Chama project is a controversial matter within the State of New Mexico as well as between Texas and New Mexico.

The San Juan-Chama project would involve a substantial portion of our normal water supply which originates entirely in the Rio Grande Basin. The purposes of adding Colorado River Basin water to the flow of the Rio Grande would be to make possible increased diversions of Rio Grande Basin water by irrigated areas in northern New Mexico; the transfer of water to the Canadian River Basin; new diversions of substantial volumes of water by municipalities in the Rio Grande Valley; and the storage of part of the normal flow of Rio Grande Basin water, originating in the Chama River, for the production of hydroelectric power. The theory of the San Juan-Chama project is that the new and increased diversions of Rio Grande water would be offset by imported water.

If the San Juan-Chama project should be built, the continued delivery of the normal water supply of our District would become entirely dependent upon the successful operation of that project. We believe that there would be substantial differences between theory and practice in the actual operation of the project.

Operating errors; inability to properly regulate numerous diversions; difficulties in properly handling a limited volume of water in a large river basin area; and conflicts among power, municipal and irrigation uses of a limited water supply would inevitably create shortages adversely affecting downstream areas such as the Elephant Butte Irrigation District. We do not wish to be exposed to upstream encroachment upon our water supply caused by the unsuccessful operation of an overly complicated project in a semiarid region.

Assurance may be offered that the San Juan-Chama project will be operated in accordance with the provisions of the Rio Grande compact which was intended to regulate the use of the waters of the Rio Grande among Colorado, New Mexico and Texas. For compact purposes, our district, although located entirely in New Mexico, was placed under the protection of the State of Texas. The Rio Grande compact has not prevented the occurrence of irregularities in the storage, diversion and use of water in New Mexico above our storage reservoirs and this situation has compelled Texas to file suit against New Mexico in the Supreme Court of the United States. The protective value of the compact is quite uncertain.

The San Juan-Chama project is primarily a municipal and industrial water supply and hydroelectric power project. Irrigation features are relatively unimportant. In the final, and permanent, allo-

cation of water, as stated in a Bureau of Reclamation interim report on the project, irrigation uses would receive only 38 percent of the 235,000 acre-feet made available by the project, whereas municipal and industrial uses would receive 56 percent. The committee was informed Thursday that the city of Albuquerque, N. Mex. has applied for 150,000 acre-feet of the water to be made available by the San Juan-Chama project. If this is correct, and the application is granted, Albuquerque will become the sole municipal beneficiary of the project, and by far the largest single beneficiary.

The committee was also informed Thursday that various military and atomic installations located in New Mexico require the use of additional water. If this be the case, they can undoubtedly obtain it without the construction of the San Juan-Chama project.

The installation of hydroelectric power facilities on New Mexico streams is a poor investment of public funds because prolonged droughts make hydroplants unreliable in New Mexico. We cite the Bureau of Reclamation hydroelectric plant at Elephant Butte on the Rio Grande, 125 miles north of El Paso, Tex., as an example. This plant has operated at only a fraction of its capacity during the past 4 years because of water-shortage conditions. Steam plants owned by private utilities have been compelled to make up the deficiency caused by failure of the Government's hydroelectric plant to produce power as anticipated. The San Juan River Basin, from which imported water will be obtained, is subject to the same conditions that affect water supply on the Rio Grande.

The financial feasibility of the San Juan-Chama project is doubtful. The estimated cost of the project is \$228 million, which sum is to be repaid in full. The project repayment plan involves the deferment of two-thirds of the irrigation cost until 56 years after project revenues commence. Final payment of irrigation costs will be made 84 years after project revenues are first received.

Anticipated revenues from irrigators will not be realized, even though only one-third of irrigation costs will be reimbursable from that source. It is doubtful that the small subsistence farming areas in northern New Mexico, to whom supplemental water would be furnished, can make more than token payments toward construction, operation, and maintenance costs. It was anticipated by project planners that the Elephant Butte Irrigation District would contribute a substantial portion of the \$32 million to be collected from irrigators obtaining San Juan water in return for a temporary supplemental water supply. The district will be unable to participate.

Experience shows that revenues from hydroelectric powerplants on New Mexico streams are uncertain for reasons previously stated. Markets for power visualized by project planners may not materialize, in view of the unreliable performance of such plants.

Substantial project revenues are counted upon from the sale of water for municipal and industrial purposes to various cities in the Rio Grande Valley. There is no evidence available that taxpayers in the selected municipalities will agree now, or in the future, to assume the obligations necessary to obtain San Juan water. The Federal Government is not obligated to find a solution to municipal water supply problems in New Mexico.

Authorization of the San Juan-Chama project is sought on the basis of a Bureau of Reclamation interim report that is not of feasi-

bility grade, and in the absence of a recommendation by the Department of the Interior. Information presented in the report on many important phases of the project is incomplete. We do not believe that an elaborate project, estimated to cost \$228 million, should be submitted for authorization until complete and reliable information concerning financing, construction, and operation has been presented to the Congress and to all affected areas for consideration. We feel that the proposal to authorize the project at the present time, with appropriations to be delayed until a feasibility report is prepared, could later be constructed as a true authorization in all respects, and that the preparation of the feasibility report would then become a mere formality.

We wish to again call the attention of the committee to a report recently prepared for the Colorado Water Conservation Board by Lees, Hill & Jewett, consulting engineers, Los Angeles, Calif. This report indicates that a reappraisal of the water supply situation in the upper Colorado River Basin may be in order.

The Elephant Butte Irrigation District respectfully requests that authorization of the San Juan-Chama project be denied.

Mr. Chairman, at the request of the Bloomfield Irrigation District, Bloomfield, San Juan County, N. Mex., I would like to submit for the record a statement from that district in opposition to the San Juan-Chama project. I would also like to submit for the record at the request of the San Juan County (N. Mex.) Farm Bureau, a further statement also in opposition to the authorization of the San Juan-Chama project.

I would also like to submit for the record a third statement on behalf of Turley ditch, in San Juan County, N. Mex., also in opposition to the San Juan-Chama project.

Mr. D'EWART (presiding). Do I hear any objection to these statements being made a part of the record? If not, it is so ordered.

(The resolutions referred to follow:)

PUMP DITCH Co.,
JAQUEZ DITCH Co.,
BLOOMFIELD IRRIGATION DISTRICT,
Bloomfield, N. Mex., January 15, 1954.

HON. A. L. MILLER,

*Chairman, House Interior and Insular Affairs Committee,
Washington, D. C.*

DEAR SIR: The attached material is for the consideration of your committee. The Bloomfield Irrigation District is located in San Juan County, N. Mex., and obtains its water supply from within the San Juan Basin.

We are opposed to the authorization of the San Juan-Chama transmountain diversion because it would make the operation of our existing irrigation project, and several others on the San Juan River, impossible; and because there is not water available for that project and the Navaho Dam-Shiprock-South San Juan projects, projects having the strongest local support, and of vital importance to the welfare of the Navaho Indian people; and because an overwhelming majority of the people of San Juan County would, given an opportunity, voice similar opposition.

The matter attached, for whose length we apologize, explains in more detail the basis for our opposition.

Respectfully submitted,

BLOOMFIELD IRRIGATION DISTRICT,
W. L. HARE, *President.*

Bloomfield Irrigation District, the Pump Ditch Co., and the Jaquez Ditch Co., oppose and protest any authorization of the proposed San Juan-Chama transmountain diversion because there is not now, nor has there ever been, sufficient

water available to New Mexico to supply present uses below the proposed Navaho Dam, the reservoir losses incident to its operation, a Shiprock-South San Juan project of sufficient size to make it feasible, and have water left to justify the cost of such a diversion. Any study we have seen which purports to show sufficient water for this project, uses reduced figures for present uses, and allows insufficient water for the necessary Shiprock-South San Juan project.

Such a diversion would impose such a drain on the limited water supply as to subject each of the three projects to water shortages so serious as to endanger their value. The comparatively small amount of water left at Navaho Dam would compel "virtually complete regulation * * * full utilization," (from progress report, San Juan River, New Mexico Technical Committee, March 7, 1952.) The Shiprock-South San Juan project would suffer ruinous shortages, while the drying-up of the streambed would leave existing projects between the Navaho Dam and the mouth of the Animas River certain victims of such sedimentation as to render their continued operation impossible.

We quote from The Colorado River, page 140: "Below Blanco, N. Mex., the silt load of the San Juan River becomes heavy, and is contributed mainly by intermittent tributaries draining the desert areas to the South. Floods from summer cloudbursts discharge silt-laden torrents into the San Juan River, which in turn delivers to the Colorado River a large portion of the silt that plagues downstream developments." And from page 163: "The San Juan River, largest of the southern tributaries of the upper basin, contributes about one-quarter of the silt passing Grand Canyon." And from the same page: "Storage capacity in Lake Mead is being reduced an estimated 137,000 acre-feet a year by the * * * deposition of * * * silt."

Not all the silt referred to above affects the area under discussion, but the contribution of almost 3,000 square miles of drainage area is of such volume that any failure to provide for its control (which we think can be done only by maintaining a sufficient flow of water to keep the sediment moving in the streambed) will result in disaster to this whole area. And the water for this purpose can only be provided from that being sought for the San Juan-Chama transmountain diversion, if the requirements of the Shiprock-South San Juan projects are to be met.

We are particularly subject to damage at the mouth of the Pump Canyon, 2 miles below the heading of our canal, where it crosses the level canyon floor a mile wide and only a few feet higher than the riverbed. What might seem like a negligible deposit of sediment in the dry stream bed and the arroyo channel would cause any flow in the arroyo to spread across the whole canyon floor at an elevation above the canal which it would fill, completely.

We hope the committee may visualize a situation in which the stream bed of the San Juan River between the Navaho Dam and its confluence with the Animas River near Farmington, is as nearly dry as is possible to have it. Each of its tributaries then contributes its load of sediment, sand, and debris, according to the area of its watershed and the frequency of rainfall. When deposited in the riverbed, whose gradient (10 feet per mile) is much less than that of the contributing stream (about 75 feet per mile), there will be built up a sandbar across the riverbed at the mouth of each of such streams. The riverbed becomes no more than a series of ponds or lakes, separated by sandbars that become ever greater in extent as they are added to by succeeding floods.

As each forms a bar across the riverbed, so it fills the mouth of the arroyo channel from which it came. This arroyo channel, no longer able to discharge its load into the filled-up riverbed, can only overflow the farmland on either side at whatever point offers the least resistance. Succeeding floods will put one farm after another out of production; perhaps the town of Bloomfield might be an early victim; but finally the lessened number of farmers could no longer keep up the increased expense, the farms, abandoned, go back to desert.

It doesn't sound so bad in the future tense, but these plans for river control are for hundreds of years. Had these same plans been put in operation 20 years ago, what are now only forecasts would have been realities long since.

Respectfully submitted.

Pump Ditch Co.; Pablo Gonzales; Ismael Morriz; Elias Ulibarri;
Jaquez Ditch Co.; T. S. Aschuleta; Valentin Archuleta; Alex
Jaquez, Sec.; Bloomfield Irrigation District; W. L. Hare, pres.;
J. M. Doak; Rafael P. Prado.

A study of the historic flow of the San Juan River at the Blanco gaging station for the 24-year period (1928 to 1951, inclusive) includes 1 year, 1941, in

which the flow of the river was extremely heavy, resulting in the mean-flow figure for the river being what we consider to be abnormally high. The inclusion of that extremely heavy runoff year in calculating water available for use from the San Juan River for the 10-year period immediately following this peak year will show that, on the average, there is available at and above the Navaho Dam site, a little more than 778,000 acre-feet of divertible water for the 3 competing projects; these are the Shiprock, the South San Juan, and the San Juan-Chama transmountain diversion projects. A study of this 10-year period will follow.

All studies available to us of various uses for San Juan River water, show a bypass requirement of 23,000 acre-feet to meet demands for the potential Hammond project and existing canals that now divert water from the San Juan River between the Navaho Dam site and the junction of the San Juan and Animas Rivers. This, we are sure, is in error, and submit the following as being near the actual requirements at this time.

	<i>Acre-feet</i>
Potential Hammond project (from Reclamation Bureau studies)-----	18, 400
Water adjudicated to Bloomfield Irrigation District and others requiring bypass of water from Navaho Dam. For 6-month irrigation period, 155 cubic feet per second equals-----	53, 000
El Paso Natural Gas Co., for industrial use-----	800
Water applied for by Bloomfield Irrigation District to irrigate additional lands. (Application filed September 18, 1951, No. 2768)-----	6, 000
	<hr/> 78, 200
Total water to be bypassed from Navaho Dam for the uses listed above (rounded figure)-----	78, 000
The following is the study (referred to above) of the modified flow of the San Juan River for the 10-year period of 1942 to 1951, inclusive (corrected for within-basin developments and Weminuche Pass diversions) :	
Total flow, 10-year period, 7,782,000 acre-feet-----	Average (rd) 778, 000
To be bypassed for downstream use-----	78, 000
Reservoir losses, 928,000 acre-feet storage-----	26, 000
	<hr/> 104, 000
Total for reservoir losses and downstream-----	104, 000
Average water available, 10-year period for Shiprock, South San Juan, and San Juan Chama diversion-----	
	674, 000
Diversion demand for Shiprock and South San Juan-----	630, 000
	<hr/> 44, 000
Left for San Juan Chama diversion-----	44, 000

RESOLUTION IN OPPOSITION TO SAN JUAN-CHAMA PROJECT APPROVED BY SAN JUAN
COUNTY FARM BUREAU, BLOOMFIELD, SAN JUAN COUNTY, N. MEX.

We, the undersigned, board of directors and members of the San Juan County Farm Bureau respectfully protest the authorization of any diversion of any water from the San Juan River Basin to any other basin or stream system.

We urge our State officials and others responsible for decisions affecting the water resources of this county against the usual tendency to overappropriate water, lest we be found in the position of those who seek to correct their mistakes of overappropriation by importation of San Juan River water.

Alex C. Hare, Bloomfield, N. Mex.; Wayne A. Hare, Bloomfield, N. Mex.; N. H. Smight, Farmington, Route 2, Box 7; E. P. Ralston, Aztec, N. Mex., Route 1, Box 6; J. F. Ridenour, Cedar Hill, N. Mex.; Chas. C. McGee, Aztec, N. Mex.; Steve Rinald, Route 1, Farmington, N. Mex.; Joseph W. Wethington, Waterflow, N. Mex.; J. Oliver Stock, Waterfall, N. Mex.; Lawrence McCoy, Aztec, N. Mex.; Alvin T. Talley, La Plata, N. Mex.; C. A. Farnsworth, La Plata, N. Mex.; Donald T. Madison, Bloomfield, N. Mex.

*To the Chairman and Members,
Interior and Insular Affairs Committee,
Washington, D. C.*

GENTLEMEN: The undersigned, directors or landowners under the Turley ditch in San Juan County, N. Mex., wish to make a protest against the proposed San Juan-Chama transmountain diversion project, unless prompt and adequate compensation be first provided for the inevitable loss of the homes and farms served by the Turley ditch. (Turley ditch now diverts natural stream flow from the San Juan River about 10 miles below the site for the proposed Navajo Dam, from which its water supply is to be provided after the completion of that storage.)

The out-of-basin diversion of such an amount of water as contemplated for the San Juan-Chama project, in addition to that to be used for the Shiprock and South San Juan from storage in the Navajo Dam (which projects have our strongest support and approval) would leave the stream bed of the San Juan River below the Navajo Dam without water to move the great quantities of sediment which flow into it with the floods from torrential rains in the area.

Our canal diverts water from the south side of the San Juan River, opposite and just down stream from the mouth of the pump arroyo. This ordinarily dry tributary of the San Juan River drains nearly 125 square miles of rough and highly-erodible country. Without regular stream flow in the river at this point, the stream bed (and the heading of our ditch) would be filled with sand, to be added to with every succeeding run of water from pump arroyo. A lifetime of experience and observation of everyday contact with the factors involved convince us that the conditions we foresee have been prevented through the years only by the normal continued stream flow, some sufficient part of which, we think, should be maintained. Without this protection we are sure you will wish to provide, in any authorization, for prompt remuneration for losses to be sustained, if, and when, they occur.

Most respectfully submitted.

Silviano Chavez; Flavio Chavez; Ubaldo J. Lobato, Director;
Aleavio N. Lobato; Jose E. Chavez, Director; Emilio Chavez;
Dennis Chavez; Rosa Archuleta; Benito Archuleta; William
Gutierrez; Gilbert A. Lobato; Onofre Lobato, Director; Aba
A. Chavez.

Mr. D'EWART. Mr. Regan?

Mr. REGAN. Yes, Mr. Chairman.

I would like to ask a few questions. First of all, we have had testimony, I believe, that the district has been long established and during that time they have had a certain feature about power output. Do you have information as to the power output at Elephant Butte?

Mr. GREGG. Yes, sir; the Elephant Butte project of the Bureau of Reclamation located on the Rio Grande, 125 miles north of El Paso, first went into operation at the end of 1940. The record shows that the average annual production for the period from 1941 to 1953, inclusive, has been 83 million kilowatt-hours. The record also shows that the minimum power output at Elephant Butte during that same period was only 28 million kilowatt-hours or one-third of the 13-year average.

The record also indicates that the maximum output during that same period amounted to 136 million kilowatt-hours, or about 1.6 times the 13-year average.

During the past few years, the production at the Elephant Butte plant has varied from 28 million kilowatt-hours to 60 million kilowatt-hours and has averaged 41 million kilowatt-hours per annum.

These extreme variations in volume of output have been due solely to fluctuations in the amount of the project water supply.

Mr. REGAN. They have not been generating any electricity for which they were committed during this period of the 12 years!

Mr. GREGG. No, sir. In several years out of the period of 13, they have apparently failed to meet their commitments.

Mr. REGAN. Who has been supplying the power, then, to meet their commitments? Where are they getting it?

Mr. GREGG. It has been supplied by the El Paso Electric Co., which is a privately owned utility, located in El Paso, Tex.

Mr. REGAN. Do you receive of the bulk of your waters stored at the main reservoir at Elephant Butte at some particular time of the year, or does it flow steadily throughout the year?

Mr. GREGG. In ordinary times we receive the bulk of our water supply during the months of May, June, and July, from floods originating in the headwaters of the Rio Grande.

Mr. REGAN. What is the distance from the Elephant Butte Reservoir to these proposed projects in the San Juan-Chama?

Mr. GREGG. The distance between Elephant Butte Dam which formed our main storage reservoir, and the closest of the proposed reservoirs under the San Juan-Chama project is about 225 miles. The distance between Elephant Butte and the farthest reservoir, under the San Juan-Chama project, is about 275 miles. The average would be about 250 miles.

Mr. REGAN. So you would be handicapped very much in getting your source of supply of water to the reservoir because of that distance and the loss of water in transportation down?

Mr. GREGG. Yes, sir; very much so.

Mr. REGAN. And about what length of time would it take? Suppose the water was released at the farthest reservoir, how long would it take until it reached the Elephant Butte Reservoir where you would need it for the beneficial use of your growing crops?

Mr. GREGG. Well, if we are successful in getting any at all past the numerous diversions above us, it would probably take a minimum of 10 days.

Mr. REGAN. And that is before you can expect any water for your crops? It would be 10 days at a minimum?

Mr. GREGG. Yes, sir.

Mr. REGAN. Suppose in a critical year of water shortage which occasionally occurs in the Rio Grande, you exhaust your storage at Elephant Butte, and make demands on the upstream reservoirs for water to be made available to you. What situation do you feel might arise at that time?

Mr. GREGG. In the first place, in addition to the delay in obtaining the water by transportation through a very sandy riverbed over the distance of 250 miles, the operating agency of the project called upon to release this water for our use would be faced with a decision as to whether they wished to release it or whether they wished to retain it in the reservoirs to provide a head for power production purposes. If it were released and the power factor were ignored, this comparatively small stream of water would then have to get by the numerous diversions between the upper storage reservoirs contemplated by the San Juan-Chama project and our reservoir at Elephant Butte.

We feel that there would be a serious question there as to whether this water would be released in the first place because this project is heavily committed to power, it must produce substantial power revenues, and anything that might interfere with the production of that power might take precedence over all other considerations.

Mr. REGAN. Your principal crop in the Elephant Butte district, particularly your district, is cotton?

Mr. GREGG. Yes, sir.

Mr. REGAN. When cotton is maturing, you cannot be put into the position of a long delay of getting water to you without a serious injury to that cotton, is that right?

Mr. GREGG. Yes, sir. There are certain stages during the period of the maturing of the cotton crops where the absence of water even during a few days could affect seriously the cotton crop. It is very sensitive to the water situation at that particular time.

Mr. REGAN. I believe you said that your interest, all of the lands under the Elephant Butte district which you represent, is within the State of New Mexico?

Mr. GREGG. Yes, sir.

Mr. REGAN. And there is quite a controversy between the people of New Mexico with respect to this San Juan-Chama diversion?

Mr. GREGG. Yes, sir.

Mr. REGAN. Your district has been in operation for how many years, Mr. Gregg?

Mr. GREGG. About 50 years.

Mr. REGAN. What is the status now with respect to paying its obligation to the Government?

Mr. GREGG. We are practically paid out. We started out with an original obligation of \$90 an acre and have now cut that down to \$20 an acre.

Mr. REGAN. You have been meeting all of your obligations to repay it?

Mr. GREGG. Yes, sir; consistently.

Mr. REGAN. Has there been any periods of time when water that was due and which was coming to the Elephant Butte Reservoir was intercepted in transit and you failed to get the water to which you were entitled?

Mr. GREGG. Yes, sir; there have been instances of that type during the past few years.

Mr. REGAN. And to the point where you fear that any additional storage in the Rio Chama might further be diverted when you needed that water, instead of benefiting you, it might be of further detriment by further diversions?

Mr. GREGG. Yes, sir.

Mr. REGAN. I still have a couple other questions. You referred to a statement, I believe, that Senator Anderson gave, where the city of Albuquerque applied for 150,000 acre-feet of water. Do you know how much water Albuquerque used the last year?

Mr. GREGG. According to published records, their total pumpage, and that is the sole source of their supply, their total pumpage in 1953 amounted to about 24,000 acre-feet or about one-sixth of the total amount of water that they are said to be applying for from the San Juan-Chama project.

Mr. REGAN. Does Albuquerque have another source of water supply other than from the Rio Grande?

Mr. GREGG. I presume that their situation is no different from any other city in the Southwest. They have access to Rio Grande Valley water.

Mr. REGAN. Do you know the population of Albuquerque at this time?

Mr. GREGG. I presume that in what you might call the metropolitan area it would run perhaps 125,000.

Mr. REGAN. Do you subscribe to the testimony given by the men of the Bureau that 100,000 acre-feet would be adequate to take care of a city of 600,000 population?

Mr. GREGG. I would have no basis for making a comparison.

Mr. REGAN. You have heard that testimony, though, I believe, that if they can save through evaporation in the upper Colorado project as much as 100,000 acre-feet of water, it would be adequate to take care of a city of 600,000 population? So Albuquerque has no need for that excessive amount of water which they would be supplied?

Mr. GREGG. There is no apparent need at the present time, no, sir.

Mr. REGAN. Of course there was some reference made to the Hill report in connection with the available water. Would you like to give us any further statement with respect to your views of that report?

Mr. GREGG. There is only one section of it to which I would like to make reference. That is his conclusion No. 1 on page 58, which reads as follows:

All of the 7½ million acre-feet of water per annum apportioned to the upper basin by the Colorado River compact may not actually be available for use because of the requirement that 75 million acre-feet be delivered at Lee's Ferry during each consecutive 10-year period.

Mr. REGAN. If it should develop that Mr. Hill is correct in that conclusion, what effect would that have in the general reduction of the water supply on the upper Colorado Basin and particularly that on the San Juan-Chama?

Mr. GREGG. I think its application on the San Juan-Chama project would be that it would cast further doubt upon the feasibility of the San Juan-Chama project through reduction of the average annual volume of water supply made available by that project.

Mr. REGAN. You have heard testimony, I am sure, here, to the effect that New Mexico is entitled to 11 percent of the available water in the upper basin which is estimated to total about 800,000 acre-feet annually.

Mr. GREGG. Yes, sir.

Mr. REGAN. Are you familiar with the lands now in cultivation in the San Juan Basin?

Mr. GREGG. In a general way, yes, sir.

Chairman HARRISON. Your time has expired.

Mr. MILLER. I will yield 2 additional minutes.

Mr. REGAN. You understand what?

Mr. GREGG. In a general way.

Mr. REGAN. What is the total now in cultivation?

Mr. GREGG. I cannot furnish that exact figure. I don't think it is very substantial, though.

Mr. REGAN. Well, the figures that I have learned from Mr. Currie, I believe, indicated that there were 75,000 in 1 spot and 29,000 in another now in cultivation. Do you know whether that is nearly correct or not?

Mr. GREGG. That sounds rather large to me. I was under the impression that there was considerably less acreage than that in San

Juan County now under cultivation and irrigation. But I may be mistaken.

Mr. REGAN. You are familiar with the use of water in that area generally. About what is the average requirement for growing alfalfa and the crops that they propose to grow in the area in the San Juan Basin? How much water does it take to mature an annual crop of alfalfa, per acre?

Mr. GREGG. I would assume that they could not mature a crop of alfalfa for less than or with less than 4 acre-feet of water per acre per year, and it might require somewhat more.

Mr. REGAN. It might require more, but usually it is 4 acre-feet per acre. And if they have, as I gathered from Mr. Currie, in excess of 100,000 acres now in cultivation, and they put under the Shiprock Dam 125,000 additional acres, then they have in excess of 200,000 acres for which they will need water. They stated, I believe, they will grow alfalfa and forage crops of that sort, largely. Then if the 800,000 feet is all they have, at the best, if Mr. Hill is right in his prediction, and they may not always have that much, then they already have, with the Shiprock and the present, uses for all of the water now available to them under the compact with the upper States.

Do you think that is reasonably correct?

Mr. GREGG. Yes, sir. I think that eventually they could make full use of the entire New Mexico allocation under the upper Colorado River Basin compact within their own area in San Juan County without transporting any of that over to the Rio Grande Basin.

Mr. REGAN. Which would be an expensive undertaking.

Mr. GREGG. A very expensive undertaking.

Mr. REGAN. Thank you, that is all.

Chairman HARRISON. Mr. D'Ewart?

Mr. D'Ewart. I would like to compliment the gentleman on the Elephant Butte project, on the splendid repayment over the years. Not too many of the projects that come before us have that splendid record. You manage this project privately, do you? Do you manage this project yourself or does the Bureau of Reclamation manage it?

Mr. GREGG. The project is operated and maintained by the Bureau of Reclamation. I manage the Elephant Butte Irrigation District which is located in the New Mexico portion of the project.

Mr. D'Ewart. That is a splendid record.

Mr. GREGG. Thank you.

Chairman HARRISON. Mr. Aspinall?

Mr. ASPINALL. No questions.

Chairman HARRISON. Mr. Saylor?

Mr. SAYLOR. Mr. Gregg, are you an engineer?

Mr. GREGG. No, sir.

Mr. SAYLOR. How long have you been associated with the Elephant Butte Irrigation District?

Mr. GREGG. For about 20 years, the last 9 of which have been in the capacity of manager.

Mr. SAYLOR. And that Elephant Butte Irrigation District is for the principal purpose of irrigating lands; is that correct?

Mr. GREGG. It is the sole purpose of irrigating lands.

Mr. SAYLOR. There is no power whatsoever produced in this unit!

Mr. GREGG. Well, there is a powerplant in connection with the project. But the district itself has no interest in it. It is entirely a Government installation.

Mr. SAYLOR. Were you in the room when the two gentlemen from Colorado testified just a few minutes ago, just before you were on the stand?

Mr. GREGG. Yes, sir.

Mr. SAYLOR. You heard them state that it was their understanding that the purpose of reclamation was to put water on the lands and that all of these other uses, be they for industrial or domestic consumption to municipalities, or for the production of power, were all incidental to reclamation?

Mr. GREGG. Yes, sir.

Mr. SAYLOR. Is that your understanding of the purpose of the reclamation law?

Mr. GREGG. I have always understood that the original purpose of the reclamation program was to bring additional land under cultivation and irrigation, and that anything else should be purely incidental to the main purpose of the program.

Mr. SAYLOR. Well, then, if this San Juan-Chama project were to go through and divert 56 percent of the water allocated to it to industrial and municipal uses, in your opinion that is not incidental to reclamation?

Mr. GREGG. No, sir; that would put the Federal Government in the municipal water supply and hydroelectric power business.

Mr. SAYLOR. And that is in addition to the other reason which you have given to my good friend from Texas, Mr. Regan, as to why you are opposed to this project?

Mr. GREGG. Yes, sir.

Mr. SAYLOR. That is all.

Chairman HARRISON. Mr. Engle?

Mr. ENGLE. No questions, thank you.

Chairman HARRISON. Mr. Berry?

Mr. BERRY. No questions.

Chairman HARRISON. Mr. Dawson, have you any questions?

Mr. DAWSON. No questions.

Chairman HARRISON. Mr. Fernandez, have you a question?

Mr. FERNANDEZ. Yes; I would like to ask some questions.

Mr. Gregg, you say you are not an engineer but you have had long experience, have you not, in operating irrigation districts? How many years?

Mr. GREGG. Twenty years.

Mr. FERNANDEZ. All of them in southern New Mexico?

Mr. GREGG. All of them in the same place.

Mr. FERNANDEZ. And you apply yourself to the job pretty thoroughly; do you not?

Mr. GREGG. I attempt to; yes, sir.

Mr. FERNANDEZ. We all know that and we appreciate it. You haven't had any experience up in northern New Mexico where the climate is quite different and the crops are different?

Mr. GREGG. I have never lived in northern New Mexico, but have traveled through there many times.

Mr. FERNANDEZ. You say your irrigation payments are pretty well paid up, and we are all proud of the fact. How much was charged to power?

Mr. GREGG. At the time that the powerplant was built at Elephant Butte, the Federal Government persuaded the water users to part with their interest in any future power development in return for an agreement to charge the cost of Elephant Butte Dam and Reservoir against future power revenues. In other words, instead of the water users paying it, it was to be paid for out of future power revenues.

Mr. FERNANDEZ. Are you familiar with the payments that are being made on the power for the construction of that Elephant Butte Dam?

Mr. GREGG. No, sir; I have not seen the financial setup—that is, the record up to date on actual returns in money.

Mr. FERNANDEZ. You said that some years it did not produce as much power as it was committed to do. Could you tell us what years they were?

Mr. GREGG. Yes, sir. I can give you a year-by-year account of it, if you would like to have it.

Mr. FERNANDEZ. That is not important. The fact is, though, that in the late years we have had some terrific droughts in New Mexico so that they have been unable to produce as much power as they would otherwise have produced?

Mr. GREGG. While the fluctuations are due primarily—that is, the fluctuations in power output are due primarily—to fluctuations in water supply, going back beyond the current period of extreme water shortage we find that in 1947 there were only 53 million kilowatt-hours produced against a 13-year average of 83 million kilowatt-hours and a plant capacity of somewhere around 100 million kilowatt-hours. So there have been extreme variations in the volume of power produced at that plant due to fluctuations in project water supply on many occasions.

Mr. FERNANDEZ. Are there any Government installations served with power from the Elephant Butte Dam?

Mr. GREGG. Well, there is a line running from the Elephant Butte transmission line to the Holloman Air Base, but actually a very substantial part of the power that flows through that line as well as the rest of the Elephant Butte system comes from the plant of the El Paso Electric Co. in El Paso, Tex.

Mr. FERNANDEZ. They have integrated their system a little, have they not, with the El Paso system?

Mr. GREGG. No, sir; I would say that the El Paso Electric Co. has been forced to bail out the Elephant Butte plant because the Government plant, due to fluctuation in water supply, has not been able to produce the amount of power that was anticipated when the plant was built.

Mr. FERNANDEZ. And yet the Elephant Butte is serving not only part of the Holloman base power needs but it also extends way over to the east and to all of Otero County and clear up to Lincoln County, serving several REA's; is that correct?

Mr. GREGG. Yes, sir. They have spread power lines all over the map in New Mexico, but they are running private utility power through their lines. It is not government power.

Mr. FERNANDEZ. And they have another line that extends to southwestern New Mexico; correct?

Mr. GREGG. Yes, sir.

Mr. FERNANDEZ. And another line going north?

Mr. GREGG. Yes, sir. I think a line goes to Socorro and perhaps north of Socorro.

Mr. FERNANDEZ. In any event, the power has been a very, very substantial part of the construction of that Elephant Butte Reservoir?

Mr. GREGG. It has paid—or the Government hopes that it will eventually pay—the entire cost of constructing Elephant Butte Reservoir, but it is paying only a comparatively small portion of the total cost of constructing the Rio Grande project, of which Elephant Butte is only a part.

Mr. FERNANDEZ. In the last dozen years or so, we have run into a very bad situation above the dam because of the heavy siltation in the river which is now being corrected by the channelization of that portion of the river; is that correct?

Mr. GREGG. Yes, sir.

Mr. FERNANDEZ. And so that the fluctuations in the future may not be quite as bad as they have been in the past when that has been fully corrected?

Mr. GREGG. Well, I think it depends upon general weather conditions—whether we have extended droughts in the future or whether we don't—more than upon the condition of the river bed itself.

Mr. FERNANDEZ. If water were diverted from the San Juan into the Chama on down to the Rio Grande, as contemplated by this bill, and we were not to build any reservoirs but let it run down to be used as it goes down, you would have no very great objection, would you, to the bill?

Mr. GREGG. Giving only my own personal opinion, if the reservoirs were eliminated and if we could be positive that the diversions could be properly regulated so that there would be no short-changing on our water supply, we would probably have no objections to the authorization for construction of the San Juan-Chama project, insofar as our own situation is concerned.

Mr. FERNANDEZ. The increasing of the waterflow in the river, particularly in dry periods, would be of some advantage in that it would help carry the evaporation losses that occur in transporting water; would it not?

Mr. GREGG. It would all depend on how the project was operated.

Mr. FERNANDEZ. I mean if it was operated properly it would have that effect?

Mr. GREGG. If it were operated properly, to achieve that result, probably it would be beneficial; yes, sir.

Mr. FERNANDEZ. Even if we have reservoirs, in periods of high supply, the storing of water in those periods of high supply, with your water being allowed to go down properly, along with San Juan water, that would be of advantage in carrying evaporation losses?

Mr. GREGG. Well, when it comes to the question of reservoirs, north of Elephant Butte, Mr. Fernandez, I don't think we are willing to concede that reservoirs are either necessary or would be anything other than detrimental to us below Elephant Butte, in view of past experience on the river.

Mr. FERNANDEZ. You do not think they are necessary, but if properly managed and your water properly protected, they would not injure you in any way, would they?

Mr. GREGG. Well, it would take years and years of experience and some very firm assurances to rid us of the belief that those reservoirs would not be detrimental to us.

Mr. FERNANDEZ. In any event, to be completely frank with the committee, your fear is really that the building of reservoirs on the Chama might tend to hold your water back?

Mr. GREGG. Not only the building of the reservoirs, but the operation of the diversions that are also contemplated in connection with the San Juan-Chama project.

Mr. FERNANDEZ. I do not know that I quite understand what you mean by "the diversions."

Mr. GREGG. Well, for instance in a tributary irrigated area in northern New Mexico, it is contemplated that they will be provided with diversion works, so that they can increase their consumption of water from the tributaries to the Rio Grande. It is also contemplated that there would be at least one municipal diversion from the Rio Grande and perhaps several. We feel that there would be a very serious problem in connection with the operation of those diversions, and that if they were not properly operated, we would be short-changed or deprived of a portion of our water supply that was illegally diverted above us.

Mr. FERNANDEZ. You have attended or have been invited to attend and have attended a good many of the numerous meetings that the people —

Chairman HARRISON. The time of the gentleman from New Mexico has expired.

Mr. FERNANDEZ. One more question.

Chairman HARRISON. I will yield you 1 minute.

Mr. FERNANDEZ. You have attended the numerous meetings they have had in New Mexico, all of the people affected, including those of the middle Rio Grande, and you have seen that they have had quite a difficult time agreeing to the division of the waters from the San Juan; is that correct?

Mr. GREGG. Yes. I have sat on the sidelines and watched them fight about the division of water up there; yes, sir.

Mr. FERNANDEZ. They really have had quite a struggle, have they not?

Mr. Gregg. Yes, sir.

Mr. FERNANDEZ. That is all, Mr. Chairman.

Chairman HARRISON. Thank you very much, Mr. Gregg.

The next witness will be Mr. A. P. Rollins.

Mr. SAYLOR. I would like to inform the committee that I have before me a letter that I am forwarding to Commissioner Dexheimer of the Bureau of Reclamation. You will recall the Commissioner was here before us. He stated that while he has admitted that there has been submitted the revision dated December 10, 1953, on the plans which had been submitted in 1950, there had been a further revision which was as yet not a part of the record and to date is still not part of the record, in which they show that in the original proposal or amendment it would pay out in 56 years, and in the revised version, dated December

24, 1953, it is stated it will pay out in 44 years. I asked the Commissioner in particular if there were any changes in any of the features of these projects, either storage or participating at the time which had been changed between October 9 and December 24, and he assured the members of the committee there had not.

In examining the power revenues, it is very interesting to note that, for example in 1960, the first year of the study, they figured in October 1953 there would be 7,620 kilowatts of firm power to be sold at 6 mills, and in December, with no change whatsoever in the plans, they suddenly determined that there would be 10,458 kilowatts of power.

There is a corresponding increase each year as you go down. The questions that I have asked are to ask the Commissioner to explain the difference in these figures.

Chairman HARRISON. Thank you, Mr. Saylor.

Mr. SAYLOR. I would like to make my letter, or the questions in it, a part of the record at this point.

Chairman HARRISON. Are there any objections?

The Chair hears none.

Mr. SAYLOR. When the answers are available, I will ask that they be inserted at this point in the record.

Chairman HARRISON. It is so ordered.
(The document referred to follows:)

JANUARY 25, 1954.

Mr. W. A. DEXHEIMER,
*Commissioner, Bureau of Reclamation,
United States Department of the Interior, Washington 25, D. C.:*

1. Will you please explain the differences between the figures set forth in the financial operation study table, dated October 9, 1953, submitted by the Secretary of the Interior to the President on December 10, 1953, as part of his supplemental report on the project (incorporating your report of November 13, 1953), and those set forth in the same table as revised December 24, 1953, which was submitted to the committee by Mr. Larson?

2. What are the reasons for increases in amounts of sales of electric energy and power revenues, year by year, during repayment period, and for all other changes in the study?

3. How do you justify such substantial changes in figures from the official report of the Secretary, which you yourself participated in preparing?

JOHN P. SAYLOR, M. C.

The answer of the Bureau of Reclamation follows:

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington 25, D. C., January 29, 1954.

Hon. JOHN P. SAYLOR,
*House of Representatives,
Washington 25, D. C.*

MY DEAR MR. SAYLOR: The following explanation is furnished in answer to the questions contained in your letter dated January 25, 1954.

The differences between the salable energy and resultant power revenues as shown on the two financial operation studies referred to in your letter are due primarily to an error in preparing the one dated October 9, 1953. Salable energy reflects a 7 percent overall reduction to allow for transmission losses. In preparing the October 9 payout study the salable energy values for the Glen Canyon and Echo Park units were by mistake taken as gross generation and reduced a second time by 7 percent. This error was detected soon after the study was prepared and a revised study was prepared. However, before this could be accomplished, the incorrect study had been furnished the Bureau of the Budget with the Secretary's report of December 10, 1953, referred to in our testimony.

Mr. Larson referred to the results of the revised study in his testimony in the form of a chart.

The energy values used in the new study dated December 24, 1953, can be checked by referring to page 72 of the Colorado River storage project report of December 1950. For year 20, the combined generation at Echo Park and Glen Canyon is 5,332 million kilowatt-hours. Reducing this by 7 percent the salable energy is 4,959 million kilowatt-hours. To this must be added the salable generation of the initial phase central Utah project which is 363 million kilowatt-hours for a total of 5,322 million salable kilowatt-hours. This compares to the total of 5,162 million shown for year 20 in the revised study. The smaller value in the revised study is due to consideration at this time of only the two storage units instead of the entire system. Upstream storage when added would increase the possible firm output, the increase, however, would represent a credit to these subsequent developments.

A second change in the revised payout study was to redesignate the previously so-called "firm excess" energy as firm since a more recent review of market studies indicates that all the energy can be absorbed in the upper basin area by the time the generating units can be placed into service.

The chart displayed by Mr. Larson and the December 24 payout study include the irrigation assistance required by the Shiprock Indian division of the Navaho project for which data was furnished by the Bureau of Indian Affairs subsequent to the completion of the financial operation study contained in the Secretary's December 10 report.

If additional explanation is desired, please let me know.

Sincerely yours,

W. A. DEXHEIMER, *Commissioner.*

Chairman HARRISON. Proceed, Mr. Rollins.

STATEMENT OF A. P. ROLLINS, MEMBER, BOARD OF WATER ENGINEERS OF TEXAS, AUSTIN, TEX.

MR. ROLLINS. I am A. P. Rollins, Austin, Tex., member of the Board of Water Engineers of Texas.

The Board of Water Engineers of Texas, operating under authority of State laws, is responsible for the allocation of State waters and for the issuing of permits to appropriate and beneficially use those waters.

As a member of the Board of Water Engineers of Texas, I am filing this statement in protest of the authorizations of the San Juan-Chama project contained in House bill No. 4443 and other companion bills now before the committee.

Texas has certain rights to waters from the Rio Grande and those rights were recognized in the negotiation of the Rio Grande compact between Colorado, New Mexico, and Texas. That compact was ratified by the three States and approved by the Congress of the United States.

Under the provisions of that compact, Texas is entitled to water from the Elephant Butte and Caballo reservoirs in which the flow of the Rio Grande is stored. El Paso County Water Improvement District No. 1, with approximately 70,000 acres of irrigable land, is a participant in and a beneficiary under the Rio Grande project. Hudspeth County with approximately 20,000 acres of irrigable land also receives water from the Rio Grande project. The city of El Paso, the sixth in size in Texas, with a population of approximately 150,000 because of its ownership of water-rights land is dependent on the Rio Grande for a supplemental water supply.

The Elephant Butte and Caballo Reservoirs impound the entire flow of the Rio Grande. The Rio Chama is the largest contributing tributary of the Rio Grande.

Water was first stored in the Elephant Butte Reservoir in 1915. Since that time the reservoir has overflowed or spilled one time. The reservoir spill occurred in 1942. The record of only 1 spill in 39 years indicates that the Elephant Butte Reservoir is adequate to store the flow of the Rio Grande and that additional storage insofar as the Rio Grande project is not needed.

The record also indicates that since storage began in January 1915 the quantity of water in storage has been less than 400,000 acre-feet for 52 months, or more than 4 years. The combined storage of the Elephant Butte and Caballo Reservoirs is approximately 2,500,000 acre-feet.

The total storage in the Elephant Butte and Caballo Reservoirs on January 15, 1954, amounted to 136,000 acre-feet. It is evident that the capacities of the two reservoirs are not in excess of the requirements of the Rio Grande project. The present winter runoff is only 25 percent of normal and snow reports are not encouraging.

Since the Elephant Butte Reservoir is adequate to store the total runoff of the Rio Grande, there having been but 1 spill during the 39 years water has been stored in it, additional storage is not needed to conserve water for irrigation.

The present situation is, without including the Hudspeth lands which is not within the district, 160,000 acres of irrigable land under the Rio Grande project a total of 136,000 acre-feet of water in project storage, and an accumulated deficit of over 400,000 acre-feet in the quantities allotted under the compact.

It is evident, therefore, that additional upstream storage for the fullest practicable utilization of the flow of the Rio Chama and its tributaries for the development of hydroelectric power in conjunction with the flows diverted from the west slope would further diminish the already limited water supply for the Rio Grande project.

Speaking for the Board of Water Engineers of Texas, I respectfully request that this committee do not authorize the San Juan-Chama project until it has been determined that the construction and operation of the proposed project will not further deplete Rio Grande project storage and will not conflict with or further complicate the administration of the Rio Grande compact.

I would like to say in addition to this statement, members of the committee, that in a conference with the Governor of Texas he authorized me to bring a letter to this committee protesting the authorization of this project. That letter has been handed to Congressman Regan.

MR. REGAN. Mr. Chairman, I asked for the insertion of the letter of the Governor the other day.

Chairman HARRISON. Yes, that has been made a part of the record. (See p. 260.) Mr. Regan, do you have further questions?

MR. REGAN. You are a member of the Board of Engineers of Texas. How many members are there?

MR. ROLLINS. Three members on the board, sir.

MR. REGAN. And your concern is the conservation of the precious water near that State?

Mr. ROLLINS. That is our total concern, sir, yes.

Mr. REGAN. And you are quite familiar with the area out there under the Rio Grande project, under the Elephant project, and our project in El Paso?

Mr. ROLLINS. Yes, sir; very well acquainted with it. Recently the board of water engineers has been compelled to deny a request for a permit to appropriate waters from the Rio Grande because there are no waters available for additional lands.

Mr. REGAN. In other words, we have been in short supply now for more than 10 or 12 years, very short supply?

Mr. ROLLINS. Yes.

Mr. REGAN. Much less than that which was contemplated when the works were first put in?

Mr. ROLLINS. That is true.

Mr. REGAN. And it is your feeling that if these additional storage dams were put in the Rio Chama, that we would have less water at Elephant Butte than we now have?

Mr. ROLLINS. Yes. We feel that since that Rio Chama is the largest contributing tributary of the Rio Grande, and since the supply of water from the Elephant Butte Reservoir receiving the total flow of the Rio Grande, with the exception of the El Vado, is providing insufficient, that further storage upstream which must primarily be for the purpose of developing power and supplying municipal needs, would, of necessity, further deplete the flow that now goes into the Elephant Butte Reservoir.

Mr. REGAN. This reservoir was built with a total capacity at Elephant Butte of 2,600,000 feet that has been diminished some by silt. But we have the additional dam down the river, Caballo Dam, that brings it up to 2,500,000 feet capacity, and yet there is but 136 acre-feet of water available now in the two dams?

Mr. ROLLINS. 136,000 acre-feet of water available on the 15th of January, in the two reservoirs.

Mr. REGAN. I believe that is all, Mr. Chairman. Thank you, Mr. Rollins.

Chairman HARRISON. Mr. Saylor?

Mr. SAYLOR. Mr. Rollins, by a homely analogy, I think what you are saying to this committee is that if you do not have enough water down there to fill 1 bucket, why try to spread it around and put a little in 2 or 6.

Mr. ROLLINS. Sir, that is a homely way to express it. We are concerned with the preservation of a project that has been sound, and that has met its obligations. We do not want to see the water supply to that project depleted for the purpose of developing power, and we do not want to see the principal tributary of the Rio Grande turned over to another agency for operation for other purposes.

Mr. SAYLOR. You were in the room when Mr. Gregg testified a few minutes ago?

Mr. ROLLINS. Yes, sir.

Mr. SAYLOR. Do you agree with his statement that the Elephant Butte project has been a worthwhile project in its area?

Mr. ROLLINS. Very worthwhile, and I would say almost a necessary project, because it has enabled the development in the lower part of New Mexico and in the El Paso and Hudspeth Counties in Texas, it furnishes the food and the agricultural products for a town

of 150,000 people, and for military installations in the vicinity of El Paso.

Mr. SAYLOR. And is it your considered opinion that if the San Juan-Chama project is added to the upper Colorado River storage project and participating projects, that it will not only be infeasible in itself, but might very likely prejudice and injure the Elephant Butte project which is now in operation?

Mr. ROLLINS. That is our fear, sir. Insofar as Texas is concerned, we have no objection to the diversion of 235,000 acre-feet from the San Juan Basin through the Continental Divide, but we do have an objection to the construction of some 750,000 additional acre-feet of storage on the Rio Chama that would control in addition to the 235,000 the ordinary flow of the Rio Chama.

Mr. SAYLOR. In view of the shortage of water which you have experienced in your area, so that in the last 39 years the present reservoir has only spilled once, where do you believe they could acquire the water or information which would enable them to complete the study you have asked for in your last paragraph? In other words, in the last paragraph of your statement you asked that this committee not authorize this project until it has been determined that the construction and operation of the project will not further deplete the Rio Grande storage project, will not conflict with or further complicate the administration of the Rio Grande compact.

Mr. ROLLINS. Congressman, I am not familiar, of course, with the conditions in northwest New Mexico, and I would not presume upon my good friends of New Mexico to tell them or suggest to them how they should work out their problems. But if it is possible for them to divert the water from the San Juan River across into the Rio Grande watershed without interfering with the ordinary flow of the Rio Chama that already has been proven almost inadequate for our needs on the lower end of the Rio Grande, we would have no objection to that.

Mr. SAYLOR. That is all. Thank you very much, Mr. Rollins, for coming. You have been an excellent witness.

Chairman HARRISON. Mr. Aspinall?

Mr. ASPINALL. No questions.

Chairman HARRISON. Mr. Berry?

Mr. BERRY. No questions.

Chairman HARRISON. Mrs. Pfost?

Mrs. PFOST. No questions.

Chairman HARRISON. Mr. Rogers?

Mr. ROGERS of Colorado. No questions.

Chairman HARRISON. Mr. Fernandez?

Mr. FERNANDEZ. When did you say it spilled over?

Mr. ROLLINS. 1942.

Mr. FERNANDEZ. 1942?

Mr. ROLLINS. Yes, sir.

Mr. FERNANDEZ. And in subsequent years we have had quite a drought and it is now empty?

Mr. ROLLINS. The two reservoirs have 136,000 acre-feet of water in them at this time; yes, sir.

Mr. FERNANDEZ. The total capacity is what?

Mr. ROLLINS. The total capacity is approximately 2,500,000 acre-feet.

Mr. FERNANDEZ. And if that reservoir had not filled up in 1942, your people would have really been in bad shape?

Mr. ROLLINS. They certainly would.

Mr. FERNANDEZ. Thank you, that is all.

Chairman HARRISON. Thank you very much, Mr. Rollins.

The next witness will be Mr. L. A. Scott.

STATEMENT OF LOUIS A. SCOTT, RIO GRANDE COMPACT COMMISSIONER FOR TEXAS

Mr. SCOTT. Mr. Chairman and members of the committee, my name is Louis A. Scott. My address is 1100 First National Building, El Paso, Tex., and I am Rio Grande compact commissioner for the State of Texas.

At the outset I wish to make clear that the only portion of the bills being considered by the committee to which the State of Texas objects is the authorization of the San Juan-Chama transmountain diversion, and the construction of dams, reservoirs, and hydroelectric plants on the Rio Chama in New Mexico as an integral part thereof, as a participating project.

Under the Rio Grande compact the commissioner for New Mexico represents all interests above Elephant Butte Reservoir in that State, while the commissioner for Texas represents all interests below the reservoir. The area so represented by the Texas commissioner includes the entire Rio Grande Federal reclamation project, which consists of Elephant Butte Dam and Reservoir, Caballo Dam and Reservoir, Elephant Butte Irrigation District in Sierra and Dona Ana Counties, N. Mex., and El Paso County Water Improvement District No. 1 in El Paso County, Tex. There are approximately 160,000 irrigable acres within the Rio Grande Federal project, 90,000 lying in New Mexico and 70,000 being in El Paso County, Tex.

The Rio Grande Federal Reclamation project has been in operation since 1915 and is rated by the Bureau of Reclamation as one of the three most successful Federal projects. There has never been a default in the payment to the United States of any installment of construction, operation or maintenance costs, or any other charge made by the Government. The project is not subsidized and all costs are being paid by the landowners within the territorial limits of the project.

Under the terms of the Rio Grande compact, New Mexico is required to make certain scheduled deliveries of water into Elephant Butte Reservoir. That New Mexico has defaulted to a serious extent in fulfilling its obligations will be mentioned later in this statement.

The Rio Chama is the principal tributary of the Rio Grande in New Mexico. It is therefore readily apparent that if anything is done to obstruct, withhold, diminish, or curtail the normal flow of the Rio Chama, lands under the Rio Grande Federal project will be deprived of the water to which they are entitled under the Rio Grande compact.

At this point mention should be made of the treaty of 1906 between the United States and Mexico whereby the United States is required to deliver to Mexico 60,000 acre-feet of water per year from water stored in Elephant Butte Reservoir. Such deliveries naturally reduce the amount of water available for use on Rio Grande Federal project lands.

The Rio Grande compact contemplates and intends that there shall be a normal release of 790,000 acre-feet per year from project storage to satisfy the needs of project lands and to meet the treaty requirement for delivery of 60,000 acre-feet to Mexico. Article VIII of the compact provides that if either New Mexico or Colorado has accrued debits to Texas, then during the month of January of any year the commissioner for Texas may demand release of water stored in reservoirs constructed in New Mexico above Elephant Butte after 1929 to the amount of accrued debits, and that such releases shall be made in sufficient quantities, within the limits of such debits, to bring usable water in project storage to 600,000 acre-feet by March 1 and to maintain this quantity in storage until April 30.

Article VII of the compact further provides that neither New Mexico nor Colorado shall increase storage in reservoirs constructed after 1929 when there is less than 400,000 acre-feet of usable water in Elephant Butte and Caballo Reservoirs.

The third paragraph of article VI of the compact provides that New Mexico shall not accrue debits in excess of 200,000 acre-feet, except as such debits may be caused by storage of water held in reservoirs constructed after 1929, and that New Mexico shall retain water in storage at all times to the extent of its accrued debit.

Since El Vado Reservoir on the Rio Chama is at present the only reservoir on this river constructed after 1929, this provision of article VI means that New Mexico shall retain in El Vado the amount of its accrued debit to Texas. The capacity of El Vado Reservoir is about 198,000 acre-feet. In other words, as of December 31, 1952, New Mexico owed Texas, which under the compact is but another word for the Rio Grande Federal reclamation project, 465,000 acre-feet of water. No computation has been made for the year 1953, but it is probable New Mexico's water debt to Texas has increased.

This enormous debt, which is more than twice the maximum permitted New Mexico by the compact, has been accumulated with only one dam on the Rio Chama. While we do not intend to imply that all of New Mexico's debit has been caused by refusal to operate El Vado Reservoir in compliance with the Rio Grande compact, we do say that a very substantial part of the debit is directly attributable to such dereliction by New Mexico.

Because of repeated violations of the Rio Grande compact by New Mexico, United States Senator Price Daniel, while serving as attorney general of Texas, felt impelled in the discharge of his official duties to file suit in behalf of the State of Texas against the State of New Mexico. This suit is now pending in the Supreme Court of the United States.

In spite of the Rio Grande compact and New Mexico's refusal to operate the one reservoir, El Vado, on the Rio Chama in compliance with that solemn agreement, New Mexico is now urging enactment of legislation by the Congress which will authorize the construction of four other reservoirs on the Rio Chama, having a combined storage capacity of more than $3\frac{1}{2}$ times that of El Vado.

New Mexico proposes a transmountain diversion of San Juan River water into a tributary of the Rio Chama to the extent of 235,000 acre-feet per year. Yet New Mexico in the same proposal asks the United States to finance the construction of 4 new dams and reservoirs

for the impounding of 753,000 acre-feet of the annual flow of the Rio Chama. This amount added to El Vado's capacity of 198,000 acre-feet makes a total of 951,000 acre-feet of the Rio Chama flow that New Mexico wishes to store behind 5 dams.

It goes without saying that such storage will include the normal flow of the Rio Chama as well as imported San Juan River water, and thereby New Mexico will, for all practical purposes, be given absolute control of the principal tributary of the Rio Grande, which in turn supplies all of the water for the Rio Grande Federal reclamation project.

Remembering the difficulties experienced with New Mexico in the operation of one reservoir on the Rio Chama, Texas is justified in viewing with grave concern and alarm the prospect of giving New Mexico the opportunity to control all of the natural flow of this stream which is absolutely essential to the continued successful operation of the Rio Grande Federal project.

Since 1913 the highest recorded annual flow of the Rio Chama at Chamita, N. Mex., near the confluence of the Chama with the Rio Grande, was 907,000 acre-feet. Thus the entire heaviest flow of the river for any year during the past 40 years was less than New Mexico would impound in five reservoirs.

The combined storage of usable water in Elephant Butte and Caballo Reservoirs has not been 600,000 acre-feet at any one time since April 1950. Hence if the four new reservoirs New Mexico desires the United States Government to build on the Rio Chama had been in existence in January 1951 under the terms of article VIII of the Rio Grande compact, Texas would have, in view of New Mexico's debt to Texas, demanded the release of sufficient water in those reservoirs to bring usable water in the Rio Grande Federal project storage to 600,000 acre-feet by March 1, 1951, and to maintain that quantity in project storage until April 30, 1951.

The same procedure would have been followed each year thereafter so long as New Mexico had an accrued debit to Texas and there was less than 600,000 acre-feet of usable water in project storage in January.

As of January 15, 1954, there were only 136,000 acre-feet of usable water in project storage. On the same date New Mexico's debt to Texas was in excess of 460,000 acre-feet.

Assuming existence of the 4 new reservoirs, and assuming their content at approximately 500,000 acre-feet, Texas could demand the drainage of the reservoirs in order to put 600,000 acre-feet of usable water in project storage.

For considerable periods of time during the years 1950 to 1953, inclusive, there was less than 400,000 acre-feet of usable water in Rio Grande Federal project storage. This was true during 9 months of the year 1953. Under article VII of the Rio Grande compact there can be no increased storage in reservoirs on the Rio Chama when there is less than 400,000 acre-feet of usable water in project storage.

The Secretary of the Interior has not recommended authorization of the San Juan-Chama project as a participating project under any of the bills being considered by this committee. The Secretary has not made available to the committee any feasibility report.

No provision is made in the bills or plan of the project as to how or by whom the various structures on the Rio Chama will be operated.

This is left to speculation and conjecture, or to possible future agreement between many conflicting interests.

Proponents of the legislation say no harm can come from authorization of the project because the bills provide that no appropriation for or construction of the project shall be made or begun until coordinated reports have been submitted to the affected States and approved by the Congress. It seems to us this is putting the cart before the horse in that the project should not be authorized until its economic justification and feasibility is established after thorough, careful, extensive studies by all interested and affected parties.

We sincerely believe that the San Juan-Chama project as submitted is fraught with danger to the Rio Grande Federal irrigation project. If lands under the latter project are deprived of the normal flow of the Rio Chama they will revert to desert, with consequent disaster to the economy of the whole area.

For the reasons herein stated, we respectfully urge the committee to strike from the bills the authorization for the San Juan-Chama project as a participating project.

Thank you, Mr. Chairman.

Chairman HARRISON. Mr. D'Ewart, have you any questions?

Mr. D'Ewart. I am interested in the suit which the State of Texas has brought against the State of New Mexico. Is that for money damage?

Mr. Scott. No, sir, to compel compliance with and observance of the compact, and in the suit the plaintiff seeks the appointment of a Federal watermaster to operate the El Vado Dam and the river in compliance with the compact.

Mr. D'Ewart. Has the Supreme Court in other cases appointed a Federal watermaster for such purposes?

Mr. Scott. Not to my knowledge.

Mr. D'Ewart. It would be a new precedent that you are requesting?

Mr. Scott. Yes, sir.

Mr. D'Ewart. Has the Court accepted the case and are they willing to hear it?

Mr. Scott. Yes, sir, the Court accepted the case and at present it is in this phase: The Court appointed a special—well, pardon me. Let me start over again for the sake of continuity.

New Mexico filed an answer urging the indispensability of the United States as a party. The Supreme Court appointed a special master and instructed him to hear evidence and make a finding on that and report back to the Court before going into the merits of the case.

Such a hearing was held in Santa Fe, N. Mex., during the month of April 1953. The question was argued before the special master the latter part of September. As yet he has not made his finding.

Mr. D'Ewart. Does Texas seek the return of any of this water debt?

Mr. Scott. Well, I don't know just how you mean by the return of it. Texas will expect the debt to be paid, the 465,000 acre-feet of water debt to be paid; yes, sir. If that is what you mean, yes, sir.

Mr. D'Ewart. That is exactly what I mean.

Mr. Scott. Yes, sir.

Mr. D'Ewart. My point was whether you expected to collect this debt or were seeking only that a further debt did not occur.

Mr. Scott. Both.

Mr. D'Ewart. Thank you.

Chairman HARRISON. Mr. Saylor, have you any questions?

Mr. SAYLOR. Mr. Scott, probably because of the fact that I agree so wholeheartedly with your statement, I would like to congratulate you on your approach to this. I believe, as you have stated, that neither this nor the other project should be processed until we have had a complete showing that there is economic feasibility and justification for this entire project.

Has there ever been a question raised between New Mexico and Texas as to who should be charged for evaporation losses in any reservoir?

Mr. SCOTT. Well, yes, sir; that is a matter of a rule of practice in the administration of the compact. For instance, evaporation losses of all water stored in Elephant Butte and Caballo are absorbed, you might say, by the Rio Grande project. New Mexico is not penalized for those losses by evaporation. For water stored in the El Vado Reservoir, the evaporation losses there would be absorbed by New Mexico.

Mr. SAYLOR. Do you concur in the testimony of the other two witnesses from Texas that if this San Juan-Chama project is authorized, before it has been shown to be economically feasible, that it not only might prove itself to be an unprofitable venture, but it might also prejudice the Elephant Butte project?

Mr. SCOTT. Mr. Saylor, yes, I agree with that. While I am no engineer, giving the matter careful thought, I don't see how 953,000 acre-feet can be stored on the Chama River and not have a very serious adverse effect on the Rio Grande project. I just don't see how that can occur.

Mr. SAYLOR. That is all.

Chairman HARRISON. Mr. Regan?

Mr. REGAN. Mr. Scott, this is referred to as a Texas project, but after all, under the Elephant Butte Dam, the greater percentage of the water is used in the State of New Mexico, is that right?

Mr. SCOTT. Yes; because a larger part of the lands under the project are in New Mexico.

Mr. REGAN. You, as a Texas member of the compact commission, handle everything below the site of the Elephant Butte Dam?

Mr. SCOTT. That is correct.

Mr. REGAN. That takes care of the Sierra and Dona Ana Counties in New Mexico?

Mr. SCOTT. Yes, sir.

Mr. REGAN. There has been quite a bit said here about defense, why we should put in this project because of that. What defense installations have we in El Paso County?

Mr. SCOTT. Well, Fort Bliss is a very large military post; and there is the Air Force base, a large field; and the William Beaumont Hospital, an Army hospital which is a large installation.

Mr. REGAN. Has Fort Bliss been established more than a hundred years?

Mr. SCOTT. Yes, sir.

Mr. REGAN. And is it a fact that it is the largest military post in the United States from the point of area?

Mr. SCOTT. I think that is correct.

Mr. REGAN. Is it a further fact that with the wide-open country adjacent to Fort Bliss, within their reservation, the Army is trying out various new guided missiles and various other new innovations in military science that can best be done there than any other installation that you know of in the United States?

Mr. SCOTT. Well, Fort Bliss is the headquarters for guided missiles for the entire United States Army, headquarters for that work, and also one of the principal installations for antiaircraft.

Mr. REGAN. Are you familiar with the number of personnel in the Military Establishment there now, both Fort Bliss and the airfield?

Mr. SCOTT. No official information is given out, Mr. Regan, I think for security reasons, but I am confident there must be at least 30,000 troops at those 3 places; that is Biggs Field, Fort Bliss, and the general hospital.

Mr. REGAN. Do you know or do you not know that at Fort Bliss there is the military school to graduate officers in military science in the handling of these new guided missiles?

Mr. SCOTT. That is right.

Mr. REGAN. And they have a class going there almost all year round, graduating men in, I think, a 6-months' course, graduating officers there to handle this new scientific guided missile material.

Mr. SCOTT. Yes, sir.

Mr. REGAN. Does the city of El Paso supply the military installation with water?

Mr. SCOTT. With a very substantial amount of water; yes, sir.

Mr. REGAN. Does the city of El Paso obtain a supplemental water supply from the Rio Grande River?

Mr. SCOTT. I think I am correct in saying that the city gets about one-third of its municipal supply from the river, that comes about in this way: The city has purchased slightly more than 1,400 acres of first-class water-right lands within the Rio Grande project. By reason of the ownership of those lands, the city is entitled and does run the water to which the lands would be entitled, diverts them out of one of the project facilities, puts that water through its treating plant and then into the mains.

Mr. REGAN. And in that way the land is left fallow and out of cultivation?

Mr. SCOTT. That is right.

Mr. REGAN. They use the water to which the 1,400 acres might be entitled as a supplemental supply to the water supply of El Paso which, in turn, supplements some of the water to the military installations there?

Mr. SCOTT. That is correct. The city also gets water from the river in this manner: There is a contract between the city and the water district approved by the Secretary of the Interior, whereby during the nonirrigating season, that means principally in the winter months, the city uses what is called return flow water, water that has been put on the lands, has percolated through the soil, and gone back into the drainage ditches and from there into the river.

The city, under the contract, is entitled to use that water and pays a specified consideration.

Mr. D'Ewart. Will you yield a moment?

Mr. REGAN. Yes, sir.

Mr. D'EWART. Does the city of El Paso under those circumstances pay a domestic water rate or irrigation rate?

Mr. REGAN. They pay the irrigation rate on the land, I believe. Is that right?

Mr. SCOTT. Yes, sir. The city, by reason of the ownership of the water-right lands, is entitled to just as much water as the private individual under the project would be entitled to receive if he owned the same number of acres, and the same charges are made against the city as to that 1,400 acres as against any private owner of lands under the project.

Mr. REGAN. That is all.

Chairman HARRISON. Mr. Aspinall?

Mr. ASPINALL. No questions.

Chairman HARRISON. Mrs. Pfost?

Mrs. PFOST. No questions.

Chairman HARRISON. Mr. Berry?

Mr. BERRY. In 1942 when this dam was spilled, was there quite considerable water that went over the spillway at that time?

Mr. SCOTT. Yes, sir; there was.

Mr. BERRY. Do you have any idea what it would have amounted to?

Mr. SCOTT. No, sir; I don't. I don't have any record on that.

Mr. BERRY. Would you have any way of knowing which one of these tributaries the principal spillage came from?

Mr. SCOTT. It was general, Mr. Berry. The whole area of the Rio Grande watershed and its tributaries experienced two wet seasons in consecutive order. The principal source of supply, by far the greater part of the water supply getting into the Elephant Butte Reservoir comes from melting snows on the watershed of the river and not from rainfall.

It just so happened that in the winters of 1940, 1941, 1942, there were very heavy snowfalls, and the accumulated runoff from those two seasons of heavy snowfall caused the spill.

Part of it came from what is called the main stem of the river in Colorado, and the other part from Chama and other tributaries of the Rio Grande, in New Mexico.

Mr. BERRY. But had that water been stored at that time, instead of being permitted to go over, wouldn't that have been enough so that New Mexico might have been able to meet its obligation to Texas?

Mr. SCOTT. Well, under the compact when a spill occurs, that wipes the slate clean and everybody starts all over again. That spill wipes out all debits and all credits and everybody starts even again, when an actual spill occurs.

Mr. BERRY. Regardless of the amount that is spilled?

Mr. SCOTT. Yes, sir.

Mr. BERRY. In other words, next spring, for instance, or when you have your water runoff, if there were sufficient so that this dam should spill again, then your suit here in the Supreme Court would be nullified, is that correct?

Mr. SCOTT. No, I wouldn't exactly say that, but New Mexico's debit would be wiped out.

Mr. BERRY. But that is what your suit is for, is it not?

Mr. SCOTT. No, the suit isn't primarily on account of the debit. It is for alleged violations under the compact, and not operating under the compact.

Mr. BERRY. I think that is all.

Chairman HARRISON. Mr. Fernandez, do you have any questions? We are going to stop at 4:30. There is another witness, I understand.

Mr. FERNANDEZ. I will do the best I can in that time. In the suit, the question is to determine whether or not we did violate the compact, which we deny.

Mr. SCOTT. That is right.

Mr. FERNANDEZ. And therefore, it would necessarily have to construe the compact and interpret the compact so that these difficulties will not arise in the future, is that correct?

Mr. SCOTT. I don't know that the suit involves a construction of the compact, Mr. Fernandez.

Mr. FERNANDEZ. Well, it necessarily does, because you claim that we have violated the compact and we deny it.

Incidental to that is also the question of whether or not the Federal Government is a necessary party, and that comes about because we have a lot of Indians up and down the river north of Elephant Butte, all of them having had, long before the white man ever settled there, prior rights and those rights are involved in this compact.

Mr. SCOTT. That is what New Mexico claims.

Mr. FERNANDEZ. That is right.

By the way, this compact itself provides that under certain circumstances we may build up a debit, does it not?

Mr. SCOTT. Yes, up to 200,000 acre-feet.

Mr. FERNANDEZ. You wouldn't want us to continue to pay our debts by spilling the water that does nobody any good, would you?

Mr. SCOTT. What do you mean by spilling water?

Mr. FERNANDEZ. You just explained to the committee that every time that the water spills over the Elephant Butte Dam, then our debt is paid to you, although it does not do you or us any good.

Now, if we had as we have now, this El Vado up there, which was also drained in this drought, if we had a few more of those, we could pay our debt without spilling the water to pay it, when the good years come.

That is logical, is it not?

Mr. SCOTT. I don't think so. When you begin damming up the normal flow of the Chama River, I don't see how that is going to help pay the debt. Nothing would make the people in the Rio Grande project happier than to see Elephant Butte fill up and spill. I can assure you of that.

Mr. FERNANDEZ. We are doing our very best, and we are now fixing up that channelization through Albuquerque and south of it, and we plan on continuing to do that in the future.

Along with that, a few more dams would help, I am sure, although this bill does not require any dams to hold back the Rio Grande water.

Your real fears are that we may violate the law, in violation of the compact unlawfully withhold some of the Chama waters that really belong to you; that is correct, is it not?

Mr. SCOTT. I just don't see how 4 more dams could be built on the Chama River and impound 950,000 acre-feet of water without that diminishing the supply getting into Elephant Butte. I don't see how it could be done.

Mr. FERNANDEZ. We don't have to build all of them. It is planned to build dams. By the time we get through with our plans, we hope

we don't have to. We want to assist in making complete plans that will show you and us how we can operate those dams without hurting you and still helping us.

Mr. SCOTT. No such plan has as yet been submitted, Mr. Fernandez.

Mr. FERNANDEZ. No, sir, it takes money to get those plans. We want to have a definite objective toward which we can work. In the northern part of the State, the people over there, you haven't heard any of them objecting here. They agree more or less upon this division of the water so that we can get 235,000, not to exceed that, from the San Juan over into the Chama.

Do you know any way how we can handle that water without some reservoirs to control and store it?

Mr. SCOTT. Well, I am no engineer, Mr. Fernandez.

Mr. FERNANDEZ. Neither am I.

Mr. SCOTT. I don't know. I can't answer that question.

Mr. FERNANDEZ. But we both understand this terrific need for water which all of the people have described here in that Rio Grande. I do not know of any way we can get that water up here, which these people in the San Juan-Chama have so generously, and finally after a long struggle agreed we should have, unless we have some reservoirs and unless we have some money to develop the plans that will tell you and me and all our people just how that water will be handled and regulated down the river for that need for use.

Chairman HARRISON. Is that all?

Mr. FERNANDEZ. That is all.

Chairman HARRISON. Thank you very much.

We have one other witness, Mr. N. B. Phillips. With the indulgence of the committee, we will allow Mr. Phillips to get his statement in. I hope that the questions asked of him will, of necessity, be brief. We would not like to ask him to come back and our schedule for tomorrow will be very full.

Mr. REGAN. I am grateful to you for hearing him now, because Mr. Phillips will be free, then, to go on. I am sure his statement will be brief and I assure you that my questions will be more so.

STATEMENT OF N. B. PHILLIPS, MANAGER, EL PASO COUNTY WATER IMPROVEMENT DISTRICT NO. 1, EL PASO, TEX.

Mr. PHILLIPS. My name is N. B. Phillips. My address is 306 El Paso National Building, El Paso, Tex.

I am the manager of El Paso County Water Improvement District No. 1 which comprises the Texas portion of the Rio Grande Federal reclamation project and I speak for 8,900 water users in said district.

I wish to voice my protest of the above-mentioned bills being presently considered by this committee to the extent only of that part of the bills pertaining to the San Juan-Chama project. I have no comments to make in regard to other projects contained in the bills.

The Rio Grande Federal reclamation project receives its waters from the Rio Grande, and its vested water rights are the results of filings made by the United States in 1906 and 1908 with the territorial engineer of New Mexico. The 1906 filing was made on 730,000 acre-feet of unappropriated waters of the Rio Grande and

the 1908 filing amended the filing of 1906 to cover all of the unappropriated waters of the Rio Grande and its tributaries in New Mexico at that time. The waters appropriated are stored in the Elephant Butte and Caballo Reservoirs having a total combined capacity of approximately 2,548,000 acre-feet.

The project was completed in 1916 and actual storage began in 1915. Since that time and up to the present date all waters under the filings have been put to continuous beneficial use and the project has developed into the second most prosperous reclamation project in the United States based on crop production compared to maintenance and operation cost. It has never defaulted on any payment to the United States and its initial construction cost has been reduced from approximately \$14 million to \$3,300,000.

The Texas people on the Rio Grande project vigorously oppose the authorization of the San Juan-Chama project for the following reasons:

1. No feasibility report has been made available to us for study.
2. The testimony given by Mr. Dexheimer, Commissioner of Reclamation, before this committee, indicates the Interior Department has not recommended the authorization of this project in any form.
3. The Rio Grande project and our district receives annually an average of 65 percent of its water from New Mexico and 35 percent of its water from Colorado. The San Juan-Chama project calls for the diversion of 235,000 acre-feet annually from tributaries of the San Juan River over to the Chama River in New Mexico and for the construction of 4 power and storage dams aggregating 735,000 acre-feet plus the storage in El Vado Reservoir already constructed with a capacity of 198,200 acre-feet.

In addition to these features of the San Juan-Chama project the Army engineers were authorized by the Flood Control Act of 1948 to construct a flood-control dam at Chamita, N. Mex., on the Chama River, with a reservoir capacity of 730,000 acre-feet.

The Chama River is the largest tributary of the Rio Grande in New Mexico from which State we derive 65 percent of our water supply. It is our opinion that the authorization and construction of the San Juan-Chama project with ample storage facilities on the Chama River to control not only San Juan River waters but all the flood and natural flow of the Chama River could only result in loss of our storage and could dry our project up. History has proven without any doubt that when storage dams are built they retain back of them the waters that they capture.

4. We have no information as to what agency is to operate the Chama River or how it is to be operated.

5. Even with the Rio Grande compact between the States of Colorado, New Mexico, and Texas, the law of the Rio Grande, the State of New Mexico is indebted to Texas 465,000 acre-feet of water as of December 31, 1952. This has been accomplished with only one storage dam. We wonder what the indebtedness would be with 5 more dams to operate.

6. Because of violations of the Rio Grande compact by the State of New Mexico, the State of Texas has filed a suit against New Mexico in the Supreme Court of the United States asking for the appointment of a Federal watermaster to operate the Rio Grande in accordance with the terms of the Rio Grande compact.

7. At no time during the promotion of the San Juan-Chama project has the State of Texas or any of its subdivisions been contacted by New Mexico to discuss what was contemplated or what effect it might have on the area downstream.

8. The San Juan-Chama project also provides for the exchange of water on the upper reaches of the Rio Grande above the confluence of the Chama and the Rio Grande into the Canadian River Basin to be repaid by San Juan waters. This could only result in further loss of water to the users below Elephant Butte Dam.

9. We do not feel any project should be authorized conditionally or otherwise until comprehensive feasibility reports have been made and all affected interests given the opportunity to study and analyze them.

We respectfully submit our objections to the San Juan-Chama project and ask that the project not be authorized at this time.

I might say, Mr. Chairman, that the four witnesses who have appeared in opposition to the San Juan-Chama project have attempted, in order to conserve time, to deal with certain features of objections so that there would not be too much unnecessary overlapping. Certainly my report is very brief and it is intended to try to pick up any loose ends which were not presented to the committee by Mr. Gregg, Mr. Rollins, and Mr. Scott.

Chairman HARRISON. Have you any questions, Mr. D'Ewart?

Mr. D'Ewart. No.

Chairman HARRISON. Mr. Regan?

Mr. REGAN. Yes, Mr. Chairman, I would like to ask 2 or 3 questions.

Mr. Phillips, these proposed dams in the Chama are for the purpose of, and almost the sole purpose of, generating electricity. What is your observation of the state of electricity generated at Elephant Butte?

Mr. FERNANDEZ. I think that is a false premise. That is not quite true.

Mr. REGAN. Well, I think it is largely true. You say that you asked for 150,000 acre-feet of water for Albuquerque out of the 235,000, and propose to divert 5,000 to 10,000 into the Canadian. I do not know what other use you are going to put the water to. What I wanted was something about the hydroelectric plant in the Elephant Butte Dam. Do you know anything about the status of that dam, whether it is operating at 50 percent of capacity or 100 percent of capacity and what its financial status might be?

Mr. PHILLIPS. I think Mr. Gregg answered that question, Congressman Regan, very comprehensively. To just sum it up, it is my understanding, and I haven't supporting figures with me, but I believe what I have to say is correct, that the Elephant Butte powerplant has been operating at a deficit to the point that since its installation, I believe it is \$5 million in the red.

Mr. REGAN. So instead of paying off any costs, it is \$5 million in the red?

Mr. PHILLIPS. Yes. I want to qualify that answer that I may be corrected. I know it is in the red, but that may be high or it may be low, that figure.

Mr. REGAN. To supplement the waters that you have not been getting in the Elephant Butte, I understand that some wells have been

drilled up and down through the project, both in the Elephant Butte project and the El Paso area, is that correct?

Mr. PHILLIPS. Yes, sir. There has been drilled, due to the short water supply since 1950, approximately 1,000 wells on the Rio Grande Federal reclamation project in Texas and New Mexico, at a cost to the farmers who have drilled them of approximately \$7.5 million.

Mr. REGAN. That has all been paid by the farmers? There has been no Federal subsidy or help at all?

Mr. PHILLIPS. That is right.

Mr. REGAN. There was something said about the channeling of the San Miguel-Cedar brake area. Would you care to supplement any comments on that?

Mr. PHILLIPS. I think there has been considerable water lost over the period of time that the compact has been in operation, and since the spill at Elephant Butte Reservoir in 1942, due to the waterlogging of the area around San Miguel. However, I don't think that that is the largest contributing factor to the indebtedness now charged against the State of New Mexico under the compact.

Mr. REGAN. That is exactly what I was trying to arrive at, Mr. Phillips, that that is not responsible, in your opinion, for the indebtedness of 465,000 acre-feet of water as of December 1, 1952.

Mr. PHILLIPS. I think only just a part of it is chargeable to that.

Mr. REGAN. I believe that is all, Mr. Chairman.

Chairman HARRISON. Mr. Fernandez?

Mr. FERNANDEZ. You mentioned, Mr. Phillips, the testimony by Mr. Dexheimer. May I call your attention to a statement he made and which I hope you will concur with. He said, and I will quote it:

We would not object if the Congress saw fit to authorize it at this time.

He was speaking of the San Juan-Chama diversion project.

Of course he was speaking of permission for authorization.

You also mention in your statement this: "The Chama River is the largest tributary of the Rio Grande."

You are speaking only of tributaries, of course.

Mr. PHILLIPS. Tributaries in New Mexico of the Rio Grande.

Mr. FERNANDEZ. And the water that you get from the Rio Grande is collected very largely also from the hundreds of miles north of this tributary on the main Rio Grande channel and south of that for about a hundred or 150 miles also from the Rio Grande Basin or drainage basin?

Mr. PHILLIPS. Yes, sir; that is true, Mr. Fernandez. I think in my statement I said that 65 percent of the water supply for the Rio Grande Federal reclamation project comes from the Rio Grande in New Mexico and 35 percent comes from the Rio Grande in Colorado.

Mr. FERNANDEZ. The main amount of water, the largest portion of it, comes from the main stem of the Rio Grande and not from the Chama.

Mr. PHILLIPS. All comes from the Rio Grande.

Mr. FERNANDEZ. I know, but I am speaking about the main stem of the Rio Grande. That is true, is it not?

Mr. PHILLIPS. Well, I do not know as I quite understand your question.

Mr. FERNANDEZ. I was fearful that the committee might get the impression that the largest proportion of your water came from the Chama when you were speaking of it as being the largest tributary.

Mr. PHILLIPS. Well, inasmuch as we get 65 percent of our water supply from the State of New Mexico, and unquestionably the Chama River is the largest tributary of the Rio Grande in the State of New Mexico, it naturally follows out that a good part of our water supply does come from the Chama River.

Mr. FERNANDEZ. I grant you that, but what I wanted to make clear was that that Rio Grande in comparison to the Chama is a very long river.

Mr. PHILLIPS. Yes.

Mr. FERNANDEZ. And the watershed that contributes these waters is mostly on the main channel of the Rio Grande and not on the tributary known as Chama.

That is all, Mr. Chairman.

Chairman HARRISON. The committee will stand adjourned until 9 : 30 tomorrow morning.

(Whereupon, at 4 : 41 p. m., the committee was recessed, to reconvene at 9 : 30 a. m., Tuesday, January 26, 1954.)

COLORADO RIVER STORAGE PROJECT

TUESDAY, JANUARY 26, 1954

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to recess, at 9:30 a. m. in the committee room, New House Office Building, Hon. William H. Harrison (chairman) presiding.

