TWENTY-FOURTH ANNUAL REPORT

OF THE

Upper Colorado River Commission

SALT LAKE CITY, UTAH

SEPTEMBER 30, 1972

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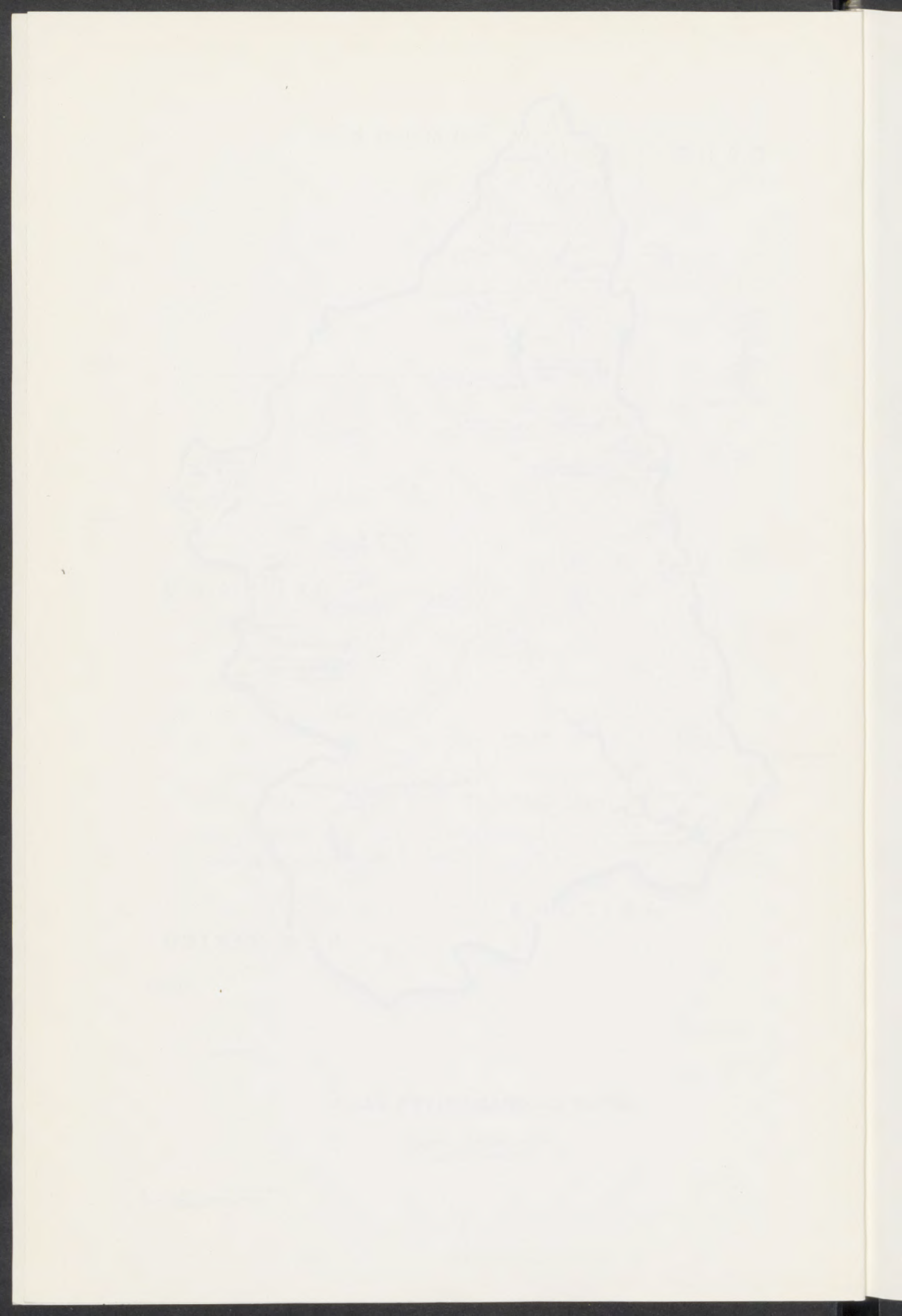
IVAL V. GOSLIN
Executive Director

UPPER COLORADO RIVER BASIN

UPPER COLORADO RIVER
COMMISSION

25 0 25 50
SCALE OF MILES



UPPER COLORADO RIVER COMMISSION

355 South Fourth East Street
Salt Lake City, Utah 84111

October 31, 1972

Mr. President:

The Twenty-Fourth Annual Report of the Upper Colorado River Commission, as required by Article VIII (d) (13) of the Upper Colorado River Basin Compact, is enclosed.

The budget of the Commission is included in this report as Appendix B.

This report has also been transmitted to the Governor of each State signatory to the Upper Colorado River Basin Compact.

Respectfully yours,

Ival V. Goslin

Ival V. Goslin
Executive Director

The President
The White House
Washington, D. C. 20500

Enclosure

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I. Preface

Article VIII (d) (13) of the Upper Colorado River Basin Compact requires the Upper Colorado River Commission to "make and transmit annually to the Governors of the signatory States and the President of the United States of America, with the estimated budget, a report covering the activities of the Commission for the preceding water year."

Article VIII (1) of the By-Laws of the Commission specifies that "the Commission shall make and transmit annually on or before April 1 to the Governors of the states signatory to the Upper Colorado River Basin Compact and to the President of the United States a report covering the activities of the Commission for the water year ending the preceding September 30."

This Twenty-fourth Annual Report of the Upper Colorado River Commission has been compiled pursuant to the above directives.

This Annual Report includes, among other things, the following:

Membership of the Commission, its Committees, Advisers, and Staff;

Roster of meetings of the Commission;

Brief discussion of the activities of the Commission;

Engineering and hydrologic data;

Pertinent legal information;

Information pertaining to Congressional legislation;

Maps of Upper Colorado River Basin;

Brief discussion of the Storage Units and participating projects of the Colorado River Storage Project and of the status of their construction or investigations;

Appendices containing:

Fiscal data, such as: budget, balance sheet, statements of revenue and expense, etc.;

II. Commission

John A. Love
Commissioner for
Colorado

John H. Bliss
Commissioner for
New Mexico

H. P. Dugan
Chairman
Commissioner for
United States

H. T. Person
Commissioner for
Wyoming

Thorpe
Waddingham
Commissioner for
Utah

III. Officers of the Commission

Chairman, H. P. Dugan

Vice Chairman, John A. Love

Secretary, Ival V. Goslin

Treasurer, I. J. Coury*

Assistant Treasurer, William F. Homer

IV. Staff

Ival V. Goslin, Executive Director

Paul L. Billhymer, General Counsel

Mrs. Hanna I. Wetmore, Administrative Secretary

Mrs. Janis J. Smith, Clerk-Typist

*deceased March 25, 1972

V. Committees

The Committees of the Commission convened when required during the year.

Committees and their membership, at the date of this report, are as follows (the Chairman and the Secretary of the Commission are ex-officio members of all committees, Article V (4) of By-Laws):

STANDING COMMITTEES

Engineering Committee

Ival V. Goslin, Chairman
Clarence J. Kuiper
Laren D. Morrill
Stephen E. Reynolds
David P. Hale
Floyd A. Bishop
H. T. Person
George D. Clyde*
Daniel F. Lawrence

Legal Committee

Felix L. Sparks, Chairman
Raphael J. Moses
Paul L. Bloom
Claud S. Mann
Clarence A. Brimmer
Jack R. Gage
Dallin W. Jensen
Thomas O. Parker

Budget Committee

John H. Bliss, Chairman
Felix L. Sparks
H. T. Person
Thorpe Waddingham

SPECIAL COMMITTEES

Finance Committee

Norman W. Barlow, Chairman**
I. J. Coury***
Bert A. Page
Felix L. Sparks

Education and Information Committee

John H. Bliss
Floyd A. Bishop
Lynn S. Ludlow

*deceased April 2, 1972
**deceased February 24, 1972
***deceased March 25, 1972

VI. Advisers to Commission

The following individuals serve as advisers to their respective Commissioners:

UNITED STATES OF AMERICA

Legal

Thomas O. Parker, Regional Solicitor
U. S. Department of the Interior
Salt Lake City, Utah

Engineering

J. R. Riter
Denver, Colorado

COLORADO

Legal

Felix L. Sparks, Director
Colorado Water Conservation Board
Denver, Colorado

Raphael J. Moses, Counsel
Colorado Water Conservation Board
Boulder, Colorado

Engineering

Clarence J. Kuiper
State Engineer
Denver, Colorado

Laren D. Morrill, Deputy Director
Colorado Water Conservation Board
Denver, Colorado

Alternate Commisioner

William Gossard
Craig, Colorado

NEW MEXICO

Legal

Claud S. Mann
Special Assistant Attorney General
Albuquerque, New Mexico

Paul L. Bloom
Special Assistant Attorney General
Santa Fe, New Mexico

Engineering

Stephen E. Reynolds, State Engineer
Santa Fe, New Mexico

David P. Hale, Engineer
New Mexico Interstate Stream Commission
Santa Fe, New Mexico

General

I. J. Coury, Chairman*
New Mexico Interstate Stream Commission
Farmington, New Mexico

*deceased March 25, 1972

UTAH

Legal

Dallin W. Jensen, Assistant Attorney General
Salt Lake City, Utah

Engineering

George D. Clyde, Consulting Engineer*
Salt Lake City, Utah

Daniel F. Lawrence, Director
Division of Water Resources
Salt Lake City, Utah

Colorado River Advisory Committee to Utah Commissioner

Hubert C. Lambert
State Engineer
Salt Lake City, Utah

Lawrence Y. Siddoway, Manager
Uintah Water Conservancy District
Vernal, Utah

Clyde E. Conover, Member
Emery County Water Conservancy District
Ferron, Utah

Clyde Ritchie, Chairman
Central Utah Water Conservancy District
Heber City, Utah

Alternate Commisioner

Daniel F. Lawrence, Director
Division of Water Resources
Salt Lake City, Utah

*deceased April 2, 1972

WYOMING

Legal

Clarence A. Brimmer, Attorney General
Cheyenne, Wyoming

Engineering

Floyd A. Bishop, State Engineer
Cheyenne, Wyoming

H. T. Person, Upper Colorado River Commissioner
Laramie, Wyoming

Assistant Commissioners

Dan S. Budd
Big Piney, Wyoming

James Greenwood
Big Piney, Wyoming

VII. Meetings of the Commission

During the Water Year ending September 30, 1972, the Commission met three* times as follows:

Meeting No. 121	March 20, 1972	Adjourned Annual and Regular Meeting Cheyenne, Wyoming
Meeting No. 122	September 18, 1972	Annual Meeting Salt Lake City, Utah
Meeting No. 123*	October 25, 1972	Adjourned Annual Meeting Denver, Colorado

*Athough this meeting was held after the end of the water year it constituted the Annual Meeting for 1972 with most of the business transacted pertaining to that year.

VIII. Activities of the Commission

Within the scope and limitations of Article I(a) of the Upper Colorado River Basin Compact, ". . . to secure the expeditious agricultural and industrial development of the Upper basin, the storage of water . . ." and under the powers conferred upon the Commission by Article VIII(d) pertaining to making studies of water supplies of the Colorado River and its tributaries and the power to ". . . do all things necessary, proper or convenient in the performance of its duties . . . , either independently or in cooperation with any state or federal agency," the principal activities of the Commission during the 1972 water year have consisted of: (A) research and studies of an engineering and hydrologic nature of various phases of the water resources of the Colorado River Basin; (B) collection and compilation of documents for a legal department library relating to the utilization of waters of the Colorado River System for domestic, industrial, agricultural purposes and the generation of hydroelectric power, and legal analysis of associated laws, reports, and problems; (C) analysis of environmental statements on water development projects of the Colorado River Storage Project and participation in hearings thereon; (D) continuation of research of data and development of facts and arguments for use by States and other defendant parties in the Rainbow Bridge lawsuit, *Friends of the Earth, et al.* v. *Secretary of the Interior, et al.;* (E) continuation of a public relations program designed to disseminate to the general public the true facts concerning the operation of Glen Canyon Dam and Lake Powell and alleged damages to Rainbow Bridge; (F) cooperation with water quality and water resource agencies of the Colorado River Basin States, Bureau of Reclamation and other federal agencies in the development of a salinity control policy and action program to control the salinity of the Colorado River system; (G) an education and information program designed to aid in securing appropriations of funds by the United States Congress for the construction, planning and investigation of storage dams, reservoirs, and water resource development projects of the Colorado River Storage Project that have been authorized for construction, and to secure authorization by the Congress for the construction of additional participating projects as the essential investigations and planning are completed; and (H) a legislative program consisting of the analysis and study of water resource Bills introduced in the U.S. Congress for enactment, the preparation of evidence and argument, and the presentation of testimony before Committees of the Congress.