Mr. HARRISON. The committee will come to order.

The first witnesses this morning will be Mr. Northcutt Ely, special counsel for the Colorado River Board of California, and Mr. Raymond Matthew, chief engineer for the Colorado River Board of California.

Do you want to proceed first, Mr. Ely?

Mr. ELY. Mr. Matthew will proceed.

Mr. HARRISON. As you remember yesterday you asked for 45 minutes and that was the time allotted. It is not a question of trying to cut you down but that is the schedule we arranged, and we hope you can finish.

Mr. ELY. We will do our best.

Mr. HARRISON. You may proceed.

STATEMENT OF RAYMOND MATTHEW, CHIEF ENGINEER, COLORADO RIVER BOARD OF CALIFORNIA

Mr. MATTHEW. Mr. Chairman and gentlemen of the committee, my name is Raymond Matthew. I am chief engineer of the Colorado River Board of California, which is a State agency created by act of the legislature in 1937. The board is charged with the responsibility for protecting the interests of California in the waters of the Colorado River. It is composed of 6 members appointed by the Governor, each representing one of the public agencies having established rights to the use of water or power from the Colorado River.

PROPOSAL BEFORE THE COMMITTEE

The bill H. R. 4449 now pending before the committee seeks to authorize certain specified initial units of the so-called Colorado River storage project and certain specified participating projects with certain qualifications. It also contains provisions covering the operation, administration, and management of the project including a proposal that the storage project and participating projects shall be treated and accounted for as one project.

Although not referred to in the pending bill, it is understood that the projects and the units and features of projects referred to in the bill are those reported upon by the Bureau of Reclamation in Project Planning Report No. 4-8A.81-1, dated December 1950, and entitled "Colorado River Storage Project and Participating Projects," supplemented by a number of special reports on participating projects. These Bureau of Reclamation reports collectively contain all of the original basic engineering, financial, and legal data and studies with respect to the proposed development.

Ostensibly, the primary purpose of the storage project, as set forth in the Bureau's project planning report, would be to so regulate the runoff of the Colorado River system above Lee Ferry as to permit full utilization of the 6,500,000 acre-feet per annum of consumptive use of water apportioned to the upper basin by article III (a) of the Colorado River compact, and at the same time assure that, under article III (d), the flow of Colorado River at Lee Ferry would not be depleted below 75 million acre-feet in any 10 consecutive years. However, the storage project appears to be basically a hydroelectric power project. The only showing of economic feasibility in the report is based solely on power revenues. Little, if any, physical relationship would exist between the units of the storage project and potential irrigation projects in the upper basin States. Only minor use could be made of the regulatory reservoirs directly for water-consuming projects. Future irrigation projects as a rule will require individual storage facilities.

Under the proposed program, it appears that decisions to build reclamation projects would depend upon the availability of revenues from physically unrelated power projects in the upper basin involving some form of basin account of net power revenues to subsidize the irrigation projects and meet the cost thereof not directly paid by the water users.

It is now understood that the Secretary of the Interior and the Commissioner of Reclamation have prepared supplemental reports which supersede and modify these previous reports in a number of particulars, including cost estimates and program of repayment; and that the Secretary proposes to recommend authorization at this time of only 2 out of 10 of the originally proposed storage units; namely, Glen Canyon and Echo Park, together with some 12 participating projects. However, the original planning report is understood to be incorporated, with modifications, in the supplemental reports referred to and still constitutes the only source of basic engineering studies.

The bill before the committee does not conform to either the original project planning report of December 1950, or the more recent supplemental reports referred to. It is uncertain, therefore, just what is the proposal before the committee. This is somewhat confusing. However, it is understood that a progressive plan of development is envisaged that would have as its final objective the construction and operation of storage reservoirs and of participating reclamation projects to consumptively use up to 7,500,000 acre-feet annually of the Colorado River system waters apportioned to the upper basin under the Colorado River compact. The Colorado River Board of California is, therefore, especially concerned with the overall development as ultimately projected, particularly in respect to its effect upon

and relation to the water supply available to the lower basin and particularly to California. But it is also concerned with proposed initial developments. Its primary interest is in certain basic factors involved, affecting or relating to water supply and the rights of California and its agencies in and to the use of Colorado River water. It is desired to emphasize those basic factors and the need for certain clarifications in the interest of protecting California's rights.

The engineering studies in the project planning report are vague and uncertain, involving or implying what are considered to be erroneous interpretations of the Colorado River compact, and do not clearly show what the effect of the proposed developments will be on the water supply and operations in the lower basin. The inadequacies of the engineering studies in this respect should be clarified by comprehensive additional studies before going ahead with any extensive overall development involving large-scale consumptive use of water in the upper basin.

WATER SUPPLY AND USE

The studies of water supply and use in the storage project report are directed almost entirely to estimates of the flow of Colorado River at Lee Ferry and depletion of that flow by upstream use. No information is given as to the water supplies available and use of water at existing and potential places of use. Data regarding stream flows at sites of proposed dams in the Colorado River storage project are shown in the report only as long-time averages with no indication of yearly or cyclic variation.

Estimates of the virgin flow of Colorado River at Lee Ferry are presented in the report for water years 1896 to 1947, inclusive. The estimated average annual virgin flow for this 50-year period is 15,590,000 acre-feet. The estimated average for the 32-year study period, 1914 to 1945, inclusive, is 15,638,000 acre-feet a year, which is the same as the estimate for the same period in the final report of the engineering advisory committee to the Upper Colorado River Basin Compact Commission, made in 1948. However, these estimates of virgin flow are less than the estimates published by the Bureau in 1946 in its comprehensive report, *The Colorado River*, which covered the period 1897 to 1943, inclusive, by calendar years.

The Bureau's figures for depleted flow at Lee Ferry under ultimate conditions appear to be low and its figures for consumptive use of water in the upper basin appear to be high, for three principal reasons:

- (1) The analyses of water supply and use are made under the erroneous assumption that article III (a) of the Colorado River compact apportions to the upper basin a water use of 7,500,000 acre-feet a year, in terms of depletion of the virgin flow at Lee Ferry, instead of a beneficial consumptive use of 7,500,000 acre-feet a year at places of use.

- (2) The studies are based on the assumption that under article III (a) of the compact the upper basin would be entitled to deplete the virgin flow an average annual amount of 7,500,000 acre-feet instead of a maximum of 7,500,000 acre-feet in any one year.

- (3) The assumption is made that the irrigation water requirement would be highest in wet years and lowest in dry years, which appears to be an unreasonable and illogical premise.

Estimates in the report of the ultimate depletion at Lee Ferry by upstream use range from 4,480,000 acre-feet in a year such as 1934, the driest on record, to 9,530,000 acre-feet in a year such as 1917, the year of greatest recorded stream flow, and average 7,500,000 acre-feet annually for a period such as 1914-45. Under proper interpretation of the compact, the maximum ultimate consumptive use of water apportioned by article III (a) of the Colorado River compact in the upper basin would be not more than 7,500,000 acre-feet in any one year, measured at places of use, and somewhat less than 7,500,000 acre-feet a year in terms of depletion at Lee Ferry; thus, the average annual depletion at Lee Ferry permissible under the compact over a long period would be considerably less than 7,500,000 acre-feet.

The 7,500,000 acre-feet of maximum permissible consumptive use at places of use would limit and thus determine the area that could be permanently developed for irrigation, after due allowance for reservoir losses chargeable to consumptive use. Assuming no shortages of water, the actual irrigated acreage that could be served permanently would be determined by the estimated consumptive-use requirements per acre in the year of maximum requirement. Consequently, if the irrigated acreage remained substantially the same, as limited by the year of maximum requirement, the total use of water in all other years, and hence the long-time average, would necessarily be less than 7,500,000 acre-feet a year.

As to annual variation in consumptive-use requirements, there appears to be no justification for the assumption in the report that, under full development with a regulated water supply and with practically all the irrigated land receiving a full supply each year, the water requirement and use would be highest in wet years and lowest in dry years. This assumption apparently stems from the erroneous concept that consumptive use of irrigation water depends solely upon the relative availability of stream flow. Investigations by the United States Department of Agriculture by Blaney and Criddle demonstrate that consumptive use varies with temperature, precipitation, wind movement, soil conditions, and other natural phenomena, and is likely to be higher in dry seasons than in wet seasons.

Based upon the application of the Blaney-Criddle formula for determining consumptive-use rates, and assuming that local project storage facilities could and would be provided in aggregate quantity sufficient to regulate the water supply to the requirements, it appears that the average annual consumptive use of apportioned water, that would be possible under conditions of ultimate development in the upper basin, would be substantially less than 7,500,000 acre-feet a year as a long-time average, and that the residual flow at Lee Ferry would be correspondingly greater than estimated by the Bureau.

The maximum permissible use in any one year in the upper basin under the compact apportionment under article III (a) would be 7,500,000 acre-feet, and any water used in excess of 7,500,000 acre-feet per annum would be surplus water under the compact, to which rights and obligations attach in the lower basin and for the Mexican Water Treaty.

It is evident from the foregoing that there are a number of unknowns remaining to be determined as to water supply and use in the upper basin, and as to the amount of water that would be expected

to be available to the lower basin passing Lee Ferry under conditions of ultimate development in the upper basin with full practicable utilization of the water supply apportioned to the upper basin under the Colorado River compact. This points up the need for a comprehensive system of gaging stations throughout the basin in order to determine the water supply available and the actual use of water. Only by actual measurements of water supply and use can the facts be ascertained. It is considered essential that more adequate measurements and records of water supply and use be obtained which will permit reliable studies to be made of the operation of existing and proposed developments in the upper basin and of the resulting available water supply passing Lee Ferry for the lower basin.

In view of the uncertainty as to the amount of water that will be available or can be used by full practicable development in the upper basin, it is believed that each of the upper-basin States should be required to set up priorities for existing and potential projects within their respective contemplated entitlements, just as California agencies were required to do in connection with contracts executed under the terms of the Boulder Canyon Project Act.

QUALITY OF WATER

Of equal concern to quantity is the matter of quality of water. This is a problem which concerns water users throughout the basin but especially those in the lower basin. No information is presented in the project planning report concerning the present or future quality of water at either places of use in the upper basin, or delivered to the lower basin at Lee Ferry.

Regional Director E. O. Larson in his statement made to this committee on January 18 said, "Careful study of all available data shows that the depletion resulting from all the projects contained in the bill would have no appreciable effect on the quality of the stream flow passing Lee Ferry." In response to questions Mr. Larson and his assistant subsequently stated that their study showed that the increase in salt content resulting from the operations of the projects contained in the bill was estimated at 12 percent. Whether such an increase is appreciable or not is a question of judgment. However, the study clearly points up the fact that additional development and use of the waters in the upper basin will result in progressive increase in the salt content of the water available to the lower basin at Lee Ferry. This problem of quality of water is a most serious one that appears to have been overlooked in the past but which can no longer be ignored.

It is evident that increased consumptive use of the waters of the Colorado River and its tributaries in the upper basin, particularly the relatively pure water flowing in the headwater streams, will result in a higher concentration of mineral salts in the residual flow in the lower reaches of the river downstream. This would appear to be particularly true of transmountain diversion projects for which the water for export is and will be diverted at higher altitudes where the stream flow is much better in quality than that in the lower parts of the system.

It is the position of the Colorado River Board of California that the Colorado River compact intends that water available for use in the lower basin shall be suitable in quality for all necessary purposes.

It is believed implicit in the compact that the provision therein of water for the lower basin would be largely nullified if the water supply were unsuited in quality for all beneficial purposes. Furthermore, article VIII of the compact provides:

Present perfected rights to the beneficial use of waters of the Colorado River system are unimpaired by this compact.

Certainly this means unimpaired as to quality as well as quantity.

It is further the Board's position that, before development proceeds too far in the upper basin, the entire problem of quality of water should be fully explored; that a determination should be made as to what the effect will be upon the quality of water remaining available to the lower basin at Lee Ferry, of consumptively using up to 7,500,000 acre-feet of water annually in the upper basin; and that authorization of additional projects involving large-scale consumptive use of water from the upper Colorado River system be deferred until satisfactory evidence is presented that there will not be a harmful effect on the quality of water available for use in the lower basin.

MAIN STREAM HOLDOVER STORAGE REQUIREMENTS IN UPPER BASIN

The Colorado River compact, article III (d), requires that the States of the upper division shall not cause the flow of the Colorado River at Lee Ferry to be depleted below an aggregate of 75 million acre-feet for any period of 10 consecutive years. Streamflow records show that in protracted dry periods the unregulated water supply of the upper drainage basin would be insufficient to meet this requirement and still permit full utilization of the 7,500,000 acre-feet a year of consumptive use apportioned to the upper basin by article III (a) of the compact. For this reason the upper basin cannot proceed to full development without construction of holdover storage of sufficient capacity to insure compliance at all times with article III (d). The volume of storage required, and the time when it will become necessary, will be determined by the fluctuation of future runoff quantities and by the rate and ultimate limit of future upper basin consumptive use development.

Under present conditions of development of the upper basin, the measured flow at Lee Ferry during all periods of 10 consecutive years has always materially exceeded 75 million acre-feet throughout the period of record to date. Studies by the Bureau in the project planning report indicate that in the driest 10-year period of record, 1930-40, the upper basin could have theoretically used, without holdover storage, about 4,300,000 acre-feet of water, or about 2,300,000 acre-feet more than the present use as estimated by the Bureau.

The Bureau in its report assumes that 80 percent of the total remaining permissible depletion by the upper basin of the virgin flow at Lee Ferry will be accomplished at a uniform rate in the 50 years beginning with 1957, and the other 20 percent in the 25 years after 2006. On the basis of this assumption, the report states that within 20 or 25 years the depletions are expected to increase to the extent that curtailment of consumptive uses will be necessary in protracted dry periods, unless some storage water is available for delivery to the lower basin. Presumably, this statement means 20 to 25 years from the date of the report, 1950.

If 80 percent of the remaining development takes place at a uniform rate in 50 years, the increase in depletion would be 88,000 acre-feet each year, and about 26 years after 1956 would be required to accomplish the theoretical increase in depletion that would be permissible without holdover storage. Thus, theoretically, no holdover storage would be required until after 1982.

On the basis of its own assumptions and estimates, the Bureau states that, under full development, by the year 2031, or 75 years after construction of the first unit of the storage project, active regulatory capacity of 23 million acre-feet would be required. The difference between the lowest 10-year total unregulated residual flow at Lee Ferry with ultimate use of the upper basin apportionment, and the compact required 75 million acre-feet, is computed in the report as 20,800,000 acre-feet, and the report states that studies based on monthly data instead of annual data indicate a deficiency about 10 percent greater.

Based on independent studies, it appears that the Bureau's estimates of the holdover capacity required for meeting the Lee Ferry delivery under full ultimate development in the upper basin is conservative, and that an active storage capacity of 21 million acre-feet would be sufficient for the purpose.

The storage provided by Glen Canyon Reservoir, as indicated by independent studies, could serve the needs of the upper basin for holdover storage capacity to meet the required delivery at Lee Ferry, for 50 years or more after the reservoir is placed in operation. Therefore, from the standpoint of this purpose alone, it would appear that no additional storage reservoirs would be required to be built for some 40 or 50 years. Furthermore, it appears that the additional consumptive use estimated for the participating reclamation projects contemplated for authorization under the bill could be made even without Glen Canyon Reservoir. However, its immediate construction may be justified from other considerations and advantages.

EFFECT OF UPPER BASIN PROJECT OPERATIONS ON LOWER BASIN

The Bureau's project-planning report of December 1950 on the Colorado River storage projects contains only brief and vague allusions to the lower basin, and to the possible effects of the plan of operation of the proposed reservoirs upon the operations of the reservoirs and powerplants in the lower basin. Nonetheless, it is evident that the building of the proposed reservoirs and the filling of these reservoirs with an ultimate capacity of about 48 million acre-feet would have a material effect upon lower-basin facilities and operations. Even the filling of the two reservoirs, Glen Canyon and Echo Park, now proposed for initial authorization with the combined capacity of some 32 million acre-feet would have a material effect and would present serious problems.

Insofar as information in the report is concerned, about all that can be deduced as to the effects on the lower basin during the assumed 20-year filling period is that at least 48,555,000 acre-feet of water in addition to reservoir evaporation losses estimated at 9,730,000 acre-feet, or a total of about 58,290,000 acre-feet, would, therefore, not be available during that period for the production of power at lower basin installations or to meet consumptive-use requirements and the Mexican treaty obligation.

A major part of the water and power thus lost to the lower basin would never be recovered, since a large part of the water retained in the upper basin during the reservoir filling period would never reach the lower basin, because of upper-basin reservoir losses and because the upper-basin reservoirs, once filled, probably would never again be emptied, at least below the dead storage level (11 million acre-feet). The 58,290,000 acre-feet retained or lost in upper-basin reservoirs would amount to an average of more than 2,900,000 acre-feet a year for 20 years. On the basis of the average effective heads at the lower basin power projects and assuming overall efficiencies of 80 percent, it is estimated that the reduction in electrical-energy production at the lower basin plants, that would be caused by retention of that volume of water in the upper basin, would aggregate 62.4 billion kilowatt-hours.

Assuming that such a potential loss of output would be valued at only 3 mills a kilowatt-hour, the total loss involved to the Government would be about \$187 million. Any substantial loss in power output in the lower basin would greatly aggravate the problem of meeting the power demands in that region.

In the study of the ultimate operation of Glen Canyon Reservoir, project year 75, the Bureau assumes that water uses in the upper basin, including reservoir evaporation, will by that time result in an average annual depletion of 7,500,000 acre-feet in the flow of the Colorado River at Lee Ferry. The study is based on the sequence of annual flows for the period 1944-47, inclusive, modified by various assumed annual quantities of depletion averaging 7,500,000 acre-feet, and by upstream storage regulation.

According to the summary table, the regulated release to the lower basin, averaging about 8 million acre-feet a year, would be limited to 7,500,000 acre-feet in as many years as possible, resulting in large excesses in a relatively short period. The table indicates that releases to the lower basin would be only 7,500,000 acre-feet a year in 26 of the 34 years studied, but that water in excess of this amount would be released in the other 8 years, aggregating 10,600,000 acre-feet of excess in the 4 years 1920-23, inclusive, and 7,000,000 in the 4 years 1927-39, inclusive, or a total excess of 17,600,000 acre-feet within an 11-year period. Such a sequence of water supply would impose stringent operating requirements on the lower basin reservoirs, especially Marble Canyon and Bridge Canyon if built.

Independent studies indicate that in order for lower basin reservoirs to accommodate such a sequence of supply, and regulate it to expected requirements without spilling water, empty storage space amounting to approximately 13,000,000 acre-feet would have to be available in the early years of a period with the 1914-47 flow pattern. Inspection of the operation summary for year 75 indicates that, on the basis of the water supply during the period 1914-47, a plan of operating Glen Canyon Reservoir could be achieved to provide more desirable releases and thus ease the operating problems of the lower basin installations.

CONCLUSION

The Bureau's plans for construction and operation of the upper basin storage project and related reclamation projects, insofar as the report reveals, give no proper or adequate consideration to the effect

of the proposals on the lower basin developments and evidence little, if any, regard to the interests of the lower basin. Moreover, the engineering studies are vague and uncertain with respect to the effect of proposed upper basin developments on the lower basin and additional studies are essential with respect thereto. The lower basin is entitled to know what the effect of the proposed plan will be on existing and future developments below Lee Ferry and particularly on the quality and quantity of water available for use in the lower basin.

There are many problems that should and must be carefully studied and solved before authorizing or proceeding with any overall plan of development in the upper basin. In the meantime, some additional development could proceed if found justified for authorization by the Congress. However, it is the position of the Colorado River Board of California that the interests of the lower basin, and of California in particular, must be fully protected with proper safeguards in connection with any legislation for authorizing of additional development in the upper basin.

Mr. HARRISON. Thank you very much, Mr. Matthew.

At this time we will ask Mr. Ely to proceed with his statement, and if we have time for questions later before 10:30, we will proceed with them; otherwise we will ask later that you return before the committee for any questions they might wish to ask.

Mr. MATTHEW. Thank you.

Mr. ENGLE. What do we have at 10:30?

Mr. HARRISON. General Grant is the first witness for the opponents of the bill at 10:30.

Mr. ENGLE. I do not think it is fair to break the continuity of the testimony.

Mr. HARRISON. The Chair is somewhat in a quandary. In other words, we have the opponents going on through to the end of the week, and if we do not have time by that time, we will have no time next week and we are doing the best we can. If the committee wants to overrule me and give more time, let us notify the opponents they will not be heard this week and to come back some time later.

Mr. ASPINALL. May I make a statement, Mr. Chairman?

This material that was just placed before this committee is in opposition to this program and at this time should be considered as time of the opposition. Mr. Matthew and Mr. Ely can be here any time that we ask them to, and we can take the time necessary to question them then.

This reminds me of a friend who claims his friendship for an individual and then sets up such standards it is impossible for a glint of friendship to show through; so no friendship was possible.

I understood this was going to be testimony that would not be considered either pro or con. These gentlemen themselves, if they are honest, will consider that this is in opposition to the program that is before us. I certainly wish to have time to question them. I think it is only fair. On the other hand, I stand with my chairman. He has set up these hearings, and we should proceed and then we should call back Mr. Ely and Mr. Matthew for questioning by this committee.

Mr. ENGLE. Let me just say that the gentleman's assumption that this testimony was going to be neutral was not from me.

Mr. ASPINALL. I understand that.

Mr. HARRISON. The Chair might say, yesterday—I do not know who gave me the impression yesterday, but somebody said it was neither for nor against. I cannot say that either Mr. Ely or Mr. Matthew gave me that information because I do not remember.

Mr. HOSMER. Will the gentleman yield?

Mr. ENGLE. I want to go one step further and say I am not prepared to concede at the moment that this testimony is in opposition to the project. It does raise some caveats and certain red lights that California wants to be protected on, but I do not view it as unabridged opposition.

Now I will yield to the gentleman.

Mr. HOSMER. I think the situation is clearly this: As within the upper basin, the proponents and the opponents of this project have certain sides of the question that they want to be presented. This testimony does not concern that whatsoever, but it is another phase entirely concerned with the rights and obligations as between the upper and the lower basin and I think in that sense it is not a pro or con proposition, but it is rather a proposition as between the two different areas and looks toward only the working out of a reasonable solution on that particular point.

Mr. ASPINALL. No one is objecting to the admission of the testimony, but having it admitted without time for questioning is not desirable. I think at the proper time under the leadership and direction of our chairman questioning is most certainly in the best interest.

Mr. HOSMER. Certainly I have no objection to that. I just asked Mr. Matthew if he could come here at a later time and he said "Yes." However, he does want to be able to be here with Mr. Ely at the time he is cross-examined, and Mr. Ely will be out of town for 2 or 3 days in the latter part of next week. I would very much welcome further exploration on this.

Mr. HARRISON. The Chair recognizes Mr. D'Ewart at this time.

Mr. D'EWART. While allotting this time to debit and credit, I would suggest on the debit side you include that from Texas and also that from the Blue River.

Mr. HARRISON. The Chair wants to say this at this time: He set his schedule up. If it does not meet with the approval of the committee, it will have to be on the action of the committee, and the individual members will have to take that responsibility for making the motion. Otherwise the Chair will go ahead as he has scheduled the meeting.

Mr. DAWSON. A point of inquiry. Are these the last two witnesses—

Mr. HARRISON. That is right, and at 10:30 General Grant expects to appear, and the Chair intends to call General Grant at 10:30 unless the committee overrules him.

Mr. DAWSON. I wonder how long it would take to examine these two witnesses to settle this question, if General Grant would be willing to go on at, say, 11:30.

Mr. HARRISON. The only difficulty with that is that the amount of time we have is limited for the balance of the week. If we do not give the opponents the time they are entitled to this week, it will be a month or more until we can get to them again. I consider it a little unfair to ask them to come back to town.

Mr. ENGLE. The proponents have the burden on this legislation. If you do not propose to do it with adequate time and adequate opportunity for these people to be heard, then naturally they will fail to meet the burden which is placed on them.

Mr. HARRISON. I suggest the gentleman from California make the motion that all of these witnesses be heard for the proponents first, and that later, when we can get to it, we take up the opponents some time in the future. If you will make that as a motion and the committee sustains you, you have that responsibility on your own shoulders, and it is agreeable to the chairman. Do you care to make the motion, Mr. Engle?

Mr. ENGLE. No.

Mr. HARRISON. You may proceed, Mr. Ely.

STATEMENT OF NORTHCUTT ELY, SPECIAL COUNSEL, THE COLORADO RIVER BOARD OF CALIFORNIA, WASHINGTON, D. C.

Mr. ELY. My name is Northcutt Ely. I am an attorney, with offices in the Tower Building, Washington 5, D. C., and appear here as special counsel to the Colorado River Board of California, a branch of the State government.

California, as a party to the Colorado River compact, is affected by this bill in the respects which I shall outline. California is also a party to the pending suit in the Supreme Court entitled *Arizona v. California, et al.*, No. 10 Original, October term, 1953, as are Nevada, Arizona, and the United States. I have the honor to represent California in that action, under the direction of Attorney General Brown of California. Certain of the issues in that suit are directly involved in the assumptions made by the Bureau of Reclamation in planning the project now before you. These will be identified during the course of my statement.

THE PENDING PROJECT

The legislation now before the committee, as modified by the explanations given here by the Interior Department, would accomplish four general objectives:

1. It would authorize in section 1, page 2, line 23, the construction of 15 reclamation projects. The aggregate consumptive use of these projects is said to be about 1,700,000 acre-feet, which added to about 2,500,000 acre-feet said to be required by projects already constructed or authorized, would represent a total of about 4,200,000 acre-feet. This total is well within the quantity of 7,500,000 acre-feet per annum, the use of which is apportioned to the upper basin by article III (a) of the Colorado River compact, to which I shall presently refer. Moreover, the engineering studies indicate that this total could be put permanently to use without the construction of any new holdover storage whatever, and that no holdover storage would be required for about 50 years, even if other projects were added.

2. The bill nevertheless authorizes, in section 1, page 2, line 12, the construction of four storage reservoirs (reduced to two, Glen Canyon and Echo Park, by the Department's testimony). The whole storage program amounts to over 48 million acre-feet. The purpose of au-

thorizing construction of these reservoirs now, instead of many years from now, is twofold:

(a) Electric energy would be generated and sold and the proceeds pooled to subsidize the construction of the power and reclamation projects previously referred to in section 1.

(b) If built now, the reservoirs could accumulate water with less interference with consumptive uses in both the lower and upper basins than if their construction were delayed until a later time when consumptive uses will be larger.

3. The bill authorizes, in section 5, page 8, the construction of other projects, unnamed, provided they meet certain criteria. These are not designated in the bill, but the Department has inventoried over 100 projects in various publications, particularly House Document 419, 80th Congress. It is not clear from section 5 whether these projects must be brought back to Congress for further authorization, or whether the Secretary is authorized by section 5 to build them; but in any event, when they are built, the new power projects and the new reclamation projects covered in section 5 will share in the subsidies afforded by the sale of power to be generated at Glen Canyon; and, in addition, and for the first time, a fourth function of the holdover storage at Glen Canyon and Echo Park will then come into existence. Thus:

4. When, as, and if the additional projects referred to in section 5 are built, it will be necessary to store water in Glen Canyon, or some equivalent storage capacity, not for use by these projects (Glen Canyon Reservoir is so far downstream that no water stored there can ever be used for irrigation or domestic purposes in the upper basin), but for quite a different reason: To enable these section 5 projects to increase the consumptive use in the upper basin above the 4,200,000 acre-feet required by existing projects plus the section 1 projects, without violating the provisions of article III (d) of the Colorado River compact, which stipulates that the States of the upper division (Colorado, Utah, New Mexico, Wyoming) will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75 million acre-feet for any period of 10 consecutive years. In the driest decade so far, the flow at Lee Ferry was well over 100 million acre-feet, when the upper basin projects were using about 2 million acre-feet per year; and engineers tell us that the upper basin uses can rise to about 4,300,000 acre-feet, which is more than the total of existing uses plus the section 1 projects, before this 100 million total would shrink to 75 million.

Thus the ultimate purpose of Glen Canyon Reservoir, and other holdover storage, is to enable the upper basin to build the section 5 projects without violating article III (d) of the compact, and the immediate reason for constructing Glen Canyon Dam now instead of waiting until the section 5 projects are built is, first, to immediately subsidize the section 1 projects and, second, to fill Glen Canyon during a time when the filling is easier, presumably, than it will be later on.

As all of the foregoing involves the Colorado River compact, and as California is a party to that compact, California is directly concerned by the interpretations of the compact implicit in the bill, and in the interpretations of the compact which will control the administration of these reservoirs. This is readily apparent when it is realized that

the total storage capacity planned is over 48 million acre-feet, enough to intercept the whole flow of the river for several years, and that it is planned to hold over storage in these reservoirs for more than 20 years, or five Presidential administrations, in order to deliver to the lower basin under article III (d) in the year 2000 water that flows into the reservoir in 1980 for example. Some rather firm understandings as to the meaning of the compact are required, especially as the bill now make no provision for enforcement of the compact by any State against the United States, which will hold this water in its reservoirs and release it subject to the decision of a long succession of Secretaries of the Interior as to what the document means.

The meaning of the document is now in sharp controversy in the Supreme Court, in respects which affect the measure now before you. To these issues I now turn.

II. Interpretations of the Colorado River compact involved in the upper storage project legislation and the pending litigation :

1. THE MEANING OF "PER ANNUM" IN ARTICLE III

Article III (a) : Does the apportionment of the use of 7,500,000 acre-feet per annum mean an average of that amount over a period of years, or a maximum in any one year?

The Reclamation Bureau, in submitting this upper basin storage project, makes the assumption that the apportionment means an average, so that the upper basin may use 9 million acre-feet or more of water in 1 year, and consider it as apportioned under article III (a) if it uses 6 million or less in some other year, to average 7,500,000 acre-feet.

California alleges in the pending lawsuit that the apportionment means a maximum, like speed limit on a highway, not an average. If the speed limit says 50 miles per hour, that doesn't mean an average of 50. We allege (Answer to Arizona, par. 8) that the words "per annum" in the compact mean "each year," and not an average of uses over a period of years, whether they are our uses or anyone else's. Arizona admits this, but says that the issue is not yet material in the lower basin (Reply, par. 8). The United States position is not clearly stated. The effect, if California is right, is not necessarily to deny the upper basin the right to use 9 million acre-feet, but to characterize the excess, 1,500,000 acre-feet, as unapportioned surplus, dedicated to Mexico under article III (c) of the compact or subject to competitive appropriation in the lower basin. The amount involved in this particular issue is very large, of the order of 1,250,000 acre-feet per year. That is, if the compact means what we think it means, the Reclamation Bureau is in error that much in its assumptions as to the quantity of water the upper basin can lawfully use of III (a) water each year, and by the same token that much more water must be let down to satisfy the Mexican Water Treaty and prior appropriations of surplus in the lower basin. The same problem arises in the lower basin, but there the Reclamation Bureau has assumed that the limitation imposed upon California's uses by the Boulder Canyon Project Act is a maximum, not an average: so also with its assumptions as to the deliveries under the Mexican Water Treaty and the amounts to be delivered under its water contracts with Arizona, California, and Nevada. Both assumptions cannot be correct.

2. THE METHOD OF MEASUREMENT OF CONSUMPTIVE USE

Article III (a): Does the apportionment of "beneficial consumptive use" mean the quantity in fact used, measured at the place of use, or does it mean the effect of that use measured in terms of stream depletion at some point hundreds of miles downstream, in this instance at Lee Ferry? This question of interpretation of the Colorado River compact and the Mexican Water Treaty is directly at issue in the present Supreme Court case. The quantity involved in this dispute, so far as the planning of the upper basin storage project is concerned, is 300,000 to 500,000 acre-feet, according to engineers' estimates. The Reclamation Bureau assumes that the measurement is to be in terms of downstream depletion in the case of the upper basin project and the central Arizona project, but in terms of diversion minus return flow, measured at the place of use, with respect to California. The Boulder Canyon Project Act so defines it, and the Mexican Water Treaty says (art. I (j)):

"Consumptive use" means the use of water by evaporation, plant transportation or other manner whereby the water is consumed and does not return to its source of supply. In general it is measured by the amount of water diverted less the part thereof which returns to the stream.

That corresponds with California's allegation of the meaning of the term in *Arizona v. California* (Answer to Arizona, par. 8). Arizona denies that this definition applies to her uses, (Reply, par. 8) and the Reclamation Bureau, in the project before you, assumes that it does not apply to the upper basin, although in section 2, page 4, line 21, the projects to be built under the bill are recognized as being subject to the terms of the Mexican Water Treaty, as they of course are.

Another problem arises if the depletion theory prevails. One of its postulates is that when water is stored in a reservoir, the stream below is depleted, as of course it is, and therefore that the consumptive use of the stored water takes place then and there, in the year when the water is put in storage, not when it is taken out and used. On that premise, how is the 48 million acre-feet of holdover storage, that is, of stream depletion, to be charged? And, in future operation, how is the storage of more than 7,500,000 acre-feet in any one year to be charged? Is the same principle, whatever it may be, applicable to the lower basin reservoirs?

3. "RIGHTS WHICH MAY NOW EXIST"

Article III (a): Does the statement in article III (a) that the apportionment of the use of 7,500,000 acre-feet per annum "shall include all water necessary for the supply of any rights which may now exist" include two categories of uses in dispute in *Arizona v. California*: (1) The uses on the lower basin tributaries, particularly those of Arizona on the Gila River, which she says are not to be charged against the lower basin's apportionment of III (a) water, and (2) Indian uses in both basins? The significance of the Gila appears in connection with the upper basin's obligations under article III (c) and III (d) of the compact and that of the Indian uses in connection with article VII, and will be outlined when we reach those articles in numerical order.

4. THE MEXICAN BURDEN

Articles III (c) and III (d): Article III (c) provides that the Mexican burden, which is a minimum of \$1,500,000 acre-feet per annum measured at the border, (more than that measured at Lee Ferry) shall be borne first out of surplus, over amounts specified in articles III (a) and III (b) and, if that is insufficient, then the burden of the deficiency shall be equally borne by the upper basin and the lower basin, and whenever necessary the States of the upper division shall deliver at Lee Ferry water to supply one-half of the deficiency, in addition to that provided in article III (d).

Article III (d) provides that the States of the upper division, that is, Colorado, Utah, Wyoming, and New Mexico, will not cause the flow of the Colorado River at Lee Ferry to be depleted below an aggregate of 75 million acre-feet for any period of 10 consecutive years.

The interpretation of these two clauses is at issue in Arizona versus California and is involved in the present bill. The Reclamation Bureau apparently assumes in its presentation here that there will be available at Lee Ferry, after the section 5 projects are built, only about 75 million acre-feet every 10 years. Arizona says (Reply, pars. 8, 11) that all this 75 million is III (a) water, that is, that this figure is merely 10 times the quantity apportioned to the lower basin by article III (a) of the compact, and that all of the lower basin's III (a) uses can be made from the main stream. California (Answer, to Arizona pars. 8, 11) and Nevada (Petition, par. XIV) deny this, and say that Arizona's uses on the Gila, and the uses of Nevada and Utah on the Virgin River, are "rights which may now exist," in the language of article III (a), hence chargeable to (and protected by) article III (a). Arizona retorts that her uses on the Gila are covered by article III (b) of the compact, an article which says that, in addition to the apportionment in article III (a), the lower basin is given the right to increase its beneficial consumptive use by 1 million acre-feet per annum. If Arizona is sustained by the Court in this position, there is no water for Mexico in the 75 million acre-feet at Lee Ferry referred to in article III (d), and the upper basin, under article III (c), must, in addition, release water to supply one-half of any deficiency in meeting the Mexican burden.

When the Reclamation Bureau reported favorably on the central Arizona project, it was on the assumption that Arizona's interpretations were correct, without, however, endorsing them. If California and Nevada are correct, a portion of the 75 million acre-feet at Lee Ferry referred to in III (d), a portion equal to the total of the uses on the Gila, Virgin, and other tributaries under III (a), is excess or surplus water unapportioned by the compact, available in part for the service of the Mexican Water Treaty and in part for use in the lower basin. We view the 75 million as a minimum, unrelated to article III (a), and to be met whether or not there remains available to the upper basin, after meeting that obligation, water to sustain a maximum use of 7,500,000 acre-feet per annum of water apportioned by article III (a).

5. RESERVOIR LOSSES

Nowhere in the compact is specific provision made for accounting for reservoir losses. Arizona says that they are all chargeable against the apportionments made by article III (a). Nevada says that they are all chargeable to surplus. California says that Basin versus Basin, they are to be charged with other uses to the basin in which they occur, in the order in which they accrue, whether to III (a), III (b), or other surplus, and that none are chargeable against present perfected rights existing in the lower basin before storage was provided. The upper basin compact (art. IV) charges them against apportionments under article III (a) of the Colorado River compact.

6. THE RIGHT TO DEMAND OR WITHHOLD WATER

Article III (e) of the Colorado River compact provides that the States of the upper division shall not withhold water, and the States of the lower division shall not require the delivery of water, which cannot reasonably be applied to domestic and agricultural use. Glen Canyon Reservoir and certain other proposed upper basin main stream reservoirs will be so located, physically, that no water stored therein can ever be applied to domestic or agricultural uses in the upper basin. All of the water stored in such reservoirs will be required for domestic and agricultural uses in the lower basin and Mexico. If the 1953 Hill report to the State of Colorado is correct, the engineers say that if the Hoover Dam's reservoir, Lake Mead, is not filled on the day when the gates are closed at Glen Canyon, it may never fill again.

Who is to determine how rapidly storage in these upper basin reservoirs is to be built up, or, putting it another way, to what extent water which would otherwise flow into Lake Mead is to be intercepted and withheld? Who is to determine how rapidly and on what terms releases are to be made? Presumably, the Secretary of the Interior. Since the United States cannot be sued without its consent, manifestly some controls are necessary here if the States, both upper and lower, are not to abdicate the administration of their compact to the United States. Such controls are proposed in the final portion of this statement.

7. APPROPRIATION OF SURPLUS

Article III (f): Does the provision for a further apportionment, by unanimous consent after October 1, 1963, mean that no State may validly appropriate surplus until a new compact is made? California alleges, in the pending litigation, that any State, including the upper basin States, may appropriate surplus waters unapportioned by the compact, subject to their being divested but only by a new compact to which such a State is party, or by Court decree. That has been the position maintained by representatives of some, at least, of the upper basin States in previous hearings. Arizona and Nevada say that no State may acquire any right in surplus until a new compact is made. If they are sustained, then the upper basin can acquire no right in the waters it may use in any year in excess of 7,500,000 acre-feet.

8. IMPOUNDING OF WATER FOR POWER GENERATION

Article IV (b) of the Colorado River compact authorizes the impounding and use of water for generation of power, but stipulates that—

such impounding and use shall be subservient to the use and consumption of such water for agricultural and domestic purposes and shall not interfere with or prevent use for such dominant purposes.

As elsewhere noted, no water stored in Glen Canyon Dam and certain other mainstream reservoirs can ever be used, physically, for agricultural or domestic uses in the upper basin. Such water is the residue after the uses in the upper basin. It will be stored and used at such reservoirs to generate power to be sold to subsidize irrigation and power projects in the upper basin. The use of such reservoirs appears to be squarely controlled by article IV (b), and the right of the Reclamation Bureau to so manipulate them as to maintain power generation, if the waters stored therein are in fact needed for agricultural and domestic use in the lower basin, appears questionable. The sole function of Glen Canyon Reservoir is as part of a hydroelectric project, unless and until the section 5 projects are built, and for a period of 50 years or more even if they are built. Only thereafter does it assume any function under article III (d) of the compact.

9. INDIAN RIGHTS

Article VII of the Colorado River compact provides that nothing in the compact shall be construed as affecting the obligations of the United States to Indian tribes. The upper basin compact (art. VII) provides that use by the United States or its wards shall be charged as a use by the State in which the use is made. California, in the pending suit, takes the same position (Answer, par. 14). The United States denies this (Petition of Intervention, par. XXXVII), and says that—

the rights to the use of water of the Indians and Indian tribes are in no way subject to or affected by the Colorado River compact.

The Government's petition tabulates (appendix II) 1,747,250 acre-feet of "diversion" claims of Indians in the lower basin, of which 1,556,250 are in Arizona. Arizona says (Reply, par. 14), that—

the obligations of the United States to the Indians or Indian tribes are not material or relevant * * *

It is known that the Office of Indian Affairs construes article VII of the compact as meaning that (1) the Indian claims come ahead of the compact, are not chargeable to any State, and the compacting States simply divide the residue after the Indian claims; (2) Indian claims relate back to the date of establishment of the reservation, even though not put to use, and take priority over uses by non-Indians even though the uses by non-Indians may in fact long antedate the actual putting of water to use by the Indians. The Government's pleadings leave it free to make both these assertions. As to the first, Arizona has refused, so far, to disagree with the Indian Bureau's position. Naturally, if Arizona can hope for 1,500,000 acre-feet for Indian diversions, outside the compact, in addition to the 3,800,000

acre-feet she demands under the compact, there is a temptation to try to get it. Just where the water would come from is not very clear.

Arizona, at a meeting with the Attorney General of the United States on December 3, 1953, was invited to join the upper basin States, California and Nevada in a common statement of position that Indian uses are to be charged under the compact against the State in which they are situated, but she declined to do so. The existence of the Indian claims, and uncertainty as to their accounting, raises serious questions as to the water supply for the projects in both the upper and lower basins. Those questions will not be resolved until this suit is decided.

10. PRESENT PERFECTED RIGHTS

Article VIII provides that "present perfected rights to the beneficial use of waters of the Colorado River system are unimpaired by this compact." In the present suit California alleges (answer to Arizona, par. 15) that "unimpaired" as used in this article means unimpaired as to both the quantity and the quality of the waters to which these perfected rights relate. As of the effective date of the compact, California's present perfected rights were not less than 4,950,000 acre-feet (answer to Arizona, par. 28). The report of the Reclamation Bureau contains no data on the effect of large transmountain diversions on the quality of water. Such a study should obviously be made. We know that when the compact was ratified, the Colorado commissioner's formal report stated that—

natural limitations upon the use of the waters within each of the upper States will always afford ample assurance against undue encroachment upon the flow at Lee's Ferry by any 1 of the 4 upper States. Colorado cannot divert 5 percent of its portion of the river flow to regions outside the river basin. (Hoover Dam Documents, H. Doc. 717, 80th Cong., p. A79.)

Elsewhere he testified that Colorado's transmountain diversions could not exceed 300,000 acre-feet per annum. By contrast, the Colorado transmountain diversion projects inventoried in the Reclamation Bureau's various reports aggregate 2 million acre-feet, or 52 percent of the water allocated to Colorado by the upper basin compact. There would be that much less water to absorb an increasing quantity of salts in passage to Lee Ferry. The effect on the lower basin is one which the lower-basin States are entitled to have studied and reported upon, to the end that their present perfected rights, in the language of article VIII, shall remain unimpaired.

III. The effects of the Colorado River controversies upon the upper basin developments:

California's basic position is that we are conforming to the Colorado River compact and that we must insist that the Reclamation Bureau and States of the upper division do so in the planning and administration of the upper basin storage project and participating projects. If the States differ as to the compact's meaning, the differences must be resolved. There are manifestly at least 10 serious questions of interpretation of the Colorado River compact which affect all the States involved in the present lawsuit and in the bill before the committee. There are others, affecting only the lower basin, which I have not enumerated.

As to some of these issues, the alinement of the various States' interests is quite different from the alinement on others. For example,

as to the question of whether the 75 million acre-feet at Lee Ferry, referred to in article III (d) of the Colorado River compact, is identical with the 7,500,000 acre-feet apportioned to the lower basin, the position of California is more advantageous to the upper basin than is Arizona's. So also, perhaps, with the Indian question.

In the pending suit, the Court may dispose of some or all of these issues. If so, the United States, as an intervening party, will presumably be bound by the decree. Or the Court may refuse to pass upon some or even all of them, as it has done three times in the past.

In any event, the administration of the great holdover storage reservoirs, and hence of the Colorado River compact, will be in the hands of the United States.

In view of the obviously important differences of interpretation of the Colorado River compact among the States of the Colorado River Basin, the question arises whether they are content to concede that the United States is to control, without recourse, the water held in these great reservoirs in the canyons midway between the users in the upper and lower basin, where it can be used by neither, and be sole arbiter of the conditions on which it shall be stored and released? If so, the compact is of doubtful protection to either group of States, because no State can sue the United States without its consent.

Manifestly, some controls are required to enable both the States of the upper division and the States of the lower division to obtain some protection in the administration of the holdover storage reservoirs. If the Secretary of the Interior should accumulate water in storage too rapidly, the whole lower basin water system would be in jeopardy. If he released it too freely, the upper basin would be adversely affected. Too much depends upon the interpretation the Secretary of the Interior gives to the Colorado River compact. The States are entitled to be consulted.

Mr. HARRISON. Mr. Ely, I would suggest, if it is agreeable, as our time is limited, that we will want you back before the committee again, which will give the committee members a chance to study these amendments, and when you come back we will discuss those amendments at that time.

Mr. ELY. That is agreeable. However, they are summarized in two pages. Perhaps I could do that and leave the text to be discussed later.

Mr. HARRISON. If they are part of the text, go ahead.

Mr. ELY. IV. Proposed amendments.

In the light of the foregoing, the following amendments to the bill are suggested (their full text is annexed. See p. 706) :

1. At page 8, line 1—delete section 5. The unnamed, undescribed future participating projects can be individually authorized by Congress on their merits, after submission of reports to the affected States as required by the Flood Control Act of 1944.

2. At page 12, line 24, insert a new section to disclaim any intent to construe or interpret or amend the documents now before the Supreme Court.

3. At page 13, line 2—insert a new section to prohibit the exchange of Colorado River system water with States outside the Colorado River Basin. There is not enough to go around as it is, and not enough to enable the eastern slope of Colorado to compose its differences with Nebraska and Kansas.

4. At page 13, line 9—insert a new section to require a study and report on the effect of transmountain diversions in the upper basin on the quality of water at Lee Ferry.

5. At page 13, line 9—insert a new section to authorize State participation with the Secretary of the Interior in the programming of storage and release of water, and to authorize suit by any State against him if necessary to compel compliance with the Colorado River compact in the operation of the holdover storage reservoirs.

6. At page 13, line 9—insert a new section subjecting all uses under this Act to covenants, such as the upper basin States insisted be inserted in the bill authorizing the San Diego Aqueduct (Public, No. 171, 82d Cong.), to respect the Colorado River compact, the Boulder Canyon Project Act, the Mexican Water Treaty, and upper basin compact.

7. At page 13, line 9—insert a new section, again drawn directly from the upper basin amendments to the San Diego Aqueduct bill, subjecting the act and all works constructed thereunder to the Colorado River compact and the other documents comprising the Law of the River.

I close, as I began, by reaffirming the necessity under which California finds herself of insisting that the proposed project conform to the Colorado River compact, and as long as the meaning of that compact is in litigation, of urging this committee to include in the bill the safeguards we have suggested against any impairment of the position of the lower basin. Finally, we ask that in the operation of the hold-over storage features of the project the States, upper as well as lower, have adequate assurance that their rights will not only be respected but be enforceable against the changing succession of Federal officials who will control those reservoirs, and, with them, the destiny of the Colorado River Basin.

(The amendments submitted by Mr. Ely follow:)

AMENDMENT No. 1

DELETION OF SECTION 5

Page 8, line 1. Strike all of section 5, and substitute:

"SEC. 5. The Congress reserves the right to add other participating projects to those listed in section 1, and to delete any now listed therein."

AMENDMENT No. 2

ASSURANCE AGAINST INTERPRETATIONS

Page 12, line 24. Substitute for section 11:

"SEC. 11. Nothing in this Act shall be so construed as to amend, construe, interpret, modify, or be in conflict with, any provision of the Colorado River Compact, the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, or the Treaty with the United Mexican States."

AMENDMENT No. 3

TRANSMOUNTAIN DIVERSIONS

Page 13, line 2. Add a new section:

"SEC. —. (a) All of the waters of the Colorado River System exported from the natural basin of that system by means of works constructed hereunder, and extensions and enlargements of such works, to the drainage basin of any other river system, shall be consumptively used in States of the Colorado River Basin,

and will not be made available by exchange, substitution, or use of return flow, or otherwise, for consumptive use in any State not a party to the Colorado River Compact.

"(b) Nothing in this Act, by implication or otherwise, shall commit the United States to the further exportation of water from the Colorado River System."

AMENDMENT No. 4

STUDIES OF SALINITY

Page 13, line 9. Insert a new section:

"SEC. —. The Secretary of the Interior is directed to institute studies and to make a report to the Congress and to the States of the Colorado River Basin of the effect upon the quality of water available at Lee Ferry, of all trans-mountain diversions of water of the Colorado River System and of all other storage and reclamation projects, existing and proposed to be made in the Upper Colorado River Basin under full practicable development and use of water apportioned by the Colorado River Compact, including those proposed to be made under the authority of this Act."

AMENDMENT No. 5

STATE REPRESENTATIONS IN OPERATION OF RESERVOIRS

Page 13, line 9. Insert a new section:

"SEC. —. (a) Each State of the Colorado River Basin is authorized to appoint one representative to an Integrating Committee, to advise with the Secretary of the Interior in programing the storage and release of water from main stream reservoirs located in the Upper Basin, for use in the Lower Basin.

"(b) The Secretary of the Interior is directed to comply with the applicable provisions of the Colorado River Compact, the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, and the Treaty with the United Mexican States, in the storage and release of water from reservoirs in the Upper Basin for use in the Lower Basin, and, in the event of his failure to so comply, any State of the Colorado River Basin may maintain an action in the Supreme Court of the United States against him 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 suits."

AMENDMENT No. 6

COVENANTS

Page 13, line 9. Insert a new section:

"SEC. —. The United States and the States of Colorado, Wyoming, Utah, New Mexico, and Arizona, and their respective permittees, licensees, and contractees and all users and appropriators of water of the Colorado River System diverted or delivered through the works herein authorized and any enlargements or additions thereto shall observe and be subject to the Colorado River Compact, the Upper Colorado River Compact, the Boulder Canyon Project Act, and the Mexican Water Treaty (Treaty Series 994) in the diversion, delivery and use of water of the Colorado River System, and such condition and covenant shall attach as a matter of law whether or not set out or referred to in the instrument evidencing such permit, license, or contract and shall be deemed to be for the benefit of and be available to the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming and the users of water therein or thereunder by way of suit, defense, or otherwise in any litigation respecting the waters of the Colorado River System: *Provided*, That the Congress does not, by the enactment of this Act, construe or interpret any provision of the Colorado River Compact, the Upper Colorado River Basin Compact, the Boulder Canyon Project Act, or the Mexican Water Treaty, nor subject the United States to, nor approve nor disapprove, any interpretation of said compacts, statute or treaty, anything in this Act to the contrary notwithstanding."

AMENDMENT No. 7

SUBJECTION TO LAW OF THE RIVER

Page 13, line 9. Insert:

"SEC. —. This Act and all works constructed hereunder shall be subject to and controlled by the Colorado River Compact, proclaimed effective by the President June 25, 1929; the Boulder Canyon Project Act approved December 21, 1928; the Upper Colorado River Basin Compact, to which the Congress gave consent (Public 37, 81st Cong., approved April 6, 1949); and the Mexican Water Treaty (Treaty Series 994); and no right or claim of right to the use of the waters of the Colorado River System shall be aided or prejudiced hereby: *Provided*, That the Congress does not hereby interpret or construe said documents nor subject the United States to, nor approve nor disapprove, any interpretation or construction thereof."

Mr. HARRISON. Thank you very much, Mr. Ely, and we will contact you at the first opportunity, and we will have you back before the committee. If it is necessary for Mr. Matthew to come back, we will see he has sufficient notice. We regret that our time was limited this morning.

Mr. ELY. Thank you, Mr. Chairman. I appreciate the committee's courtesy.

Mr. HARRISON. The first witness for those who are in opposition to part or all of the legislation will be Gen. U. S. Grant 3d, of the American Planning and Civic Association.

I have been given five names, including Mr. Grant, Mr. Joe Penfold, Mr. Fred Packard, Mr. Dave Brower, Mr. Kenneth Morrison, in that order. Unless I receive a request, I will call them in the order I have read.

STATEMENT OF U. S. GRANT 3D, AMERICAN PLANNING AND CIVIC ASSOCIATION

Mr. GRANT. On behalf of the American Planning and Civic Association, of which I am president, I have the honor to appear before you in protest against the inclusion in the upper Colorado storage project of the Echo Park Dam, or any other dam inside of the Dinosaur National Monument, or in any other monument or national park in the region. In case you are not familiar with our association and its work, let me add that, starting with the Park and Outdoor Art Association in 1897 and its merger with the American League for Civic Improvement in 1904 to form the American Civic Association, by a succession of affiliations with others in the same field the association has for 57 years now been in the forefront of the fight for the conservation of our natural resources, the preservation of our marvels of scenic beauty, and for the protection of national parks and state parks against commercial and other encroachments that violate the primary purpose for which they were set apart. It is proud to claim having had an effective part in securing the establishment of the National Park Service.

It is therefore with a background of more than half a century's connection with the citizens' efforts to make our country a more attractive and agreeable place in which to work and live, and to save for future generations those natural areas and formations from which we have drawn improved health and inspiration, and with a sincere desire to provide for the sound economic development of

the upper Colorado Basin, that we strongly recommend to your committee the passage of legislation (1) authorizing the immediate construction of the following dams, namely, Flaming Gorge, Cross Mountain, Whitewater (Bridgeport), and Glen Canyon; and (2) authorizing and directing the Bureau of Reclamation to proceed with the revision of the 1950 upper Colorado storage project eliminating therefrom the Echo Park and Split Mountain Dams and any other projects which would encroach upon or damage any national monument or national park.

This would be in accord with the policy long established by Congress and approved by the Chief Executive, and expressed in the 1921 and 1935 amendments to the Federal Power Act approved June 10, 1920, Public 280, 66th Congress. In these amendments the Federal Power Commission was prohibited from granting permits to private enterprise for any developments in national parks or national monuments. It would be strange indeed for Congress to authorize a Government agency like the Bureau of Reclamation to violate such an established policy and to do what private enterprise is not allowed to do, namely to do irreparable damage to a scenic area legally set aside after careful study for the edification, instruction, and inspiration of our people so as to protect it against just such exploitation as is now proposed. The fact that the Under Secretary of the Interior said he knew of no such prohibitory law indicates that the people in the Bureau did not think such a law worth mentioning, and certainly they have shown little regard for the policy it sought to establish.

The claim that the Echo Park Dam is essential to any upper Colorado storage project is a statement constantly repeated by the proponents, the justification for which seems to rest on repetition as no facts in support have been adduced except the seemingly erroneous and misleading argument of an alleged intolerable evaporation loss, if the Echo Park Dam be eliminated. The weakness of this latter argument can best be brought out as we proceed with the question of developing possible alternative sites in lieu of the two objectionable ones which lie within the monument. But before taking up that somewhat intricate subject, may I clear up 1 or 2 other points that have been used for such smokescreen value as they might develop. Manifestly the proponents of the Echo Park Dam are honestly convinced that without it there can be no upper Colorado project; but the Bureau of Reclamation's fanatical insistence upon this view in the face of the information about possible alternatives in its own reports; its evident unwillingness to investigate possible alternatives without prejudice; its readiness to sacrifice any part of the program in order to gain this point, for instance, omitting Flaming Gorge from the present recommendation, and with it the need supply of water to Utah by gravity. All these apparent facts have forced on me, against my will, the inference that this is a jurisdictional matter with the Bureau, that for 38 years it and its projects have been kept out of our national parks and monuments, that now it sees an opportunity for a breakthrough and a precedent for future opportunities, and hence the urgency and importance of getting legislative sanction for the Echo Park Dam, even if the rest of the overall and much-needed program has to be postponed indefinitely.

Please do not misunderstand me, I make no accusation. I am merely mentioning an inference forced upon me, so that you gentlemen of the committee may be aware of a possible prejudice in the Bureau's brushoff of our claim that a sound program is possible without Echo Park. You are doubtless aware of the proposals for dams or reservoirs encroaching on Yellowstone National Park, Glacier National Park, the Grand Canyon, Mammoth Cave, and so forth. You will be able to judge whether I am wrong in this surmise.

The plea that the explicit exemption of the Browns Park development in the Executive order setting up the present boundaries of the monument opens it to any other destructive encroachment, is first on the list of unjustified arguments. The said project is that otherwise known as the old Lodore Canyon Dam. This site is in the very northern tip of the monument, and would affect the upper Green River Canyon without drowning out the most impressive scenery, the most interesting geological formations lower down. It was a regrettable exemption, but made in all fairness because at the time this project already had a just claim to consideration and was thought terribly important, like the Echo Park project now. However, on further study it has apparently been abandoned by its votaries as not all it was thought to be.

None of us who are opposing the Echo Park project have for a moment thought that it would reach the dinosaur fossil deposits. The repeated assurance that it will not, even repeated in the presentations made to you, is just another effort to divert attention from the main issue.

The program of development proposed in the Bureau's 1950 report has been termed by a reliable authority "actually a preliminary treatment of a plan to provide regulatory storage capacity for the upper Colorado River Basin without full development of sufficient fundamental data for the comprehensive planning of such a system. When major questions remain unsolved, premature authorization may actually hamper and restrict future planning." I concur fully in the quoted opinion, and for this reason have recommended the authorization for immediate construction only of projects about the soundness of which there seems to be little disagreement, and which will at least make a beginning. It is doubtless evident to your committee that, except for the insistence of the Reclamation Bureau on starting the Echo Park Dam and no other, 3 years' progress might already have been made.

The 1950 program proposes 5 dams on the Green River, 3 on the Gunnison, 1 on the San Juan and none at all on the upper Colorado itself. While this is partly due to less inviting sites on some rivers than on others, it would seem the part of wisdom to try to get a more balanced program. For instance, a drop of 1,170 feet in about 120 miles on the San Juan is entirely ignored. As the San Juan will be delivering the greatest amount of silt (31,800 acre-feet annually), according to the Bureau's report, into the expensive and really important Glen Canyon Reservoir from below the Navajo (Martinez) Dam there are practical reasons for reconsidering the Bluff or Chinle site. No reason is given or evident for its omission. It will have a fairly high evaporation factor but will store water not stored elsewhere until it reaches Glen Canyon. Please erase "where the

evaporation is still greater." While that is a true statement, it gives an implication that is not sound. So skip that part. Its potential 6,920,000 acre-feet of storage and 85,000 installed kilowatt power capacity could play an appreciable part in finding substitutes for Echo Park.

In this connection it is pertinent to point out that the present recommendation of the Bureau is for the immediate authorization of Echo Park and Glen Canyon Dams only, together with Navajo as a separate project though necessarily an intrinsic element of the overall program. This leaves out Flaming Gorge, from which reservoir the Uinta Basin in Utah was to receive its water by gravity. In order to pass over this omission, the Bureau mentions that Utah can be supplied its water by pumping from Echo Park. The good people of Utah doubtless realize that this will make it more expensive, will place their irrigations demands in competition with the power demands that are to be created for Echo Park and can hardly be to their advantage.

As to the economic soundness of the program, it is pertinent that the irrigation projects will not be self-liquidating but will be subsidized by expected profits from the power features. The 5.5 mills proposed in 1950 as the cost to be charged per kilowatt-hour was questioned. In the meantime construction costs have gone up, the Bureau estimates 12.8 percent rise.

I would interpolate that probably the increase is nearer 20 percent. And in its last report the Bureau proposes 6 mills to pay out in 50 years, and speaks of 7 mills for a shorter period of liquidation. This approaches the stated cost of power production by other means in this area given by the Bureau. In view of the statement of the President's Water Resources Policy Commission (vol. II, p. 371) that—

the extent to which the undeveloped power potential of the Colorado Basin could or would be utilized is largely undetermined at this time and this presents a problem for future study.

It seems likely, in spite of enthusiastic claims of some to the contrary, that a market for the big power output expected to pay for the program will have to be created artificially, that is, by using all the inducements generally covered by the terms "public relations" and "propaganda." The artificial development of such a market may not prove the blessing anticipated by local chambers of commerce, and when the participating irrigation projects have developed they may find themselves dependent on getting water already preempted for power, a competition in which they are only too likely to be the least favored. While estimates of construction costs are not to be taken too seriously these days, it may be asked whether even the 6 mills cost is enough to pay for the distributing lines that may be necessary to reach more distant markets, should the local market prove inadequate, and also, of course, including the increase in construction costs already mentioned.

In general I have adopted the Bureau's data and figures and have merely tried to show that even according to their own report the project could be made without the Echo Park Dam, and that it is not a well-worked-out balanced project as is.

I think that in your evidence a few days ago you were told by representatives of the Bureau that they expected to produce power at an

average cost of a little over 4 mills a kilowatt-hour. I would introduce another estimate of cost which may be of interest.

Just taking the 4 or 5 mills mentioned in the legislation before you, the estimate is that at Curecanti Dam the power in the 20th year will cost 8.3 mills and in the 50th year, 8.47 mills.

At Echo Park it will cost the full 6 mills in the 20th year and 6.9 mills in the 50th year.

At Flaming Gorge it will cost 7.95 mills in the 20th year and 11.20 mills in the 50th year.

At Glen Canyon, one of these 5 where the price is down, it will cost 4.02 mills in the 20th year and 3.80 mills in the 50th year.

At Navajo it will cost 12.8 mills in the 20th year and 19.1 mills in the 50th year.

Now in order to complete the picture, at Cross Mountain, which I have suggested as a dam that might, and should, be built first, postponing Echo Park until later, the 20th-year cost would be 5.45 mills and the 50th year would be 4.95 mills.

At Whitewater, the 20th-year cost would be 7 mills and the 50th year cost would be 6.29 mills.

I will give this to the reporter. I am sorry it could not be included in the mimeograph.

Mr. D'EWART. Would you give us the basis of those figures for the record?

Mr. GRANT. Those were worked up on the basis of this report [indicating], sir.

Mr. D'EWART. Taken from the Interior Department? Would you cite the report so it will be in the record?

Mr. GRANT. It is "Reclamation Report," and that is a separate study, not accepting the figures that the Reclamation Bureau worked out, but trying to arrive at figures independently.

At the Secretary of the Interior's public hearing on April 3, 1950, I not only protested on behalf of our association against the breach of established policy proposed by the Echo Park and Split Mountain Dams, but I showed that they were quite unnecessary, their being in the second phase of the Bureau's program projects which could be brought forward into the first phase, and the Echo Park Dam postponed to the second phase, which would give 800,000 acre-feet more gross storage capacity and 153 million kilowatt-hours more annual firm power at a cost of \$88,300,000 more than Echo Park, which the Bureau had at that time in the first phase, but since these projects were in the program, which was to be carried out, it was merely a question of which fiscal year would include the extra appropriation, there would be no added overall cost and no added evaporation, because these were to be built anyway—the Bureau's own program included the evaporation from these second phase projects.

Thus the Echo Park project would be left to the second phase, by which time the whole program might be revised and a better one adopted. In the meantime the people of the upper Colorado would be getting more power and more water storage than if Echo Park Dam had been built; but the Bureau's fanatical demand for Echo Park and no other has prevented anything being done. Now the synopsis of that change is in table I on the last page of the statement.

Then, coming to the second phase here I was confronted with the postponed Echo Park Dam and the Split Mountain power dam. So,

for the second phase I suggested the construction, or at least serious investigation, of Desolation, Bluff, and New Moab sites, which would give 1,130,000 more acre-feet storage and 181 million kilowatt-hours more firm power at a saving or less cost of \$59,400,000 for the entire project. That is shown on table II in tabulated form, and those are all figures taken from the Reclamation Bureau's own estimates and reports.

I also questioned whether the water supply would really be sufficient, at least for a considerable period of years, to fill the reservoirs of the entire program, so that some of the second phase might never have to be built. The Bureau itself in some places acknowledges that the fulfillment of the interstate contract at Lee Ferry, might leave only 4,900,000 acre-feet for the upper basin, although elsewhere it calculates that 7,500,000 might be made available with the full storage project working. I have found no provision for the 750,000 acre-feet that is the upper basin's share to furnish Mexico under the international compact. That may be taken care of, but I have not been able to find it. Actually the period for which records are available is too short for a confident determination of how much water will be available in the upper basin. In any case, it is worthy of your notice that the Glen Canyon Reservoir, the one with the greatest capacity and the greatest evaporation, will afford 26 million acre-feet of storage or even more, whereas 23 million acre-feet of live storage or active storage is the total storage the Bureau estimates as necessary to provide the promised flow by Lee Ferry to the lower basin. Because of the very high evaporation at this site and the amount of silt that would be coming into it before the upstream reservoirs are built to catch some of it, there may be some question as to the economic desirability of starting this reservoir early in the first phase. However, since such is the recommendation of the Department, this project has been included in our recommendation for legislation, particularly, may I add, because of the low cost of power there upon which you are going to depend so largely for paying back any part of the costs of the project.

In my suggestions of alternative sites for substitution in the second phase I made an error, which I did not discover until after the hearings of April 3, 1950; namely, I found that the New Moab Dam would back water up into Arches National Monument, which would again violate our basic principle. However, this was corrected in my supplementary memorandum of August 1950, when I pointed out the error and the Dewey site as a possible substitute, which could have more than double (8,200,000 acre-feet) the storage capacity and double (797 million kilowatt-hours) firm power of the New Moab site, but I had no estimate of cost; if reduced to the approximate dimensions of the New Moab project, the cost should not be appreciably different. Information subsequently obtained confirms this. So that lower Dewey site could be substituted for the New Moab site in that table.

Meantime, the Bureau had thought up its evaporation argument and alleged that the proposed substitution would involve an annual loss by evaporation of 350,000 acre-feet. I challenged this in my August 1950 memorandum, and apparently my view was accepted, as now the alleged loss is between 100,000 and 200,000 acre-feet, but still unacceptable, even though the additional storage obtained should largely com-

pensate. Actually, the data on which the evaporation is computed is meager. The Bureau apparently uses a higher coefficient than the Geological Survey for converting pan observations into reservoir evaporation. Differences in wind conditions and similar local circumstances are not taken into consideration. At best, as the Secretary of the Interior stated in his August 6, 1950, release, it is—

a comparatively little known but important phase of water resources development * * *. An old hydrologic mystery * * *. No one knows just how much moisture the atmosphere demands from a given expanse of water under different climatic conditions.

The Department is now carrying on a research project on Lake Hefner near Oklahoma City to obtain better information, but I do not believe any conclusive results have yet been obtained. Secretary Tudor's view that whatever inaccuracies there may be in the method of evaluating the evaporation factor applies to all equally is interesting. While it may serve to show the relative evaporation of different projects among themselves, it may make an appreciable difference in the absolute result with which we come out. The man who has \$15 and gives away \$5 maintains his relative position with the one who had only \$3 and gave away \$1; but there is much difference between the \$10 one has left and the \$2 in the other's pocket.

I do not have the basic assumptions made in arriving at the relative evaporation figures in the table accompanying Mr. Tudor's statement, and I have not been able to obtain them during the course of the hearing. However, it may be noted that, if the evaporation is primarily proportional to the area and the height of the reservoir, as he states, and I agree with him, then the total evaporation for the high Glen Canyon—that is his alternative No. 4—should be 64,000 and not 691,000 acre-feet. Moreover, 526,000 of these acre-feet are already in the project as recommended by the Bureau, leaving 114,000 for the substitute part. Subtracting from this the 87,000 evaporated in Echo Park and the 8,000 at Split Mountain, or a total of 95,000, the actual excess the fourth alternative suggested by Mr. Tudor would have only 19,000 acre-feet a year more evaporation than the Bureau's program with Echo Park and Split Mountain, very far from the 100,000 loss that is his justification for insisting on keeping the two dams in the national monument and destroying the special scenic and recreational value for which it was set aside.

To indicate how tricky this subject is, if instead of raising the Glen Canyon Dam 50 feet, as suggested by Mr. Tudor, you should raise it only 39 feet and then figure the evaporation in the same proportion as for the 50-foot raise, it may be shown that the evaporation for this alternative is actually less than with the two objectionable dams in the program. I would not wish to be misunderstood as favoring this alternative, because it is manifestly desirable to get more storage and power on the upper streams rather than concentrated at Glen Canyon.

I have some other examples that might be interesting in regard to the trickiness of the evaporation question and the relative variations between computed net evaporations and gross acreage evaporations, which may be as much as 45 percent. I do not want to bore the committee with too many of those things.

Leaving the specific question of evaporation for a moment and considering the recommendation made in my opening remarks with

that made by the Department of the Interior, namely, the authorization of Flaming Gorge, Cross Mountain, Whitwater or Bridgeport, and Glen Canyon, in lieu of Echo Park, Glen Canyon and Navaho or Martinez, we find my recommendation provides—and here is another correction. By mistake the total was put in instead of the difference. That should be 2,360,000 acre-feet more storage and 50,000 kilowatts less installed power, 44,000 more evaporation, and the cost is \$54,641,000 less.

Since the projects I have ventured to suggest are all in the Bureau's program, they cannot be objectionable from any technical standpoint, and since the power demand will not have been built up according to the Bureau until 1978, the small difference in power capacity will not be missed until a future phase permits the substitution of alternative projects picked by the Bureau itself.

Another approach is of interest: Taking my recommendation for bringing Cross Mountain and Great Canyon projects forward into the first phase in lieu of Echo Park, and taking the Bureau's figures to compute the evaporation, we find a total evaporation of 204,940 acre-feet, which looks big compared to the 87,000 given for Echo Park. But the storage provided in the upper reaches of the rivers exceed the Echo Park storage by 800,000 acre-feet, so that an equal amount less storage need be developed at Glen Canyon in the first phase, where evaporation is highest, and there will be an actual decrease of some 5,560 acre-feet evaporation loss.

Others will discuss the national parks values of the monument, and show up the ridiculousness of the claim that greater recreational values will be created by a reservoir in the monument than by a longer reservoir elsewhere which would be substituted for it. Lest they overlook them, however, I would like to point out that Echo Park and Split Mountain Dams will flood out Island Park, Rainbow Park, and Little Park, the places where visitors can camp and from which the canyons are entered. To say that the damage to the monument would not be substantial is just evidence of entire misunderstanding of such values and the kind of recreation to be gotten from a visit to such a region. I have a large accumulation of testimonials to the value and unique character of this bit of our country, but others will present that part of the subject.

Equally in error is the statement that no one visits the monument. It is relatively inaccessible, but that will be corrected when adequate appropriations for development are made available. The same appropriation, \$17,796,000, proposed by the Reclamation Service for recreational development of the proposed artificial lake and organized Jones Beach effects along the shores will do the job. In 1952, 13,688 people visited the monument and 157 went down the river in boats; in 1953 there were 22,334 visitors at the monument, of whom 502 made the river trip. This compares interestingly with the 19,575 who visited the Yellowstone in 1910. There is no question but that we need more park space of all kinds to accommodate our growing population. What has been developed is overcongested and crowded now. May Congress at least save what has already been set aside.

In conclusion, I would like to emphasize that I have used only the facts and figures given by the Bureau of Reclamation except in the one insertion that I made as to the cost of power. Having no field

force or opportunity to make scientific investigations for myself I have not ventured to propose any new sites, but merely to show that by the Bureau's own data the Echo Park and Slit Mountain projects are not necessary either to give the needed storage, the needed ultimate electrical power, or to keep within the total cost limit. I am confident, and I hope you are convinced also, that the evaporation loss is not, or at least need not be as substantial as the 100,000 acre-feet which have persuaded Mr. Tudor to favor these projects, that in fact an unprejudiced revision of the program without these two projects would show that such a program is feasible and economically justified. When we consider the reports of wastage of water from leaky canals and other causes, it is hard to understand the insistence upon the figures offered to show a substantial loss by using alternative sites.

This argument certainly does not even exist as to the early stage, since the substitute sites I have recommended are already in the program, are to be built anyway and, therefore, involve no additional evaporation loss to the program. By the time the second phase is reached, the Bureau will presumably have made more adequate field investigations and will have found feasible substitute sites, if those I suggested for the second phase on the basis of the Bureau's previous reports are really found to be unsuitable. Certainly, if the canyons of the Green and Yampa Rivers had not been created to tempt the Bureau of Reclamation to invade this national monument, a suitable and economically justified program would be proposed by the Bureau to utilize more fully the natural waterflow in the upper basin and to give the people there the water and power the upper basin needs. Let that program be found now, while the dams to which there is no objection are building.

Finally, I wish to express my thanks for the help that has come to me from many sources, the voluntary cooperative work of other engineers, and the valuable suggestions of my friends in the conservation field; for this is not entirely a local issue, but has nationwide impact, and many unheard people throughout the land are anxiously waiting to see whether the policy long established so wisely by law is now to be violated unnecessarily and a precedent set for the ultimate destruction of the wonders of nature that are one of the valuable assets of our country.

(The table submitted by Mr. Grant follows:)

TABLE 1.—*Reclamation Bureau proposal and suggested alternative in initial stage of Colorado project*

Reservoir project	Gross storage of water	Annual firm power	Estimated approximate cost
	<i>Acre-feet</i>	<i>Kilowatt-hours</i>	
Gray Canyon.....	2,000,000	1,018,000,000	\$178,600,000
Cross Mountain.....	5,200,000	335,000,000	49,100,000
Total.....	7,200,000	1,353,000,000	227,700,000
Echo Park.....	6,400,000	1,200,000,000	139,400,000
Gain.....	800,000	153,000,000	
Additional cost.....			88,300,000

TABLE 2.—*Reclamation Bureau proposal and suggested alternative in second phase of Colorado project*

Reservoir project	Gross storage of water	Annual firm power	Estimated approximate cost
RECLAMATION BUREAU PROPOSAL			
Echo Park.....	<i>Acre-feet</i> 6,400,000	<i>Kilowatt-hours</i> 666,000,000	\$139,400,000
Split Mountain.....	335,000	720,000,000	67,000,000
Total.....	6,735,000	1,386,000,000	206,400,000
ALTERNATE POSSIBILITY			
Desolation ¹	900,000	433,000,000	33,000,000
Bluff.....	3,000,000	289,000,000	19,000,000
New Moab.....	3,965,000	845,000,000	95,000,000
Total.....	7,865,000	1,567,000,000	147,000,000
Increase from alternates.....	1,130,000	181,000,000	-----
Savings from alternates.....	-----	-----	59,400,000

¹ Including some overlapping with Gray Canyon; see text.

TABLE 3.—*Comparison of Department's schedule for immediate action and Grant's*

	Storage (acre-feet)	Installed power (kilowatt)	Estimated cost (1950 estimate)	Evaporation (acre-feet per year)
Reclamation's proposal:				
Glen Canyon.....	26,000,000	800,000	\$363,928,000	526,000
Echo Park.....	6,460,000	200,000	165,356,000	87,000
Navaho.....	1,200,000	30,000	63,019,000	16,000
Total.....	33,660,000	1,030,000	592,303,000	629,000
Grant's counterproposal:				
Flaming Gorge.....	3,910,000	72,000	82,667,000	56,000
Cross Mountain.....	5,200,000	60,000	50,991,000	70,000
Whitewater.....	880,000	48,000	40,076,000	21,000
Glen Canyon.....	26,000,000	800,000	363,928,000	526,000
Total.....	36,020,000	980,000	537,662,000	673,000
Counterproposal results.....	¹ 2,360,000	² 50,000	² 54,641,000	^{1 2} 44,000

¹ More.

² Less.

³ Evaporation note: The added storage, times average evaporation rate, more than offsets the difference. Even without this gain, the saving in total cost per acre-foot lost is \$1,240.

Mr. HARRISON. Mr. Miller?

Mr. MILLER. General Grant, I was interested in your statement about the park and the building of dams. You have long been interested in many parks in the United States as well as in and around the District of Columbia.

I believe when the Dinosaur National Monument was enlarged, that was done by proclamation of the President. It has never been approved by Congress. Is that right?

Mr. GRANT. As far as I know, there has never been any legislation other than the legislation authorizing monuments to be set up by the President.

Mr. MILLER. The original monument was very small?

Mr. GRANT. Yes. The original monument was rather small, just to save the fossil deposits.

Mr. MILLER. Originally it was about 80 acres?

Mr. GRANT. So I understand.

Mr. MILLER. Now it is enlarged by proclamation to take in some 235,000 acres. When the proclamation enlarging the Dinosaur National Monument—I believe that was in 1938—was made, it was subject to withdrawal by the Reclamation Bureau for the Browns Park Reservoir site, which relates to a small area in the northern part of the monument. That withdrawal covers a small portion of the monument lands now proposed to accommodate the Echo Park and Split Mountain Reservoirs by the Bureau of Reclamation. In other words, when it was set up there was a reservation that dams could be built and it could be used for developing power and for reclamation purposes. Is that your understanding?

Mr. GRANT. My understanding is that there is an exemption or a reservation in the proclamation for one project which at that time was thought to be most important and had already for some years had a legal status in the area, sir. I do not understand that it was any more general than that.

Mr. MILLER. You do not think it was broad enough to take in grazing and mining and reclamation and power projects?

Mr. GRANT. Are the power projects comparable with grazing and so forth, sir? That is an administrative matter.

Mr. MILLER. This is a reservation in the original proclamation and has been interpreted by the Attorney General as being broad enough to take in all of those phases.

I was wondering, inasmuch as the proclamation which enlarged the Dinosaur National Monument was made subject to Reclamation withdrawals and for other purposes, whether the argument that there should not be a dam built in the park might fall on rather barren ground because the reservation is already made.

Mr. GRANT. Our association's feeling is—we are just laymen—that the reservation made was a specific one for one project which had had certain legal claims at the time, and that that reservation did not apply to other dams in other places which do a great deal more harm than that one up in the northern end.

Now as to the legal points, sir, I am merely an Army officer, I am not a lawyer, and I do not want to express an opinion if the Attorney General has already done so.

Mr. MILLER. Of course, it is not new that dams be built in national parks. This is not a new procedure or a new road that we are traveling on. I am sure you understand that, because Grand Canyon National Park, the act of February 26, 1919, provides in section 7:

Whenever consistent with the primary purposes of said park, the Secretary of the Interior is authorized to permit the utilization of areas therein which may be necessary for the development and maintenance of a Government project.

That is in the Grand Canyon National Park.

Then in the Glacier National Park, the act of May 11, 1910, contains the following provision in section 1:

And that the United States Reclamation Service may enter upon and utilize for flowage or other purposes any area within said park which may be necessary for the development and the maintenance of a Government reclamation project.

Then in the Rocky Mountain National Park, the act of January 26, 1915, had a similar provision. In the Hawaiian Volcanic National

Park, the act of August 9, 1916, has a provision for the building of dams.

There are dams and reservoirs in some areas of the national park system. A prime example is the Hetch Hetchy and the Lake Eleanor Dams and Reservoirs in the Yosemite National Park. They were bitterly but unsuccessfully opposed by conservationists throughout the country. Congress authorized its building by the act of December 19, 1913, for water supply and related purposes of the city and county of San Francisco.

Those purposes have been met without sacrificing the beauties of Hetch Hetchy Valley, which are available now.

There are a number of citations, including the Dinosaur National Park, in which reservations were made by the Reclamation Bureau for the building of dams. It is nothing new, either for power purposes or water for domestic use or water for irrigation purposes.

I think the record should show that, and the citations I have made are only a few where reservations have been made and have already had dams built in so-called national parks and monuments.

Mr. GRANT. My recollection is that the Hetch Hetchy Valley project, sir, was built before the National Park Service was established. I am quite sure of that.

Mr. MILLER. It was authorized by the act of September 9, 1913.

Mr. GRANT. The Park Service would have to give you accurate information as to whether any advantage has been taken of these other reservations, but as far as I know, and as far as it has come to my attention, those invasions have not been made. I hope, and our association hopes, that Congress will not make them even though they kept in those cases a reservation in the legislation.

Mr. MILLER. Mr. Chairman, may I ask the counsel, Mr. Abbott, to check the proclamation which enlarges Dinosaur National Monument in 1938, and at this point in the record put in at least a résumé of the proclamation to determine whether there was some reservation made as to the building a dam in this particular site.

Mr. HARRISON. Without objection from the committee, it will be so ordered.

(The information referred to follows:)

MEMORANDUM

Subject: Dinosaur National Monument and proposed Echo Park construction.
To: Hon. William H. Harrison, chairman, Subcommittee on Irrigation and Reclamation, House Interior and Insular Affairs Committee.
From: George W. Abbott, committee counsel.

In response to the several requests of committee members during and immediately following the hearings of January 26, 1954, on H. R. 4449, H. R. 4463, and H. R. 4443, there follow extracts from statutory enactments, and related materials, bearing on the history of Dinosaur National Monument and its relationship to proposed construction of Echo Park Dam.

The statutory provisions, executive actions, and correspondence documented hereinafter are as follows:

1. June 8, 1906: Act of Congress providing authority of the President to establish national monuments.
2. October 4, 1915: Proclamation establishing Dinosaur National Monument.
3. August 25, 1916: Act creating the National Park Service.
4. June 10, 1920: The Federal Water Power Act.
5. March 3, 1921: Amendments to the Federal Water Power Act.
(a) Provisions of the act of 1921.

(b) Action in the Senate.

(c) Action in the House.

6. August 9, 1934: Letter from National Park Service to Federal Power Commission.
7. December 13, 1934: Letter from Federal Power Commission to National Park Service.
8. August 26, 1935: Further amendments to the Federal Water Power Act.
9. November 6, 1935: Letter from the Secretary of the Interior to the Federal Power Commission.
10. January 9, 1936: Letter from the Federal Power Commission to the Secretary of the Interior.
11. June 11-13, 1936: Affidavits on meetings held in Utah and Colorado by National Park Service representatives.
12. July 14, 1938: Proclamation enlarging Dinosaur National Monument.
13. May 14, 1943: Ad Interim Report. Survey of Recreational Resources of the Colorado River Basin by Frederick Law Olmsted.
14. December 1, 1943: Memorandum from the Director, National Park Service, to the Commissioner, Bureau of Reclamation.
15. June 27, 1944: Report of the Park Service regional representative on Dinosaur Monument.
16. May 2, 1946: Letter from Director, National Park Service, to Dr. J. E. Broadus, Salt Lake City, Utah.
17. June, 1946: A Survey of the Recreational Resources of the Colorado River Basin, excerpt from.
18. December 20, 1949: Memorandum from the Commissioner, Bureau of Reclamation, to the Secretary of the Interior.
19. December 30, 1949: Memorandum from the Director, National Park Service, to the Secretary of the Interior.
20. February 28, 1950: Memorandum from the Director, National Park Service, to the Secretary of the Interior.
21. March 3, 1950: Memorandum from the Director, National Park Service, to the Secretary of the Interior.
22. June 27, 1950: Memorandum from the Secretary of the Interior to the Director, National Park Service, and the Commissioner, Bureau of Reclamation.

Except for No. 8, upon which comment was requested, no attempt has been made to evaluate the materials here collected. The arrangement is chronological. References to the Federal Water Power Act of 1920, as amended in 1921 and 1935, carry original statutory citations for purposes of clarity; present law is codified in title 16, sections 791-823, United States Code.

1. AUTHORITY OF THE PRESIDENT TO ESTABLISH NATIONAL MONUMENTS

The authority of the President to establish national monuments by proclamation is contained in the act of June 8, 1906, sometimes referred to as the "Antiquities Act". (Emphasis supplied.)

"ACT OF JUNE 8, 1906, 59TH CONGRESS, 1ST SESSION (34 STAT. 225)

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any person who shall appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the Department of the Government having jurisdiction over the lands on which said antiquities are situated, shall upon conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

"Sec. 2. That the President of the United States is hereby authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected: Provided, That when such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tract, or so much thereof as may be necessary for the proper care and management of the object, may be

relinquished to the Government, and the Secretary of the Interior is hereby authorized to accept the relinquishment of such tracts in behalf of the Government of the United States.

"SEC. 3. That permits for the examination of ruins, the excavation of archaeological sites, and the gathering of objects of antiquity upon the lands under their respective jurisdictions may be granted by the Secretaries of the Interior, Agriculture, and War to institutions which they may deem properly qualified to conduct such examination, excavation, or gathering, subject to such rules and regulations as they may prescribe: *Provided*, That the examinations, excavations, and gatherings are undertaken for the benefit of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the knowledge of such objects, and that the gatherings shall be made for permanent preservation in public museums.

"SEC. 4. That the Secretaries of the Departments aforesaid shall make and publish from time to time uniform rules and regulations for the purpose of carrying out the provisions of this Act."

2. ESTABLISHMENT OF DINOSAUR NATIONAL MONUMENT

Dinosaur National Monument was established by Presidential proclamation, pursuant to the 1906 act, in 1915, and as originally established covered an area of 80 acres. (Emphasis supplied.)

"PROCLAMATION OF OCTOBER 4, 1915 (39 STAT. 1752)

"By the President of the United States of America

"A PROCLAMATION

"*Whereas*, in section twenty-six, township four south, range twenty-three east of the Salt Lake meridian, Utah, *there is located an extraordinary deposit of Dinosaurian and other gigantic reptilian remains of the Juratrias period, which are of great scientific interest and value, and it appears that the public interest would be promoted by reserving these deposits as a National Monument, together with as much land as may be needed for the protection thereof.*

"Now, therefore, I, Woodrow Wilson, President of the United States of America, by virtue of the power in me vested by Section two of the act of Congress entitled, "An Act for the Preservation of American Antiquities", approved June 8, 1906, do hereby set aside as the Dinosaur National Monument, the unsurveyed northwest quarter of the southeast quarter and the northeast quarter of the southwest quarter of section twenty-six, township four south, range twenty-three east, Salt Lake meridian, Utah, as shown upon the diagram hereto attached and made a part of this proclamation.

"While it appears that the lands embraced within this proposed reserve have heretofore been withdrawn as coal and phosphate lands, the creation of this monument will prevent the use of the lands for the purposes for which said withdrawals were made. Warning is hereby expressly given to all unauthorized persons not to appropriate, excavate, injure or destroy any of the fossil remains contained within the deposits hereby reserved and declared to be a National Monument or to locate or settle upon any of the lands reserved and made a part of this monument by this proclamation.

"IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

"Done at the city of Washington, this fourth day of October, in the year of

"[SEAL] our Lord one thousand nine hundred and fifteen and the Independence of the United States the one hundred and fortieth.

"WOODROW WILSON.

"By the President:

"ROBERT LANSING,

"Secretary of State."

3. ACT CREATING THE NATIONAL PARK SERVICE

"ACT OF AUGUST 25, 1916 (39 STAT. 535) 64TH CONGRESS 1ST SESSION

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That there is hereby created in the Department of the Interior a service to be called the National Park Service,

* * * The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations. * * *

"Sec. 3. That the Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments, and reservations under the jurisdiction of the National Park Service * * *."

4. THE FEDERAL WATER POWER ACT OF 1920

The act of June 10, 1920 (41 Stat. 1063), known as the Federal Water Power Act, provided for creation of the Federal Power Commission, to make possible orderly development of water power. (Emphasis supplied.)

Section 3, contained these definitions:

"*'Public lands'* means such lands and interest in lands owned by the United States as are subject to private appropriation and disposal under public-land laws. It shall *not* include '*reservations*' as hereinafter defined.

"*'Reservations'* means *national monuments* * * * and other lands and interests in lands owned by the United States * * *"

Section 4 authorized the Federal Power Commission

"* * * (d) *To issue licenses* * * * for the purpose of constructing * * * *dams* * * * and for the development, transmission and utilization of power across, along, from or in any of the navigable waters of the United States, or upon any part of the public lands and reservations of the United States (including the Territories), or for the purpose of utilizing the surplus water or water power from any Government dam, except as herein provided: *Provided, That licenses shall be issued within any reservation only after a finding by the commission that the license will not interfere or be inconsistent with the purpose for which such reservation was created or acquired*, and shall be subject to and contain such conditions as the Secretary of the Department under whose supervision such reservation falls shall deem necessary for the adequate protection and utilization of such reservation. * * *"

Therefore, under the 1920 act, it is apparent that the FPC had authority to issue a license for the erection of a dam within a national monument.

5. 1921 AMENDMENTS TO THE 1920 FEDERAL POWER ACT

(A) PROVISIONS OF THE 1921 ACT

The act of March 3, 1921 (41 Stat. 1353), amended the act of June 10, 1920, by providing (emphasis supplied):

"That *hereafter* no permit, license, lease, or *authorization for dams, conduits, reservoirs, power houses, transmission lines, or other works for storage or carriage of water, or for the development, transmission, or utilization of power, within the limits [as now constituted] of any national park or national monument shall be granted or made without specific authority of Congress*, and so much of the Act of Congress approved June 10, 1920 * * * as authorizes licensing such uses of [*existing*] national parks and national monuments by the Federal Power Commission is hereby repealed."

It will be noted that the words "as now constituted" and "existing" were amendments to the original bill. Two excerpts from the Congressional Record, 66th Congress, 3d session, help background these amendments.

(B) ACTION IN THE SENATE

On January 25, 1921, in the Senate (60 Congressional Record, 2001 et seq.), the following comments were recorded:

"WATERPOWER PROJECTS WITHIN NATIONAL PARKS

"The bill (S. 4554) to amend an act entitled 'An act to create a Federal Power Commission; to provide for the improvement of navigation; the development of waterpower; the use of the public lands in relation thereto; and to repeal section

18 of the River and Harbor Appropriation Act, approved August 8, 1917, and for other purposes,' approved June 10, 1920, was announced as next in order.

"Mr. KING. Let that bill go over.

"Mr. WALSH of Montana. Mr. President, I wish to inquire if objection was made to the present consideration of Senate bill 4554?

"Mr. KING. May I inquire of the Senator from Washington [Mr. JONES] if this is the measure to which he referred?

"Mr. JONES of Washington. Yes.

"Mr. KING. Then I have no objection to the consideration of the bill, Mr. President.

"The VICE PRESIDENT. The Secretary will read the bill.

"The Assistant Secretary read the bill, as follows:

"*Be it enacted, etc.*, That hereafter no permit, license, lease, or authorization for dams, conduits, reservoirs, power houses, transmission lines, or other work for storage or carriage of water, or for the development, transmission, or utilization of power, within the limits of any national park or national monument shall be granted or made without specific authority of Congress, and so much of the act of Congress approved June 10, 1920, entitled "An act to create a Federal Power Commission; to provide for the improvement of navigation; the development of water power; the use of the public lands in relation thereto; and to repeal section 18 of the river and harbor appropriation act, approved August 8, 1917, and for other purposes," approved June 10, 1920, as authorized licensing such uses of national parks and national monuments by the Federal Power Commission is hereby repealed."

"Mr. BORAH. That bill cannot be disposed of this morning.

"The VICE PRESIDENT. Then the Senator from Idaho may object to its consideration.

"Mr. BORAH. I object to its consideration.

"Mr. WALSH of Montana. Mr. President, I desire to say a few words in connection with the bill which has just been read. I was not able distinctly to hear the reading of the bill, but I understand that it was introduced by the Senator from Washington [Mr. JONES] for the purpose of eliminating national parks from the jurisdiction of the Water Power Commission.

"Mr. JONES of Washington. That is correct.

"Mr. WALSH of Montana. I think, perhaps, it would be appropriate to say in this connection that the Senator from Washington, as well as myself, is under obligation to bring this matter to the consideration of the Senate with all speed, and unless there is some special reason I hope the measure will have consideration.

"When the water power bill was transmitted to the Senate for consideration an objection was made——

"Mr. BORAH. Mr. President, I do not desire to object to the remarks of the Senator from Montana, but I understand the bill is not under consideration. There was objection to the bill.

"Mr. WALSH of Montana. I so understand; but I will take occasion at this time to say what I desire to say, with the permission of the Senate.

"An objection was made to the bill by the Secretary of the Interior, Mr. Payne, upon the ground that it granted the waterpower commission created by that act the authority to authorize the construction of dams for power purposes within the national parks, and it seemed not unlikely that the bill would be vetoed by the President in consequence of the objection to it thus pointed out by the Secretary of the Interior. In that connection the Senator from Washington and myself, both being very deeply interested in the speedy enactment of the measure, called upon the Secretary of the Interior and stated to him that if he would withdraw his objection to the bill we would at the ensuing session of Congress charge ourselves with the duty of introducing a bill to relieve the water-power measure of the objection and urge its passage upon the Senate. Accordingly, I feel obligated to do what I can to remove any objection that might be made against the bill. I feel that both of us stand pledged to do everything we can to expedite the passage of the bill.

"In this connection I also desire to say, Mr. President, that in all of the long discussion of and consideration given to the water-power bill I do not recall that anybody ever called attention to the feature of that bill to which reference is now made. It was embodied in the bill as it was originally prepared by the Secretary of War, the Secretary of the Interior, and the Secretary of Agriculture. It was not the subject of discussion upon the floor. Apparently it passed without any attention whatever being given to it. No one was particularly inter-

ested in it, so far as I can understand; yet, notwithstanding this condition of affairs, and the pledge given by the Senator from Washington as well as myself, a very active, energetic campaign is being waged, and the country is being deluged with appeals from civic associations of all kinds charging something in the nature of intrigue or indirection in getting this provision into the water-power bill and calling on all the friends of the national parks throughout the country to assist in sweeping away all possible objection to the legislation now proposed and speedily accomplishing its enactment, reminding one of some of the adventures of Don Quixote and his celebrated mount. I do not believe that there is any serious objection to the enactment of this measure. I hope that we shall have it speedily considered. I say this in explanation of my own attitude with respect to it.

"Mr. BORAH. Mr. President, I am not going to stand in the way of the consideration of the bill if it comes up on a proper occasion when we can consider it for a reasonable length of time, but I do object to it at the present time. It is a matter of some importance, and we could not possibly dispose of it under the rules with the time which we have this morning.

"Mr. FLETCHER. Mr. President, I will simply say that this is the first time I ever heard of any objection to the bill. It has been reported unanimously by the Committee on Commerce, I believe, and I never knew heretofore there were any objections to it.

"Mr. BORAH. There are some objections to it, Mr. President, which have been presented to me. What my final attitude upon the bill will be I do not know, but it is a matter of a great deal of importance to some people. I therefore do not desire that the Senate shall undertake to dispose of it this morning.

"Mr. JONES of Washington. Mr. President, I have been seeking to get this bill up for some time. I knew that the Senator from Idaho was interested in it, and possibly might have some objection to it. I have delayed asking for its consideration in order that the Senator from Idaho might procure some information concerning the bill which he desired to obtain. As I have said before, at the very first opportunity I expect to call the bill up. As the Senator from Montana [Mr. Walsh] has stated, I feel under obligation to do whatever may be possible to secure action upon the measure by the Senate, and I expect to secure such action.

"The VICE PRESIDENT. The bill will be passed over.

* * * * *

The Senate passed the bill, with amendments, on February 24, 1921 (60 Congressional Record, 3789, et seq.), with the following debate:

"AMENDMENT OF FEDERAL POWER COMMISSION ACT

"Mr. JONES of Washington. Mr. President, I want to make another attempt to make good my promise to the Secretary of the Interior. The Senator from Missouri [Mr. Spencer] a moment ago told me that this was not the bill he had in mind. Therefore, I ask unanimous consent for the present consideration of Senate bill 4554, intending to offer two amendments if that consent is given. It is the bill that takes from the jurisdiction of the Water Power Commission the granting of permits in national parks and leaves it with Congress.

"The VICE PRESIDENT. Is there any objection to the present consideration of the bill?

"There being no objection, the Senate, as in Committee of the Whole, proceeded to consider the bill (S. 4554) to amend an act entitled 'An act to create a Federal Power Commission; to provide for the improvement of navigation; the development of waterpower; the use of the public lands in relation thereto; and to repeal section 18 of the river and harbor appropriation act, approved August 8, 1917, and for other purposes,' approved June 10, 1920, which was read, as follows:

"*Be it enacted, etc.,* That hereafter no permit, license, lease, or authorization for dams, conduits, reservoirs, power houses, transmission lines, or other works for storage or carriage of water, or for the development, transmission, or utilization of power, within the limits of any national park or national monument shall be granted or made without specific authority of Congress, and so much of the act of Congress approved June 10, 1920, entitled "An Act to create a Federal Power Commission; to provide for the improvement of navigation; the development of water power; the use of the public lands in relation thereto; and to repeal section 18 of the river and harbor appropriation act, approved August 8, 1917, and for other purposes," approved June 10, 1920, as authorizes licensing

such uses of national parks and national monuments by the Federal Power Commission is hereby repealed.'

"Mr. JONES of Washington. After the word 'limits,' on page 1, line 7, I move to amend by inserting the words 'as now constituted.'

"The amendment was agreed to.

"Mr. JONES of Washington. Then, on page 2, line 6, after the words 'uses of,' I move to insert the word 'existing.'

"The amendment was agreed to.

"Mr. BORAH. Mr. President, I did not feel that I was in a position to object to the consideration of this bill, as the Senator from Washington has been for a long time trying to get it before the Senate for consideration, and he was under an obligation, by reason of a promise which he made to the President and the Secretary of the Interior, to bring it up for consideration if possible. I did not desire to interfere with his bringing it before the Senate, neither have I time at this hour to discuss the bill; but I desire to record my objection to it, and I want an opportunity to vote against it. That is all I shall ever get out of it anyhow, I presume, so we might just as well consider it this afternoon.

"I have understood that the bill is very generally favored by the Senate, but it seems to me to be an unwise measure, even from the standpoint of those who are advocating it, taking into consideration the reasons for it which they assign. But I cannot undertake at this late hour, Mr. President, to discuss it. However, I ask for an opportunity to vote upon it.

"Mr. UNDERWOOD. Mr. President, I only want to say that I happen to know something about the situation. The water power bill, which many Members of Congress were interested in securing the passage of, was in very grave danger of a Presidential veto in the closing hours of the last Congress, and finally the Secretary of the Interior expressed as his main objection the fact that the power in that bill extended over the national parks, and he did not want any bill to develop power in the national parks and destroy their beauty. Finally, the Secretary agreed that he would recommend to the President to sign the bill and let it go through, if the Senator from Washington (Mr. Jones), who was acting chairman of the committee in charge of the bill, would bring before the Congress a bill to amend the water power act so as to leave out the national parks. I think in good faith we ought to pass the bill.

"Mr. BORAH. Mr. President, I do not think that good faith requires us to pass it. I think that good faith does require that an opportunity shall be given for the Senate to vote upon it. Therefore I have not opposed a vote.

"As I understand the bill, it all resolves itself into a simple proposition whether the parks would be better protected by the Congress of the United States or by the commission which was created by the power act.

"I had some experience here in trying to protect the parks through the Congress of the United States, when we had up the famous Hetch-Hetchy proposition, and I observed that the Congress did all it could do, in that instance, to destroy that park. I think those who are advocating this bill will find in a very short time that they are not securing the protection which they think they are securing. I am just as much in favor of protecting the parks, I think, as those who are advocating this bill, but I wholly disagree with them as to how they can be best protected. Therefore I am opposed to the bill.

"The bill was reported to the Senate as amended, and the amendments were concurred in.

"The bill was ordered to be engrossed for a third reading, read the third time, and passed.

* * * * *

(C) ACTION IN THE HOUSE

House action on the Senate version of the bill is set out in proceedings of March 1, 1921 (60 Congressional Record 4204, et seq) :

"AMENDING FEDERAL POWER COMMISSION ACT

"Mr. ESCH. Mr. Speaker, I ask to take from the Speaker's table the bill S. 4554, a bill to eliminate from the water power act national parks and monuments.

"The Clerk read the bill, as follows :

"S. 4554. An act to amend an act entitled "An act to create a Federal power commission; to provide for the improvement of navigation; the development of water power; the use of the public lands in relation thereto; and to repeal sec-

tion 18 of the river and harbor appropriation act, approved August 8, 1917, and for other purposes," approved June 10, 1920.

"*Be it enacted, etc.*, That hereafter no permit, license, lease or authorization for dams, conduits, reservoirs, power houses, transmission lines, or other works for storage or carriage of water, or for the development, transmission, or utilization of power, within the limits as now constituted of any national park or national monument shall be granted or made without specific authority of Congress, and so much of the act of Congress approved June 10, 1920, entitled "An act to create a Federal power commission; to provide for the improvement of navigation; the development of water power; the use of the public harbor appropriation act, approved August 8, 1917, and for other purposes," approved June 10, 1920, as authorizes licensing such uses of existing national parks and national monuments by the Federal Power Commission is hereby repealed."

"Mr. ESCH. Mr. Speaker, the object of the bill is to modify the Federal Water Power Act so as to eliminate from its provisions national parks and monuments. When the act was originally passed we supposed we had sufficiently safeguarded national parks and monuments so that there would not be constructed therein any water power or reclamation projects. However, the President was in doubt as to whether he would sign the bill which was presented to him on the 4th day of June, the day before we adjourned. He referred the bill to the Secretaries of the Interior, War, and Agriculture. The Secretary of the Interior had great doubt as to the policy of giving to a commission control over national parks and monuments in the matter of water-power development. Senator Jones, chairman of the Committee on Commerce, and Senator Walsh of Montana, called upon the Secretary and conferred with him regarding the signing of the bill. The Secretary conferred with Senator Underwood and the majority leader (Mr. Mondell), and an understanding was reached whereby the bill was to be introduced at this session eliminating the parks and monuments from the operation of the Federal Power Act, and this bill carries out that understanding."

"Mr. BARKLEY. Will the gentleman yield?"

"Mr. ESCH. Yes."

"Mr. BARKLEY. What is the difference between the bill as it passed the Senate and as it was reported from the Interstate Commerce Committee of the House?"

Mr. ESCH. They are identical.

"Mr. BARKLEY. Would the gentleman consider an amendment to the bill as it passed, striking out the word 'existing'?"

"Mr. ESCH. That is in the bill."

"Mr. BARKLEY. The word 'existing,' which limits it to national parks and monuments now in existence, is in the bill as it passed the Senate?"

"Mr. ESCH. Yes; and as reported by the Select Committee on Water Power."

"Mr. BARKLEY. I would like to ask whether the gentleman would be willing to consider an amendment to the bill striking out the word 'existing'?"

"Mr. ESCH. I fear, Mr. Speaker, that with such an amendment the bill would fail in this Congress."

"The SPEAKER. The question is on the third reading of the bill."

"The bill was ordered to be read a third time; was read the third time."

"Mr. BLANTON. Will the gentleman yield for a question? This does not create any commission?"

"Mr. ESCH. Not at all."

"Mr. BLANTON. It is only an amendment perfecting the act, and it does not increase any salaries, or anything of that kind?"

"Mr. ESCH. No."

"Mr. BARKLEY. Mr. Speaker, is it in order to offer an amendment to the bill?"

"The SPEAKER. The Chair thinks it is."

"Mr. ESCH. Mr. Speaker, I did not yield the floor for that purpose."

"Mr. MANN of Illinois. Will the gentleman yield?"

"Mr. ESCH. Yes."

"Mr. MANN of Illinois. I hope that the gentleman from Kentucky will not do that. I am in full sympathy with what the gentleman wants."

"Mr. BARKLEY. If the gentleman from Wisconsin will yield to me for a moment?"

"Mr. ESCH. I do."

"Mr. BARKLEY. When the bill was under consideration the question arose whether a limitation should be made applying to national parks now in existence or also to future parks that might be created."

"As the bill passed the Senate and as it was reported to the House, it limited its effect to existing national parks only, so that hereafter, if more national parks shall be created, or those already in existence shall be enlarged, we must fight out on every individual bill creating a new national park or enlarging one already in existence the question whether the water power in the national park shall be used. It was my thought that we ought to make this provision apply to all parks that exist now as well as those that may be created in the future; but if the House feels that such an amendment would endanger the passage of this bill and thinks it is better to get what we can under this bill than to try to get more, I have no disposition to offer an amendment. I do desire, however, to register my objection to the provision that limits it to existing national parks instead of including all that may hereafter be created.

"Mr. ESCH. Mr. Speaker, the thought as presented to the committee by Secretary Meredith and Secretary Payne was that this would safeguard existing parks and monuments, and hereafter, if any project was presented to Congress for the creation of a new park or monument or the extension of existing parks or monuments, it would be within the power of Congress to determine whether or not the water power act should apply to them.

"The SPEAKER. The question is on the passage of the bill.

"The question was taken, and the bill was passed.

"On motion of Mr. Esch, a motion to reconsider the vote by which the bill was passed was laid on the table.

"On motion of Mr. Esch, the bill H. R. 14469, an identical House bill, was ordered to lie on the table.

"* * * * *

It is here pointed out that Dinosaur National Monument as it "existed" or was then "constituted"—in 1921—was comprised of a total of 80 acres of land.

6. AUGUST 9, 1934: LETTER OF PARK SERVICE TO FEDERAL POWER COMMISSION

In August 1934 the Acting Director of the National Park Service addressed a letter to the Federal Power Commission on the subject of power withdrawals in the Echo Park-Blue Canyon areas. (Emphasis supplied.)

WASHINGTON, D. C., August 9, 1934.

FEDERAL POWER COMMISSION,

Washington, D. C.

GENTLEMEN: We are studying the possibility of setting aside certain lands in northwestern Colorado as a national monument. The area considered is within the watershed shown on the map marked "Exhibit H (a)," which accompanied an application of January 30, 1932, of the Utah Power & Light Co. for a preliminary permit, and which is on file in the Denver office of the Reclamation Bureau. The proposed monument would be affected by the Echo Park Dam site and the Blue Canyon Dam site, as indicated on the enclosed map of the proposed monument.

Such an area would be established by Presidential proclamation which would exempt all existing rights, and a power withdrawal is, of course, an existing right.

However, we feel that we should call this to your attention. If it is possible to release the power withdrawals that you now have in the area, our monument will be placed in a much better position from the standpoint of administration.

If you have any data or reports on this area, we would appreciate very much receiving copies.

Very truly yours,

A. E. DEMARAY, Acting Director.

7. DECEMBER 13, 1934: REPLY OF FEDERAL POWER COMMISSION TO LETTER OF PARK SERVICE

The response of the FPC to the Park Service letter of August 9, 1934, was as follows (emphasis supplied) :

FEDERAL POWER COMMISSION,
Washington, December 13, 1934.

EP-279-Utah,
Re Utah Power & Light Co.

DEAR DIRECTOR CAEMMERER: Reference is made to Acting Director Demaray's letter of August 9, 1934, in which the Commission was advised that you were studying the possibility of establishing a national monument along the Green and Yampa Rivers, in northwestern Colorado, which would embrace lands withdrawn for the proposed Echo Park and Blue Mountain power developments included in the application for preliminary permit of the Utah Power & Light Co., designated as project No. 279.

Assurance was given in the letter that the Presidential proclamation establishing such a monument would exempt all existing rights, including power withdrawals, but a statement was added that if it were possible to release the power withdrawals the "monument would be placed in a much better position from the standpoint of administration." This implied request for a vacation of the power withdrawal has called for careful consideration because of the magnitude of the power resources involved and the fact that the permit application is still in suspended status pending conclusion of the comprehensive investigation of irrigation and power possibilities on the upper Colorado River and its tributaries by the Bureau of Reclamation, and a more definite determination of water allocations between the States of the upper basin. The power resources in this area are also covered by Power Site Reserves Nos. 121 and 721 and Power Site Classifications Nos. 87 and 93 of the Interior Department.

In the application of the Utah Power & Light Co. the primary power capacity of the Echo Park site is estimated at 130,000 horsepower. This is based on the development of a head of 310 feet at the dam and a regulated flow of 5,000 cubic feet per second obtained by storage in the proposed Flaming Gorge Reservoir on Green River and Juniper Mountain Reservoir on Yampa River. At Blue Mountain the primary capacity is estimated at 19,000 horsepower based on the development of 210 feet of head and a regulated flow of 1,100 cubic feet per second.

Ralf R. Woolley in his report on Green River and its Utilization (Water Supply Paper No. 618, United States Geological Survey), proposes the development of 114,800 horsepower, primary capacity, at the Echo Park site, based on an average head of 290 feet and a stream-flow of 4,950 cubic feet per second. At Johnson's Draw, which is his designation for the Blue Mountain site, Mr. Woolley proposes a primary capacity of 43,200 horsepower based on a regulated flow of 1,800 cubic feet per second and a head of 300 feet. Either of these estimates would justify installations of something like 300,000 horsepower at Echo Park and at least 50,000 horsepower at Blue Mountain.

It is generally recognized that the Green and Yampa Rivers present one of the most attractive fields remaining open for comprehensive and economical power development on a large scale. Power possibilities on Green River between the proposed Flaming Gorge Reservoir and Green River, Utah, and on the Yampa River below the proposed Juniper Mountain Reservoir are estimated at more than 700,000 primary horsepower, which would normally correspond to 1,500,000 to 2 million horsepower installed capacity. Excellent dam sites are available, and as the great part of the lands remain in the public domain, a very small outlay would be required for flowage rights. The sites are considering are important links in any general plan of development of these streams.

Regardless of the disposition which may be made of the Utah Power & Light Co.'s application, and giving due consideration to the prospect that some time may elapse before this power is needed, the Commission believes that the public interest in this major power resource is too great to permit its impairment by voluntary relinquishment of two units in the center of the scheme. The Commission will not object, however, to the creation of the monument if the proclamation contains a specific provision that power development under the provisions of the Federal Water Power Act will be permitted.

I enclose a copy of the portion of the application of the Utah Power & Light Co. which describes the proposed development, and blue prints of exhibits H (a), H. (b), and H (c) showing the location of the various units of the plan.

river profiles, and cross sections of the dam sites. The Commission has no special reports on the area under consideration, but if you are not already familiar with them, it is suggested that you obtain the following publications of the Geological Survey:

Water Supply Paper No. 618 (previously referred to).

Plan and Profile of Yampa River, Colo., from Green River to Morgan Gulch (5 sheets showing river profile and topography and 1 sheet of special dam site surveys).

Plan and Profile of Green River, Green River, Utah, to Green River, Wyo. (16 sheets, 10 plans, and 6 profiles).

Yours very cordially,

FRANK R. MCNINCH, *Chairman.*

8. 1935 AMENDMENT OF THE FEDERAL WATER POWER ACT

The 74th Congress, 1st session, in the act of August 26, 1935 (49 Stat. 838), again amended the Federal Water Power Act—in two respects germane to the legislative history herein set out.

First: Section 3 of the act, which had included "national parks and monuments" in the definition of "reservations," was amended so as to exclude national parks and national monuments; offered as a committee amendment, and agreed to without discussion (79 Congressional Record 10569), the amendment—and thus, the present language of the act—reads:

"Reservations" means national forests, tribal lands embraced within Indian reservations, military reservations, and other lands and interests in lands owned by the United States, and withdrawn, reserved or withheld from private appropriation and disposal under the public land laws; also lands and interests in lands acquired and held for any public purposes; but shall not include national monuments or national parks." [Emphasis supplied.]

It will be noted that the conference report, submitted on August 24, 1935 (79 Congressional Record 14621), on the disagreeing vote of the two Houses on the overall 1935 act, contains this explanation:

*"The Senate Bill included national monuments and national parks in the definition of 'reservations' * * * amending section 3 of the Federal Water Power Act, but the House Amendment excluded national monuments and national parks in conformity with the Act of 1921 * * *."* [Emphasis supplied.]

The Committee on Interstate and Foreign Commerce, in Report No. 1318 (74th Congress, 1st sess.), accompanying the bill S. 2796, at p. 22, states:

"The definition of the former term ('reservations') has been amended to exclude national parks and national monuments. Under an amendment to the act passed in 1921, the Commission has no authority to issue licenses in national parks or national monuments. The purpose of this change in the definition of 'reservations' is to remove from the act all suggestion of authority for the granting of such licenses. [Emphasis supplied.]"

Second: Section 212 of title II of the 1935 act (49 Stat. 803, 847)—still dealing with the Federal Water Power Act—provides:

"Sec. 212. Sections 1 to 29, inclusive, of the Federal Water Power Act, as amended, shall constitute Part I of that Act, and sections 25 and 30 of such Act, as amended, are repealed: Provided, That nothing in that Act, as amended, shall be construed to repeal or amend the provisions of the amendment to the Federal Water Power Act approved March 3, 1921 (41 Stat. 1353), or the provisions of any other Act relating to national parks and national monuments." [Emphasis supplied.]

The record (79 Congressional Record 10575) for July 1, 1935, discloses the coming into being of the foregoing amendment:

* * * * *

"Mr. CROSSER of Ohio. Mr. Chairman, I ask unanimous consent to return to page 253, line 10, for the purpose of offering an amendment.

"The Clerk read as follows:

"Amendment offered by Mr. Crosser of Ohio: Page 253, line 10, after the word "repealed" change the period to a colon and add the following: *"Provided, That nothing in that act, as amended, shall be construed to repeal or amend the provisions of the amendment in the Federal Water Power Act approved March 3, 1921 (41 Stat. 1353), or the provisions of any other act relating to national parks and national monuments."*

"Mr. WOLFENDEN. Mr. Chairman, I object.

"Mr. CROSSER of Ohio. Will not the gentleman withhold his objections?"

"Mr. WOLFENDEN. Mr. Chairman, I reserve my objection, to permit the gentleman to make an explanation.

"Mr. CROSSER of Ohio. The purpose of this amendment is to clarify the language of the bill; and *this is the law now. The national parks organization wants to make sure that the bill does not infringe upon their preserve*, so to speak. We are offering this at their request. *This is not anything at all technical.* The national parks organization thinks it would be helpful to have a provision in the bill distinguishing between the national parks and the Federal power commissions. [Emphasis supplied.]

"Mr. WOLFENDEN. Mr. Chairman, I withdraw my objection.

"The CHAIRMAN. The question is on the amendment offered by the gentleman from Ohio.

"The amendment was agreed to.

* * * * *

In view of these two amendments—which appear on first examination to be somewhat inconsistent—what construction should be placed on the operation of the Federal Water Power Act of 1920, as amended in 1921 and 1935, with respect to national parks and monuments?

The conclusion indicated is that the 1935 act did not amend or repeal the act of March 3, 1921, requiring specific authorization by Congress before construction of any dam or related works within any national park or monument "constituted" or "existing" on that date. Summarized, successive legislative and executive action provided:

(a) Authorization for President to establish national monuments in the act of June 8, 1906 (34 Stat. 225).

(b) Establishment of Dinosaur National Monument, comprising 80 acres, on October 4, 1915 (proclamation, 39 Stat. 1752).

(c) Authorization for Federal Power Commission to issue licenses for construction of dams upon any part of the public lands and reservations (defined to include "national monuments") in the Federal Water Power Act of June 10, 1920 (41 Stat. 1063).

(d) Modification of authority of Federal Power Commission to require specific authority of Congress before issuance of license for construction of dams within any existing national monument, or national monument as constituted on March 3, 1921 (41 Stat. 1353).

(e) Redefinition, in the act of August 26, 1935 (49 Stat. 803, 838) of "reservations" to exclude national parks and monuments; but with qualification in same act that such redefinition did not amend or repeal (49 Stat. 803, 847) the provisions of the 1921 act—the latter act limiting authority of FPC in monuments as "constituted" in 1921.

No attempt will be made here to summarize or set out the conclusions reached in memorandum briefs on related questions by the Office of the Solicitor, Department of the Interior, or briefs submitted for committee consideration during the hearings on H. R. 4449, and companion bills.

The several pertinent portions of legislative history detailed above:

1921 act floor amendment inserting "existing" and "as now constituted";

Conference report on the 1935 amendment referred to as "in conformity with the act of 1921";

Committee Report No. 1318 on the 1935 act reference to "an amendment in the act passed in 1921";

Floor statements of Mr. Crosser, i. e., " * * * and this is the law now" and " * * * This is not anything technical"; and

Section 212 of the 1935 act's clear statement that "nothing * * * shall be construed to repeal or amend (the March 3, 1921 act)"; all suggest a conclusion that the 1935 redefinition of "reservations" can be construed only as a restatement of the 1920 Federal Water Power Act, as amended in 1921; therefore, that the 1935 act did nothing to either enlarge or reduce the inside and outside limits of authority of the Federal Power Commission spelled out in the earlier legislation.

If so interpreted, it follows that the enlarged Dinosaur National Monument (that portion not "existing" in 1921) has at no time been within the restrictions of the 1921 act, as redefined in 1935. Such a conclusion becomes significant upon examination of that portion of the 1938 proclamation (set out post, as Document 12) which declares that the enlarged reservation therein created " * * * shall not affect the operation of the Federal Water Power Act of June 10, 1920 * * * as amended."

9. NOVEMBER 6, 1935: LETTER FROM SECRETARY OF THE INTERIOR
TO THE FEDERAL POWER COMMISSION

THE SECRETARY OF THE INTERIOR,
Washington, November 6, 1935.

HON. FRANK R. MCNINCH,
Chairman, Federal Power Commission,
Washington, D. C.

MY DEAR MR. MCNINCH: For some time the National Park Service of this Department has been studying the possibility of setting aside, as a national monument, certain lands in northwestern Colorado and northeastern Utah along the Yampa and Green Rivers. Enclosed is a map of the area.

The Utah Power & Light Co. filed an application in January 1932 for a preliminary permit for a power site reservation in the Yampa and Green Rivers section. This application was on file in the Denver office of the Reclamation Bureau. Recently, however, the Utah Power & Light Co. voluntarily withdrew their application. This suggests that the power resources of the section may not be as important as originally believed.

I shall appreciate receiving your opinion as to the possibility of releasing the power withdrawals that exist in the area. By such action the proposed monument would be placed in a much better position from the standpoint of administration.

Sincerely yours,

HAROLD L. ICKES,
Secretary of the Interior.

Enclosure 686264.

10. JANUARY 9, 1936: REPLY OF FEDERAL POWER COMMISSION TO THE
SECRETARY OF THE INTERIOR

FEDERAL POWER COMMISSION,
Washington, January 9, 1936.

EP-279-Colorado, Utah
Utah Power & Light Co.

HON. HAROLD L. ICKES,
Secretary of the Interior,
Washington, D. C.

MY DEAR MR. SECRETARY: Reference is made to your letter of November 6, 1935, in which you inquire as to the possibility of releasing the power withdrawals existing in the area along Yampa and Green Rivers, in Colorado and Utah, in which the National Park Service desires to establish a national monument.

The Utah Power & Light Co. did, as you state, withdraw its application for preliminary permit covering the power sites in this area in March 1935, but this withdrawal was not based on any reduced appraisal of the power resources. The action was taken because the Commission was unwilling to carry the application any longer in suspended status, and the growth of the company's power market did not justify the construction of any of the plants within the comparatively brief period which could have been allowed under the Power Act after the issuance of a permit. Nothing has occurred to change the status of the Power Commission withdrawal, or power site reserves Nos. 121 and 721, and power site classifications Nos. 87 and 93, which are also involved.

In reply to a similar request made by the National Park Service, a letter was sent to the Director on December 13, 1934, in which the power value of Green and Yampa Rivers was discussed in some detail and the position of the Commission was summed up as follows:

"Regardless of the disposition which may be made of the Utah Power & Light Co.'s application, and giving due consideration to the prospect that some time may elapse before this power is needed, the Commission believes that the public interest in this major power resource is too great to permit its impairment by voluntary relinquishment of two units in the center of the scheme. The Commission will not object, however, to the creation of the monument if the proclamation contains a specific provision that power development under the provisions of the Federal Water Power Act will be permitted."

Since receipt of your letter this whole subject has been given further study but :
no information has been developed to change the views of the Commission as :

expressed in the above quotation. For your further understanding of the Commission's position I enclose copies of my letter of December 13, 1934.

Yours very cordially,

FRANK R. MCNINCH, *Chairman.*

11. JUNE 11-13, 1936: UTAH-COLORADO PARK SERVICE MEETINGS

On March 27, 1950, David H. Madsen, former manager of Dinosaur National Monument, signed a sworn affidavit setting out certain statements with respect to meetings held at Vernal, Utah, June 11, 1936, and Craig, Colo., June 13, 1936.

"AFFIDAVIT

"STATE OF UTAH,

"County of Utah, ss:

"David H. Madsen, being first duly sworn on oath, deposes and says: that he is over the age of 21 and a citizen of the United States, and a resident of Utah County, Utah. That at the time the area of the Dinosaur National Monument was enlarged to include the canyon unit I was employed by the National Park Service under the title of Supervisor of wildlife resources for the National Parks. Among my other duties I was acting Superintendent of the Dinosaur National Monument and in that capacity *was ordered by the National Park Service* to arrange for hearings at Vernal, Utah, and Craig, Colorado, for the purpose of securing the approval of the citizens of that area for the expansion of the Dinosaur National Monument to include the canyon unit. Meetings were accordingly held at Vernal, Utah, June 11, 1936, and Craig, Colorado, June 13, 1936. A large representation of the citizens of the area were present at these meetings.

"Among other things discussed was the question of grazing and the question of power and of irrigation development which might be deemed essential to the proper development of the area at some future date. *I was authorized to state, and did state as a representative of the National Park Service*, that grazing on the area would not be discontinued and that in the event it became necessary to construct a project or projects for power or irrigation in order to develop that part of the States of Colorado and Utah, that the establishment of the Monument *would not interfere with such development.*

"The first part of this agreement with reference to grazing has been carried out and the residents of the area involved are entitled to the same consideration with reference to the development of power or irrigation at the Echo Park and Split Mountain Dam sites, and any other development that may not duly interfere for the purpose of the establishment of the Monument and which is necessary for the development of the area.

"DAVID H. MADSEN.

"Subscribed and sworn to before me this 27th day of March A. D. 1950.

"KARL H. BENNETT.

"Residing at American Fork, Utah.

"My commission expires: December 25, 1950."

This affidavit was made part of the record of the 1950 hearings, as were supporting affidavits of J. A. Cheney, Vernal; Joseph Haslem, Jensen, Utah; Leo Calder, Vernal; H. E. Seeley, Vernal; and B. H. Stringham, Vernal.

Each deposed substantially as follows:

"That during the course of this meeting the National Park Service representative assured the residents of these areas that if the Dinosaur National Monument were enlarged, that the National Park Service would not prevent or stand in the way of the future reclamation projects or water development projects on the Green River or the Yampa River within the boundaries of the Dinosaur National Monument, for irrigation or power purposes."

12. ENLARGEMENT OF DINOSAUR NATIONAL MONUMENT BY PRESIDENTIAL PROCLAMATION

On July 14, 1938, Dinosaur National Monument, by proclamation of the President, was enlarged to include additional lands aggregating 203,885 acres. As indicated by the emphasis supplied, basis for the extension of the monument's

exterior boundaries was to include lands containing "various objects of *historic and scientific interest*"; the proclamation provides that the reservation of such lands " * * * shall not affect the operation of the Federal Water Power Act of June 10, 1920 (41 Stat. 1063), as amended * * *"; further, that administration of the monument would be subject to the Brown's Park Reservoir reclamation withdrawal of October 17, 1904.

"PROCLAMATION—JULY 14, 1938 (53 STAT. 2454)

"ENLARGING THE DINOSAUR NATIONAL MONUMENT, COLORADO AND UTAH

"By the President of the United States of America

"A PROCLAMATION

"Whereas certain public lands contiguous to the Dinosaur National Monument, established by Proclamation of October 4, 1915, *have situated thereon various objects of historic and scientific interest*; and

"Whereas it appears that it would be in the public interest to reserve such lands as an addition to the said Dinosaur National Monument:

"Now, therefore, I, Franklin D. Roosevelt, President of the United States of America, under and by virtue of the authority vested in me by section 2 of the act of June 8, 1906, chapter 3060, 34 Stat. 225 U. S. C., title 16, sec. 431), do proclaim that, subject to all valid existing rights, the following-described lands in Colorado and Utah are hereby reserved from all forms of appropriation under the public-land laws and added to and made a part of the Dinosaur National Monument:

* * * * *

aggregating 203,885 acres.

"Warning is hereby expressly given to any unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

"The reservation made by this proclamation supersedes as to any of the above-described lands affected thereby, the temporary withdrawal for classification and for other purposes made by Executive Order No. 5684 of August 12, 1931, and the Executive order of April 17, 1926, and the Executive order of September 8, 1933, creating Water Reserves No. 107 and No. 152.

"The Director of the National Park Service, under the direction of the Secretary of the Interior, shall have the supervision, management, and control of this monument as provided in the act of Congress entitled 'An act to establish a National Park Service, and for other purposes,' approved August 25, 1916, 39 Stat. 535 (U. S. C., title 16, secs. 1 and 2), and acts supplementary thereto or amendatory thereof, *except that this reservation shall not affect the operation of the Federal Water Power Act of June 10, 1920 (41 Stat. 1063), as amended, and the administration of the monument shall be subject to the Reclamation Withdrawal of October 17, 1904, for the Brown's Park Reservoir Site in connection with the Green River project.*

"IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

"Done at the city of Washington this 14th day of July, in the year of our Lord nineteen hundred and thirty-eight, and of the Independence of the [SEAL] United States of America the one hundred and sixty-third.

"FRANKLIN D. ROOSEVELT.

"By the President:

"CORDELL HULL

"The Secretary of State."

13. MAY 14, 1943: AD INTERIM REPORT, SURVEY OF RECREATIONAL RESOURCES OF THE COLORADO RIVER BASIN

The Bureau of Reclamation, in November 1940, under authority of the Boulder Canyon Project Adjustment Act of July 19, 1940 (sec. 2 (d) provides authority for financing conservation investigations and studies in connection with the work of the Bureau within the Colorado River Basin) requested the National Park Service to identify the scenic, scientific and recreational resources of the Colo-

rado Basin, as a part of a comprehensive plan for the utilization of the water resources of the region.

On January 27, 1941, the Secretary of the Interior approved the inclusion of a basinwide recreational survey as a part of the studies and investigations to be continued and extended under his direction for the formulation of a comprehensive plan of utilization of the waters of the entire Colorado River system. The Secretary also appointed Frederick Law Olmsted, distinguished landscape architect, with wide experience in regional and site planning, as consultant for the survey.

By letter of transmittal of May 14, 1943, Mr. Olmsted submitted the following:

"SURVEY OF RECREATION RESOURCES OF COLORADO RIVER BASIN

"Dinosaur National Monument Region.—Report of Progress, May 13, 1943

"By Frederick Law Olmsted

"To the DIRECTOR: This ad interim report is to record certain problems, and certain tentative conclusions in regard to the Dinosaur National Monument area, as developed to date by unfinished investigations by Mr. George F. Ingalls and myself and others, in relation to plans now in process of development by the Bureau of Reclamation for water-control projects in and near the monument."

* * * * *

"Apart from its effect on road planning for the area, reservoir construction as contemplated by the Bureau would submerge a number of sites, geologic formations and wildlife habitats, and would alter the character of the landscape by substitution of still water for flowing streams, and by reducing the visible height of canyon walls. The later effect would be most disastrous scenically at an near Pats Hole, where the extraordinary feature of Steamboat Rock would be submerged up to more than half its height, and in the inner canyon of the Yampa for some miles upstream well beyond Harding Hole. (See photographs.)

"Nevertheless, the canyon unit would still have scenic and recreational values of notable importance and of nationwide interest. I venture to cite a very few examples.

"The canyon of Lodore, in general roughly V-shaped in section, is so deep that raising of the water in its bottom by 100 to 500 feet or thereabouts would hardly diminish its great impressiveness to a perceptible degree. Its rapids and low waterfalls now visibly continuing the process of erosion which cut all these canyons in the uplifting mountain mass as it rose athwart the rivers that once meandered across an ancient peneplain—would be changed to a fiordlike lake. Such an artificial change would not be justified in a national monument administered to preserve notable features of nature for enjoyment of mankind as nearly as possible in their natural condition; but it cannot be denied that if the area is deliberately made a "multiple-use" area, for power developments plus any recreational values compatible therewith, a great many more people can and will derive pleasure and inspiration of a high order from traversing the canyon of Lodore in boats on a fiordlike lake than would even be able to see it all in a more perfectly natural state by shooting its dangerous rapids in boats or by following the 25 miles or more of narrow trail that might with difficulty be contrived to traverse it without much scarring of natural conditions. The upstream portions of the meandering narrow inner canyon of the Yampa, incised into the "bench" in many places to a depth of about a thousand feet with almost vertical walls, would appear much as at present seen from above. One of the most impressive and geologically illuminating features of the entire area would remain, at the eastern end of the Monument, wholly unaffected by the damming. It is where the high, bare, sandstone escarpment of the upfolded strata has so obviously been sawn through, on the axis of an anticline, by the river; which there quietly flows from a broad flood plain into the dark deep canyon it has cut in the slowly rising rock. The notable outlooks from many places on the rim of the upper plateau south of the rivers, especially on and near Harpers Corner—some very beautiful, all interesting geologically or otherwise—would in most cases remain substantially unchanged in appearance (unless transmission lines, as yet not definitely planned, should be so located as to impair one or more of them seriously).

"To sum up my chief considered impressions and opinions to date in regard to the scenic and recreational values of the Canyon Unit:

"1. It is without doubt sufficiently notable and distinctive and good of its kind, from a national standpoint, to justify in the absence of very strong special reasons to the contrary, retaining it as a national monument, administering it as such, and in due course of time expending a considerable amount of Federal taxpayers' money to make certain parts of it conveniently accessible by road and to provide simple conveniences for visitors and for its operation.

"2. It is not so unique and precious for such purposes (in the sense that Zion National Park is, for example), and the scenic, recreational and related values which it would have if so administered would not be so largely sacrificed by the introduction of the waterpower developments contemplated by the Bureau of Reclamation as to give very strong grounds for opposing those economic developments if and when it becomes clearly evident that the installation of some or all of those waterpower developments would produce economic values of social importance largely and certainly in excess of the economic cost of producing them. Under those conditions it would be reasonable for the Park Service to approve changing the legal status of the unit from that of a national monument to that of a "multiple-use area" devoted to the storage and regulations of water and production of waterpower and also (to the full extent compatible with the reasonably efficient performance of that function) to conserving and utilizing the potentially great scenic, recreational and related values of the area.

"When the several road-locations studies now in progress in the field shall have been carried far enough to determine with confidence which of them are most practicable and advantageous, the next step will be to prepare a comprehensive general plan and report for guiding the development and administration of the area—including some desirable readjustments of the present boundaries, which were fixed in the absence of accurate topographic information now available from the special USGS survey. That general plan must embody a program that can be adapted to meeting either of the two major contingencies: (a) Use of the canyon unit for hydroelectric developments and also for recreational and related values consistent therewith; or (b) indefinite postponement of final decision about building the power dams without also indefinitely postponing progressive development and use of the area in a manner appropriate to a national monument, and in such a way as to reduce to a minimum the risk of avoidable waste of natural resources or of investments in construction that may have to be made before final decision is reached about the dams."

DECEMBER 1, 1943: MEMORANDUM FROM PARK SERVICE TO BUREAU
OF RECLAMATION

After the Reclamation withdrawal of June 17, 1943, the Director of the National Park Service addressed the following memorandum to the Commissioner of Reclamation:

UNITED STATES DEPARTMENT OF THE INTERIOR,
NATIONAL PARK SERVICE,
Chicago, Ill., December 1, 1943.

MEMORANDUM FOR THE COMMISSIONER, BUREAU OF RECLAMATION

On pages 10370-10371 of the July 24 issue of the Federal Register there is published the notice of the reclamation withdrawal of June 17, approved July 13, for the Colorado River storage project. This withdrawal covers most of the area of the Dinosaur National Monument in Utah and Colorado.

Since this notice in the Federal Register constituted the first information that we had received concerning the withdrawal, and since there might be some question as to the necessity for the withdrawal, as well as to the legality thereof, the lands already having been withdrawn from all forms of appropriation under the public-land laws, it occurred to us that your office might not have realized that the withdrawal covered national monument lands.

You will recall that the proclamation of July 14, 1938, enlarging the Dinosaur National Monument, including the lands now under discussion, contained a provision at the request of the Federal Power Commission, "that this reservation shall not affect the operation of the Federal Water Power Act of June 10, 1920 (41 Stat. 1063), as amended," and a further provision inserted in the proclamation at the request of your Bureau, that "the administration of the monument shall be subject to the reclamation withdrawal of October 17, 1904,

for the Brown's Park Reservoir site in connection with the Green River project." While there is no question as to the validity of the provision protecting the Brown's Park reclamation withdrawal, it has been our opinion that the provision relating to the operation of the Federal Water Power Act was ineffectual, since Congress specifically excluded national parks and monuments from the purview of that act. The reclamation withdrawal of June 17, of course, does not come under either one of the above-quoted provisions in the proclamation of July 14, 1938.

As you know, our two Bureaus are collaborating in the study of the Echo Park project and other reservoir projects affecting the Dinosaur National Monument, in an attempt to work out the best possible plan of development and use of the area in the event that any one or several of the proposed water-storage projects should prove feasible and should be authorized for construction. It has been the understanding between our two Bureaus, in which the Secretary has concurred, that, in event of reservoir construction within the monument, some suitable change in the designation of the area would be sought. It is our understanding, from discussions held with representatives of your Denver office that you have not made final determinations yet as to the feasibility of the projects in Dinosaur National Monument and that, in any event, it may be many years before any of them are approved for construction.

I have cited the foregoing facts to make it clear that, insofar as I am aware, there is no misunderstanding between us as to the possible future of Dinosaur National Monument.

We are concerned, however, about the promulgation of a reclamation withdrawal within an existing national monument, which has not been done heretofore, and the possible detrimental effect of such action upon the future interpretation of the laws under which the national monuments are established and administered. Because of these considerations, it is suggested that we might profitably discuss this matter further when next I am in Washington. Perhaps it would be possible to amend the June 17 withdrawal so as to exclude from it any lands within Dinosaur National Monument.

NEWTON B. DRURY, *Director*.

15. JUNE 27, 1944: REPORT OF POSITION OF THE NATIONAL PARK SERVICE ON DINOSAUR DEVELOPMENT

On June 27, 1944, the position of the National Park Service was stated in a report:

* * * * *

"4. If and when it is shown that it would certainly be in the greater national interest to develop the water resources of the canyon unit than to retain the unit for national monument purposes and it then becomes evident that authorization for such development will be given, the status of the unit should be changed to that of a multiple-purpose area in which water control for the generation of power would be the principal use, and recreation the secondary but also important use."

* * * * *

16. MAY 2, 1946: LETTER OF PARK SERVICE DIRECTOR TO DR. J. E. BROADDUS

Because of its apparent bearing on intradepartmental understanding as to the effect of previous power withdrawals, the following letter is included herein (emphasis supplied):

UNITED STATES DEPARTMENT OF THE INTERIOR,
NATIONAL PARK SERVICE,
Chicago 54, Ill., May 2, 1946.

DR. J. E. BROADDUS,
Salt Lake City 3, Utah.

DEAR DR. BROADDUS: I appreciate your courtesy in writing me as you did about your continued interest in preserving the park and monument areas in Utah, and giving me an evaluation of the scenic qualities of the canyon country within

Dinosaur National Monument. Through my long association with conservation organizations, including this Service, I am well acquainted with your work and with the contribution you have made toward bringing the outstanding scenic areas of Utah to the public attention which led to their protection and preservation.

I am intensely interested in your statement about the possible beneficial effect of the proposed Echo Park reservoir in Dinosaur National Monument as a means of access for visitors to see the Green and Yampa Canyons.

The extensive river basin surveys now being conducted by the several agencies of Government are of concern to us, as some proposals may adversely affect areas of the National Park System. *Dinosaur is one of the few areas in the System established subject to a reclamation withdrawal and this may have some bearing on the proposed Echo Park project.* While we would regret to see this non-conforming use in the national monument, we are pleased to have your expression as to the possible beneficial effects.

As I have never had an opportunity to visit Dinosaur, I have not formulated any personal opinion of its scenic qualities. I know that it is regarded highly by Regional Director Merriam, of region 2, and others in the Service. It is hoped that there will be an opportunity for me to visit the area sometime this summer and to get in touch with you in Salt Lake City at the same time.

Sincerely yours,

NEWTON B. DRURY, *Director.*

17. JUNE 1946: A SURVEY OF THE RECREATIONAL RESOURCES OF THE COLORADO RIVER BASIN

During June 1946, there was compiled the report of the National Park Service on its survey of the recreational resources of the Colorado River Basin; this report was printed in 1950.

At page 199, there is set out the following:

"CONCLUSIONS

"The policy of the National Park Service, as the administrative agency now primarily responsible for the national monument, has been, and is, to make the protection of the natural and archeological values of the area the controlling factors in administering it. The question of whether this policy is to be changed to permit water uses will require for its solution a review of all probable advantages and disadvantages arising from such use.

"Dinosaur National Monument is eminently qualified, in the absence of very strong special reasons to the contrary, to justify its retention as a unit of the National Park system. Certain parts of it should be made reasonably accessible by road and accommodations provided for visitors just as soon as funds become available. Before authorization is given to develop its water resources and to recognize water use as the principal consideration in the administration of the canyon unit, it should be clearly shown (1) that economic and social values deriving from such development and use would largely and certainly exceed the economic costs of producing them; (2) that it would be more economical to develop the water resources of the monument rather than other resources available for the same purpose within practicable reach; and (3) that it would be of greater benefit to the whole Nation to develop the area for water storage and power than to retain it in a natural state for its geological, wilderness, and associated values for public enjoyment. * * *

18. DECEMBER 20, 1949: MEMORANDUM FROM RECLAMATION TO THE SECRETARY OF THE INTERIOR

It appears that on December 20, 1949, by memorandum addressed to the Secretary of the Interior, the Commissioner of Reclamation first urged formal concurrence by the Secretary in the Bureau's plans providing for construction of Echo Park. The memorandum follows:

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington 25, D. C., December 20, 1949.

Memorandum.

To: Secretary of the Interior.

From: Commissioner.

Subject: Development of the Echo Park and Split Mountain Reservoirs in the upper Colorado River Basin, and their relationship to the Dinosaur National Monument.

Reference is made to memorandum of November 4 to you for approval from Director Newton B. Drury of the National Park Service on the subject, Clearance of Bureau of Reclamation Colorado River Basin Project Investigations. In concurring in Director Drury's memorandum, I informed you that the Bureau of Reclamation was studying alternative proposals to the Echo Park and Split Mountain Reservoirs, which would be located within the Dinosaur National Monument, and that we would present our findings to you as soon as current studies were completed. This memorandum summarizes the situation in the upper Colorado River Basin and the results of our studies of alternative reservoir sites.

Many years of effort in the development of coordinated plans for the best possible use of the waters of the upper Colorado River have recently culminated in the ratification and approval of the upper Colorado River Basin compact and in a recommendation by representatives of the States of the upper basin for immediate construction of certain regulating reservoirs necessary to aid in meeting requirements of the 1922 compact and for water-use projects on the streams of the upper basin.

By January 1, 1950, the regional director, Bureau of Reclamation, region 4, will complete a report entitled "Colorado River Storage Project and Participating Projects" to the point where it is ready for informal submittal to the States and interested Federal agencies for preliminary comments. Following this, it is hoped that the report soon can be submitted to this office for formal approval and adoption as your proposed report, and that formal release of the report can be made to the States and Federal agencies for review and comments in accordance with the provisions of section 1 of the Flood Control Act of 1944 and in accordance with the interagency agreements for review and coordination of reports. Members of the Senate Interior and Insular Affairs Committee were pressing the Bureau last spring for immediate submission of a report on this project.

In accordance with the 1922 compact, the States of the upper division are required not to deplete the flow at Lee Ferry below an aggregate of 75 million acre-feet for any period of 10 consecutive years. This necessitates provision of holdover storage reservoirs in the upper basin with a total capacity in excess of 48 million acre-feet. Many reservoirs have been studied by the Bureau of Reclamation in order to find the best plan for development of the necessary storage. Over a period of several years, it has become increasingly evident that any plan that would meet the upper basin's obligation in an efficient manner must include the Echo Park Dam and Reservoir on the Green River. In addition to providing efficient storage, at a location which will control the Green and Yampa Rivers with a minimum of loss or evaporation, the Echo Park project is probably the best power site in the upper Colorado River Basin and would provide a much-needed block of hydroelectric power, the returns from which are essential to the payout plan for the upper Colorado storage project. Any deferment of the Echo Park project would be only temporary as it is a key unit in a plan requiring development of all proposed sites in the ultimate stage of the Colorado River Basin.

The Echo Park Reservoir and its afterbay, the Split Mountain Reservoir, are both in the area of the Dinosaur National Monument. Fortunately, those reservoirs will not affect the original monument area containing the Dinosaur remains, and will afford an opportunity for providing access to the undeveloped canyon areas of the Green and Yampa Rivers.

In view of the imminent release of the Colorado River storage project report, it is considered desirable that there be concurrence by the Secretary at this time in that portion of the Bureau's plans which provide for construction of the Echo Park Dam and Reservoir and the Split Mountain Dam and Reservoir on the Green and Yampa Rivers in the area previously set aside under the Secretary's jurisdiction and that of the National Park Service as the Dinosaur National Monument.

The Dinosaur National Monument as originally established by Proclamation No. 1313 of October 4, 1915, was an area not affected by the waters of the Green and Yampa Rivers and set aside as a national monument to preserve certain gigantic reptilian remains. A large additional area, known as the canyon unit, which contains very interesting geologic formations and magnificent scenery and which was far greater in extent than the original monument, was declared as a part of the monument by Proclamation No. 2290 of July 14, 1938.

At the time of the creation of the canyon unit of the Dinosaur National Monument in July 1938, it was fully recognized within the Department and by other Federal agencies that the streams of the upper Colorado River Basin afforded vital possibilities for the development of power and consumptive water-use projects. The Federal Power Commission as early as 1935 and 1936, relative to the proposed creation of the canyon unit of the Dinosaur National Monument, had advised the Secretary of the Interior, "The Commission will not object, however, to the creation of the monument if the proclamation contains a specific provision that power development under the provision of the Federal Water Power Act will be permitted."

The position of the Bureau of Reclamation was also well known to the Secretary and the National Park Service when the proclamation was issued in July 1938, and recognition was given to the acknowledged alternate water use potentialities of the Green and Yampa Rivers in this area by the inclusion of an exception in the proclamation providing that "establishment of this monument shall not affect the operation of the Federal Power Act of June 10, 1920, as amended."

The position of the agencies of the Department in regard to the potential developments of the Green and Yampa Rivers was further expressed in the continued joint planning efforts of the National Park Service and the Bureau of Reclamation for the best possible development of the water resources lying within the Dinosaur National Monument. In a report of June 27, 1944, the position of the National Park Service was stated:

"4. If and when it is shown that it would certainly be in the greater national interest to develop the water resources of the canyon unit than to retain the unit for national monument purposes and it then becomes evident that authorization for such development will be given, the status of the unit should be changed to that of a multiple-purpose area in which water-control for the generation of power would be the principal use, and recreation the secondary but also important use."

Engineering studies now completed by the regional director, region 4, and thoroughly reviewed by the Chief Engineer of the Bureau of Reclamation, establish without a doubt the superior advantages of the proposed Echo Park Dam and Reservoir with the Split Mountain afterbay dam and powerplant to any other potential developments in the upper basin. As a keystone in the plan for the upper basin, it will be required for the fullest development of this area. In view of the needs for many additional storage sites in the upper Colorado River storage project, and because of evaporation rates and reduction in storage capacities which will be caused by sedimentation over the life of the upper Colorado River storage project, there are no acceptable alternative possibilities for development which will adequately meet the needs of the basin over the life of the project. Deferring construction of the Echo Park project at this time would result in economic loss of great magnitude, and, in all probability, would serve only to delay the eventual construction of these reservoirs. The benefits to be obtained from the Echo Park projects are compared with the best alternative possibilities in the attached report by the regional director of the Bureau of Reclamation, entitled "Brief Report on the Importance of the Echo Park and Split Mountain Units, Colorado River Storage Project and Their Relation to the Existing Dinosaur National Monument, Colorado and Utah," dated December 1949. This report shows that the development of the best alternative reservoirs, namely, Lodore and New Moab, would result in a loss of about 100,000 acre-feet of water annually more than from the Echo Park and Split Mountain Reservoirs, and would result in a loss of 800 million kilowatt-hours of electric energy annually

under initial conditions and 431 million kilowatt-hours under ultimate conditions of stream depletion. This is equivalent to an annual loss to the Nation of about \$8 million annually under present conditions, decreasing to about \$5 million under ultimate conditions.

In the joint studies made by the National Park Service and the Bureau of Reclamation, it has been fully recognized that proper planning of the Echo Park development with regard to the construction of access roads and public facilities will make available to the public of the United States the beauties of the canyon unit of the Dinosaur National Monument. Access to the entire Lodore Canyon of the Green River by boat on the surface of the reservoir will open to many people the beauties of this region which can otherwise only be approached by a few on extremely difficult and hazardous trails through the existing canyon.

In view of the outstanding superiority of the Echo Park Dam and Reservoir, its required place in any event in the ultimate development of the upper Colorado River, the benefits to be gained by the public from the appropriate development of a recreational area contiguous to the Echo Park project, and the strong desire expressed by the States and local interests for prompt development of this project, inclusion of the Echo Park project and the afterbay Split Mountain Dam in the regional director's report on the Colorado River storage project should be contemplated, said report to provide for the construction of the Echo Park and Split Mountain projects and joint planning of roads and other facilities in the area now encompassed by the canyon unit of the Dinosaur National Monument. Thus, it will be possible to accommodate the fullest and most sound water resource developments, preserve the historic area of the original Dinosaur National Monument area, and enhance the recreational possibilities of the canyon area of the present monument. No formal change in the designation of any part of the Dinosaur National Monument would be required until such time as the report has been issued as a part of the Secretary's proposed report and until the States and interested agencies have commented thereon, the report submitted to Congress, and the Echo Park Dam and Reservoir authorized by the Congress and approved by the President. Before the regional director's report recommending construction of Echo Park and Split Mountain Reservoirs is released at field level, I would like to bring this matter to your attention and secure your permission at this time for the Bureau of Reclamation to recommend the construction of the Echo Park and Split Mountain Reservoirs within the boundaries of the Dinosaur National Monument.

I recommend that you approve this memorandum which will permit the Bureau of Reclamation to move forward with the Colorado River storage project report and to recommend authorization of the Echo Park and Split Mountain Reservoirs.

MICHAEL W. STRAUS.

Approved:

_____,
Secretary of the Interior.

19. DECEMBER 30, 1949: MEMORANDUM OF NATIONAL PARK SERVICE DIRECTOR TO THE SECRETARY OF THE INTERIOR

On December 30, 1949, the National Park Service Director expressed his views of the December 20, 1949, Reclamation memorandum:

UNITED STATES DEPARTMENT OF THE INTERIOR,
NATIONAL PARK SERVICE,
Washington, December 30, 1949.

Memorandum—

To: Secretary of the Interior.

From: Director, National Park Service.

Subject: Effect of Reclamation's Echo Park and Split Mountain Reservoir proposals on Dinosaur National Monument.

Commissioner Straus' attached memorandum of December 20, which has been routed to this Service for review, requests your permission and approval for his Bureau to recommend construction of these two reservoirs in Dinosaur National Monument and to submit by January 1, or shortly thereafter, to the States concerned and otherwise the regional director's report Colorado River storage project and participating projects in accordance with established review and approval procedures.

For the following reasons, I recommend that his memorandum be not approved:

The review and clearance procedures which Reclamation now wants rushed through will comply only with the letter of the law. The spirit has already been violated through the irregular, advance submission by the Bureau to the upper Colorado River Basin States concerned of its preliminary draft report of the same title, dated March 1949. It is a little difficult to reconcile the admonition stamped in red on its cover Preliminary Draft of Proposed Report, for Review Only, Not for Public Release, with the series of public hearings, engendered by the report proposals, held in the West this autumn by the State agencies with full participation of Bureau officials. It is regrettable that the Department should now be embarrassed by the resulting local "demand" for the Echo Park and Split Mountain proposals in advance of secretarial determination of the Department's position.

During our so far unsuccessful efforts to reach with Reclamation a compromise solution of our conflicting responsibilities to be submitted for your possible approval, the National Park Service has refrained from informing the conservation organizations and others having an interest in this specific problem. I believe that you will want to have their views before reaching a conclusion on this controversial issue. However, I do not propose to seek those views without first having your approval to do so. I recommend that such approval be given.

The National Park Service has constantly been at a disadvantage in connection with dam-building projects in that almost always the knowledge of these projects is given out locally prior to any nationwide information being given to those who are interested in conservation of all natural resources.

In November representatives of this Service went to Salt Lake City in an effort to work out possible alternate reservoir proposals that might at least save the heart of Dinosaur National Monument by eliminating Echo Park Dam. Although Reclamation promised, in order to speed our analysis of the situation, to provide directly to this Service comparative data on alternates to Echo Park, the promise has not yet been kept. The first we have heard of this is the mimeographed Brief Report on the Importance of the Echo Park and Split Mountain Units, Colorado River Storage Project and Their Relation to the Existing Dinosaur National Monument, December 1949, attached to the original and the National Park Service copies of Commissioner Straus' memorandum. This report appears to be far from an exhaustive study of alternate possibilities. Even so, certain deductions from Reclamation's conclusions based on the report are possible.

Commissioner Straus concludes that annual losses ranging from \$8 million under present conditions to about \$5 million under ultimate conditions would result from the substitution of Lodore and New Moab Reservoirs for Echo Park-Split Mountain. Incidentally, while he admits that the alternate proposal would provide ultimate storage capacity equal to Echo Park and Split Mountain, at smaller capital cost, he fails to point out that the saving in construction cost amounts to \$33,700,000.

Moreover, as to the \$5 million to \$8 million annual loss that Reclamation claims would result from substituting Lodore-New Moab, we are convinced that the "loss" would not be a real one. First, it is evident that the estimates for power generation are based on the maximum potential of the reservoirs, whereas unknowable future conditions of precipitation and runoff (and, for that matter, the demand for power itself which nearby river basins appear to be able and anxious to produce) may well be such that they will not permit or justify practical operation at the projected scale. Second, it is our considered judgment that the tangible economic benefits to the surrounding States from an unimpaired and fully developed Dinosaur National Monument would amount to from \$10 million to \$12 million a year. And this places no dollar sign whatever on the many recognized but intangible values of recreation and wilderness conservation, let alone the saving of Dinosaur National Monument itself for future generations. Furthermore, the economic values of the area as a national monument will increase in future years, whereas Reclamation's anticipated values necessarily decline with the years.

With respect to our estimate of annual economic value of Dinosaur National Monument, attention is directed to an impartial survey and analysis of the expenditures in Montana by out-of-State visitors to Glacier National Park (to which Dinosaur, when developed, may logically be compared), made by the bureau of business and economic research, Montana State University, during the current year. The Montana survey, final results of which are to be published in February

1950, disclosed an expenditure in Montana by out-of-State visitors to Glacier National Park of approximately \$10 million per annum. Indications are that final tabulations by the university will result in a higher figure. In any event, it is our opinion that the potential economic value of Dinosaur National Monument compares favorably as an offset to the estimated "loss" that Commissioner Straus speaks of.

Our experience does not permit us to agree with Reclamation's view that greater economic benefits from recreation will accrue if the Echo Park and Split Mountain Dams are built. We believe that the opposite would be true.

Commissioner Straus appears to be misinformed as to the effect of the proviso in the proclamation of July 14, 1938, that "establishment of this monument shall not affect the operation of the Federal Power Act of June 10, 1920, as amended," which he cites. The Federal Power Commission is by statute expressly prohibited from granting licenses for power works in national parks and monuments (sec. 3 of the Federal Water Power Act as amended by sec. 201 of the Federal Power Act). Accordingly, it would appear that the exception in the proclamation is ineffective to accomplish Reclamation's purposes, since the authority of the Commission has been prescribed by Congress and cannot be extended by provisions in an Executive proclamation of this character. (See Solicitor's Opinion M 30471 of December 5, 1930.)

Commissioner Straus quotes the following statement of National Park Service's position from a 1944 report we made:

"(d) If and when it is shown that it would certainly be in the greater national interest to develop the water resources of the canyon unit than to retain the unit for national monument purposes and it then becomes evident that authorization for such development will be given, the status of the unit should be changed to that of a multiple-purpose area in which water control for the generation of power would be the principal use, and recreation the secondary but also important use."

This statement was made as a part of the series of investigations and reports made by this Service in connection with the recreational resources survey of the Colorado River Basin. It was not intended to be and is not a commitment that the monument should be sacrificed to facilitate Reclamation's dam proposals. It is our contention that there has been no showing "that it would certainly be in the greater national interest to develop the water resources of the canyon unit than to retain the unit for national monument purposes." Boiled down to its essentials, that is the question that Commissioner Straus and I now find it necessary to place before you for decision.

In any case, I believe you will agree that there are considerations involved which cannot be resolved by January 1, 1950.

In summary, I recommend:

1. That Commissioner Straus' memorandum of December 20 be not approved.
2. That the Bureau of Reclamation be specifically directed, by your approval of this memorandum or otherwise, not to release the regional director's report on January 1 or until you have indicated what your position is to be.
3. That you authorize me to ascertain in your behalf the views of the conservation agencies.

NEWTON B. DEURY, *Director.*

20. FEBRUARY 28, 1950: MEMORANDUM FROM NATIONAL PARK SERVICE TO THE SECRETARY OF THE INTERIOR

From correspondence files of the Department of the Interior, it appears that a meeting was held in the Secretary's office on February 23, 1950; one of the results was this memorandum:

DEPARTMENT OF THE INTERIOR,
NATIONAL PARK SERVICE,
Washington 25, D. C., February 28, 1950.

Memorandum.

To: Secretary of the Interior.

From: Director, National Park Service.

Subject: Echo Park and Split Mountain Dams.

In accordance with the request made of me at the meeting in your office on February 23, I have had prepared a statement of facts and events leading up to the opinion of the Department's Solicitor (M. 30471), dated December 5, 1939.

The proclamation which increased the Dinosaur National Monument to its present size was issued on July 14, 1938 (53 Stat. 2454). It provided that "this reservation shall not affect the operation of the Federal Water Power Act of July 10, 1920 (41 Stat. 1063), as amended," and that "the administration of the monument shall be subject to the Reclamation withdrawal of October 17, 1904, for the Brown's Park Reservoir site in connection with the Green River project."

When the Federal Water Power Act (now called the Federal Power Act) was amended in 1935 (16 U. S. C., 1946 ed., sec. 796), national monuments and national parks in specific language were excluded from the term "reservations" as defined and used in the act, thus removing these areas from the authority of the Federal Power Commission with respect to the issuance of power licenses. The legislative history of this particular amendment indicates that it was the intention of Congress, by excluding national monuments and national parks from the term "reservations," to remove all suggestion of authority for the granting of such licenses in these areas and that the purpose of the amendment was to implement the policy established in a previous amendment (act of March 3, 1921, 41 Stat. 1352), which prohibited the granting of such licenses within the limits as then constituted of any national park or national monument without specific authority of Congress. (See Solicitor's opinion of August 19, 1938 (56 I. D. 372).)

At the time the proclamation enlarging Dinosaur National Monument was signed (July 14, 1938), there had been no opinion of the Solicitor construing the effect of the 1935 amendment of the Federal Power Act upon the administration of the national parks and national monuments. A little more than a month later, on August 14, 1938, the Solicitor rendered the above-mentioned opinion, holding that the Federal Power Commission does not have authority to grant licenses for power works within national parks or national monuments, whether or not there are navigable waters within such reservations, and that, therefore, it is unnecessary to include in proposed legislation for establishing or extending national parks or national monuments a provision designed to limit the jurisdiction of the Federal Power Commission.

This opinion did not, however, discuss the question whether or not the authority of the Commission could be preserved by an appropriate provision in a proclamation reserving lands for national monument purposes. This question was not raised until 1939 when, on December 5 of that year, the Solicitor rendered an opinion (M. 30471) on the questions (1) whether a national monument (proposed Sawtooth National Monument) could be created subject to reclamation withdrawals and power site classifications; and (2) if so, whether the Federal Power Commission would thereafter be authorized to grant licenses affecting the classified lands. In this opinion, it was held that while, in the light of long and persistent practice, there can be no reasonable doubt as to the legal propriety of establishing a national monument subject to prior reservations for other purposes, it is clear that the Federal Power Commission is, by the 1935 amendment to the Federal Power Act, expressly prohibited from granting licenses for power works within national monuments. On the question whether this authority could be preserved in the monument proclamation, the opinion stated: "Any attempt to preserve this authority in the Commission by specific provision in the national monument proclamation would be ineffective since the authority of the Commission has been prescribed by Congress and cannot be extended by provisions in an Executive proclamation of this character."

NEWTON B. DRURY, *Director.*

21. MARCH 3, 1950: MEMORANDUM FROM NATIONAL PARK SERVICE
DIRECTOR TO THE SECRETARY OF THE INTERIOR

UNITED STATES DEPARTMENT OF THE INTERIOR,
NATIONAL PARK SERVICE,
Washington 25, D. C., March 3, 1950.

Memorandum

To: Secretary of the Interior.

From: Director, National Park Service.

Subject: A brief on the Echo Park and Split Mountain Dams versus Dinosaur National Monument.

I have submitted, in a separate memorandum dated February 28, an answer to your specific question regarding the right of the Federal Power Commission to reserve sites in Dinosaur National Monument.

In this present memorandum I should like to summarize the main issues relating particularly to Echo Park Dam and Split Mountain Dam in order to clarify what we believe to be the position that the Department finds itself in. These issues are presented in an effort to be of assistance to you in reaching a final decision on our recommendation that Echo Park Dam and Split Mountain Dam be not built.

The problem breaks itself down into four main items, and I shall treat each item separately. They are as follows:

- (1) Dinosaur National Monument and its value to the Nation;
- (2) Power reservations;
- (3) Past agreements and studies made for and with Bureau of Reclamation;
- (4) Secretary Warne's Committee recommendations and its effect.

1. *Dinosaur National Monument and its value to the Nation.*—Collectively, the present geologic, wilderness and scenic qualities of the canyons of the Green and Yampa Rivers and their adjacent benches and plateaus within Dinosaur National Monument are of national significance. Their combination in natural state, together with associated geological features constitute an inspirational and recreational resource of utmost value to the people of the Nation. The topography of Dinosaur National Monument portrays a living geological story which challenges the imagination. The recent geologic history records the work of the rivers and tributary streams in abrading their channels even deeper as tremendous internal forces elevated the land. The monument formations also present in an outstanding manner the dynamic story of mountain uplift and subsidence, accompanied by faulting and folding, erosion, deposition, and stream piracy.

There have been two main charges against the Service's stand that Dinosaur National Monument should not be sacrificed for dams. One is that the proposed Echo Park and Split Mountain Dams will not touch the dinosaur remains and, second, that nobody is using the area at the present time. Both of these statements are correct. As to the dinosaur remains, the misunderstandings arise from the misnomer, Dinosaur National Monument. It probably seemed logical, at the time the original 80-acre monument was enlarged to 209,744 acres in order to include the Green and Yampa Canyons, that the original name be used. Few will now disagree that a more appropriate name should have been chosen to reflect the main purpose of the enlargement, which is to protect the scenic grandeur and the scientific values of the Green and Yampa River Canyons, originally proposed for establishment as a national park. This area fully measures up to the standards for a national monument.

Relative to the second charge, that the area is not developed and people cannot enjoy it; that is also true, but it is only a temporary condition. It is impossible to develop fully an area for public use within a few years after it has been established. Particularly has this been true in view of inadequate appropriations for the past several years. In any event I believe that you subscribe to our position that it is a sound policy to develop gradually and protect our natural resources for the use and enjoyment of generations to come.

2. *Power reservations.*—While the facts pertaining to the reservation of power in the monument are covered by a separate memorandum, I do want to recall in this general résumé some of the thinking that went on at the time that the proclamation was in the process of being drawn up. On August 9, 1934, Acting Director Demaray wrote the Federal Power Commission informing them of the Department's interest in the establishment of a national monument in the Green River and Yampa Canyon area, and informed them that, while national monuments are established subject to valid existing rights, it would be preferable from an administrative standpoint if the existing power withdrawals could be released. On December 13, 1934, the Power Commission replied that they would have no objection to the extension of the monument provided that there would be no interference with any issuance of power permits within the monument boundaries. Following this correspondence, in 1935 (16 U. S. C. 1946 ed., sec. 796), the Federal Water Power Act, now called the Federal Power Act, was amended so as to preclude any power development in any park or monument then established or to be established in the future. On November 6, 1935, Secretary Ickes, who was much concerned about the preservation of this area, wrote the Federal Power Commission referring to the National Park Service letter of 1934, stating that he had heard that the Utah Power & Light Co.'s preliminary permit within

the monument had been voluntarily withdrawn by them, and asking whether the Federal Power Commission would be willing to go along with the proclamation. On January 9, 1936, the Federal Power Commission replied that the permit had been relinquished, but advised that their stand was similar to that taken in their letter to the Service on December 13, 1934. The files indicate quite clearly that there was a general understanding by the affected bureaus and the Federal Power Commission of the Department's desire and effort to free the proposed monument from power withdrawals and a realization that failing this, the monument was being established subject to a desire by power interests for developments at Echo Park and Split Mountain, and subject to the plans of the Bureau of Reclamation eventually to construct a dam at the Brown's Park site (the monument proclamation was made subject only to this withdrawal) in the northernmost part of the monument as enlarged. When it was concluded that Dinosaur National Monument nevertheless should be enlarged, as it was in 1938, there was the further realization that future requirements might require that the power issue be more squarely met. That time has now come. However, the record is clear as to whether, regardless of their opinion in the matter, the Federal Power Commission has any right to issue power permits or grant applications for developments within the monument. The answer is definitely "No." The only way that such action can be accomplished is by a specific act of Congress. The Solicitor's opinion (M. 30471) of December 5, 1939, subsequent to monument enlargement, contains this sentence: "Any attempt to preserve this authority in the Commission by a specific provision in the national monument proclamation would be ineffective, since the authority of the Commission has been prescribed by Congress and cannot be extended by provision of an executive proclamation of this character."

Another occurrence, which has in no way served to clarify matters, was Reclamation's success, in 1943, in having the Department issue without our knowledge or consent, reclamation withdrawals covering the Echo Park and Split Mountain areas in the monument. This action we have always considered as of questionable propriety if indeed there is any authority for having taken the action. We have never received from Reclamation any answer to our requests for an explanation, but have made no issue of it because of possible embarrassment to the Department and with the realization that before any dam could be built it would require approval of the Secretary.