A. ENGINEEERING — HYDROLOGY

1. Colorado River Salinity Problem

The Upper Colorado River Commission has continued its interest and efforts related to the salinity problem in the Colorado River Basin. The Commission has recommended that this problem be treated as one that is basinwide and that its solution should not preclude development of Upper Basin water resources, that numerical salinity control criteria should not be established until salt load reduction projects have been constructed and their operation proved practicable, and that the Bureau of Reclamation should be assigned the primary responsibility for feasibility investigations, planning, and initiating a basinwide salt load reduction program at Federal expense. The Commission has also urged the Bureau of Reclamation to initiate feasibility studies, and the Executive and Legislative branches of the Federal government to support authorization and adequate funding of salinity control projects for the Colorado River Basin.

The Commission's staff has also been authorized and directed to work closely with representatives of the Commission's member States in coordinating and correlating activities with other States and Federal agencies.

In cooperation with the Colorado River Board of California, which is correlating similar activities for the three Lower Basin States, and the States' water quality conferees, the Commission sponsored and participated in a number of important salinity control conferences during the past year. A few of the most important of these meetings are mentioned in the following paragraphs.

On July 30, 1971 a conference was held in Washington, D.C. with the late Under Secretary of the Interior, William Pecora, members of his staff, the Commissioner of Reclamation and members of his staff, and representatives of the United States Section of the U.S.-Mexican Boundary and Water Commission. The Colorado River salinity problem and its importance were thoroughly discussed. The principles mentioned in earlier resolutions of the Upper Colorado River Commission and the necessity for an immediate and adequately funded program of feasibility studies of methods of salinity control were emphasized. The Under Secretary offered the full cooperation of his office and instructed the Commissioner of Reclamation to prepare a program of feasibility studies, designated the Colorado River Water Quality Improvement Program.

This program prepared by the Bureau of Reclamation, as reflected in the President's budget, called for a 10-year program of feasibility studies at a cost of approximately $18 million, with a budget item of $1,005,000 for fiscal year 1973. It became apparent, especially after subsequent meetings mentioned below, that the first phases of the program required acceleration with more adequate funding. Through the combined efforts of the Commission and representatives of all seven Colorado River Basin States the U.S. Congress was persuaded to increase this appropriation for fiscal year 1973 to $2,060,000.

With the cooperation of the water quality conferees and representatives of the water resource interests of the seven Colorado River Basin States, a meeting was held in Denver, Colorado on February 4, 1972. Another meeting of this same group was held in Las Vegas, Nevada on February 15-16, 1972. The purpose of these sessions was to develop as unified a position as possible of all seven basin States on the recommendations in the final report of the U.S. Environmental Protection Agency, entitled, *The Mineral Quality Problem In The Colorado River Basin.*

The Environmental Protection Agency also held the seventh session of the joint Federal-State *Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries* in Las Vegas on February 15-17, 1972.

The water quality conferees and water resource representatives of the seven basin States agreed in Las Vegas on a resolution which was presented to the Environmental Protection Agency enforcement conference with the suggestion that it be adopted as the Federal-State position of the conference. The officials of the Environmental Protection Agency could not support the seven States' resolution, but they did agree to accept it in principle, further study it, and call the water quality conferees and water resource representatives into session at a later date. The resolution of the conferees of the Colorado River Basin States and a resolution of the Upper Colorado River Commission endorsing the conferees resolution in principle follow.

RESOLUTION

OF THE CONFEREES OF THE COLORADO RIVER BASIN STATES

February 17, 1972

WHEREAS, the Colorado River Basin Water Quality Control Project was established as a result of recommendations made at the first session of a joint Federal-State "Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries," held in January of 1960 under the authority of Section 10 of the Federal Water Pollution Control Act (33 U.S.C. 466 et seq.); and

WHEREAS, in 1963 based upon recommendations of the conferees, the Project began detailed studies of the mineral quality problem in the Colorado River Basin; and

WHEREAS, the Environmental Protection Agency transmitted in April 1971 its draft report on "The Mineral Quality Problem in the Colorado River Basin" to the conferees and water resource agencies of the Colorado River Basin States for review and comment; and

WHEREAS, all Colorado River Basin States reviewed and commented on the draft report on the mineral quality problem in the Colorado River Basin; and

WHEREAS, the Environmental Protection Agency has revised its draft report and transmitted to the Colorado River Basin States a final report dated 1971; and

WHEREAS, the said report constitutes a necessary step toward the solution of the mineral quality problem of the Colorado River system; and

WHEREAS, the States and Federal agencies have implemented measures to control salinity of the Colorado River; and

WHEREAS, the Bureau of Reclamation is authorized to make, and has feasibility investigations underway, to determine additional measures to reduce the salinity of the waters of the Colorado River under present and future conditions; and

WHEREAS, during 1971 the States of the Colorado River Basin urged committees of Congress to appropriate funds to the

Bureau of Reclamation to accelerate feasibility investigations of salinity control projects on the Colorado River; and

WHEREAS, additional funds were appropriated to the Bureau of Reclamation for these feasibility studies; and

WHEREAS, in the interest of comity between the United States and Mexico the State Department has given its support to a basin-wide salinity control program:

NOW, THEREFORE BE IT RESOLVED by the Conferees of California, Arizona, Nevada, New Mexico, Colorado, Utah and Wyoming that:

(1) a salinity policy be adopted for the Colorado River system that would have as its objective the maintenance of salinity concentrations at or below levels presently found in the lower main stem;

(2) in implementing the salinity policy objective for the Colorado River system the salinity problem be treated as a basinwide problem that needs to be solved to maintain Lower Basin water salinity at or below present levels while the Upper Basin continues to develop its compact-apportioned water, recognizing that salinity levels may rise until control measures are made effective;

(3) to guard against any rise in salinity the Congress and the Administration be urged to accelerate the entire salinity control program and, in particular, to augment the F.Y. 1973 budgeted amount of $1,005,000; and

(4) the Bureau of Reclamation have the primary responsibility for investigating, planning, and implementing the basin-wide salinity control program in the Colorado River system;

(5) the Environmental Protection Agency continue its support of the program by (a) consulting with and advising the Bureau of Reclamation, (b) accelerating its ongoing data collection and research efforts, and (c) transferring funds to the Bureau of Reclamation;

(6) the Office of Saline Water contribute to the program by assisting the Bureau of Reclamation as required to appraise the practicability of applying desalting techniques; and

(7) the adoption of numerical criteria be deferred until the potential effectiveness of Colorado River salinity control measures is better known;

BE IT FURTHER RESOLVED that the Environmental Protection Agency be commended for performing the necessary studies and completing the 1971 report on the Mineral Quality Problem in the Colorado River Basin; and

BE IT FURTHER RESOLVED that copies of this resolution be transmitted to the Secretary of State, Secretary of the Interior, Administrator of the Environmental Protection Agency, Governors and Members of the Congress of the Colorado River Basin States, the Commissioner of Reclamation, Director of the Office of Saline Water and other interested entities.

RESOLUTION

by

UPPER COLORADO RIVER COMMISSION

re:

United Position of Water Quality Conferees of Colorado River Basin States

WHEREAS, in 1963, based upon recommendations of the "Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries," the Colorado River Basin Water Quality Control Project initiated detailed studies of the mineral quality problem in the Colorado River Basin; and

WHEREAS, the Environmental Protection Agency transmitted its final report dated 1971 on "The Mineral Quality Problem in the Colorado River Basin" to the water quality Conferees and water resource agencies of the seven Colorado River Basin States; and

WHEREAS, the seventh session of the "Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries" was called by the Environmental Protection Agency and held in Las Vegas, Nevada on February 15-17, 1972; and

WHEREAS, on February 17, 1972, the Conferees of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming by roll call vote unanimously adopted a resolution that was presented to the Federal-State Conference as the position of said seven States on the salinity problem of the Colorado River system and a program for its control:

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission convened at Cheyenne, Wyoming on March 20, 1972 that said Commission endorses the February 17, 1972 resolution of the seven Colorado River Basin States' Conferees in principle and commends the Conferees for their action in adopting a unified, reasonable, and practicable policy with reference to the salinity problem of the Colorado River Basin;

BE IT FURTHER RESOLVED that the Environmental Protection Agency is hereby urged in the interest of Federal-State relationships, interstate comity, and the initiation and performance of a practicable salinity control program for the Colorado River Basin to conform its recommendations on water quality for the

Colorado River system to the principles enunciated in the February 17, 1972 resolution of the Conferees of the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming;

BE IT FURTHER RESOLVED that copies of this resolution be transmitted to the Secretary of State, Secretary of the Interior, Administrator of the Environmental Protection Agency, Governors and Members of the Congress of the Colorado River Basin States, the Commissioner of Reclamation, Director of the Office of Saline Water, members of the "Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries," and other interested entities.

CERTIFICATE

I, IVAL V. GOSLIN, Executive Director of the Upper Colorado River Commission, do hereby certify that the above Resolution was adopted by the Upper Colorado River Commission at a Regular Meeting held in Cheyenne, Wyoming on March 20, 1972.

Witness my hand this 21st day of March, 1972.

/s/ Ival V. Goslin
Ival V. Goslin
Executive Director

In February, 1972, the Bureau of Reclamation published a report entitled, *Colorado River Water Quality Improvement Program.* This report describes the need for making feasibility studies of various potential salinity control projects in order to determine the magnitude of the problem and the best ways of controlling salinity.

The seventh session of the joint Federal-State *Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries* was reconvened by the Environmental Protection Agency in Denver, Colorado on April 26-27, 1972. The State and Federal conferees unanimously agreed upon the following statement.

The State and Federal Conferees have unanimously reached the following conclusions and recommendations.

I. It is recommended that:

A salinity policy be adopted for the Colorado River system that would have as its objective the maintenance of salinity concentrations at or below levels presently found in the lower main stem. In implementing the salinity policy objective for the Colorado River system, the salinity problem must be treated as a basinwide problem that needs to be solved to maintain Lower Basin water salinity at or below present levels while the Upper Basin continues to develop its compact-apportioned waters.

II. The salinity control program as described by the Department of the Interior in their(sic) report entitled "Colorado River Water Quality Improvement Program," dated February 1972, offers the best prospect for implementing the salinity control objective adopted herein. Therefore, it is recommended that:

1) to minimize salinity increases in the river, a salinity control program, generally as described in the Interior Department report, be implemented on an accelerated basis;

2) the Bureau of Reclamation have the primary responsibility for investigation, planning and implementing the basinwide salinity control program in the Colorado River system;

3) to accelerate the salinity control program, the Bureau of Reclamation assign a high priority to LaVerkin Springs, Paradox Valley, and Grand Valley water quality improvement projects with the objective of achieving stabilization of salinity levels on the Lower Colorado River at the earliest possible date. The contemplated impact would be to initiate immediate action so as to achieve, by 1977, the removal of 80,000 tons of salt per year from LaVerkin Springs, 180,000 tons per year from Paradox Valley, and 140,000 tons per year from Grand Valley. This would provide a total reduction of 400,000 tons per year and would result in an estimated subsequent reduction of 33 mg/l at Imperial Dam.

4) the Office of Saline Water contribute to the program by assisting the Bureau of Reclamation as required to appraise the practicability of applying desalting techniques; and

5) the Environmental Protection Agency continue its support

of the program by consulting with and advising the Bureau of Reclamation and accelerating its ongoing data collection and research efforts.

III. To achieve the salinity policy described herein, the long range program of the Bureau of Reclamation shall be directed toward achieving reduction of salinity concentrations that would otherwise exist at Imperial Dam to the extent of at least 120 mg/l in 1980, 355 mg/l in 1990 and 405 mg/l in the year 2000.

* * *

The conferees agree that the Bureau of Reclamation's program as submitted in its report "Colorado River Water Quality Improvement Program," dated February 1972, should be considered as an open-ended and flexible program. If alternatives not yet identified prove to be more feasible, they should be included as part of the program, and if elements now included prove not to be feasible, they should be dropped. In addition, it should be recognized that there may be other programs which could reduce the river's salinity. Since present levels are greater than desirable, an effort should be made to develop additional programs that will obtain lower salinity levels.