3. *Past agreements and studies made for and with the Bureau of Reclamation.*—It is true that the National Park Service has cooperated with the Bureau of Reclamation in making a recreational study of the Colorado River. It is also true that during the process of these studies we considered what the possible effect would be upon Dinosaur National Monument if the Echo Park and Split Mountain Reservoirs were built. Personally, I feel that no reservoir studies should be undertaken in national park or monument areas. I think your decision to this effect in connection with the Kings Canyon National Park was the proper one to make; however, I realize that in the case of the Dinosaur National Monument the questions of future power and reclamation developments were definitely in mind in some quarters at the time of its establishment, and a final solution to the problem of the area's best public use was left open for future consideration. The results of subsequent studies have convinced us that the Echo Park and Split Mountain Dams should not be built unless there is an absolute national necessity as distinguished from purely local power benefits and reclamation subsidies to be derived from the sale of that power. The overall national interest in this matter appears to us to be clear.

Unavoidably, in frank discussions of Reclamation's proposals with their officials and perhaps otherwise, some of our people may have expressed thoughts, ideas or personal opinions as to extent, caliber, worth and kind of recreational developments that might be appropriate in the area if the dams are built. Some preliminary studies, but no final ones, have ever been made in this respect, nor do we believe that they should be unless it is concluded that the monument is to be abandoned.

The Park Service has always agreed with the Bureau of Reclamation that the entire matter should be carefully studied and analyzed, and nothing that I have ever signed or agreed to with the Bureau has had an objective other than to get all of the facts in the open so that a decision could be made by the Department as to whether congressional authorization should be sought to build power dams, or any kind of a reservoir or reservoirs, within the area that is now Dinosaur National Monument. I do not feel it fair for anyone to consider these agree-

ments and studies except as an effort to cooperate. They should not be used against us in reaching a final decision.

Our efforts have involved many studies over the years, including a study of the entire Colorado River Basin. Our agreement and understanding with Reclamation is that they would undertake a complete study of the alternate reservoir possibilities, and certainly our understanding was that Echo Park Dam would be considered only the last resort; and only after review of the issue by the Secretary. While a token effort has been made by Reclamation in this respect, all that we have had is one copy of a mimeographed pamphlet (which we had to detach from copies of correspondence to you in order to see it at all) which lists a few alternate possibilities for project combinations in lieu of Echo Park-Split Mountain. It appears to be slanted to show why the alternates, notably New Moab-Lodore, are less desirable. In any case, the conclusion is inescapable that the search for acceptable alternates outside the monument has not been pursued with the enthusiasm, vigor, and thoroughness that have governed Reclamation's Echo Park-Split Mountain investigations within the monument.

Even if the Echo Park project is the best in the United States, we are not convinced that there are no alternates or combination of alternates capable of supplying most if not all of what is claimed for it. Certainly the national monument and its values, economic and otherwise, should count for something in totaling the score and concluding what is really in the national interest.

Surely it is not convincing to cite tentative agreements with the affected States favoring these dams within the monument. We believe that no such agreements should have been attempted before the Secretary had passed upon the desirability of building Echo Park and Split Mountain Dams.

4. *Secretary Warne's Committee recommendation and its effect.*—The recommendation of Assistant Secretary Warne's Committee does not, in my opinion, disapprove or approve the Echo Park Dam. It merely authorizes the construction of certain dams already on the Bureau of Reclamation's program and approved by the State committees and the five States in the upper Colorado River Basin before any work is done on Echo Park Dam. It also provides that further studies be made as to possible alternates to the Echo Park between now and the beginning of the second phase of the upper Colorado River program, which would be January 1, 1955. In the discussions of the committee in Secretary Warne's office, at no time was it recalled by Service representatives that the Bureau of Reclamation came out and stated definitely that there was no alternate whatsoever for the Echo Park project in the upper Colorado Basin overall program.

These are the facts in the case as we know them. I know in addition that you must take into consideration other matters of national importance, such as the expediency of the situation. There is one thing that this episode brings forward emphatically. It is the need for improved technique in the Department's public relations with the people in the immediate vicinity of this type of undertaking and with the Nation as a whole. The principle here involved extends far beyond this specific case. I most sincerely hope that some arrangement can be made for future handling of projects such as this one, or any reservoir project, whether or not it affects national park lands, whereby all interested parties, Federal, State, and individual, including the many conservation societies, can be simultaneously advised and brought in for a general discussion at one time, especially before approval of any one particular interested group is obtained. I urge that the proper procedure to accomplish this be discussed with your Advisory Committee on Conservation.

Even in view of the fact that the four States have already gotten together according to the compact and approved a definite program, I still believe that this matter can be aired in a general meeting with a representative of each State and other groups interested in the Nation's welfare, and a decision reached along the line of the Warne committee program. I most sincerely hope that this can be done.

I agree most heartily with the statement made by Assistant Secretary Warne, that in whatever way you decide the issue it will require the full support of both bureaus in order to carry out your decision and to obtain the maximum benefit from the decision reached. I am sure that you can depend on both the Bureau of Reclamation and the National Park Service to support your decision wholeheartedly, whether in their opinion they "win, lose, or draw."

NEWTON B. DRURY, *Director.*

22. JUNE 27, 1950: MEMORANDUM FROM THE SECRETARY OF THE INTERIOR TO THE BUREAU OF RECLAMATION AND NATIONAL PARK SERVICE

On April 3, 1950, the Secretary of the Interior held a hearing on the proposed construction of Echo Park and Split Mountain Dams as a part of the overall development of the upper Colorado River Basin.

The conclusions reached by the Secretary in this memorandum were in turn incorporated by the Park Service in that agency's comments on the proposed report of the Secretary on the Colorado River storage project and participating projects. The memorandum follows:

THE SECRETARY OF THE INTERIOR,
Washington, June 27, 1950.

Memorandum.

To: Commissioner, Bureau of Reclamation,
Director, National Park Service.

From: The Secretary.

Subject: Construction of dams in the Dinosaur National Monument.

The preparation of a comprehensive report for the development of the upper Colorado River Basin has posed the question of whether Echo Park (immediately) and Split Mountain (eventually) Dams should be built in the canyon sections of Dinosaur National Monument. I will not have the final say, but I must determine whether, as Secretary of the Interior, I shall approve and recommend to the Congress a plan that includes these dams.

The history of the issue is well known to you and is well documented in the transcript of proceedings of the hearings I held on April 3, 1950. I shall not review it here.

I am impressed with the fact that the waters of the Colorado River constitute a resource of paramount importance to the region and that in view of the arid nature of the area, my approved plan for the development of the upper basin must make every practicable provision for the conservation and multiple use of these waters in the interest of the people of the West and of the whole Nation.

I am not unmindful of the public interest in the inviolability of our national parks, and in the status, only a little less austere, of the national monuments. By no precedent of mine would I wish to endanger these places.

Weighing all the evidence in thoughtful consideration, I am impelled in the interest of the greatest public good to approve the completion of the upper Colorado River Basin report, including the construction of the dams in question, because:

(a) I am convinced that the plan is the most economical of water in a desert river basin and therefore is in the highest public interest; and

(b) The order establishing the extension of the monument in the canyons in which the dams would be placed contemplated use of the monument for a water project, and my action, therefore, will not provide a precedent dangerous to other reserved areas.

I note that the fossils are not in the areas of the monument proposed to be flooded and that the creation of the lakes will aid the public in gaining access to scenic sections of the Green and Yampa River Canyons. Much superb wilderness within the monument will not be affected, excepting through increased accessibility.

The importance to the growth and development of the West of a sound upper Colorado River Basin program can scarcely be overemphasized. I hope that this decision on my part will promote quick solution of all other problems connected with this matter so that we may proceed with such a program.

I ask the National Park Service and the Bureau of Reclamation to cooperate fully in making plans that will insure the most appropriate recreational use of the Dinosaur National Monument, under the circumstances.

OSCAR L. CHAPMAN,
Secretary of the Interior.

Mr. D'EWART. Will the gentleman yield?

Mr. MILLER. Yes.

Mr. D'EWART. I might also suggest that section 3, chapter 408, session 1, 64th Congress, 1916, be included for that purpose. The citation is 535, Stat. 39, part 1. (See p. 721.)

Mr. MILLER. That is all, Mr. Chairman.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. Mr. Grant, I have only one question. I just wondered how serious you were in your statement on page 6 when you said, "In these days of austere economy." Were you serious or facetious in that remark?

Mr. GRANT. Yes, sir, I think every effort is being made by both the administration and Congress now to economize and reduce our expenses as far as possible.

Mr. REGAN. I hope you are correct, but I have not so observed.

Mr. GRANT. Maybe my impression is just from what I read and on the outside. I confess I am not in an inside position.

Mr. REGAN. That is all.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. General Grant, on page 2 of your statement you say:

You are doubtless aware of the proposals for dams or reservoirs encroaching on Yellowstone National Park, Glacier National Park, the Grand Canyon, Mammoth Cave, etc.

Would you detail for the committee's information the planned encroachment on Yellowstone Park at this time?

Mr. GRANT. I cannot give you that offhand from my memory. I do not know exactly what it is, but I am sure that for many years there has been discussion of some sort of a project of that kind in Yellowstone Park. I would have to look it up, sir.

Mr. D'EWART. From your own knowledge, you know of no encroachment on Yellowstone Park?

Mr. GRANT. Except that I have heard of it, that it is proposed.

Mr. D'EWART. That is all.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. General Grant, as I ask you some questions about this very excellent statement which you have made, I wish you to know that I consider you, of course, one of the most effective and best motivated of all the conservationists in the country. Generally I agree with most of the decisions at which you arrive. Here I find myself in direct conflict, of course, because I am now talking of my own homelands, about an area which is an integral part of our Nation, and its future contribution depends upon the wise development of its resources.

I have hopes that by some means or other those who are sincerely interested in conservation, as such, throughout the Nation will be able to know that this is a question of determining values, and that although some of us may differ on particular matters, nevertheless, on the overall we are together.

I think before I start my questions I should know whether or not you have visited this great area of the United States personally.

Mr. GRANT. Not the monument; no, sir.

Mr. ASPINALL. You have been, though, in the upper Colorado River Basin, as I understand it?

Mr. GRANT. I have been through there; yes. I have been south of this area, but I have not been to this site.

Mr. ASPINALL. In light of the statements which you make about the values concerned, how do you explain, General Grant, that the people of the whole basin, having lived there as many of us have for half a

century, are overwhelmingly in favor of this development of the upper Colorado River Basin and the inclusion of the Echo Park unit as a part of the so-called first phase of the project?

Mr. GRANT. My answer is that we, too, are in full agreement as to the need for a proper balanced development of the upper Colorado River Basin and its tributaries. But we believe that the people locally have been told that Echo Park was the only possible, was the keystone of the arch, was the only possible thing that could go into this project, and that they actually have been misled or are mistaken in this belief.

Mr. ASPINALL. However, you admit that we love the beautiful things of nature just the same as any other people in the Nation?

Mr. GRANT. I suppose so, sir. But maybe by living very close to them—

Mr. ASPINALL. Your position is that we are so close to these beautiful instances of nature that we cannot measure their values.

Mr. GRANT. I think maybe that is the case, yes, sir; and I think that maybe you do not measure the value that they have to people from other parts of the country, from the congested parts of the country, who do not have the great open spaces that your people live among.

Mr. ASPINALL. May I say, General, that as a sponsor of the legislation which is now before the committee, I think I know the natural values, the natural resources, of that area, and I have had the pleasure to travel about this continent and other continents. And just to evaluate, I would say that there are hundreds of areas in this one district alone, the congressional district which I have the honor to represent, which have far more scenic values and have far more restful values than the area which we are speaking about at this time. I do not take issue with you, but I want you and the other conservationists of the Nation to know that we, too, are conservation-minded and that we too wish to have our area serve its purpose in the overall national picture.

Now you have made a charge here in your statement which I think is decidedly unfair. I do not believe that we are the cat's paw of the Bureau of Reclamation. I do not believe that we have just overwhelmingly thrown ourselves overboard to take what they offer. I think that there are those present who would say that this committee, and myself for that matter, have been very critical of some of the things they have brought before us. But, after all, when you make a statement that the Bureau of Reclamation has centered its decision in favor of Echo Park in order to draw attention away from other matters, to those of us who have lived there for years and studied these problems and know these sites personally, and have walked over them and know what it means to put water in shallow places and what it means to put water in deep canyons—I do not believe that you mean that statement, do you, that the Bureau of Reclamation has used us and is using others in order to divert attention from other places where it might be economically feasible and afford less evaporation or more evaporation to the upper Colorado River?

Mr. GRANT. Mr. Aspinall, I have tried to make it clear that I did not want to make an accusation, but I have been forced in the 3 years that this issue has been up, and I have had a part in it, to the inference, anyway, and surmise that there is something of that kind that has cer-

tainly been at the back of the conviction that the people have there as to the essential need for this one reservoir, because, quite honestly, in looking over the program I cannot see any such essential need. I do not believe the people there would want to have it built if there is no essential need.

Mr. ASPINALL. Of course, I know——

Mr. GRANT. I have tried to make it clear to the committee why I do not think there is any essential need for that particular project.

Mr. ASPINALL. My only answer to that is that I am not an engineer, that I must rely upon engineers to make these determinations, but that I do have some confidence in the engineers of the Bureau of Reclamation; and when their figures show feasibility to certain projects over other projects, then I feel at least until they are proved wrong that I have a right to rely upon those figures.

Now you also bring up another matter in your statement, which may or may not have some influence before this committee, and that is the jurisdictional quarrel within the Department of the Interior. Do you not think, General, that the Department of the Interior, the former Secretary and the present Secretary, have been fair in trying to evaluate the positions taken by these two bureaus which are concerned here?

Mr. GRANT. Yes, sir; I think they have wanted to be fair. I think that perhaps the situation has not been fully made clear to them. I do not know what went on in the Department at all, sir.

Mr. HARRISON. Excuse me. The time of the gentleman from Colorado has expired. The Chair will yield such time as he might need from the chairman's time.

Mr. ASPINALL. That is very kind of you, Mr. Chairman, but these proceedings are not going to be determined very much upon the way that we ask questions and the way that they are answered, although they may be interesting and all of that. I do not know if it is fair to the committee and the other witnesses who are to come before us for me to take more time.

I just wish to say, thank you, General Grant, for the contribution which you make. I may differ, but I am friendly.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. Thank you, Mr. Chairman.

General Grant, in your opening statement, you made the statement that in 1953 some 525 people went down the river. Is it true that a large part of these, nearly half of them, were local people, and that a large number of other people including the Sierra Club, of which probably about 200 members made the trip pretty much in a group? Is that correct or not?

Mr. GRANT. I have no information on that, sir. I merely gave the figures that I got from the Park Service as to the number of people who made the trip.

Mr. BERRY. That is pretty much the point.

Mr. HARRISON. Will the gentleman yield?

Mr. BERRY. Yes.

Mr. HARRISON. Are not the figures you quoted for total attendance in the park, figures that represented attendance merely at the monument and do not represent a visit through the entire area?

Mr. GRANT. As I understand it, they are the number of people who came to the monument.

Mr. HARRISON. But it does not represent any visit to any other part of the area?

Mr. GRANT. I did not get the number who really made a trip through the monument for 1953. I did have that for 1952, and it was—well, I had better not quote from memory. But I can put it in the record if you wish.

Mr. HARRISON. I would appreciate it.

Mr. GRANT. What was the total number who came to the monument, the total number who went around, camped or otherwise stayed in the monument a while, and then the number who went down the river; and those are the three classifications. I only have the first and the last.

Mr. BERRY. I think the testimony previously given here indicates that about half of those who made the trip are local people—I am talking about down the river—and a group of some 200 from the Sierra Club made the trip down the river in 1953 as a group, which might change the complexion just a little bit.

Now on page 3 of your testimony, General, you say:

The program of development proposed in the Bureau's 1950 report has been termed by a reliable authority.

For the record, I wish you would give us the source of that authority.

Mr. GRANT. That is a quotation from a letter I happened to see from one of the departments that is supposed to make a report on all such projects. Now whether that letter actually went forward and was in the report or not in that form, I do not know.

Mr. BERRY. You do not know the department that made the recommendation?

Mr. GRANT. I know the department; yes, sir. I am coming to that in a moment. And if the committee is interested in that subject, may I suggest that you ask the two bureaus who have adequate force and knowledge and background, and who by law have to comment on such a program as this 1950 program—if you will ask for their reports on the program, and those are the Chief of Engineers of the Army and the Federal Power Commission. Both of those bureaus of the Federal Government have made reports on this project according to the last statement of the Bureau itself, a supplementary statement.

Mr. BERRY. This quotation that you give—

Mr. GRANT. Was in a preliminary letter that I happened to see because of a friend from the Chief of Engineer's office, but I do not know it was a final draft of what the Chief of Engineers sent forward.

Mr. BERRY. But you are making an actual quote from something.

Mr. GRANT. Yes, sir.

Mr. BERRY. And what is that?

Mr. GRANT. That was a letter that was prepared for the Chief of Engineers in making his report on this subject, and the officer who prepared it—

Mr. BERRY. But you are not at liberty to tell or give us the information as to who this reliable authority actually is?

Mr. GRANT. Actually I do not know now who it was. It was 3 years ago. It was one of the many things that I got hold of when I was trying to go into the project.

But the answer to the question is, sir—and I hope you will do it—that you ask for the report of the Chief of Engineers and the Federal Power Commission on this subject.

Mr. BERRY. Just one more question, General. As a conservationist, you are vitally interested in the conservation of all natural resources; is that not correct?

Mr. GRANT. Yes, sir.

Mr. BERRY. And this would include water, would it not?

Mr. GRANT. Yes, sir.

Mr. BERRY. Then when you recommend projects which would knowingly increase evaporation, are you acting in true conformity with the spirit of conservation?

Mr. GRANT. I think so, sir, because I do not believe that that loss is material or actual. I think that that is almost an entirely academic discussion that has gone on.

If you will read the footnote at the bottom of table 3, in which I compare the proposal which was made, the recommendation made by the Secretary of the Interior and the proposal which I made in my opening statement, you will see in the footnote that while there is this calculated or estimated possible additional 44,000 acre-feet more evaporation, which is not very much, because when you consider the error that is possible in any of these computations of evaporation, why, that is within the error—but even so that the additional storage you get, if that water is stored, the additional evaporation will still leave you more water than you had without the additional evaporation. So I think that my proposition, my suggestion, conserves the water rather better than the Echo Park Dam in it, because I have brought in some other, especially in the second phase of my original recommendation and I bring in Bluff, which I think is quite important in saving water and conserving it on the San Juan and preventing so much silt going into the Grand Canyon, which really is the keystone.

Mr. BERRY. But actually your interest is the same as the interest of those people out there in actually conserving water that falls?

Mr. GRANT. Yes. I think there are two competing interests—the conserving of water value and the conserving of the scenic value of something that has been picked out to be saved.

Mr. BERRY. I think that is all.

Mr. HARRISON. Mrs. Pfost?

Mrs. PFOST. Mr. Chairman, I want to say to General Grant that I too am most interested in preserving our national parks and our national monuments because we have them in Idaho also. I want to say too that I hope by passing this legislation we will not be setting a precedent of taking over the national parks and the national monuments in a wholesale manner, so to speak. But I do want to ask you, General Grant, whether or not the original law giving the Chief Executive the power to establish national monuments by Executive order states any policy on the multiple use of water in national parks and national monuments.

Mr. GRANT. Frankly, I am not sure I remember just what that law says. I have never looked at it with that question in mind, and therefore I do not know. I can undoubtedly look it up.

Mr. DAWSON. Will the lady yield to me?

Mrs. PFOST. Yes.

Mr. DAWSON. I have before me a copy of the law providing for national monuments, and you might be interested in this statement:

The limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

Now this was originally designated as Dinosaur National Monument with 80 acres, and then they came along and took in by Presidential decree an additional 200,000 acres including the stream beds of the Green and Yampa Rivers. You might ponder that question as to whether the area taken in was compatible with the objects to be protected.

Mr. ASPINALL. Will the lady yield to me?

Mrs. FROST. Yes.

Mr. ASPINALL. General Grant, did the organization which you represent before this committee state its position on enlargement of the original Dinosaur National Park?

Mr. GRANT. I am sure it was in favor of it, but Miss Jameson is in the audience and is our secretary. I was not here at that time. I was elsewhere on duty.

Mr. ASPINALL. She will be before the committee later?

Mr. HARRISON. Is the lady going to be a witness later?

Mr. GRANT. It is Miss Jameson.

Mr. HARRISON. She is not on the list. If she is not, you may put the question now.

Mr. GRANT. This is Miss Harlene Jameson.

Miss JAMESON. I am not sure what the question is.

Mr. ASPINALL. The question is whether or not the organization which the General represents before this committee at this time took any position on the enlargement of the original Dinosaur National Monument.

Miss JAMESON. No; I think we took no action at the time, as we ordinarily do not when the National Park Service acts, or the Department of the Interior, or the President, unless it is some objection. So that we took no official action at that time.

Mr. ASPINALL. But you do know that the local residents out there asked for the enlargement; do you not?

Miss JAMESON. I know it.

Mr. ASPINALL. And now at the present time they ask also for the development of this natural resource?

Miss JAMESON. Yes, I know that.

Mr. D'EWART. Would the lady from Idaho yield to me?

Mrs. FROST. Yes.

Mr. D'EWART. I have in my hand a copy of the proclamation—"Enlarging the Dinosaur National Monument, Colorado, Utah" by the President of the United States of America, July 20, 1938. And in part that proclamation reads as follows:

The administration of the monument shall be subject to the reclamation withdrawal of October 17, 1904, for the Browns Reservoir Park site in connection with the Green River project.

The proclamation is signed by Franklin D. Roosevelt. The proclamation has been made a part of the record, so I only read a phrase that has to do with the discussion before us. (See p. 733.)

Mrs. FROST. And your organization accepted the reservation as set up?

Mr. GRANT. Yes; as I say, it was our understanding certainly that they had a just claim to carry out that project. Since 1904 or 1905 it had been on the books, so to speak.

Mrs. FROST. Thank you. That is all.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Following along that same line, General, it is my understanding that after the park was enlarged, and in line with the conditions set forth in the proclamation, the Upper Colorado River Commission and various water groups went ahead and filed on the water out there and published their applications for water, which were made a part of the public record, and which was well known at that time. Did you or any of your conservation groups ever file any objections when those filings were made.

Mr. GRANT. I am almost sure that we did not.

Mr. DAWSON. That was for the construction of dams within the monument at that time, as I understand it?

Mr. GRANT. I do not know.

Mr. DAWSON. Then I will ask you this question: They also went in there and they made core drillings, and their plans for constructing these dams were well known back at the time shortly after the monument was enlarged. Have you filed any objections to those actions?

Mr. GRANT. We have not taken any legal action on it; no, sir.

Mr. DAWSON. I am sorry I was not here when you were being cross-examined in the beginning. Have you ever been out there?

Mr. GRANT. No, sir. I have been in that general part of the country, but I have not been to this part, this monument.

Mr. DAWSON. I only wish you would go out there, General.

Mr. GRANT. I would like to very much.

Mr. DAWSON. And see how difficult it is to get down into that canyon. It is true there have been some daring river runners who have gotten down over the edge and taken a ride. I am informed that the group that was referred to my colleague from South Dakota, the Sierra Clubbers, had announced their opposition to Echo Park before they ever came up there, and they went in last year and took what we call the "dude's ride," the little, easy ride down the slow part of the river, to tell people they had been down the river. But aside from that, we have had very few people aside from local river runners who have taken the risk of going down that river.

I wish, too, you would take occasion to view the pictures, if you already have not, to see how this will beautify that canyon, permit people to get in there and see the various things you are talking about.

Mr. GRANT. I tried hard to see that, Mr. Dawson, but it seems to me it is a perfectly terrible thing, and it will absolutely drown out the whole scenic part, the really impressive part of the canyon.

Mr. DAWSON. I believe if you would go out and see for yourself that probably we could convince even you that this would beautify it and make it more accessible to more people.

Mr. GRANT. When you take the picture which the Reclamation Bureau itself gives of that dam [indicating], it shows there is nothing left but a little edge of long hills around the lake. Evidently the whole impressive scenery is drowned out.

Mr. DAWSON. Of course, you are looking at the dam itself. But if you look at the water to be impounded back of it, I think the pictures produced will tell you quite a different story.

Mr. GRANT. I have seen several moving pictures, those that were brought by a group of people from Utah and Colorado and others. I am afraid that I am still convinced it is one of the wonder spots of the world and that it is really worth preserving.

Mr. DAWSON. We do appreciate your statement that you feel that the conservation of water is one of the objectives of your organization. Now you also mentioned that one of the other things you are interested in is the scenery.

Mr. GRANT. Yes.

Mr. DAWSON. I might ask you this question: If it came to a choice of conserving the water or conserving the scenery, which would receive first priority?

Mr. GRANT. It might depend a little bit on the relative need and value in the matter of the water, sir. It is a little bit hard to answer a hypothetical question of that kind. The matter of principle is that a national monument should not be invaded by this kind of a construction.

The reason I have taken so much trouble—and I have taken a great deal of trouble and time to study the project and put before you the observations that I have made in regard to it—was because I felt I wanted to satisfy myself that this would not take away any appreciable amount of water or any economic advantage that could be gotten from a proper program of storage in the upper basin.

Mr. DAWSON. Of course, we are interested, too, but as far as we are concerned, water to us out there in that arid country is not a relative matter, it is a matter of life and death with us. If we cannot get water to drink and water on our lands out there, we cannot live.

Mr. GRANT. That is right.

Mr. DAWSON. Of course, some of you people in the East can come out there and see our scenery and you can still live back here and have the money to get out on. But we are close to the problem. We like our scenery and we like our water, too, and we feel that this project is a means of getting both of them.

Mr. GRANT. I do not know whether that was a question or not, but may I express the conviction that I am entirely in agreement, but the Echo Park Dam is not necessary to have that, sir.

Mr. DAWSON. Let me ask you this: If the Army engineers, upon whom you apparently have been relying, come in with a favorable report now on this plan for constructing Echo Park, would you then support it?

Mr. GRANT. They will only report on the economic features of the program, as such, sir, and they will not have any idea or thought about the damage to the scenery because, like the Bureau of Reclamation and the Power Commission, that is not part of their responsibility. That is why we conservation organizations of citizens are here requesting you not to authorize that dam there because there is no Government bureau that is entrusted with this except the National Park Service.

Mr. DAWSON. Has your organization or the National Park Service ever been invited to sit in with the Bureau of Reclamation to discuss these alternative dam sites?

Mr. GRANT. I can answer for our organization that we have not, except at the public hearing on April 3, 1950.

Mr. DAWSON. And did you accept that invitation?

Mr. GRANT. We did, and we made our presentation.

Mr. DAWSON. And what about the Park Service?

Mr. GRANT. The Park Service were present at that, too. And as a consequence, somewhat later, we had another meeting with the Secre-

tary. I presented my second memorandum in August 1950. I think the record will show that Secretary Chapman somewhat changed his mind as to the need of this Echo Park Dam and, in fact, reserved the right in his recommendation to Congress to have an alternative.

Mr. DAWSON. If I remember Secretary Chapman's last report back in 1952, I think it was, that was when he urged further study to be made. That is the one you refer to?

Mr. GRANT. Yes, with the idea of finding an alternative.

Mr. DAWSON. That is right.

Mr. GRANT. Along the lines I have suggested.

Mr. DAWSON. That study was made back in 1952 and 1953, and now they have come in here with a report after the study is made and recommend the sites. Now you say, "Let's go ahead and study some more." Apparently your group feels that they can continue to study until they come up with a report that you want.

Mr. GRANT. I feel that they have not answered the suggestions that were made in 1950 at all. They have simply brushed the thing away.

Mr. DAWSON. In other words, they have not followed your recommendation?

Mr. GRANT. I do not think they have made the serious unprejudiced study that was hoped for at that time.

Mr. DAWSON. Those of us who live out there are just at a loss to understand why any report which is not favorable to your group is considered to be biased and prejudiced. If your figures could be substantiated that we could get more water and more power and less evaporation, as you seem to state, there is no reason in the world why we would not be for it. But I am at a loss to understand the basis for your figures. We have got to rely on the engineers who have made the surveys. Do you agree with that?

Mr. GRANT. Yes, sir; but I have used the figures that they have produced, and the results are somewhat different from what they claim.

Mr. DAWSON. Then it is just purely a matter of engineers' figures. If we are all agreed then I see no reason why we cannot get together and thrash this matter out and get your engineers together with theirs and we can agree on the basis and move from there. Would that be agreeable?

Mr. GRANT. I have not got an engineer office, sir, I am just by myself, a retired officer now.

Mr. DAWSON. But you are relying on the Bureau's figures?

Mr. GRANT. I have used the Bureau's figures here, sir, and in some cases I have questioned them. But I have used them to show that even according to their own figures such alternative sites are possible and that the evaporation difference is very slight and not at all equivalent to the value, the money value, of the change.

Mr. HARRISON. Mr. Dawson, do you want to complete now or wait until this afternoon?

Mr. DAWSON. If I might wait.

Mr. HARRISON. Mr. Saylor has also asked that the gentleman be back this afternoon for some questions. We will stand in recess now until 2 o'clock.

Prior to adjournment, I would like to ask unanimous consent to introduce in the record a statement by Norman Littell, general coun-

sel for the Navaho Tribe, clearing up one phase of the Navaho Shiprock project.

(The letter referred to follows:)

WASHINGTON, D. C., January 25, 1954.

HON. WILLIAM H. HARRISON,
*Chairman, Irrigation and Reclamation Subcommittee,
 The House Committee on Interior and Insular Affairs,
 Washington 25, D. C.*

DEAR MR. HARRISON: It will be very much appreciated if you will insert this letter in the record as near as may be following the testimony of the three representatives of the Navaho Tribe on January 25.

The Bureau of Reclamation in their supplemental report on the Colorado River storage project and participating projects December 1953, recommended for initial construction only a part of the Navaho project. This recommendation included the Navaho Dam and Reservoir and the Shiprock division of the Navaho project, with capacity to be provided in the Navaho Reservoir and main canal to supply the south San Juan division at some future date.

It is requested that the committee give consideration to this recommendation in order that construction of the Shiprock division can proceed as rapidly as possible after authorization. The Shiprock division of the Navaho project will provide for irrigation of 122,000 acres of land on the Navajo Reservation, and is needed immediately as one of the major developments to provide a better economic status for the Navaho people. It can be built as a separate project as it is not integrated or in any manner whatever dependent upon the San Juan-Chama project. Capacity, however, would be provided in the reservoir and the main canal to serve the south San Juan division.

Sincerely yours,

NORMAN M. LITTELL,
General Counsel for Navaho Tribe.

Mr. PILLION. Before adjourning, I wondered if I may ask permission to introduce in the record a letter from a Mr. Herman Forster, New York State representative to the National Wildlife Federation, which is in opposition to the Echo Park Dam.

Mr. HARRISON. Are there any objections?

The Chair hearing none, it will be received.

(The letter referred to follows:)

NEW YORK STATE CONSERVATION COUNCIL,
 January 13, 1954.

HON. JOHN R. PILLION,
*Subcommittee on Irrigation, House Committee on Irrigation,
 House Committee on Interior and Insular Affairs,
 New House Office Building, Washington, D. C.*

DEAR CONGRESSMAN PILLION: For 7 years I was privileged to serve the organized sportsmen-conservationists of New York as their elected president. For the past 3 years I have been and am at present the elected representative of the organized sportsmen to the National Wildlife Federation.

New Yorkers are deeply concerned about the preservation of the remnants of a once majestic wilderness. With the aid of the New York Herald Tribune, the New York Times, the Macy chain of newspapers, the New York Daily Mirror, the Buffalo Evening News, and a tremendous number of smaller papers throughout the State, the organized conservationists succeeded in passing amendment 9 to the New York State Constitution. This insured the retention in a wild state of some 2,500,000 acres in our forest-preserve counties and will prevent the inundation of valleys in that preserve by hydroelectric interests without the specific approval of the electorate at the polls.

The organized sportsmen of New York are similarly concerned about hydroelectric reservoirs in other parts of the country where, in their construction, areas of great scenic beauty would be forever destroyed. Echo Park Dam, which would flood the Green and Yanopa Canyons in the heart of the Dinosaur National Monument, is a case in point.

Many sportsmen, many tourists, many members of women's clubs, many New Yorkers, in fact, annually visit Dinosaur National Monument. With the same

reasoning which caused them overwhelmingly to defeat the threatened invasion of our Adirondack Forest Preserve, they oppose the destruction of this unique scenic treasure through the construction of storage or hydroelectric reservoirs. Their feeling is strengthened by the belief that alternate sites are available to furnish the water so urgently needed for irrigation.

Through the years the organized sportsmen of New York have followed the philosophy enunciated by Dr. Ira N. Gabrielson, a philosophy which needs repetition and restatement from time to time. That philosophy involved the insistence on the part of all sportsmen-conservationists that in any public project conservation values be given the same consideration accorded all other values.

May I respectfully urge you to oppose the Echo Park Dam project with all the vigor you possess. In doing so you will be reflecting the sentiments of the over 1 million voters who recorded their views at the polls in the last election.

May I point out that the New York victory was achieved through bipartisan leadership; that former Lt. Gov. Frank Moore and Senator Herbert H. Lehman rendered yeoman service to our cause; that former Republican State Chairman Pfeiffer worked hand in hand with the State Democratic chairman, Richard Balch, and that both the Republican and the Democratic leadership of the senate and assembly here in New York State came through with flying colors.

Inasmuch as it will probably be impossible for me to appear before your committee in person, I would appreciate your filing these objections with the committee.

With warm personal regards, believe me.

Faithfully yours,

HERMAN FORSTER,
New York State Representative to the
National Wildlife Federation.

Mr. HARRISON. The committee will now stand in recess until 2 o'clock.

(Whereupon, at 12 o'clock noon, the subcommittee recessed until 2 p. m. of this same day.)

AFTERNOON SESSION

The committee reconvened at 2 p. m., upon the expiration of the recess.

Mr. HARRISON. The committee will come to order.

Mr. DAWSON, you may continue with your questions.

Mr. DAWSON. General, you made some reference in your statement to the report of the President's Water Resources Policy Commission. I think you were citing with approval, were you not, some statement that was made in that report?

STATEMENT OF U. S. GRANT III—Resumed

General GRANT. Yes, sir. The question was raised as to whether the market was actually there for all the power that they proposed to develop and in volume 2, page 371, in our copy, that is the only reference.

Mr. DAWSON. Are you generally in agreement with the report of the President's Commission?

General GRANT. In many ways; yes, sir.

Mr. DAWSON. I would like to read from page 454 of the report of this commission of the President, volume 2, discussing this question of recreation which we have been talking of here. Here is what they have to say:

The basin is now a major national recreational center. With some of the greatest scenic attractions in the world, it is likely that planning for and maintenance of proper recreational use will always be a major feature in basin water

resources use. The important problem for planning is reconciliation of the need for preserving the natural attractiveness of the great scenic assets, and the vital need for regulation of basin streams in their most effective beneficial use. Stream regulation therefore must be undertaken in a manner which will not unreasonably destroy the attractiveness of those features which have or could have national appeal.

At the same time development of the water resources of the basin can measurably enhance the recreational usefulness of the region and broaden its services. The use to which the Lake Mead national recreational area has been put, with only minor elements of its master plan in operation, is indicative of the potential recreation opportunity inherent in the proposed reservoirs. Aside from the general attraction provided by a body of water in a desert and the fishing, new reservoirs will afford easy and comfortable means of access to canyon areas as magnificent as those now served by limited, expensive, and overcrowded facilities, will be enhanced by the overall program of water resources development.

That is the report. So I hope you will consider that along with the other references you make.

General GRANT. Yes, sir.

If I may point out also—it is not necessary in this case, I believe from the presentation I have made—that the recreational facilities of a lake will be more and greater if you adopt the alternative plans with larger lakes, and have the others, too, sir.

Mr. DAWSON. You referred this morning to the picture you had on the frontispiece of the report, department report of the dam.

Have you ever seen the one introduced the other day, G-1, showing the views of the dam looking at it from downstream?

General GRANT. I don't believe I have.

Mr. DAWSON. Here this picture before, and the picture after, gives the size of the dam in approximate dimensions. You will observe when looking at it from a distance it does not appear quite as prominent.

General GRANT. It does fill up the verticle part of the canyon, I believe, Mr. Dawson.

Mr. DAWSON. Now, General, on page 7 of your statement you make a reference to some \$17 million, I think, which the Reclamation Bureau proposes for recreational development.

General GRANT. That is the plan that is in this report.

Mr. DAWSON. That is in the 1950 report?

General GRANT. Yes, sir.

Mr. DAWSON. Now, are you not aware of the fact that in the second supplemental report, which came in December of last year, that he has recommended \$21 million to be expended by the Park Service in improving the recreational facilities, and that this item which you refer to in your statement was actually recommended by the Park Service and it has been increased now to \$21 million to take care of the recommendations of the Park Service?

General GRANT. But that was if the Echo Park Dam and the other dams are built.

Mr. DAWSON. Yes.

General GRANT. In accordance with the program.

Mr. DAWSON. That was the Park Service recommendation, that if the dam is built they recommend that \$18 million be spent to improve the park facilities.

General GRANT. Of course, they did not recommend that the Echo Park Dam be built, sir.

Mr. DAWSON. No, but if it were built they wanted these facilities put in. So the truth of the matter is that really it is not the Reclama-

tion Bureau of the Interior Department itself as much as it is the Park Service which is requesting these funds to be put in. Is not that correct?

General GRANT. They gave an estimate on the recreational features of this program sir. I don't think they were ever in accord with it, but if the program is carried out that would be the cost of the recreational features.

As I understand it, that was included in the Reclamation Bureau's study of costs and benefits.

Mr. DAWSON. That is right, but it was on the recommendation of the Park Service that it was included.

General GRANT. Yes.

Mr. DAWSON. Now, my final question.

I know there has been a lot of confusion raised here over these figures which you produced on evaporation and various engineering data that you have presented. You make the statement I think in the next to the last page of your statement, page 7, that you received your data from various sources, various engineers and others.

General GRANT. Yes, sir.

Mr. DAWSON. Would you care to tell us who those engineers are?

General GRANT. Well, I got some information and help from the Park Service in the early days. I have not communicated with them since the Secretary made his decision because I felt that they would hesitate to speak.

Mr. DAWSON. How long has it been since those figures have been brought up to date?

General GRANT. About 2 years.

Mr. DAWSON. Any other engineers other than those in the Park Service?

General GRANT. I have talked to a good many people, sir, and the quotation I used was from the opinion of an engineer officer, as I say. I don't know whether his opinion would be accepted, but it came to me secondhand, frankly.

I have talked to other people informally. I would not be able to tell you just who, some of whom agree and some who do not agree.

Mr. DAWSON. You say it came to you secondhand. Can you rely on that? Would it be better to go back to the original source, the engineer who put out the information?

General GRANT. As I say, I think the best check on whether it is reliable or not would be to get the report of the Chief of Engineers and of the Power Commission on the project.

Mr. DAWSON. Then I take it you are relying on the figures of the Chief of Engineers of the Army.

General GRANT. I merely quoted an opinion of one person there who gave an opinion that was similar to mine, sir. I was not just accepting other people's opinions.

I used them when they seemed to me reasonable.

Mr. DAWSON. Do you have any opinions of your own, any original investigations that you have made?

General GRANT. I have studied the report. I have not gone out and done any field work; no, sir.

I think the Government has people to do that for it.

Mr. DAWSON. I think this committee would be very much interested in sitting down with you or your engineers and with the engineers of the Bureau and discussing these figures.

Do you not think that would be an advisable thing?

General GRANT. Well, I put the figures out as my conclusions from a study of this report. It is the kind of study that we do in the Board of Engineers for Rivers and Harbors in connection with many such programs that are put before us.

I am taking full responsibility for the statements I have made.

Mr. DAWSON. Then if this committee would afford you an opportunity to sit down here and compare your views with that of the Bureau of Reclamation engineers, would you meet with us?

General GRANT. Yes, surely, but I think it would be very well, considering the fact that some people have wondered whether I was really competent to make such criticisms, if you brought in the people who have studied this, who are Government officials, and who can correct me if I am wrong or correct the Reclamation Service if they are wrong.

Mr. DAWSON. That is exactly what I am suggesting. It is for that reason that I want to know who these other people are.

Mr. HARRISON. The time of the gentleman from Utah has expired. The Chair will give him an additional 2 minutes.

Mr. DAWSON. At an appropriate time I am going to suggest that this committee sit in executive session or open session with these engineers and get into these figures.

I would like the witness, if he could, to give us the names of some people we could meet with.

General GRANT. Frankly, I don't know who is the executive officer of the Board of Engineers for Rivers and Harbors at the present moment, sir. I will have to look that up because that has undoubtedly changed in the past 2 years.

Mr. DAWSON. You could tell us where you got your figures from, could you not?

General GRANT. I can show you the photostat of a letter; yes, sir. I will be glad to do that.

Otherwise, from the Power Commission, I suggest the chief engineer of the Power Commission. I think his name is Alexander Anderson, or something of that sort. I can get that in a few minutes.

As I say, I have said right from the start I have not gone out and made a field survey and I am not prepared to propose an original program, sir.

Mr. DAWSON. You don't come here professing to be an engineer qualified to pass on these figures?

General GRANT. I think I am pretty well qualified to pass on the figures; yes, sir; and to criticize the report, because I have had to do that officially many times when I was on the Board of Engineers.

Mr. DAWSON. Are you a qualified engineer?

General GRANT. I think so, sir. I do not know how to prove that except that I have been an officer of the Corps of Engineers for some 43 years and I graduated from the engineering school, as well as having a degree of bachelor of science from West Point.

Mr. HARRISON. The time of the gentleman from Utah has again expired. The Chair would suggest that when we reach that point that

the gentleman from Utah again renew his request that the general submit to the committee the names of those engineers that have made a study. Give us this information and we will call them before our committee and we will be glad to talk to them, because we do want to know, of course, that we are not making a mistake.

Mr. SAYLOR. Sir, there has been some question raised about your background and ability. Will you tell us for the benefit of this committee just who you are, what your education has been, and what your experience has been throughout your entire life from the time you have taken up your education.

Mr. DAWSON. Will the gentleman yield to me? I don't want the impression to get out, General, that I was belittling your training, because I was not here when you were giving your qualifications.

I think I join my colleagues in just getting the facts.

Mr. SAYLOR. I just want the general to tell us what his experience has been to show that he is competent to make a study of these engineering reports.

General GRANT. I think a start would be that I was admitted to the School of Mines at Columbia in 1898 at the age of 16, which was younger than we were supposed to be when admitted there.

So evidently my examination was satisfactory. I did not remain there because I went to West Point the next year and graduated in the class of 1903, sixth in the class of 94.

I went to the Philippines and had charge of road work in Mindanao and survey work for the fortification along the Polo for a year, with a few other minor jobs, and then was brought back to Washington and assigned to the Engineer School and took the course there and was secretary of the school as well as adjutant of the post.

The course was somewhat interrupted. We were not able to do our astronomy, part of it, before we were sent to Cuba in the expedition called the Cuban Pacification Expedition.

I returned from that and was assigned to the Boston district and was closely connected with the fortification work and the accurate harbor survey, and the Santa Ann breakwater.

After 2 years in Boston, I, in the meantime, had come back and finished the engineer's course in that summer of 1908, and was graduated and then was stationed in Washington again in charge of the State, War, and Navy Departments buildings, where I had some experience in designing plants and managing plants.

From that I was sent to the Mexican border where I went in with the Pershing Expedition with my company then given a provisional regiment of engineers for training at El Paso, and then brought back to the Office of the Chief of Engineers in early 1917, and helped there during the early days of the war, put on the General Staff and had charge of the organization of special troops for the war in France, until I was taken abroad by General Bliss on the Supreme War Council, and remained with the Supreme War Council through the war, and then was on duty with the Peace Commission for a while, which has, of course, nothing to do with this kind of job.

Coming back here, after a few months further on the General Staff, I was sent to San Francisco in charge of the second San Francisco district and the executive officer and disbursing officer of the California Debris Commission.

While there, the State made its big survey for conservation of its water resources and I had no direct official connection with that, but considerable unofficial contact with it.

At that time I may say that I suggested multiple use dams and the possibility of them in the Feather, American, and Yuba Rivers, which I think was perhaps one of the first occasions that such double use was proposed, though I don't think I had any suggestions at that time for hydroelectric power in those dams because our chief problem was the stabilizing of the silt that had come from the hydraulic mining and therefore those dams were going to be filled up very substantially in a period of years.

From the San Francisco district I was brought back to Washington and put in charge of public buildings and parks here and the executive officer of the Arlington Memorial Bridge Commission.

I was then on the Park and Planning Commission when it was formed, ex officio, and in 1933 I went to the Army War College and graduated in 1934 and was in command at Fort DuPont of the First Engineers, of the first Delaware CCC district and the fortification of Delaware River, until 1936 when I was made chief of staff of the Second Corps Area at Governor's Island.

From there I went in, I think the end of 1939 or the beginning of 1940, to Cleveland as division engineer of the Great Lakes division.

During about 2 years I was division engineer I was ex officio a member of the Board of Rivers and Harbors and traveled with them, made one trip with them in the West, to look at a number of projects that had been put before us.

Then with the war I was put in command of the Engineer Training Center at Fort Leonard Wood and remained there until I was brought here in 1942 and put in the Office of Civilian Defense as the representative of the Secretary of War and in charge of the protective division.

I remained there until April 1944. In the meantime I had been made by the President Chairman of the Planning Commission here and I stayed on on that until my term ran out in 1949, even after I retired.

That is about the story, sir.

Mr. SAYLOR. In other words, would it be fair to say, General, that your entire life since your graduation from West Point in 1903 has been devoted to a study of engineering affairs?

General GRANT. Yes, sir. I tried to conscientiously study both sides of that question.

Mr. SAYLOR. During that period of time, of fifty-odd years, have you been called upon to make studies of figures which have been compiled by other engineers or field crews and submitted to you?

General GRANT. Yes, sir. As district engineer and division engineer we had to handle all the reports of our own subordinates in those districts and their designs, and as a member of the Board of Engineers for Rivers and Harbors we had to handle as I say a great number of just similar reports as this and analyze them and decide whether they were justified economically, or not.

Mr. SAYLOR. So that the mere fact that you have not seen the site of Dinosaur National Monument would not in any way affect your ability to study these reports and come to the conclusions that you have?

General GRANT. I don't think it would.

Mr. SAYLOR. I want to ask you this question to verify what I believe is a fair analysis of your report.

In your analysis which you have made, am I correct that you are not opposed to the development of the upper Colorado storage project and participating projects?

General GRANT. No, sir; we are far from opposed. We are hoping that the committee will pass legislation that will get it started, ignoring this contentious dam at Echo Park and building some dams which will do some good.

Mr. SAYLOR. Your particular interest in this affair is to see to it that Dinosaur National Monument is not invaded by the building of Echo Park Dam and Split Mountain Dam.

General GRANT. That was the primary reason I got into the discussion at all, sir. But I must confess that after studying it I have become convinced that the program as set forth in the 1950 report is unsound and uneconomical and not the best, and as good a one, or better one can be produced without Echo Park and Split Mountain.

Mr. HARRISON. The time of the gentleman from Pennsylvania has expired. The Chair will be glad to give him an additional 5 minutes remaining on the chairman's time.

Mr. WESTLAND. I also give the gentleman 5 minutes of my time.

Mr. SAYLOR. Thank you.

Mr. HARRISON. You have an additional 10 minutes, Mr. Saylor.

Mr. SAYLOR. Now, General, from the studies which you have made, as indicated on the tables that are attached to your report, am I correct in your conclusions that there are not only substitutes for Echo Park and Split Mountain in your opinion, but there are better sites and more feasible sites as already shown by the surveys made by the Bureau of Reclamation?

General GRANT. That is my conclusion.

Mr. SAYLOR. And that these sites will produce not only as much power, but more power, store not only as much water, but more water, and the evaporation in the overall will be less; is that correct?

General GRANT. That is correct, provided the figures of the Reclamation's report are correct, which I assume they are.

Mr. SAYLOR. Well, General, I will call your attention to the fact that you cannot always rely on the Bureau's figures because in October of 1953 they published one set of figures on the amount of power that could be produced in these projects and on the 24th of December they came up with an entirely new set of figures.

I called it to their attention yesterday and so far we have not had their explanation. So that I must warn you that their figures you cannot rely upon because they cannot even rely on them themselves.

To your knowledge, General, have there been other plans made for the invasion of other national parks and monuments?

General GRANT. I have hearsay evidence only. I mean I have no personal evidence, but I have heard, and I think correctly, the admitted reports that there is a project for Mammoth Cave which would affect it harmfully, which our advisory board visited 2 years ago, but I was unable to go on that trip, so I don't have personal knowledge of it.

Mr. SAYLOR. For your information I will tell you, would it not have been for the late Senator from that State, Senator Chapman, seeing

in the extent that the provision in the appropriations bill was taken out, that that dam would already be under construction.

General GRANT. A similar project affects Glacier Park. When our advisory board was at the Grand Canyon we were told of a project there which would affect the lower part of the Grand Canyon for about 18 miles.

Mr. SAYLOR. In other words, I believe you are referring now to Bridge Canyon Dam?

General GRANT. I am not sure of the name now, sir.

Mr. SAYLOR. I might tell you that if that is erected, that dam would flood not only the Grand Canyon National Monument, but go up into the Grand Canyon National Park.

Mr. RHODES. Would the gentleman yield for a moment? I would like to have the gentleman's definition of flooding in that particular instance. My information would lead me to believe it would not flood the national monument, but it would cause the water to rise in the national monument some hundred feet and that perhaps in the park the Grand Canyon itself would cause the water to rise some 25 or 30 feet; is that the gentleman's definition of flooding?

Mr. SAYLOR. That certainly comes within my definition of flooding, anything which will cause the water to be raised to an unnatural level is a flood.

If I were to assume that was not a flood, I might report that water that occurred in Johnstown in 1889 was only a slight dampness, that all that was was an elevation of the water of about 25 feet.

Mr. RHODES. Of course, the Federal Government has always taken cognizance of that slight dampness in Johnstown and has provided flood control for it. I do not think it is germane to this particular topic, but since it happens to come in my part of the statement I want to take issue with the gentleman.

Mr. SAYLOR. I want to show this is part of an overall program, that the Bureau of Reclamation has its eyes set on a number of dam sites which if the precedence is established here will open the floodgates not only to this, but to another series of national parks and monuments.

Mr. HARRISON. Will the gentleman yield?

Mr. SAYLOR. Yes.

Mr. HARRISON. Do you not think that precedence has been set through the authorization of the different parks about which the evidence was put in this morning on the specific act creating those parks, as to the location of dams and reclamation dams within those parks?

Mr. SAYLOR. None whatsoever.

In other words, I would like to call the gentleman's attention to the decree in 1938. In other words, there has been the impression raised here that something was given up by the States of Utah and Colorado.

Now, when this was set aside, when this national monument was set aside it was public domain, clearly shown in the opening words of the proclamation which is as follows:

Whereas certain public lands contiguous to the Dinosaur National Monument established by proclamation of October 4, 1915, have situated thereon various objects of historic and scientific interest; and

Whereas it appears it would be in the public interest to reserve such lands as an addition to said Dinosaur National Monument.

Mr. DAWSON. Does the gentleman contend it is still not public domain?

Mr. SAYLOR. No, but it is in a new classification. It is now owned, as it was then, by all the people of the United States and set aside in an entirely new category.

Our national park system has throughout the years been copied by other countries. One of the things that the other countries have always called attention to is that while it took people of foresight to create our national park system, it has also taken people of foresight to preserve it from invasion. There are those who from a matter of local interest, feel it might be better for their local benefit to have certain of these parks and monuments invaded.

That might, in all probability, be true, as far as their local interests are concerned. But these parks and monuments belong to all the people in the United States whether they have ever been there, or not. And they all have an interest in them.

And the number of people that are going to our parks and monuments each year, as you gentlemen on the committee know, is increasing by leaps and bounds.

I feel as a member of this committee that it is incumbent upon us as we look at these situations to preserve inviolate the limits of our national parks and monuments. I am delighted to have had General Grant here today and in his testimony say he is not opposed to the development in the upper Colorado River Basin. That is not the purpose of his testimony here. The purpose of his testimony here is to allow you to develop the upper Colorado River Basin and not invade this national monument.

Mr. RHODES. Will the gentleman yield for a moment?

Mr. SAYLOR. Yes.

Mr. RHODES. I cannot help but wonder how the gentleman would feel sitting in the English Parliament in the 18th century and there was a debate similar to this about developing the wilds of Pennsylvania. The State of Pennsylvania is a very scenic State, and as the gentleman well knows, many of the scenic beauties of that State have been ruined and I might even say raped by the people who have gone in there and dug coal from the hills and have drilled wells, oil wells, such things as that.

I personally feel that that is fine, the resources should have been developed for the good of the people who live there. I think that the gentleman would probably feel the same way if he were sitting in the debate and the development of the State of Pennsylvania was at issue.

Mr. SAYLOR. Sir, I will say what you say is correct and the people of Pennsylvania have seen the error of their ways.

Mr. HARRISON. The time of the gentleman from Pennsylvania has again expired.

Mr. RHODES. I will yield the gentleman from Pennsylvania 3 more minutes.

Mr. SAYLOR. I say we have seen the error of our ways and we have gone out of our way to correct those errors. I congratulate the assemblies of Pennsylvania in seeing to it that these people who now want to go in and, as you say, rape the scenic beauty of Pennsylvania, do so with the idea that they must pay an extreme penalty, and the penalty that the State of Pennsylvania exacts is so high that the people who

own the land cannot rape the scenery unless there is an unusual vein of coal. Even then unless they replace the ground the penalty is high.

Therefore, I am happy to say if I had been back in the Parliament when the Crown gave to William Penn his warrant for Pennsylvania, that I would have taken the same position.

I might say to you that assuming that everything you have said is correct, that there have been errors made in Pennsylvania, we have seen what has happened back East and we are going to see to it that the same thing does not happen to the folks out West.

In other words, we are going to try to save you from yourselves.

I yield back to you the balance of the time.

Mr. HARRISON. Mr. D'Ewart, do you have any questions?

Mr. D'Ewart. Thank you, Mr. Chairman. No.

Mr. HARRISON. Thank you very much, General Grant, for your testimony. If you will supply the names of those engineers which you would like the committee to call before we finish our deliberation, I would appreciate it very much.

General GRANT. Thank you.

Mr. HARRISON. The next witness will be Mr. J. W. Penfold, representing the Izaak Walton League.

Mr. ASPINALL. Mr. Chairman, before Mr. Penfold takes the stand, I would like to say a word or two. Joe is from Denver, the western representative of the Izaak Walton League. He is one of the most able and conscientious of all the conservationists. He was also a mighty fine companion on a trip down the Green and Yampa Rivers.

Congressman Saylor and I can testify to it. And also I might say to this committee that it is due to Mr. Penfold's efforts as much as any other individual's, that the spruce beetle project received the attention it has in the forests of Colorado.

Mr. SAYLOR. I would like to concur in everything you have said with regard to Mr. Penfold. You can get to know people when you deal with them in your daily lives, but you actually get to know them when you go out and camp with them.

It was a pleasure and a delight to travel with you and with Joe Penfold and his son, Mike, down the Yampa and Green Rivers over this area which is now under question, the Dinosaur National Monument.

The question has just been asked if I took the dude trip, or the dangerous trip. I will leave that up to Mr. Penfold. He arranged with the guide and, by the way, I might tell you men if you want to spend a few nights out with a few good stories in camp. I do not know of any better place to recommend to you than that. One of the places that will be gone, if you do build this dam.

Mr. ASPINALL. I have plenty more places.

Mr. HARRISON. Proceed, Mr. Penfold.

STATEMENT OF J. W. PENFOLD, WESTERN REPRESENTATIVE, IZAAK WALTON LEAGUE OF AMERICA, WHEATRIDGE, COLO.

Mr. PENFOLD. Thank you, Mr. Chairman. I appreciate those kind words from the gentlemen.

Of course, it is typical of Wayne Aspinall to be kindly, even when I don't seem to have enough sense to see eye to eye with him on some subject as this one.

My name is Joseph W. Penfold. I am western representative for the Izaak Walton League of America.

My headquarters are in Denver. My home is in Wheatridge, a suburb of Denver.

My duties take me throughout the Western States.

The league is a membership organization, not for profit, and supported by the dues of the membership which is scattered throughout every State and Alaska, mostly organized in local chapters and State divisions.

Colorado and western members of the league, and the league nationally, are not opposed to the development of the Colorado River. We endorse the fundamental purposes and objectives of the upper Colorado storage project. We recognize that if the West is to develop along sound resource lines there must be a sound and coordinated program for the conservation and use of the limited supplies of water. We recognize that much of the water originating at elevations up to and exceeding 14,000 feet and dropping nearly 3 miles on its journey to the sea can and should create energy to serve human, agricultural, industrial, and commercial needs.

We recognize that world demands as well as those of our expanding populations mean that America must plan for the optimum production of foods and fibers from all suitable lands including those suitable for irrigation. We recognize that under the 1922 compact there must be some such storage plan as that now proposed, if the upper basin States are to be able to make full beneficial use of the waters allotted to them.

Moreover, we in the league are thoroughly convinced that the arid and semiarid West must have a complete water-conservation program that extends from the very ridgeline of the Continental Divide to the sea. We believe in the full protection of timbered and grassland watersheds. We believe in furthering research and action programs designed to handle our timber stands so as to increase the yield not only of timber but also water. We believe we can do much more about the fearful problem of siltation than just provide storage space for it and blithely hope future generations will face the issue squarely.

We believe our engineers and scientists are fully capable of solving all of these matters. We are confident they even have the ability to figure out how the canyons of the Green and Yampa within Dinosaur Monument can be preserved and still fulfill the purposes of the upper Colorado storage project.

We are convinced that those canyons are worth preserving. We know that man does not live by bread alone. In saying that I am being no starry-eyed, impractical nature lover—there is nothing whatsoever impractical about a recreation business which amounts to hundreds of millions annually in Colorado alone. A business in Colorado exceeded only by agriculture in the aggregate.

We are faced with a seeming conflict at the moment. I don't believe the conflict has so much to do with any great difference in objective, as it has with the approach and some difference in the evaluation of various resources. We in the league are looking at the problem from the viewpoint that there are intangible values which are of compelling importance, values which should be preserved,

values which are worth the cost of preserving. Dinosaur National Monument is a prime example of one such value.

Let me repeat—we are not protesting development of the Colorado River. We are protesting one unit in one proposed scheme for that development. We are questioning the advisability of one unit, not in opposition to the program as a whole but in sincerely seeking the ultimate and highest development of a region in order that it may provide abundantly for all the elements that go to make up the kind of future we want to leave our successors.

I am not going to rhapsodize on the unique and irreplaceable beauties and inspiration values afforded by the magnificent canyons of the Green and Yampa. I'm not going to dwell on the precedent shattering effect if the Congress should decide to construct Echo Park, and so serve notice, which surely would not be intended, that the purposes and values of a dedicated national park system are valid only if the areas cannot serve some other purpose. These points can also be brought out better by others.

I do wish to take up some items which in the debates of recent years have seemed to me important and which I think may warrant your consideration.

As mentioned we are urging against one small segment of a vast project. Secretary McKay has recommended certain units of the overall plan for early authorization and construction. They total \$1,134,643,000. That's the initial phase. Just adding the balance of the proposed main storage dams and without computing costs of other participating projects which will come along in the future, we must add another half billion. That means a total projected cost of at least one and three-quarter billions.

Of this we are protesting Echo Park, and in the eventual overall plan Split Mountain, which together total but 15 percent of the whole program, moneywise. The projects we urge against would account for but 14 percent of the storage, 18 percent of the installed power capacity.

Nor are we urging that the West do without even that portion of storage and power. As will be brought out by others, it seems most likely that it can be provided by alternative dam and reservoir sites and/or other operating schemes.

Proponents say Dinosaur is inaccessible, therefore valueless. If we construct the dam there will be good access roads, everybody can see the area. Moreover, the lake created will permit them to see it from boats.

It's quite true that Dinosaur is relatively inaccessible. The roads are terrible and too few. The value is there, even though as yet untapped, in just exactly the same sense as there is a power value in running water, even though it has not yet been harnessed to a turbine. A dam will bring roads to be sure. But consider this: A couple million spent over the next few years for decent park roads would open the area to everyone. The cost for the dam construction access road alone is estimated at \$10 million or more.

With a reservoir people could get around by boat, but in acquiring that means of transportation they will have lost a major portion of what it was they came to see and enjoy.

Actually right now the canyons are accessible by boat. A river trip is practical, of relatively modest cost, and a whale of an experience for anyone.

They say there would be excellent sport fishing in the reservoir and a great recreation industry would develop around it.

There is little reason for optimism on this score. From what I can learn from the fisheries experts, the fishing will not be good. It will be less than mediocre. There won't be any bass fishing as at Lake Mead, the elevation is too high, the water too cold. Trout are stream spawners, there will be very little natural trout reproduction in the reservoir. This means then that if there is to be developed a good trout fishery it will have to be done through the planting of hatchery-raised trout.

One of the experts who should know told me that after the initial bloom of good trout fishing in Granby Reservoir, unit of the Colorado-Big Thompson project, is passed, even if the game and fish department planted every catchable size trout it rears in Granby, the fishing would still be mediocre. Granby when full holds some 500,000 acre-feet of water. Echo Park would hold over 6 million. Colorado last year produced about $3\frac{1}{2}$ million catchable-size trout in all its hatcheries. About 1 million pounds. They cost sportsmen close to \$1 per pound to produce. If we dumped that entire production into Echo Park, there would be but one-half a trout per acre-foot of water. So what reasonable chance for good trout fishing.

Proponents say there would develop on Echo Park a great boating type of recreation. Perhaps so, but let's look at the examples we already have in Colorado. Green Mountain, Granby, Taylor Park, and so forth. It is pretty easily seen that the boating type of recreation is tied very directly to the fishing. If the fishing isn't good, there isn't any boating. If the Denver papers on Friday report poor fishing in Granby, the lake is just about deserted over the weekend. And do the boat-livery people hate that kind of a report.

The proponents say the canyons of the Green and Yampa will not be damaged by flooding, matter of fact would be improved.

Everyone is entitled to his own opinion, but I sure do thoroughly disagree with that one. I don't believe I've ever run into anyone who has been down the rivers who would agree with it. Excepted, of course, are those who are completely committed to the proposition that Echo Park Dam must be built, whatever it takes.

They are apt to say that after all what is 500 feet of water in canyons that are 2,500 to 3,000 feet deep. Only the bottom section will be affected. Such statements are misleading. In most sections of the canyons the sheer walls are not over 400-600 feet high, then they shelve off onto benches or into slopes going on up to high points.

The beauty, charm, and scenic values of Dinosaur canyons have their base in the live river, the sandy beaches, the clumps of cottonwood, boxelder, and juniper, the overhanging cliffs, and the first few hundred feet of canyon wall. Inundate them and what remains will be of no more value in my opinion than the other hundreds and hundreds of miles of flooded river canyon that we now have or will eventually have in the Colorado drainage. .

Proponents say, of course, that in opposing Echo Park we want to bottle up the scenic resources and selfishly hang on to it for the rugged and selfish few.

Enough women, children, aged, and infirm have now made the river trips through Dinosaur to forever lay to rest the bugaboo that Dinosaur is only for the rugged and reckless. Anyone can go through, and safely, and have a marvelous time doing it. We want it saved, so the people will forever have that opportunity.

It should be obvious to all that the Izaak Walton League and all the other conservation organizations have been urging for years that the Park Service be granted such minimum funds necessary to construct and improve access roads so the public can easily and safely enter the monument and see its beauties, and provide for them at least the minimum facilities for human comfort and public sanitation.

In the foregoing I've tried to illustrate the type of claims which Echo Park proponents advance in seeking converts to their cause. I don't think they add up. However, please consider this, to whatever limited extent these conjectural claims of fishing, boating, recreation, and so forth at Echo Park are valid, they will be as valid on every other reservoir in the huge Colorado storage project and they will be valid on any alternative sites that might be substituted for Echo Park.

Leaving out Echo Park and Split Mountain the upper Colorado project will inundate some 600 miles of river canyon in the Colorado drainage. As has been brought out numerous times by Echo Park proponents, many of these other canyon areas are mighty impressive scenically. Those who claim that the canyons of Dinosaur will be vastly improved by inundation will have plenty of opportunity to demonstrate what they can accomplish with these other canyons.

We don't think it makes good sense to insist that we take the best, and a national park area at that, to experiment with. In that connection I am quite impressed with the recommendation that in connection with construction of Echo Park Dam the National Park Service be granted \$21 million of nonreimbursable funds for recreation planning and construction, archeological and geological work and so forth.

Dinosaur National Monument has been operated from the start on a pittance. Efforts to secure sufficient funds for the development and improvement of roads so the public can get in, see and use it, have been largely unsuccessful. The minimal Park Service staff, not even sufficient to assure protection against forest and range fire, has been unable to secure until just this past summer a navy surplus rubber raft, costing maybe \$100, to keep an administrative eye on over 100 miles of river canyon. Now we find the Park Service is offered \$21 million for development of the area after its prime values have been terribly reduced, a sum which is about two-thirds the entire Park Service budget for a year.

Please don't misunderstand me. Should the Congress authorize Echo Park and it be constructed, surely we shall want to utilize to the full whatever recreation potentials it has, just as we would any other reservoir area. I don't think it will retain the characteristics of either national park or a national monument. Maybe it will develop the characteristics of a national recreation area or a State recreational area. If so, none will be more happy in that turn in events than I. But let's not base such developments with the immense funds involved on recreation claims made now by those who seek to get Echo Park Dam authorized, regardless. Recreation development can come along as public use and public needs become manifest.

During the past several years while the Echo Park controversy has been debated here, there and everywhere, the proponents of the project have laid great stress on the point that the use of alternate sites would result in a greater evaporation loss. Reclamation people and others have usually stated this loss would total some 300,000 to 350,000 acre-feet annually. I understand Under Secretary Tudor now says that evaporation loss will be from 100,000 to 200,000 acre-feet.

Whatever the figure is, from a theoretical standpoint perhaps we cannot afford such an increased loss of water from its destined beneficial use. I say "theoretical" because I am sincerely wondering if this evaporation loss argument is not just a bit academic. I'm wondering if we may not be straining at a gnat and swallowing a dinosaur.

To illustrate why these questions are in my mind:

A Colorado Agricultural and Mechanical bulletin¹ lists a seepage loss of water between diversion point and point of delivery to farms in the seven Colorado Basin States at 22,927,000 acre-feet annually.

You might be interested in the breakdown of that figure:

Wyoming, 4,100,000 acre-feet, or 67 percent of the water diverted.
 Arizona, 3,200,000 acre-feet, or 60 percent of the water diverted.
 New Mexico, 1,566,000 acre-feet, or 55 percent of the water diverted.
 California, 11,430,000 acre-feet, or 46 percent of the water diverted.
 Utah, 733,000 acre-feet, or 20 percent of the water diverted.
 Nevada, 508,000 acre-feet, or 19 percent of the water diverted.
 Colorado, 1,590,000 acre-feet, or 17 percent of the water diverted.

A Bureau of Reclamation pamphlet² states that in 1949 of 15,650,000 acre-feet diverted into unlined canals and laterals on 46 Bureau of Reclamation projects, 3,900,000 acre-feet, or 25 percent was lost through seepage before reaching the farmers' fields.

Recently the president of Utah Aggies³ stated that of 4 million acre-feet diverted in Utah, only half reaches the farmers.

Whatever the total or average annual figure is, it seems conclusive that we are diverting a huge amount of water that is being lost before reaching the farmer and being put to the production of crops.

To illustrate further:

A California agricultural station bulletin⁴ reports an average irrigation efficiency of only 51 percent.

A bulletin⁵ out of Logan, Utah, reports irrigation efficiencies ranging from 24 to 51 percent with an average of 40 percent.

¹ Seepage Losses from Irrigation Channels, Rohwer & Stout, Colorado Agricultural and Mechanical College, Agricultural Experiment Station Technical Bulletin 38 (1948).

² Canal Linings and Methods of Reducing Costs, U. S. Department of the Interior Bureau of Reclamation. Government Printing Office 983909-52-2.

³ "Utah is wasting more currently available water than it stands to gain from the Colorado River and other reclamation developments, the Utah Water Users Association was told Tuesday at its capitol. . . ."

"Dr. Louis B. Madsen, president of Utah State Agricultural College, said Utah's total potential water supply is another 2.5 million acre-feet in addition to about 1 million acre-feet now being effectively used. It could add about 750,000 acres of irrigated land to the present 1.2 million acres, permitting the State to support an ultimate population of 1.7 million persons, he said.

"About 4 million acre-feet of water now is being diverted for irrigation, Dr. Madsen said, but half of it never reaches the farm and the balance is used at only 50 percent efficiency.

"He said canal linings could save a million acre-feet, and better farm management could put another half million feet to good use.

"New water would add the other million acre-feet—800,000 from surface sources and 200,000 ('more of a guess than an estimate') from underground veins, he said.

"We must never minimize the importance of further reclamation work, Dr. Madsen told the association, but we must also recognize the importance of better farm and canal management." (From Salt Lake Tribune, September 17, 1952.)

⁴ California Agricultural Station Bulletin 489.

Another Utah study⁵ shows a range from 18 to 60 percent with an average of 35 percent.

The Utah studies attributed this low efficiency to excessive application of water, uneven distribution over the land and excessive soil moisture content at the time of irrigation, or a combination. They point out other factors, of course, physical characteristics of the soil, irrigating methods and the supply of water available.

I'm certainly in no position to comment on such data except to say it looks as if we are rather generally inefficient and are wasting a lot of water.

Certainly a very substantial portion of this "lost" water finds its way back into the watercourses as return flow and is available for use further downstream. What percentage that may be I don't know, and haven't readily been able to find out from the experts.

But a lot of it isn't recovered as return flow. It is consumed by nonproductive vegetation, salt cedar and tules, as an example. It gathers in seep holes and sumps where it is dissipated by evaporation and transpiration. It is evaporated off the irrigated land itself. Furthermore, the return flow may have been badly deteriorated by accumulation of salts.

A Utah bulletin⁶ states:

The area of nonproductive land in the West has been greatly increased because of the rise of groundwater and alkali concentration which has resulted from low efficiencies in the conveyance and in the application of irrigation water.

Let me hurriedly add, before I am burned at the stake for heresy, these problems of conveying and applying irrigation water are recognized in the West. The experts in our colleges, Federal and State agencies, irrigation districts, and individuals are devoting time and attention to their solution. I am certainly not raising them here as any indictment of western irrigation or with any thought of discouraging the further irrigation which the West must have.

We are, however, talking about "loss" of water.

The Bureau bulletin mentioned has some interesting data on what that agency has already accomplished. It states that since 1946 through lining canals it is now saving 706,000 acre-feet annually and places a value on it of \$1,609,000.

The canal linings have also reduced maintenance costs by \$660,000. During the same period it has reclaimed some 5,900 acres of waterlogged land through use of canal linings and through the same method prevented the waterlogging of some 9,100 acres.

If I understand the Bureau of Reclamation figures correctly, the savings in water mentioned above resulted from the lining of some 600 miles of canal. The latest figure I have seen shows there are

⁵ Water Application Efficiencies in Irrigation, Agricultural Experiment Station, Logan, Utah, Bulletin 31.

⁶ Canal Lining Experiments in the Delta Area, Utah, Technical Bulletin 313, Utah Agricultural Experiment Station. This bulletin also states:

"Considering the welfare of all the people in an irrigated valley or State, the lining of irrigation canals may be valuable in three ways, namely: (1) Saving the water for use in irrigation; (2) reduction of the cost of damage of irrigated land; and (3) conservation of soil productivity. * * *

"Considering only the welfare of the stockholders of a mutual irrigation company, the lining is valuable only to the extent that it saves water for the use of the stockholder irrigators. Drainage systems are usually not under the management or control of an irrigation company and therefore the reduction of drainage cost does not directly influence the canal company officials. Likewise, the lands that need protection against waterlogging and alkali concentration are frequently far removed from the canals that sustain seepage losses."

some 70,000 miles of unlined canal and laterals in the Colorado Basin States.

If we assumed that by lining all the canals and laterals we could on the average effect even 10 percent of the savings reported by the Bureau, we would save some 8 million acre-feet of water annually, worth about \$19 million.

The Bureau figures the water worth \$2.40 per acre-foot. Guess in California it is worth a whale of a lot more than that.

Frankly it seems to me, and I am humbly aware of my very limited knowledge of such matters, the specter of some additional evaporation loss from use of alternate reservoir sites at this stage of history is pointless. If that estimated loss is of such compelling importance that on it hinges the fate of a fabulous national park unit, then it would seem we had better start doing something in a comprehensive way to prevent these other and far greater losses. Perhaps we might better provide public financing for the lining of canals and laterals, where there is such a tremendous water-salvage job awaiting us.

There is still another angle to these losses I have talked about.⁷ From strictly an irrigation standpoint every facility from the farmer's headgate to the dam has to be designed and constructed to impound, divert, and deliver perhaps twice as much or more water as will be put to beneficial use. I would hate to try to figure what those costs are, but I'll bet the cost of lining canals would be but a fraction of them.

Incidentally, a lined canal can be built smaller to carry the same quantity of water as an unlined canal and it would take out of production less usable land.

Again, please do not misunderstand me. I am not suggesting that avoidable water losses one place provides any excuse for permitting a water loss somewhere else.

I do feel sure, however, that these widespread water losses throughout the Colorado Basin make one wonder whether indeed the Echo Park Dam site is pivotal and whether on it hinges the future of the upper basin States and the West.

In conclusion may I say that I have been in the Dinosaur Monument many times. I believe I am pretty familiar with it. It is my firm conviction that if it is preserved for the purposes to which it has been dedicated, in the long run it will serve the people of the region and the Nation to its maximum and to their best good.

We urge respectfully that the Congress delete Echo Park from its present position as a priority unit in the upper Colorado storage project and that it be placed at the very bottom of the list.

We urge likewise that the engineers and other scientists in Government be directed to devote their great talents to finding ways and means whereby the purposes of the overall project can be achieved without ever having to destroy the prime values of Dinosaur National Monument.

In the future, if their abilities and ingenuity have not been adequate for the task, if nuclear energy, solar energy or energies not yet

⁷ Lower Cost Canal Linings, U. S. Bureau of Reclamation, Denver, Colo., June 1948, p. 66. "Seepage losses from canals and laterals represent a loss not only of valuable irrigation water that should be conserved for productive agricultural use, but also a considerable loss in additional costs of construction from which no return is received on the investment. Storage reservoirs and dams must be constructed of size to impound not only the useful water but also the water that will be lost in transit to the farms. Canals and laterals must be designed with sufficient capacity not only to transport the useful water but the water that will be lost through seepage as well. • • •"

dreamed of, will not have come to our aid, the Echo Park Dam site will still be there. I think even the most staunch proponent of Echo Park will agree that the damsite one hundred years from now will be worth incalculably more than it is worth today.

In the meantime, there is enough in Glen Canyon, Cross Mountain, Flaming Gorge, and the other storage units, and in the highly important participating projects to keep us all mighty busy for many, many decades.

Mr. PENFOLD. That concludes my statement.

Mr. D'EWART. Does that finish your statement, Mr. Penfold?

Mr. PENFOLD. Yes, sir.

Mr. D'EWART. I have 2 or 3 comments I would like to make.

First, I cannot agree with you that this establishes a precedent. I think that was rather completely covered in the record this morning, the various items that parks have either included various kinds of projects that you mentioned, or have been placed there following their being set aside.

This was placed in the record this morning and I don't want to burden the record again, but this is not a precedent.

I think I cannot agree with you on that.

The next point I would like to mention is that my experience in regard to fish in reservoirs does not agree with yours. You probably have had wider experience than I have. But I have visited a lot of the reservoirs all the way from Wilson Dam down on the Tennessee, which is an artificial lake where I think you will agree with me that fishing is excellent, to High Alpine Mountain lakes where the trout are very fine, including the golden trout, where they occur at ten thousand feet altitude.

I have seen the fish at Fort Peck where there is excellent fishing in a huge reservoir that is 100 miles long. I think in part perhaps because the food supply is so plentiful in these new reservoirs that is perhaps why fishing is so good quite often in them. It might be as the food decreases as you indicated, it makes a difference.

The point is that my experience does not agree with yours that fish will not thrive either in artificial lakes or in high reservoirs. My experience is that they will thrive in both places.

Maybe your experience is larger than mine.

Lastly, I think I concur with you at least in part in regard to the wasted use of water. I happen to have an irrigated farm in Montana and you make me rather ashamed of the way I have managed my own irrigation system.

I think I would have to plead guilty to the charges you make. But let me tell you, Mr. Penfold, that in spite of what you think, it is a terrifically expensive thing to line a ditch, especially in a cold country where you have to make that concrete stout enough to resist freezing and thawing. We have various ways of doing, with bentonite, but even with bentonite we have to ship it in from Wyoming or some such place as that.

If you do that with concrete it is just beyond the ability of the ordinary farmer who owns his own distribution system to undertake.

Now, we can improve our ditches by keeping them clean of weeds and thrash and things like that and improve the capacity very greatly.

You can seal the rocks where there are cracks and things like that.

But to line those ditches is totally beyond the ability of the ordinary privately owned irrigation farmer to accomplish. As we would like to, I doubt in the northern latitudes that would pay interest on the investment.

Would you like to comment on the statements which I have made? I will give you a chance to reply because I have disagreed with you twice and agreed with you once.

Mr. PENFOLD. I would like to make a couple of comments, Mr. D'Ewart. As to fishing in artificial reservoirs, there are two prime factors. One, you have to have successful spawning.

Of course, the lakes of the TVA—I am familiar with them; I worked down there for a couple of years—they have an entirely different use cycle of their reservoirs which is adaptable to the types of warm-weather fish that they have there and it has been very successful.

Mr. D'EWART. You will agree with me it is successful there?

Mr. PENFOLD. Yes. It has to do with spawning and it has to do with food production.

In our widely fluctuating reservoirs in the West, particularly the cold waters, the trout waters, you have a limited growing season to start with, that is for the vegetation which is the basis of the food chain for fish.

If I am sounding like an expert, it is strictly coincidental because I am not one.

If we draw down water 10 or 15 feet and as I understand it from experts, practically all or a tremendous proportion of the foodstuff produced in water is within the top 20 feet where you have food penetration of light—I am assured by folks that the fluctuating schedule in Echo Park will be sufficient to largely do away with production, we can figure that it will produce food for a period of years when the terrestrial vegetation that is in the reservoir basin is covered until it is used up.

There is another factor, of course, in Mr. Harrison's State of Wyoming. Up there at Pathfinder, it has several very productive trout streams that come into it that provide the spawning possibilities for trout.

That lake also has been drawn down a couple of times so there has grown up additional terrestrial vegetation which in turn roots and provides food.

So it has held up pretty good.

Our high mountain natural lakes, of course, are a different situation entirely. Some of them are dandy.

Mr. D'EWART. In the case of Fort Peck probably the water level is not drawn down or raised to the extent that it interferes with fish propagation.

Mr. PENFOLD. I am not as familiar with Fort Peck as I should be.

Mr. D'EWART. In fact, the fish have multiplied so they have considered commercial fishing in order to hold them down to the food supply.

Mr. PENFOLD. In connection with your other comment, on the cost of lining canals and laterals, just a couple weeks ago I spent a couple of hours with a reclamation engineer discussing this and related problems. He told me that in connection with a project that maybe is before your committee now, so I won't mention it by name, that he

believes that he can line all the canals in connection with that project at an approximate cost of 35 cents a yard. That is clay which he believes is highly superior from a maintenance standpoint as you mentioned, than concrete, so he told me.

Mr. D'Ewart. Perhaps the Bureau can teach us, who have to repair our own canals, how to put in these linings. I hope so.

Mr. MILLER. Mr. Penfold, in relation to the Dinosaur National Monument, when it was enlarged the reservation was made by Reclamation for the building of the dam in the Dinosaur National Monument.

Mr. PENFOLD. There was reservation at the Brown Park site.

Mr. MILLER. And that has also occurred in a number of other dams in the national parks?

Mr. PENFOLD. Two or three that I can recall.

Mr. MILLER. Yes; more than that.

Mr. D'Ewart and I placed them in the record this morning. There are quite a number. So this is nothing new, the building of a dam in a monument or a park, and there was reservation made relative to building of a reservoir or dam.

Now, you and I, I think, would agree on the greatest good for the greatest number of people. There is no question that the folks of the West seem to be in favor of this.

I think in your remarks as I went over them, Mr. Penfold, you mentioned several things. One was wilderness resource development versus water resource development, or recreational area development.

Now, if you were going to vote on these, how would you place those three things in order of priority? The wilderness resource development, water resource development, or recreational area development? Which do you think ought to have priority for the greatest good for the greatest number of people?

Mr. PENFOLD. Could I answer that question this way, which is no answer, and I don't mean to be impertinent. That is like asking me if I had to make my choice whether I was going to give up drinking water or give up eating.

I think they are all involved. I think all those things are involved, and I think that is the kind of future that we want to have for our country.

Mr. MILLER. Do you not want to eliminate the water resource development? You do not want a dam built in the national monument?

Mr. PENFOLD. That is correct.

Mr. MILLER. You would eliminate one of these, then?

Mr. SAYLOR. Doctor, would you yield to me at that point?

Mr. MILLER. Let me finish, if I can.

You mention here the wilderness resource development, the water resource development, plus recreational development. As members of the committee and Members of the Congress we have to sort of decide which has the priority.

I am wondering if you thought that the wilderness resource development, or the recreational area development, should be placed ahead of water resource development.

Mr. PENFOLD. Well, sir, I thought that in my statement I had made it perfectly plain that we are not opposed to water development. We are thoroughly in favor of water development and we hope that your

committee and the Congress does permit the upper Colorado storage project to proceed.

We are opposed to one unit and we believe that the purpose, all of the purposes, of the project can be carried out without going in there.

Mr. MILLER. Yes, I see what you mean.

In other words, you feel that the engineers can find some other alternative sites.

Mr. PENFOLD. I think we should exhaust every possibility.

Mr. MILLER. Of course, it has been examined over a number of years, has it not, the possibility of other sites?

Mr. PENFOLD. I am not sure to what extent it has, Dr. Miller.

Mr. MILLER. You have made a good statement here. I think it is an excellent statement.

Of course, I know something about lining canals. I also have a farm that is irrigated, and when we start lining canals as we did on one of the small main canals, we found out the cost was so prohibitive we had to grow something else besides ordinary crops to make it pay for lining canals.

So I hope the Izaak Walton League does not get into the business of telling the farmers to go out and line the canals so there won't be too much seepage of water.

It is a pretty expensive proposition. I speak from experience.

Mr. HARRISON. Mr. Engle.

Mr. ENGLE. I will pass at the moment.

Mr. HARRISON. Mr. Saylor, do you have any questions?

Mr. SAYLOR. Mr. Penfold, I want to congratulate you on the statement you have made. I wanted to point out that you, by your very statement, have shown that you and your organization are not opposed to water development at all.

In fact, you have urged this committee in your statement to proceed with water development in the upper Colorado River Basin.

What you have pointed out is that you are opposing what amounts to about 14 percent of the overall project and that especially in light of the fact that we have had testimony here that there are over 200 prospective dam sites and by the Bureau's own admission many of them have not been investigated.

Now, Mr. Penfold, from time to time the proponents of this bill have directed particular attention to the beauties of Echo Park Dam site and Dinosaur National Monument, which will be made available if this dam is built.

I would like to have you come forward here and look and tell us whether or not the camp called G-1, referred to by Mr. Dawson in calling General Grant's attention to it, whether or not the left-hand picture shows the Echo Park Dam site or shows the Echo Park Canyon unaffected by any dam?

Mr. PENFOLD. No. This is taken below the Echo Park Dam site, I believe. This is Harpers Corner. This is looking upstream at the dam site.

Mr. SAYLOR. This water you see here in the picture on the left-hand side is what has been referred to as Whirlpool Canyon; is that correct?

Mr. PENFOLD. Yes.

Mr. SAYLOR. Now, you testified here that these are not sheer walls and that they do not go up for several thousand feet, but go up for

about 500 feet and then spread out into a series of benches and widen out.

Does the picture here in G-1 on the left bear out your testimony in showing a sheer canyon at the bottom and then flaring out into benches?

MR. PENFOLD. Whirlpool Canyon, except just about in the general area of the dam site, does not have any sheer walls, as I recall it.

MR. SAYLOR. Now, the picture on the right there placed in ink, the proposed dam site at Echo Park, does that proposed dam site come up to the first bench?

MR. PENFOLD. I would assume that it did. I would not know where the top of that dam would come. I have been down there. I could not estimate, I don't know.

It is going to use up pretty much of the sheer wall on both sides.

MR. SAYLOR. And the picture as presented by the Bureau of Reclamation, the right-hand picture on G-2, the ink sketch, shows that it comes up on both sides of the canyon to the top of the sheer wall; is that correct?

MR. PENFOLD. That is the way it looks in the picture.

MR. SAYLOR. Now, Mr. Penfold, you have attached to your statement a series of references down to No. 7. Are those the items which have been referred by you in your statement to verify the fact that the University of Utah, other agricultural colleges, and the Department of Interior and Bureau of Reclamation have already shown that there is this tremendous loss of water in irrigation features in the Colorado River Basin now?

MR. PENFOLD. Yes. I thought that being strictly an amateur in such things it might be proper to give a few references and quote people who are experts. I am not.

MR. SAYLOR. And if you can read as an individual, you can read these reports correctly. The Bureau of Reclamation has already admitted that they are only putting about 25 percent of the water at the present time on the land; is that correct?

MR. PENFOLD. That is what the report shows.

MR. SAYLOR. Then it is a sort of bugaboo and a new idea that they are waving now on this evaporation feature which has suddenly come along when forced down in the corner, they have to find some other excuse; they finally for the first time have come up with evaporation losses.

Is that the conclusion you come to?

MR. PENFOLD. I would not want to put thoughts in their minds or words in their mouths. I do not know.

MR. SAYLOR. Now, as to this \$21 million that they have suddenly asked for in this project, does it seem rather strange to you that the Bureau of Reclamation has suddenly asked for this one feature an item that amounts to two-thirds of the annual budget of the Park Service to be devoted to Dinosaur National Monument?

MR. PENFOLD. I personally think it is way out of line.

MR. SAYLOR. In other words, this amount of money which they are spending is out of line, considering all of the other national parks and monuments which we have?

MR. PENFOLD. I would certainly think so.

MR. DAWSON. Will the gentleman yield to me there?

MR. SAYLOR. Yes.

Mr. DAWSON. It is my understanding that the National Park Service requested \$18 million in 1950, and due to the increased cost they raised it up to \$21 million. So it is just simply the park department's request.

Mr. SAYLOR. They have seen what they consider the inevitable. They have been told what is to happen, so they have asked for what money is necessary in their opinion.

Mr. DAWSON. I am glad to hear you say it is the inevitable.

Mr. SAYLOR. Well, in their opinion; not in mine. I am sure that there has not been a shovelful of dirt turned over yet at Echo Park, and I hope I never live to see the day that there will be.

I certainly hope to live to see the time when the Upper Colorado River storage project will be built up outside of Echo Park and Split Mountain.

Now, I think you explained in response to Mr. D'Ewart that the type of fishing which would occur at the elevation would not be bass fishing; is that correct?

Mr. PENFOLD. That is my understanding.

Mr. SAYLOR. Bass can grow down in Lake Mead and other lower lakes at lower elevation, but they cannot grown at this high elevation?

Mr. PENFOLD. They don't do very well anywhere in Colorado. We have tried them and they have not done well.

Mr. SAYLOR. Have these other dams that have been referred to with regard to having maintained a large supply of fish, have those dams had natural feeders, feeding streams flowing into them?

Mr. PENFOLD. Yes, some of them.

Mr. SAYLOR. And I think some of the others you explained are natural lakes and have had natural feed and are not harmed by the drawing down of water as will be necessary for a power dam.

Mr. PENFOLD. Yes, sir.

Mr. SAYLOR. That is all, Mr. Penfold.

Mr. HARRISON. Mr. Engle?

Mr. ENGLE. Mr. Penfold, I want to compliment you on this statement. I am sorry I was not here when you delivered it, but I have read it very carefully since I came in. I want to say that it stands in very bright comparison to some statements that have come in from the Izaak Walton League, before this committee which I had occasion to characterize as unworthy of the kind of organization with the influence that the Izaak Walton League has.

I understand that my public relations with the Izaak Walton League throughout the West was not particularly aided by some of the comments I made at that time.

So now that we get a good one, a statement which I regard as objective and which seeks to be factual and which tries to be persuasive, I want the record to show that I have some good things to say about that kind of presentation.

I am glad that you have made it.

Mr. PENFOLD. Thank you.

Mr. ENGLE. Now, without agreeing with everything you say, but having in mind the very thought that you urge on page 9 of your statement where you state your conclusions, I asked Mr. Tudor whether or not the Echo Park project was such an essential part of the upper Colorado Basin development that removing Echo Park from the project would be like taking the engine out of the machine.

Mr. Tudor responded that it would not be exactly like taking the engine out of the machine, but it would be like taking the pistons out of the engine.

What I was driving at was whether or not Echo Park is so essential as to financial feasibility and the economics of upper Colorado River Basin development that the whole project would rise or fall on the vote of this committee as to whether or not we included it in the project.

Of course, that puts in issue the very thing that you suggest in your conclusions, namely, that we go ahead on something else.

Perhaps Green Canyon, Flaming Gorge, Cross Mountain, and perhaps some participating project, and leave Echo Park to a little later and more deliberate consideration, bearing in mind as you say your conclusions, that the dam site will still be there if later on we consider that subject.

But if it is true that the whole project collapses and Echo Park is necessary to the financial feasibility of the entire project, if it is indeed like taking the pistons out of the engine or engine out of the automobile, then we will be squarely up against the question of whether or not we have it to put it in now or can defer this thorny problem until a little later.

That brings me to the question I want to ask which is this: Are you prepared to say now what the position of your organization will be if it does develop conclusively, or at least by a substantial and heavy majority of engineering opinion, that the upper basin is wholly and financially infeasible without Echo Park, that it is in fact taking the pistons out of the engine?

What would be the position of your organization in that case? Do you know now?

Mr. PENFOLD. Mr. Engle, I, of course cannot foretell what the position of the league might be at some indeterminate date in the future, 5 years, 10 years, or 20 years. I think my own position would be, and I rather expect that the league position would be just about the way I have stated it there in my conclusions, if when everything else has been exhausted, when it has been determined that, out of 110,000 square miles in the upper Colorado Basin, out of that 110,000 square miles this 6,000 acres, upon it hinges the wealth, future, prosperity, the water, power, everything hinges on this 6,000 acres, within Dinosaur National Monument, then I will say, "Yes, we will have to give it up; it is a pity."

But I cannot for the life of me believe that that 6,000 acres is that important. I am convinced in my own mind that if we can—and I say we, meaning not only the Bureau of Reclamation, but the other agencies of Government and the people themselves—approach this problem from the standpoint of "This is something we want to hang onto, this is something that is important, this is something that is worth trying to save," and if I can go on, it will partially answer a question that Mr. D'Ewart made, and Dr. Miller.

I think that the precedent involved in this is a whole lot more fundamental than just the national park system. I think when we take the position that federated property, property dedicated to something beyond commercial advantage, when we take the position that

we can afford to get rid of it, when we take the position that we can afford to get rid of churches and use that property for something else because we can have the services over television, when we make that kind of a decision it is a precedent that goes far beyond the national park system.

It is a precedent that is going to affect our approach to all these matters of fine things in life. That is my personal opinion. So the fact that the 1938 proclamation provides the withdrawal for Brown's Park, that other legislation or proclamations affecting other parks have provided that maybe a dam could be built, I do not think is really the present that I am getting at.

Mr. ENGLE. Let me say this to you, that the case would be a lot easier for this committee and certainly a lot easier for this bill on the floor of the House, if the upper Colorado project would be initiated without Echo Park and with other elements which would give the upper Colorado Basin a start on the kind of development that they think they ought to have and which we all agree they should have.

But I do not know just what is going to happen if Interior officials keep walking in here and saying we cannot take out Echo Park, that it would be like taking the engine out of the automobile. It puts us in a position where we either have to authorize a project which the Interior officials say will be on wobbly financial grounds, and by taking out Echo Park, go across the bridge and perhaps face the defeat of this legislation, which is not altogether improbable, if Congress takes out Echo Park.

Mr. HARRISON. The time of the gentleman from California is expired.

Mr. Berry?

Mr. BERRY. Mr. Chairman, I have given my time to the gentleman from Utah, Mr. Dawson.

Mr. ENGLE. If the gentleman can tell us how to get off the horns of this dilemma, I would certainly like to hear it.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. I, too, wish to compliment you on your constructive approach. I don't understand that you mean by your testimony relative to the possibilities of fishing in Echo Park that there wouldn't be any fishing in the Echo Park Reservoir if it is constructed. You don't mean that, do you?

Mr. PENFOLD. Pardon?

Mr. ASPINALL. I say, you do not mean that there would not be any fishing in Echo Park if reservoirs are constructed?

Mr. PENFOLD. I don't think it will amount to much to the point where it will attract any large number of people.

Mr. ASPINALL. Will you state again your reasons for that? I don't follow you, because after all, fishing in lakes of Colorado is done at altitudes that are greater even than the altitude of this proposed reservoir.

Mr. PENFOLD. Well, I was speaking of altitude and the coldness of the water, Mr. Aspinall, strictly in terms of some of the claims that have been made that Echo Park will be another Lake Mead. The fishing in Lake Mead which has been quite excellent is bass fishing. It is not trout fishing.

Mr. ASPINALL. But the fishing below Hoover Dam is largely trout fishing?

Mr. PENFOLD. That is right.

Mr. ASPINALL. How deep is the water there?

Mr. PENFOLD. Below the dam?

Mr. ASPINALL. Clear down to the next reservoir.

Mr. PENFOLD. I can't answer. I have never fished it.

Mr. ASPINALL. Well, the facts are, of course, that they do have trout fishing in those cold waters and the facts are that Colorado's best trout fishing as far as the lakes are concerned is in altitudes of 9,000 feet or better where the water would be just as cold as the water in this proposed reservoir. It will not be as deep. I will admit that.

Mr. PENFOLD. I think you still have misunderstood me. It is not in my opinion the temperature or the elevation of Echo Park that will mitigate against there being trout fishing in it. I was using altitude and the cold temperature of the water in connection with bass, not with trout. Our experience with fluctuating reservoirs in Colorado has not been good. The game and fish department, and the Fish and Wildlife Service both have information in connection with Green Mountain in the Colorado-Big Thompson project.

Mr. ASPINALL. Are you advising the committee that trout fishing in Green Mountain Reservoir and Granby Reservoir and Shaddow Mountain Reservoir is not good?

Mr. PENFOLD. If I recall the figures correctly, and I am not sure that I do so I wouldn't want to be hung by them, in Green Mountain, if I recall correctly, 2 or 3 years after it was first filled, and all these reservoirs seem to go through a cycle, the fishing was excellent, and on the average a person would catch a fish about one an hour or something of that sort. It has passed its peak. It is now on the down-grade.

Now it takes in the neighborhood of 5 to 6 hours to catch a trout.

Mr. ASPINALL. But the reason is not because of the location of the body of water. The reason is because of the terrific load placed upon it by the people who are fishing. The numbers of people have so increased in Colorado as far as the fishing resources are concerned, that one does not have as much sport as he used to have. Do you mean that this is just another heavy load to be put upon the Game and Fish Department of Colorado? I might not have any quarrel with you on that.

Mr. PENFOLD. I don't believe that at Green Mountain the falling off of fishing has been due to the pressure placed on it by the fishermen. I think it is due to the fact that the lake does not produce fish. The game and fish department has had a very extensive stocking program in Green Mountain, but even that has not maintained the fishing. So I don't think, sir, that it is a question of fishing pressure on Green Mountain.

Granby, of course, just now, and it has only been filled for 2 years, is going through its boom now, and if weather conditions are right, it is pretty darn good fishing.

Mr. ASPINALL. I admit this is a minor matter in considering this legislation. But I do want to clear that up with the Game and Fish Department of Colorado before I get through with it. As I understood the testimony, it was that you did not wish to shut the door absolutely as far as possible construction of the dam at this place was

concerned. In other words, if it was found to be feasible, and it is the only place where such feasibility exists, whether it is in 5 years or a hundred years, the second phase or third phase, that General Grant referred to, then you might not raise an objection, your organization. Let me ask you this, inasmuch as you do speak for the Isaac Walton League, what is the position of the chapters of the Isaac Walton League in the area affected by this project?

Mr. PENFOLD. Well, I can say this, Mr. Aspinall, and perhaps you are familiar with the fact that the Grand Junction chapter at one time had endorsed Echo Park and at another time and since has rejected it, I would say that—

Mr. ASPINALL. It has not disapproved of it, though, but it has withdrawn, as I understand, its former recommendations as far as the organization is concerned.

Mr. PENFOLD. That is correct. And to be perfectly frank with you and the committee, I would judge that in the Grand Junction chapter, the opinion is about equally divided. It could swing one way or it could swing the other. But I might add this, that about a week ago this past Sunday—when there was the so-called midwinter meeting of the Colorado Division, to which were delegates from all of the 30 or 35 chapters in the State—I was called upon to discuss Echo Park, and there briefly I gave them substantially what I have told the committee this afternoon. There was 100-percent agreement that that is what I should say for them to the committee here.

Mr. ASPINALL. Let me ask you this: How soon do you think that the Federal Government would recognize the possibilities of Dinosaur National Park as it is presently constituted and appropriate sufficient money to make the area available to the public?

Mr. PENFOLD. I cannot answer that. I don't know.

Mr. ASPINALL. Would this be a fair question: For the next 20 years, under the present situation, more than likely not over 250 to 350 people will enjoy the canyons annually?

Mr. PENFOLD. Are you asking that as a question, sir?

Mr. ASPINALL. Yes. Would that be a fair question?

Mr. PENFOLD. Well, it is a fair question. I do not think it is the case. The Park Service has, just this past summer had some funds and has done some work on roads. It has also had some cooperation from the Utah counties and the Colorado counties involved, which has been a decided improvement and has opened up new territory, for example the road out to Harper's Corner. I would say, judging by the interest that I find, that the number of people not just going to the monument headquarters and looking at the dinosaur quarry, but actually visiting the canyons and taking river trips, is going to continue to increase.

Now, whether it will be 500 next summer or a thousand next summer or 1,500, I don't know. But I do know in my office the contacts that I get, the people who call me, the people who drop in to find out how they go about getting over there, is increasing. Last summer I expect there were at least 3 or maybe 4 parties that took boat trips. Two of them at least I know went entirely on their own, without anyone else, and just got a rubber boat and went on down there. Of those 4 that came in to get specific information, 3 of them have come back and reported to me that they did go down and they are just as sold on it as I am.

Mr. ASPINALL. I would like to see what your appreciation is on these matters, Mr. Penfold. If the road to Harper's Point was completed, and that is as far as you could go, would you get more or less beauty out of the canyon if you had reservoir water down there?

Mr. PENFOLD. As far as I am concerned, you would have less with the reservoir.

Mr. ASPINALL. If you were called upon to compare the beauties of the two canyons, Gunnison Canyon below the Curecanti site, and the Lodore Canyon or Yampa Canyon, either one, at their highest place, which would be the most beautiful, in your opinion?

Mr. PENFOLD. I wouldn't try to compare them. I don't think they are comparable any more than the Black Canyon is comparable to the Grand Canyon. They are entirely different. They are each extremely beautiful in their own way. So is Lodore Canyon and the canyon of the Yampa.

Mr. ASPINALL. You would like to keep them all in the state in which they are, including many, many others, just for personal appreciation itself?

Mr. PENFOLD. No, sir. That isn't my position. I fully recognize that we are going to have to flood a lot of canyons. This project, without either Echo Park or Split Mountain, will flood 600 miles of canyon. Just the other evening some of us went and saw that Cinerama, whatever they call it, and they flew down in the Lee Ferry-Glen Canyon country. By gracious, that is the closest look I have ever had at it, and it is beautiful. It is going to be flooded. So we are not saying that all of these have to be saved. But let's at least save prime examples which, after all, was why the President figured it was important to issue his proclamation for Dinosaur, because it is unique and worth preserving.

Mr. Aspinall. I will just close with this: I hope the next time you get to see a pretty canyon, that I can go along with you.

Chairman HARRISON. Mr. Dawson?

Mr. DAWSON. Mr. Penfold, following up the line of questioning my colleague from California had, are you suggesting that if the Bureau of Reclamation's conclusions as contained in their modified report be reviewed by the Bureau of the Budget from the technical standpoint, they have the engineers, too, to check into those matters, as prescribed under circa 37 of the act of December 31, 1952, and the 1944 Flood Control Act, that is, the report from the engineers has been complied with, are you now suggesting that Congress should adopt a new and different procedure and require further assurance and information to ascertain whether or not these 400 engineers in the Bureau of Reclamation have made a mistake?

Mr. PENFOLD. I am not suggesting, Mr. Dawson, that the engineers have made a mistake. I am suggesting that I do not believe they have gone far enough in trying to determine the possibilities of not only alternate sites perhaps also alternate operating arrangements, so as to provide the benefits of the project without Echo Park.

Mr. DAWSON. Of course, this has been under study for a good many, many years, as you well know. And when the matter came before the Congress in 1952, or at least it came before the Department, at that time a new study was ordered to be made. As I say, there are some 10,000 employees in the Bureau of Reclamation, and 400 engi-

neers at Denver alone, who have been investigating these sites and working on them.

Now, if, as Mr. Tudor says, this is like taking the pistons out of the engine if we delete Echo Park, we must say that those engineers are all wrong and we must again go ahead and study, which simply means that we are just going to kill time and eventually lose the entire project.

Mr. SAYLOR. Will the gentleman yield at that point? I am glad to know that the Denver engineers have been a part of this, because up to this point all we have heard from was Salt Lake.

Mr. DAWSON. I would be most happy to answer that question before you go. I think if the gentleman will check with the Reclamation Department, you will find out that the engineering data as to dams and technical phases are prepared in the engineers' office in Denver, and not in the regional office.

Mr. SAYLOR. I am glad to know that, because so far all we have had was the folks over on the other side, from Salt Lake.

Mr. DAWSON. I regret to see you leave the hearing. If you would stay, you would pick up much valuable information.

Mr. ROGERS of Colorado. Will the gentleman yield?

Mr. DAWSON. Yes.

Mr. ROGERS of Colorado. Mr. Dexheimer has been in the Denver office for years and years before he was appointed to the Commission. At least that is one man from the Denver office who is here to testify. That is for the information of the gentleman from Pennsylvania.

Mr. DAWSON. You point out, Mr. Penfold, that only 14 percent of the storage is in Echo Park and 18 percent of the power. But if you will examine the testimony of the engineers who have testified here, that isn't just a reflection of the importance of Echo Park. It is truly, as Mr. Tudor says, the pistons in the engine, because it is the key, an integral part of these other dams that have been referred to. I think there was some testimony to the effect that Cross Mountain probably would not be feasible without Echo Park and Glen Canyon. Gray Canyon would not be feasible nor would some of these others. To insist that we go on and on forever with investigations, I think is just tantamount to saying "Well, let's forget about the project."

I don't know whether you agree with those views or not.

Mr. PENFOLD. No, sir; I don't.

Mr. DAWSON. Well, then, that brings us back entirely to the question of whether, in assessing these values, that is, recreational values as compared, we will say with the consumptive use of water, that you would feel, and your organization, that the reclamational values would prevail, is that correct?

Mr. PENFOLD. No, sir; that isn't quite correct. We believe that in this country of ours, the greatest in the world, and the greatest the world has ever known, with the greatest advantages and abilities for working out these problems, that there is room for both. There can be consumptive use and there can be completely nonconsumptive use which is recreation. Recreation doesn't use a drop of water. Every drop of water for recreation can be used a hundred percent by some other consumptive use. So I don't think it is a choice. I think it is only a choice when we come to a specific proposition of this sort, then we have to decide at one time the whole proposition for the

upper Colorado storage project. So I am not suggesting that recreation must take precedence over all other uses, consumptive or non-consumptive.

Mr. Dawson. I have here a book from the Library of Congress, Our Federal Lands, discussing the formation of national monuments and national parks. Here is a statement I think which is quite significant by Stephen T. Mather, who was Director of the National Park Service back in November of 1927. He makes this significant statement:

Areas whose principal qualification is adaptability for recreational uses are not, of course, national park caliber.

In the same book, discussing the qualifications of national monuments, he says:

National monuments are areas preserving landmarks, structures and objects, confined to the smallest area compatible with proper care and management.

Do you feel that this area you are talking about, and I am referring to the enlarged Dinosaur area, is anything other than for recreational purposes and scenery? What about the statement that I have just read? How does it size up with that?

Mr. PENFOLD. I am not sure that I follow you exactly, Mr. Dawson.

Mr. Dawson. Well, the statement generally is that national monuments are set up to conserve certain peculiar phenomena which occur that might be preserved for the public, rather than taking in a vast scenic area, which would ordinarily be a national park. Don't you feel that by expanding the monument to 200,000 acres as was done in 1938, that that is going beyond the scope for which the national monument act, the Antiquities Act, was set up?

Mr. PENFOLD. Personally I can answer that, though maybe it is not a complete answer. My organization feels, and I feel very strongly that the canyons of the Green and Yampa are fully of a quality that they should be placed in a national park, they should be made a national park.

Mr. Dawson. Because of the scenery?

Mr. PENFOLD. Yes, sir; because of the scenery, because of the unique character of those canyons.

Mr. Dawson. Yes, that would be made into a national park. But I am talking about a national monument. Does that comply with the provisions that were set up in the Antiquities Act?

Mr. PENFOLD. I see what you mean. I am not a lawyer. I don't know. I could not answer that. I could answer it this way, perhaps: Certainly from the standpoint of the 80-acre quarry of Dinosaur bones, there was no need to add the canyons of the Green and Yampa, and I don't believe that that is what the Department of the Interior and the President had in mind when they set them aside.

Mr. Dawson. In other words, we will both concede that there are no remains of prehistoric animals or fossils of the dinosaur type up these canyons?

Mr. PENFOLD. Well, I don't know whether there are or not, sir.

Mr. Dawson. I think General Grant conceded in his statement that that wasn't the claim of the conservation group.

Mr. PENFOLD. That is right.

Mr. Dawson. I am glad to hear you quoting figures from our Utah Agricultural College and placing such reliance on them. I think you

are substantially correct in the statements you have made. I think you might also be interested to know that the man who did all that research work up there and who compiled these figures that you have just read, is sitting here on the front row, Mr. George Dewey Clyde, and he is the man who testified in favor of this project. So we are happy to know that you are banking on his figures.

Mr. PENFOLD. Well, he has the reputation of being one of the topmen in that field, so I would have no choice but to accept his opinion on those things.

Mr. DAWSON. I am glad to hear you make that statement.

Yesterday, I believe it was, when one of our witnesses was testifying in regard of the attitude of the farmers union group, my colleague from Pennsylvania raised the question as to whether or not he had polled his membership for their views on this question, insisting that there should have been a plebiscite taken of their membership to see that they were in full agreement on this subject. I would like to ask you the same question.

Mr. PENFOLD. No, sir. We have not polled our membership. That is not the way the Izaak Walton League operates and arrives at its policies and positions on matters. Under our constitution, bylaws, and articles of incorporation, so on and so forth, the governing body of the Izaak Walton League is the national convention. It is the national convention held each year that determines our policies, general and also specific.

I might point out that the protection of parks, monuments, and so forth has repeatedly been taken up and the position expressed in resolutions at our national conventions, including our position on Echo Park.

Mr. HARRISON. The time of the gentleman from Utah has expired.

Mr. DAWSON. Would you let me have 2 minutes?

Mr. HARRISON. Proceed.

Mr. DAWSON. I take it there are any number of your people in Colorado who are in disagreement on this, is that right? I refer to one in particular, a very good friend of yours. Are you in agreement with Tom Kimble in regard to the fishing possibilities in Echo Park Dam?

Mr. PENFOLD. I cannot say, because I haven't discussed it with Tom Kimble.

Mr. DAWSON. Are you not acquainted with Tom Kimble's views on the possibilities of fish propagation in Echo Park?

Mr. PENFOLD. No, sir; I don't believe I am.

Mr. DAWSON. Are you familiar with the stand of the Utah Wildlife Federation which composes most of the wildlife people in our State?

Mr. PENFOLD. Yes, sir; I am.

Mr. DAWSON. What is their stand?

Mr. PENFOLD. They said O. K. to Echo Park.

Mr. DAWSON. Well, not only the Utah Wildlife Federation, but I might say practically every other conservation group that we have in the State, I think, is endorsing Echo Park, which I will put into the record at the proper time.

That is all.

Mr. HARRISON. The question that the chairman would like to ask at this time, to get his mind clear on it, is this:

I went over the territory of the Dinosaur National Monument, by plane. I did not take the river-running trip. We did make a pretty extensive trip by plane, not just a fast run over it, but we went over the different sites 2 or 3 different times and we viewed the canyons and the whole area. It has been mentioned that it might be possible to build a road in to that area. I am wondering whether the building of roads into that area, or improving those roads, would make it possible for people to see the canyon except possibly in one or two places where the water can be reached. Isn't that more or less the general situation there, that these big steep canyon walls going up and then coming down for a distance then branching out, and then going out again into the river, that the river can only be reached at 1 or 2 points through its length in those canyons?

Mr. PENFOLD. There are quite a fair number of points, Mr. Harrison, where they can get down even now.

Mr. HARRISON. About how many would there be?

Mr. PENFOLD. Well, the major ones would be at Island Park, Jones Hole, Echo Park, Castle Park, Lily Park. I don't know of any place in Lodore Canyon that is being used now. I think there probably is somewhere in there.

Mr. HARRISON. What I am getting at is that even though you did build roads in there, the actual enjoyment of the river itself and the viewing of the river outside of a short distance at each one of these spots would be limited to those people who took the river trip and not to your general public who might drive the road.

Mr. PENFOLD. Yes, sir; that would be true just as it would be if the reservoir is built. The person takes his car down to the boat landing and that is all he sees of it, unless he gets a boat and goes out on the reservoir.

Mr. HARRISON. All I was trying to do was to get the picture of it. We thank you very much, Mr. Penfold, and I, too, on behalf of the committee, wish to say that you have been very patient and made a very fine statement and answered the questions frankly.

The next witness, and we will go as far as we can with him, until we adjourn at 4:30, will be David Brower.

Mr. Brower, I believe, represents the Sierra Club of San Francisco.

STATEMENT OF DAVID R. BROWER, EXECUTIVE DIRECTOR, SIERRA CLUB, SAN FRANCISCO, CALIF., APPEARING ON BEHALF OF THE FEDERATION OF WESTERN OUTDOOR CLUBS

Mr. BROWER. My name is David R. Brower. I am executive director of the Sierra Club, a national conservation organization of 8,000 members, founded in 1892 by John Muir, Warren Olney, and colleagues, to explore, enjoy, and protect the Nation's scenic assets. The club's headquarters are in San Francisco; its members live in 46 States, the District of Columbia, the Territories, and 15 foreign countries.

I have also been asked to speak in behalf of the Federation of Western Outdoor Clubs, a group of 31 organizations in the States of Washington, Oregon, California, and Utah whose total membership exceeds 21,000.

Parenthetically, that 21,000 excludes the Sierra Club, which is a member of the federation.

As a citizen and taxpayer, I have been very much interested in the testimony here, technical though much of it has been. I have been impressed by the mass of detail that has been compiled and made available by the Department of the Interior. I hope the 1946 survey of recreational resources of the Colorado River Basin is in your file, too. I must say that I wish, in my capacity as a citizen bystander, here, that I could have heard more from objective experts, Government and private, on engineering, agriculture, and economics, for it has occurred to me that the 21½ days' testimony has consisted in large part of a single Bureau's looking upon its own work and pronouncing it good.

But I feel sure that this committee, before it makes up its own mind on this tremendous project, will have received and considered such testimony.

As a citizen of a State which contributes more than 8 percent of the Federal Government's income (that would be about \$125 million of the Federal expenditure envisioned for the total upper Colorado River project as estimated a year ago, I have no objection to seeing the Federal Government find some means for authorizing such a project, but I do hope that ample time will be allowed for the very thorough scrutiny such a proposal needs before the Nation as a whole commits itself to the very complicated and necessarily costly project which is before you. I am sure there is time for the thorough review we need. In spite of all the study to date, the project is not yet shaken down.

Representing the Sierra Club and Western Association of Outdoor Clubs, I should like to address myself to some matters that concern ideals and principles and their relation to America the beautiful, the America we are all very happy to step outside into after such sessions as these. We all have an interest in America's beauty. The Congress itself, beginning back in Lincoln's administration and continuing to this moment, has diligently sought means of assuring that the best of our scenery is not to be sold, or given, or destroyed, or altered. It is to be preserved unimpaired for the enjoyment of this and future generations, one of the finest steps in land-use administration ever devised in the history of the world.

Congress set Yosemite Valley aside for the Nation 90 years ago. Yellowstone 8 years later. The number of scenic reservations increased, and their size and use, too. About 300 people visited Yosemite in the year 1893. Last year there were just a few less than a million. There were probably 30 million in all the parks. Many people have not seen any parks, and possibly never will; but they are happy to have them there to take care of those people who like that sort of thing.

Who are those people? Perhaps not everyone here. There are probably quite a few, for example, who would not care to rough it to see any of the wild back country, who would not care to climb in a rubber boat and float down the rapid and calm stretches of Dinosaur's beautiful canyons. But to some people this very trip has been the finest scenic experience they ever had. Two of my kids and I feel that way. We were there.

Many of you won't feel that way, but will still defend the right of others to have a chance to. Even if we did not like opera, we should

certainly hesitate to close the best opera house or to alter it so that you still had some of the house but couldn't hear the music.

Who are the people who fight for this right, the present-day Thoreaus and Leopolds and Marshalls?

Look at the Sierra Club, for instance, which wants to persuade you to protect Dinosaur and the parks, just as other Congresses have done for so long. What kind of people are in it? Teen-age kids, out to club, hike, and ski; office workers, teachers, professional men—we even have a mailman who comes on our Sierra outings to walk 90 or 100 miles during 2 weeks in the wilderness. Strange people, slightly odd? Some, perhaps.

But also the past president of the American Society of Civil Engineers, the current president of the American Society of Radio Engineers, the next president of the American Chemical Society, the president of a major pharmaceutical house, of a major railroad, of a major mining firm, an Assistant United States Attorney General. We have these, too. All of them, whether kids getting away from too much homework, or executives getting away from too many telephones ringing on one desk, all have this in common, a love for the beautiful, unspoiled places; places they work hard (at no pay) to preserve, and long after they themselves can no longer enjoy them.

It is a noble human endeavor that leads them to do this. It is this type of endeavor I am hoping I can communicate to you as something every bit as important as the type of enterprise so earnestly supported here, and entirely laudable in its place, the urge to produce, to grow, to develop, to profit and to spend. This Sierra Club is a good organization, devoted to idealism, and I am proud of it. It is but one of many, all just as good. I wish you were all members. It would cost you only \$3.50 per year. That is the rate to underpaid Government employees.

Here are three questions which we feel have not been answered properly yet.

1. What are the important park values in Dinosaur?
2. Would they be destroyed by the Echo Park and Split Mountain Dams?
3. Can Dinosaur's scenery be made accessible without dams?

As you may have guessed, our answer is that this area has superlative park values. They would indeed be destroyed by the proposed dams. And the dams are not needed to make this area accessible. Briefly, this is why:

What about the park values? I am tempted to set myself up as an expert on this. I have seen a lot of outstanding scenery in the last 35 years, in this and other countries. In Dinosaur I have been out to the quarry, on Harper's Corner, and up on Round Top, and with 2 of my boys, 9 and 7 years old, I have floated 86 miles across the monument, from Lily Park through Split Mountain Gorge, camping at Anderson Hole, Bull Park, Mantle's Ranch, Echo Park, and Jones Hole. I have never had a scenic experience to equal that one. And as a native of California I fully expect to be hung from a yardarm in San Francisco Bay for saying so. To me, and to the 200 other Sierra Club members who took the same trip last summer, it is a magnificent place.

I had hoped to be able to show you a color movie made on that trip by one of our New York members, but the chairman has explained—

and I can see how difficult that would be to arrange here. Nevertheless we have a work print of the film in Washington with us. It runs half an hour, and we should be happy to arrange to show it to those of you who haven't seen all the canyons yourselves.

If you haven't been all the way through the canyons, or haven't seen one of the 4-color movies now available that show the trip, you cannot begin to appreciate why we are so determined in wanting to preserve it.

I should like to try to give you a quick account of what the trip is like and how it makes you feel about the place. I will if you ask me to. But to spare your time, I'll ask you to just take my word for it that this is a totally wonderful place, certainly the equal of any canyon park except Grand Canyon—and it beats Grand Canyon all hollow in the ease with which you can effortlessly see the best of it from the bottom looking up, riding those rainbow rivers.

Would the dams destroy the park values? My own opinion is that the values which now give this area its great natural significance would indeed be destroyed and that if you should be led into the mistake of authorizing those dams, you should at the same time throw the area out of the park system. We should, if that tragedy came about, let the States develop the recreation area, chiefly of local value, that would be left. And that should be the rule, we submit, for reservoir recreation throughout the upper-basin project and elsewhere. Develop and administer it at State expense.

I have seen in the Utah papers the claim that the dams would improve the canyons, and of course that has been made a point of a good many times here, but which seem to these writers, if they have seen the canyons to be a collection of ugly snags and quicksand. They are entitled to their opinion, but we do not accept that as disinterested opinion. When I am sick I go to a doctor, not an engineer, and when I want studied opinion on park values, I go to the people who have made the study of those values a career, reserving the right to disagree. I think we do well here to quote the Park Service. This statement is quoted in House Document 419. The citation for that statement is in the 1950 report, the upper Colorado storage project, page 40 of the National Park Service chapter. Their quote is:

The effects of the proposed Echo Park and Split Mountain units upon irreplaceable geological, wilderness, and related values of national significance would be deplorable.

Deplorable is a mild word to describe what would happen to the scenery in Dinosaur were we to permit these dams to be built there. The Echo Park project alone calls for a dam 525 feet high, backing up 107 miles of reservoir, inundating the intimate, closeup scenes and living space, with nearly 6½ million acre-feet of water. There would be construction roads in the canyon and above it, tunnels, the whole power installation and transmission lines, the rapid buildup of silt at the upper end of the reservoirs, and the periodic draw-downs of the reservoir to enable it to fulfill its functions—a fluctuation that would play hob with fish and wildlife. The pinyon pines, the Douglas firs, the maples and cottonwoods, the grasses and other flora that line the banks, the green living things that shine in the sun against the rich colors of the cliffs—these would all go. The river, its surge and its sound, the living sculptor of this place, would

be silent forever, and all the fascination of its movement and the fun of riding it, quietly gliding through these cathedral corridors of stone. All done in for good. The tops of the cliffs you could still see, of course. As reservoirs go, it would be a handsome one, but remember the 251 other reservoir sites in the upper basin and the hundreds of reservoir sites elsewhere in the country. We don't want Dinosaur to be just another reservoir. We want it to remain the only Dinosaur, which it is now.

If we should accept the amazing statement that Echo Park Dam would not destroy Dinosaur, but would only alter Dinosaur, we should also accept such statements as these:

1. A dam from El Capitan to Bridal Veil Fall would not destroy Yosemite, but just alter it.

2. Other dams would only alter Yellowstone, Glacier National Park, Mammoth Caves National Park, Kings Canyon National Park.

3. Removal of the rain forest would only alter Olympic National Park.

4. Cutting the 3,000-year-old big trees and making them into grapestakes, which used to happen, would only alter Sequoia National Park. After all, the ground would still be there, and the sky, and the distant views. All you would have done is alter it, that is, take away its reason for being.

Maybe "alter" isn't the word. Maybe we should just come out with it and say "cut the heart out."

Those of us who have been working to help save the parks for future generations for all these years can understand how people who have not yet had the privilege of enjoying the great scenic parks would think that a dam might improve Dinosaur. We can understand it, but we completely disagree. We cannot, however, hide our grave apprehension at finding that Federal Department officials charged by law with protecting our parks show such poor appreciation of them as to call this destruction "altering."

It certainly argues that those of us who appreciate the national park idea, the Members of Congress who through the decades have steadfastly supported the park idea, and the others who selflessly volunteer their services on behalf of people not yet born, all of us need to do a better job of helping to explain to those who do not know, how important a spiritual and inspirational asset we do have in our national park system.

Perhaps Undersecretary of the Interior Ralph Tudor would have been felt differently about the impact of the dams upon this irreplaceable asset of Dinosaur had he been able to devote more time looking at it. You will recall his telling you that he flew over some of the proposed alternate damsites and was in the monument 3 days. But I gather that he was able to see very little of the canyons themselves on the ground—or rather, on the river.

Echo Park, which he did see, is a magnificent place, alone worthy of being preserved inviolate. However, the Dinosaur canyons reach their scenic climax, not at Echo, but above and to a lesser extent below it. The best of the Yampa is the stretch from Bull Park down to Echo, which our party took 2 days to float through, and where I should like to spend a week, exploring for Indian signs and little things under those great, noble cliffs. The Canyon of Lodore, from

the Gates of Lodore down to Echo, is the best of the best. But you can't just fly over it and have the foggiest idea of its beauty. You need to ride the river and camp along the way. Two or three days ought to be allowed, although you can race through if you feel you must.

Arrangements could easily be made for a smooth, quiet glide down the charming winding canyon from Mantle's Ranch to Echo. You could leave United States Highway 40, take this ride, and be back on the highway the same day, much richer for this superb wilderness experience. You could, that is, if they would fix the roads just a little—and if the people of Vernal did not warn you, "Don't waste your time there; there is nothing to see and it is treacherous." That is an unbelievable lack of understanding of the facts.

A climax of its own special kind is the ride through the spire-walled Split Mountain Gorge, a roller-coaster ride that takes only 2 or 3 hours and leaves you wanting more right now. And you can do it for the price of a couple of tickets to a football game. But wear your levis; you may get splashed a little. And try to be there before too late in October, for the river may get too low then.

That upper Yampa corridor has one of the most awesome spectacles in all the world. I call it the Grand Overhand (it's in the Sierra Club Bulletin you have before you; it should have a much better name, and you can only appreciate it if you see it yourself or get Cinerama to photograph it in color). The Yampa River really did a job here, in the course of some 90 million years, entrenching itself in a giant meander right in the heart of the Uintah Mountains.

I am afraid Mr. Tudor, in addition to missing the entire corridor, Lodore, and Split Mountain Gorge, could not have seen this beetling overhand from above. Once you get close enough to the edge to look down, it is too late. It is a terrific drop. It would take you about 12 slow seconds to complete the fall, and you would land on the opposite bank of the Yampa River.

You just cannot go down that river, all of it—and I have added here watching a group of women and children enjoying it—and come out with a statement that a dam would only alter it. You come off that trip convinced that a dam would be the tragedy of our generation.

And Mr. Tudor would have you trade all this for what he has been told might be 100,000 to 200,000 acre-feet of water. Very recently they were saying 350,000 acre-feet officially. It makes a friend of mine wonder how much lower they can go, and still be wrong.

I have some statements that I think we ought to start the rest of this discussion with. We have been quite concerned with the reliability, although we want to rely on them, of the Bureau's figures, the Interior figures. I think I can demonstrate, if you will follow the arithmetic, what folly it is to follow those figures.

Mr. Tudor in his testimony on Monday said, for one thing, "The most important single factor in favor of the recommended plan, as contrasted to suggested alternates, is its comparatively smaller water wastage through evaporation."

Then he said on page 23:

The fourth alternative—
one that he rejected—

would be the high Glen Canyon Dam, which is considerably more elevation, 3,750 feet. It would then have a gross storage capacity of 31,700,000 acre-feet.

The exposed reservoir surface is 186,000 acres and the evaporation is 691,000 acre-feet per year. Again, that figure must not be compared with the evaporation from Echo Park but with the combined evaporation of Echo Park and lower Glen Canyon.

He concluded that paragraph saying:

So the net difference is 165,000 acre-feet.

Then he made a statement later on, page 26:

In the final analysis, the increased losses of water by evaporation from the alternate site is the fundamental issue upon which the Department has felt it necessary to give any consideration to the Echo Park Dam and Reservoir.

On page 33, just as a footnote for what I am going to carry on with, he said:

The difference in evaporation between Echo Park and the other most favorable dam site is about 108,000 acre-feet.

From Mr. Tudor's own figures, or the figures someone worked out for him, it can be shown that one of the alternates he investigated does not evaporate 165,000 acre-feet more than Echo Park Dam, as he testified, but 2,610 acre-feet less, while storing some 700,000 acre-feet more. It is hard to believe, I know, to someone sitting here who has no engineering experience, but if I am wrong, it must surely be because he is wrong, and he is not supposed to be wrong in engineering matters or figures.

But I submit that he made three big errors and one little one in this one matter alone. I refer to the comparison between Echo and Little Glen and Big Glen, as I call it. All the evidence you need is on pages 12, 13, and 14 of his opening testimony, plus those excerpts I have given, which I did not check carefully during his reading of it. I should have checked sooner, because editors are trained to check, even if they do not know engineering. They are supposed to know ninth-grade arithmetic. I submit that I know ninth-grade arithmetic.

I shall be glad to do the arithmetic, if you wish, but for now will just mention the four errors that might have cost us our park:

1. He forgot to subtract the Echo evaporation, which would reduce his implication of 165,000 acre-feet evaporation loss down to 79,000. If these are Bureau figures, and not his, this is getting to be a Bureau habit. They did the same thing in 1952 until General Grant straightened them out.

2. His Big Glen evaporation figure is 51,000 feet too high, based on the figures shown. An error in multiplication or division or both. Or the slide rule stuck.

That is where you have the 153,000 acres to the little dam to 186,000 of the big one, as the 52,000 feet evaporation is to X. You solve for X and you come out with 51,000 acre-feet lower than he did. That is half enough for a city the size of Denver.

Mr. DAWSON. We are getting all mixed up with figures here. I wonder if the witness would put the figures in writing that he has interpolated there off his sheet. He is throwing in some extra figures that are not in his statement. If we can get them all together it would be helpful.

Mr. BROWER. The one that you don't have in my written statement, the figure there is the 8,000 acre-feet evaporation for Split Mountain. It should be 10,000, I claim, but we will let it ride at 8, which is their figure.

Mr. HARRISON. The Chair does not want to hold the witness down, but it is getting time to adjourn. If it is just a matter of finishing the statement, I think we would be willing to stay over, but if there is going to be a lot of extra in here, and a lot of figures, I think we better wait until tomorrow when we can go into them. That is up to you. If you want to have additions in there, it is your privilege, and the Chair will yield to you and let you do it.

Mr. BROWER. If you would let me explain, Mr. Harrison, what hapened since I had the thing mimeographed is that I have refined my figures. I have found a few more citations which make it even worse, not for me but for the Department.

Is it the Chair's wish that I subside for the time being?

Mr. HARRISON. We will wait and start in at 9:30 in the morning. If there are any extra figures, if we could have them, I think possibly we can get them from the record. But if you have them, we will proceed with them at that time. We will not be able to ask you any questions this afternoon anyway.

(Whereupon, at 4:30 p. m., the committee was recessed, to reconvene at 9:30 a. m., Wednesday, January 27, 1954.)

COLORADO RIVER STORAGE PROJECT

WEDNESDAY, JANUARY 27, 1954

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to recess, at 9:30 a. m., in the committee room, New House Office Building, Hon. William H. Harrison (chairman) presiding.

Mr. HARRISON. The committee will come to order.

Mr. Brower was on the stand yesterday and he will return at this time to complete his statement.

STATEMENT OF DAVID R. BROWER, EXECUTIVE DIRECTOR, SIERRA CLUB, SAN FRANCISCO, APPEARING ON BEHALF OF THE FEDERATION OF WESTERN OUTDOOR CLUBS—Resumed

Mr. BROWER. Mr. Chairman, the blackboard is still elsewhere. On those figures, had I not better wait for the blackboard?

Mr. HARRISON. Would you prefer to wait and let some other witness go ahead of you and then finish after that when the blackboard is here?

Mr. BROWER. Whatever you wish. I can go on, skipping a couple of parts here that have to do with the figures, then when I finish have questions on that, and then come back to the blackboard.

Mr. HARRISON. That will be fine.

Mr. BROWER. All right. By the time I get through with the figures on the blackboard, I hope I will have demonstrated it to the committee's satisfaction that the figures are not reliable.

I will pick up on page 10 then, near the bottom of the page.

Before I worry about the "serious difficulty of protecting Rainbow Bridge" that Mr. Tudor worried about, I should like to sit back to see what happens if they go over their pages of figures with a well-oiled slide rule to see if there are as many critical errors on the other pages and hundreds of tables in the testimony and in your files.

It would be nice to think that whoever it is who audits the arithmetic will change his approach to one of protecting, and not altering, our country's pride in the park system, which we all want to preserve for future generations for the beautiful thing it is, and Dinosaur along with it. I know, and I will bet Reclamation knows, that if the river disappeared in its course through Dinosaur, or was somehow unavailable, a sound upper Colorado storage project could be developed elsewhere. The axiom for protecting the park system is to consider that it is dedicated country, hallowed ground to leave as

beautiful as we have found it, and not country in which man should be so impressed with himself that he tries to improve God's handiwork.

As it is, so it can be enjoyed. Mr. Dawson, in a letter to all the Members of the House, has used the word "treacherous" to describe the rivers. I think that the 200 Sierra Club members who went down those rivers over the course of a single month last summer would like me to disagree with your application of the word. It could be used far better to describe Highway 40. We were all delighted to get off that treacherous highway and to settle back and relax in those safe boats on a thrilling, but not treacherous river, to watch the trees, the wildlife, and the cliffs go by as we trailed our hands in the water, and now and then jumped out to float quietly along with the boats into the middle of the most amazing river wilderness I know. Trips for dudes can easily be arranged. The dudes need not be daring, nor were we who took the full trip, all 180 of us.

Take that ride with us next summer and I'll bet that you'll agree with me. Between now and next June, if somehow you can persuade your colleagues to persuade the Department of the Interior to spend 10 percent of the \$21 million Mr. McKay has proposed to spend on helping Dinosaur, after it's been spoiled, it will be easier, a whole lot easier, to get from U. S. 40 to the river's edge, where life really becomes simple and fun, and you can feel your nerves relaxing one by one—so long as you don't mind a few nights out in a sleeping bag on an air mattress.

Right now, as you probably know, it is pretty hard to get to Mantle's ranch or to Echo Park. For those of the committee who do not know, let me say that last summer, when we hit Echo Park on our fourth afternoon down the river from Lily Park, we had planned to have a truck take us up for that view from Harper's Corner, back at where we had been and down to where we were headed. But there had been a heavy rain 5 days before and Bus Hatch, our boatman, said we couldn't take the truck up. I checked with Lyle Chew, about the road. Bus said Lyle owns the ranch at Echo, and he said it was pretty rough. And when he says it's rough, I'd hesitate to fly a kite over it. That just about describes that road.

Gentleman, I hope you all meet Bus—and I especially hope you leave him the chance to make the thousands of people happy who have just begun to learn about those wonderful wilderness river trails—perhaps with a patch or two by then when the next century rolls around.

Thank you for this opportunity. I should like to answer your questions, and I shall be disappointed if there aren't any.

Mr. HARRISON. I notice that your blackboard has not arrived. If you would want to wait for your explanation and questions until it does, we could have another witness and then call you back if that suits your convenience.

Mr. BROWER. I will be here.

Mr. HARRISON. I want to give you a chance to explain the figures properly.

Mr. BROWER. All right, thank you.

Mr. HARRISON. So we will call another witness and then when you are ready after that we can call you back.

Mr. BROWER. Thank you, Mr. Harrison.

Mr. HARRISON. The next witness will be Mr. Stephen J. Bradley of Boulder, Colo.

VOICE. Mr. Bradley is not here, Mr. Chairman, he hoped to be here at this time.

Mr. HARRISON. Mr. Packard, executive secretary of the National Parks Association. Proceed Mr. Packard.

**STATEMENT OF FRED M. PACKARD, EXECUTIVE SECRETARY,
NATIONAL PARKS ASSOCIATION**

Mr. PACKARD. Mr. Chairman, I am Fred M. Packard, executive secretary of the National Parks Association.

The National Parks Association is a citizens' organization with membership in every State and some foreign countries, dedicated to the continued welfare of the national park system. Its activities are conducted entirely in the public interest. Its members derive no other benefit than the conviction that they are promoting the welfare of their country. It is for them, and for the members of the other conservation organizations of the Nation, which have supported the position taken by the National Parks Association that this statement is presented.

The national conservation organizations have not opposed the upper Colorado River project, and have no desire to impede orderly development of the water resources of the Western States. They have objected unanimously to one aspect of the plans for this project, namely, the inclusion of Echo Park and Split Mountain Dams proposed to be constructed within Dinosaur National Monument. They have predicated their opposition to these two dams fundamentally on the grounds that these structures would irreparably impair paramount values that led to the reservation of the canyons affected as part of the national park system. If these two dams are deleted from the project, a highly controversial factor will have been eliminated and the realization of the project as a whole simplified. The question at issue is not whether the upper basin States shall have the water and power benefits desired. All of us are agreed this water is needed. The controversy is entirely over the method by which this goal should be achieved.

Revision of the project is desirable because Echo Park and Split Mountain Dams would constitute the first invasion of the national park system by an engineering project since the National Park Service was established and would open the door to similar invasion of other national parks; and also because of the damaging effects their construction and existence would have on Dinosaur National Monument. We contend that this violation of the integrity of the national park system is not justified, and that it is not necessary, since the water benefits can be obtained without these dams. Since Split Mountain Dam is a later phase project, not now before this committee, we shall restrict our comments to matters relating to Echo Park Dam.

Dinosaur National Monument was established in 1915 to protect for scientific purposes an 80-acre deposit of dinosaur fossils, from which have been excavated bones now on exhibit in various museums. These operations have long since been discontinued, and the quarry represents an opportunity to show the public an interesting exhibit of scientific value. However, the preservation of this quarry is not

in any way an issue in the present debate. It would not be flooded, and opponents of Echo Park Dam have not said it would be affected.

In 1938, the monument was extended by Presidential proclamation to include the adjacent canyons of the Green and Yampa Rivers, on the grounds that they represent some of the finest scenic, scientific, and archeological values on the continent. The debate is entirely on the question of preserving these canyons. It is the consensus of those who have reported on the area, who are qualified by experience and background to judge the quality of park values, that these canyons fully measure up to park standards, that they are equal in grandeur to such other canyons as those in Zion, Yosemite, and Grand Canyon National Parks, and that they possess features unique in themselves.

Some members of this committee have seen the area, and other witnesses have or will present their views about these qualities. We shall not attempt to describe them now, except to say that we believe these canyons should remain within the national park system and be protected from any activities that would change their natural character. In order that the record of this hearing may include an adequate description of these canyons, there is submitted for the record an article, *This Is Dinosaur*, by Devereux Butcher, from National Parks magazine.

You will find that article in the blue magazine attached to your statement.

MR. HARRISON. It will be accepted for the files but not a part of the record.

(The article referred to will be found in the committee files.)

MR. PACKARD. I might comment that that is the article that Mr. Untermann referred to in his testimony.

It has been asserted by proponents of Echo Park Dam that its construction would not materially damage these values and would provide equivalent recreational potentialities. Burying the canyons under 500 feet of water would certainly destroy the present character of the area, hiding from view most of the stupendous escarpment that provides the awe-inspiring spectacle that is the monument's chief feature. It would end forever the possibility of enjoying the extraordinary boat trips down the rivers, which are unique in the national park system, hardly duplicated elsewhere in America. Representatives of the Sierra Club and the Izaak Walton League of America, who have managed such trips, have described them and analyzed their unique importance as a recreational asset. Geological values of significant scientific importance would be lost, valuable archaeological sites inundated, and other educational assets destroyed, and there would also be destroyed wildlife values and certain other recreational values. The very purposes for which the canyons were reserved would be negated completely.

In place of these would be substituted secondary, artificial recreational resources of little significance. As the upper Colorado River storage project is built, a succession of reservoirs will be created, differing only in size.

The recreational potential of one will be identical in nature to that of another. The quality of uniqueness, a basic attraction of the present monument, would be lacking. The local communities, which have in the monument a great potential tourist asset, would have little

to offer visitors which will not be available at many other places, or that would induce people to linger in the vicinity.

It is true that as yet this potential has not been realized adequately. The local residents themselves have not recognized they have a great economic asset nearby, and have made no effort to encourage people to visit it. They have not used their influence to secure proper funds for development of the monument. The canyons are not inaccessible, but the roads need improvement and other facilities are needed. Local residents could do much to prevail on Congress to provide such funds.

Point has been made of the fact that relatively few people have visited the canyons, compared to the crowds that come to other national parks. Given reasonable accommodations, both inside and out of the monument, this area would equal in popularity other major national park system areas. For 30 years after Yellowstone was established, fewer than 10,000 people visited that park in a year; but today more than 1 million visitors spend \$20 million annually in and near the park, and more than \$120 million on their trips there. Given a chance, Dinosaur National Monument will have a similar history of development. Without in any way minimizing the importance of water to Utah and Colorado, it should be remembered that the tourist trade is one of the major industries of those States.

Flooding the canyons would be bad enough in itself; but worse would be the havoc caused by the earth-changing construction equipment. What is now a superb exhibit of natural magnificence would become a display of human disturbance. The park would no longer exist.

Even more serious than the destruction of the canyons of Dinosaur National Monument is the danger such an action would represent to the integrity of the entire national park system. Following the recommendations of your committee, the Congress has consistently prevented invasion of the national parks and monuments for any exploitive reason whatever. This is in a sense a test case to determine whether similar programs may or may not be undertaken in other national parks. The plans are drawn for such dams if this one is approved. If they succeed, if dams can be built in our national parks and monuments, demands will be brought forward to open yet others to other uses that eventually would destroy the entire system. If our national park system is to be of any permanent significance—and it is the model for some 44 nations that have established national parks—it must retain its integrity and continue to remain inviolate.

Question has been raised whether the National Park Service ever agreed to such destruction of the canyons in Dinosaur National Monument. The answer is that it did not. In 1938, the Park Service did not know of any plans of the Bureau of Reclamation to propose dams at Echo Park and Split Mountain. The Service was informed of those plans in 1942. The Park Service undertook a study of the recreational resources of the Colorado River in 1941. Its report was prepared in 1946 and published in 1950, entitled "A Survey of the Recreational Resources of the Colorado River Basin," published by the United States Department of the Interior, 1950. A full chapter of that report is devoted to the Park Service's strong belief that Echo Park and Split Mountain Dams should not be built.

That has always been the official position of the National Park Service. Congress should know this, and if the record of this hearing

is to be comprehensive the Park Service's analysis of its position should be part of the record. I submit it here.

It was understood by the Park Service, in 1938, that an entirely different project, the Browns Park project, was planned, to be located not more than 4 miles south of the northern tip of the monument. The proclamation clearly reserved the right for construction of this specific project:

* * * this reservation (of the lands for park purposes) shall not affect the operation of the Federal Power Act of June 10, 1920 (41 Stat. 1063), as amended, and the administration of the monument shall be subject to the reclamation withdrawal of October 17, 1904, for the Browns Park Reservoir site in connection with the Green River project.

The Federal Power Act was amended in 1921 and 1935 to clarify its wording, to spell out unmistakably the intent of that act that national parks and monuments should not be used as sites for power or irrigation dams. The proclamation directly applies these amendments to Dinosaur National Monument. It expressly provides that the only exception intended was the Browns Park project. Identification of the Brown's Park project is explicit. Subsequent to the issuance of the proclamation, the Bureau of Reclamation abandoned its plans to build that project.

There is attached to your statement a legal brief which I will come to at the end of my original statement, which I am submitting for the record.

In 1950, Secretary of the Interior Chapman called a hearing to consider the advisability of recommending construction of Echo Park Dam as part of the storage project. At that time, important defense considerations were involved that required a certain amount of power to be produced in the vicinity, and Secretary Chapman, who was himself most reluctant to approve such an invasion of the national park system, felt that he was confronted with the one valid reason for such action—the requirements of the national security. Therefore, he ordered the Bureau of Reclamation to prepare data designed to lead to the recommendation of Echo Park Dam for construction.

Fortunately, it developed that the defense needs could be met better at another location, and that factor was thus eliminated. At the same time, Secretary Chapman's attention was invited to General Grant's study of the Bureau of Reclamation's reports, which showed that the timing and sequence of construction of other proposed projects could be changed in a way that would enable the upper basin States to secure the desired water benefits without the necessity of building Echo Park Dam. He at once ordered a restudy, which continued for about 16 months, and he was convinced that feasible alternatives did exist. Accordingly, on December 4, 1952, he addressed recommendations to the President—and these were the only recommendations he ever made to superior authority on the subject—that included the following language about Echo Park and Split Mountain Dams:

I have now concluded that the terms of the recommendations of the report (of January 26, 1951) should be modified in respect to these two units. Accordingly, the report as modified by the letter of June 29, 1951, of the Commissioner of Reclamation is further modified by the deletion of the recommendation for inclusion of the Split Mountain unit in the plan of development for later authorization. In lieu of the recommendation of the Echo Park unit, I recommend that the Secretary of the Interior be authorized to construct and operate facilities, at Echo Park or at an alternative site, to serve the purposes intended to be served

by the Echo Park unit. This authorization should be made subject to the requirement that the Secretary give further consideration to studies of alternate sites and subject also to a finding by the Secretary, prior to the submission of requests for appropriations to initiate construction, as to the site best adapted for development in the light of all factors involved.

The clear intent of this letter was that the benefits originally anticipated from the Echo Park unit should be ensured, but from structures located outside the monument. Conservationists consider this letter a step in the right direction, but believe that the national interest can be served only by entirely eliminating Dinosaur National Monument from further consideration for storage or power production. Inasmuch as Secretary Chapman's letter asking for comment by the States has been entered into the record of this hearing several times, we submit this final letter for the record for the sake of completeness. I have it here.

We shall not review the details of the alternate proposal, which has been ably presented by General Grant and other witnesses. They have shown that, if the Bureau's estimates of possible evaporation losses are accurate enough to warrant serious attention, comparison between the original proposal and various counterproposals produce a much smaller difference than the proponents of Echo Park Dam have stated them to be. In our opinion, as laymen in such matters, there is too little good evidence on which to predicate sound appraisal of the evaporation loss factor, and the whole contention represents an inadequate guess. Certainly, it cannot be justified as the main reason to build Echo Park, rather than the alternative possibilities. We do not insist that any particular revision of the project be adopted, if a better alternative possibility or sequence can be worked out. We do insist that advocacy of Echo Park Dam is premature in any event.

The burden of proof, in this regard, rests with those who propose the destruction of this national monument, and that public funds be used to undertake the construction of the storage project as a whole.

Such a change in sequence of construction would guarantee maximum benefits to the people of Utah and Colorado at the earliest possible time; and, should it prove that there is not enough water available to supply the later phase fully, some years hence, as has been rumored, it will be even more to their advantage to have built these important dams as part of the first phase.

In summary, we urge that Echo Park Dam be deleted from the project. This action is in accord with the recommendations of the two Secretaries of the Interior who were directly concerned with the planning of the project, and who devoted years of attention to it. We urge that the desirability of authorizing now other dams outside the national monument be considered by this committee, dams that are not injurious to other significant values, and about which no serious controversies have arisen. We suggest to the people of Utah and Colorado that they support the proposed revision, not only because it is in the national interest, but also because they stand to gain from it. They can realize the maximum local benefits in water and power, and still have available the great resource of a magnificent national park system area as an attraction to people from all over the country. We have been assured by delegates to Congress from these States that they will welcome a practical alternative proposal that will safeguard the national monument. We have presented such

a proposal, and hope it will be adopted, with such refinement as may be desirable, as being in the interest of the local economy as well as of the Nation.

Mr. Chairman, I have noticed in listening to the hearing there are several questions that have been asked on a number of occasions by various members of the committee. I should like, if I may, to attempt to answer 1 or 2 of those questions because I think I can clarify certain points that have been raised.

Mr. HARRISON. Any objection? Hearing none, you may proceed.

Mr. PACKARD. First of all, the question has been asked a number of times whether or not there is a precedent for the invasion of this national monument. In a legal brief, which was prepared by Manly Fleischmann, on this very question, you will find on page 15 a statement of the law which is already in the record regarding the four reservations that have been made in laws relating to national parks on the question of reclamation projects. They start on page 14. The four are Glacier National Park, Rocky Mountain National Park, Lassen Volcanic National Park, and Grand Canyon National Park. The first three of these statutes contain essentially the same wording. The fourth, Grand Canyon, has certain variations.

The first three of these acts were passed before 1916 before there was a National Park Service. Until that time neither the Congress nor the people of this country had any clear conception of how our national parks should be administered. It was in a state of flux. It was not until National Park Service was established that our policies and principles regarding national parks and monuments were jelled.

The Fourth, the Grand Canyon National Park Act, was passed in 1919, and that contains a special phrase that the others did not carry, and that is:

Whenever consistent with the primary purposes of said park, the Secretary of the Interior is authorized to permit utilization of areas therein which may be necessary for the development and maintenance of a Government reclamation project—

Whenever consistent with the primary purposes of said park.

And now there is only one occasion where such wording has been put in the law since the establishment of the National Park Service other than the Grand Canyon National Park Act, and that is in the case of Dinosaur National Monument proclamation.

The question is, Does that constitute a valid precedent for the invasion of a national monument that is under consideration here? I think the answer is that it does not, because there is an entirely different precedent that has been established. The one occasion where these four acts have been applied in action, have been translated into projects that have been built, is in the case of Rocky Mountain National Park, and I am referring to the Colorado-Big Thompson project. But the reservation that was put in the act of 1915 establishing the Rocky Mountain National Park was not then deemed to apply to the Colorado-Big Thompson project, which was not even conceived at that time, it was intended to apply to an entirely different project in the Green River Basin near Grand Lake and concerned certain lands in that area. That project was abandoned in 1921. In 1937, Secretary Ickes called a hearing to consider the question of the Colorado-Big Thompson project and its relationship to Rocky Mountain National Park. At that time his decision was that the project might

be built but that it might not affect the national park in spite of the wording of the original act establishing that park.

As originally planned, the Bureau of Reclamation said it was essential for it to have its exit come out in Moraine Park within the national park, and the transmission lines to go across that national park. Secretary Ickes ruled that it might not be built that way, that they would have to put the exit to the tunnel outside the national park boundaries, which was done, and the transmission lines have to go around the park. Rocky Mountain National Park was not affected by the Colorado-Big Thompson project, in spite of the wording of the original act establishing it.

The only other instance where a dam has been built to date in a national park is Hetch Hetchy Dam in Yosemite, which was authorized before the National Park Service was established.

What Secretary Ickes did, in effect, was to establish a precedent that said, if a reclamation withdrawal applies to a national park area, it must be used for the purposes for which that withdrawal was made; it may not be used for another entirely different set of projects.

Attached to this legal brief you will find a copy of the letter from the Geological Survey recommending the withdrawal for reclamation purposes. It is dated October 13, 1904. It states the ranges and townships involved in the reclamation withdrawals within the area of Dinosaur National Monument, which was withdrawn for the Green River project, particularly for the Browns Park Reservoir site. That withdrawal does not cover the areas or the sites of Echo Park or Split Mountain Dams. The southernmost point of that withdrawal is in range 104 west, township 10 north, and the reservation was specifically for the Browns Park site. The proclamation of 1938 did not extend that withdrawal to any other area or to any other purpose. Therefore, there is no justification for assuming that that withdrawal covers a site it did not cover.

We contend that the precedent is entirely the other way around—that the Congress has consistently refused to build dams and national parks and monuments, and that Secretary Ickes has established a precedent pointing out that the withdrawals must be for the purpose for which they were intended.

I think that is the question I wanted to answer.

Mr. D'EWART (presiding). Mr. Engle, do you have any questions?

Mr. ENGLE. No; thank you.

Mr. D'EWART. Mr. Saylor?

Mr. SAYLOR. Yes. Mr. Packard, I want to congratulate you on this statement. I think, having been one of the principal opponents of the erection of the Echo Park and Split Mountain Dams, you have presented a very factual report to this committee on behalf of the National Parks Association. I am delighted with the fact that you have included the legal brief of Mr. Fleischmann because I was a little concerned yesterday when Dr. Miller introduced into the record what purported to be six violations of our national park system. I had looked at the report and had asked for a further clarification from the Department, but I am delighted to find that you have already anticipated it and have it here.

Mr. PACKARD. I have, Mr. Saylor, a list of the actual projects that are proposed within the national park system as of now and in the

past, if you would like me to read them into the record. They are brief paragraphs about each. If it would be helpful.

Mr. SAYLOR. It is not necessary to read it. If you have it, I would like to have it inserted in the record at this point.

Mr. PACKARD. Should I name the parks concerned?

Mr. SAYLOR. Yes.

Mr. PACKARD. The parks that are concerned with projects still on the books for construction if they are authorized are Yellowstone National Park, Glacier National Park, Grand Canyon National Park, Grand Canyon National Monument, Mammoth Cave National Park, Kings Canyon National Park, and Dinosaur National Monument.

Mr. SAYLOR. I ask unanimous consent that this list of proposed projects to erect dams and national parks and monuments be made a part of the record.

Mr. HARRISON. I believe they were made a part of the record previously.

Mr. PACKARD. I have them abridged into a few lines on each one explaining how they were proposed.

Mr. HARRISON. Without objection—

Mr. ENGLE. May I see it?

Mr. PACKARD. Yes.

Mr. YOUNG. Will the gentleman yield?

Mr. SAYLOR. Yes.

Mr. YOUNG. I wonder what the gentleman means by the phrase "on the books."

Mr. PACKARD. Perhaps I had better read it—it is very short—to explain that question.

The following national parks and monuments have been or are endangered by proposals to use them as sites for reclamation or power projects—

These are plans actually in existence by the Bureau of Reclamation or some other Bureau, the Army engineers, except in one case—

Yellowstone National Park: Since 1921, bills to authorize dams and tunnels affecting Yellowstone Lake, Bechler Basin, and Falls River Basin have appeared in Congress. The Yellowstone Lake proposal bills were reintroduced as recently as 1938.

Mr. D'EWART. Would you name the author of those bills?

Mr. PACKARD. I cannot remember the numbers, but the author of the Yellowstone Lake bill was Senator Walsh back in 1921 or thereabouts, and the Bechler Basin proposal was introduced by someone else. I think it was Grant. I have the data if you would like to have it.

Mr. D'EWART. You do not mean to intimate that there was a real effort to—

Mr. PACKARD. It was one of the most vigorous fights ever put up.

Mr. D'EWART. It was never approved?

Mr. PACKARD. It was never approved.

Mr. D'EWART. That was in the years gone by.

Mr. PACKARD. In the years gone by, sir, but it came up in 1938, which is not very long ago, so it continued for 20 years.

Mr. D'EWART. And it was really not a threat to the integrity of the park?

Mr. PACKARD. I would say it was a very serious threat, but fortunately Congress acted with its usual integrity and refused to accept the proposal.

Mr. SAYLOR. It was not authorized because the Congressmen insisted that the national parks and monuments remain inviolate?

Mr. PACKARD. Exactly.

Mr. SAYLOR. That is all we are asking them to do here.

Mr. PACKARD. The Rocky Mountain National Park I have already mentioned.

Glacier National Park: The proposed Glacier View Dam would flood 20,000 acres in the national park. The proposals were made both by the Bureau of Reclamation and the Corps of Army Engineers for this project; under the 1949 agreement between them, the Bureau of Reclamation has jurisdiction over such work in the Clarks Fork subbasin, in which this dam would be located.

And there is at the moment a bill in Congress to continue studies of that project.

Grand Canyon National Park and Grand Canyon National Monument: The proposed Bridge Canyon Dam would flood the entire length of the national monument and 18 miles into the national park.

Mammoth Cave National Park: Mining City Dam, proposed by the Army engineers, would back water into Mammoth Cave and prevent normal flowage of the subterranean river there.

Kings Canyon National Park: Reservoirs proposed at Simpson Creek, Paradise Valley, and Copper Creek, all on the South Fork of the Kings River, would be located within the national park. Reservoirs at Cedar Grove and Tehipite Valley would be adjacent to the park, outside its present boundaries. The city of Los Angeles has renewed applications for construction of facilities at these sites.

I need not read the Dinosaur National Monument as I have already covered that.

I had this in the original memorandum but it is a special case, really. In the case of the Big Bend National Park, the International Boundary and Water Commission has authority to build dams within Big Bend National Park without reference to the Secretary of the Interior. It is a matter of international treaty. The International Boundary and Water Commission has studied certain dam sites on the Rio Grande, but so far it has not yet found any suitable ones in national parks—thank heavens—and indications are they probably will not.

Mr. SAYLOR. And it is your considered opinion, Mr. Packard, that the proposal to erect the dams in the Grand Canyon National Monument and Grand Canyon National Park are not consistent with the statement made on the floor of the House in the 57th Congress wherein that bill was passed?

Mr. PACKARD. I agree with that entirely. Our organization, our position has been against those dams for that reason.

I can add a corollary to that if it would be of assistance.

The Grand Canyon originally was a national monument established shortly after the Lacey Act was passed. It was a very large area, of course. The whole canyon was included as a national monument. In 1919 part of that monument was made a national park and the monument was reestablished to comprise the balance of that land.

I have here the proclamation which reestablished the Grand Canyon National Monument. It is dated December 22, 1932, and signed by Herbert Hoover. It is rather interesting that there is no statement in this proclamation continuing the reclamation withdrawals for use of the Grand Canyon National Monument for reclamation purposes.

Mr. D'Ewart. Would the gentleman yield?

Mr. SAYLOR. Yes.

Mr. D'EWART. Do you advocate that the members of this committee support the Bricker amendment so that the Big Bend National Park cannot be invaded by treaty?

Mr. PACKARD. I go along with you halfway. I hope Big Bend is not invaded.

It may be a matter of interest to the committee to know there is another international treaty specifically prohibiting such things in national parks. I am referring to the Pan-American Convention on Nature Protection in the Western Hemisphere, ratified at Washington in 1943. It defines national parks, and then it says that national parks be not exploited for any commercial purpose. That is in an international treaty ratified by the United States.

Mr. SAYLOR. Mr. Packard, the National Park Association is not opposed to the upper Colorado River Basin development?

Mr. PACKARD. Certainly not.

Mr. SAYLOR. You are not opposed to any participating projects in the upper Colorado River Basin project?

Mr. PACKARD. No; that is correct.

Mr. SAYLOR. The opposition which you bring before this committee is directed to the erection of two dams within Dinosaur National Monument?

Mr. PACKARD. That is correct.

Mr. SAYLOR. That is all.

Mr. D'EWART. Mr. Regan?

Mr. REGAN. Mr. Packard, I noticed in the opening of your statement that you represent an association of citizens with membership in every State and some foreign countries. What percentage of that membership do you suppose ever visited this site of Echo Park?

Mr. PACKARD. Unfortunately few, I should say, sir.

Mr. REGAN. I think that is right.

Mr. PACKARD. I think few of them.

Mr. REGAN. If you had, I do not think you would be in such opposition to the proposal before the Congress. I have observed in my experience with national parks and history that some of them, the most of them, come about because of the local people's interest in preserving them for the national good, and they come to Congress for years at their own expense and try to get that site designated as a national park or monument.

Mr. PACKARD. That was true in the State of Texas.

Mr. REGAN. I understand that the people in Vernal, where the remains were found, did that very thing, and finally they were fortunate in getting 80 acres set aside. That did not seem to bring on the tourist travel they hoped for because the remains were dug out and taken to museums in concentrated centers. Then they said, "Maybe we can get some picnic sites." That is beautiful scenery. They have it all over the State of Utah. This is not the only beautiful spot, they have this type of scenery all over the State of Colorado. But in order to carry on what they started, they said, "We ought to take in some of these canyons." But looking to the future, they said, "Now we might sometime get to the point where we would want to put this water to beneficial use, so we want to make a reservation, that, if any time we want to put some dams in here to conserve water, we are going to have that in the bill." So they did.

Now the people at Vernal particularly are more interested in this monument, I think, than anybody else in the country.

Mr. PACKARD. They should be.

Mr. REGAN. Because it means tourist travel to them, which means dollars to the chambers of commerce and the people out there. They are not going to get any direct benefit from this dam for water or electricity. The people there will get no direct benefits. It is there for the State of Colorado and Utah where the electricity can be sold, and the dams up the river is where they will get the water.

So in their opinion, they are on the ground, and I venture to say have all seen Steamboat Rock, which you picture very well [indicating]. You say in the magazine, which is very attractive—I think you have all been doing good work and I hope you will continue, and I will back you up in a lot of things—in this instance you say, only the top will be shown if that is inundated with the reservoir. More than 300 feet of it, if I understand it, will stick out when the reservoir is full, and I doubt from the way they are scrambling for this water that it will ever be filled.

We listen to you with interest because we know you have no motive other than what you think is best for this country. But those local folks come here for what they think is best for the people who live in that vicinity. I have been more impressed with their arguments, I am sorry to say to you, but I have been more impressed with their eagerness for this than I have been with those points you brought up in opposition to it, because I do not believe that the national-park system will be injured in any way. In my opinion, having been on the ground and gone up these canyons, having seen the monument, it will be enhanced and beautified and be more attractive to the people who are interested in national parks. I think if and when you see them you will so agree.

Mr. PACKARD. I would like to answer the various points because there are some very good points.

Mr. SAYLOR. Before you answer the question, I wonder if the gentleman would yield for an observation?

Mr. REGAN. With reluctance, I yield.

Mr. SAYLOR. There is no member of this committee for whom I have greater admiration than for my good friend Mr. Regan of Texas. But I must call to his attention that his logic in this case is slightly in error because the withdrawal that is referred to in the proclamation of 1938 has absolutely nothing to do with the interest of the people of Vernal. This was a withdrawal made in 1904 before even the people of Vernal were interested in having the original 80 acres set aside, and at the time this national monument was extended in 1938, they did not recognize any claim that the people of Vernal had made with regard to the right to develop the river, but a withdrawal which was made before the original 80 acres was set aside. And that withdrawal was made in 1904.

Mr. DAWSON. Will the gentleman yield to me at that point?

Mr. REGAN. If I still have any time, I will.

Mr. DAWSON. I want to make this observation in reply to what the gentleman from Pennsylvania has just said:

The State of Utah is now 72 percent federally owned. In other words, the Government owns 72 percent of the State of Utah. And

does the gentleman mean to say we in the State of Utah have nothing at all to say about that 72 percent?

Mr. PACKARD. Mr. Chairman, shall I answer these points that have been raised as best I can?

Mr. HARRISON. Proceed.

Mr. PACKARD. One fact is new to me. I am very glad to hear it. I have never known how that quarry was established in the first place. I am pleased to discover it was because of the interest of the people of Utah. My original impression was that it was because of the interest of certain museums, notably the Pittsburgh Museum and the American Museum of Natural History, that led to the establishment of the quarry to be reserved for the protection of the fossils. It was not reserved, as far as I can understand, for tourist attraction back in 1915. When it was established it was way out in the hinterland and nobody thought of using it as a park.

Mr. REGAN. Will you yield there?

Mr. PACKARD. I may be wrong on that, but it is my understanding.

Mr. REGAN. I may be wrong also, but as of the last few years the people of Vernal have been much in the forefront of advertising in every way possible the attractiveness of coming to Dinosaur National Park.

Mr. PACKARD. I think that is true.

You made another statement. From the reports coming to me from the people connected with our staff who have been in the monument, not been in the canyon, a great many residents of Vernal have not been in the canyons, residents of that part of Utah themselves have never been in the canyons, and do not know what is in there. They were told so by a number of people in the area after they asked that specific question.

You said the people of Vernal have nothing to gain. Understand, I am not criticizing the people of Vernal in that regard at all. It is a natural and proper hope. But the people of Vernal have a great deal to gain if the dams are built in that vicinity, not necessarily the Echo Park Dam but other dams so that Vernal would be one of the nearer communities. Vernal has an opportunity and a danger, and that is that there will be developed a boom condition due to the presence of reclamation workers. The town of Estes Park in Colorado is now suffering from the fact it was not farsighted enough to see that when the Big Thompson project was completed the thousands and thousands of dollars that poured into that town while the reclamation workers were working in the vicinity are going, and it led to a great deal of difficulty for the town of Estes Park in that it did not realize that it was enjoying a boom condition which is now vanishing.

You asked about Steamboat Rock. I am no authority on that. Others here are of much more authority on that than I. But I understand Steamboat Rock is actually 650 feet high. It will be inundated to 500 feet.

Mr. REGAN. Your own magazine says 800.

Mr. PACKARD. That was written before the restudy to determine exactly what the height is. We understand it is 800 feet.

Mr. HARRISON. The gentleman's time has expired. I will yield him 3 minutes of my time.

Mr. REGAN. I will split it with him.

Mr. PACKARD. You said these dams will not hurt Dinosaur National Monument. I know you, Mr. Regan, are very proud of that Big Bend National Park in Texas. And may I ask what your attitude might be if there was a project of similar size and scope planned there?

Mr. REGAN. If the people down there thought a dam in the canyon would benefit them, I would be in support of it.

Mr. PACKARD. Then what was the point of giving this to the Nation in the national parks in the first place?

Mr. REGAN. The canyon is a part of it.

Mr. PACKARD. An essential part of it.

Mr. REGAN. I was in the State senate at the time and got the first land dedicated for that park for the benefit of the people.

Mr. PACKARD. Right.

Mr. REGAN. I am still very much interested in it, but I am also interested in the people who live in that part of the country; and if a dam there would benefit the people who live there, I think I should be in support of the dam because I do not believe it would mar the beauty or change its topography too much, but add something to it.

Mr. PACKARD. I should add that your record in support of that park and in the aid of the law certainly has been a very excellent and magnificent one.

Mr. REGAN. I put in a good part of the day yesterday, when I was not here, in trying to do something for that park.

Mr. PACKARD. I think perhaps to sum that question up, it sounds—a lot of debate here has sounded as though there is a conflict between the national interest and the local interest. We do not believe that that exists. Certainly we do not want to stimulate any such conflict. We believe that the people of Utah and Colorado should emphatically have these water benefits. There is no question about that at all. We believe the indications are they can have those benefits without interfering with the national monument.

Mr. REGAN. Will you yield there, Mr. Packard? Do you think those people also are as interested as any of your members in retaining the attractiveness of the area in order to attract the tourists there?

Mr. PACKARD. I think that is true, as shown by the fact their delegates in Congress, including Mr. Dawson, and some others in Congress here, have told me personally that if there is a possibility of building the project without going into the national monument, they would be happy to have it done that way.