The February 1972 report states that the Bureau of Reclamation Mathematical Simulation Model for the Colorado River system will be used to evaluate the Water Quality Improvement Program. This will be an important tool to evaluate the program's progress. The results of this evaluation along with the general program progress should be reported annually to the conferees and other interested State agencies.

By letter of June 9, 1972 to the Secretary of the Interior, the Administrator of the Environmental Protection Agency concurred with the action of the State-Federal conferees as follows:

> "The conferees unanimously agreed, and I concur, that the basinwide salinity control program described by the Department of the Interior in its report, 'Colorado River Water Quality Improvement Program, February 1972,' appears to offer the best prospect for arresting or reducing the salinity increases in the river. This Agency endorses your program for achieving resolution of this salinity problem in furtherance of our mutual goal of water quality improvement. We are prepared to assist to the extent of our available resources."

It appears that Congressional legislation will be required to authorize the Bureau of Reclamation to construct, operate, and maintain salinity control works in the Colorado River Basin. It is anticipated that considerable effort by many interested entities will be required during the next water year in order to resolve the many problems associated with a salinity control program and to obtain Congressional authority to proceed with its implementation.

The Upper Colorado River Commission on behalf of its member States has consistently endeavored to maintain a sound policy pertaining to salinity control problems and the development, utilization, and conservation of the water resources of the Upper Colorado River Basin. Other resolutions concerning the salinity problem are to be found in the Commission's Twenty-Third Annual Report, September 30, 1971.

2. Principles and Standards for Planning Water and Related Land Resources

In conformity with the major purposes of the Upper Colorado River Basin Compact ". . . to provide for the equitable division and apportionment of the use of the waters of the Colorado River System, the use of which was apportioned in perpetuity to the Upper Basin by the Colorado River Compact" and ". . . to secure the expeditious agricultural and industrial development of the Upper Basin, the storage of water and to protect life and property from floods," the Upper Colorado River Commission acts to alleviate or remove proposed impediments to the future welfare of the citizens of its four member States. With regard to the *Proposed Principles and Standards for Planning Water and Related Land Resources* published by the Water Resources Council (36 F.R. 24144, Dec. 21, 1971) the Commission adopted the following resolution on March 20, 1972:

RESOLUTION
by
Upper Colorado River Commission
re:
Proposed Principles and Standards for Planning Water and Related Land Resources published by Water Resources Council 36 F. R. 24144, December 21, 1971

WHEREAS, Section 103 of the Water Resources Planning Act of 1965 provides that "The (Water Resources) Council shall establish, after such consultation with other interested entities, both Federal and non-Federal, as the Council may find appropriate, and with the approval of the President, principles, standards, and procedures for Federal participants in the preparation of comprehensive regional or river basin plans and for the formulation and evaluation of Federal water and related land resources projects"; and

WHEREAS, the Water Resources Council has published "Proposed Principles and Standards for Planning Water and Related Land Resources" in the Federal Register (36 F.R. 24144; Dec. 21, 1971) referred to hereinafter as "the WRC proposal"; and

WHEREAS, under the WRC proposal the discount rate used in the evaluation of projects would be predicated upon the "opportunity cost of all Federal investment activities" and would be increased from 5⅜% to 7% for the next five years, and presumably to 10% or more later, adversely affecting federal water development programs because higher discount rates would (a) be short sighted and force planners to trade off construction costs of a project with long-term benefits for higher operation and maintenance costs of a smaller, less-efficient project to the extent that the smaller project would be less economical in the long run, (b) inhibit or preclude federal participation in water resource development with a shifting of the financial burden to State, local, and private interests, (c) emphasize the impact of benefit-cost ratios and diminish the relative importance of social, regional, and environmental objectives, (d) conflict with the President's declared objectives of strengthening the national economy and reducing unemployment, and (f) force a moratorium on planning of future projects leaving insufficient time for needed projects to be constructed to alleviate resulting water shortages; and

WHEREAS, promulgation by the Executive Branch of an

increased discount rate based upon the "opportunity cost" concept is discriminatory against water resource development and usurps the policy-making prerogatives of the U.S. Congress; and

WHEREAS, the WRC proposal specifies that "The regional development objective will be used in formulating alternative plans only when directed" which fails to recognize that the national cultural level is the integration of local and regional cultural levels and is not based on national economic efficiency alone; and

WHEREAS, the WRC proposal provides that plans, programs, or projects which have been authorized by the Congress and on which actual construction or other similar activity has not commenced within five years after authorization will be reviewed in accordance with the principles and standards; and

WHEREAS, the objective "to enhance social well-being" has been deleted as a specific objective of water and related land resources planning, thus eliminating the opportunity to evaluate the effects of water resource development as a factor of the long-recognized function of the Federal government to provide economic and social opportunities for its citizens; and

WHEREAS, the WRC proposal acknowledges that policies related to cost sharing and reimbursement require an early review and such policies affect project evaluation and formulation as well as do "principles and standards"; and

WHEREAS, the "Proposed Principles and Standards for Planning Water and Related Land Resources" as published by the Water Resources Council are contrary to a major purpose of the Upper Colorado River Basin Compact "to secure the expeditious agricultural and industrial development of the Upper Basin, the storage of water and to protect life and property from floods";

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission representing the States of Colorado, New Mexico, Utah, and Wyoming, convened in regular session at Cheyenne, Wyoming on March 20, 1972 that:

1. the concept of establishing the discount rate in accordance with "the opportunity cost of all Federal investment activities" should be removed from the Principles and Standards for Planning Water and Related Land Resources and there should be inserted in lieu thereof a "government borrowing cost" concept, such as, "the discount rate for the formulation and evaluation of federal water and related land resources projects shall be, as computed to the nearest one-eighth of one percent, the average rate of interest payable by the Treasury on interest-bearing marketable securities

of the United States outstanding at the end of the fiscal year preceding such computation which upon original issue had terms to maturity of fifteen years or more";

2. the principles and standards should be modified to provide for the inclusion of the regional development objective in the formulation and evaluation of each water resource project;

3. (a) projects for which feasibility reports have been completed should not be reviewed in accordance with new principles and standards, and (b) projects authorized by the Congress for construction should not be reviewed in accordance with new principles and standards for a minimum of five years after formal adoption of the new principles and standards;

4. contributions of water resource development to the security of health, life, property and to the national security should be included as direct objectives of water and related land resources planning; and

5. the adoption of principles and standards under which water and related land resources projects are to be formulated and evaluated should be deferred until they can be adopted and implemented in coordination with revised cost-sharing and reimbursement policies;

BE IT FURTHER RESOLVED that the Water Resources Council is to be commended for accomplishing the complex and difficult work leading to the publishing of its "Proposed Principles and Standards for Planning Water and Related Land Resources" in the Federal Register and providing consultation with interested Federal, State, and local entities;

BE IT FURTHER RESOLVED that copies of this resolution be transmitted to the director and each official member of the Water Resources Council, the director of the Office of Management and Budget, the Congressional delegations of Colorado, New Mexico, Utah, and Wyoming, and other interested entities.

CERTIFICATE

I, IVAL V. GOSLIN, Executive Director of the Upper Colorado River Commission, do hereby certify that the above Resolution was adopted by the Upper Colorado River Commission at a Regular Meeting held in Cheyenne, Wyoming on March 20, 1972.

WITNESS my hand this 30th day of March, 1972.

/s/ Ival V. Goslin
Ival V. Goslin
Executive Director

3. Forecasts of Stream Flow

*APRIL 1, 1972 FORECASTS OF APRIL-JULY INFLOWS TO LAKE POWELL**

Agency	*Acre-Feet*
Soil Conservation Service Department of Agriculture	5,900,000
National Weather Service Department of Commerce	6,600,000
Bureau of Reclamation Department of the Interior	6,400,000

The reconstructed inflow to Lake Powell for the period April-July 1972, amounted to 5,578,000 acre-feet.**

During the April-July 1972 period storage of water in Colorado River Storage Project reservoirs above Lake Powell amounted to 1,544,000 acre-feet of which 66,000 acre-feet evaporated and 141,000 acre-feet went into bank storage.*** Excluding bank storage and evaporation, Fontenelle Reservoir stored 126,000 acre-feet; Blue Mesa 214,000 acre-feet; Morrow Point —1,000 acre-feet; Flaming Gorge 898,000 acre-feet; and Navajo Reservoir 100,000 acre-feet.

Actual inflow to Lake Powell for the period April-July 1972 was 4,041,000 acre-feet.**

The virgin flow of the Colorado River at Lee Ferry for the 1972 water year amounted to 11.9 million acre-feet.****

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*Including water to be stored upstream in other Colorado River Storage Project Reservoirs.
**Exclusive of evaporation and seepage losses.
***Including Fontenelle Reservoir on Green River in Wyoming.
****Provisional records subject to revision.

4. Summary of Reservoir Levels and Contents

Runoff during the spring of 1972 was considerably less than normal. Lake Powell rose to elevation 3619.71 feet (content 14,198,000 acre-feet) above mean sea level on June 27, 1972 and receded to elevation 3603.40 feet (content 12,488,000 acre-feet) by the end of the water year on September 30, 1972. At elevation 3619.71 feet on June 27, 1972, Lake Powell was 2.63 feet below its high point of 3622.34 feet (content 14,489,000 acre-feet) on July 11, 1971.

Lake Mead at the end of water year 1971-1972 contained 17,451,000 acre-feet* of available storage water at elevation 1158.49 feet. Lake Mead held 3.8 million acre-feet in the 35.7 feet above its rated head.

The results of the long-range reservoir operation procedures adopted by the Secretary of the Interior for Lake Powell, Flaming Gorge, Navajo, Blue Mesa, and Morrow Point reservoirs in the Upper Colorado River Basin and for Lake Mead in the Lower Basin are illustrated in the graphs on the following pages for the 1972 water year.

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*Based on April 1, 1967 Capacity Table revised according to Sedimentation Survey 1963-64.

STATISTICAL DATA FOR PRINCIPAL RESERVOIRS IN COLORADO RIVER BASIN

(Units: Elevation — feet; capacity — 1,000 acre-feet)

UPPER BASIN

Colorado River Storage Project

(Total Surface Capacity)

	Flaming Gorge		Navajo		Lake Powell		Blue Mesa		Morrow Point		Fontenelle	
	Elev.	Cap.	Elev.	Cap.	Elev.	Cap.	Elev.	Cap.	Elev.	Cap.	Elev.	Cap.
River elevation at dam (average tailwater)	5,603	0	5,720	0	3,138	0	7,160	0	6,775	0	—	—
Dead Storage	5,740	40	5,882.5	175	3,370	1,998	7,358	111	6,808	0	6,408	0.56
Inactive Storage (minimum power pool)	5,871	273	5,990[1]	673	3,490	6,124	7,393	192	7,100	75	—	—
Rated Head	5,946	1,102	—	—	3,570	11,426	7,438	361	7,108	80	6,491	234
Maximum Storage (without surcharge)	6,040	3,789	6,085	1,709	3,700	27,000	7,519	941	7,160	117	6,506	345

[1]Required for Navajo Indian Irrigation Project

STATISTICAL DATA FOR PRINCIPAL RESERVOIRS IN COLORADO RIVER BASIN

(Units: Elevation — feet; capacity — 1,000 acre-feet)

LOWER BASIN

(Usable Surface Capacity)

	Lake Mead		Lake Mohave		Lake Havasu	
	Elev.	Capacity	Elev.	Capacity	Elev.	Capacity
River elevation at dam (average tailwater)	646	(-2,378)	506	(-8.5)	370	(-28.6)
Dead Storage	895	0	533.39	0	400	0
Inactive Storage (minimum power pool)	1,050	7,471	570	217.5	440[1]	439.4
Rated Head	1,122.8	13,633	—	—	—	—
Maximum Storage (without surcharge)	1,221.4	26,159	647	1,809.8	450	619.4

[1]Contractual minimum for delivery to Metropolitan Water Ditsrict's Colorado River Aqueduct.