Mr. DAWSON. With a feasible alternative.

Mr. PACKARD. Yes. Now, the question of feasibility is a very important one. Let me point this out: that this project, which first came to the attention of the National Park Service in 1942—up to that time they did not know about it. The Secretary of the Interior, Harold Ickes, who was primarily responsible for the initial plans of this project submitted testimony at the Secretary's hearing in 1950, which was to the effect, and very emphatically to the effect, that he did not believe the Echo Park Dam or Split Mountain Dam should be built. And he was primarily responsible for planning the project.

The subsequent Secretary of the Interior, Julius Krug, made the following statement about this type of project in general. Here it is. I am sorry, I cannot find it. That is the trouble with bringing too many papers to the place. I will paraphrase it and submit it for the record in his own words.

Secretary Krug said that power projects should not be built in national parks unless the national security were so endangered as to make it vital that they be so constructed. The national security, not just a local interest.

(The language referred to follows:)

Large power and flood-control projects should not be recommended for construction in national parks, unless the need for such projects is so pressing that the economic stability of our country, or its existence, would be endangered without them.

Mr. PACKARD. Secretary Chapman, the next Secretary of the Interior, was impelled by military considerations, that when national security was involved, to rule that the Bureau of Reclamation should go ahead with its recommendations to build the Echo Park Dam. He never submitted those recommendations to the President, but instead he initiated a 16-month investigation that continued until he left office, to determine whether the alternates we have been speaking of were feasible. He was convinced that these alternatives were feasible, not the particular ones General Grant proposed necessarily, but it was possible to revamp this project to change the sequence of construction of these dams to a point where it would not be necessary to go in the monument. Just before he left office in 1952 he submitted a letter to the President that I have submitted for the record, and quoted, showing that he took that position. That was after 16 months' study.

The next Secretary of the Interior, Mr. McKay, before he had been in office a full year, without any further field investigations, other than sending Secretary Tudor out there for a 3-day visit, without any further investigation, actually relying upon the investigation Secretary Chapman ordered made, and which let to Secretary Chapman's conclusions that the dam should not be built, quickly came to the conclusion that it should be built, without any adequate study whatever. I think he has acted much too rapidly, and he has relied upon inadequate surveys, and investigations. In the Bureau of Reclamation's own report it says they have not surveyed these alternatives.

Mr. REGAN. Let me cut in there.

Mr. PACKARD. Yes.

Mr. REGAN. You said he made no study. Did the other Secretary to whom you refer make a thorough study?

Mr. PACKARD. He made a 16-month study which let to that conclusion that—

Mr. REGAN. Which Secretary?

Mr. PACKARD. Secretary Chapman.

Mr. DAWSON. Will the gentleman yield there?

Mr. HARRISON. The time of the gentleman has again expired.

Mrs. PFOST. I will yield to my colleague from Texas such time as he may desire from my time, Mr. Chairman.

Mr. REGAN. I cut in there to ask you if Secretary McKay had made a 16-month investigation—

Mr. PACKARD. Of course not.

Mr. REGAN. I mean Secretary Chapman.

Mr. PACKARD. Less than 8 months ago Secretary McKay said to me personally—and I am paraphrasing what he said, but it is very much what he did say—"I do not know very much about this Echo Park problem." He said, "I hope that you and other conservation

organizations will advise me what you think about it because I know very little about it." He said that 8 months ago. He told the advisory committee exactly the same thing. I was serving as one of the members on the advisory committee at that time. The advisory committee he referred the matter to recommended unanimously against Echo Park, and he apparently did not pay any attention to that recommendation.

I feel very strongly that neither Secretary McKay nor Secretary Tudor have made an adequate study of the alternative possibility, which is what Secretary Chapman said they should do, before they came to Congress with that proposal.

Mr. DAWSON. Will you yield to me at that point?

Mr. REGAN. I yield.

Mr. DAWSON. For an observation. Is it a fact that the Secretary, of course, must rely upon his field staff and others to do the detailed work for him?

Mr. PACKARD. I quite agree.

Mr. DAWSON. Is that correct?

Mr. PACKARD. Certainly.

Mr. DAWSON. Is it not also correct that the same field staff is in existence now that was there under Secretary Chapman and Secretary Krug and the others you mentioned?

Mr. PACKARD. Yes, sir. I should assume they are more or less the same staff, except the new Commissioner of Reclamation.

Mr. DAWSON. And they are the ones now who are back here making the suggestion to the Secretary that the dam be built?

Mr. PACKARD. That is right. But may I point out, sir, they made the same recommendations to Secretary Ickes, Secretary Krug, and Secretary Chapman, and the three Secretaries thought they were not good recommendations.

Mr. DAWSON. I suggest you read Secretary Chapman's statement.

Mr. PACKARD. I put it in the record.

Mr. DAWSON. We have it in the record.

Mr. PACKARD. The final conclusion Secretary Chapman came to was that those recommendations were not good.

Besides, sir, may I point out, it is a difficult thing, both for the Bureau of Reclamation and for the Secretary. The Bureau of Reclamation naturally wants to carry out its projects as it originally planned them.

I have his letter here of December 4, 1952.

They want to carry on that project as they originally designed it. That is very understandable and very natural. The trouble is we are in a situation where the proponents, the judge and the jury are more or less the same person. The one who is going to make the surveys, the one who is going to determine whether it is feasible, whether feasible alternative sites exist, are the very people who originally proposed the project, and naturally they are not going to lean over backward, to my mind, to find another way to do this. They are going to follow their original planning in any—

Mr. HARRISON. I might suggest, without trying to cut the witness off, that if we want to get many more witnesses on for the opponents, we will have to limit the time a little bit.

Mr. REGAN. I will yield back to the lady the balance of the time.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. I have a couple of notes here, Mr. Chairman.

In your statement you did not point out the fact that this monument was not set aside by an act of Congress, whereas the parks have been so set aside?

Mr. PACKARD. Of course, that is generally true.

Mr. BERRY. This was simply by the order of the Secretary. Is that not correct?

Mr. PACKARD. No, the national monument was set aside by order of the President under the Lacy Act of 1906. Any national monument is.

Mr. DAWSON. It was a Presidential order, was it not, and not by act of Congress?

Mr. PACKARD. That is correct. That is true of most of the national monuments.

Mr. BERRY. Have you ever been in the canyon?

Mr. PACKARD. Not the canyon in the monument. I was there when I was a kid in 1927.

Mr. BERRY. You are very interested in this canyon and its beauty?

Mr. PACKARD. I certainly am.

Mr. BERRY. But you did not get around to go down yourself?

Mr. PACKARD. When I was there, sir, the area was almost unknown. I was there in 1927 when I was 14 years old.

Two representatives of our association, though, were officially assigned to make that investigation for us, just as Mr. McKay assigned Mr. Tudor to go there because he could not go himself.

Mr. BERRY. Just one other thing I would like to ask. One of the Secretaries that you referred to decided that power projects should not be built unless the national security was endangered?

Mr. PACKARD. Yes. I can quote the—

Mr. BERRY. Is it your understanding that this is simply a power project?

Mr. PACKARD. I bring the point in, sir, for another reason—

Mr. BERRY. Does not that put it in a different class?

Mr. PACKARD. Not in that regard.

Mr. BERRY. Can you quote a Secretary saying that power projects should not be built in national parks unless the national security is endangered?

Mr. PACKARD. That is right.

Mr. BERRY. As authority for the fact that this project should not be built unless?

Mr. PACKARD. My opinion, sir—you asked me my opinion, and I am very glad to give it to you—I think there is no reason for invasion of a national park or a national monument for any purpose whatsoever unless the national security is so endangered to make it necessary.

Mr. BERRY. For no purpose?

Mr. PACKARD. No purpose. I think they are sacrosanct. I think that is why they were set up. I think—

Mr. BERRY. Wait a minute. Do you differentiate between national parks set aside by Congress and national monuments set aside by Presidential order?

Mr. PACKARD. I make no distinction.

Mr. BERRY. You make no distinction?

Mr. PACKARD. Ever since national monuments were incorporated within the national park system, and all of them were put into it in

1934, the policy, the principles and the objectives of a national monument have been identical with those of a national park. There is no distinction made by the Interior Department between a national park and a national monument in that regard. It is not customary for the Interior Department to specify national park and national monument every time they mention a national monument. They often speak of national monuments as national parks. The only difference between national monuments and national parks in that regard is the technique in establishment. The reason for establishing a national monument under a different act is primarily to do it fast because Congress takes so long to do it. Grand Canyon would have been destroyed if it had not been for that.

Mr. BERRY. We might take into consideration a little more of the facts if Congress had to do it; is that right?

Mr. PACKARD. No. Let me give you a concrete example. The Grand Canyon is perhaps our greatest national park. I think everybody agrees it is one of the finest.

Mr. BERRY. Do you believe all these things should be done by Presidential order?

Mr. PACKARD. Oh, no.

Mr. BERRY. Do you think Congress should have something to say about some of these?

Mr. PACKARD. Congress has a great deal to say about it as the law stands.

Let me finish my point, sir. Grand Canyon National Monument was established because there was a tremendous problem back in 1908, I think it was, when the monument was established—that the Grand Canyon was in great danger from commercial exploitation, not dam sites, but for another purpose.

Some of you may remember the controversy that raged with Senator Cameron's efforts to battle the commercializing of the Grand Canyon. I do not remember it. I was not even born then. But I have read about it. The national monument was established under the Lacy Act in order to prevent its destruction. Subsequently it was made a national park. But there is no difference, none whatever, in propriety of protecting the Grand Canyon as a national park or as a national monument, or any other national monument in the same fashion. I suggest the only—

Mr. HARRISON. May I suggest that the witness confine himself to answering the questions and we will get along a little faster.

Mr. PACKARD. Right.

Mr. BERRY. That is all.

Mr. SAYLOR. Will the gentleman yield to me?

Mr. BERRY. Yes.

Mr. SAYLOR. I would like to ask unanimous consent, since this plan of the national monument has become so controversial, there be admitted as part of the file, if not a part of the record, the topographic map of our national monument showing the boundaries of the monument and outlining the sections set aside in the reservation of 1904.

Mr. HARRISON. Any objections?

The Chair hears none. It will be received for the file.

(The document referred to will be found in the files of the committee.)

Mr. D'EWART. Will you yield to me?

Mr. BERRY. Yes.

Mr. D'EWART. I have just examined this memorandum on "Legal Status of National Parks and Monuments With Reference to Their Use in Federal Irrigation or Power Projects."

I have no objection, but there are certain conclusions that go beyond what I think the committee would want to indicate as giving approval.

Mr. ASPINALL. I agree with the gentleman from Montana.

Mr. HARRISON. Without objection, it will be received for the file.

(The memorandum referred to will be found in the files of the committee.)

Mr. HARRISON. Are you through, Mr. Berry?

Mr. BERRY. I have one more question.

In the act of June 8, 1906, authorizing the Presidential setting aside of monuments, it says this:

The limit of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

Is similar language in the National Parks Act?

Mr. PACKARD. I do not believe so, sir. It says "objects," but it does not use that phrase of the "minimum area" that you are referring to.

Mr. BERRY. This says "objects to be protected."

Mr. PACKARD. Yes.

Mr. BERRY. I think that is all.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Packard, did I understand you to say that you thought that once a national monument or national park was established it should be treated thereon as inviolate?

Mr. PACKARD. I said that. I will qualify it, however, at least to get what you are driving at, I think, sir. The only body that has authority to authorize any violations, shall I say, of the national parks or national monuments is Congress.

Mr. ASPINALL. So far as you are concerned, once it is established it should be continued in that entity?

Mr. PACKARD. Fundamentally, yes. I do not say the boundaries should not be changed under certain conditions.

Mr. ASPINALL. Where were you and your organization when I introduced two bills when I first came to Congress, at the instance of the National Park Service, to do away with the Holy Cross National Monument and the Wheeler National Monument in Colorado?

Mr. PACKARD. That is a good question, sir. I think it is aiming at a very good point I should have included.

I think they are sacrosanct, sir; they should not be invaded unless the Congress in its wisdom sees a very good reason for doing so. That is true, of course. I will agree with you there. My statement was probably too broad in that statement.

Mr. ASPINALL. I want to know where you were.

Mr. PACKARD. We supported you on that question.

Mr. ASPINALL. Let me ask you this: This area was established first as a national monument of 80 acres, which I think honestly fits into the provisions of the Antiquities Act of 1906. Now what if my colleague from Utah and I should come in here and introduce a measure

to discontinue the rest of the area as a national monument—where would you be?

Mr. PACKARD. I do not know, sir. You have raised a good point. I probably should not have made that as emphatic as I did. I think the principle I presented is sound. I do agree there are areas in the national park system that can stand alteration of their boundaries in some cases, even elimination.

Mr. ASPINALL. I wanted your reasoning as to how this additional area of over 209,000 acres legally is found to be entitled to be considered as a national monument area.

Mr. PACKARD. The answer would be, first, because of the qualities that were there that in the opinion of the Park Service, and in our opinion, qualified to measure up to park standards. Secondly, regarding the area involved, which I think is what you are driving at, the area is actually very close to being as small as possible to protect those two canyons, and the canyons are the objects to be protected under the proclamation.

Mr. ASPINALL. I understand under the provisions of the Antiquities Act, it says, "to declare by public proclamation, historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest."

Mr. PACKARD. You mean it does not apply to areas in addition to these—the scenic areas?

Mr. ASPINALL. What do you think?

Mr. PACKARD. My answer to that is that question has been tested on many occasions, even in the courts, and the act has been interpreted by much better legal authority than I to apply to scenic areas as well. Therefore, I say the canyons come within the act and is the land area involved sufficiently small, the minimum necessary, to take care of them.

Mr. ASPINALL. You are making a very sound general statement, but as far as these areas are concerned—

Mr. PACKARD. I think it applies.

Mr. ASPINALL. You would have difficulty, would you not, in applying that test to this particular area and keep out hundreds of other areas?

Mr. PACKARD. No, sir.

Mr. ASPINALL. Let me ask you this: Have you ever been in Dolores Canyon?

Mr. PACKARD. No, I do not know that. I have been in some of the canyons in Colorado. I have not been in that. I admire them very greatly.

Mr. ASPINALL. As far as historic canyons are concerned—this is my personal feeling—there would not be anything about this canyon to entitle it to more consideration than to the one to which I have just referred.

Under the provisions of the Antiquities Act of 1906, the United States Congress does have the right at this time, if it sees fit, to lessen the area or to broaden the area.

Mr. PACKARD. Certainly Congress has the right to make the determination that the area does come within the provisions of the Antiquities Act of 1906. You have more authority than that, sir. You have complete authority over all public reservations, national parks, and national monuments.

Mr. ASPINALL. But what you are trying to say here is that you would be disposed to object to any changing whatsoever as far as the legal status of this area is concerned?

Mr. PACKARD. That is correct.

Mr. ASPINALL. Let me say to you, before I let you go, because I appreciate your statement, that I wish you would come to Colorado.

Mr. PACKARD. I have spent some years there, sir.

Mr. ASPINALL. And that you give other places of interest, which in my opinion hold much more prospects for the people of the United States, the same publicity you have seen fit to give to this one.

How old were you in 1927?

Mr. PACKARD. I was 14.

Mr. ASPINALL. You were 14?

Mr. PACKARD. Yes.

Mr. ASPINALL. You do not mean to convey to this committee that you formed any definite opinion at that time on the value of Echo Park?

Mr. PACKARD. Oddly enough, I did. Not Echo Park, but I did of the monument, because, actually, on the trip back in 1927, when hitchhiking was unheard of, a group of us hitchhiked from New York to California and back. We bought two model T Fords at Kansas City and went the rest of the way. On the way back we stopped at Dinosaur National Monument, at the Little Fossil Quarry. And that is all I have ever seen of it. But my interest in conservation, sir, comes from my original interest when I was 8 years old and saw the dinosaurs taken out of the quarry by the American Museum of Natural History. That was my original interest.

Mr. ASPINALL. Can you tell me the quarry from which the remains of the largest dinosaur has been taken in the United States?

Mr. PACKARD. I am not sure. I think at Medicine Bow in Wyoming.

Mr. ASPINALL. I do not think so. I think it is about 5 miles from a little town called Fruita, which is 23 miles west of my home town, Palisades. Have you never visited it?

Mr. PACKARD. I have been in Fruita, but I did not know that was true.

Mr. ASPINALL. I may be wrong. It may be just a question of the chamber of commerce seeing it from their local viewpoint.

Mr. MILLER. Will the gentleman yield?

Mr. ASPINALL. Yes.

Mr. MILLER. I want to point out that near Agate, Nebr., on the Wyoming line, is one of the richest sources of dinosaur bones. They are still digging them up there by the carload. I do not know whether they are going to make it a monument, but there are certainly a great number of dinosaur bones in that particular area, probably the largest collection of any place in the United States. You are familiar with that?

Mr. PACKARD. I have heard of it. I am not familiar with it.

Mr. MILLER. The cattle graze all over the place. Dams are not being built there. I think an oil well is being drilled presently on one of these spots where bones have been found.

Mr. DAWSON. Do not give up hope, Mr. Miller.

Mr. HARRISON. Will the gentleman yield?

Mr. ASPINALL. I yield.

Mr. HARRISON. I might say, as far as Wyoming is concerned, we too have a very famous and very large dinosaur deposit there, and I am very hopeful that no one will get the idea that we should give up more of our land area for either a park or a monument. At the present time we do not have as much of our land owned by the Federal Government as other States, Utah in particular, but the Federal Government owns a little over 52 percent of the area of our State and owns over 70 percent of our mineral resources. We who live in the area love the beauty, but we think that we have given considerable to the people of the United States for their material enjoyment and to our detriment. For that reason we are hopeful that some of our good friends who live in other areas will recognize the fact that, if we are to expand, and our economy is to increase and if we are to provide places for veterans and other people who want to live in our State, then in turn, we must be allowed to make use of some of the natural resources which arise and originate in our State.

I might say that I am very much in favor of the preservation of national parks. I served in the Ranger Service, first in Glacier and then in Yellowstone, under Horace Albright, and I certainly would be the last one to try to destroy the beauty of any part of the parks.

On the other hand, I think the time has come that the people must realize, with the population increasing in this country rapidly, that our problems are increasing as to the production of food and the preservation of our resources, and as time continues to get closer to the point where we do not have the space and provisions for the people, we must for the preservation of our country and our resources possibly invade some of the so-called areas which have been set aside in the past for the benefit of the public, because in that instance, in my opinion, it would be for the benefit of the public.

Mr. MILLER. I have to leave shortly, and I want to ask 2 or 3 questions relative to the use of water.

As I understand your group, you would object to building a dam any place inside of the present monument?

Mr. PACKARD. No, sir; because of the fact that the proclamation establishing that monument authorizes the Brown's Park Dam, and it would not be appropriate that we object to that. I hope it is not built.

Mr. MILLER. Do you object to the building of Brown's Park Dam?

Mr. PACKARD. I do not think we can legitimately object to that. I hope they will not build it, personally.

Mr. MILLER. Where is Brown's Park Dam in relation to the dinosaur bones?

Mr. PACKARD. It is miles from there, sir. The whole problem is not related to the dinosaur quarry. That will not be affected no matter what we do.

Mr. MILLER. Congress has set up the use of water, and different legislation has been passed for the domestic use of water coming first in priority, then irrigation, reclamation, and industrial uses, and then they have others, flood control, recreation, and silt control which have been added. But always in all of the priority lists the domestic use of water, then for irrigation and electrical energy and industrial uses, come ahead of recreational uses of water. Do you think the Congress ought to change that and put recreational uses of water first?

Mr. PACKARD. Certainly not. I merely point out the recreational use of the water does not use the water up.

Mr. MILLER. Would you change the priority for the important use of water?

Mr. PACKARD. I do not think there is priority, sir. I think it should be used for what it is needed, including irrigation and power uses.

Mr. MILLER. Some of the communities in the West are limited in their growth to the amount of water they get and how wisely they use the water they do get.

Mr. PACKARD. That is right.

Mr. MILLER. Whether they get water for domestic use. Some of their towns would be finished unless they can get additional water. Some of them can grow no more unless they can get water for irrigation purposes, for electrical energy. Do you think we ought to say to those communities, "stop where you are. We are going to save this water for recreational purposes?"

Mr. PACKARD. I think I have emphasized, sir, that we have no desire to interfere with any of those uses of water. I have said it several times. I certainly hope the people of Utah can use, and use as wisely as possible, all that water. I merely state they do not have to use it by building Echo Park Dam, they can build other dams first.

Mr. MILLER. That is a very nice statement. It reminds me of a little advice a young fellow got when he went out in a new town to locate. They said, "When someone comes around to have a church built, always favor a church. Indeed, always do that, but always object to where it is going to be built." Now you are a little bit in that position.

Mr. PACKARD. I suppose I am.

Mr. MILLER. You want them to use the water and build the dam—

Mr. PACKARD. Build the dam somewhere else.

Mr. MILLER. You object to how the water is being used and where the dam is being built.

Mr. PACKARD. No, we do not object to how the water is being used, we object to where the dam is being built.

Mr. MILLER. In other words, sure, build the church, but you object to where the church is being built?

Mr. PACKARD. If you build a church there, you cannot put a dam in that spot, no matter where you build the church.

Mr. MILLER. I might note, Mr. Chairman, that the President's Committee on Water Resources Policy, in their report of 1950, on page 462, volume 2, said—and I would like to read just a short statement or paragraph of their remarks relative to this site:

There also remains some elements of controversy concerning the place of reclamation facilities and scenic attractions in the development program for the basin. In spite of the Department of the Interior's interdepartmental resolution of such conflicts as that between the Green River projects (Echo Park, Split Mountain, Flaming Gorge) and national park preservation, these projects have not yet been accepted by militant spokesmen of park and recreational interests * * * while it is remotely possible that selection of alternative projects could allay this opposition, the substantial economic advantages which most of the controversial projects possess suggest that they cannot be placed in the background easily. Difference of opinion by important groups on basic projects, therefore, is likely to be an obstacle facing development until Congress finally has authorized true comprehensive plans for the basin.

I presume, if anything is to be done here, Congress must take some action, as to whether the dam or the church is to be built at a certain location.

Mr. PACKARD. Yes, sir, definitely.

Mr. MILLER. I think that is all.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Mr. Packard, you made some reference to Mr. Chapman's statement on this?

Mr. PACKARD. Yes, I read into the record——

Mr. DAWSON. On the Echo Park Dam?

Mr. PACKARD. Yes.

Mr. DAWSON. I want to call your attention to the 1950 report of the Secretary, with the comments of the National Park Service on this project. I am reading from page 41 of the report, and in which they quote Mr. Chapman. This is taken from Mr. Chapman's letter of June 27, 1950.

Mr. PACKARD. That is right.

Mr. DAWSON. He reviews the history of the case, and he says:

I am convinced that the plan is the most economical of water in a desert river basin and therefore is in the highest public interest; and, (b) the order establishing the extension of the monument in the canyons in which the dams would be placed contemplated use of the monument for a water project, and my action, therefore, will not provide a precedent dangerous to other reserved areas.

I note that the fossils are not in the areas of the monument proposed to be flooded and that the creation of the lakes will aid the public in gaining access to scenic sections of the Green and Yampa River Canyons. Much superb wilderness within the monument will not be affected, excepting through increased accessibility.

The importance to the growth and development of the West of a sound upper Colorado River Basin program can scarcely be over emphasized. I hope this decision on my part will promote quick solution of all other problems connected with this matter so that we may proceed with such a program.

I ask the National Park Service and the Bureau of Reclamation to cooperate fully in making plans that will insure the most appropriate recreational use of the Dinosaur National Monument, under the circumstances.

That is signed "Oscar L. Chapman, Secretary of the Interior."

Now that is the situation, is it not?

Mr. PACKARD. No.

Mr. DAWSON. He recommended the approval of the dam?

Mr. PACKARD. I beg your pardon. He——

Mr. DAWSON. Just a minute.

Mr. PACKARD. That is the situation as of 1950.

Mr. DAWSON. Well, I was thinking about his letter. He says it was contemplated additional acreage was set aside for dams to be built.

Mr. PACKARD. No; a project might be built.

Mr. DAWSON. Let me read the statement again:

The order establishing the extension of the monument in the canyons in which the dams would be placed contemplated use of the monument for a water project, and my action, therefore, will not provide a precedent dangerous to other reserved areas.

Mr. PACKARD. I agree with that.

Mr. DAWSON. He also is talking about a precedent.

Mr. PACKARD. He also says a water project. My point——

Mr. DAWSON. In this letter he is urging the construction of Echo Park Dam and he is referring specifically to the dam.

Mr. PACKARD. The point is this. I agree with most of it. The point is that was the Secretary's position in 1950. Following that year, he had a 16-month investigation made that led him to the conclusion much of what he said was true but he should not build Echo Park Dam. That is in the letter of December 4, 1952, the only report he ever made to the President on the subject.

Mr. DAWSON. In the letter of 1952 he was urging that additional study be made; was he not?

Mr. PACKARD. Quite right.

Mr. DAWSON. And the study has been made by the Bureau of Reclamation and the same people who were in his department at that time are here now under Secretary McKay and——

Mr. PACKARD. Some of them.

Mr. DAWSON. And come in here recommending the project after making that study.

Mr. PACKARD. Nevertheless, he still believed that the Echo Park unit not be——

Mr. DAWSON. He still directed the study to be made and they made the study and came back and recommended it.

Mr. PACKARD. It did not convince him because he said it should not be built.

Mr. DAWSON. All right. You also made the statement I think that geological and archeological values will be lost if the dam is constructed. Is that right?

Mr. PACKARD. Yes, sir.

Mr. DAWSON. Have you read the statement of Dr. Kay, who is the curator of the Carnegie Museum in Pittsburgh?

Mr. PACKARD. No, I have not.

Mr. DAWSON. I think you made reference to the fact, if I remember your statement correctly, that they were the people who were responsible more than anyone else in getting Dinosaur Monument set aside.

Mr. PACKARD. The fossil quarry.

Mr. DAWSON. That is right.

Mr. PACKARD. I think that is right. I do not know.

Mr. DAWSON. Now the same people you say were responsible for getting it set aside come in and recommend that Echo Park be built.

Mr. PACKARD. They are not responsible for having the canyon preserved, but the quarry preserved, which is something quite different.

Mr. DAWSON. Now the Antiquities Act provides that monuments be set up to protect objects of interest such as fossils.

Mr. PACKARD. There are two objects of interest which must be separated. One is the dinosaur fossils, which are not of concern in this whole dispute. There is no question about them, they would not be affected—the bones. The issue at stake is the canyons, which are another object.

Mr. DAWSON. The scenery?

Mr. PACKARD. An entirely different object. Not only the scenery, but archeologic values of those canyons.

Mr. DAWSON. Then I suggest you read the statement of Dr. Kay, the curator, who says the scenery can only be accessible through construction of this dam. And he has spent 8 years out there.

I call your attention to the fact also that the University of Utah Geological Department and other colleges out there have been sent

out to make these investigations on the archeological factor, and all report that construction of this dam would not interfere with it.

Mr. PACKARD. Yet there are plenty of witnesses in this room that found the river and the canyon extremely accessible, even though over inadequate roads.

Mr. DAWSON. I am rather amazed that you have taken the interest you have over the years and engaged professionally in this capacity, and by talking about scenery, and yet you have never taken the occasion to take the trip down the canyon or even to go out to the monument.

Mr. PACKARD. I will tell you why, sir, and very clearly. The association is dependent upon membership dues for their income. Two representatives of that organization who went to the monument went on their own expense, spending literally thousands of dollars to get there. I, unfortunately, am not in a position to spend the money to do that. I tried desperately to find funds to take me. Nevertheless, with little picayune funds—we cannot rely on other sources of income, commercial sources—yet two members of our staff at their own expense, involving hundreds, if not thousands of dollars, have gone to those canyons to find out what the story was. But I cannot afford to do it.

Mr. DAWSON. I am glad to hear you inform the committee of the terrific expense it takes to get down to see the canyons. I think that is right. We would like to make it more accessible and easy to get there and see without so much expense.

Mr. PACKARD. It was very expensive because one gentleman was taking a motion picture of the canyon at considerable length, and the other spent considerable length of time there. The expense involved is simply the transportation funds necessary from wherever you live to the monument and the boat trip down the canyon.

Mr. DAWSON. I am going to close, Mr. Chairman, by asking my regular stock question as related by the gentleman from Pennsylvania. I assume you have taken a poll of your complete membership and have found their views on this subject.

Mr. PACKARD. No, sir. It is not practical to do so, again because of the lack of funds; also because members rely on the executive committee to determine the policy of the association. They join the association with that understanding, and they stay with us because they understand that situation and approve it.

Mr. HARRISON. Will you yield?

Mr. DAWSON. Yes.

Mr. HARRISON. That same reason would apply for other groups, too, would it not, as the ones Mr. Saylor questioned as to that?

Mr. PACKARD. Yes.

Mr. HARRISON. Thank you, Mr. Dawson.

Mr. DAWSON. That is all.

Mr. HARRISON. Mr. Westland?

Mr. WESTLAND. I just have one question. Where the authorizing legislation or proclamation reserves the right to build reclamation or power projects in a park as, for example, Glacier Park, and if legislation were introduced to build a dam in that park, would this National Park Association still oppose the building of that dam?

Mr. PACKARD. Certainly, sir. We would oppose it because I think it is a mistake regardless of the law.

Mr. WESTLAND. Even though it is in the original proclamation?

Mr. PACKARD. Yes. I do not think the provisions necessarily are right. We have opposed it in that particular case.

Mr. WESTLAND. That is all.

Mr. HARRISON. Mrs. Pfost?

Mrs. PFOST. No questions.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. No questions.

Mr. HARRISON. Mr. Rhodes?

Mr. RHODES. No questions.

Mr. HARRISON. Thank you very much.

The Chair will announce that there will be no meeting this afternoon because of time consumed for voting in the House, and we will not be able to secure permission to meet. We will start again tomorrow morning at 9:30 and carry through. I am hopeful that we can hear those whose names have been given to me by the conservation group. We will see that the group gets equal time, as I have stated in the beginning, but opposition to any part of the bill is construed as opposition to the bill. It is just as true for the other groups as it would be for the conservation groups as to the time being divided on that basis, and I hope that wherever possible questioning can be kept to a minimum and the statements kept to a minimum so that all the gentlemen may have the privilege of giving their statements.

Proceed, Mr. Brower.

Mr. ASPINALL. Just a minute. Before Mr. Brower starts with his figures, what is your purpose, Mr. Brower?

STATEMENT OF DAVID R. BROWER, EXECUTIVE DIRECTOR, SIERRA CLUB, SAN FRANCISCO, APPEARING ON BEHALF OF THE FEDERATION OF WESTERN OUTDOOR CLUBS—Resumed

Mr. BROWER. I was reading part of my testimony yesterday and the figures were coming a little too fast and the request was made that I make the figures available so the committee could see what was arrived at. My purpose is to demonstrate that this continuing study has produced no reliable information or at least is subject to question because its ninth-grade arithmetic fails.

My purpose is to demonstrate, whereas Mr. Tudor testified that one of these alternative sites would produce 165,000 acre-feet more evaporation per year, which led to his saying that for this waste of water alone that was the fundamental reason for even considering Dinosaurs—I am going to demonstrate with simple arithmetic it is not 165,000 acre-feet more which is evaporated, but 20,000 acre-feet less, just with arithmetic.

My point in doing this is to demonstrate to this committee that they would be making a great mistake to rely upon the figures presented by the Bureau of Reclamation when they cannot add, subtract, multiply, or divide. I am not trying to sound smart, but it is an important thing.

Mr. ASPINALL. And you are a layman and you are making that charge against the engineers of the Bureau of Reclamation?

Mr. BROWER. I am a man who has gone through the ninth grade and learned his arithmetic. I do not know engineering. I have only

taken Mr. Tudor's own figures which he used and calculated in error to justify invading Dinosaur National Monument.

Mr. ASPINALL. Of course, the conclusion which Mr. Tudor tried to leave with this committee was to the effect that there would be a shortage of almost 300,000 kilowatts if the big reservoir at Glen Canyon was constructed rather than the reservoir contemplated at Echo Park. That was the conclusion which he really left, was it not?

Mr. BROWER. I do not believe so, Mr. Aspinall. I think that was an incidental part put in his statement.

In conclusion, in the final analysis, the increased loss of water by evaporation for the ultimate site is the fundamental issue upon which the Department has felt it necessary to give any consideration to the Echo Park Dam and the reservoir.

Now the other point, I grant you, was in his testimony, and I can talk about that too, if you wish, just giving a few figures that they do not give.

Mr. ASPINALL. No.

Mr. BROWER. But this table gives the Low Glen that is in the present plan as illustrated on your map; gives Mr. Tudor's figures for High Glen and the figures for Echo Park and Split Mountain.

The elevation is the elevation of the top of the reservoir as given in Mr. Tudor's figures. The capacity is in thousands of acre-feet. I have left off the last three ciphers. The area again [indicating] from Mr. Tudor's figures. The evaporation from Mr. Tudor's figures. The index is just my own division to get this 3.44 divided into that [indicating]. That is the number of feet per year that evaporate from each acre.

Now Mr. Tudor started out with an error when he said the difference was 165,000 feet. The net difference that is in the testimony. What he did to get that 165,000 was to subtract this figure from this figure [indicating]. That would be 165,000. So we will put that down. But he called it the net difference, failing to subtract. If he had moved this Echo and Split storage down to Glen, we would subtract the amount which would evaporate at Echo and Split, which totals 95,000, if we accept this figure [indicating], which does not make too much sense. So there we subtract 95,000. And the balance is then 70,000 net. That is the first mistake—forgetting to subtract.

Mr. Tudor's testimony said the chief reason for variations in evaporation were the elevation of the area. He said there were other reasons but those were the chief ones. Now there will be other reasons—the relative humidity and the temperature and the wind. The wind is certainly one of the most important.

But let's take his own figures there, varying according to area, and to do that you run a proportion of 153,000, which is to the area of 1 as to the area of the other, as the evaporation of 1—

Now to check this once. We will see what it ought to be. I will say, without going through the arithmetic and carrying on and so on, that this comes out, X solved at 51,000 acre-feet. So you subtract 51,000 from the 70,000, and you leave 19,000.

Now Mr. Tudor assumes that to get the storage, if you want it down here, an additional 5,700,000, he would have to build a dam 50 feet higher. Now he didn't build a dam 50 feet higher.

There it is a simple matter of just running a cross section, which he could do, and of course there I could not use his figures. I did not

have his figures exactly. But I do not really need them because I think you gentlemen can see that if you add 1 foot to the height of the Glen Canyon Dam, you get an additional 1,553,000 acre-feet of storage, plus a little more because it begins to spread out. And if you add 50 feet, you will get 50 times this [indicating]—765,000 more acre-feet without it spreading out. And we know it spreads out by the time it gets to 50 feet. So you have this much area. By making a simple cross section you can compute with no effort at all—I can go through the details of that arithmetic, sir, but I do not think the committee wants me to do that now. I have been able to arrive at the figure here which I will give a test in just a moment.

Let us call this other one Middle Glen Dam, which would hold all additional storage Mr. Tudor wants to put in, just taking active storage and not dead. It would be 3,735 by his own figures. Its capacity would be 31,932,000, a little more than he really wanted. Its area would be 176,100, and its evaporation would be 600,500 acre-feet per year.

Now if you run the same proportion here, this is to this as this is to X [indicating], you will find that the evaporation—we will see what the evaporation reduces to. And finally when you make your final adjustment, you add up, you take the evaporation from Big Glen and Echo and Split Mountain, which is 621 million, and you subtract that other one, which is 600,000, and you come out with 20,500 acre-feet less.

Now I submit that it will be awfully hard for me coming here to put a lot of figures there. It is hard to check them right now and do the arithmetic on scratch paper. I will stand back of that, and I do not think Mr. Tudor can find any mistakes in what I have done with his figures.

If you would like to submit those to Mr. Tudor, I certainly would be happy to.

MR. ASPINALL. Mr. Chairman, I would suggest the witness try to contact Mr. Tudor or whoever works for him in the Bureau because most certainly it is a direct criticism of Mr. Tudor's ability which has been challenged here.

MR. BROWER. It has been.

MR. ASPINALL. And we would like to have that resolved before this committee, and I would like to have the witness state that he will get in touch with the Bureau and give us the results of the Bureau's reaction as well as his.

MR. DAWSON. Will you yield to me?

MR. ASPINALL. Certainly.

MR. DAWSON. I made this suggestion yesterday, I believe it was, and one I intend to follow up at the appropriate time. I think we should have these people who profess to be engineers come in here and meet with us in executive session with the Bureau of Reclamation engineers and go over these figures for the benefit of the committee. If Mr. Brower is willing to do that, I think he certainly should be invited.

MR. BROWER. Thank you very much for that suggestion. I point out again, Mr. Dawson and members of the committee, I do not profess to be an engineer. All I am doing is using arithmetic and Mr. Tudor's figures, using the same method he did.

Mr. DAWSON. That is the point I am making—it is arithmetic that is concerned, and I think for the benefit of the committee that should be thrashed out. My colleague from Colorado is perfectly right, we should have these people in here to go over these figures.

Mr. BROWER. I certainly could offer to do this: I could leave these figures with somebody who lives nearer than I live. After all, I live about 3,000 miles away, and my wife is getting a little bit overloaded about now with the four children, and I think she will want a little help and needs a little help as well as Dinosaur needs help.

Mr. HARRISON. You will submit those figures on paper. I think he is entitled to your figures so he can make an answer on it.

Mr. BROWER. I think he is.

There is one more citation that would possibly help him. On pages 146 and 147 of House Document No. 149, the blue book, the Reclamation engineers make this statement, that if you add not 50 feet, not 35, but if you add 25 feet to the present Glen Canyon Dam, 25 feet, and give an eventual elevation, I believe, of 605, you will have 34 million feet of storage.

Mr. HARRISON. May I interrupt? I understand Mr. Jacobson from the Bureau is here. Would you come up? When Mr. Brower finishes there, give us your reaction and we will get this settled now.

Mr. JACOBSON. I believe I can.

Mr. HARRISON. Proceed, Mr. Brower.

Mr. BROWER. Now the point I want to make and Mr. Dawson brings it up when he says "Those who profess to be engineers," please do not lump me with those. I come here, I am very interested in seeing this place preserved, and there is a reason for doing it if we can find alternatives which will do it with no substantial loss. If we can, I think we certainly should want to, and I think most of the committee here would agree if there is a feasible alternative we should not then sacrifice a national monument.

Here I only provide what my arithmetic has shown me, and I think the arithmetic is reasonably accurate.

I would close this little interlude with this statement, which represents our policy. Right now the last impression I am leaving with you is one of figures. I did not come here to do arithmetic. I came here to try to advocate the principle. I would suggest as a closing statement here—

"Before we sell out our parks, shouldn't we attack real waste first? Wasteful irrigation methods, for one thing. Wasteful pollution for another. Wasteful soil erosion due to small-watershed mismanagement. The list of wasteful things we do is nothing to be proud of.

"When we've whittled that list down, then—and not until then—let's see where else to pare. When the pinch comes, then see if we must sacrifice the delights we have clung to, in our civilization, for the good of our soul, even if those delights don't affect the Dow-Jones average, and produce nothing but a little relief from tension, maybe.

"In that dark day, if our children should find that religion and symphony, gardens and parks, trout streams and golf courses, don't pay off at the cash register, and if cash is all we have taught them to think about, then let's leave to them the choice of selling their birth-right.

"They won't even have a chance to choose unless we leave them that birthright, unless we bring about an enlightened approach to the parks in this, their darkest hour."

I don't know whether you want to question me at this time.

Mr. HARRISON. Mr. Jacobson, will you proceed to explain?

**STATEMENT OF C. B. JACOBSON, ENGINEER IN CHARGE OF
COLORADO RIVER STORAGE PROJECT STUDIES, BUREAU OF
RECLAMATION**

Mr. JACOBSON. If I may, Mr. Chairman, inasmuch as I was the man who accompanied Mr. Tudor around this basin during his inspection of alternatives, I would like to make this brief statement.

Mr. HARRISON. It will be received, and this, of course, will not be chargeable to the opponents so far as time is concerned.

Mr. JACOBSON. It is charged that Mr. Tudor did not look at all these items. He did spend considerable time in the monument. For instance, at the overhang point that the gentleman refers to, Mr. Tudor actually laid on his stomach and viewed the river 1,400 feet below. He got into a boat in the river almost an equal distance from that point around the bend, but the river was too low for navigation. He did view a good number of the areas in the monument itself. He actually flew over the areas that he did not otherwise view. And you can get a good view of Lodore Canyon from the air, a view you cannot get any other way.

You do not go down Lodore Canyon for two football tickets. I know because the trips I have made on the river have been financed by my own resources—I have not had a dime from the Government to travel the river—and I know what it costs. I can also testify it is a treacherous trip because I swam part of it on one occasion.

So I think we ought to, when we (the Bureau of Reclamation) are accused of making misstatements in figures, have the opportunity to defend them.

Mr. MILLER. I believe people who go down the river now, even in so-called low water have to wear life preservers and have some protection so if they do get dumped they will be safe.

Mr. JACOBSON. There are no insurance companies that will insure you for that trip.

Mr. MILLER. Then the old and aged and invalid do not very often make that trip. I would be ruled out, I suppose. [Laughter.]

Mr. JACOBSON. Now as to the figures.

Engineering is not just ninth-grade arithmetic, I assure you gentlemen. After you have taken your ninth-grade arithmetic, you have to start out with a course in algebra, plane geometry, solid geometry, trigonometry, spherical trigonometry, college algebra, and calculus. And these matters enter into such a complicated matter as computing evaporation from reservoirs.

We have a slight error in the figures that are in Mr. Tudor's statement. You will notice that Glen Canyon was an afterthought, or has been added to Mr. Tudor's explanation of these other alternatives. He did that because that is one of the suggestions that has come up since we made our detailed investigations. However, we have studied a great number of combinations involving the High Glen Canyon. In

using the elevation of 3,750 feet, this figure was misprinted in Mr. Tudor's statement. I checked his statement. I am responsible that that figure was not printed as 3,735 feet.

This 3,750 figure refers to the height of the dam, the top of the dam. This column [indicating] refers to the water surface. Thus the 3,750 figure is in error. But regardless, the 186,000 acres involved and the 691,000 acre-feet of evaporation are correct and correspond to the 3,735 figure. So it is merely a misprint in the record and not an actual error.

Mr. BROWER. Could I ask what happened there to the relationship in solving X?

Mr. HARRISON. Let him explain.

Mr. JACOBSON. My mathematics do not arrive at this figure here [indicating]. This figure should be much greater than 51,000 as I recall the solution of equations. There is a difference between 526,000 and 51,000. But regardless of that, evaporation is not a direct relationship of the maximum area of a reservoir. We have never contended that. That is only one of the factors involved in evaporation, particularly the maximum area of the reservoir. This index figure is not based on evaporation from the maximum water surface. If it were, it would be a lot larger, would be in the order of 5 feet, as the gentleman expresses.

But the annual evaporation from a reservoir is arrived at from the operation of that reservoir over a wide fluctuation. I think you gentlemen realize that. It is not related to the maximum surface of the reservoir.

The same applies to the little Glen as to the large Glen.

Here is where your higher mathematics comes in. The gentleman fails to express them when he takes straight-line ratios.

Had he compared the areas at the centroids of the respective volumes, he would be more nearly correct. But when you superimpose capacity on top of one water surface it spreads out over a larger area. The reservoir is not a cube, it is more like a cone. The area of the cone at this point [indicating] is not a direct relationship of the depth of the reservoir. In this case it varies with the square root of the radius, which is a direct relationship to the depth of the reservoir.

And how does the volume vary? The volume varies as the cube power. So you just cannot use ratios and run the old slide stick and get any answer you want. In fact, on the slide rule, you have two or three scales: one deals with cube and another the square root. So the proposition the gentleman puts before you lacks engineering practicability.

Mr. BROWER. May I make a comment or two?

Mr. HARRISON. Yes.

Mr. BROWER. Mr. Jacobson has explained some things of which I would like to have seen in the testimony since this evaporation is the thing Mr. Tudor wants to base Echo Park on. That is the most important thing according to Mr. Tudor. All I could do was—

Mr. HARRISON. The Chair will have to insist that you limit yourself to some explanation of the figures and not to any statement upon Mr. Tudor because we are just involved in this one question: Whose figures are right?

Mr. BROWER. I would point out that when we start using the cone we are talking about relationships which are already reflected and brought into a straight-line relationship when you talk about area, because the area of one is to the area of the other as a different level in the cone.

Now if this evaporation is figured at a lower level, the evaporating level of the lake, then this one should be too [indicating]. I do not think we have got worked out in complete detail what the operating level of the lake must be if we put in additional Echo storage down there. And there are lots of figures we need then. And I still have this little joker here about the comparative, the subtraction. We can argue for quite a while, and I will stand by my arithmetic, on the straight-line method of solving of X, and we can have a duel with chalk whenever the committee has the time.

I do not know any relationship here except one of straight subtraction, which if you do nothing else, takes it down to 70,000 feet, which is quite below the 100,000 or 200,000 that Mr. Tudor gave us.

This [indicating] was an error and a misprint. I am glad that is corrected now. Would it have been corrected had I not raised the question? And would it not be well to get competent engineers to raise the questions about a lot of these other facts?

Mr. HARRISON. The Chair might say I do not think it is proper for the witness to impugn the ability of the engineers.

Mr. BROWER. You are quite correct. May I withdraw that last one? I think it is good to have further checks made because certainly we can vary in results, and if we do not check why, we can let some errors stay in.

I apologize for that "competent engineers." But I am still wondering where we get this now. We have this 3,735. In the Bureau's own testimony on pages 146 and 147 of that document it says that you will get 47 million acre-feet storage if you go up just 25 feet. Now why do we have to go up 37? I do not know.

Mr. HARRISON. Thank you very much, Mr. Brower.

Mr. DAWSON. I would just like to make one comment. If Mr. Tudor is such a poor engineer as you seem to claim he is I am surprised he ever got that Golden Gate Bridge down in your town to meet at the center.

Mr. BROWER. Mr. Tudor made a great contribution on the San Francisco Bridge.

Mr. DAWSON. The Bay Bridge or the Golden Gate Bridge?

Mr. BROWER. The Bay Bridge, I think.

Mr. DAWSON. I think that was quite an engineering feat, and I think he has done quite a job. So it would surprise me if he does not know figures any better than you say he does.

Mr. HARRISON. Thank you very much.

Are there any further questions? If not, we will proceed to the next witness.

Mr. ASPINALL. Wait just a minute. This witness has not been questioned.

Mr. HARRISON. Pardon me. The Chair is in error.

Mr. Miller?

Mr. MILLER. Are you an engineer?

Mr. BROWER. No, sir, I am an editor.

Mr. MILLER. You do not propose to know the engineering techniques that go into the building of a dam or the estimate of storage?

Mr. BROWER. All I can apply, Dr. Miller, is just an editor's natural suspicion when he is working over a manuscript. And I have worked for the University Press for many years, and I have had a lot of scientific monographs to go over, and I know nothing about the subject, but you can be suspicious, and it is amazing what you can turn up.

In my own bulletin, which I turned over to you, for example, which I edited this issue of, I have a pretty bad error there myself on page 7.

Mr. HARRISON. I think the witness has answered the question.

Mr. MILLER. Thank you very much. That is all.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. No.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. No.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Brower, I am very much interested in the fine publicity you have given Dinosaur Monument, and I am in favor of as many people as possible getting to the area.

How many times have you been in Dinosaur National Park?

Mr. BROWER. I have been there over a period of 8 days, and that was in the course of last summer. I guess it was 9 days all together.

Mr. ASPINALL. Why did you not go to Dinosaur Monument before this last year?

Mr. BROWER. I can tell you that very briefly, and it is sort of a confession.

Mr. ASPINALL. Just briefly.

Mr. BROWER. The first I saw of Dinosaur was when the controversy came up around 1950. I saw a lot of black and white photographs, which is all we were able to afford to put in our little sheet. I thought, "Well now, in black and white maybe it is fine," but I did not get the impression. A winter ago I saw a color movie of it and it knocked my hat off, and I knew I had to get there. And I am planning to go again next summer.

I might add that the Sierra Club planned a trip last summer and has already reserved space for 240 people to go down next summer.

Mr. ASPINALL. Do you know anything about the canyons of the Dolores River?

Mr. BROWER. No, Mr. Aspinall, in spite of the fact that Colorado will be my second adopted State, and I have seen a lot of it because I trained as a mountain trooper, I have not seen that. I have seen a lot of Colorado and that is fine scenery.

Mr. ASPINALL. Have you seen Black Canyon?

Mr. BROWER. I have not seen Black Canyon.

Mr. ASPINALL. Have you seen Glenwood Springs Canyon?

Mr. BROWER. Yes.

Mr. ASPINALL. Gore Canyon?

Mr. BROWER. Yes.

Mr. ASPINALL. Have you ever been to Maroon Bells?

Mr. BROWER. Yes.

Mr. ASPINALL. Crystal Canyon at Marble?

Mr. BROWER. I have not been to Crystal Canyon.

Mr. ASPINALL. Hells Gate on the headwaters of the Fryingpan?

Mr. BROWER. Pretty close to there.

Mr. ASPINALL. Hesperus Canyon?

Mr. BROWER. That I do not know.

Mr. ASPINALL. You like to run rivers, as I understand it?

Mr. BROWER. I never ran a river before last summer. I do know I would like to take as many river trips as I can before the places are flooded out with the reservoirs which are planned.

Mr. ASPINALL. All I can say is that if you give these other places in my district, where we have 42 of the 67 mountains in the United States which are over 14,000 feet high, the same publicity, you are not going to find people falling all over themselves to get down into this Dinosaur National Monument to get this beauty, because this place has no corner on it. It is very beautiful, but it has no corner on it.

Mr. BROWER. Mr. Aspinall, correct me if I am wrong, but it has the best wilderness quality and primitive quality of these canyons.

Mr. ASPINALL. I am not an expert on that matter, but I can take you into areas of the same extent which to my opinion are just as much wilderness and farther away from man than this one is.

Mr. BROWER. I want to get to see them. I hope I live long enough.

Mr. ASPINALL. Do you know Preston Walker of Grand Junction, Colo.?

Mr. BROWER. No, I do not know Mr. Walker.

Mr. ASPINALL. Have you ever met Mr. Nevels?

Mr. BROWER. I am sorry I did not have a chance to meet Mr. Nevels before his death.

Mr. ASPINALL. Of course, in Colorado we consider Mr. Walker as perhaps our best river-runner as far as residents in our area are concerned. It might surprise you to know, as I understand it, he and his good wife, who run rivers throughout the United States and all rivers in western Colorado, favor the construction of the Echo Park Dam.

Mr. BROWER. I think that one man who lives out in our town, Otis Marston, you may have heard of him—

Mr. ASPINALL. Yes.

Mr. BROWER. Probably can be pitted against this man as one who has run many rivers, and he is not in favor of this dam.

Mr. ASPINALL. That is easily understood—he does not live there, he does not know the ambitions and the wishes and the desires and the longings of the people of the area. I can understand when a person lives away from anything and he just wants to use it as a playground—I can understand how he would say, "We will keep it undeveloped. Let us go there and play." Because as long as he can keep that reserved for himself and a few others, all right, that is very, very good. But when it comes to the use of the area by the general public or an appreciable part of the general public, that is something else.

I will yield to the gentleman from Texas.

Mr. REGAN. I just want to put in a chamber of commerce plug for the Santa Elena Canyon.

Mr. HARRISON. Mr. Saylor?

Mr. SAYLOR. I might say to my good colleagues from Texas and Colorado, one of the outstanding authorities of this country appeared in support of this project the other day, Dr. Budd, and as I recall his testimony, he stated to somebody who had made a number of trips through the other Colorado River canyons that had been referred to,

that since he had not been down in the Yampa and Green Canyons, he congratulated him because he had saved the best until last. I do not want to underestimate the grandeurs of the great State of Colorado, but one of the outstanding men in the country has already stated that this is the outstanding area in his opinion.

Mr. DAWSON. I do not think there is any dispute about that, is there? We have all agreed on that. The dispute is how best to get on to see it.

Mr. SAYLOR. For the information of the committee, there has been made available to me three movies and I am willing to take up part of the committee's time to show them or to show them at any other time.

Mr. HARRISON. The Chair accepts your invitation. You may show them on the time of the opponents at any time. You set the time and you may show them. Do you want to show them?

Mr. SAYLOR. At the convenience of the committee.

Mr. HARRISON. We will be meeting tomorrow morning.

Mr. SAYLOR. I do not want to show them at this time, until after some of these witnesses have finished.

Mr. HARRISON. The time will come out of the time of the opponents.

Mr. SAYLOR. All right then, I will on my own extend an invitation to the members of the committee to see them, because you have not been down there, and I will extend that invitation and arrange with the man to have a projector up here to show these canyons.

Mr. DAWSON. I think, Mr. Chairman, we might make it a double feature. We also have films of the same ride.

Mr. SAYLOR. That is delightful. I already have a triple feature. If you have one more, we will make it a quadruple feature.

Mr. HARRISON. That is completely outside the business of the committee, and is the business of either one of the individuals if he wants to show pictures at his convenience on his time at his invitation and under his arrangements. That is perfectly agreeable. Any further questions?

Mr. SAYLOR. No; I have no further questions at this time.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. I just have one question. My colleague from Colorado raised the question of your Sierra Club going out there to view this Dinosaur Monument. Was your club opposing the construction of Echo Park Dam before you went for this visit?

Mr. BROWER. We have been opposing it for 3 years.

Mr. DAWSON. So you were opposed to it before you ever saw it?

Mr. BROWER. The club itself was; a lot of people had not seen it.

Mr. DAWSON. And you saw fit to go out late last year to see it and then make your statement; is that right?

Mr. BROWER. Previously some of our people had seen it before then. After all, we have 8,000 members, and I could not say how many had seen it earlier. I know some had seen it in 1950, some in 1951 and some in 1952.

Mr. DAWSON. One of the witnesses who testified before this committee, Dr. Untermann, director of the Utah Field House of Natural History, of Vernal, Utah, made this statement in regard to your group. He says:

With true missionary zeal nearly 200 members of the Sierra Club, in three separate groups, came to Vernal last summer to make the trip through the canyons

of Dinosaur National Monument under the guidance of competent river pilots. Their avowed purpose was to enjoy the thrill and excitement of the river run, but a member of the first group spilled the beans by revealing the real purpose. He stepped forward and made the following introduction: "We represent the Sierra Club of California and we have come to Vernal to save Dinosaur National Monument for you people so they won't build those dams in there." "Well," I replied, "that's certainly very nice of you, and I'm sure you are prompted by the very best of motives, but did it ever occur to you that we might not want to be saved? As it so happens, we don't. We want to be dammed."

Mr. BROWER. I remember that.

Mr. DAWSON. Do you remember that instance?

Mr. BROWER. I did not hear that on my trip. It may be on one of the two subsequent trips that came through that statement was made. I do not know who made the statement.

Mr. DAWSON. It is a fact that your group had made up their mind before it came there?

Mr. BROWER. I would not say that. Going back—it will just take a minute—I would say the main reason for forming the Sierra Club was to get more people to know about these places so they would have the desire to protect them. That has been the desire throughout. We have tried to make it possible to provide organizations with trips to get people there so they will see what they are losing. I think we have had more people now from our membership go through that canyon than have been through from Vernal, probably about five times as many.

Mr. DAWSON. I will close with my stock question, as given by my colleague from Pennsylvania.

I assume you have polled your entire membership on this question?

Mr. BROWER. Mr. Dawson, I knew that question was coming up because I was here earlier. Our club is governed the same way as the country, and I do not think Mr. Untermann would want to suggest that this Government is not governed democratically. We have annual elections at which the people who do not like what the club is doing can throw out those who have been doing it. No one has been thrown out for this. I have no letters from the club members in opposition to our stand. The first I heard was the letter Mr. Untermann read.

Mr. DAWSON. You were here the other day when a representative of the Farmers Union testified and the question was raised they had not polled their membership?

Mr. BROWER. I was here.

Mr. DAWSON. So I assume from what you say your club operates in a similar manner?

Mr. BROWER. I do not know how they operate. Do they have annual elections for executive committee? I think that is the critical point.

Mr. DAWSON. Their committee members reviewed it and that was the report.

Mr. BROWER. I think the type of Government would have an effect. I think we have by this annual election a check, and the business of hearing from members if we do things they do not like, and we hear occasionally. We can demonstrate, I think, we are a democratic body.

Mr. DAWSON. That is all.

Mr. HARRISON. Mr. Rhodes?

Mr. RHODES. I am sorry, I am a little bit handicapped because I did not hear all of your statement. Having a little natural suspicion my-

self, I am wondering about X there. That X results in 51—153,000 over 186,000.

Mr. BROWER. Would be 5,377, and that is the difference as Mr. Jacobson pointed out.

Mr. RHODES. X is 577 when you cross multiply there?

Mr. BROWER. Wait a minute there, I will check it. No, 464.

Mr. RHODES. I just did it and it is 639.

Mr. BROWER. X equals 639. I am glad to straighten out my ninth-grade arithmetic. I went back to the eighth grade, I guess. Would you settle for 640?

Mr. RHODES. 640.

Mr. BROWER. I think if you subtract 640 from 691 you will get 51.

Mr. RHODES. That is not X. The 51 is not X.

Mr. BROWER. No.

Mr. RHODES. That is what I did not understand.

Mr. HARRISON. Mr. Rhodes, before you came in, Mr. Jacobson had made an explanation of his viewpoint for the record which you will see in the morning.

If there are no further questions, thank you very much, Mr. Brower.

Mr. BROWER. Thank you, Mr. Harrison.

Mr. HARRISON. The next witness will be Mr. Stephen Bradley.

Mr. BRADLEY. With the chairman's permission, I have several displays of pictures other than aerial photographs of the canyon which my brother here has made at his own expense. If you have no objection, may they be put up on your easel?

Mr. HARRISON. I hear no objection. It is so ordered.

STATEMENT OF STEPHEN J. BRADLEY, BOULDER, COLO.

Mr. BRADLEY. My name is Stephen Bradley; I live in Boulder, Colo.; and I am manager of a winter recreational area known as Winter Park.

I came here at my own expense, because I believe that we, who are being asked to give away a national park unit now, should have our side of the case known.

I am not backed by any organization; nor do I speak for any group, unless it be that growing brotherhood who have been privileged to drift through Dinosaur's sandstone canyons, and who, from the experience, feel as I do.

How did I become interested? Four years ago, like most citizens, I knew nothing about Dinosaur Monument, except that it contained a rare deposit of fossil bones. I visited the temporary museum at monument headquarters once. I found the fossil exhibits fascinating, and the location a desolate inferno. I had no compelling reasons to see it again.

Nothing in the name "Dinosaur," and certainly nothing that I recall of the museum's photographic exhibits gave any hint of the remarkable canyon country a few miles north.

I also visited the lovely little museum in Vernal. In it was a magnificent display of colored pictures featuring Zion, Bryce, Grand Canyon, and other beauty spots of Utah. Dinosaur was represented by one uninviting view of a murky stream, an unimpressive segment of curved strata, and sultry sand hills supporting a struggling community of piñon pine.

One day in the summer of 1950 I glanced at a copy of the *Saturday Evening Post*. In it was a feature article by one of America's scrappiest and most respected writers—Bernard DeVoto. You may recall the title: "Shall We Let Them Ruin Our National Parks?" To my astonishment it was all about Dinosaur, the new Dinosaur. In it Mr. DeVoto launched a broadside against Reclamation's proposal to invade the monument with a dam known as Echo Park.

As a matter of principle I became interested. The invasion of any national park for such purposes, however worthy, seemed to me to be a most serious scheme, and could only be justified if dire necessity were clearly demonstrated. Yet, from what I had seen, I honestly wondered whether Dinosaur was really of sufficient value to warrant its being a part of our national park system. Knowing the need for water in this region I was anxious to weigh those needs against the value of an area I had never really seen.

The following spring my wife and I were invited to take a boat trip through the monument. I heard it could be done; but I was also an immediate victim of a persistent superstition, one almost as popular today as it was then, that the rivers were mighty torrents which only the most adventurous and foolhardy would dare attempt; hardly the place to take a wife.

I had seen the thundering Colorado in the Grand Canyon, from the safety of shore, and the prospect of facing that type of experience in a boat filled me with anxiety. We very nearly refused the invitation. We agreed to go, finally, only on the assurance of Bus Hatch, our guide from Vernal—who, by the way, has probably been through the monument more times than any other living person—that it was quite safe.

Once inside the Yampa Canyon I suddenly realized that we were in a scenic area, the like of which for sheer dramatic beauty—of color, form, movement, and sound—I had never experienced anywhere. And I have visited over one-third of our national parks. To my relief our river, instead of being a thrashing torrent, was a most gentle host. We sat back and for nearly 100 miles let the river do the work for us.

As we drifted lazily with the current, letting it transport us through this amazing corridor, I found it difficult to believe that such a gentle river could have cut such a deep incision into the earth. The answer, of course, was that it has been at this work for a very long time. It was a placid meandering stream. As the Uinta Mountains pushed up the Yampa continued to cut down in its meandering bed through 2,000 feet of solid rock.

I was surprised further by the abundance of white sand beaches, ideal for swimming, and the many grassy banks, and shaded groves of boxelder and cotton wood trees, ideal for camping, that lined the river's edge. The natural landscaping of the valley floor, which seems generally more broad than the river itself, added greatly to its charm.

Now and then this peaceful and lazy existence was punctuated by the momentary excitement of running a rapids, through which the great rubber boats glided with supple ease. There are only four real rapids on the Yampa, all short, and all easily taken by the boats. However, if we had been apprehensive, we could have walked around any of them on foot, while Bus took the boats through. This, by the way, can be done on any of the rapids in the monument; the big ones in

Lodore Canyon, and the moderately big ones in Split Mountain. This is a great safety feature, typical of every rapids in Dinosaur.

At first I had the feeling that what we were seeing was just a magnificent but brief, part of the monument. But as we drifted down the Yampa the scenery, instead of diminishing in beauty, continued to be more impressive with each mile. The lower 30 miles of the Yampa Canyon is unquestionably a masterpiece beyond description or price.

It is a great pity that Under Secretary Tudor could not have floated through that section.

Four days later, as we quietly passed through Split Mountain's dramatic exit, I knew I could no longer face this issue with detachment. I had been privileged to see extraordinary natural beauty which few have seen, and I was grateful to those who helped set this monument aside so that others might see it too. What we saw and experienced was so thrilling and so easy that I have returned each year to make the river trip again with Bus Hatch.

In approaching this problem I feel that there is a grave danger that the American people will not understand the terms of the sacrifice we are being asked to make. There is a danger of underestimating the value of this area as a national park unit, and, thus glossing over the sacrifice. It's quite clear to me that it is most difficult to make any true appraisal of the sacrifice here without a clear knowledge of the Monument's intrinsic and potential value.

What is value as a park unit will depend upon several factors: What importance a person places on the intangible values of our existence. Equally important, I think, is how you have seen the area. You can appraise a house by looking at it from the outside; or by looking in the front and back door and through a few of its windows; but if you are thinking of writing out a large check for the place, it would be wise to inspect the inside pretty thoroughly.

You can see the monument in its present undeveloped state in a number of ways. You can fly over it. You can drive in over its rough dusty roads and get a glimpse here and there of parts of it; or you can examine it more thoroughly by boat. Each method requires more time, but rewards you with a better conception of its value.

I have done all three. Interesting as they are the views from the air and from the roads give no hint of the incomparable beauty seen from the river.

As I began to probe deeper into the problem, in an effort to understand its complexities, and to get at the fundamental facts, I found the monument and the issues concealed in a ground fog of superstition, myths, legends, faulty information and oversimplification.

I wish to enumerate some of these so that you may appreciate the problems facing an individual who attempts to run an analysis in this dispute.

The hazard myth: One of the most popular myths about Dinosaur Monument is that its rivers are so dangerous that only the foolhardy and reckless dare journey down them by boat.

Last summer in my own party there were seventeen of us. It was a three-generation family reunion. There were 4 children, 4 mothers, a badly crippled brother, and my father, aged 76. We floated the full 90 miles from Lily Park to the end. We walked around no rapids;

and we made the journey without incident. To dispel the notion that these trips are costly affairs, our costs were \$9 per person per day, for everything, somewhat less than I am paying right now to be in Washington. [Laughter.]

Bus Hatch, by the way, took over 500 persons on the river trip this summer. Ages ranged from 4 to 76. Not an accident was recorded. Accidents are possible, of course, whether the water be moving or stagnant. The record speaks for itself.

This figure of 500 may not seem very impressive until a person understands several points. First, few people know anything about the monument, or the availability of these trips. Second, drifting through on its rivers is an unfamiliar mode of tourist travel, uniquely adaptable to this monument. And third, the figure of 500 exceeds the total of all previous years that Bus has done this sort of thing.

Accessibility and value: An odd notion, that is repeatedly stated in my area is that Dinosaur Monument is of comparatively little value because only a few have seen it. I think this is another example of the ground fog that conceals the fundamental facts.

Accessibility is a temporary thing. It has nothing to do with permanent values. The treasures of our National Gallery are no less treasures to me in Colorado simply because I find Washington somewhat inaccessible.

All of our national parks were comparatively inaccessible until we provided funds for their development. Hardly a penny has been spent in Dinosaur. Naturally it is difficult to get into, unless you make a river trip.

In 1893 Yosemite National Park had fewer visitors than Dinosaur did in 1953. Yet in 1953 a million people visited Yosemite. The hard facts are that some of our existing parks are becoming critically overcrowded. At a time when we should be looking around for a way to distribute the overload we are being asked to give one of them away and pay the cost in addition.

Lake accessibility: Proponents, in their enthusiastic description of the lakes have implied that their creation automatically makes the canyon country accessible. The lakes cover the same area that is reputed to be already inaccessible. In fact the lakes will actually reduce the accessibility as it exists today in its natural form. Stagnant water will replace the moving stream. Nature has made it possible for anyone to journey through almost without effort. It is a magic carpet.

Flooding the canyons will destroy that magic carpet. It will be more difficult to see the Yampa. Few will paddle or row very far up it. To see it with ease we will have to substitute nature's way by incorporating internal combustion to the scene. And the powerboats will wipe out the charm of the great silences of that sunken cathedral.

Lakes will not destroy the beauties: It has been suggested that the lakes will only alter but not destroy the beauties of the monument. This of course is a matter of opinion, and a matter of interpretation of the word "destroy."

The wonderful city of Venice—which people from all over the world go to see—would be destroyed if its waterways were dried up, or if the water level was raised 20 feet. Either way, its living space would be gone.

I feel the same way about Dinosaur. The issue is not concerned with the height of the fluctuating watermark; nor how high the walls will

rise above it; nor how beautiful the lake. By erecting Echo Park Dam we will cover the living space—the beaches, the campgrounds, the lovely boxelder groves—with dead water.

The lakes: The lakes will be beautiful to be sure. But we are contemplating, as I understand it, 600 miles of lakes in this project alone. The West will be full of lakes in a few years, all necessary, all beautiful, and all artificial.

But we will never find another Yampa Canyon, once it too has become another water tank. If we decide it must be sacrificed, then, in my opinion we should remove it from the park system.

Roosevelt's proclamation: Repeatedly has it been expressed that the 1938 proclamation provided for these dams anyway. This I consider is just another smokescreen. The proclamation clearly specifies the site to which it refers. There is no mention or implication that substitute sites would be permissible.

I regret the inclusion of the Brown's Park site in the proclamation but undoubtedly at that time the arguments for its inclusion were so strong that Mr. Roosevelt felt it had to be included. Now, 15 years later, there is no mention of any Brown's Park Dam. We are told that Echo Park Dam amounts to the same thing. Giving a surgeon permission to amputate a finger does not suggest he may amputate an arm or cut out my heart.

No proof of immediate dire necessity: The only condition that can justify the invasion of this park unit is proof of immediate dire necessity. I am not satisfied that this proof has been demonstrated.

For 4 years now, ever since my first visit to Dinosaur, I have been most concerned with this almost frantic insistence that Echo Park Dam be among the first of this titantic project to be installed. For obvious reasons the project will have to be conducted on a stage-by-stage basis. Yet we, who own this area, are being asked to write it off at the very first stage. As one who loves our parks and who is now being called upon to scuttle one of them, and a prize one at that, and who will help pay this large bill, I am not satisfied that any argument yet presented justifies putting a "rush delivery" label on this one dam.

Alternative dams have been proposed. We have heard endless discussion on the question of evaporation loss at these alternative sites. I have seen what appears to be careless mistakes in arithmetic exposed. I have watched the figures fluctuate from 350,000 acre-feet to 100,000 acre-feet. I am disturbed by this.

We have heard that this evaporation loss, now between 100,000 and 200,000 acre-feet, is a priceless one. It may be. I come from a water conscious region, and, I must confess, I see this "priceless" ingredient wasted on all sides of me. I confess further that I am guilty of this myself.

Yet even these figures do not demonstrate the need for Echo Park Dam now; they merely suggest that we probably should not erect the suggested alternatives now.

We are reminded of commitments that must be met. There are other commitments involved besides the one between the upper and lower basin States. One of them is a commitment made to all of the American people which guaranteed to them the protection of our outstanding scenic assets: The National Park Act of 1916, conceived three-quarters of a century ago and honored by all administrations ever since.

For 4 years now I have attempted to understand why this most controversial and dangerous dam has been pushed for immediate delivery with such stubborn insistence. And I simply have not had a satisfactory answer.

The Bureau of Reclamation seems almost willing to scuttle the whole project to make its point. Were it not for Echo Park Dam's extraordinary priority this project might already be underway, and the people of Colorado and Utah that much closer to the day of delivery.

The Bureau has insisted that it is the key. I am not convinced of that. And I am not prepared to wipe out this great park on its say-so. It may well be a key, but not to the project. This has too many indications of being the key that will unlock the gates to our whole park system. Dinosaur, a recent monument, new, undeveloped, little known, is more vulnerable to attack than any other park unit. If the invasion can be accomplished now, the people, who own it, will have no real conception of what they have been asked to give away.

I am grateful to this committee for giving me this opportunity. One out of 160 million people, you haven't time to hear all of us. My position is not an easy one. It's always hard to speak of intangible values. In any particular moment of time, when intangibles come in conflict with other basic human needs, they appear to come off second best. They cannot be eloquently represented in words, and they cannot be measured by the cost per cubic foot of reinforced concrete. Yet, in the long view of time, it is always the intangibles which survive. Art, music, literature, even religion itself, these are the things that people have kept and cherished. I consider our national parks are among them. And Dinosaur is certainly one of the most exquisite gems of our "crown jewels."

I know you gentlemen are fully aware of these intangibles. After all, the preservation of our national parks has been in your hands. And, as everybody knows and gratefully appreciates, that job has been done very well.

MR. HARRISON. The committee would like to ask a few questions at this time. I would like to relieve this witness so that he will not have to come back, even though it is now 12 o'clock.

Any questions, Mr. Saylor?

MR. SAYLOR. Yes. Mr. Bradley, I want to congratulate you on your statement. You live in the upper Colorado Basin?

MR. BRADLEY. I live in Boulder, Colo., on the other side of the Continental Divide, sir. Part of the time I live in Mr. Aspinall's region, though.

MR. ASPINALL. When you want to have fun and make a little money?

MR. BRADLEY. It is rather complex. I would not want to explain that now.

MR. HARRISON. Any further questions, Mr. Saylor?

MR. SAYLOR. Yes. I want to congratulate you on that statement. I would like to inform you, since, as you say, you are one of the 160 million people, that figures which have just been submitted to me by the Park Service show that 46,224,794 American citizens visited the national parks and monuments in 1953. So that better than 25 percent of the people have visited our national parks and monuments last year. I am sure while they cannot all have an opportunity to appear

and speak, they appreciate the fact that they do have people like you who have enough interest to come here and speak in their behalf.

I might say that I have checked on the figures that were submitted yesterday with regard to the invasion of our national parks and find that only once in 80 years has there been an invasion of a national park. I think you have some pictures there with regard to it. That is the Yosemite, and that was before the national park system was set up.

Mr. Chairman, I would at this point like to submit my own remarks in the record to show my analysis of the statement that was submitted yesterday showing all of the invasions that purportedly had been made of national parks and monuments. (See p. 594.)

Mr. HARRISON. Are there any objections?

The Chair hears none. Permission will be granted.

Mr. SAYLOR. That is all.

(The statement submitted by Mr. Saylor follows:)

Since Yellowstone National Park was established in 1872 and national monuments were first created under the act of June 8, 1906, it has been the basic policy of the Congress to exclude commercial exploitation of resources of these types of reserves.

In a period of over 80 years, only once has the Congress permitted the construction of a dam or reservoir in an established area of the national park system. That one exception was for the Hetch Hetchy and Lake Eleanor Dams, Reservoirs, and appurtenances in Yosemite National Park, which the Congress, despite nationwide opposition, authorized by the act of December 19, 1913 (38 Stat. 242), for water supply and related purposes of the city and county of San Francisco. Those purposes could have been met elsewhere and cheaper and Yosemite National Park would have remained intact with its Hetch Hetchy Valley available to absorb the overcrowded park use to which Yosemite Valley is subjected.

That one exception, it may be noted, was authorized by the Congress some 3 years before it formalized its policies relating to the national parks and monuments in the act of August 25, 1916, which established the National Park Service in the Department of the Interior and charged it with responsibility to "conserve the scenery and the natural and historic objects and the wildlife" in the national parks, monuments, and reservations, and "provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

The Congress has made further specific provision for the protection of the areas of the national park system from dam and reservoir construction. When the Federal Water Power Act of June 10, 1920 (amended by the act of March 3, 1921, to exclude then existing national parks and monuments from the scope of the statute), was further amended by the Federal Power Act in 1935, the definition of the "reservations" to which the act was to apply was amended to exclude national parks and monuments, thus removing these areas from the authority of the Federal Power Commission with respect to the issuance of power licenses, without regard to the date of their establishment. The intention of the Congress, by this amendment, to afford unlimited protection to all national parks and national monuments from encroachment of power development, is made undeniably clear by the legislative history. In the report (No. 1318, 74th Cong.) of the Committee on Interstate and Foreign Commerce of the House of Representatives, accompanying the bill, S. 2796, which became the Federal Power Act of 1935, it is stated (p. 22):

"The definition of the former term ('reservations') has been amended to exclude national parks and national monuments. Under an amendment to the act passed in 1921, the Commission has no authority to issue licenses in national parks or national monuments. The purpose of this change in the definition of 'reservations' is to remove from the act all suggestion of authority for the granting of such licenses."

The proclamation enlarging Dinosaur National Monument in 1938 was made subject to the Reclamation withdrawal of October 17, 1904, of the Brown's Park Reservoir site and related to a small area in the northern part of the monument.

That withdrawal covers only a very small portion of the monument lands now proposed for use to accommodate the Echo Park and Split Mountain Reservoir proposals of the Bureau of Reclamation.

The question whether the authority of the Federal Power Commission to issue power licenses could be preserved by an appropriate provision in a proclamation of the President reserving lands for national monument purposes under the Antiquities Act of June 8, 1906, has been considered by the Solicitor of the Department of the Interior. In an opinion dated December 5, 1939, he held:

"Any attempt to preserve this authority in the Commission by specific provision in the national monument proclamation would be ineffective since the authority of the Commission has been prescribed by Congress and cannot be extended by provisions in an Executive proclamation of this character."

In three instances—in 1910, in 1915, and in 1916, before it established the National Park Service and defined its purposes—the Congress permitted a degree of vulnerability to water-control development in the provisions of the acts establishing Glacier, Rocky Mountain, and Lassen Volcanic National Parks, as follows:

Glacier National Park.—The act of May 11, 1910 (36 Stat. 354), contains the following proviso (in sec. 1):

" * * * and that the United States Reclamation Service may enter upon and utilize for flowage or other purposes any area within said park which may be necessary for the development and maintenance of a Government reclamation project * * * "

It may be noted that the provision pertained to a project on the east side of the park for the benefit of the Indians; that minor impoundments for that purpose on the east side existed, were underway, or were contemplated when the park was established. The proviso is not an authorization for the proposed Glacier View Dam on the west side, which, in any case, is not a "reclamation" project.

The following two acts contain provisions identical to the one in the Glacier Park act quoted above:

Rocky Mountain National Park.—Act of January 26, 1915 (38 Stat. 798).

Lassen Volcanic National Park.—Act of August 9, 1916 (39 Stat. 442).

The only similar provision made by the Congress since 1916 relates to Grand Canyon National Park, as follows:

Grand Canyon National Park.—The act of February 26, 1919 (40 Stat. 1175), provides:

"Sec. 7. That, whenever consistent with the primary purposes of said park, the Secretary of the Interior is authorized to permit the utilization of areas therein which may be necessary for the development and maintenance of a Government reclamation project."

None of these provisional "reclamation project" authorizations has been utilized, nor has the Congress authorized or financed the construction of Federal water-control projects in these areas.

A few of the national parks contain minor impoundments and appurtenances that were there before the areas were established, as follows:

Jackson Lake Dam and Reservoir, enlarged 1913-16, antedates Grand Teton National Park which now contains it. The reservoir was included when most of the former Jackson Hole National Monument was added to the park by the Congress in 1950.

Olympic National Park contains some minor impoundments for domestic water supply which were constructed before the park was established.

There is a privately owned and operated power dam in Sequoia National Park operating on a 50-year license from the Federal Power Commission which will expire in a few years.

Surely maintaining this historic policy of the Congress for the protection of the areas of the national park system is of even greater importance and concern today in view of the 46,224,794 visitors who used those park areas in 1953.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Chairman, I am of the opinion that the witness has made a very fine statement on his side of the question. However, I have noticed in his statement that he has used the words "national park" and "national monument" interchangeably as it relates to his thought on this particular area.

Mr. BRADLEY. I think I have referred to it here as a "park unit," have I not? It is part of a park system. I have been a little leary

of calling it a national park unless it is not one; so unless I have made a mistake, I called it a park unit.

Mr. ASPINALL. Of course, the National Park Service has a different procedure when it asks for funds for its national parks and its national monuments. You are aware of that, are you not?

Mr. BRADLEY. The park areas usually get more money than the national monument areas as a rule. I am sure that is true of Dinosaur; yes.

Mr. ASPINALL. I think you have to admit it is true of all of them.

Mr. BRADLEY. I have not been to all of them, so I really could not tell. Certainly, from the evidence of poverty over there, I would say it is extremely and eloquently true of Dinosaur.

Mr. ASPINALL. Do you not think you go just a little too far when you refer to this as a unit of the national parks?

Mr. BRADLEY. No, sir, I do not. It is a park unit.

Mr. ASPINALL. It is a park unit?

Mr. BRADLEY. Yes, sir, I consider it such. As a matter of fact, Mr. Aspinall, I consider it a park on ice or a park in escrow. I think it has full national park caliber. I really do, so far as I am concerned.

Mr. ASPINALL. Do you think it should be made a park by legislative action?

Mr. BRADLEY. Yes, sir, I would recommend that very highly.

Mr. ASPINALL. On the other hand, it is a monument at the present time?

Mr. BRADLEY. Yes.

Mr. ASPINALL. It exists by virtue of a Presidential order?

Mr. BRADLEY. Yes, sir. It would take Congress to elevate it to park status, would it not?

Mr. ASPINALL. I think that it would. Do you claim that the same standards should be used in determining what is to take place in these areas for parks as those used for monuments and vice versa?

Mr. BRADLEY. Well, to answer that question, Mr. Aspinall, I will try to answer it this way:

We recently had an inclusion of Teton National Monument into the Teton National Park system. I think that was about 2 years ago, was it not? I am not quite sure. I am sure that this committee probably recommended that, and I certainly endorse their action. I thought it was a very wise move. In this case it was merely changing the status of the monument and making it a part of an existing park. My attitude about this one is that as a monument it is fine, but I really think it should be a national park.

Mr. ASPINALL. Then do you not think we should go rather slowly on the question of determination of policy on matters relating to these areas, and that the policy may differ somewhat as between what is to be put in a park and what is to be put in a monument?

Mr. BRADLEY. Are you saying you should go slowly because I as an individual am speaking only as an individual?

Mr. ASPINALL. Yes.

Mr. BRADLEY. Yes, of course; that you must do, I am sure.

Mr. ASPINALL. And that there is a difference when the President of the United States by order makes the determination and the Congress of the United States by statute establishes a policy?

Mr. BRADLEY. Yes, I can see there is a difference, surely?

Mr. ASPINALL. I will not take any more time.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. I yield such time as I may have to my colleague from Utah, Mr. Stringfellow.

Mr. STRINGFELLOW. Thank you. I will prevail upon the committee's time only for just a moment.

Mr. Bradley, what profession are you in?

Mr. BRADLEY. I am manager of Winter Park. That is a ski area, a winter recreational area.

Mr. STRINGFELLOW. Where is your place of residence?

Mr. BRADLEY. Boulder, Colo. My office is in Denver, Colo. That is why Mr. Aspinall's question was complex as to where I earned my living.

Mr. STRINGFELLOW. I take it for granted you are a man who respects a person's word and promise, because you made reference in your statement to the commitments that have been made in the past. You say, in the fifth paragraph on page 6 of your statement:

We are reminded of commitments that must be met. There are other commitments involved besides the one between the upper and lower basin States.