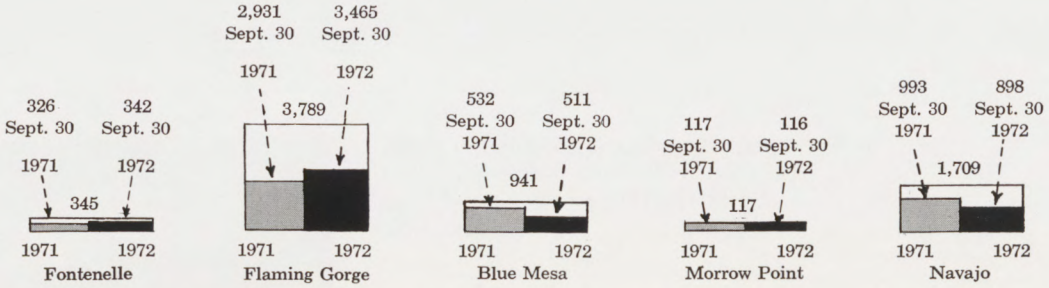
STORAGE IN PRINCIPAL RESERVOIRS AT END OF WATER YEAR

UPPER BASIN

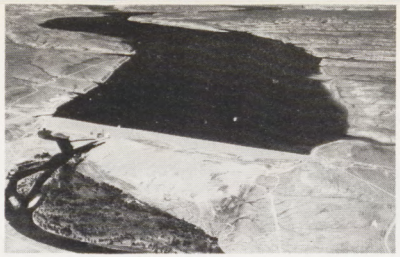
TOTAL STORAGE CONTENTS*

(1,000 Acre-Feet)

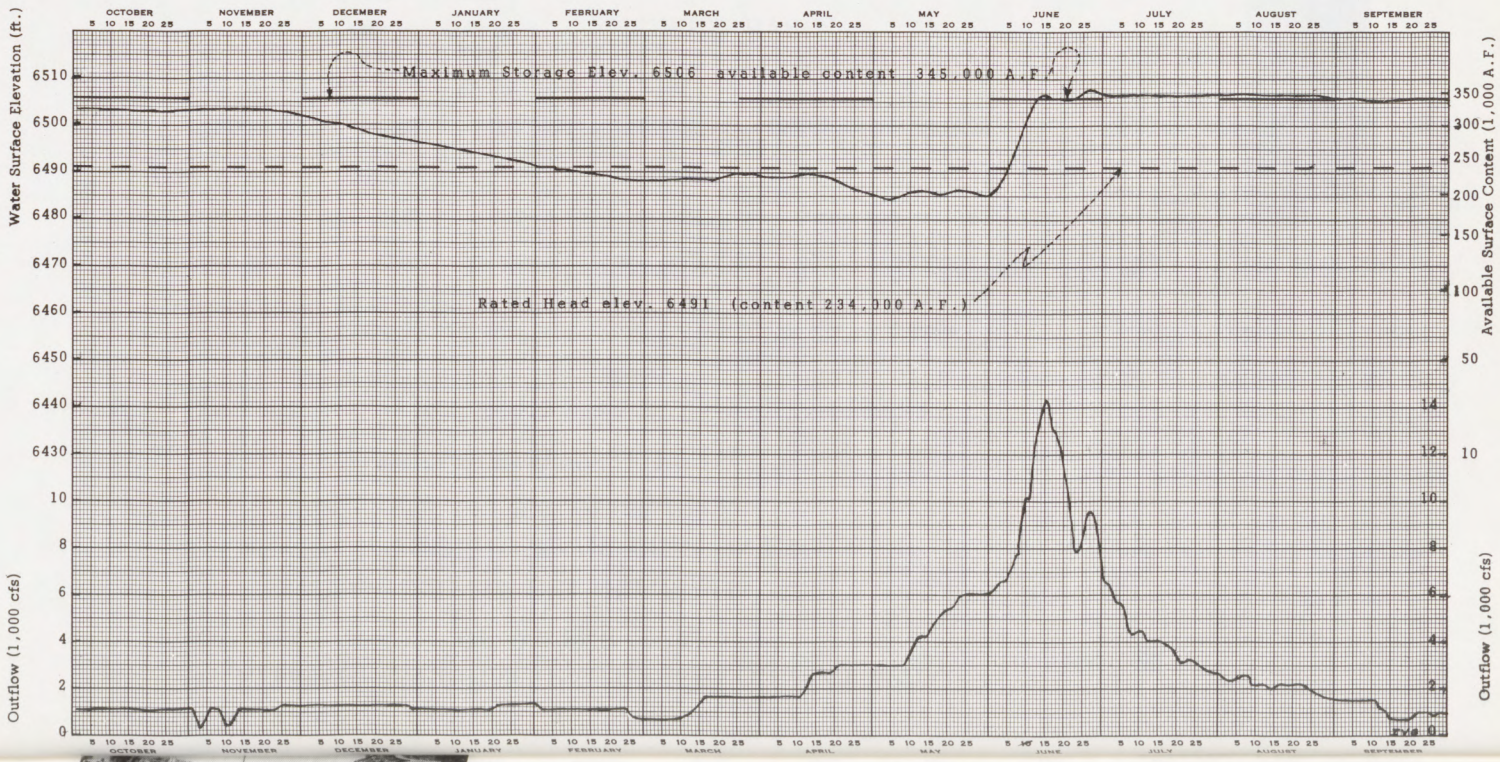
RESERVOIR	Sept. 30, 1971	Percent of Capacity	Sept. 30, 1972	Percent of Capacity	Change in Contents
Fontenelle	326	94	342	99	+ 16
Flaming Gorge	2,931	77	3,465	91	+ 534
Blue Mesa	532	57	511	54	— 21
Morrow Point	117	100	116	99	— 1
Navajo	993	58	898	53	— 95
Lake Powell	13,609	50	12,488	46	—1,121
Total	18,508	(54.6)	17,820	(52.6)	— 688



*Excludes Bank Storage

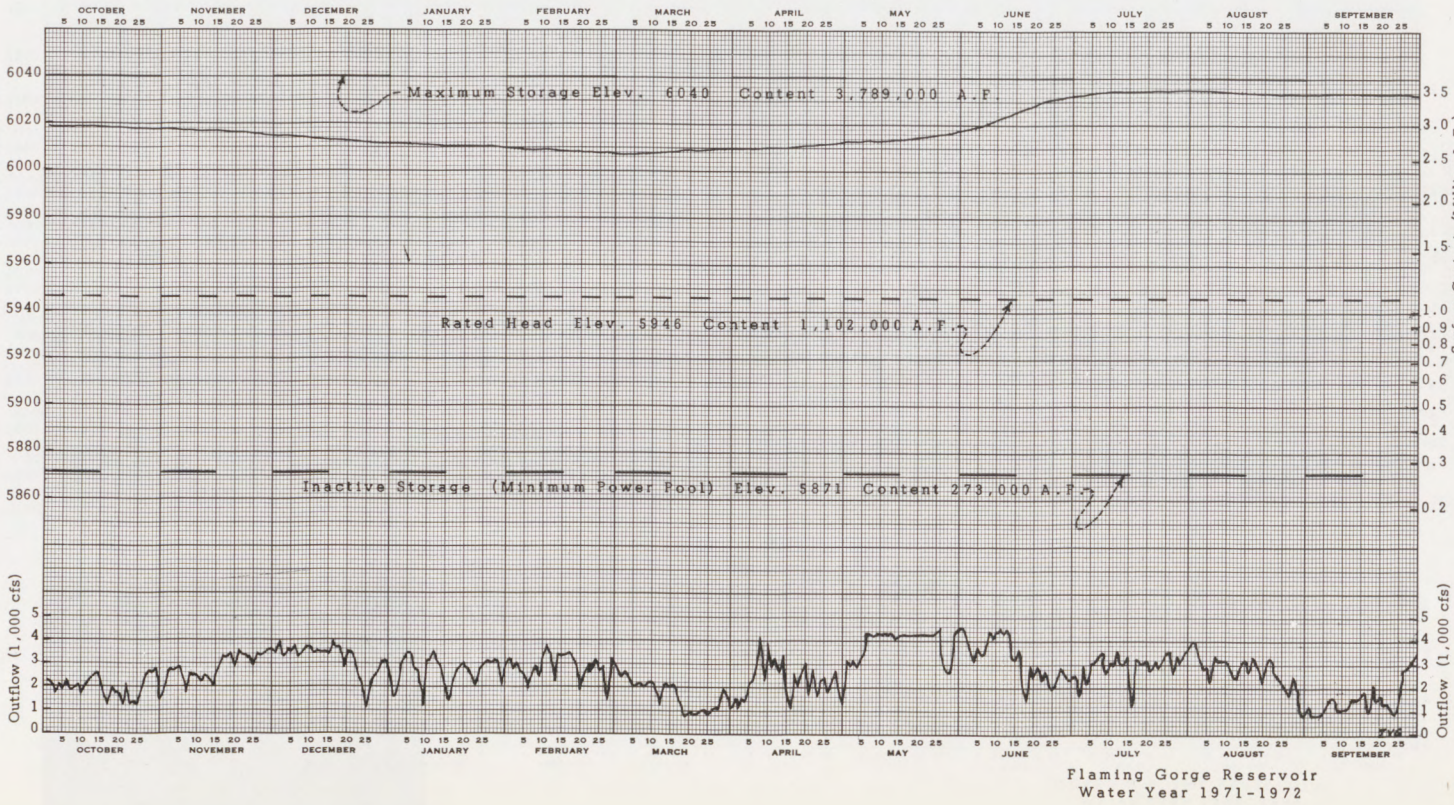


FONTENELLE
Storage Capacity — 345,000 acre-feet
Power Generating Capacity — 10,000 KW
Water in Storage 9/30/72 — 342,000 acre-feet



FLAMING GORGE

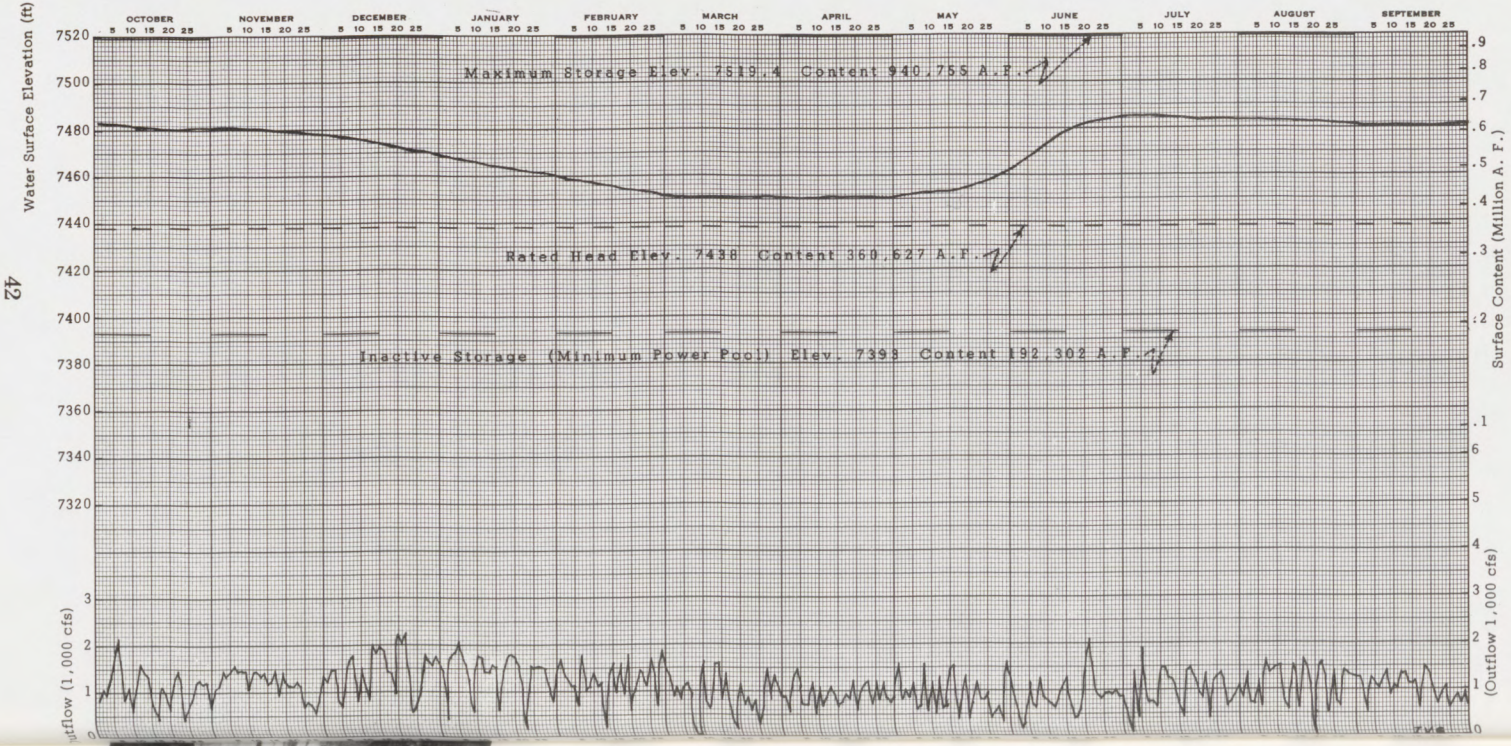
Storage Capacity — 3,789,000 acre-feet
Power Generating Capacity — 108,000 KW
Water in Storage 9/30/72 — 3,465,000 acre-feet