We in the Vernal area are very aware of commitments which have been made and encroachments of the Government upon personal rights. I know this has been referred to before, but I would just like to call it to your attention again, and that was a commitment which was made by Mr. David H. Madson, who represented the Park Service at that time when they extended the so-called national monument. He said:

Grazing on the area would not be discontinued in the event it became necessary to construct a project or projects for power or irrigation in order to develop that part of the States of Colorado and Utah and the establishment of the monument would not interfere with such development.

That was a statement made back in 1936.

Thank you.

Mr. BRADLEY. Were you asking me a question?

Mr. STRINGFELLOW. No, I just wanted to call that to your attention.

Mr. BRADLEY. You did not want me to comment on it?

Mr. STRINGFELLOW. The committee has not the time.

Mr. HARRISON. Thank you very much, Mr. Bradley.

Mr. BRADLEY. Thank you.

Mr. HARRISON. Before we adjourn, I would like to have unanimous consent to insert in the record a statement by Horace M. Albright, formerly Director of the National Park Service, which he has asked to be included.

Hearing no objection, it is so ordered.

(The statement referred to follows:)

DINOSAUR NATIONAL MONUMENT—ECHO PARK DAM

A press release from the Department of the Interior states that departmental approval has been given by the Secretary to a program for the development of the upper Colorado River.

This program contemplates the erection of several dams for the impoundment of water for the irrigation of arid land and the production of hydroelectric power. One of the dams specifically mentioned as being a part of the program is the Echo Park Dam which, if authorized by Congress, would be built in the Dinosaur National Monument in Utah.

The undersigned wishes to enter a strong protest against the erection of any reclamation or power structure in the Dinosaur National Monument. Should

this Echo Park project be authorized, not only will the scenic and recreational features of the national monument be destroyed, but an extremely dangerous precedent will have been created, through the employment of which, projects in other national monuments and even in the great national parks themselves, might be and probably would be authorized in time.

The national park and monument system began with the establishment of Yellowstone National Park in the administration of President Grant, through his approval on March 1, 1872, of the act creating Yellowstone National Park in the Rocky Mountains, in territory now lying within the States of Montana, Wyoming, and Idaho.

The fundamental feature of the organic laws creating the national parks, beginning with Yellowstone, was the mandate that the territory reserved within the park boundaries should be retained in its natural condition. There was to be no exploitation of any of the resources of these parks, and there was to be no structure built within them except those that might be needed for the enjoyment of the areas by the public.

By the act of August 25, 1916, the National Park Service was created as a Bureau of the Department of the Interior, to administer and protect the national parks, national monuments and other reservations assigned to its jurisdiction.

This law contains the following provision :

"The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations. (U. S. C., title 16, sec. 1.)"

Since the enactment of this law, there have been no dams, reservoirs, or other structures authorized to be built in territory under the protection of the National Park Service. In fact the only infringement of the basic policy covering national park administration and protection was the act of Congress passed in December 1913 permitting the city of San Francisco to develop the Hetch Hetchy Valley in Yosemite National Park for a municipal water supply. That law was enacted 3 years before the passage of the National Park Service Act of August 25, 1916, from which the above protective provision was quoted.

All conservationists are undoubtedly in sympathy with further development of the upper Colorado River. However, there are a number of dam sites that can be utilized without invading the Dinosaur National Monument. While some might be more expensive and others might not be quite as effective from other standpoints as the proposed Echo Park project, this is the price that America can pay for the maintenance of its national park and monument system in its natural condition.

It is respectfully submitted that the Echo Park Dam project should not be recommended to Congress by the administration, that it should not be included in messages to Congress regarding the budget or public works or the state of the Union, and that the upper Colorado River plan be reconsidered with a view to adopting one or more other sites in lieu of Echo Park in the Dinosaur National Monument.

HORACE M. ALBRIGHT,
Formerly Director of the National Park Service.

Mr. HARRISON. The committee will stand adjourned until 9:30 tomorrow morning.

(Whereupon, at 12:10 p. m. the committee recessed until 9:30 a. m. Thursday, January 28, 1954).

COLORADO RIVER STORAGE PROJECT

THURSDAY, JANUARY 28, 1954

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to recess, at 9:40 a. m. in the committee room, New House Office Building, Hon. William H. Harrison (chairman) presiding.

Mr. HARRISON. The committee will come to order.

At this time the Chair would like to state the count on actual basis of time between the opponents and proponents shows that the proponents had 14 hours and 39 minutes and the opponents, as of now, have 14 hours and 20 minutes. The Chair has said that he wanted to be as fair as possible. The Chair is going to allow the opposition to continue until approximately 20 minutes of 12.

I am making that statement as the witnesses I have been given here, in order, may wish to make their statements brief. That will be fine, and I hope the committee will bear with them and not ask too many questions.

I also ask unanimous consent that those who were here present and unable to make a statement be granted permission to file their statement and have it made a part of the record since they have been here.

Mr. ASPINALL. Mr. Chairman, how much time will we be allowed?

Mr. HARRISON. You mean for cross-examination?

Mr. ASPINALL. To make our statements available for the purpose of the record.

Mr. HARRISON. I would say at least within a week.

The first witness this morning will be David Bradley.

STATEMENT OF DAVID BRADLEY, M. D., HANOVER, N. H.

Dr. BRADLEY. Mr. Chairman, my name is David Bradley, M. D. of Hanover, N. H., author of *No Place to Hide*.

I came down here at my own expense as a private citizen because I do believe that the inclusion of Echo Park and Split Mountain Dams in the upper Colorado River storage project is not justified.

I speak with some trepidation, because, after all, I live a long way from the problems of Colorado, and I would have spoken with greater trepidation had I not seen in the *Denver Post* a statement by Senator Barrett of Wyoming that he believed that "The fate of the project should be decided by the people of the area themselves."

I have included in this outlined statement of mine the proclamation so there would be no further confusion on this particular subject.

These were public lands from the beginning, administered under public land laws. I will read that part of the proclamation which is important:

Whereas certain public lands—
and going down to the bottom it says—

do proclaim that, subject to all valid existing rights, the following-described lands in Colorado and Utah are hereby reserved from all forms of appropriation under the public land laws—

It ought to indicate I have a right to be here, and, of course, I understand the chairman would not recognize me if I did not believe it.

Mr. DAWSON. May I ask, is that the entire proclamation?

Dr. BRADLEY. No, sir; I have included the proclamation without the description of the land involved.

Mr. DAWSON. There is a reservation for a dam site?

Dr. BRADLEY. At Browns Park.

Mr. DAWSON. I might inform the witness that the entire proclamation is in the record.

Dr. BRADLEY. Fine. I accept that correction.

Now I have given you, Mr. Chairman, an outline which was prepared before a good many of the witnesses have testified here and I will not go through them in detail.

Let me merely mention that I am not a water expert or an engineer, but I am dissatisfied with this project of Echo Park on several counts:

First, because it represents the estimate of only one Bureau, and in every civilian enterprise I know of, if bids of a billion dollars are being let out, one hears from at least three bidders instead of one.

Secondly, I claim from what I have heard here that the figures of the Bureau of Reclamation are inadequate, misleading, and inaccurate. I will refer you to my outline if you want further examination of that.

Let me take up only the question of their being inaccurate. General Grant 3 years ago proved at least that an error in subtraction had been made. Mr. Brower yesterday showed that not only had an error of subtraction again been made, but the simple straight-line proportions could not be satisfactorily worked out.

I claim, Mr. Chairman, that the Bureau here has a monopoly. It is involving itself in projects that will cost several billion dollars, and like Caesar's wife ought to be above suspicion.

I am not at all satisfied that after 10 years and \$7 million spent in investigation they cannot do their homework better than they have shown.

I do not like being asked to underwrite this cavalier attitude to figures which run to seven digits.

I certainly recognize the need for a water project in western Colorado. I was there last summer and it is perfectly clear. But from the figures presented here I have reason to suspect the soundness of every dam proposed here, and I would suggest to my Congressman that he look on the whole project with a good deal of suspicion.

There is one other item which has not been shown, namely, that the people of Vernal, Utah, have not been told the truth about this situation.

I have here in front of me Utah's Last Water Hole. It is an admirable display of a last-ditch effort to find some water on the part

of a poor old straggly hardpan miner. This is what they are giving away in a hotel in Utah. Of course, the people of Vernal, Utah, who with a few exceptions have not seen Dinosaur, are inclined to believe it.

They state here perfectly clearly, for the reasons indicated "The people of the upper basin States called upon the Bureau of Reclamation to develop a plan whereby the waters of the Colorado could be stored and saved during the high runoff periods to be used later during the low runoff periods."

I point that out because I want it perfectly certain that they are basing their plans in the future on Bureau of Reclamation projects. They have been told that this is the plan.

Now if you will look at that thing, Mr. Chairman, you will find this: They are being asked to give away their plentiful, clear, sparkling Uintah Mountain water and send it over the mountains to the Bonneville area. And in the middle of this chart, which you can pick up for nothing, the Bureau of Reclamation relief map, in the hotel, shows a pumping plant in Echo Park Reservoir and an aqueduct called Echo Park aqueduct leading to Stanaker Reservoir. And the people of Vernal—you have only to talk to a few of them on the street—believe they are going to get Echo Park water. Senator Bennett in his testimony here, page 5, volume 6, indicated that is not quite true. He said, "Lastly, Echo Park may some day provide water directly to Utah."

And Mr. Tudor, testifying here, under questioning indicated that Echo Park would be used only for power and storage.

I submit, gentlemen, that this is not playing it straight with the people of Vernal, Utah. They have been asked to give their lifeblood of Uinta water away and have tutored to expect a sailing transfusion from Echo Park. And Secretary Tudor says, in effect, "We have no such plan."

If I lived out there, I should be pretty mad about it. It seems to me the people of Vernal, Utah, have been sold down the dry wash.

Now I want to turn for the benefit of Mr. Miller, who brought this subject up, to this set of pictures, which is Hetch Hetchy before and after.

This is Hetch Hetchy Dam and Hetch Hetchy Reservoir [indicating] and this is what Hetch Hetchy was before [indicating].

Hetch Hetchy is a little valley almost identical with Yosemite, lying just to the north. In 1913 the city of San Francisco was able to put through a bill allowing them to invade what was a national park reservation. Although not exactly a national park in a sense, it now is. And they were allowed to use the Tuolumne River here for their own water. They succeeded. They had the alternative of putting a dam downstream in the foothills which would have cost roughly \$50 million. I am not aware of the exact figure. They had the choice of taking less power and a much cheaper dam downstream. They chose instead to invade this national park.

Hetch Hetchy is indeed a smaller Yosemite, but almost as beautiful, with fine meadows, camping groves, waterfalls, enclosed in spectacular granite walls.

You will notice with the fluctuating waterline you have left that this is a barren area [indicating] which is attractive to no one.

Mr. Aspinall would be interested to know you can hardly catch fish in Hetch Hetchy. Now once in a while. But you can go into the valley miles south and catch plenty of fish even though there are a million people there every summer.

In addition, let me point out you cannot boat on the lake, you cannot camp there, there is nothing you can do about it. It is gone and it did not need to go.

That dam cost them about \$200 million more than they needed to pay and they have lost this area. Last year 1,200 people drove up, saw the dam, signed the register and drove away. 1,200 people visited Hetch Hetchy. A few miles away in Yosemite it was crowded with a million people in 1 year. I have seen them there 30,000 at a time, each little tree a campground.

What we could do with Hetch Hetchy now if we had it. That is my point: Once you let the dam builders in there, it is gone forever.

I do not want to go on on the subject of the Yampa and the Dinosaur National Park because that has been clearly made.

Let me just show you some of these pictures which deal with this area that would be inundated.

Here are pictures of this boat trip you heard about yesterday.

For Mr. Miller's information, he said the aged and the invalids would not go. We had one man 76, and my brother was there, who had to go through a serious brain tumor operation, who was just as crippled as you will ever find a fellow. He can only walk with one arm over somebody else. He went down the trip with us, and after 6 days of lying in a rubber boat with the hot sun beating on him and the spray and everything else inconvenient, his one reply as to whether he liked it or not was that it was not long enough.

I show these pictures because these [indicating] will be flooded out—the living space, the campground, the swimming beaches will be flooded out.

Let me show you this area [indicating]. This is the big turn that will be flooded out to some extent like that. This [indicating] will be flooded out. That [indicating] will be gone to about 300 feet. That is about a day's run above Echo Park, and you finally come to the crowning glory of this whole area, which is Echo Park.

If you will take this, Mr. Chairman, and examine it [handing document], it is a Bureau of Reclamation picture of Echo Park. You will find if you study it with a microscope that Steamboat Rock is on the upper left corner. You cannot get any impression of Echo Park from studying these pictures, but you can a little from this [indicating]. We camped here along this area [indicating] and this area is big enough to hold at least a hundred camping sites without any trouble at all. This would be flooded out to some such area about like that [indicating]. All gone.

We camped here [indicating] and here was big Steamboat Rock facing us, where if you clap your hands or chop wood the sound comes back a second later with exactly the same precision. Indeed, we sat there and said a few uncomplimentary things about the Bureau of Reclamation, and it was perfectly clear that Steamboat Rock felt the same about them.

May I indicate this [indicating] would be all gone? This is a unique spot. I am surprised that you have no better picture from the Bureau of Reclamation than what you see there, except that I believe it to be a campaign of missing information and typographical errors.

You cannot enter Echo Park, this natural cathedral, without a sense of the presence there of the Supreme Being, a supremely competent architect and master sculptor, who is at work.

Some of the boys next morning started singing in this area [indicating], and with Echo Park as a sounding board and the hills behind to add and confuse the whole singing, it was exactly as I have heard in Riverside Cathedral in St. Paul or the Tabernacle in Salt Lake City, where you cannot tell the words and cannot tell what is even being sung, but you know the whole valley is brimming with harmony. We were not the tabernacle choir singing, but just for ordinary Americans who love to sing, and that was all, but we could create such music in this area.

May I point out this is a natural temple. Echo Park is a temple which has been many millions of years in the building. It belongs to the people of this country and has been reserved to them from all forms of appropriation.

Some 1,900 years ago a man, who was imbued with more brotherly love than most men have, found money changers desecrating His temple, and He got angry and He threw them out. We have had money changers in our temples before. We have thrown them out in the past, and with the help of this good committee we shall do it again.

Thank you.

Mr. HARRISON. Any questions, Mr. D'Ewart?

Mr. D'EWART. No.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. No.

Mr. HARRISON. Mr. Saylor?

Mr. SAYLOR. Doctor, I want to take this opportunity to congratulate you on coming down here from New Hampshire to participate in the hearings which we are having down here. The mere fact that you have come down should be an indication to members of this committee and the Bureau of Reclamation that it is not only the people of the 17 Western States who are interested in it—some people have tried to indicate this is purely a local matter and the local people out there should be entitled to do with it what they want—your appearing and testifying is an indication that the entire populus of America is interested in this matter of our national parks. They should be entitled to have a large voice in saying what should be done in our national parks.

I gather, Doctor, from your statement that you are not opposed to the development of the upper Colorado River Basin; is that correct?

Dr. BRADLEY. I was not opposed until I began to hear the figures here the other day, Mr. Saylor, and then it made me wonder about the whole business. I think someone needs to look into it who has more competence in figures than I have.

Mr. SAYLOR. In your opinion, you are satisfied with the decision of this committee? We have looked into these matters before and they have involved billions. Do you feel that this committee is competent to handle that matter?

Dr. BRADLEY. Yes, sir.

Mr. SAYLOR. I might say, I understand there are a number of other witnesses, Mr. Chairman, and according to the time that has been allocated, as you have decided to divide it equally, anyone who has

appeared as an opponent to any part of this bill is listed as an opponent and therefore the time has been charged against the opponents. Is that correct?

Mr. HARRISON. That is correct.

Mr. SAYLOR. In view of the fact there are a number of witnesses who will probably not have a chance to testify, therefore I ask unanimous consent that they be permitted to file statements.

Mr. HARRISON. Permission has already been granted. That has been taken care of by the chairman at the beginning of the meeting.

Mr. SAYLOR. I now ask unanimous consent that when the hearing is completed those members of the committee who can stay, could stay here and see the pictures which will be shown here in this room after the close of this session.

Mr. HARRISON. Without objection, the request will be granted.

Mr. YOUNG. If the gentleman will yield, when will the picture be shown?

Mr. SAYLOR. They requested 11:30.

Mr. HARRISON. It is agreeable to me for the pictures to be shown at 11:30.

Mr. YOUNG. Shortly before noon?

Mr. SAYLOR. Shortly before noon. They are not too long. They will be over, I am sure, by 12:30.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Chairman, I would like to say to Dr. Bradley that I think perhaps the main difference between us is the locale relationship. How many national parks do you have in New Hampshire?

Dr. BRADLEY. We have the White Mountain National Forests.

Mr. ASPINALL. I asked about parks.

Dr. BRADLEY. We have none.

Mr. ASPINALL. How many State parks do you have?

Dr. BRADLEY. I think we have about 6 or 7.

Mr. ASPINALL. Do you have any idea what the percentage of your area is that is controlled by the Federal Government?

Dr. BRADLEY. I do not.

Mr. ASPINALL. But you know in this area which is to be served by this development that the Federal Government controls over 50 percent of it at the present time?

Dr. BRADLEY. Yes.

Mr. ASPINALL. And that the feeling of desire for the community to grow in our area is just as much as the feeling that you have for your home community. And some of us who have, perhaps, the same inherent feeling as you do, feel a little bit closer to it because, if this is necessary to our development, then we are willing to make the decision. And I think that you folks coming from where you do should appreciate that position on our part.

That is all I have to say.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. I just wanted to ask, Mr. Chairman, do you know about how many people in New Hampshire have been to Echo Park?

Dr. BRADLEY. Yes. Six that I know of. No, I am sorry. Three that I know of. My wife, my 9-year-old daughter and myself. There may be others, but I do not know of it.

Mr. BERRY. What is the population of New Hampshire, Doctor?

Dr. BRADLEY. About 500,000.

Mr. BERRY. About 500,000?

Dr. BRADLEY. Yes.

Mr. BERRY. That is all.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Dr. Bradley, I am sure the people in my State are appreciative of your concern for our welfare and coming from New Hampshire to tell us out there how we are being took. I trust it is in good faith.

Dr. BRADLEY. May I say something?

Mr. DAWSON. Yes.

Dr. BRADLEY. I believe if the Bureau of Reclamation walked into Hanover, N. H., tomorrow and said, "Look, I have \$200 million. Do you want it?" we would do exactly as you did even though we got a dam already.

Mr. HARRISON. Will the gentleman yield there?

Mr. DAWSON. Yes.

Mr. HARRISON. I might call to the attention of the witness that the Bureau of Reclamation does not have that money, it has to be made available by Congress. And I certainly would not cross that bridge until such time as it was made available.

Mr. BRADLEY. Yes, sir.

Mr. DAWSON. I do not want to take the time to point out the errors of statement in regard to pumping from Echo Park and where the people of Vernal get the water. I think that has been gone into and we all understand that. But sometime I might explain to you where I think you are in error on it when I do have more time.

Mr. Chairman, at this point I would like to just take my time to read into the record five wires from professional boatmen who have taken people down the river, and point out to the witness that we refer to the trip you took as the "dude trip," one little stretch of water which is not too dangerous, and some people can get down it, and a lot of them do, as you say.

The first wire is from John A. Hacking, a professional boatman from Vernal, Utah, which reads as follows:

I was employed as boatman by Bus Hatch during entire summer '53. I was boatman on two of Sierra Club runs. I personally saved the life of one Mrs. Dot Pepper, a member of the expedition of last run, as result she sent me honorary membership to Sierra Club.

The next wire is from Dale J. Merrill of Vernal, Utah, professional boat runner. He says:

I was the truck and bus driver for the Hatch River expedition in 1953. At every point where I met the boat on river I brought out dissatisfied members of Sierra Club.

The next one is from Lynn N. Pope, professional boatman, Vernal, Utah. It says:

Sir, as a boatman, I have taken parties to Yampa and Echo Canyon. Can say they are too rough dangerous for average boatman. The few who have gone through were taken by expert boatmen who know every part of river through the safest parts when the river was at the safest stage. Even so, there will be people killed in future as in past.

Here is another one from William H. Slaugh, Vernal, Utah:

Being an experienced boatman and having made several trips through the canyons of the Green River in the area the Sierra Club say is so safe, I wish to inform you that it is not safe for anyone and only experienced rivermen should ever attempt it. I almost lost my own life along with four others on one trip. I lived in constant fear last summer while the Sierra Club was on their trips. Letter to follow.

Here is one from Grant Merrill, boatman of Vernal, Utah:

I have run boats through all the gorges in Dinosaur Monument spring of '51 I ran with the Hatch River group. This trip 2 boats were upset, 5 men were in the river for 1½ miles. I personally saved lives of 2 men; if this river is safe for anyone it needs better boatmen than I have seen on it.

There are others, but I wish, Mr. Chairman, these might be entered in the record.

Mr. HARRISON. Without objection, it is so ordered.
(The telegrams referred to follow:)

VERNAL, UTAH, January 28, 1954.

Congressman WILLIAM A. DAWSON,
House Office Building, Washington, D. C.:

I was employed as boatman by Bus Hatch during entire summer 1953. I was boatman on two of Sierra Club runs. I personally saved the life of one Mrs. Dot Pepper, a member of the expedition of last run; as result she sent me honorary membership to Sierra Club.

JOHN A. HACKING, Boatman.

VERNAL, UTAH, January 28, 1954.

Congressman WILLIAM A. DAWSON,
House Office Building, Washington, D. C.:

I was the truck and bus driver for the Hatch River expedition in 1953. At every point where I met the boat on river I brought out dissatisfied members of Sierra Club.

DALE J. MERRILL.

VERNAL, UTAH, January 28, 1954.

Congressman WILLIAM A. DAWSON,
House Office Building, Washington, D. C.:

Sir, as a boatman, I have taken parties to Yampa and Echo Canyon. Can say they are too rough and dangerous for average boatman. The few who have gone through were taken by expert boatmen who knew every part of river through the safest parts when the river was at the safest stage. Even so there will be people killed in future as in past.

LYNN N. POPE, Boatman.

VERNAL, UTAH, January 27, 1954.

Congressman WILLIAM A. DAWSON,
House Office Building, Washington, D. C.:

Being an experienced boatman and having made several trips through the canyons of the Green River in the area the Sierra Club says is so safe, I wish to inform you that it is not safe for anyone and only experienced rivermen should ever attempt it. I almost lost my own life along with four others on one trip. I lived in constant fear last summer while the Sierra Club was on their trips. Letter to follow.

WILLIAM H. SLAUGH.

VERNAL, UTAH, January 28, 1954.

Congressman WILLIAM A. DAWSON,
House Office Building, Washington, D. C.:

I have run boats through all the gorges in Dinosaur Monument spring of 1951. I ran with the Hatch River group. This trip 2 boats were upset; 5 men

were in the river for $1\frac{1}{2}$ miles. I personally saved lives of two men in this river; if safe for anyone it needs better boatmen than I have seen on it.

GRANT MERRILL, *Boatman.*

VERNAL UTAH, January 28, 1954.

Congressman WILLIAM A. DAWSON,
House Office Building, Washington, D. C.:

On the 11th day of May 1951 I was designated by Governor of the State of Utah to represent the State of Utah on the Green and Yampa Rivers expedition. The party consisted of 13 men and started at Lynnwood, Utah. Three days later we entered the La Dore Canyon and 2 hours later with 2 boats and 4 men and myself capsized on upper Disaster Falls. The 5 of us were in this terrible water for $1\frac{1}{2}$ miles, before we could reach the bank. By the grace of God only we reached the bank before we were battered to death on the thousands of huge rocks in this wild river. This water is so fast and rough impossible for best swimmers to attempt swim. If all five hadn't been lucky enough to have held to boats we would have battered to death. We reached bank minus boat and provisions. After making trip personally I cannot see why sane person would take trip. To think that National Park Service will permit elderly persons small children take trip is beyond sane thinking. River is not safe to swim in below canyon where it is running smooth. Because of undercurrent records shows several people drowned even in smooth water below canyon. I can see why few people might make trip once but after running the waters of canyon I cannot see why anyone would make second trip. Entire trip was under direction of Bus Hatch, veteran river runner. Even with his expert knowledge of river we still almost lost five lives.

S. J. HATCH,
Highway Patrol of Utah.

VERNAL, UTAH, January 28, 1954.

Congressman WILLIAM A. DAWSON,
House Office Building, Washington, D. C.:

We have recorded in our paper accounts of more than a dozen drownings in Green River in Vernal in the last decade. An experienced boatman lost his life when his boat was overturned in the rapids of Slipt Mountain last summer. A university geology student drowned at the Dinosaur Quarry while swimming. Boats of experienced rivermen have been overturned, crushed, and occupants tossed into the rapids. Pinned in whirlpools sucked under ledges narrowly escaping with their lives. The river is absolutely hazardous to the inexperienced and unguided venturers.

WILLIAM B. WALLIS,
Publisher, Vernal Express.

VERNAL, UTAH, January 28, 1954.

Congressman WILLIAM A. DAWSON,
House Office Building, Washington, D. C.:

Being experienced boatman, having made several trips through canyons of Green River in area the Sierra Club says is safe, I wish to inform you that it is not safe for anyone and only experienced rivermen should ever attempt it. I almost lost my own life along with four others on one trip. I lived in constant fear last summer while the Sierra Club was on their trip.

WILLIAM H. LAW, *Boatman.*

Mr. HARRISON. Are you through, Mr. Dawson?

Mr. DAWSON. Yes.

Mr. HARRISON. Mr. Westland?

Mr. WESTLAND. I only have one comment, Doctor. I noticed you are the author of a book called No Place to Hide.

Dr. BRADLEY. Yes, sir.

Mr. WESTLAND. And if it is along the lines I think it is from that title, I just wanted to suggest, in my own district in the State of Washington there is a park of just about 900,000 acres, and if you do

not have any place to hide, I can guarantee you can go into those wilds and nobody will ever find you.

Dr. BRADLEY. It is a book on atomic energy.

Mr. WESTLAND. That is a far cry from my thought.

Dr. BRADLEY. Are you sure you want me out there at all?

Mr. WESTLAND. Come on. We will be glad to have you.

Mr. HARRISON. The Chair wants to say at this time—I am not going over the statement, but I just want to call attention to the witness that some of the information he has received is not any more accurate than he contends some of the Bureau's information is, or he did not understand what was said.

On page 2 he says, calling it a misleading statement of Secretary Tudor, "year's supply of water for a city size of Denver. This project purports to store water enough for 188 to 375 Denvers (depending on 100,000 or 200,000 acre-feet)."

My recollection is that Mr. Tudor said that the additional evaporation, not the storage water, but the additional evaporation, from the alternate sites would be sufficient. And your statement, of course, does not point that out. It leaves the impression that the actual storage of water in the reservoir is that much. I just wanted to correct that one statement there.

Dr. BRADLEY. May I say a word on that?

Mr. HARRISON. Yes.

Dr. BRADLEY. It seems to me when one mentions 100,000 or 200,000, one understands we are talking about additional evaporation. In trying to put that figure in terms of the whole business, trying to put some one figure into a proposition with other figures, I have used the full storage project. Now this is additional evaporation which the alternative site would involve in the whole storage project, and my figures are correct, taken from Mr. Tudor.

Mr. HARRISON. I was pointing out that you did not make it clear in your statement that you referred only to the additional evaporation from the alternate sites rather than the total storage. I wanted to make that clear because that is what he said. I think the record will speak for itself. Mr. Tudor said the amount lost by evaporation from one alternative site would be enough to supply a city the size of Denver all of its water, municipal and business.

Dr. BRADLEY. You understand, Mr. Chairman, this is only an outline and I did not have time to—

Mr. HARRISON. I am not criticizing you. I do not mean to reflect on the witness. I just would like to have that straightened out.

Mr. Young?

Mr. YOUNG. I notice you as well as some of your associates oppose construction in the bill because you feel the figures are inadequate. Do you have any suggestion as to whose figures we should accept?

Now the Bureau of Reclamation has a large number of very well-qualified engineers; they have spent \$7 million in investigations of this. Yesterday a gentleman submitted certain figures which were manifestly subject to question. You question the Bureau of Reclamation's figures. Can you give us a more objective criterion or some recommendation as to whose report you would accept?

Dr. BRADLEY. If you will look at No. 2 in my outline, the first page, I suggest what has already been mentioned before, that you

should have the Federal Power Commission or the Corps of Engineers or the President's Water Resources Policy Commission and the Department of Agriculture report, if there is one.

Mr. YOUNG. Is it customary to have all of those reports in every reclamation project?

Dr. BRADLEY. It seems to me you are letting out a big bid here, and \$1 billion is going on one fellow's figures.

Mr. YOUNG. A lot of bids have been let out before and they do not always have the Federal Power Commission or the President's Water Resources Policy Commission or the Department of Agriculture report as far as I know.

Dr. BRADLEY. I would not have raised the objection, sir, if I had not been shown these errors in arithmetic.

Mr. YOUNG. Where are the errors you can point out in arithmetic?

Dr. BRADLEY. I will point them out via people I have trust in. Yes, indeed.

Mr. YOUNG. You mentioned the President's Water Resources Policy Commission's report. Are you familiar with the Commission's report of the development of the Connecticut River Basin, and particularly that portion of the Connecticut River Basin in New Hampshire which calls for certain hydroelectric plants, in the development of the Connecticut River?

Dr. BRADLEY. I have not seen it.

Mr. YOUNG. You are not familiar with that?

Dr. BRADLEY. No.

Mr. YOUNG. Do you think the people of New Hampshire would oppose the hydroelectric development of the Connecticut River?

Dr. BRADLEY. I have no idea.

Mr. YOUNG. I suggest you take a look at that some time in the interest of preservation of scenic areas. I am sure you would find it at least of passing interest.

That is all the questions I have.

Mr. HARRISON. Thank you very much, Doctor.

Dr. BRADLEY. Thank you.

Mr. HARRISON. The next witness will be Kenneth Morrison.

STATEMENT OF KENNETH D. MORRISON, REPRESENTING THE NATIONAL AUDUBON SOCIETY

Mr. MORRISON. I am Kenneth D. Morrison, representing the National Audubon Society.

My original statement was brief, and in deference to the representatives of the other conservation organizations that are here and that are waiting to be heard, I am going to make it even more brief.

The National Audubon Society, which is dedicated to the conservation of nonrenewable natural resources and which has continentwide membership, urges a rejection of the Echo Park Dam feature of the revised Colorado River storage program recently recommended by the Secretary of the Interior.

We believe it extremely important to the public interest that the national park and monument system be protected against encroachments destructive of the values for which these parks and monuments have been established.

To our society it seems very important, from the standpoint of public interest, that the spiritual, esthetic, health-giving and other recreational values of our national parks and monuments be permanently maintained.

It is impossible to sustain with proof any evaluation in dollars of intangible assets. Who can say what the value of an unspoiled Dinosaur National Monument will be in an era when most of our rivers have been dammed or diverted? Must we wait until natural areas become scarce and hard to find before we comprehend the intrinsic worth of our national parks and monuments?

National Audubon Society headquarters are directly opposite Central Park in New York City. As we look across this oasis in the midst of concrete and steel, we are aware that New York City could derive a tremendous tax revenue from the acreage of Central Park, if it were to be sold and filled with skyscrapers or other buildings. The city's fiscal problems might vanish. Yet anyone who suggests impairment of the park is quickly and indignantly shouted down because even this remnant of trees and grass, lakes and birds, is so greatly treasured by New York's millions. We are fast approaching the same situation as regards park and wilderness values throughout the Nation. And for that reason we feel this is no time to let down the barriers of our national parks and monuments.

Every year greater numbers of Americans flock to these areas. They desire to get away from the artificial things that surround them. Even a few days in places where canyon walls rise sharply overhead and swift waters tumble at their feet, sends people home with renewed mental and physical vigor. The inspiration and enjoyment which our people can derive from these reservations are reason enough to defend them against destructive developments. It is easy to lose natural scenic values and almost impossible to recreate them.

In conclusion, I would just like to say that we believe that the alternate sites should be given very serious consideration because we feel, as we pointed out here, that once we lose an area which is valued by the Nation because of its natural scenic values, nothing can bring it back. And with the scarcity value which these areas have today, the National Audubon Society and its organizations throughout North America hope you will give very sincere consideration to those alternatives.

Thank you very much.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. I would be interested to know the position of the National Audubon Society with respect to the St. Lawrence seaway.

Mr. MORRISON. The society has not taken any stand on that subject.

Mr. D'EWART. That is all.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. Mr. Morrison, where is your home?

Mr. MORRISON. My home is Armonk, N. Y.

Mr. REGAN. Have you been to Echo Park?

Mr. MORRISON. I have not, but certain members of our organization have, and I hope very much to go there someday if the dam is not built.

Mr. REGAN. Were you here the other day when the two Senators from Utah outlined the holdings of the State as being 52 million acres, and said that less than 2 million would be adaptable to cultivation?

Mr. MORRISON. Yes, I was here.

Mr. REGAN. A very small percent of the land. You say in your statement here, "Must we wait until natural areas become scarce and hard to find before we comprehend the intrinsic worth of our national parks and monuments?"

Now, Colorado and Utah are broken out with scenic wonders. It is impossible to use any great percent of the land for anything but, I might say, a monument, because there are areas there that can never be used for cultivation. Yet the people there, like the people originally from New York—we in the West might like to say that Manhattan should have remained a wilderness so we could go to New York. It was beautiful, but you have now got it boiled down to a very small area called Central Park. We cannot use all of the State of Utah, but we would like to put to beneficial use that part that can be used for the benefit of the people living out there, and expanding population, just as the people of New York used Manhattan Island all except a very small acreage. That is Central Park to which you referred.

I would like to go a little further. Here we have in the record an affidavit which was signed about 4 years ago by the former Park Service manager of Dinosaur National Park. At that time the people there locally—they did not come from New York or New Hampshire—but the people said, "We would like to have something more attractive to get the people out to see this little Dinosaur Monument area. It is so small and we have so little to show people when they come that we think we could take in canyons and things of that type and we might have an inducement to get the tourist trade out here." Because they like tourist dollars too in that country.

Now they are not going to get direct benefits, the people living immediately around there, from the dam. I mean in the use of the water or electricity generated there. That will be taken off some place else, but the people locally feel that the completion of Echo Park Dam will be of lasting benefit to bring the tourist travel to their part of the country; it will be a beautiful place rather than one that is now practically inaccessible.

When they decided then to take on this additional land, the people there were a little apprehensive of what might happen if later on as their population grew they would want to put this area to beneficial use, so they had a meeting, an unusual thing. When the National Park Service takes over an area, they want it all, no grazing, no encroachment of any kind in the national park. But they didn't in that land. They had meetings at Craig, Colo., and Vernal, Utah, and the people there who were affected directly were present and said, "We would like to continue to graze on this land because that is a part of our economy, and a very necessary part."

So they said, "All right, we will take over with that understanding, that the land will still be available for grazing."

He now says further in his affidavit, sworn to here:

I was authorized to state, and did state as a representative of the National Park Service—

now he was there as a representative holding these meetings at the request of the head of the Park Service, which, in turn, your conservation organizations back up and wisely so. I think that is fine. It is nice to have an organization. But we think your organization ought to also cooperate with the people.

He said:

I was authorized to state, and would state as a representative of the National Park Service, that grazing on the area would not be discontinued and that in the event it became necessary to construct a project or projects for power and irrigation in order to develop that part of the States of Utah and Colorado, that the establishment of the monument would not interfere with such development.

Then he goes on to say it was at that meeting discussions were had of Echo Park, which these people could visualize somewhere in the future. It is also still in the future, but they think it ought to be done.

I think it is nice to have the views of you people, and I am sure you serve a very good purpose for this country, but there are times when I think we probably ought to also think about the people living there, just as they did when they developed Manhattan Island. Thank you.

Mr. DAWSON. Will you yield to me at that point?

Mr. REGAN. Yes.

Mr. DAWSON. I want to compliment the gentleman on a very clear and concise summary of what took place out there, and call attention further to the fact that some of the witnesses have talked of the heritage or the rights that they have in other parts of the country and that the United States gave them this. I think those witnesses should also be reminded that when the United States Government through its representatives makes a promise to the people, the people expect the Government to keep its word.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. I have no questions.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. Mr. Morrison, if the dam is built—and I hope it will be—and you should want some easier form of recreation, or should want some more difficult form of recreation, come to my congressional district and I will take care of your wishes either way. [Laughter.]

Mr. MORRISON. May I just say one thing?

Mr. HARRISON. Yes.

Mr. MORRISON. It seems to me that the feeling that this area will be improved by the dam has been expressed several times, and it is easy to see how people can feel that way. I suppose it depends on what our definition of beauty is. But I would like to point out that if this dam is built and this huge water area is created, Dinosaur Monument will then be in the same class with dozens of other reservoir areas; it will have lost its unique value for which the area was created. And we certainly are not opposed to the people of that area having the water development which they need, but we feel we should learn in this country to live with our national parks and monuments. They have been created, we feel, out of great wisdom, and there are very real and valid reasons for keeping them in their natural condition. When alternatives exist which can be developed, as has been pointed out here by General Grant and others, with certain advantages to the people, then we feel it is important that they be very thoroughly investigated before we go into one of these great natural areas.

Mr. HARRISON. Is that all, Mr. Aspinall?

Mr. ASPINALL. Yes.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. I want to compliment the witness. I think he has made a very moderate and fine statement on behalf of the views of the society. Some of the people come here with a bunch of figures and statements with very little to back them up. But I think you have presented the view of your group in a very concise and, I would say, earnest way.

At this time, Mr. Chairman, I would like to make a very short statement in reply to the gentleman from Pennsylvania yesterday, I think it was, who introduced some figures on attendance at various parks. I think something was submitted for the record.

I think the committee will be interested in the breakdown of the figures for attendance at National Park Service areas which has previously been mentioned at over 46 million for the year 1953. From the Park Service's own figures, I find that in 1953, the third most used area under the jurisdiction of the National Park Service was the Lake Mead national recreation area with 2,220,940 visitors.

I think my friend from Nevada will appreciate this.

Thus, almost 5 percent of the visitors to all of the National Park Service areas came to this one area. For clarification, I should point out that areas under the jurisdiction of the National Park Service are national parks, national monuments, historical areas, parkways, and memorial parks. In the year 1952 travel year ended September 30, Lake Mead attracted 1,944,157 visitors out of a total of over 41 million, retaining its position as the third most visited area and in 1951 it was second most visited with 2,052,786 visitors. And what is it that attracts so many visitors to this area? Let me quote from the Park Service itself—this is the bulletin they put out and what they have to say about it:

Lake Mead, the main feature of Lake Mead National Recreational Area, is the reservoir created by the construction of Hoover Dam. This beautiful blue lake with its 550-mile shoreline at high watermark, nestles in magnificent canyons along the Colorado River. Surrounded by the rugged and colorful canyon walls, some of them towering a mile above the surface of the lake, it has a high scenic quality. It also affords exceptional water-recreational facilities in the midst of a desert region.

Let me leave this descriptive folder of this magnificent recreation area as a part of the committee files on this hearing.

I would ask, Mr. Chairman, it be introduced because it very graphically describes what the situation would be if Echo Dam were built.

Mr. HARRISON. Without objection, it is so ordered.

(The folder referred to will be found in the files of the committee.)

Mr. DAWSON. I know the committee will also be interested in knowing the areas which outrank the Lake Mead Recreation Area in number of visitors. First of these is the Blue Ridge Parkway with over 4 million visitors in 1953, and second in the last 2 years has been the Great Smoky Mountain National Park with 2,250,772 visitors in 1953, just 1 percent more visitors than the Lake Mead area.

I also want to point out at this point that the great number of visitors who go through the Blue Ridge Parkway and also through the Great Smokies go to get on the great lakes that were created

through the TVA, particularly the Fontana Dam. The Park Service itself explains that in their bulletin, that is the reason they make that trip, to visit these great lakes which have been created by the dams.

Now I have more in the statement, Mr. Chairman, and I ask that it be made a part of the record at this point.

Mr. HARRISON. Without objection it will be submitted for the record. (The statement referred to follows.)

STATEMENT SUBMITTED BY REPRESENTATIVE DAWSON OF UTAH

I think the committee will be interested in the breakdown of the figures for attendance at National Park Service areas which has previously been mentioned at over 46 million for the year 1953. From the Park Service's own figures, I find that in 1953, the third most used area under the jurisdiction of the National Park Service was the Lake Mead national recreation area with 2,220,940 visitors. Thus, almost 5 percent of the visitors to all of the National Park Service areas came to this one area. For clarification, I should point out that areas under the jurisdiction of the National Park Service are national parks, national monuments, historical areas, parkways, and memorial parks. In the 1952 travel year ended September 30, Lake Mead attracted 1,944,157 visitors out of a total of over 41 million, retaining its position as the third most visited area and in 1951 it was second most visited with 2,052,786 visitors. And what is it that attracts so many visitors to this area? Let me quote from the Park Service itself, "Lake Mead, the main feature of Lake Mead national recreational area, is the reservoir created by the construction of Hoover Dam. This beautiful blue lake with its 550-mile shoreline at high watermark, nestles in magnificent canyons along the Colorado River. Surrounded by the rugged and colorful canyon walls, some of them towering a mile above the surface of the lake, it has a high scenic quality. It also affords exceptional water-recreational facilities in the midst of a desert region." Let me leave this descriptive folder of this magnificent recreation area as a part of the committee files on this hearing.

I know the committee will also be interested in knowing the areas which outrank the Lake Mead recreation area in number of visitors. First of these is the Blue Ridge Parkway with over 4 million visitors in 1953, and second in the last 2 years has been the Great Smoky Mountain National Park with 2,250,772 visitors in 1953, just 1 percent more visitors than the Lake Mead area. Lest there be some misunderstanding as to the attraction of the Great Smoky Mountains National Park, I would like to call the committee's attention to the fact that the southern boundary of the park is the Great Fontana Reservoir of the TVA, formed by one of the highest dams east of the Rocky Mountains. As a matter of fact, the Great Smoky Mountains National Park was not even created until the Tennessee Valley Authority was formed and promoted the development of this great Tennessee Valley area.

And, I might add that the Blue Ridge Parkway is the most scenic highway leading from the great populous centers of the East to the beautiful Tennessee Valley Authority reservoirs which have such a high degree of interest and attraction for the people of our country.

I wish I had the figures for reservoir use for the other great reservoirs of this country not under the jurisdiction of the National Park Service. It is my understanding that the great Lake Texoma formed by the Dennison Dam on the Red River between Texas and Oklahoma shows an even greater use than the Lake Mead area.

I would like to submit these lists compiled by the Park Service and showing the number of visitors to the various areas under the jurisdiction of the Park Service for 1951, 1952, and 1953 for the committee files.

Mr. HARRISON. Mr. Westland?

Mr. WESTLAND. No questions.

Mr. HARRISON. Mr. Young?

Mr. YOUNG. No, thank you.

Mr. DAWSON. I would like to ask the witness a question.

It seems to me we are weighing economic values against scenic values here. Now the Colorado River Basin means a certain amount of money each year, a certain amount of economic benefits. Against that we have to weigh the scenic values to the entire Nation.

Of course, if it meant \$5 million income to the people out there, I suppose even your society would admit the project would be good. Could you estimate the value scenically as to the country? Is it \$5 million a year?

Mr. MORRISON. I wonder if we have to make that determination.

Mr. DAWSON. It seems to me we have to weigh those values; that is what is essentially involved here.

Mr. MORRISON. I would say if there were no alternative sites, if that were necessary, I believe we would have to make that determination.

Mr. DAWSON. With alternative sites it seems to be easier to determine the value.

Mr. MORRISON. As long as we can retain the present values of Dinosaur National Monument and go ahead with one of the alternative sites, we do not have to decide whether the people of that area are going to have these benefits or not, but we can, it seems, retain the benefits which they at present have in the monument and also have the benefits from development of one of the alternative sites.

Mr. DAWSON. The alternative sites would cost that area so much per year in water. It was testified the minimum would be 100,000 acre-feet, probably even more with other alternative sites.

I was wondering if you had ever put any economic value on the scenic beauty.

Mr. MORRISON. No. We have always realized it is impossible to put an economic evaluation on intangible assets.

Mr. DAWSON. You recognize there is a point where economic values would certainly outweigh the scenic values of even Echo Park?

Mr. MORRISON. That is hard to say.

Mr. DAWSON. Would you admit that there would be a possibility that economic values could outweigh the scenic values?

Mr. MORRISON. I would say there would be the possibility, yes.

Mr. DAWSON. But the question is, Where along the line does that occur?

Mr. MORRISON. Yes.

Mr. DAWSON. But you made no estimate of what the economic values would be as against the scenic?

Mr. MORRISON. No.

Mr. DAWSON. That is all.

Mr. BERRY. Will the gentleman yield?

Mr. DAWSON. Yes.

Mr. BERRY. Which of these sites would you recommend be used instead of Echo Park?

Mr. MORRISON. Well, sir, we do not pretend to be engineers, and I think that the question of alternate sites has been gone into by people who know much more about it than we do. We feel it is not our function to recommend an alternate site.

Mr. BERRY. Well, just name one. Name one of those in those canyons up above there. Which of the sites would you recommend?

Mr. MORRISON. We are not prepared to make any recommendation. All we recommend is that one of the alternative sites be used, if possible. And we feel it is up to this committee and their judgment—

Mr. BERRY. Suppose that you should pick one. You know it would be in a gorgeous canyon, do you not?

Mr. MORRISON. But it would be outside of the national park and monument system.

Mr. BERRY. Wait a minute. Would it be a gorgeous canyon or not?

Mr. MORRISON. It might well be.

Mr. BERRY. You know it would be because all are gorgeous and spectacular. Is that not correct?

Have you been out there?

Mr. MORRISON. Yes.

Mr. BERRY. And suppose after it was picked, the President would step in then and declare that to be a national monument. And he can do it by the stroke of the pen, can't he, under our law?

Mr. MORRISON. It can be done by Executive order, yes.

Mr. BERRY. By the stroke of the pen. Right? All he has to do is sign his name. The thing is drafted for him and he can sign it and then it is a national monument, is it not?

Mr. MORRISON. Yes.

Mr. BERRY. Then do you think that should stop the building of that dam?

Mr. MORRISON. I do not believe that the President would declare an area in which a dam was to be built a national monument.

Mr. BERRY. You do not think he would, but suppose he does. Just suppose now.

Mr. MORRISON. All right, suppose he does.

Mr. BERRY. Then do you think you should try and stop the development of that dam?

Mr. MORRISON. If he were to declare it as a monument with a dam about to be built, there would, of course, be a reservation in the proclamation.

Mr. BERRY. Something like there was in this one?

Mr. MORRISON. But the reservation did not apply to this dam.

Mr. BERRY. Not this particular spot. But they did reserve the one they knew about, did they not?

Mr. MORRISON. Yes.

Mr. BERRY. That is all.

Mr. HARRISON. And the proclamation did say power project or projects, or in the accompanying order?

Mr. MORRISON. My understanding is it provided for the Brown's Park Dam and provided for the operation of the Federal Power Act as amended.

Mr. HARRISON. Any questions, Dr. Miller?

Mr. MILLER. No.

Mr. HARRISON. Mrs. Pfost?

Mrs. PFOST. No.

Mr. MORRISON. Thank you.

Mr. HARRISON. The next witness will be C. R. Gutermuth.

**STATEMENT OF C. R. GUTERMUTH, VICE PRESIDENT, WILDLIFE
MANAGEMENT INSTITUTE, WASHINGTON, D. C.**

(COMMITTEE NOTE. Mr. Guteruth's statement was ordered deleted from the record by unanimous vote of the subcommittee, as follows:)

Mr. GUTERMUTH. Now you gentlemen in the Congress have preserved these areas for us and their fate is in your hands now.

I want to make it very clear that I am not here defending my position. I think the people who are defending their position are this committee and——

Mr. HARRISON. Now just a minute. I think that was a little unfair statement for you to make here.

Mr. GUTERMUTH. It is not, because the responsibility, Mr. Chairman, is in your hands.

Mr. HARRISON. I suggest you ask that statement be removed from the record.

Mr. REGAN. Second the motion.

Mr. ASPINALL. A point of order, Mr. Chairman. Inasmuch as this committee has not made any decisions and have only asked questions, and only the sponsors of the bill have inferred what their position is going to be——

Mr. GUTERMUTH. That is right, and I am merely making the statement, Mr. Aspinall——

Mr. ASPINALL. Do you not think that your statement was entirely out of order?

Mr. GUTERMUTH. I do not think it was for this reason——

Mr. REGAN. Mr. Chairman, do we need a person to come in here with a chip on his shoulders, and belligerent, and tell this committee how we think? I think we could do without that.

Mr. MILLER. I think the witness could be removed.

Mr. HARRISON. The Chair will entertain a motion that the witness be removed from the stand and his testimony be stricken.

Mr. REGAN. I so move.

Mr. HARRISON. Are you ready for the question?

Mr. DAWSON. Yes.

Mr. HARRISON. All those in favor will say aye?

It is so ordered. The witness' statement will be stricken from the record, and you will be dismissed.

Mr. HARRISON. The next witness will be Mrs. Warren. We are glad to have you, Mrs. Warren.

**STATEMENT OF MRS. BRYAN P. WARREN, PAINT BRANCH GARDEN
CLUB, COLLEGE PARK, MD., REPRESENTING NATIONAL COUNCIL
OF STATE GARDEN CLUBS**

Mrs. WARREN. I am Virginia Warren, representing the Paint Branch Garden Club, College Park, Md., and coming to read a statement that the National Council of State Garden Clubs, headquarters, New York City, has prepared.

Mr. HARRISON. We are glad to have you with us.

Mrs. WARREN. In New York City on January 14, 1954, there was a meeting of the board of directors of the National Council of State Garden Clubs, which is the association of all the State federations

of garden clubs. When it passed a resolution concerning the upper Colorado storage project, it is fair to say that the council was speaking for the majority of some 300,000 members in more than 9,000 clubs.

A copy of that resolution is attached to this statement for your attention and for the record. We of the garden clubs are concerned with the upper Colorado project because of its potential effect on the Dinosaur National Monument. We are strongly opposed to any artificial changes in this monument which are not necessary to the visiting public.

Perhaps, as women—who are often left with the planning for recreation, beauty, and education in the home—we rise more quickly to the matter of natural beauty in landscape. In our gardens it is an intrinsic part of daily living. If men must work then it is women who must help the fruits of work to be realized. We believe that our leisure is the thing worked for, and that it must find its expression in truly satisfying surroundings.

I am not here with proposals for alternate sites for dams, or figures on the increasing numbers of people who must have recreation that nature can give, nor with the total of dollars that these people bring to States with unusual scenic resources. The Dinosaur National Monument is uppermost in our minds because it stands for something that we in Virginia, or we in Connecticut, have lost from our daily lives. We fear what might be done to these park lands because they represent to thousands of us a garden of nature which is a counterpart to the gardens in our yards and a foil to the pace and strain of lives full of speed, details, and tension.

It is a matter purely of principle. To equate any national park with the tourist industry or to measure it against acre-feet of water, or to attempt to develop it for anything else than itself and our love of it is to destroy the reason for making it a park. In effect, our system of park lands hangs or falls together. Dinosaur by itself is worth every effort by which we can defend it. To make it an exception to the tradition of preservation would be impossible. One by one these perfect bits of the original America—to which we can return for recreation—would be invaded.

If we are a young nation, we are still the first to have reserved such parks. Our pride in this achievement is such that our children come home from school reporting that it was born of a small exploring party in the Yellowstone in 1870, who gave up their plans for development and profit in what they knew would become a rich tourist bonanza. With our children we reenact this history every summer when we enter a park or monument. That our population has grown since then and requires more productive soil with irrigation, means more than ever that the remnants of the grand American wilderness need firm preservation, even if the irrigation outside them is a little more expensive. These reservations grow in stature as the remaining landscape changes. They inspire us all the more when all else is mobilized for production. They symbolize the part of our environment that cannot be sold.

In conclusion, we believe that modern family living makes us aware of the need for a full and varied experience. Some of the things associated with the pursuit of a good life in our country are, like our material wealth, a part of the landscape. Foremost among these are

the parks and monuments. The wealth they have for us derives from their wild and natural beauty, and is lost when that is changed.
(The resolution referred to follows:)

THE NATIONAL COUNCIL OF STATE GARDEN CLUBS

RESOLUTION—DINOSAUR NATIONAL MONUMENT

In keeping with the spirit of the resolution of this organization on April 27, 1953, opposing boundary changes that might reduce the Olympic National Park, this organization recognizes the special value of each of our national parks and monuments and the necessity of maintaining these lands intact and natural.

Public sentiment was expressed during the administration of Abraham Lincoln who signed the bill reserving the Yosemite Valley, and has reasserted itself innumerable times when proposals have been made which were inconsistent with the ideal of preservation as it has developed with the growing system of parks and monuments. We believe that this is as it should be.

The Dinosaur National Monument, on the northern boundary between Colorado and Utah, is extremely important for its fossil remains and canyon landscape. Science should have perpetual opportunity of studying here, both for itself and to answer our questions and those of our children about the origins of American life. Nothing should be done that would destroy these remnants or the unique valleys of the Colorado headwaters.

The scenic prominence of this and other areas in the park system cannot be equated with monetary gains that might be made from their exploitation, or so-called development. Dinosaur's value for its wild and peculiar scenery is increasing annually as more people see it, read of, or hear about it. Its very remoteness and untouched nature give it unusual piquance in the imaginations of many who will never visit it. Its importance may be said to be inverse to the degree that any agency or person commercializes its resources.

With other conservationists we look ahead to decades of rapidly expanding population, more leisure, higher mobility, and greater proportion of the retired-age classes. We have few fears for our future ability to provide them with the material needs of life if sound conservation practices are adopted on lands now producing food, fiber, energy, impounded water, or space for construction. If such practices are not realized it is impossible to conceive that the use of materials or energy extracted from such areas as Dinosaur will have any effect on our survival. On the contrary, it would destroy essential recreational resources that will be needed urgently, not for the pocket or stomach, but in the minds and hearts: Therefore be it

Resolved, That the National Council of State Garden Clubs, meeting in New York on January 14, 1954, (1) strongly opposes any action that might be detrimental to the scenic, recreational, and scientific value of Dinosaur National Monument; (2) directs the resources of its membership of some 300,000, by the spread of information, toward safeguarding the integrity of this or any other national park or monument that is threatened; and (3) urges fuller recognition as a matter of national policy of the increasing need for protection and expansion of resources yielding nonmaterial values to our developing population.

PAUL H. SHEPARD, JR.,
Conservation Chairman.

Mr. HARRISON. Do you have any questions, Mr. Miller?

Chairman MILLER. No.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. No.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. No.

Mr. HARRISON. Mr. Aspinall?

Mr. ASPINALL. I just wish to say this: I think that this is a very fine statement coming from the Garden Clubs. May I say to you, Mrs. Warren, that I have such a statement from a garden club in the beautiful town of Glenwood Springs, Colo., and I consider it is a fine expression from those ladies who are prompted by the motives which

make your Garden Clubs very fine and constructive organizations in the lives of America today.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. No.

Mr. HARRISON. Mrs. Pfost?

Mrs. PFOST. No.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Just one question. I notice in the resolution you have attached to your statement of the National Council of State Garden Clubs, you state: "It is extremely important for its fossil remains and canyon landscape."

Then you go on to say, "Nothing should be done that would destroy these remnants."

Is it your understanding that the construction of the Echo Park Dam would destroy any dinosaur fossil remains?

Mrs. WARREN. We were afraid it might, and we were very anxious, if we were going to do it, that it not be done.

Mr. DAWSON. I think even the opponents of this legislation have admitted that it would not destroy any fossil remains. They have never contended that. I think your organization should be informed of that fact.

I would also like to ask you—you state that this represents the views of the garden clubs throughout the various States. Do you have an organization in the State of Utah?

Mrs. WARREN. Yes.

Mr. DAWSON. Have they expressed themselves?

Mrs. WARREN. I have a compilation here from the New York Federation, the national federation. I do not have it broken down. I am sorry.

Mr. DAWSON. Would it be a fair statement to say that you have not polled your membership of these clubs?

Mrs. WARREN. Yes, it is, but we do not have it broken down, a tally of it State by State. We do not have it listed.

Mr. DAWSON. Would you say then that some of the States may not be in accord with your statement?

Mrs. WARREN. Some members in some groups may not, but in general it has been unanimous—300,000 members in more than 9,000 clubs. You see, it is a national federation of garden clubs of the United States.

Mr. DAWSON. I would appreciate it if you would check on it and let me know, particularly about the garden club of Utah, because I have a statement from practically every conservation and wildlife group in the State of Utah favoring the construction of this dam.

Mr. HARRISON. I thank you very much, Mrs. Warren. It is a pleasure to have you before the committee and receive the very fine statement of the position of the national council.

Mrs. WARREN. Thank you.

Mr. HARRISON. The next witness, Lowell Beasley. Is he here?
(No response.)

Mr. HARRISON. Mr. Carl D. Shoemaker?

Mr. SHOEMAKER. Mr. Chairman, I prefer to just file a very brief statement.

Mr. HARRISON. Permission has already been granted to you.

(COMMITTEE NOTE.—Mr. Shoemaker's statement was not received before the hearings were printed.)

Mr. HARRISON. Richard Westwood.

**STATEMENT OF RICHARD W. WESTWOOD, PRESIDENT OF THE
AMERICAN NATURE ASSOCIATION, WASHINGTON, D. C.**

Mr. WESTWOOD. My name is Richard W. Westwood. I am president of the American Nature Association. I shall be very brief and, I hope, not repetitious.

Reference was made here yesterday—excuse this whisky tenor, but it is this weather—reference was made here yesterday and rather sloughed off to the national parks back in 1921. It was passed over as rather unimportant, but it was at the time extremely important. That was the threat to Yellowstone River and Yellowstone Lake. At that time the National Park Service was a very young agency, public visitation to the national parks was relatively small and conservationists were few. It happened at the time I was a member of the staff of the Christian Science Monitor and was assigned to do a series of articles on this threat. I wrote 21 articles, and I think they played a little part in defeating this very dangerous proposal.

Through the years similar assaults on the integrity of the national park system have arisen. These have been successively and successfully turned back. During these same years the number of visitors to these areas has grown to many millions annually, and the sentiment in support of the protection of the parks and monuments has become a part of American thinking and conviction.

Echo Park Dam is the latest of these assaults and threatens an outstanding area. I have not personally been to Dinosaur National Monument, nor have a great many people who cherish these areas been able to visit it. This is only because funds have not been available to make the monument accessible to the many who would visit it and gain inspiration from it. These Americans merit your consideration.

Mr. HARRISON. Any questions from the committee?

Mr. ASPINALL. I would like to ask one question.

Mr. HARRISON. Mr. Aspinall.

Mr. ASPINALL. Mr. Westwood, where were you and your organization when I requested to do away with the national monuments of Holy Cross and Wheeler?

Mr. WESTWOOD. Where were we? Right where we are now, sir.

Mr. ASPINALL. You did not present any opposition to entirely doing away with them.

Mr. WESTWOOD. No.

Mr. ASPINALL. I would think perhaps it is more adverse to the interests of the philosophy which you express to do away with a monument than it is perhaps to invade it for some useful beneficial purpose.

Mr. WESTWOOD. I think that certain of the national monuments could be done away with, sir. I think they have been added for various reasons to the system, where there are particular pressures here and there, inadvisedly, and I think that the national system itself has not benefited by certain additions.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Mr. Westwood, have you ever been out to the Dinosaur National Park?

Mr. WESTWOOD. No. As I stated, I have not been.

Mr. DAWSON. I would like to ask Mrs. Warren the same question. Have you been out to Dinosaur National Park?

Mrs. WARREN. I have not had that pleasure, sir. But I hope to in the very near future, and I certainly would hate to go out and look at it and find it made into an artificial reservoir.

Mr. DAWSON. I was just trying to keep a record of these witnesses who are testifying, the number who have been there.

Mr. HARRISON. Any further questions?

Mr. DAWSON. That is all.

Mr. HARRISON. Thank you very much, Mr. Westwood.

Mr. WESTWOOD. Thank you.

Mr. HARRISON. Mr. George Fell?

(No response.)

Mr. Michael Hudoba?

Mr. CALLISON. Mr. Hudoba is not here. I have his statement, and with your permission I would like to read it. It is a brief statement.

Mr. HARRISON. Without objection that will be granted.

STATEMENT OF CHARLES H. CALLISON, CONSERVATION DIRECTOR OF THE NATIONAL WILDLIFE FEDERATION

Mr. CALLISON. Mr. Chairman and gentlemen of the committee, my name is Charles H. Callison and I am conservation director of the National Wildlife Federation. With the permission that has been generously granted, I would like first to read this statement for Mr. Hudoba—Michael Hudoba, who is Washington editor for Sports Afield.

Mr. HARRISON. Does he represent any group?

Mr. CALLISON. He is conservation director of the Outdoor Writers Association of America, as his statement stipulates. His statement reads as follows:

STATEMENT OF MICHAEL HUDOBA, WASHINGTON EDITOR OF SPORTS AFIELD

My name is Michael Hudoba, and I am Washington editor of Sports Afield magazine. I do not oppose the upper Colorado River storage program, for having lived in the West, I appreciate the value of water to its economy. But I do wish to register strong objection to the proposal to build Echo Park Dam within the Dinosaur National Monument. It is a threat to the whole concept of the national park system which the law clearly states should be preserved for all the people.

I also appreciate the fact that the order setting up the Dinosaur as a national monument area provided for use of the Brown's Park, Lodore Canyon site. But the question that causes me to fear the proposed Echo Park Dam invasion for its impact on the whole national park system is the reasoning of the Reclamation Bureau in using the original order to seek a better dam site that would at the same time flood such a large area of the Dinosaur canyons.

Should this reasoning be extended, and the Bureau's record has little, if anything, to show otherwise, as the committee itself has pointed out, the threat to the people's national park areas is even more serious.

I also feel that the alternate dam sites, to avoid flooding out extensive monument areas, have sufficient merit for the Reclamation Bureau to study this with more intentness and objectivity than they have in the past. Especially, since General Grant's alternate site studies were sufficient to change the opinion of the preceding Interior Secretary who once supported Echo Park and then changed his views on study of the Grant alternates.

We will not go into the question of this Echo Park Dam project being necessary for its power revenue to sustain the feasibility of other participating projects in the upper Colorado River storage program. For I do not wish to obstruct the whole project. But I do feel there is sufficient weakness in the Echo Park proposal to merit more than a passing consideration of alternate sites.

The Bureau has discovered water loss through evaporation upon which they seem to base their case. I am amazed that this water loss has come up in view of the hundreds of miles of unlined irrigation ditches and canals losing water—perhaps more than enough to supply a city the size of Denver. Again, I do not wish to condemn or criticize Reclamation programs for they have done a great service to the western economy and people.

But I do fear the breakdown, the invasion of the first national park system area, which even President Eisenhower has seen fit to defend by saying they must not be despoiled. I strongly support the President's views on this and strongly oppose the location of Echo Park Dam within the Dinosaur National Monument.

I also wish, as conservation director of the Outdoor Writers Association of America, to oppose the Echo Park Dam within the Dinosaur National Monument in behalf of this organization. They have each year reiterated emphatically a resolution throwing all their support in any fight to oppose invasion of any national park system area. This is also stated as a basic tenet in the Outdoor Writers proposed national water policy.

I also wish to submit for the record a resolution from the League of Ohio Sportsmen, one of the largest and strongest State sportsmen's groups, opposing the Echo Park Dam invasion of the Dinosaur National Monument.

Also a similar resolution opposing Echo Park Dam invasion of the Dinosaur National Monument from the Central Ohio Anglers' and Hunters' Club.

Mr. CALLISON. I have those resolutions.

Mr. HARRISON. Without objection, they will be accepted.

(The resolutions referred to follow:)

THE CENTRAL OHIO ANGLERS' & HUNTERS' CLUB,
Columbus, Ohio, January 14, 1954.

MIKE HUDORA,

991 National Press Building, Washington, D. C.

DEAR MR. HUDORA: I am directed by the Central Ohio Anglers' and Hunters' Club to transmit the following resolution to you:

"The Central Ohio Anglers' and Hunters' Club, representing hundreds of men and women of central Ohio interested in our wilderness and national park areas, approve of the statement of the President of the United States: 'That no despoliation or destruction be made of such areas.'

"We most emphatically disapprove of the plan of the Bureau of Reclamation's upper Colorado River storage project that will destroy the heart of the Dinosaur National Monument. This irreplaceable treasure of America must be retained. We were advised that this plan had been abandoned and are shocked that anyone should attempt to revive it."

Sincerely yours,

CLARK LONGSTRETH, President.

RESOLUTION OF THE LEAGUE OF OHIO SPORTSMEN

The League of Ohio Sportsmen representing thousands of men and women of Ohio interested in our wilderness and national park areas, approve of the statement of the President of the United States: "That no despoliation or destruction be made of such areas."

We most emphatically disapprove of the plan of the Bureau of Reclamation's upper Colorado River storage project that will destroy the heart of the Dinosaur National Monument. This irreplaceable treasure of America must be retained. We were advised that this plan had been abandoned and are shocked that anyone should attempt to revive it.

Mr. HARRISON. You also have a statement you wish to make yourself at this time?

Mr. CALLISON. How much more time now do we have?

Mr. HARRISON. You have about 30 more minutes.

Mr. CALLISON. I will read my statement. It also is brief.

Mr. HARRISON. I think you will be through with the number of witnesses you have given me.

Mr. D'EWART. I would like to ask the witness one question. He is the second one that has criticized the irrigation farmers because we have not lined our ditches. Would you like to suggest how we could finance that?

Mr. CALLISON. Mr. Chairman, I overheard the previous discussion here in the hearing on that, and I must confess that I have no further suggestions to offer on it. I would remind you that I was reading a statement of Mr. Hudoba.

Mr. D'EWART. It is a tremendously expensive thing. We would like to do it.

Mr. CALLISON. I understand that is true, sir. I also understand that you gentlemen deplore that waste as much as anyone, the waste that does occur. It is one of the unsolved problems.

Mr. D'EWART. We recognize the seepage out of the ditches, but we do not recognize it as all loss. Ordinarily about 40 percent of the water is what we call return flow which goes back into the stream and is available for all the other users downstream. We do not call it loss water.

We have coming up on the floor very shortly a reservoir authorized by this committee where we turn the water out of the reservoir and it all goes into the underground. We have no ditches from that reservoir. The water goes underground and gets down to the irrigation project and they pump it out. According to your definition that would all be loss water, and we think it is an excellent way to handle that water.

Mr. HARRISON. Proceed, Mr. Callison.

Mr. CALLISON. I am now presenting my statement as conservation director of the National Wildlife Federation.

The National Wildlife Federation is an organization of State wildlife federations and sportsmen's leagues and their affiliated member clubs and groups, representing a total membership of some 3 million persons.

In national convention in Washington, D. C., March 12, 13, and 14, 1953, with voting delegates from 44 States and the District of Columbia in attendance, the federation adopted a resolution expressing the firm conviction that big dams, reservoirs, or other engineering projects which mar the natural landscape should never be constructed within a national park or monument. A similar resolution was adopted at our 1952 convention held in Miami, Fla.

Mr. Chairman, in view of known plans and proposals for reservoir projects and various commercial or exploitative activities in other national parks, we contend the authorization of Echo Park Dam would set a dangerous precedent.

Aside from the danger of inviting despoliation of other of the Nation's treasured parks, we believe the unique natural features of Dinosaur National Monument are worth saving in their own right, even if it means that Vernal, Utah, must give up its dreams of becoming a boomtown during the construction period.

We do not oppose the entire upper Colorado storage project. We recognize the need for additional water storage on the Colorado River and tributaries. We recommend and urge, however, that Cross

Mountain Dam or other of the so-called secondary projects be moved up to the initial phase of the overall development, and that Echo Park be deleted from the initial phase.

It will take several years to complete construction of the initial phase of this great development. In the meantime alternate reservoir sites can be studied more thoroughly. In the meantime, also, Dinosaur National Monument can be properly developed with access roads and public-use facilities, so that its natural values and popularity can be studied and compared with other of America's great national parks. We think the Vernal boosters will discover they have another Yosemite that in the long run will bring more business to town than a Lake Mead which fluctuates violently or freezes over every winter. There is nothing unique in a big artificial reservoir to attract a tourist. Nearly every State has one or several, and will have more by the time the Army engineers and Bureau of Reclamation complete their authorized projects.

We believe the purposes of the upper Colorado storage project can be pursued promptly without construction of either Echo Park Dam or Split Mountain Dam. We endorse and commend to the committee the recommendations presented at this hearing by Gen. U. S. Grant III.

Thank you.

(The resolution referred to follows:)

RESOLUTION ADOPTED BY NATIONAL WILDLIFE FEDERATION IN NATIONAL CONVENTION, WASHINGTON, D. C., MARCH 12-14, 1953, TO PROHIBIT DAMS IN NATIONAL PARKS

Whereas areas of great primitive beauty and scenic grandeur, of inestimable esthetic and recreational value to Americans of this and future generations have been preserved in the national parks and monuments; and

Whereas the National Parks Act of August 25, 1916, declared it to be the policy of the Government to preserve such areas unspoiled, for the benefit and enjoyment of the public; and

Whereas proposals have been advanced for the construction of dams, reservoirs, and other engineering projects at sites within the parks and monuments, which projects would destroy the values and impair the uses for which the areas have been set aside and preserved: Now, therefore, be it

Resolved, That the National Wildlife Federation calls upon the Congress of the United States to reaffirm its uncompromising support of the principles upon which the national park system has been developed by passing H. R. 1038, which bill would prohibit the construction or operation of any dam, reservoir, or water-delivery project within or adversely affecting any national park or monument.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. No questions.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. No.

Mr. HARRISON. Mr. Dawson?

Mr. DAWSON. Yes, I have one.

Mr. Callison, the expression has been used in your statement, and has been repeated by a number of witnesses, "Even if it means that Vernal, Utah, must give up its dreams of becoming a boomtown during the construction period."

What is your basis for making such a statement as that?

Mr. CALLISON. My basis, Mr. Dawson, is my observations from having visited in Vernal and talked to its residents, and my experience with a number of similar projects to this. The nearby town always be-

comes enthusiastic proponents of these projects because they see financial benefits to their community. It is natural. We cannot condemn them for it. It is a natural development. Vernal expects to have a period of prosperity resulting from the expenditure of the construction money in that area. I think it would logically follow.

MR. DAWSON. I have to disagree with you on that point, but these people who are here from Vernal—and you know there have been at least 50 or 60 of them here during most of these hearings—have been through one boom period when the Rangely oilfields came in, and they felt the impact of it after. Those people are definitely against any boom period in Vernal. That is not their purpose at all. I think if you would be fair about it and discuss it with the people here, that that is not their concern at all, and they are opposed to it. They do not want any boom period in Vernal. I think it is a matter of getting themselves an adequate supply of water, Mr. Callison, which they are primarily concerned with, as well as the development of this area surrounding them.

I would also like to ask you if your organization represents the various wildlife federations throughout the various States.

MR. CALLISON. The Utah Wildlife Federation is our affiliate in your State.

MR. DAWSON. Does the Utah Wildlife Federation agree with your views?

MR. CALLISON. I understand at their last meeting they adopted a resolution favoring the construction of Echo Park Dam. I have that information, sir.

MR. DAWSON. Mr. Chairman, at this point I would like to read into the record a resolution from the Utah Wildlife Federation, which represents most of the conservation groups in the State of Utah, a wire in which they endorse the building of Echo Park Dam. I would also like to point out to the chairman that it was the result of a convention which was called for this purpose in January, this month, this very month, for their membership to go over this matter, and it is a unanimous report of the Utah Wildlife Federation.

MR. CALLISON. Mr. Chairman, may I just comment on that?

MR. HARRISON. Yes.

MR. CALLISON. I understand from my own communications with the officers of the Utah Wildlife Federation that was their regular convention, that the meeting was not called for the purpose of discussing this particular project. They elected new officers and went through all their regular annual business and passed a number of other resolutions.

MR. DAWSON. That is right, it was their annual convention. But this was one of the principal matters on their agenda.

I would like to read the wire in view of the fact that it does cover so many points that have been discussed here. It is dated January 17, 1954, and reads as follows:

Whereas the development of the upper Colorado River Basin project is one of the major conservation projects in the United States; and

Whereas the construction of the Echo Park Dam is an integral and necessary part of the entire project; and

Whereas the construction of Echo Park Dam will not adversely effect any part of the Dinosaur National Monument as originally constituted; and

Whereas the enlargement of the Dinosaur National Monument in 1938 was made expressly subject to the development of the upper Colorado River Basin; and

Whereas the construction of Echo Park Dam will make water available for irrigation, which in turn will improve wildlife habitat; and

Whereas the Echo Park Reservoir will make abundant water for fish and aquatic wildlife; and

Whereas we believe the gain to wildlife and recreation will greatly outweigh any initial loss of wildlife habitat; and

Whereas the construction of the Echo Park Dam will make the beauty of this area available to millions who otherwise would never see it; and

Whereas because the enlargement of Dinosaur National Monument in 1938 was made expressly subject to the upper Colorado River Basin project, the construction of Echo Park Dam will not establish a precedent for the destruction of other national monuments and parks; and

Whereas the conservation of water and water resources is a crying need in all Western States and the United States; and

Whereas certain conservation groups, including the National Wildlife Federation and the Wildlife Management Institute, are opposing the construction of Echo Park Dam; and

Whereas we believe such conservation organizations do not have, or refuse to see, the facts relative to the Echo Park Dam; and

Whereas we believe the attitude of such conservation organizations is based upon fear that other national monuments and parks may be destroyed; and

Whereas we believe such fear is unwarranted and ill advised, and that opposition is not conservation, nor in the interest of conservation, nor in the interest of the people of the West, nor in the interest of the people of the United States; and

Whereas, conservation groups by press releases from Washington, D. C., have created and left in the minds of the public that we are opposed to Echo Dam; and

Whereas in January 1950, we, by resolution favored Echo Dam; and

Whereas we desire to correct any misunderstanding created innocently or otherwise regarding our considered stand on the construction of Echo Dam: Now, therefore, be it

Resolved by the Utah Wildlife Federation in convention assembled, First, the Utah Wildlife Federation endorses and supports the upper Colorado River Basin project, including the construction of Echo Park Dam as an integral and necessary part thereof, as being in the best interest of conservation, recreation, wildlife, and of the people of the West, and of the people of the United States.

Second, this resolution to be telegraphed to Representative William A. Dawson for presentation to the committee holding hearings on Echo Park Dam, January 18, 1954, and copies to be mailed immediately to the congressional delegation from Utah to the President of the United States, to the Speaker of the House of Representatives, to the President of the United States Senate, to the National Wildlife Federation and to the Wildlife Management Institute. This resolution unanimously adopted January 17, 1954.

UTAH WILDLIFE FEDERATION,
D. KEITH BARNES, *President*.

I ask this be made a part of the record, Mr. Chairman.

Mr. HARRISON. Without objection, it is so ordered.

Mr. HARRISON. Any further questions from the committee?

Mr. Callison, I appreciate having you here before the committee. You have sort of spearheaded the arranging of the witnesses. You have been very cooperative. It has been a pleasure to work with you. You have been fair on your part, and I hope you feel we have been fair on our part.

Mr. CALLISON. Thank you, Mr. Chairman. May I insert one more resolution which I overlooked a moment ago. I have a resolution adopted by the Nevada Federated Sportsmen, our affiliated organization in that State, opposing the construction of Echo Park Dam in Dinosaur National Monument.

Mr. HARRISON. Without objection, it is so ordered.

(The resolution referred to follows:)

RESOLUTION RE DINOSAUR NATIONAL MONUMENT

Whereas Secretary of the Interior McKay has just recommended to President Eisenhower the destruction of Dinosaur National Monument for the construction of Echo Park Dam; and

Whereas arguments of conservationists have been passed by; and

Whereas alternative sites exist that will spare the national park system; and

Whereas it has not been shown that there is a need for the Echo Park Dam at the location selected: Now, therefore, be it

Resolved, That the Nevada Federated Sportsmen, Inc., in meeting assembled, do hereby oppose the invasion of our national park system by the destruction of Dinosaur National Monument in the construction of Echo Park Dam; be it further

Resolved, That copies of this resolution be sent forthwith to the President, White House, Washington, D. C.; to the Honorable Pat McCarran and George W. Malone, Senators, Washington, D. C.; and to C. Clifton Young, Congressman, Washington, D. C.

Dated: January 9, 1954.

NEVADA FEDERATED SPORTSMEN, INC.,
WM. H. GRAVELLE, *President*.
M. MICHELSON, *Secretary*.

Mr. CALLISON. Did you read the name of Mr. George Fell?

Mr. HARRISON. Yes. Is he here now?

Mr. FELL. Yes, sir.

Mr. HARRISON. If you will come up at this time.

Mr. CALLISON. With your permission and the permission of Mr. Dawson, may I comment on the resolution of the Utah Wildlife Federation?

Mr. HARRISON. You may.

Mr. CALLISON. I knew of that resolution. I fully expected you to put it in the record, Mr. Dawson.

Mr. DAWSON. They sent you a copy of the wire?

Mr. CALLISON. I have not seen a copy of it, but I have heard word of it through the newspapers and otherwise.

I merely wanted to say that our own resolution last year and in 1952 was adopted unanimously by the delegates of the various States in annual convention, and the Utah Federation was represented both years and voted with the unanimous majority both times.

Mr. DAWSON. I call attention to the fact they point out that your organization misrepresented them, and they go back to the 1950 resolution in which they favored it. Certainly your statement does not bear out what they say in this wire. They say they sent it officially from their organization so they can correct any impressions your organization put out.

Mr. CALLISON. I will concede we are not representing the Utah Wildlife Federation in this issue. We are representing the other 46 State affiliates of the National Wildlife Federation.

Mr. HARRISON. Mr. Fell, you may proceed.

**STATEMENT OF GEORGE B. FELL, EXECUTIVE DIRECTOR OF THE
NATURE CONSERVANCY, WASHINGTON, D. C.**

Mr. FELL. My name is George B. Fell. I am executive director of the Nature Conservancy Association, with headquarters in Washington, D. C.

The Nature Conservancy is a national association devoted to an action program to preserve natural areas. It was organized by scientists who were concerned about the rapid destruction of areas where natural conditions could provide the setting for scientific research, education, and esthetic enjoyment. Our organization is engaged in an action program to preserve these areas in all parts of the country as typical examples of primeval America.

We urge you to keep Dinosaur National Monument in its natural condition. We believe it is absolutely essential that the primeval areas in our system of national parks and monuments be spared from development. We support the view that Dinosaur National Monument and other preserved areas are irreplaceable scenic and cultural assets that will become ever more valuable as our population increases. We also want to emphasize that these areas have other values.

Places like Dinosaur National Monument are living museums. They serve as scientific laboratories for many types of research. They are yardsticks by which the scientist may gage and evaluate land-use practices in other areas. Also, they are reservoirs of native plants and animals. Every one of these preserved areas is an island, a modern Noah's ark, that provides habitat for a myriad of wild creatures that cannot live on the lands man has engulfed with his civilization. These virtually unknown wild plants and animals which scientists have not yet studied have more than sentimental value. Their potential economic and scientific usefulness for future generations is beyond calculation. How many Echo Park dams would it take to equal the value of penicillin, the drug that has revolutionized the science of medicine? A few years ago the molds that now produce this and other antibiotics were considered worthless. What other wild things hold equal or greater riches? We cannot know. All we can do is to save these treasures for the benefit of future generations.

The only way to save these things is to save their habitat—the place where they live. The only way to do that is by having a system of inviolate preserves. Our system of national parks and monuments is just that. It must be totally preserved, not destroyed bit by bit as expediency dictates. Calculated by any standards, economic or esthetic, Dinosaur National Monument is worth most to the American people if it is kept in its natural condition.

Mr. HARRISON. Mr. D'Ewart?

Mr. D'EWART. No questions.

Mr. HARRISON. Mr. Regan?

Mr. REGAN. No.

Mr. HARRISON. Mr. Berry?

Mr. BERRY. Just one. Have you been out there, Mr. Fell?

Mr. FELL. No, sir.

Mr. BERRY. Have you been out in that country?

Mr. FELL. I have been through the State of Utah several times.

Mr. BERRY. I was just wondering, when you make the statement that these little oases provide the habitat for a myriad of violent creatures that cannot live on the lands man has engulfed with his civilization—do you know how far it is to man's civilization every direction from this spot?

Mr. FELL. I cannot state.

Mr. BERRY. There are millions and millions of acres out there exactly like this, are there not?

Mr. FELL. No, sir; I do not think so.

Mr. BERRY. You have not seen it.

Mr. FELL. Most of the land, as I understand it, is grazed.

Mr. BERRY. Yes; but do you know how far it is between a spear of grass out there?

Mr. FELL. I know.

Mr. BERRY. It is about 6 or 8 inches, is it not, between spears?

Mr. FELL. Sometimes a lot more.

Mr. BERRY. They just do not live very close together, do they? It is quite a country, it is a great country. I agree with you. And there is an awful lot, millions and millions of acres, 72 percent of this State which belongs to the Federal Government. It is not good for anything. I mean it has not been built up. Man has not taken all of it yet. There are an awful lot of acres out there for this myriad of wild creatures, is there not?

Mr. FELL. It is all being devoted to the most intensive use possible under the present economic situation.

Mr. BERRY. As a matter of fact, they talk about grazing. They graze on this park ground, do they not?

Mr. FELL. I do not know.

Mr. BERRY. It was especially set apart. Have you read the act which set it aside? Does it not provide grazing shall always continue on this?

Mr. FELL. I cannot recall about that.

Mr. BERRY. Have you been around here while these hearings have been going on?

Mr. FELL. No, sir.

Mr. BERRY. Has not that been brought out many times?

Mr. FELL. It has been mentioned; yes, sir.

Mr. BERRY. They reserved it for grazing. So far as grazing is concerned, you will always have grazing in this park.

Mr. FELL. I hope we will not always have grazing on the monument.

Mr. HARRISON. Will the gentleman yield?

Mr. BERRY. Yes.

Mr. HARRISON. For what reason would the witness not want grazing there? Do you not want the country to produce the beef and the meat which is necessary to continue the growth of our country and maintain its population?

Mr. FELL. As I have said in my statement, I believe that areas of this sort contribute to the economic welfare of the Nation through their values as scientific laboratories.

Mr. HARRISON. Can you live on science and not on food? Does not food come before science?

Mr. FELL. Mr. Wheeler McMillan, the editor of the Farm Journal, has an article in the current issue of the Land, called Stone Age Plants in the Atomic Age, or something like that. In that he mentions, I cannot quote the exact figures, but the fact that the cultivated plants we use number at the most about maybe a thousand, a couple of thousand, whereas in the world there are perhaps 300,000 known species of plants, to say nothing of the myriad of animals. We know

nothing of the value of those plants and animals. Virtually nothing. We have spent a great deal of money on research on corn, just a few species of plants, and look at the results we have obtained from research on those species.

Mr. HARRISON. You figure that science takes the place of meat?

Mr. FELL. There are both plants and animals there, and I think all of those things have tremendous economic value as well as esthetic value.

Mr. HARRISON. Where do you live, Mr. Fell?

Mr. FELL. I live presently in Washington.

Mr. HARRISON. Did you always live here?

Mr. FELL. No, sir.

Mr. HARRISON. Where did you live prior to Washington?

Mr. FELL. Rockford, Ill.

Mr. HARRISON. In town?

Mr. FELL. Part of my life in town, part of my life in the country.

Mr. HARRISON. Have you ever spent any time in the West?

Mr. FELL. Yes, sir.

Mr. HARRISON. Do you know how many acres it takes, on a general average, for instance, in the State of Wyoming, to maintain a cow for 1 year?

Mr. FELL. Quite a large acreage.

Mr. HARRISON. Have you any idea?

Mr. FELL. My guess is 600 acres, something like that.

Mr. HARRISON. You are wrong. I will not go quite that far, but I would say it runs from 60 acres down to 20 acres in the irrigated districts.

Mr. FELL. There are some vegetation types where it does take that much. That would be the worst.

Mr. HARRISON. We are not quite as much owned by the Federal Government as Utah is; we are only 52 percent. But as I said the other day, the Federal Government has over 70 percent of our mineral resources. All we are asking and, I think, all the other States are asking, is that we be allowed to expand just the same as the other States, because I call attention to the fact that when Wyoming, and I think the other States also, were admitted into the Union, they were admitted on an equal basis with all the other States, which would include the State you come from—Illinois. Of course, some of us feel we are not quite equal.

Any further questions?

Mr. ASPINALL. I have one question. Mr. Fell, you have referred to these peculiar qualifications. What peculiar animals or what particular plants or qualities of nature can be found in this area that cannot be found in innumerable other places out in that basin, Mr. Fell?

Mr. FELL. I cannot specify an answer.

Mr. ASPINALL. Of course you cannot. There are none. You might just as well admit it.

Mr. FELL. But I would challenge that statement.

Mr. ASPINALL. You can challenge it.

Mr. FELL. On these lands that are intensively grazed certain species are killed off. They become extinct. They are only going to remain where they are given a place to live.

Mr. ASPINALL. If you want to see a coyote, you better go to a place where they keep coyotes. If you want to see some small mouse that

might be present there you can find them someplace else. I am just telling you. It is my front yard and I know what is there and what is not there. From a scientific standpoint, my opinion is that you are barking up the wrong tree.

I understand these people that come in here and speak about this area from an esthetic and recreational viewpoint. I understand them. But from a scientific standpoint, your argument falls of its own weight.

Mr. DAWSON. Are you through, Mr. Aspinall?

Mr. ASPINALL. Surely. I have said too much already.

Mr. DAWSON. Do I understand you correctly to say that your hope was that all grazing would be done away with?

Mr. FELL. I do, all grazing by domesticated animals.

Mr. DAWSON. All grazing by domesticated animals. Are you representing the official view of your organization?

Mr. FELL. I mean in Dinosaur National Monument.

Mr. DAWSON. You are not talking about the State of Utah then or Wyoming?

Mr. FELL. I am testifying about Dinosaur National Monument, not about the State of Utah.

Mr. DAWSON. I understood you to say you were talking about these areas as a whole out there, and you favored with doing away with all grazing.

Mr. FELL. I am sorry I was misunderstood on that.

Mr. DAWSON. Now you change your statement. You are just confining it to all grazing within Dinosaur National Monument?

Mr. FELL. Yes, sir.

Mr. DAWSON. Of course, you realize that was a reservation that was made in the proclamation when this area was enlarged, do you not?

Mr. FELL. You mentioned that.

Mr. DAWSON. Do you think the Government should break its promise to the people out there when that was set aside and included in the proclamation?

Mr. FELL. If you call that a promise, why I would—

Mr. DAWSON. It is a Presidential proclamation. President Roosevelt set apart the monument and the reservation was in there for grazing. Is that not a promise?

Mr. FELL. I do not think so. I think it is merely a statement of what the conditions will be until the matter is changed.

Mr. HARRISON. Will the gentleman yield?

Mr. DAWSON. Yes.

Mr. HARRISON. Would not the same reasoning say that the status of the monuments could be changed in the same way?

Mr. FELL. Yes. I do not think it should be though.

Mr. DAWSON. I have just this one more thought, Mr. Fell. Have you heard the statement of the scientists who have been out there and who have gone over the site, the area to be inundated. For instance, the statement of Dr. Kay of the Carnegie Museum in Pittsburgh, who made the statement that there were no scientific items of value that would be covered up out there, and the statement of the geology professor from the University of Utah, which is in the record here. Both of them have been down in the area and made extensive investigations and say there is nothing of scientific value that would be covered up. Have you read those statements?

Mr. FELL. I have heard some statements to that effect.

Mr. DAWSON. And are you familiar with the statement of the Department of the Interior that before any of the area is covered up other investigations will be made and anything of scientific value will be removed or record made of it? I just suggest you read these statements and find out what is going on.

Mr. FELL. I think that most of those statements refer to archeological and geological values.

Mr. DAWSON. What are you referring to?

Mr. FELL. Biological values.

Mr. DAWSON. The insects?

Mr. FELL. Yes.

Mr. DAWSON. As my colleague from Colorado said, if you want to find any more of the insects comparable to those in that area, you can go for thousands of miles in any direction and find the same thing.

Mr. FELL. With a superficial look, that is probably so.

Mr. DAWSON. That is all.

Mr. HARRISON. Thank you very much, Mr. Fell.

Is Mr. Zahniser in the room?

Mr. ZAHNISER. Yes, Mr. Chairman, I am here. I see that we have arrived at the end of the alphabet along with the end of our time.

Mr. HARRISON. How long will it take you to make your statement?

Mr. ZAHNISER. Mr. Chairman, I would be very well satisfied to file the statement that I had, to tell you what I had in mind, and to excuse myself.

Mr. HARRISON. I was not trying to stop you.

Mr. ZAHNISER. I believe Mr. Saylor wanted to see with us the movies soon too.

Mr. HARRISON. Proceed.

STATEMENT OF HOWARD ZAHNISER, EXECUTIVE SECRETARY OF THE WILDERNESS SOCIETY AND EDITOR OF "THE LIVING WILDERNESS"

Mr. ZAHNISER. I had better identify myself, Mr. Chairman.

My name is Zahniser; first name, Howard. I am executive secretary of the Wilderness Society and editor of the Living Wilderness. I should like, Mr. Chairman, first of all, to present a statement by Dr. Olaus J. Murie and then to follow that with some oral comment from some notes that I had made.

Mr. HARRISON. That would be fine. That privilege will be extended to you.

Mr. ZAHNISER. I might merely mention that one of the things that Dr. Murie stressed particularly was the subtle danger of undermining the concept of our national parks, and that is something that I think would perhaps lead to some discussion.

Another thing that I wanted to suggest, Mr. Chairman, was I do not know whether those shades would go up or whether it would be more convenient just to take a look out that window as I did the other day. You can see the Washington Monument from the outside of the window. I have tried to explain to my friends who have not

seen this area and have wondered about our concern with it, if you think of the Washington Monument and its 555-foot high thrust into the sky, and how you feel if you stand and look at it, and then think of Steamboat Rock yet another 100 feet and more, you get an idea of the magnitude of these things that we are talking about.

Mr. ASPINALL. Mr. Chairman?

Mr. HARRISON. Mr. Aspinall.

Mr. ASPINALL. If I might interrupt there. If you are denied that pleasure in the future, you come to my home near Grand Junction. I will take you out to the Colorado National Monument and you will have an equally nice opportunity to gaze up at a beautiful rock standing by itself out in the open. There will not be any water at the base of it. That is the only difference.

Mr. ZAHNISER. Mr. Aspinall, I will conditionally accept that invitation.

Mr. ASPINALL. I hope you do.

Mr. ZAHNISER. Mr. Penfold has told me of the very pleasant time he enjoyed with you, and I should be very glad to have the same pleasure.

Mr. Chairman, that is all I wanted to suggest at this time, and I will file Dr. Murie's statement. Along with it I will make reference to certain articles that have appeared in the Living Wilderness and will attach copies of those articles, which you may handle as you see fit.

Mr. HARRISON. Thank you very much.

(The statements referred to follow:)

[From the Wilderness Society, Washington 7, D. C.]

A PLEA FOR THE GREEN AND YAMPA RIVER CANYONS

(A statement by Dr. Olaus J. Murie, president and director of the Wilderness Society, for the Subcommittee on Irrigation and Reclamation of the Committee on Interior and Insular Affairs, House of Representatives, Congress of the United States, at hearings held in Washington, D. C., the week of January 18, 1954, on three identical bills to authorize the Secretary of the Interior to construct, operate, and maintain the Colorado River storage project (H. R. 4443, 4449, and 4463).)

It seems strange to be defending in 1954 the actions taken by Congress many years ago, when it established a national park system and a Federal agency to administer the national parks and to preserve them in the condition intended by that act of Congress. With overwhelming unanimity the American people have accepted the national parks and have accepted the fundamental policies for their administration and use as defined by that congressional act.

Yet at this point, after all those years, certain Federal administrators are asking the Congress to break that long-established policy by now authorizing the construction of the Echo Park proposed dam in the Dinosaur National Monument, in Colorado and Utah. Their proposal is a presumption that Congress was in error when it established the national park policy.

We who are representing the thousands of people sincerely interested in the national park system, I am sure, have given honest consideration to the economic claims for the so-called Echo Park Dam. We have visited the Dinosaur National Monument repeatedly, we have discussed the question among ourselves objectively, and we have suggested an alternative solution that would not violate a long-established American institution.

In representing the Wilderness Society in opposition to the Echo Park proposal I do not in the least commit its members on the general question of the upper Colorado water project as such. We are concerned only with defending dedicated public property.

There are others, I am sure, who will testify on the alternative dam sites that are available. But it seems to us that when there are other sites available

(and there is testimony to the effect that they will save the taxpayers many millions of dollars and provide more water storage), there can be no excuse to invade the sanctity of a national park unit. We are not convinced about the figures on evaporation at the various sites. The Department of the Interior has at different times given different figures regarding evaporation. We don't believe anyone has really worked this out.

But I should like to point out that evaporation is going on all over our country, millions of acre-feet of it, day after day. If we were to stop evaporation completely we should have to build roofs over all our impoundments. This argument should be considered irrelevant when so much is at stake by a wrong decision, when the American people, who have been led to believe that the national park system was established in good faith and is theirs to enjoy, in effect have said:

"This belongs to the Nation. We are not organized to deny you water. Take it and use it. But this park is ours."

One former Member of Congress said to me, in effect: "We must hurry and get this water for Utah very soon, while we have the opportunity, or much of it will be allocated to other neighboring States."

We are not here concerned over interstate controversies about water. We do wish each state to prosper. The American people who cherish their national parks are distributed throughout all the States—east, west, north, and south. Each one has State loyalties, on sovereign State matters and by neighborly association. Collectively we also cherish each national park in whichever State it is found. On these national issues we who live in these many States are interested beyond the boundaries of our own. That, we believe, is what makes a nation.

One of the dangers to the integrity of the national park system is a subtle one. It is an attempt to undermine the very concept of national parks. Over and over again it has been argued that by flooding the canyons of the Green and Yampa Rivers, which are the heart of the Dinosaur National Monument, this national park unit will actually be "improved."

I would call to your attention the language and the purpose of the original action by Congress, which was aimed at preserving outstanding scenic areas in their original condition and to keep them unimpaired, so far as is humanly possible, for future generations. This concept has been thoroughly accepted by Americans and the very fact that such a high concept has behind it the authority of the United States Government has been a source of inspiration for us.

It is poor taste indeed, then, for certain personnel of Government bureaus to attempt to instill in the minds of the public a substitute concept, designed to convince the unwary with argument that an impoundment will furnish recreation for so and so many people. Regardless of the ersatz park recreation that can be provided by drowning beautiful canyons, by obliterating entirely the lengths of outstanding rivers within the present boundaries, this would no longer be a true national park and its usefulness as such would be gone. It would have lost its very heart, the scenic canyons and the living rivers for which it is primarily being preserved.

Each national park or monument has some particular central feature of outstanding beauty and interest, or some prominent natural theme. Glacier National Park has its glaciers and rugged mountains with their associated wildlife. Big Bend National Park has the desert theme, with cactus in bloom and certain wildlife as outstanding manifestations of it. The outstanding feature of Olympic National Park is its original rain forest. And in Utah and Colorado, Dinosaur National Monument has as its central feature the canyons of the Green and Yampa Rivers, with the living rivers that run through them.

If someone conceived the idea of removing the cacti from Big Bend National Park for some fancied economic purpose, that area would have lost one of its prominent features, no matter how many luscious beds of African violets might be substituted for people to enjoy. People don't go to that desert park to see violets. They go there to see what nature produced in that area, in that climate.

Likewise, as soon as Congress appropriates money for improvement of a few roads and some convenient accommodations, and when people become more generally aware of the treasure we have in Dinosaur National Monument, they will come there too in order to enjoy the scenic canyons as they are. Already there is boating service on the river and hundreds of people have already taken the river trip. There are numerous engineering impoundments where only one kind of recreation is available. But the Green and Yampa River Canyons are unique.

I want earnestly to stress this thought:

In their present state those canyon rivers will continue to run for many centuries; so far as we can calculate such things, forever. Innumerable generations of people can enjoy them. But the life of an impoundment is limited. In 50 or 100 years, an impoundment is used up. We have then lost our river canyons and we have lost our lake. Can we not afford here to take the long view, rather than the view of mere expediency?

We have before us a question that strikes at the roots of our civilization. We have been quite successful in producing material things. Our engineers and our technicians in many branches of endeavor have developed astonishing efficiency. Fortunately, we have been striving also to improve our intellectual and spiritual life. It is a credit to America that so many thousands of people, probably millions all told, have joined together under numerous titles, to further one or another phase of our cultural life. These people, and I include among them the many conservation societies, local and national in scope, are working unselfishly, with no slightest thought of personal gain, often for objectives which they do not personally expect to enjoy. It is this kind of service which helps to build a worthy civilization. Dams and powerplants are important to help with the economy of certain areas; we need a stable agricultural and industrial economy. But we cannot afford to lose sight of, or thwart, the efforts of our people to strive for ideals.

The national park concept has within it the source of much idealism; it is a worthy high goal that we thought we had secured.

It is to the credit of our Congress that bills have been drawn up to safeguard further our national parks. I know there must be many Members of Congress who have already given much thought to this matter. For that we are grateful.

We plead for the preservation of a segment of our civilization, the opportunity to appreciate natural beauty. On behalf of the Wilderness Society I wish thus to place on record our plea to save for the American people the scenic canyons of the Green and Yampa Rivers.

Mr. DAWSON. Just at that point, Mr. Chairman, I just raise the question to his referring to attaching a series of articles.

Mr. HARRISON. He qualified that by saying that could be handled by the committee.

Mr. DAWSON. I see.

Mr. HARRISON. In other words, we would not accept it that way, but he did qualify his request that it could be handled as the committee wanted, a part of the record or a part of the file.

Mr. DAWSON. I did not want to clutter the record up.

Mr. ZAHNISER. Here are copies of Dr. Murie's statement for your immediate convenience and of one of these articles.

Maybe to relieve the—the time has gone—but to relieve the terminal tension, I should like to call the committee's attention to one of the gems, tours de force, in English literature, which gave its name to the Canyon of Lodore that we are talking about.

Robert Southey was the poet laureate of England at the time, and when asked by his children to describe how the waters came down at Lodore, he wrote the poem the early explorers of the river had in mind when they went down these canyons and named it that. I do not know if the committee could indulge in the time to listen to all of it, for it is extensive, but I will give you a 1-minute sample.

How does the water come down at Lodore?

My little boy asked me thus, once on a time,

Moreover, he tasked me to tell him in rhyme—

I will skip a few—

Rising and leaping, sinking and creeping, swelling and flinging, showering and springing, eddying and whisking, spouting and frisking, twining and twisting, around and around, collecting, disjuncting, with endless rebound; smiting and fighting, a sight to delight in; confounding, astounding, dizzying and deafening the ear with its sound.

And then 20 more lines of 2's like that, followed by these 3's:

And falling and crawling and sprawling, and driving and riving and striving, and sprinkling and twinkling and wrinkling, and sounding and bounding and rounding, and bubbling and troubling and doubling, dividing and gliding and sliding, and grumbling and rumbling and tumbling, and clattering and bettering and shattering;

Is the committee enjoying this?

Mr. HARRISON. I would not take too much time on it. [Laughter.]

Mr. ZAHNISER. And followed by these quadruplets:

And gleaming and steaming and streaming and beaming, and rushing and flushing and brushing and gushing, and flapping and rapping and clapping and slapping, and curling and whirling and purling and twirling, retreating and beating and meeting and sheeting, delaying and straying and playing and spraying, advancing and prancing and glancing and dancing, recoiling, tumbling and tolling and boiling, and thumping and flumping and bumping and jumping, and dashing and flashing and splashing and clashing, and so never ending, but always descending, sounds and motions for ever and ever are blending, All at once and all o'er, with a mighty uproar—and this way the water comes down at Lodore.

I do not think we should debate about such an area like that without paying some respects, at least, to its literary significance.

Mr. HARRISON. I will say that the entire poem will not be received for the record, but for the file.

That finishes the time.

At this time I ask unanimous consent to include in the record a letter addressed to the Honorable A. L. Miller, chairman, from the Intermountain Section, 1916, of the American Society of Civil Engineers, signed by J. W. Odell, secretary-treasurer.

If there are no objections, it will be made a part of the record.

(The letter referred to follows:)

INTERMOUNTAIN SECTION,
AMERICAN SOCIETY OF CIVIL ENGINEERS,
Salt Lake City 1 Utah, January 22, 1954.

Hon. A. L. MILLER,

*Chairman, Committee on Interior and Insular Affairs,
House of Representatives, Washington, D. C.*

DEAR CONGRESSMAN MILLER: The following resolution was unanimously adopted by the Intermountain Section of the American Society of Civil Engineers at the regular monthly meeting January 21, 1954, in Salt Lake City, Utah.

"Whereas the future industrial and agricultural growth of the upper Colorado River Basin is connected inseparably to the development of further water supplies from the Colorado River system; and

Whereas water resources and power resources can only be developed by the construction of major storage dams in the upper Colorado River Basin together with participating projects; and

Whereas the Echo Park and Glen Canyon Dams and Reservoirs of the Colorado River storage project are key units in the overall plan of development; and

Whereas Echo Park and Glen Canyon Dams have engineering and economic feasibility; be it therefore

Resolved, That the Intermountain Section, American Society of Civil Engineers, go on record as urging the immediate authorization and construction of the Echo Park and Glen Canyon units of the Colorado River storage project and the subsequent orderly development of the necessary participating projects."

Very truly yours,

J. W. ODELL,
Secretary-Treasurer.

Mr. Jeff Will is here. He is secretary and general counsel of the upper Colorado River Commission. He has been here during these hearings and has been very helpful in supplying the names and lists of witnesses and other information which has been requested. He

was instrumental in seeing that the members of this committee had the opportunity of visiting this particular area during the past summer. That trip was not only instructive but it was a great pleasure to the members of the committee. I was fortunate enough to be along and could see the different sections which we have heard the testimony about.

I want to thank, in behalf of the committee, Mr. Will at this time for his hospitality. I understand he does not want to make a statement here at this time but he will file one for the record later.

Mr. WILL. Yes.

Mr. HARRISON. It will be received, Mr. Will, and made a part of the record when filed. We ask you to submit it as soon as possible so we can finish our record.

Mr. WILL. Thank you.

(Mr. Will's statement is as follows:)

STATEMENT BY JOHN GEOFFREY WILL, SECRETARY AND GENERAL COUNSEL, UPPER COLORADO RIVER COMMISSION, REGARDING H. R. 4443, H. R. 4449, AND H. R. 4463

I very much appreciate the permission to file this statement granted me by Hon. William H. Harrison, chairman of the Irrigation Subcommittee.

Throughout the almost 2 weeks during which the hearings on the bills above-mentioned were held, the members of the Irrigation Subcommittee, and its chairman, demonstrated extreme patience in listening to oral testimony, and, from the questions which they addressed to witnesses, evidenced a keen capacity for analysis of the problems presented. They evidenced also their understanding of the importance of the proposed legislation, not only to the upper Colorado River Basin itself but also to its contiguous areas within the upper Colorado Basin States and, indeed, to all of the Colorado River Basin States, as well as the Nation at large.

I desire at this time to congratulate the committee also on having avoided confusion that might have occurred by reason of the fact that there were pending before the committee three different sets of proposals looking to the development of a portion of the water resources of the upper Colorado River Basin States. These three different sets of proposals consist: First, in the proposals contained in the bills themselves (H. R. 4443, H. R. 4449, and H. R. 4463); second, in the proposals contained in the Department of the Interior's recommendations; and, third, in the recommendations made by the upper Colorado River Commission by its letter of January 18, addressed to Chairman Harrison. In order to facilitate the further consideration of these proposals by the committee, there is attached hereto a chart whereby these three different sets of proposals may readily be compared.

It is evident from questions addressed to witnesses during the hearings that the committee clearly understands that the project proposed to be authorized, while consisting of two principal divisions and of a number of parts, nevertheless amounts to a single multiple-purpose project that will make a beginning on the substantial development of the water resources of the upper Colorado River Basin States. The Colorado River storage project has two principal divisions, to wit: the storage division and the participating projects division. The storage division consists in those units, the principal purpose of which is to regulate the flow of the highly erratic Colorado River by storing water during years of plentiful flows for release during years of low flow. As proposed in the bills now pending before the committee the storage division would consist of the Echo Park, Flaming Gorge, Glen Canyon, Navaho, and Curecanti units. As proposed by the Department of the Interior the storage division to be authorized at this time would include the Echo Park and Glen Canyon units. As proposed by the upper Colorado River Commission's recommendations, contained in its letter of January 18, the storage division would consist of the Echo Park, Flaming Gorge, Glen Canyon, Navaho, Cross Mountain, and Kendall units. An incidental purpose which these storage units would serve is the generation of hydroelectric energy, the need for which is abundantly clear, the market for which is assured, and the revenues from which will assist in the payout of reimbursable costs.

The need and the market are conclusively proven by the Interior Department's report, including surveys made by the Federal Power Commission, the testimony of Department witnesses, the statement submitted by J. H. Ratliff and the testimony in behalf of the 10 power companies in the area. The municipalities and REA's in the area are also anxious for more power. This area is not one in which a public versus private power conflict exists. The testimony shows that complete cooperation among these groups can be confidently expected.

The suggestion has been heard that the generation of hydroelectric power is not an incidental purpose of these holdover storage reservoirs, but is rather their primary purpose. No basis exists for such an assumption. The contrary is the case.

Section 4 of the text of the bills themselves answers this in irrefutable terms. It is further amply refuted by the Commission's letter of January 21, 1954, supplementing its letter of January 18, where the recommendation is made that the following language be inserted in section 4 of the bills:

"No right to impound or use water for the generation of power or energy, created or established by the building, operation or use of any of the power-plants authorized by this act, shall be deemed to have priority over or otherwise operate to preclude or impair any use regardless of the date of origin of such use, of the waters of the Colorado River and its tributaries for domestic or agricultural purposes within any of the States of the upper Colorado River Basin;".

That is not to say, however, that the generation of hydroelectric power is not an important purpose that will be served by such holdover storage units. In the respect in which the sale of hydroelectric power from the units of the storage division assists in repayment of the costs of the Colorado River storage project and participating projects, such units will serve a purpose recognized in reclamation law ever since April 16, 1906. They will, in other words, fulfill an established policy. Such policy is spelled out in the act of April 16, 1906 (34 Stat. 116, 117), reading in pertinent part, as follows: " * * * whenever * * * an opportunity is afforded for the development of power under any such project, the Secretary of the Interior is authorized to lease for a period not exceeding 10 years, giving preference to municipal purposes, any surplus power or power privilege, and the moneys derived from such leases shall be covered into the reclamation fund and be placed to the credit of the project from which such power is derived * * * "

In other words, the generation of hydroelectric power, while it is only one of the several exceedingly important purposes to be served by the Storage Division, is, nevertheless, vital; and, insofar as the use of power revenues is concerned, such use will accord with one of the oldest established policies of the reclamation law—a policy jealously guarded, through the years, by the legislative and executive branches of the Federal Government, because it is the heart of financial feasibility of water resource development in the West.

In evaluating the several purposes to be served by the storage division we ought not to lose sight of the fundamental purpose, which it serves, of providing holdover storage for river regulation which is needed in order to assure that the upper basin States will be able to make consumptive uses of water within their apportionment according to the Colorado River compact of 1922 and at the same time provide for delivery of compact-obligated amounts to the lower basin and fulfill treaty obligations to Mexico.

Without the regulation to be provided by the storage division the upper basin States cannot make any considerable additional uses of water of the Colorado River system that would not be subject to ruinous interruption during years of low flows. Obviously, no great investment in such consumptive use projects would be justified in the face of a threat of extensive and unpredictable interruptions in water supply. Finally, although no credit is taken or sought for them, the benefits of silt retention, resulting in extension of the useful life of Lake Mead and in providing conditions under which the eventual construction of additional lower basin works will be practicable, must not be overlooked or minimized.

The so-called participating projects cannot be considered separate and apart from the storage division of the project. They are, in fact, the principal consumptive use parts of the project. They are made possible through the regulation proposed to be achieved by the storage division and through the financial assistance to be contributed by the storage division in the payout of costs. These participating projects are needed. They are badly needed. Plans for them have been developed along with the plans for the storage units after years of painstaking investigations.

Thus it is seen that, comprehensive development being the goal, there is a positive and close relationship among the units of the storage division; there is a positive and close relationship among the participating projects; and there is a positive and close relationship between the storage division, on the one hand, and the participating projects, on the other. The situation is analogous to that of a smooth-working athletic team with a goal to reach, where each player has his part to play, closely integrated with the part played by each other member of his team.

The project known as the Colorado River storage project and participating projects is one of the most conservative multiple-purpose reclamation projects ever to be presented to a committee of Congress. This is true for the following reasons, among others: (1) For the first time, so far as we are aware, the proposal is made that the interest returned on the power investment in the storage division shall flow into miscellaneous receipts of the Treasury (instead of into the reclamation fund) never to be used toward the payout of project costs; (2) it is proposed that there shall be paid into miscellaneous receipts of the Treasury, not only the interest on the capital investment in power features, but also interest accruing during construction of such power features; (3) in addition to the foregoing, the full amount invested in power features will be returned to the United States; (4) costs of both power and irrigation features will be returned within a comparatively short period of years (much less than that proposed in the case of many Federal reclamation projects heretofore authorized); and (5) after payout of all irrigation and power construction costs to be returned from such revenues, power revenues will continue to flow into miscellaneous receipts of the Treasury at the rate of millions of dollars per year. No part of the cost of the storage division of this project is proposed to be allocated to any nonreimbursable purpose.

Throughout the course of the extensive hearings, during which every opportunity was afforded for the presentation of evidence pro and con, no evidence of opposition to any part of the proposals contained in the bills now pending before the committee or to the recommendations made by the Department of the Interior was submitted, except with respect to one unit, to wit: The Echo Park unit of the storage division. No evidence, indeed, was submitted of opposition to proposals made by the Upper Colorado River Commission in its letter of January 18, except with respect to the Echo Park unit and the provision for an advance to the city and county of Denver whereby its proposed works for diversions of water out of the Blue River might be financed. The opposition to the proposed provision for a loan to the city and county of Denver involves intrastate questions which this statement does not purport to discuss.

The opposition to the Echo Park unit is founded upon worthy sentiment by undoubtedly sincere organizations and individuals who fear that such authorization might set a precedent for the use of other reserved areas for water-storage purposes. For a ready understanding of the issues involved, it may be well to examine the background of the proposed authorization of the Echo Park unit.

In accordance with the spirit and purpose of certain pertinent provisions of the act of December 22, 1944 (58 Stat. 887), the Department of the Interior, during the course of its investigation of proposed water-resource development projects in the upper Colorado River Basin, had let it be known that there were being considered certain dams and reservoirs known respectively as "Echo Park" and "Split Mountain," located within the confines of the Dinosaur National Monument as extended by Presidential proclamation of July 14, 1938.

On or about March 16, 1950, the Secretary of the Interior gave notice of a hearing, to begin at 10 o'clock on the morning of April 3, 1950. This hearing was stated to be for the purpose of affording the Secretary of the Interior "the fullest possible presentation of the 'pros and cons' of these two projects," so that the Secretary might determine "whether or not to approve * * * the inclusion of the Split Mountain and Echo Park Dams * * * in the Department's recommendations to Congress on the upper Colorado River development program."

The hearing in question was duly held on April 3, 1950. The transcript of that hearing contains almost 700 pages of testimony. Much testimony of great importance to the upper-basin States was not included in the transcript. Among those testifying in favor of including the Echo Park and Split Mountain Dams in the Department's proposal for water-resources development in the upper Colorado River Basin were many Senators and many Members of the House from the upper-basin States. A number of Senator and Representatives who could

not be present in person on the occasion of the hearings were invited to and did subsequently supply statements for the record. There was presented much evidence of a scientific nature. This evidence reflected detailed investigations of possible alternatives for these two reservoirs. It showed clearly that the best combination of alternatives would involve an annual loss of water by evaporation in the neighborhood of 300,000 acre-feet. There was presented also evidence reflecting the record of promises that the extension of the Dinosaur National Monument would not be allowed to interfere with water-resources development projects in the area.

On June 27, 1950, the then Secretary of the Interior advised former Senator Elbert D. Thomas, of Utah, that he had determined to include the Split Mountain and Echo Park Dams and Reservoirs among his recommendations in connection with the Colorado River storage project and participating projects. In no part of such announcement was any reference made to an intention on the part of the then Secretary of the Interior not to submit the Colorado River storage project to Congress until, as he later said, "a group of conservationists" had had an opportunity "to study the possibilities for an alternative solution." On the contrary, the upper-basin States and the Upper Colorado River Commission, having participated wholeheartedly and with great effort and expense in hearings held at Washington, D. C., and having thereafter been informed of a decision on the part of the Secretary favorable to them, were entitled to, and did, rely upon the decision, in which the then Secretary advised that after having given "very careful thought to the arguments presented by both sides" he had concluded to approve "the plan calling upon the Bureau of Reclamation to draft necessary recommendations to the Congress for the building of Echo Park and Split Mountain Dams."

It should be borne in mind too that, in February of 1951, the Secretary of the Interior's proposed report on the Colorado River Storage project and participating projects was duly circularized among the affected States as required by the act of December 22, 1944 (*supra*) and that, although under the statute, only 90 days is required to be granted by the Secretary of the Interior for the submittal of comments, time for the submittal of comments on the Colorado River storage project and participating projects was extended far beyond such 90-day period. Notwithstanding such extension of time, and the full and free public discussion that had occurred within the States concerned regarding the features of the proposed Colorado River storage project and participating projects, none of the comments submitted by the affected States reflects opposition to the authorization of the Echo Park Dam or the Split Mountain Dam.

Thereafter, the report on the Colorado River storage project and participating projects was processed within the Department of the Interior and prepared for transmittal to the Bureau of the Budget on its way to the Congress of the United States. Such report was finally transmitted to the Director of the Bureau of the Budget on so late a date as to prevent its subsequent transmittal to the 82d Congress.

On November 18, 1953, Under Secretary Tudor of the Interior Department, an engineer of note, having personally investigated the problem, advised Secretary McKay that adoption of the best combination of proposed alternatives for the Echo Park Reservoir would result in a net additional loss of water from evaporation "from approximately 100,000 to 200,000 acre-feet per year." He went on to say, referring to the upper Colorado River Basin, that in "an area where water is so precious this is a matter of very serious consequence. Such lost water cannot be replaced at any cost and the ultimate regional economy would have to be reduced accordingly." Accordingly, Under Secretary Tudor recommended the authorization of the Echo Park unit and his recommendation was approved by Secretary of the Interior McKay on December 10, 1953.

It is worthy of note that Under Secretary Tudor's estimate is the most conservative estimate yet made of the water sacrifice that the upper Colorado River Basin would be called upon to make by the adoption of alternatives for the Echo Park Reservoir. The present chief engineer of the Upper Colorado River Commission, formerly for many years dean of the School of Engineering at the University of Wyoming, and an internationally known hydrologist, has estimated these prospective additional losses at as high as 350,000 acre-feet per year. The estimates made by the Bureau of Reclamation engineers, after most exhaustive studies, are that the additional loss will be on the order of 300,000 acre-feet per year. These estimates were reviewed in detail by another and wholly inde-

pendent authority, to wit: Charles D. Curran, then senior specialist, engineering and public works, the Legislative Reference Service, Library of Congress, and now on the staff of the second Hoover Commission. He concludes that the estimate of 331,000 acre-feet per annum prospective additional loss by evaporation from the best combination of alternatives for Echo Park Reservoir "is not unreasonable." However, even if we assume that all the experts, save Secretary Tudor, are in error, and that the additional evaporation loss does not exceed his lowest estimate, we are still faced with a loss which, as he says, would require reduction of our "ultimate regional economy." Why should we be called upon to make this sacrifice?

The estimating of reservoir evaporation losses is by no means a "hydrologic mystery." It is not a mystery to those learned and experienced engineers who have devoted years to study of the subject. It is not a mystery to the American Society of Civil Engineers, in whose manual it is discussed. It is not a mystery to Messrs. Wisler and Brater, recognized authorities on the subject. In whose work on hydrology it is treated. It is not a mystery to Foster, another highly competent authority who discusses it in his *Rainfall and Runoff*. It is not a mystery to Meinzer who discusses it in his 1949 edition of *Hydrology*. It is not a mystery to those who participated in the Symposium on *Evaporation From Water Surfaces*, contained in the transactions of the American Society of Civil Engineers for 1934. There are countless others who could be named to whom the work of estimating evaporation losses from exposed surfaces consists of methods with a sound scientific basis achieving results within reasonable tolerances. The utter stupidity of attempting to calculate evaporation losses by the use of ninth-grade arithmetic was amply demonstrated at the hearing and requires no further discussion here. The point that should be borne in mind in connection with the estimating of prospective evaporation is that it is not necessary to determine absolute values for differences in amounts of evaporation at alternate reservoir sites. The important consideration is one of relative values at the proposed alternate sites or combinations of sites. Under any rational method of estimation, relative values upon examination and comparison will be found to remain in much the same perspective to each other, simply because any logical method of estimating evaporation would necessarily take into account such natural phenomena as temperature, altitude, latitude, wind movement, etc., which vary with location and are, in turn, related to each other.

As was said at an earlier point in this statement, exceedingly worthy organizations, groups, and individuals oppose authorization for use of even a small part of the canyon area of the Dinosaur National Monument for water-storage purposes by reason of their fear that such authorization would constitute a precedent for the similar use of other national parks and monuments. Their fears are without foundation, since the circumstances surrounding the enlargement of the Dinosaur National Monument by Presidential decree in 1938 are unique. Similar circumstances do not exist in connection with the creation of any other national park or monument, and, therefore, the authorization based upon the unique circumstances of this case would not constitute a precedent for others. In fact, the area encompassed within the monument, as enlarged, had been used for grazing for many years. Plans to use different parts of the area for water-resources development had been spoken of for many years. The local people, who had themselves fostered the enlargement of the monument, were extremely anxious that such enlargement should not operate to prevent continued use of the area for grazing and its prospective use for water-resources development. Their concern in these respects was evidenced at hearings held by officials of the National Park Service in the area preliminary to the enlargement of the monument, and the evidence shows, beyond peradventure of a doubt, that they were assured that such enlargement would not prevent the continued use of the area for grazing and the prospective use of the area for water-resources development. Such enlargement has not prevented the continued use of the area for grazing. It should not be allowed to prevent the use of the area for water-resources development.

It may well be true that, from a technical legal standpoint, the reservations contained in the Presidential decree enlarging the monument are not alone sufficient to protect the right, which everyone sought to protect at the time, to utilize the monument area for water-storage purposes; but technical legal considerations can never dispose of a moral question. The moral issue here is whether the promises that were made, even though they be not in all respects

reflected in the Presidential decree, shall be kept. We have said that these promises were made to the local people, and the evidence presented at the hearings fully bears that out. The very same promises were made to the representatives in Congress of the States concerned at the time of the enlargement of the monument.

For instance, as early as 1936, the late Senator King, of Utah, advised the Department of the Interior that the areas in question "possess latent possibilities as sites for reservoir development, irrigation, and other purposes," and of the fears expressed by the then Governor Blood that "unless specific reservations are made covering the matters referred to, the State would be blocked in the construction of reservoirs, etc. * * *" Senator King was subsequently informed by the then Acting Director of the National Park Service as follows: "You will be interested to know that the proposed proclamation to extend the boundaries of Dinosaur National Monument provides that the administration of the monument shall be subject to the operation of the Federal Water Power Act of June 10, 1920 (41 Stat. 1063), as amended, and reclamation withdrawal of October 17, 1904, for the Brown's Park Reservoir site in connection with the Green River project." The Senator and his constituents construed that statement, as they had a right to construe it, as meaning, in effect, that the latent possibilities of the area "for reservoir development, irrigation, and other purposes," to which Senator King had theretofore referred, would be protected. To fall back now upon a narrow and legalistic construction of the language of the reservation itself is to impute to the Department of the Interior at the time a resort to tricky tactics which we are not willing to impute. The converse is that the Department of the Interior itself in good faith intended to reassure the late Senator King and his colleagues; that it intended that the latent possibilities of the area "for reservoir development, irrigation, and other purposes" should be protected. We adopt that converse.

There is ample evidence of reliance upon the good faith of the United States in this connection. Part of this evidence consists in actual filings, made as early as 1939, after the monument had been enlarged, covering the use of various areas within the monument, as enlarged, for water conservation purposes. One of these filings contemplated construction of a dam 425 feet high, slightly downstream from the present proposed location of the Echo Park Dam, and flooding comparable areas within the monument. Another of these filings involved the dam above described plus the construction of a dam at the Split Mountain site. Each of these filings was made by the Colorado River-Great Basin Water Users Association. The filing fees alone amounted to \$2,000, and, although opportunity for protests was afforded, we have not learned that any such protests were ever made.

Another example of reliance upon the good faith of the United States in this respect consists in the fact that the Bureau of Reclamation itself made extensive surveys and investigations in the area, including core drillings, looking to the use of the canyon area in and around the Echo Park site for water storage purposes. This is an example, not only of reliance upon the good faith of the Government; it amounts, in effect, to a highly persuasive administrative construction of the decree enlarging the monument, tending to show that the reservation contained in such decree should not be construed so narrowly as has been advocated.

Several of the opponents of authorization of the Echo Park Dam have said, in effect, that the reservoir will "fill" the monument, or will destroy the monument, or will "flood" the monument. Such statements, though made with undoubted sincerity, do not accord with the facts. This was amply demonstrated by testimony and pictures. Water impounded behind the dam will inundate only a small portion of the bottom of the canyons. It will neither "fill," "destroy," nor "flood" the canyons. At the dam, the water will be only 500 feet deep in a canyon of 3,000 feet depth. Due to the steep gradient of the river, the relative depth of the water with respect to the total depth of the canyon will rapidly diminish as one travels upstream from the dam. The rivers in the monument now inundate only 3 to 4 percent of the total area. The water-covered portion of the monument, after the Echo Park and Split Mountain Reservoirs are filled, will amount to only about 10 to 12 percent of the monument area, leaving about 90 percent untouched. Can you call this "filling," "destroying," or "flooding"?

One of the opponents of authorization of the Echo Park Reservoir made mention of a treaty entered into by the United States of America and the gov-

ernments of a number of South and Central American countries on nature protection and wildlife preservation in the Western Hemisphere. He called attention to the provisions of article III thereof whereby "the resources of these reserves (national parks and monuments) shall not be subject to exploitation for commercial profit." He seemed to think that such treaty must be held to prevent the erection of Echo Park Dam and the consequent use of the reservoir area for water storage purposes. He is in error. In the first place, it is highly questionable that the primary purposes of the treaty would be adversely affected through the use of a small part of the Dinosaur National Monument for water storage purposes. It seems doubtful, furthermore, that the use of a part of the area by the Federal Government itself for water storage purposes would constitute an "exploitation" thereof "for commercial profit" within the meaning of article III of the treaty. Finally, it is not clear that the treaty applies to the Dinosaur National Monument, since no evidence has been adduced of compliance in its connection with the terms of paragraph 3 of article II of the treaty.

It may be well, having considered the arguments of those who are opposed to the Echo Park Dam, to conclude the discussion of the issues surrounding its authorization with a brief restatement of the principal reasons why it ought to be authorized. It ought to be authorized because an adequate water supply from both the Green and the Yampa Rivers is available for storage above it. In low water years, especially after full consumptive use is attained in Wyoming on the Green River, the inclusion of the waters of the Yampa River will become increasingly important. This point was contemplated by the negotiators of the upper Colorado River Basin compact when they wrote into article XIII, paragraph a, of that document the provision that "The State of Colorado will not cause the flow of the Yampa River at the Maybell gaging station to be depleted below an aggregate of 5 million acre-feet for any period of 10 consecutive years * * *." It ought to be authorized because, as has been amply demonstrated, its evaporation losses will be at a minimum in the high altitude, deep canyon, northern latitude, and low prevailing temperature characteristics of the Echo Park region. It ought to be authorized because an adequate water supply together with a minimum evaporation rate will contribute to the production of the maximum amount of firm electric power at as low a cost as possible. It ought to be authorized because it will be strategically located with respect to electric energy load centers of the upper Colorado River Basin States and adjacent areas. It ought to be authorized because, looking at it from the point of view of the overall plan, it will, in subsequent stages of development, provide storage and regulation for the production of the maximum amount of firm power at Split Mountain, Gray Canyon, and Glen Canyon, in addition to providing river regulation necessary to meet the upper basin's obligations at Lee Ferry.

The legal situation in the Colorado River Basin is not such, in any sense, as to deter authorization of the Colorado River storage project and participating projects at this time. Nothing is proposed that can be so construed or should be so construed as to amend, construe, interpret, modify, or be in conflict with, any provision of the Colorado River compact, the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, or the treaty with the United Mexican States. Nothing is proposed to be authorized for the purpose of permitting the exportation of Colorado River system water for use by States not parties to the Colorado River compact. Nothing is proposed that will affect the duty of the United States and other States concerned to observe and be subject to the Colorado River compact, the upper Colorado River Basin compact, the Boulder Canyon Project Act and the Mexican treaty in the diversion, delivery and use of water of the Colorado River system.

The aggregate of the consumptive uses that will be made by the upper Colorado River Basin States, as a result of the authorization of the initial phase of the Colorado River storage project and participating projects, amounts, when added to uses already being made by them, only to about 50 percent of the uses apportioned to them as a group by the Colorado River compact of 1922. Therefore, even if it should be conceded (and we specifically do not so concede) that such uses should be measured in terms of diversions less returns at the site of use, it is immaterial at this time whether such uses are so measured or are measured in terms of stream depletion at Lee Ferry. In other words, the upper basin States are far from reaching that stage of development where the determination of such a question bears any real relation to the question: Should the project be authorized?

Finally, the evidence presented at the hearings shows clearly that the total effect on quality of water of the uses here proposed to be authorized is slight.

It cannot, therefore, seriously be contended that, even if a legal basis for such a provision exists (and the existence of such legal basis is hereby specifically denied), provision ought to be made in this legislation to protect the lower basin from changes in quality of water arising from such uses.

Chart showing 3 proposals before committee

Project as proposed in H. R. 4443, 4449, and 4463	Project as recommended by Department of the Interior	Project recommended by Upper Colorado River Commission
Storage units to be authorized: Echo Park Flaming Gorge Glen Canyon Navaho ¹ Curecanti ²	Storage units to be authorized: Echo Park Glen Canyon (¹) (²)	Storage units to be authorized: Echo Park Flaming Gorge Glen Canyon Navaho Cross Mountain Kendall Authorization, conditioned upon feasibility, for storage of approximately 3 million acre-feet (a substantial portion of which is to be located on upper reaches of Gunnison River) on the Colorado River and its tributaries above Grand Junction, Colo. ³
Participating projects to be authorized: Central Utah (initial phase) Emery County Gooseberry Florida Hammond LaBarge Lyman Paonia Pine River extension LaPlata Seedskaelee Silt Smith Fork	Participating projects to be authorized: Central Utah (initial phase) Emery County Gooseberry Florida Hammond LaBarge Lyman Paonia Pine River extension Seedskaelee Silt Smith Fork	Participating projects to be authorized: Central Utah (initial phase) Emery County Gooseberry Florida Hammond LaBarge Lyman Paonia Pine River extension LaPlata Seedskaelee Silt Smith Fork
Participating projects to be conditionally authorized: San Juan-Chama Shiprock-South San Juan	Participating projects to be conditionally authorized: Shiprock division of Navaho project, including Navaho Reservoir and canal capacity for South San Juan division.	Participating projects to be conditionally authorized: San Juan-Chama Shiprock-South San Juan Provision for loan of \$75 million to city and county of Denver to finance construction of works for diverting Blue River water.

¹ As originally proposed in the Department of the Interior's report on the Colorado River storage project and participating projects, the Navaho Dam and Reservoir was a unit of the storage project, complete with power features; and that is why it was so listed in the bills. Subsequent studies by the Department indicate that the power features proposed are not advisable at this time. Hence, the Department has proposed that the Navaho Dam and Reservoir be authorized, without power features, as a part of the Shiprock division of the Navaho participating project.

² Subject to the condition that the Curecanti Dam shall be constructed to a height which will impound not less than 940,000 acre-feet of water or will create a reservoir of such greater capacity as can be obtained by a high-water line located at 7,520 feet above mean sea level. Should the Curecanti Reservoir be authorized, local groups, with whom members of the upper Colorado River Commission's legal committee concurred and agreed, desire the following additional condition: "Provided further, That the construction thereof shall not be commenced until the State of Colorado shall have notified the Secretary of the Interior that conditions which it has heretofore laid down with respect to such unit have been satisfied or waived."

³ Such storage might be provided, in part, by the Curecanti Reservoir (large or small) on the Gunnison River, and by the Debeque Reservoir, on the main stem of the Colorado River near Debeque. According to the Department, the small Curecanti Reservoir is infeasible. According to local groups, who have made intensive investigations, a feasible plan for the small reservoir can be developed. The Debeque Reservoir has so far been the subject of reconnaissance surveys only; and it cannot, therefore, be stated at this time whether the same is feasible or infeasible.

NOTE.—The pending bills, the Department of the Interior and the upper Colorado River Commission are in agreement with respect to financial assistance to be provided from power revenues of the Colorado River storage project, for payout of those irrigation costs of the Eden project, Wyoming, that are beyond the repayment ability of the irrigation farmers.

Mr. HARRISON. That takes up the full time allotted and closes the list of witnesses.

The Chair wants to say once again that it has been his idea and his attempt to be entirely fair to both sides of the question which have been presented here. The Chair has allowed an hour and 45 minutes additional time to those opponents who have testified here this morning. He has done so with the feeling that he should give them every benefit of time it was possible to give them, and the committee went along on that decision.

Following adjournment, we will probably go into executive session some time in the near future when the members of the committee get caught up with their office work. What the decision of the committee will be I cannot tell you. I can make this assurance to all of those involved—that following the usual procedure of this committee, all evidence and all facts and all the figures will be very carefully studied. No snap judgment will be taken, and any decision reached by this committee will be a decision reached only after careful study and based upon the facts as we are able to obtain them.

Mr. HARRISON. Without objection there will be inserted at this point the statements of Clyde T. Ellis, executive manager, National Rural Electric Cooperative Assn.; and the General Federation of Women's Clubs; and a letter from Mr. Robert T. Platt, Portland, Oreg., submitting letters from the Mazamas and the Oregon Audubon Society:

STATEMENT OF CLYDE T. ELLIS, EXECUTIVE MANAGER, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION, IN SUPPORT OF AUTHORIZATION FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF HYDROELECTRIC GENERATION AND TRANSMISSION FACILITIES OF THE COLORADO RIVER STORAGE PROJECT

INTEREST OF RURAL ELECTRIC COOPERATIVES

My name is Clyde T. Ellis. I am executive manager of the National Rural Electric Cooperative Association, the national service organization of 935 rural electric cooperatives and power districts in the United States and Alaska.

From time to time, as the occasion arises, representatives of the rural electric systems throughout the country appear before various committees of the Congress for the purpose of supporting legislation authorizing the construction, and appropriations for the construction of multiple-purpose projects which produce electric energy. Our people do this not because of any inherent political or philosophical convictions concerned with the idealistic virtue or lack thereof of Federal power development. It is simply a business matter in that the rural electric systems, as preference customers under the law, receive direct and indirect benefits from such projects in localities where the Federal hydroelectric energy is available to them and where the influence of Federal hydroelectric projects has brought about an improvement of service and reduction of wholesale rates to the rural electric systems from privately owned electric utility companies by its competitive influence.

On the average, the rural electric distribution systems of the United States pay out 32 percent of their total gross revenue for the purchase of power. From commercial power companies they purchase 50.4 percent of their total wholesale energy input; from Federal agencies they purchase 28 percent and from REA borrowers largely their own generation and transmission co-ops, they purchase only 13.6 percent of their total input.

During the fiscal year ending June 30, 1952 (the latest available figures), the rural electric systems of the United States paid an average of 7.9 mills per kilowatt-hour for their wholesale energy. In areas such as Washington, Oregon, Idaho, Montana, and Tennessee where there is an abundance of federally produced energy, our systems paid between 3.2 and 5 mills per kilowatt for their power. In such States as Oklahoma, Arkansas, Alabama, Georgia, Wyoming, and New Mexico where the wholesale energy supply is a combination of federally produced power and privately produced power, or where Federal power projects

are close by, our systems paid between 5.6 and 7.9 mills per kilowatt-hour for their wholesale energy. By contrast, in States such as Utah, Colorado, North Dakota, South Dakota, Minnesota, Maine, and Vermont, where there was no Federal hydroelectric power available our people paid the commercial utility companies between 9.6 and 15 mills per kilowatt-hour for their wholesale energy. This is one of the two major reasons our people in the upper Colorado Basin have long looked forward to the development of the upper basin.

Our people in the Mountain States also anticipate that development of the upper basin will not only lower the cost of their wholesale energy, but that it will make electricity abundant in a section where it has heretofore been and is now relatively scarce. Even now several of the rural distribution cooperatives in the tri-State Colorado-Nebraska-Wyoming area have formed a generation and transmission group in order to supply their own energy needs from REA-financed G-T facilities. Our people in general turn to REA-financed generation only when alternative supplies of energy are nonexistent, inadequate, or unreasonably expensive. Power scarcity is our second reason for asking authorization of the Colorado River storage project.

The bills now under consideration by the subcommittee for the development of the upper Colorado River Basin (H. R. 4443, H. R. 4449, and H. R. 4463) would authorize the Secretary of the Interior to construct altogether some 1,318,000 kilowatts of hydroelectric generating capacity which according to Bureau of Reclamation figures, would produce 6,469,000,000 kilowatt-hours of annual generation including the units of the Colorado River storage project itself, and the participating projects as outlined in the bill.

The supplemental report on the Colorado River storage project and participating projects, submitted to the Secretary of the Interior November 13, 1953, recommends that the Echo Park unit, with an installed capacity of 200,000 kilowatts, and the Glen Canyon unit, with an installed capacity of 800,000 kilowatts, be constructed first, to be followed by the other units and participating projects. These, of course, are the two largest power installations of the whole plan. The rural systems of Colorado are also anxious to see the 40,000-kilowatt Curecanti power units constructed. For this reason our people of the several-State area in which the power from these projects would be marketed would like to see construction of them started as soon as possible. As we now understand it, from information contained in the Bureau of Reclamation regional director's 1950 report on these projects, and from supplementary information presented to this subcommittee by the Bureau of Reclamation's regional director, Mr. E. O. Larson, several days ago, power from these projects will be marketed in an area comprising portions of northwestern New Mexico, northeastern Arizona, western Colorado, eastern Utah, southwestern Wyoming, and southeastern Idaho, and we understand it is contemplated that power may be available from the upper Colorado project, and such other projects as are integrated with it in nearly all of the area encompassed by these States.

ENERGY COST SAVINGS

Mr. Larson, the Bureau of Reclamation's regional director, stated in his prepared testimony submitted to the subcommittee that "transmission costs and the estimated average rate of 6 mills per kilowatt-hour for the sale of system energy are based on a delivery of power to load centers by either Federal or other means of transmission."

For the purpose of obtaining at least an estimate of the benefit to the rural electric systems that would accrue from the construction of the Echo Park and Glen Canyon units, we have compiled table 1 attached. This table contains the names of the 18 rural electric systems which lie within or directly adjacent to the section of the country which has been designated by the Bureau of Reclamation maps and by the 1950 report as the "principal proportion" of the power marketing area for the Colorado River storage project. A photostat of the Bureau of Reclamation map on which has been superimposed black dots representing the location of these rural electric systems is attached hereto. These 18 rural electric systems located in the States of Colorado, New Mexico, Idaho, Utah, and Wyoming generate or purchase an approximate total of 92.3 million kilowatt-hours of energy per year based on REA statistics. One of these cooperatives in Wyoming generates the majority of its power from its own hydroelectric facilities and already enjoys a very low rate. One other cooperative in Wyoming and one in Idaho already purchase low-cost power from the Bureau of Reclamation and presumably these three systems would not save any appreciable money by construction of the upper Colorado project. However, all of the remaining

15 systems, including those in western Colorado who are paying a premium wheeling fee for the delivery of Federal hydroelectric power at the present time, would enjoy appreciable saving if 6-mill power were available to them from the proposed upper Colorado project. These 15 systems now pay approximately \$802,248 per year for their wholesale energy, whereas were the same quantity available at the 6-mill rate, the total cost would be \$483,006, and there would be an estimated yearly saving of \$319,242. These systems now pay anywhere from 18.3 mills downward for their wholesale energy, as indicated in the table, compared to the estimated delivered price of 6 mills for the power from the Colorado River storage project.

In addition to the saving that would be afforded our systems in the "principal portion" of the marketing area proposed for the upper Colorado project, it would appear from the estimated ultimate installed capacity of all the units and participating units that there would be considerable annual energy above and beyond the needs of the preference customers in the "principal portion" of the marketing area. We think this is especially insignificant in that the Bureau of Reclamation has stated, in explaining its new marketing criteria for the Missouri River Basin, that there may not be any additional power available to preference customers in the Missouri River Basin beyond the year 1956. As it has been suggested, and if as is set forth in the bill, the hydroelectric powerplant constructed in the upper Colorado River Basin are "operated in conjunction with other Federal powerplants, present and potential, so as to produce the greatest practicable amount of power and energy that can be sold at firm power and energy rates."

We feel that there well may be additional power available from the project for distribution to the rural electric systems in at least the western division of the Missouri River Basin. In general, the loads of the rural electric systems throughout the country are doubling every 4 years, and we feel that the authorization and construction of additional hydroelectric facilities is absolutely essential to the continued existence and development of a strong rural electrification program in the Missouri Basin States, as well as in the upper Colorado Basin area.

POWER MARKETING LANGUAGE

We are indeed happy to see that the proposed legislation provides that in the construction, operation, and maintenance of the proposed facilities, the Secretary of the Interior shall be governed by the Federal reclamation laws which we assume to mean that power will be marketed from these projects in full accord with the provisions of these laws granting preference in such sale to municipalities, rural electric cooperatives, and other nonprofit organizations. We are also glad to note that the legislation provides that it is proposed to operate the upper Colorado River Basin projects so as to produce the greatest practicable amount of power and energy that can be sold at firm power and energy rates. The rural electric systems require, for the most part, firm power and energy and except for those few systems that own their own generation facilities, they are unable to economically utilize peaking capacity and/or secondary and dump energy.

We are, however, seriously concerned by the language contained between lines 6 and 25 of page 7 of bills H. R. 4443, H. R. 4449, and H. R. 4463. This language reads as follows:

"Electric power generated at plants authorized by this Act and disposed of for use outside the States of the upper Colorado River Basin shall be replaced from other sources, as determined by the Secretary, when required to satisfy needs in the States of the upper Colorado River Basin, at rates not to exceed those in effect for power generated at plants authorized by this Act. Contracts for the sale of power for use outside the States of the upper Colorado River Basin shall contain such provisions as the Secretary shall determine to be necessary to effectuate the purposes of this Act, including the provision that if and when the Secretary finds (a) that such power cannot practicably be replaced from other sources at rates not exceeding those in effect for power generated by plants authorized by this Act, and (b) that such power is required to satisfy needs in the States of the upper Colorado River Basin, then such contracts shall be subject to termination or to modification to the extent deemed necessary by the Secretary to meet power requirements in the States of the upper Colorado River Basin."

We do not recall this type of language being used in preceding bills authorizing Federal power projects, and our initial interpretation of it would lead us to

believe that it might lead to modification and perhaps abrogation of the preference provision of the reclamation laws. This language would seem to imply that nonpreference customers within the States defined as the upper Colorado River Basin, would be entitled to preference in procuring power from these projects over nonpreference customers whose service areas lay even slightly outside of the area defined as the upper Colorado River Basin. In other words, were the rural electric systems and other preference agencies in the upper Colorado River Basin States unable to initially or ultimately utilize all of the firm energy available from the projects, the remaining portion of the energy would be sold to nonpreference customers within these States, if they desired it, rather than to preference customers lying outside of the upper Colorado River Basin area, even though the power could be made available to the preference customers over the existing or proposed facilities of the Federal Government that were electrically integrated with the upper Colorado River Basin project. In general, neither State lines nor the peripheries of river basins bear any relation in distance from a project to economical transmission distances from a project.

We, therefore, would urge the subcommittee, in considering authorization of this project, to examine this portion of the bill closely, and to consider its effect on the preference provisions of the Federal power marketing laws. The rural electric systems of the country, even with the advantage of the preference laws, as they have remained for many years, purchase only approximately 5.9 percent of all the energy from existing Federal power projects as compared to 21 percent that is purchased by the private-utility companies. To now authorize the construction of a project as gigantic as the upper Colorado River Basin project without adequate provision being made for the sale of this power and energy in accordance with the full meaning of the existing and long established preference legislation, could, we think, mean the beginning of the end of preference for our people, and, therefore, the end of their ability to purchase any power from Federal dams.

We note that the authorization bill for the upper Colorado River storage project includes authorization for the construction of "transmission facilities." We are glad to see this in the bill, and we hope that the Congress, if it authorizes the project, will have in mind that the existence of Federal transmission facilities is the only effective means for carrying out the preference provisions of Federal power marketing legislation and the only means of passing the benefits of Federal hydroelectric development to the preference customers. The rural electric cooperatives, in general, are small and unable to build the necessary high-voltage facilities required to take the power from the Federal busbar. Therefore, except in rare cases, the commercial companies would, without the existence of federally constructed transmission facilities for the delivery of Federal power to the load centers of the cooperatives, be in a position to purchase all of the output of almost every Federal hydroelectric project.

POWER COMPANY PROPOSALS

We have read with considerable interest the statement presented to the subcommittee on behalf of nine commercial utility companies serving the general area of the upper Colorado River Basin. We have not yet had time to completely interpret the statement of these companies. We agree that the powerplants comprising the Colorado River Basin project should be built by the Federal Government. However, we do not agree that the general premise of any power marketing arrangement should be incorporated in legislation authorizing this project, as has been suggested in the statement submitted to the subcommittee on behalf of the nine power companies. We do not recall any authorizing legislation which contained such provisions, and we feel that such provisions would restrict and hamper the Bureau of Reclamation in disposing of the power and energy of the projects, in accordance with the preference provisions of the law and in accordance with the best interests of the Government. We feel that the power should be marketed from these dams as has been done in the past—by negotiation with the preference agencies and the power companies involved. In our opinion, the authorization legislation is not the appropriate place to consider administrative details of power marketing, and inasmuch as the Bureau of Reclamation has recommended at this time only a partial development in terms both of storage and of water utilization, it would seem, at the very least, premature to include in the initial authorization, restrictive language which might tie the hands of officials attempting to market power from subsequently authorized projects in the best interest of the Government and the people.

To us, the meaning of the fourth principle submitted by the power companies in connection with their plan for disposing of the power from the proposed projects is confusing. We are not clear as to the meaning of "deliver project power to preference customers, making such reasonable transmission charges therefor as may be approved by the local regulatory authorities; or, the private utilities are willing to contract directly with the preference customers to supply all their power requirements at rates which will pass on such savings as are obtained through the purchase of project power."

Our initial interpretation of this language leads us to believe that it is basically similar to a plan previously proposed by power companies in Colorado for disposal of power from the Fryingpan-Arkansas project. The language does not, I think, state or imply that the companies will "wheel" power to preference customers for the account of the Government. In many areas, the power companies are, at the present time, wheeling power from Federal projects to preference customers for the account of the Government, and, in our opinion, this arrangement is the only safe and practical alternative method of passing on to the preference agencies the benefits of Federal hydropower where Federal transmission facilities are not available. However, the proposal submitted to the subcommittee by these nine companies does not, according to our interpretation, propose actual "wheeling" but proposes a plan roughly similar to that now advocated by the Georgia Power Co. for the marketing of Clark Hill power.

In our opinion, both of the alternatives proposed by the power companies in principle No. 4 of their prepared statement submitted to the subcommittee, would involve the purchase of the entire output of all the dams by the companies which would then either resell to the preference customers such power as the companies themselves defined as firm energy, limiting the preference customers to amounts of power so defined by the companies, or the companies would agree to sell the preference customers their entire requirements, passing on to the preference customers in the form of very slightly reduced rates, a small portion of the benefits of the projects. This is what the Georgia Power Co. is now demanding, even now enjoying. We do not accept either of these alternatives. In our opinion, the only way the preference customers can realize a just share in the benefits or the project is either for the Government to build transmission facilities adequate to deliver the project power to their load centers, or for the Government to exchange peaking capacity or other particular types of power or money in return for the companies' commitment to deliver firm power and energy to the preference customers for the account of the Government. We would prefer Federal transmission to our load centers. It provides us more security.

CONSERVATION ARGUMENTS AGAINST PROJECT

We realize that there has been considerable opposition to the Echo Park Dam and Split Mountain Dam, both of which would be constructed within the Dinosaur National Monument. This opposition arises from persons and organizations interested in the national parks and their desire to preserve such areas in their present natural state. As has been called to the attention of the subcommittee, the Under Secretary of the Interior, Mr. Tudor, has made a study of the proposal to build these two particular dams. The Under Secretary has concluded that it is a matter of personal opinion as to the extent of the harm that would be caused by the Echo Park Dam in particular which would create a rather large body of water within the monument, and would appreciably alter its appearance. The Under Secretary, however, concluded that if the dam were built, the beauty of the park would by no means be destroyed and would remain an area of great attraction to many people, and in his report, the Under Secretary called attention to the fact that neither of the proposed reservoirs would flood the portion of the quarry where the dinosaur skeletons had been found. The Under Secretary further concluded that any of the alternate dam and reservoir sites proposed would result in a net loss of water sufficient to provide all of the domestic, commercial, and industrial water for a city the size of Denver. He reasoned that in an area where water is so valuable, the alterations caused by the reservoir from these two projects would be secondary in importance to the serious loss of water inherent in the substitution of alternate dam sites. The Under Secretary also concluded that there would be a very substantial loss in the electric generating capacity should any of the alternate sites be substituted. He further stated in his report that, although he shared the concern of those who wanted to preserve the beauties of the Dinosaur National Monument, he believed the

conservation of water is of greatest importance. The Under Secretary therefore recommended that the plans for the development of the Upper Colorado River Basin include the Echo Park and Split Mountain Dams.

My family and I visited Dinosaur National Monument in the summer of 1947. We had hoped to spend 2 or 3 days, but we saw what we could in 1 day and left. It is indeed a beautiful spot but the dinosaur remains are high on the hills and will not be inundated. The water would only add to the grandeur of the park, I believe, and I can assure you that had the lake been there in 1947, thus making the canyons more accessible, we would probably have stayed there 2 or 3 days more.

Last fall, one of the senior members of our Washington staff also visited the Echo Park Dam site. He reports that, in his opinion, it is located in a remote and most inaccessible area because the road giving entry is poor and poorly marked. He also reports that the lake which would be created by the power dam would not affect the area of the park where the excavations for dinosaur remains have been undertaken.

For these reasons, we disagree with those who oppose the construction of the Echo Park and Split Mountain Dams for aesthetic reasons, and in this matter, we are in full agreement on this point with the Under Secretary of the Interior, Mr. Tudor.

SUMMARY

In summary, I would like to impress upon the subcommittee the following points:

1. The rural electric systems of the upper Colorado River Basin and adjacent areas need additional sources of hydroelectric energy if their existence and development is to continue. The basin area is very sparsely populated. We understand that the average population density is approximately 3 persons per square mile compared to a national average of 51 persons per square mile. For this reason, an adequate source of low-cost energy is absolutely essential to the rural electric systems in the area. Unit construction costs and the average cost of rendering retail electric service is necessarily high in a sparsely populated area, and the hydro energy from these projects would be of inestimable value to us in securing area coverage.

2. Our systems located within and directly adjacent to the "principal portion" of the section that has been indicated as the power marketing area for the projects, would alone save almost one-third of a million dollars per year in the cost of wholesale energy.

3. Whereas, we are glad to see that the bill contains provisions for the construction of transmission facilities and that the projects will be constructed in accordance with the reclamation laws which provide preference in the marketing of power to cooperatives and other nonprofit organizations, we are disturbed by the language contained between lines 6 and 25, of page 7, of the bill which we interpret as meaning that nonpreference customers within the upper Colorado Basin area would be placed in a quasipreferential class and would be entitled to such power as they required to the exclusion of preference customers, as designated by the reclamation laws, who were located even slightly outside the borders of the upper Colorado Basin States, even though such preference customers were directly connected to the Federal transmission system marketing power from the upper Colorado Basin project or proximate electrically integrated projects.

4. We urge that no restrictive provisions be placed in the bill which would specify administrative details for the marketing of this power as has been suggested by representatives of 9 power companies serving the area. We feel that such restrictive language is inappropriate in authorizing legislation, is premature, and would be to the detriment of the interests of the Government and the people.

Our first interpretation of the principles outlined by the power company representatives for the delivery of power from the projects to the preference customers leads us to believe that the companies do not, at this time, intend to wheel power and energy to the preference customers for the account of the Government under either of their alternative proposals. We feel that Federal transmission, adequate to deliver the power to our load centers, is the best method of insuring that benefits of the project will be passed on to the preferred customers, and as a second alternative, we suggest that wheeling agreements be negotiated, at the appropriate time, under which the companies would deliver power and energy from the projects to the load centers for the account of the Government. We

reject any proposal by which the total output of the projects would be sold to the power companies at the busbar.

5. Our people in the area need additional sources of hydroelectric energy, and we, therefore, urge the Congress to authorize at this time the initial units of the upper Colorado project (Glen Canyon Dam and Echo Park Dam) as well as the additional hydroelectric units and participating projects in the bill (San Juan Chama project, Flaming Gorge unit, and Curecant unit if its feasibility can be established). We also urge subsequent authorization of additional units and participating projects which would produce power and which the Secretary may from time to time be in a position to build.

6. We feel that the benefits of the Echo Park and Split Mountain Dams and their advantages over alternative sites outweighs the limited aesthetic damage that would be inherent in their construction. We support the construction of these two dams.

I would like to include for the record a copy of a resolution unanimously passed by the 12th annual meeting of members of the National Rural Electric Cooperative Association held in Miami, Fla., January 11-14, 1954. This is our Resolution No. 24 urging the construction and completion of several multipurpose hydro projects including the Colorado River storage project as has been outlined in my statement.

"RESOLUTION No. 24

"Whereas there are a great number of hydro projects throughout the United States for the development of low-cost electric power; and

"Whereas these projects are needed to meet the requirements for electric power in the Nation; and

"Whereas there is a need for the acceleration of the program of conservation and control of our river basin waters for power, irrigation, and flood control, the benefits of which are essential for the long-term prosperity of the Nation: Now, therefore, be it

"Resolved, That we, the delegates to this 12th annual meeting of the NRECA, assembled January 11-14, 1954, do hereby urge Congress to—

"1. Appropriate necessary funds for the construction and completion of all multipurpose hydro projects approved by proper authorities and meeting the specifications laid down for feasible multipurpose dam construction, and by way of illustration, but not exclusive of other such projects as the following dams: Alabama-Coosa, Jim Woodruff, St. Lawrence, Niagara, Missouri Basin, Oahe, Buffalo Rapids, Glendo, Yellow Tail, Frying Pan-Arkansas, Table Rock, Keystone, McGee Bend, Grier Ferry, Eufala, Hells Canyon, Ice Harbor, Hartwell, upper Columbia, Buford, Devils Canyon, and Colorado River storage project; and be it further

"Resolved, That Congress enact the necessary legislation to assure the people that development of hydro sites solely for power-production purposes, by commercial utilities, or non-Federal agencies may be undertaken only when such development will not interfere with ultimate comprehensive regional or river basin development, which because of size and complexity of purpose should be properly undertaken only by Federal agencies; and be it further

"Resolved, That we urgently request Congress to appropriate necessary funds for transmission facilities to integrate river basin project power facilities, and delivery of power to preference customers' load centers; and be it further

"Resolved, That rights of preference customers, under the Flood Control Act of 1944, be recognized, and that preference customers be advised that power is available, and their needs met before contracts of interim agreements are made with commercial utilities for disposal of power from various power projects."

TABLE 1.—Estimated yearly energy cost savings to electric co-ops in and adjacent to "principal portion" of Colorado storage project marketing area

State and name of cooperative	Mills per kilowatt-hour annual energy consumption	Present average rate mills per kilowatt-hour	Present annual cost of energy	Annual cost of energy at 6 mills per kilowatt-hour	Annual savings at rate of 6 mills per kilowatt-hour
Colorado:					
Grand Valley Rural Power Lines, Inc. (7)	6.62	8.9	\$58,683	\$39,720	\$18,963
San Luis Valley Rural Electric Co-op (14)	12.96	8.8	114,099	77,760	36,339
Gunnison County Electric Association (18)	1.10	18.0	19,780	6,600	13,180
Delta-Montrose Rural Power Lines Association (20)	5.52	10.7	59,110	33,120	25,990
San Miguel Power Association (26)	11.01	9.1	100,431	66,060	34,371
La Plata Electric Association (32)	6.14	9.8	60,310	36,840	23,470
Empire Electric Association (33)	10.51	9.8	103,282	63,060	40,222
Holy Cross Electric Association (34)	3.07	8.0	24,590	18,420	6,170
Yampa Valley Electric Association (36)	3.31	12.0	39,958	19,860	20,098
White River Electric Association ¹ (40)	1.83	17.5	32,501	10,986	21,515
North Park Rural Electric Association (42) .....	.88	7.0	6,185	5,280	905
New Mexico: Northern Rio-Arriba Electric Cooperative (15)	1.87	18.3	34,200	19,860	14,340
Idaho: Raft River Electric Co-op (16)	9.03	5.6	² 24,021	² 25,920	-----
Utah:					
Garkane Power Association (6)	4.30	14.0	60,231	25,800	34,431
Moon Lake Electric Association ¹ (8)	7.81	8.4	65,627	46,860	18,767
Wyoming:					
Riverton Valley Electric Association (3)	4.46	6.8	² 30,143	² 26,760	-----
Bridger Valley Electric Association ¹ (9)	2.13	10.9	23,261	12,700	10,481
Lower Valley Power & Light ¹	4.48	4.5	² 20,089	² 26,880	-----
Total	92.3	-----	802,248	483,006	319,242

¹ Generates own power, figures for calendar 1951.

² Not included in total.

NOTE.—Except as noted, figures are for fiscal year 1952 from 14th Annual Report of Energy Purchased by REA Borrowers, published by REA.

STATEMENT BY THE GENERAL FEDERATION OF WOMEN'S CLUBS, PRESENTED BY SALLY BUTLER, DIRECTOR LEGISLATIVE RESEARCH

ECHO PARK DAM IN DINOSAUR NATIONAL MONUMENT

The General Federation of Women's Clubs was chartered by the United States Congress in 1901. This organization has 5 million members in the United States and is working, among other things, for programs which will promote and preserve the conservation and development of our natural resources.

It is the interest of the General Federation of Women's Clubs in the conservation of the national parks and monuments which prompts it to present this statement to the committee, regarding the proposed building of Echo Park Dam in the Dinosaur National Monument.

The policies of the General Federation of Women's Clubs are made by passing resolutions at national conventions. These resolutions (all except emergency ones, are submitted by State federations, the executive committee, national committee chairmen, or the resolutions committee—all are then submitted to each State federation for consideration and action and finally go to the national convention for action by certified delegates from each State. A majority vote determines the result. A positive vote means that the general federation will accept the responsibility, using its energy and resources, of carrying out the mandate of the membership as indicated by the vote of the majority. Minority votes are registered if there is a report of the minority votes.

We mention this because on this controversial subject of the Echo Park Dam we have one State federation that is not in accord with the action taken by the delegates at the convention in May 1951.

The following resolution was passed by the General Federation of Women's Clubs at the convention in May 1951:

"COMMENDING AND SUPPORTING NATIONAL PARK SERVICE POLICY

"Whereas our national parks and monuments are administered by the National Park Service under policies which insure permanent preservation of scenic,

scientific, and historical natural features which they contain, and under policies which prohibit grazing, logging, mining, and engineering projects which will destroy their natural character; and

"Whereas many local and commercial interests seek to despoil these national parks and monuments for their personal profit by introducing legislation in Congress that would open them to exploitation: Therefore be it

"Resolved, That the General Federation of Women's Clubs, in convention assembled, May 1951, commends the National Park Service for its adherence to official policies and asserts its strong opposition to any efforts, except such developments as may clearly be demonstrated to be in the interest of the national defense, that may be made to commercialize any national park or monument, whether by direct invasion, by altering boundaries or by any other means."

While it would seem that the Department of the Interior has changed its policy, it is the stand of the General Federation of Women's Clubs that its resolution continues to support its policy regarding the preservation of national parks and national monuments.

It would seem to us that other sites in the general locality can serve the purpose of the proposed Echo Park Dam in the Dinosaur National Monument as well and more economically. We are, therefore, opposed to building Echo Park Dam, as suggested, in Dinosaur National Monument.

The department of conservation of the General Federation of Women's Clubs has asked us to point out the following facts, as a basis for our stand in this matter:

1. To put a dam in Dinosaur National Monument would set a dangerous precedent and open other units of the national park system to invasion; and that

2. There are other sites available outside the Dinosaur National Monument, but in the same area, where dams could be built to provide more power and water at less cost; and that

3. As we see it, it is not in the interest of national defense which is the only reason for which the General Federation of Women's Clubs would approve the desecration of any of our national parks or national monuments.

THE SHERATON-CARLTON,
Washington 6, D. C.

HON. WILLIAM HARRISON,
*Chairman, Subcommittee on Irrigation,
House Committee on Interior and Insular Affairs,
Washington 25, D. C.*

DEAR SIR: I regret very much that time prevents me from testifying in person in opposition to the construction of dams within the Dinosaur National Monument.

I submit herewith a letter from the Mazamas, Oregon's oldest and largest outdoor club, which clearly states the club's position. I request that this letter be made a part of the record in this hearing, noting that this is the considered expression of a 60-year-old organization of approximately 1,000 members.

I am also privileged to submit a letter from the Oregon Audubon Society, which I ask to have placed in the record also.

I also attach the November 1953 issue of Western Outdoor Quarterly, the publication of the Federation of Western Outdoor Clubs. I call your attention to page 5, on which appear certain resolutions adopted by the federation at its annual meeting in September 1953, and in particular to Resolution No. 4. This very clearly states the position of the entire federation, in which the Mazamas are an active member, in firm opposition to the sacrifice of any national park or national monument in favor of dam construction or power development.

We therefore urge that your committee recommend the substitution of alternate sites, outside Dinosaur National Monument, instead of the Echo Park and Split Mountain locations, as part of the upper Colorado River program.

Most respectfully,

ROBERT T. PLATT
(For Mazamas).

Home address:
Portland 12, Oreg.

MAZAMAS,

Portland 4, Oreg., January 15, 1954.

Hon. WILLIAM HARRISON,
*Chairman, Subcommittee on Irrigation,
 Interior and Insular Affairs Committee,
 New House Office Building, Washington 25, D. C.*

DEAR MR. HARRISON: Before his message to Congress we sent the following telegram to President Eisenhower:

"We strongly protest the building of any dams in Dinosaur National Monument as a needless sacrifice of unique scenic and recreational values. We urge further study of alternate sites as more economic and justifiable. As an organization of 1,000 mountaineers we want our national parks and monuments held inviolate."

We had been informed that Secretary McKay had just made the recommendation that these dams be built and we regarded it as a serious mistake to invade these lands set aside by Presidential proclamation for any development that is purely economic.

While this is not the issue in this particular case, we feel so strongly about this matter that we would be in favor of alternate sites which would offer less power or impoundage or even mean greater cost rather than despoil areas which, by their very nature, have been judged sufficiently unique to be set aside for perpetuity.

However, in the case of Dinosaur National Monument there is ample evidence of many sites available. Only 2 of the 27 mapped by the Bureau of Reclamation in the upper Colorado Basin are in the Dinosaur National Monument. A group of three outside the monument, Desolation, New Moab, and Bluff would provide more power and more storage and cost \$59,000,000 less than the Echo Park and Split Mountain Dams within the monument. When recommendations and appropriations for the national park system have been inadequate to provide decent maintenance, let alone standards worthy of their status and extensive use, it would seem an ironic decision to contemplate the spending of even more than necessary for their despoliation.

When as many as 41 million people from every State visited our national parks and monuments last year, it becomes a citizen's problem and one with which he had personal knowledge and experience. Outside of voting, is there any activity or privilege in which more people have enjoyed their heritage? And with increasing population pressures our dedicated areas also become increasingly precious and necessary.

Yet, the very values and extensive use of these areas seem to incubate schemes and projects for commercialization or reduction of their resources. The argument that lake dams afford greater recreational opportunities in swimming and boating and fishing may be true for these reasons, but that is an artificial justification for ruining those natural features for which the park or monument may have been created.

We must be continually aware and proud that our national parks and monuments are unique in the world in many ways, certainly when they contain virgin forests, rare flora and fauna and geological forms which are all dependent upon undisturbed natural surroundings. We shall continue to regard any threatened despoliation of our national parks and monuments as a reflection upon the integrity of congressional action and as an indefensible violation of our heritage.

We urge you to use every influence at your command to prevent the building of these dams in Dinosaur National Monument or for any other proposal located within the boundaries of any national park or monument.

Sincerely yours,

MAZAMAS,
 By MARTHA ANN PLATT, *President.*

OREGON AUDUBON SOCIETY,
 Portland, Oreg., January 14, 1954.

Hon. WILLIAM HARRISON,
*Chairman, Subcommittee on Irrigation,
 New House Office Building, Washington 25, D. C.*

DEAR SIR: The Oregon Audubon Society is a conservation organization located in Portland, Oreg., and has over 300 members. We wish to add our opinion to

those being heard by your committee in connection with the construction of Echo Park Dam in Dinosaur National Monument.

Our society is opposed to encroachment upon the areas within our national parks and monuments. We sincerely and deeply believe that the intangible values preserved in such areas and specifically in Dinosaur National Monument will in the long run far outweigh any immediate material gain that may result from the construction of Echo Park Dam. We believe that it is now the time for our Government to fix a policy of preserving from any violation the lands set aside in our national parks and monuments.

We urge your committee not to authorize the Echo Park Dam and in general to set a policy of saving our national parks and monuments from all encroachment.

Sincerely yours,

NORBERT LEUPOLD, *Secretary.*

Mr. HARRISON. The committee will now stand adjourned.
(Whereupon, at 12:10 p. m. the subcommittee adjourned.)

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