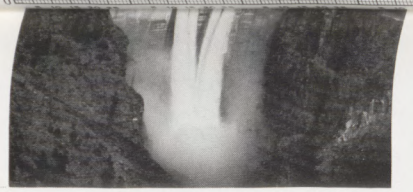


Flaming Gorge Reservoir
Water Year 1971-1972

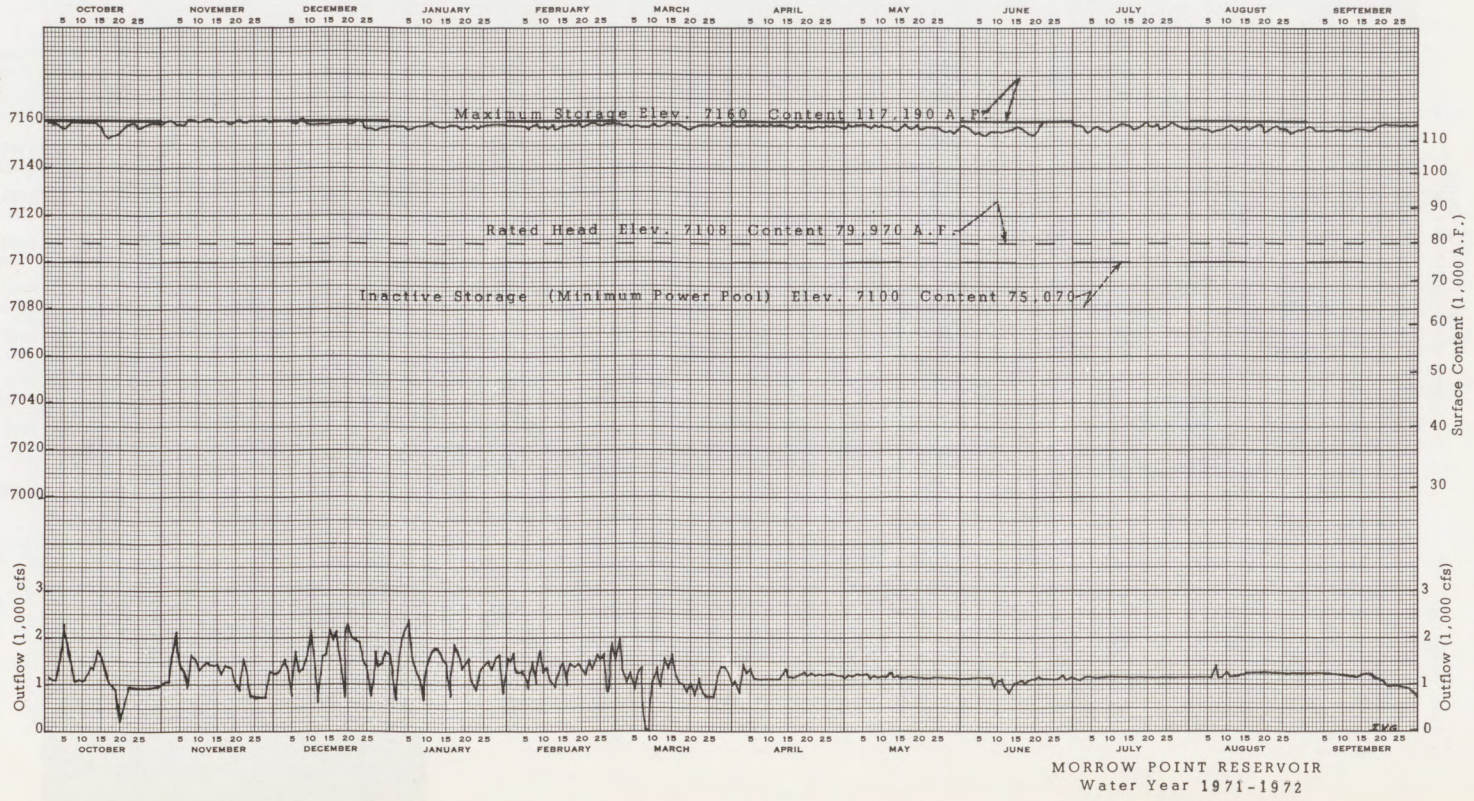
BLUE MESA

Storage Capacity — 941,000 acre-feet
Power Generating Capacity — 60,000 KW
Water in Storage 9/30/72 — 511,000 acre-feet



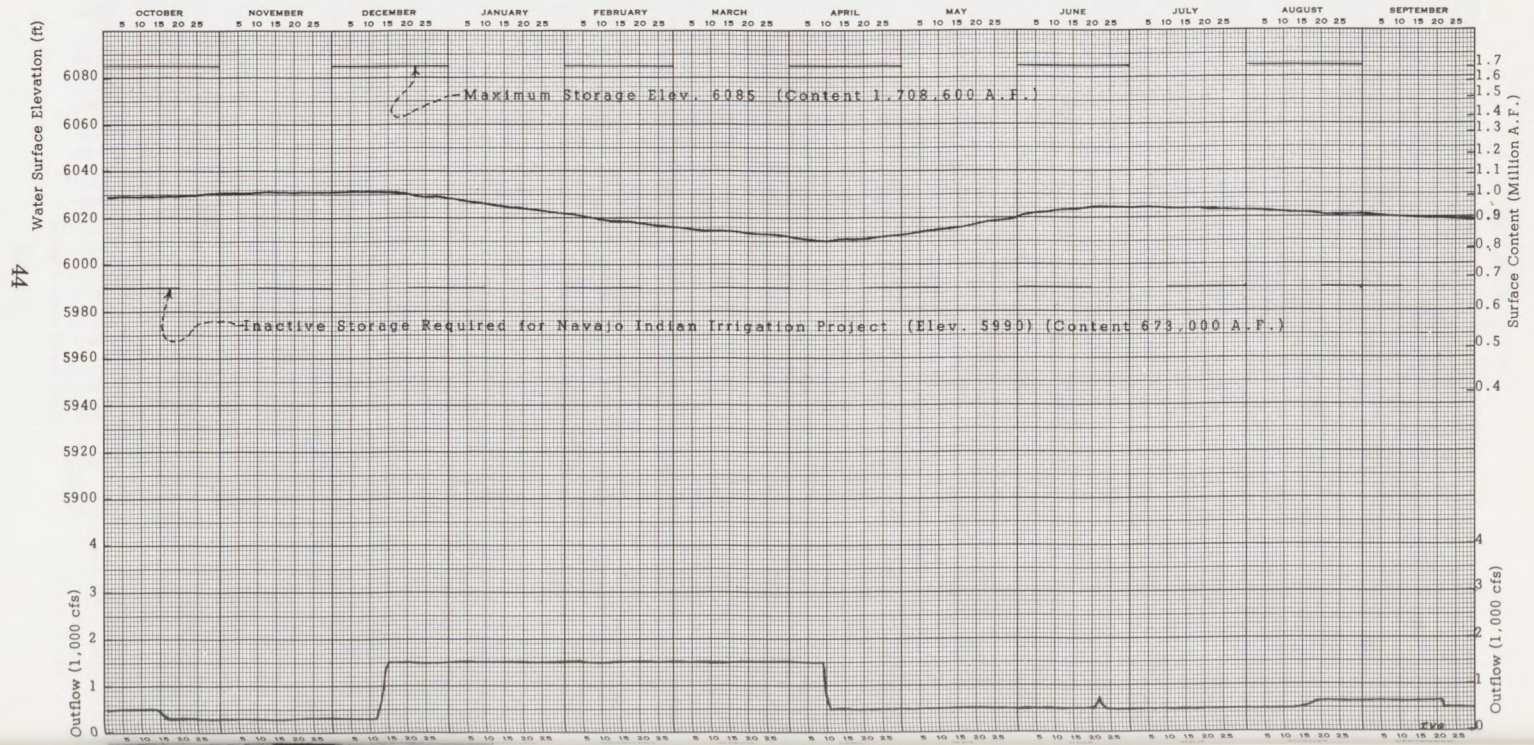


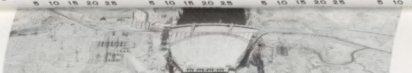
MORROW POINT
Storage Capacity — 117,000 acre-feet
Power Generating Capacity — 120,000 KW
Water in Storage 9/30/72 — 116,000 acre-feet



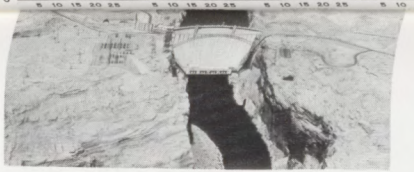
MORROW POINT RESERVOIR
Water Year 1971-1972

NAVAJO
Storage Capacity — 1,709,000 acre-feet
Power Generating Capacity — 0
Water in Storage 9/30/72 — 898,000 acre-feet





LAKE POWELL — GLEN CANYON DAM



LAKE POWELL - GLEN CANYON DAM

Storage Capacity — 27,000,000 acre-feet

Power Generating Capacity — 950,000 KW

Water in Storage 9/30/72 — 12,488,000 acre-feet

LAKE POWELL
Water Year 1971-1972

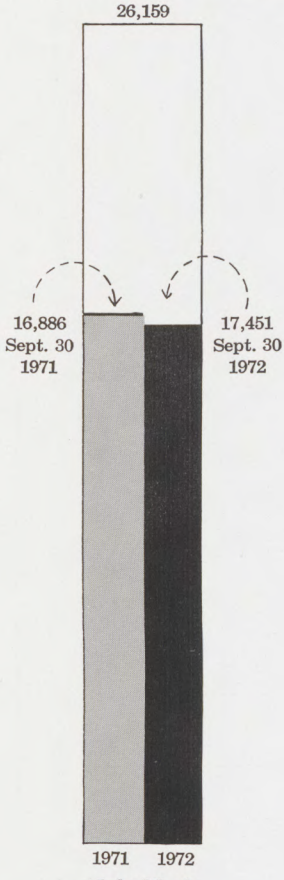
STORAGE IN PRINCIPAL RESERVOIRS AT END OF WATER YEAR

LOWER BASIN

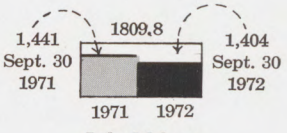
USABLE STORAGE CONTENTS

(1,000 Acre-Feet)

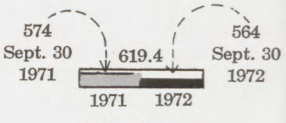
RESERVOIR	Sept. 30, 1971	Percent of Capacity	Sept. 30, 1972	Percent of Capacity	Change in Contents
Lake Mead*	16,886	65	17,451	67	+565
Lake Mohave	1,441	80	1,404	78	— 37
Lake Havasu	574	93	564	91	— 10
Total	18,901	(66)	19,419	(68)	+518



Lake Mead

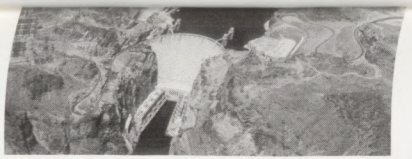


Lake Mohave



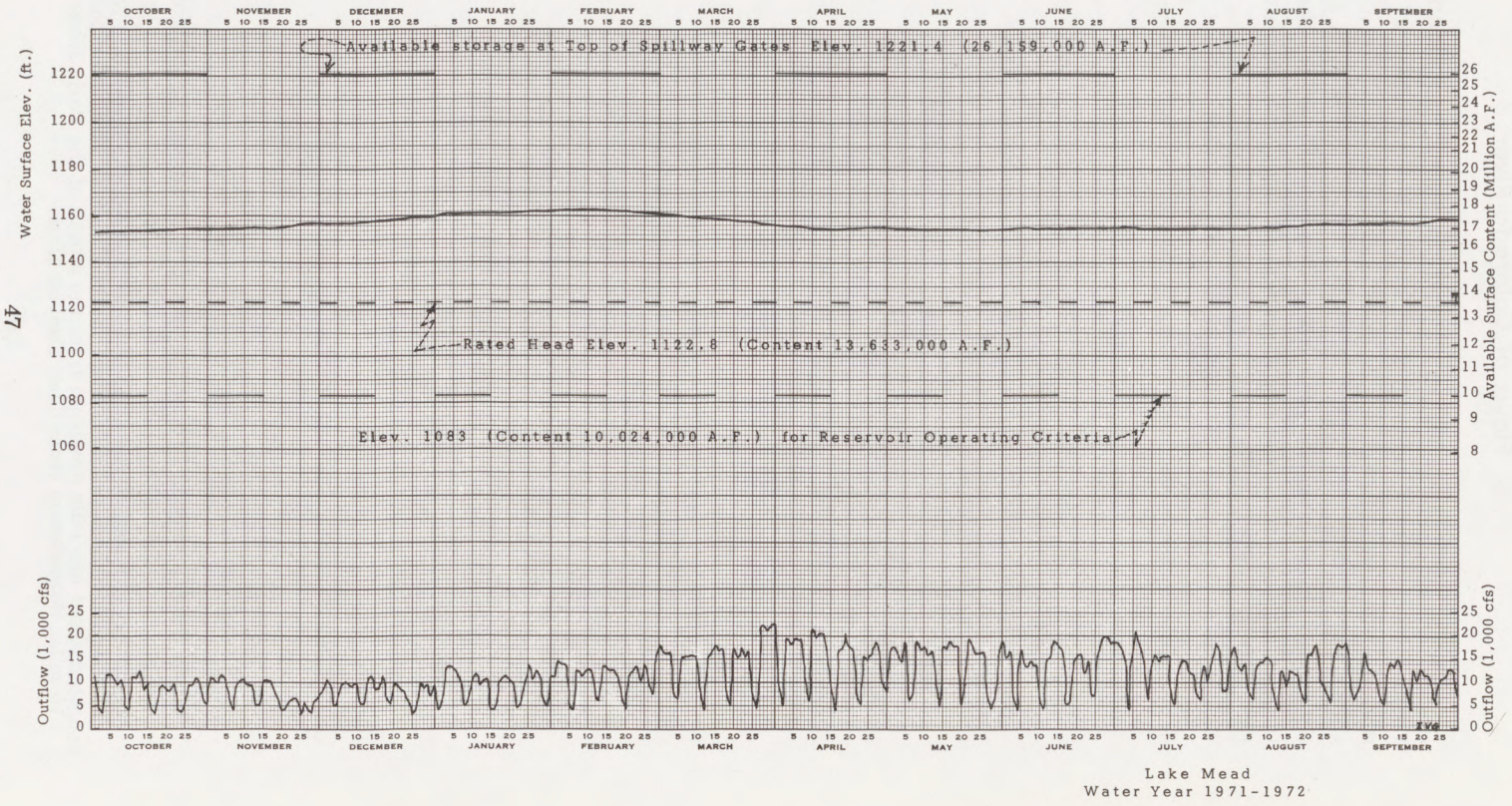
Lake Havasu

*Contents based on April 1967 revised capacity tables according to 1963-64 sedimentation survey at Lake Mead.



LAKE MEAD - HOOVER DAM

Storage Capacity — 26,159,000 acre-feet
Power Generating Capacity — 1,344,800 KW
Water in Storage 9/30/72 — 17,451,000 acre-feet



Lake Mead
Water Year 1971-1972

5. Flows of Colorado River

Table VIII(a) on pages 49 and 50 shows in column (3) the virgin flow* of the Colorado River at Lee Ferry, Arizona** as estimated at the end of each water year from 1896 to 1972. Column (4) shows the average virgin flow from any given year within the period computed through water year 1972. Column (5) shows the average virgin flow for each progressive period of ten years beginning with the 10-year period ending on September 30, 1905.

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*virgin flow=estimated flow of the stream if it were in its natural state and unaffected by the activities of man.

**Lee Ferry, Arizona is the division point between the upper and lower basins of the Colorado River as defined in the Colorado River Compact. It is located about one mile upstream from the mouth of the Paria River and about 16 miles downstream from Glen Canyon Dam.

TABLE VIII (a)

ESTIMATED VIRGIN FLOW AT LEE FERRY
(million acre-feet)

(1)	(2)	(3)	(4)	(5)
Years to 1972	*Year Ending Sept. 30*	*Estimated Virgin Flow*	*Average to 1972*	*Progressive 10-year Running Average*
77	1896	10.1	14.8	
76	97	18.0	14.9	
75	98	13.8	14.8	
74	99	15.9	14.8	
73	1900	13.2	14.8	
72	01	13.6	14.8	
71	02	9.4	14.8	
70	03	14.8	14.9	
69	04	15.6	14.9	
68	05	16.0	14.9	14.0
67	06	19.1	14.9	14.9
66	07	23.4	14.8	15.5
65	08	12.9	14.7	15.4
64	09	23.3	14.7	16.1
63	1910	14.2	14.6	16.2
62	11	16.0	14.6	16.5
61	12	20.5	14.6	17.6
60	13	14.5	14.5	17.6
59	14	21.2	14.5	18.1
58	15	14.0	14.4	17.9
57	16	19.2	14.4	17.9
56	17	24.0	14.3	18.0
55	18	15.3	14.1	18.2
54	19	12.5	14.1	17.1
53	1920	22.0	14.1	17.9
52	21	23.0	14.0	18.6
51	22	18.3	13.8	18.4
50	23	18.3	13.7	18.8
49	24	14.2	13.6	18.1
48	25	13.0	13.6	18.0
47	26	15.9	13.6	17.6
46	27	18.6	13.6	17.1
45	28	17.3	13.4	17.3
44	29	21.4	13.4	18.2
43	1930	14.9	13.2	17.5
42	31	7.8	13.1	16.0
41	32	17.2	13.3	15.9
40	33	11.4	13.2	15.2

(Continued)

TABLE VIII (a) — continued

ESTIMATED VIRGIN FLOW AT LEE FERRY
(million acre-feet)

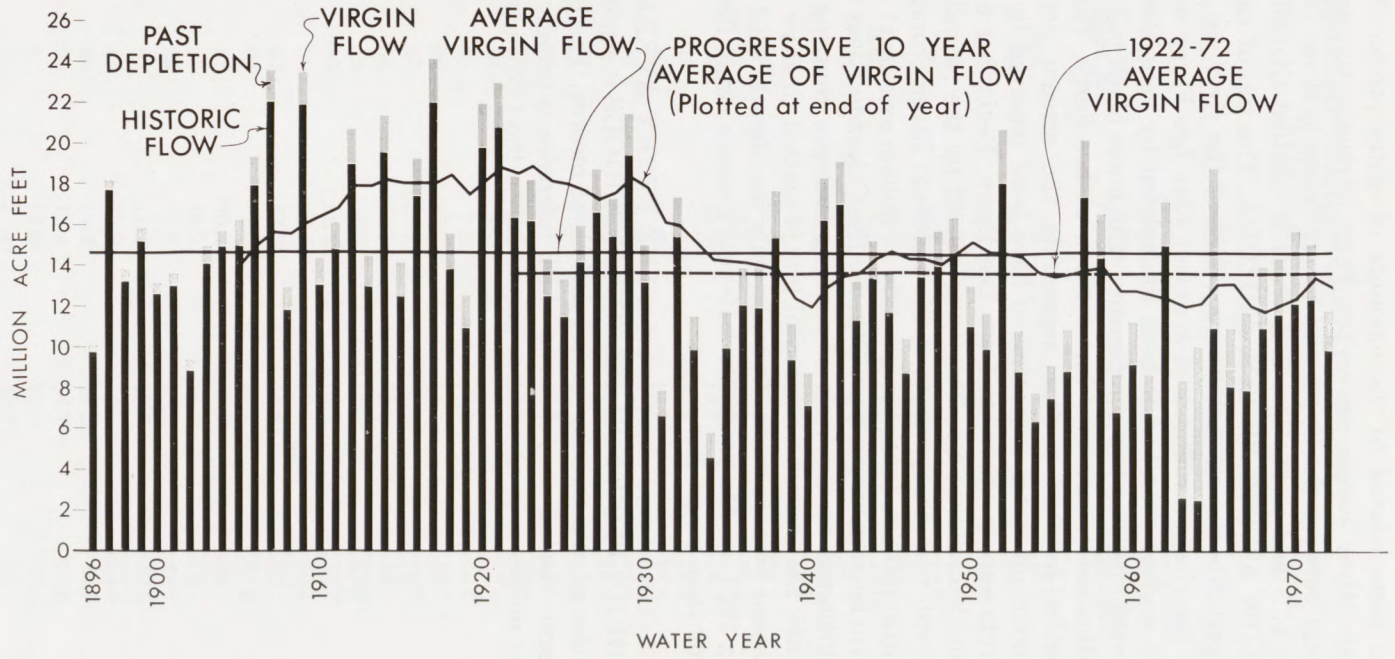
(1)	(2)	(3)	(4)	(5)
Years to 1972	*Year Ending Sept. 30*	*Estimated Virgin Flow*	*Average to 1972*	*Progressive 10-year Running Average*
39	1934	5.6	13.2	14.3
38	35	11.5	13.4	14.2
37	36	13.8	13.5	14.0
36	37	13.7	13.5	13.5
35	38	17.5	13.4	13.5
34	39	11.1	13.3	12.5
33	1940	8.6	13.4	11.8
32	41	18.1	13.5	12.8
31	42	19.1	13.4	13.0
30	43	13.1	13.2	13.2
29	44	15.2	13.2	14.2
28	45	13.4	13.1	14.4
27	46	10.4	13.1	14.0
26	47	15.5	13.2	14.2
25	48	15.6	13.1	14.0
24	49	16.4	13.0	14.5
23	1950	12.9	12.9	15.0
22	51	11.6	12.9	14.3
21	52	20.7	13.0	14.5
20	53	10.6	12.6	14.2
19	54	7.7	12.7	13.5
18	55	9.2	13.0	13.1
17	56	10.7	13.2	13.1
16	57	20.1	13.3	13.5
15	58	16.5	12.9	13.6
14	59	8.6	12.6	12.9
13	1960	11.3	12.9	12.7
12	61	8.5	13.1	12.4
11	62	17.3	13.5	12.1
10	63	8.5	13.1	11.8
9	64	10.2	13.6	12.1
8	65	18.9	14.0	13.1
7	66	11.2	13.3	13.1
6	67	11.9	13.7	12.3
5	68	13.6	14.0	12.0
4	69	14.4	14.2	12.6
3	1970	15.4	14.1	13.0
2	71	14.9*	13.4	13.6
1	72	11.9*	11.9	13.1

*Based upon provisional streamflow records subject to revision.

The next two charts illustrate some of the pertinent historical facts related to the amounts of water produced by the Colorado River system above Lee Ferry, Arizona, the compact division point between the Upper and Lower Colorado River Basins. See maps on p. 3 and p. 65. The first chart is entitled COLORADO RIVER FLOW AT LEE FERRY, ARIZONA. The top of each vertical bar represents the estimated virgin flow of the river, i.e., what the flow of the river in millions of acre-feet past Lee Ferry would have been for a given year had it been undepleted by activities of man. Each vertical bar has two components. The lower black part represents the estimated or measured historic flow at Lee Ferry. The upper, lighter vertical-hatched portion represents the stream depletion, or the amount of water estimated to have been removed by man from the virgin supply upstream from Lee Ferry. Beginning in 1962, part of this depletion at Lee Ferry was caused by the retention and storage of water in storage units of the Colorado River Storage Project. The horizontal line (at approximately 15 million acre-feet) shows the long-term average virgin flow. Because the Colorado River Compact is administered on the basis of running averages covering periods of ten years, the irregular horizontal line is plotted to show the progressive 10-year average virgin flows. In only one decade (1941-1950) following 1923 has the progressive 10-year average virgin flow exceeded the long-term virgin flow.

The second chart entitled LEE FERRY AVERAGE ANNUAL VIRGIN FLOW FOR SELECTED PERIODS is a pictorial representation of averages for several periods of records. The periods of water years selected were those to which reference is usually made for various purposes in documents pertaining to the Colorado River System.

COLORADO RIVER FLOW AT LEE FERRY, ARIZONA



LEE FERRY AVERAGE ANNUAL VIRGIN FLOW FOR SELECTED PERIODS

Several important hydrologic facts are apparent from these two charts:

(1) For the period 1896-1921, prior to the Colorado River Compact of 1922, the average was estimated to be 16.8 million acre-feet per year, which is considerably greater than for any other period selected, including the long-term average. A stream gaging station at Lee Ferry was not installed until 1921. Therefore, the annual flows at Lee Ferry prior to the 1922 Compact are estimates based upon records obtained at other stations.

(2) A great majority of the high flows indicated were prior to 1929.

(3) In only one decade (1941-1950) following 1923 has the progressive 10-year average virgin flow exceeded the average virgin flow. The trend for 49 years has been downward as can be seen from the first chart.

(4) For the longest period shown, 1896-1972, the estimated annual average is 14.8 million acre-feet.

(5) For the next longest period, 1906-1972, the estimated annual average virgin flow is 14.9 million acre-feet. Many of the early records for this series of years, as well as for the 1896-1972 period were based upon the estimates of flows made at other gaging stations as mentioned in (1) above. This average is slightly less than that used (1906-67) as the basis for justification of a water supply for the Central Arizona Project which was authorized in 1968.

(6) The average annual virgin flow for 1914-45 amounts to 15.6 million acre-feet. This is the period of record used by the negotiators of the Upper Colorado River Basin Compact of 1948.

(7) For 1922-1972, the total period since the signing of the Colorado River Compact, the annual average is 13.8 million acre-feet. Records for this series of years are based upon actual measurements of flows at Lee Ferry, the gaging station there having been installed in 1921. The general trend throughout almost this entire period has been toward a decreasing 10-year running average virgin flow.

(8) The downward trend is further demonstrated by the fact that for the 1930-1972 period the annual average had dropped to 13.2 million acre-feet.

(9) Two completely unrelated 10-year periods of minimum flows have occurred since 1930. These are series of years 1931-1940

and 1954-1963 for which the average annual virgin flow for *each* 10-year period amounted to only 11.8 million acre-feet.

(10) The annual average virgin flow for a 12-year period, 1953-1964, amounted to only 11.6 million acre-feet.

6. Other Upper Colorado River Basin Studies

Because the Colorado River Storage Project is a water resources development plan of the Upper Colorado River Basin, the Upper Colorado River Commission has determined that active participation in investigations, studies and plans related to the present and future construction and operation of water-regulating, water-diversion, power-generating, and water-utilization facilities is both necessary and expedient. The Commission has a primary duty to the four Upper Division States to do all things necessary to protect the interests of its member States in the water resources of the Colorado River and to aid the best and most expeditious development of those resources. In fulfilling this responsibility, the Commission's staff has been actively engaged during the past year in making many hydrologic and engineering studies relative to the utilization and distribution of the water resources of the Upper Colorado River Basin.

B. LEGAL

As indicated in the Twenty-Third Annual Report, there was pending in the United States District Court, District of Utah, a case, *Friends of the Earth, et al. v. Secretary of the Interior, et al.* (Civil No. 116-71), which sought to prevent the waters of Lake Powell from entering the Rainbow Bridge National Monument. This case had not come to trial at the close of the 1971 water year. In January of 1972 this case was tried before the District Court and submitted for final determination. At the close of the 1972 water year the Judge had not rendered his decision.

The publication of the Water Newsletter was continued. It is anticipated that this Newsletter will be expanded to cover not only its present subject matter, but also to include pertinent environmental material, particularly environmental lawsuits. It is hoped that such coverage will keep the Commission and its staff advised in this particular area.

A number of memoranda on various legal problems have been prepared during the course of the 1972 water year. It is believed that particular attention will be required to be given in the next water year to land use Bills which may be introduced in the Congress.

During the past year a number of memoranda were prepared on various legal problems that fell within the scope of the Upper Colorado River Commission's activities. There has also been a continuing program of acquisition of historical and current information that sheds light on the growing body of law known as the "law of the river," and in which members of the Commission and their legal advisers have a primary interest. This material has been added to the Commission's library for future reference by the member States.

C. EDUCATION — INFORMATION

General Cooperation

The Upper Colorado River Commission has directed its Education and Information program toward promoting interstate cooperation, harmony and united efforts; developing an understanding in other sections of the United States of the problems of the Upper Colorado River Basin; and the creation of a favorable attitude on the part of the Congress with respect to the development of the industrial and agricultural resources of the Upper Colorado River Basin.

Efforts were continued in the gathering and preparation of engineering and geologic information pertaining to Rainbow Bridge National Monument and the lawsuit concerning the encroachment of the waters of Lake Powell within its boundaries. A report on the *Geological and Structural Evaluation of Rainbow Bridge* was completed for the Upper Colorado River Commission by Dames & Moore, prominent consulting engineers in the applied earth sciences.

The Commission has continued to cooperate with members of the Congressional Delegations from the Upper Colorado River Basin States and with officials of the Department of the Interior and the Bureau of Reclamation in seeking appropriations of funds by the Congress for the construction of the Storage Units and participating projects authorized for construction, as well as funds for the investigations of additional participating projects that are given priority in planning in the Colorado River Storage Project Act. As part of this cooperation the Commission's Executive Director has been in Washington, D.C. at intermittent periods acting as liaison between the Congress and States and various departments of government, supplying information, arranging and taking part in Congressional hearings, and providing other assistance requested.

Relief Model

The Relief Model of the Upper Colorado River Basin and adjacent areas is available for display at conventions and other public events and has proved to be extremely interesting and instructive in promoting an understanding of the physical and hydrologic problems of the Upper Colorado River Basin and the development of its water and other natural resources. (See last page of this report.)

Motion Pictures

The motion pictures in the Commission's film library continue to be widely distributed. In addition to filling requests for the

picture entitled "The Lakes Made For You" showing the recreational benefits of man-made reservoirs, and "Mountain Skywater" which is concerned with atmospheric water research by the Bureau of Reclamation, hundreds of requests have also been filled for motion pictures about Glen Canyon and Flaming Gorge reservoirs and other river basin subjects by utilizing films that have been supplied to the Commission by the Bureau of Reclamation, et al. Widespread interest has been created in recent years by schools, colleges, civic clubs, etc., in the benefits of river basin development. Undoubtedly some of this increased interest can be traced to the fact that since the completion of Flaming Gorge, Glen Canyon, Blue Mesa, and Navajo dams and reservoirs the American public is becoming more aware of the national benefits of man-made bodies of water in the Colorado River Basin and elsewhere.

Library

Efforts are being continued to accumulate all types of engineering, legal, economics, and semi-technical documents related to the Colorado River Basin to comprise a well-equipped and efficiently operating permanent library. Many thousands of pages of documents have been placed on microfilm. Information in the Commission's library will be available to any of its member States on short notice should a need arise. Studies are being made and supplemented of many problems associated with the development, utilization, and conservation of water and hydro-electric resources of the Colorado River Basin.

IX. Legislation

The 1972 water year continued to be a year of hearings and debates in the field of water and related resources development so far as Congress was concerned. On November 2, 1971 the Senate passed S. 2770 (the Federal Water Pollution Control Act Amendments of 1971). This Bill made extensive and far-reaching changes in the Federal Water Pollution Control Act. Senate Report No. 92-414 accompanied S. 2770. On March 29, 1972 the House passed H.R. 11896, its counterpart version of the Federal Water Pollution Control Act Amendments of 1972. The House Report was 92-911. The House substituted the language of H.R. 11896 for the Senate-passed language of S. 2770.

Near the close of the water year, September 28, 1972, the Committee of Conference submitted the Conference Report, Senate Report No. 92-1296 and House Report No. 92-1465 to accompany S. 2770. As of the close of the water year, neither House had acted upon the Conference Report.

The Senate considered and passed S. 632 (Senate Report No. 92-869). This Bill was to be a Land Use Policy and Planning Assistance Act. It was not brought to the floor of the House of Representatives. This Bill may be reintroduced in the 93rd Congress. Its enactment would have far-reaching consequences in the resource development field.

The Act of August 10, 1972 (86 Stat. 525) increased the original authorized spending ceiling of $760,000,000 of section 12 of the Colorado River Storage Project Act (70 Stat. 105) by stating:

> That in order to provide for completion of construction of the Curecanti, Flaming Gorge, Glen Canyon, and Navajo units, the transmission division of the Colorado River storage project, and for completion of construction of the following participating projects: Central Utah (initial phase — Bonneville, Jensen, Upalco, and Vernal units), Emery County, Florida, Hammond, LaBarge, Lyman, Paonia, Seedskadee, Silt, and Smith Fork; the amount which section 12 of the Act of April 11, 1956 (79 Stat. 105) authorizes to be appropriated is hereby further increased by the sum of $610,000,000, plus or minus such amounts, if any, as may be required, by reason of changes in construction costs as indicated by engineering cost indexes applicable to the type of construction involved. This additional sum shall be available solely for continuing construction of the previously authorized units and projects named herein.

X. Colorado River Storage Project and Participating Projects

A. APPROPRIATION OF FUNDS BY THE UNITED STATES CONGRESS

1. Fiscal Year 1972

On October 5, 1971 the President signed the "Public Works for Water and Power Development and Atomic Energy Commission Appropriation Act, 1972." Details of the funding of the storage units and projects of the Colorado River Storage Project were the same as in the conference report approved by the House and Senate on September 22, 1971. See page 56 of the Commission's Twenty-Third Annual Report.

2. Fiscal Year 1973

On January 24, 1972 President Nixon in the annual budget message to the Congress recommended a construction program for fiscal year 1973 of $56,590,000 for the Colorado River Storage Project and participating projects. Of this total, $46,165,000 were recommended to finance activities of the Bureau of Reclamation, $425,000 the National Park Service, $504,000 the Bureau of Sport Fisheries and Wildlife, and $10,425,000 for the Bureau of Indian Affairs to be used for construction of the Navajo Indian Irrigation Project. Due to the releasing of funds appopriated by the Congress in the previous year and impounded by the Office of Management and Budget, new monies requested to be appropriated amounted to $55,975,000, with $44,600,000 to the Upper Colorado River Basin Fund, $420,000 to the National Park Service, $500,000 to the Bureau of Sport Fisheries and Wildlife, and $10,425,000 to the Bureau of Indian Affairs for the Navajo Indian Irrigation Project construction and $30,000 for Indian development of recreation, fish and wildlife facilities in Utah.

The President's budget also contained an item of $10,098,000 for Operation and Maintenance of the Colorado River Storage Project. The Colorado River Storage Project Act provides in Section 5(c) that all revenues collected in connection with the operation of the Storage Project and participating projects shall be credited to the Upper Colorado River Basin Fund and shall be available without further appropriation for defraying the costs of operation, maintenance, replacement, and emergency expenditures for all facilities of the Storage Project and participating projects. Operation

and maintenance costs allocated to Flood Control and Fish and Wildlife facilities are non-reimbursable in accordance with Section 6 of the Colorado River Storage Project Act, and are to be financed by appropriated funds.

The fiscal year 1973 Operation and Maintenance program for the Colorado River Storage Project provided for operation and maintenance activities on Flaming Gorge, Glen Canyon, Navajo, and Curecanti Storage Units; the transmission lines, and the Florida, Paonia, and Seedskadee participating projects. The program also provided for the continued purchase of power to cover requirements caused by diminutions in energy generation and capacity impairment created at Hoover Dam powerplants as the result of operations of dams and reservoirs of the Colorado River Storage Project, and provided for quality of water, consumptive use, and flood control studies.

The total fiscal year 1973 O & M program was entirely funded by revenues received from the sales of electric energy and water.

The Upper Colorado River Commission on April 13, 1972 submitted testimony to the Subcommittee on the Department of the Interior and Related Agencies of the Committee on Appropriations of the House of Representatives in support of construction funds for the Navajo Indian Irrigation Project. Similar testimony was also presented to the Senate Committee on Appropriations.

Witnesses representing the Upper Colorado River Commission and various entities in its member States on May 16, 1972 presented testimony to the Subcommittees on Public Works of the House and Senate Committees on Appropriations in support of funds to continue investigations, planning, and construction of the Colorado River Storage Project and participating projects.

On June 26, 1972 the House of Representatives passed H.R. 15586, its Public Works Appropriation Bill for fiscal year 1973. The House in this Bill approved the appropriation of $45,750,000.

On June 30, 1972 the Senate passed its version of the same Bill with an increase to $47,300,000.

The Conference Committee's Report (House Report No. 92-1310) was approved by both houses of the Congress on August 10, 1972 with an appropriation of funds amounting to $46,720,000.

The Public Works Appropriations Act for 1973 again contained language with reference to the protection of Rainbow Bridge National Monument, as follows:

Provided, that no part of the funds herein approved shall

be available for construction or operation of facilities to prevent waters of Lake Powell from entering any national monument.

On August 25, 1972 the President approved the "Public Works for Water and Power Development and Atomic Energy Commission Appropriation Act, 1973."

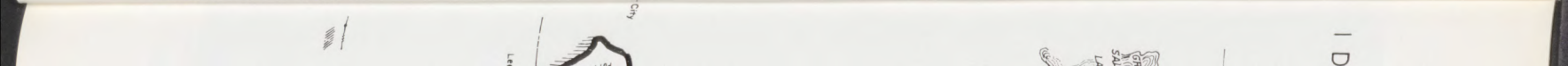
Table X(a) illustrates a general recapitulation of action by the Second Session of the 92d Congress with regard to appropriations of funds for the construction program of the Colorado River Storage Project and participating projects.

The total appropriation to the Bureau of Indian Affairs for fiscal 1973 for continuing construction of the Navajo Indian Irrigation Project amounted to $10,500,000 (P.L. 92-369, the "Department of the Interior and Related Agencies Appropriation Act, 1973.")

TABLE X (a)
COLORADO RIVER STORAGE PROJECT
Fiscal Year 1973 Appropriations

Project and State	*President's Budget Jan. 24, 1972*	*H.R. 15586 Passed House June 26, 1972*	*H.R. 15586 Passed Senate June 30, 1972*	*Conference Report approved by House & Senate August 10, 1972*
Colorado River Storage Project:				
Curecanti Unit, Colorado	$ 4,800,000	$ 4,800,000	$ 4,800,000	$ 4,800,000
Transmission Division, Various States	4,200,000	4,200,000	4,200,000	4,200,000
Participating Project:				
Central Utah, Bonneville Unit, Utah	29,420,000	29,420,000	29,420,000	29,420,000
Central Utah, Jensen Unit, Utah	850,000	850,000	850,000	850,000
Central Utah, Upalco Unit, Utah	—	—	300,000	220,000
Dallas Creek, Colorado	—	—	250,000	250,000
Fruitland Mesa, Colorado	—	—	500,000	500,000
Lyman, Wyoming-Utah	1,655,000	1,655,000	1,655,000	1,655,000
San Juan-Chama, Colo.-New Mexico	1,925,000	1,925,000	1,925,000	1,925,000
Savery-Pot Hook, Wyoming-Colorado	—	—	500,000	—*
Drainage and Minor Construction, Various	2,222,000	2,222,000	2,222,000	2,222,000
Advance Planning, Various	1,355,000	1,555,000	1,555,000	1,555,000
Initial Underfinancing, an Undistributed Reduction based on Anticipated Delays	—1,827,000	—1,827,000	—1,827,000	—1,827,000
Subtotal — Section 5 of CRSP Act	$44,600,000	$44,800,000	$46,350,000	$45,770,000
Recreation, Fish and Wildlife Facilities:				
Bureau of Indian Affairs	$ 30,000	$ 30,000	$ 30,000	$ 30,000
National Park Service, Various States	420,000	420,000	420,000	420,000
Bureau of Sport Fisheries and Wildlife	500,000	500,000	500,000	500,000
Subtotal — Section 8 of CRSP Act	$ 950,000	$ 950,000	$ 950,000	$ 950,000
TOTAL — Colorado River Storage Project	$45,550,000	$45,750,000	$47,300,000	$46,720,000

*The conference committee requested that the Office of Management and Budget expedite the review of the economic restudy of the Savery-Pot Hook project, Colorado, in order that the $250,0000 in budgetary reserve may be made available for the initiation of work on the project.



UPPER COLORADO RIVER BASIN

COLORADO RIVER STORAGE PROJECT

UPPER COLORADO RIVER COMMISSION

the Savery-Pot Hook project, Colorado, in order that the $250,0000 in budgetary reserve may be made available for the initiation of work on the project.

B. AUTHORIZED STORAGE UNITS

(Information relative to Storage Units and participating projects has been obtained from reports on investigations and activities of the United States Department of the Interior, Bureau of Reclamation.)

The Colorado River Storage Project was authorized for construction by the U.S. Congress in the act of April 11, 1956 (70 Stat. 105). The four storage units are comprised of Glen Canyon Dam and Lake Powell on the Colorado River in Arizona and Utah, Navajo Dam and Reservoir on the San Juan River in New Mexico and Colorado, Flaming Gorge Dam and Reservoir on the Green River in Utah and Wyoming, and the Curecanti Storage Unit on the Gunnison River in Colorado. The Curecanti Unit consists of three dams and reservoirs — Blue Mesa, Morrow Point, and Crystal. Combined, the four storage units will provide about 33,583,000 acre-feet of water storage capacity.

The authorizing Act also provided for the construction of 11 participating irrigation projects. Ten additional participating projects were added by subsequent legislation.

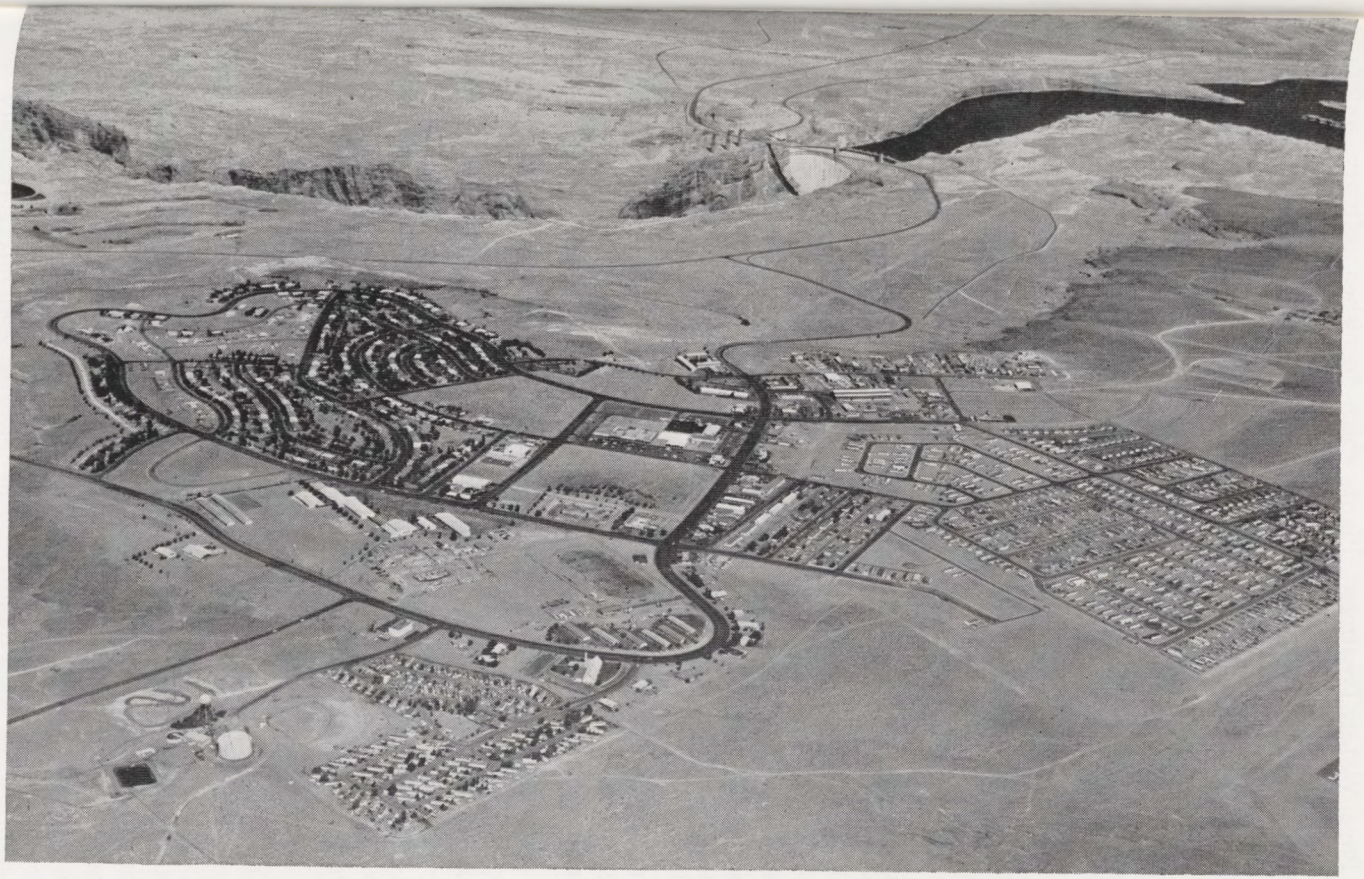
1. Glen Canyon Storage Unit

Glen Canyon Dam and Reservoir comprises the key storage unit and is the largest of the initial four, providing about 80 percent of both the storage and generating capacity. The 710-foot high concrete arch dam is located in northern Arizona on the Colorado River, 12.4 miles downstream from the Utah-Arizona State line and 15.3 miles upstream from Lees Ferry. *(Lees Ferry is the location of the Geological Survey gaging station and is one mile upstream from the compact point, Lee Ferry, which divides the Colorado River drainage into two basins.)* Glen Canyon Dam is the second tallest dam in the United States. The reservoir has a capacity of 27 milllion acre-feet and when filled will extend a maximum of 186 miles upstream on the Colorado River and 71 miles up the San Juan River. The powerhouse, located at the toe of the dam, has eight generating units with a total installed capacity of 950,000 kilowatts.

Glen Canyon Dam was completed in 1964.

Construction

Construction during 1972 consisted of measures for improving operation and maintenance, appearance, health, and safety at the dam, powerplant, and the Government-operated community of Page,



Bureau of Reclamation Photo

The town of Page, Arizona showing new areas being developed. This community was constructed in virgin desert to provide living facilities for people associated with the constructon of Glen Canyon Dam of the Colorado River Storage Project. It is rapidly becoming known as a recreation center and now is home for about 6000 citizens.

Arizona. It included initiation of construction of an addition to the Page Water Treatment Plant which furnishes culinary water to the townsite, Visitor Center, and Bureau of Reclamation offices in the powerplant building. Thin terrazzo finish was installed on the concrete floor of the generator gallery in the powerplant. The Visitor Center tunnel received a terrazzo floor finish. Ceramic tile was installed on the tunnel walls.

Recreation

Visitation to the Glen Canyon National Recreation Area has shown a small decrease during the past year. During 1971, 873,090 visits were recorded.

The National Park Service has concession-operated facilities at Wahweap, Rainbow Bridge, Halls Crossing, Hite, Lees Ferry, and Bullfrog Basin.

From 1909 through 1961 a total of 20,972 vacationers visited Rainbow Bridge. When access to the Bridge was made available by water through closure of the dam in 1963, visitation rapidly increased. In 1966 there were 20,468 visitors, or almost as many as the total of 20,972 who enjoyed Rainbow Bridge during the 53 years prior to the construction of the dam. During 1971 there were 41,818 visitors recorded — twice as many people as viewed the Rainbow from 1909 through 1961.

At the dam the Carl Hayden Visitor Center was visited by 237,632 people during 1971 and 150,025 persons participated in tours through the dam.

The total of 18 million fish — including largemouth bass, rainbow trout, Kamloop trout, kokanee salmon, and black crappie — have been planted in the lake.

2. Flaming Gorge Storage Unit

Flaming Gorge Dam is located on the Green River in northeastern Utah, about 40 road miles north of Vernal, Utah, and 32 river miles downstream from the Utah-Wyoming State line. The dam is a concrete thin-arch structure rising 502 feet above bedrock. The reservoir has a capacity of 3,789,000 acre-feet and, when full, extends upstream 91 miles, or nearly to the town of Green River, Wyoming. The powerplant has an installed generating capacity of 108,000 kilowatts. The dam and powerplant were completed in 1963.

Construction

There were no construction activities during 1972.

Recreation

Flaming Gorge National Recreation Area recorded 917,923 visitations in 1971, below the 1969 totals of 1,156,000. One of the largest single attractions in the Flaming Gorge National Recreation Area was the self-guided tour provided by the Bureau of Reclamation through the Flaming Gorge Dam and Powerplant. During 1971, 68,177 visitors went on the tour.

Fishing is an important recreation activity at Flaming Gorge Reservoir and in the Green River below the dam. During 1970, some 282,400 trout were taken from the reservoir and 43,400 from the tailwaters downstream.

The U.S. Forest Service administers recreation facilities at Lucerne Valley, Antelope Flat, Buckboard Crossing, Squaw Hollow, Firehole Canyon, Dutch John Draw, Cedar Springs, and Sheep Creek. Each site has boat ramps, picnic, and campground areas. Concession facilities are available at Lucerne Valley, Buckboard, and at Cedar Springs. In addition, several campground and overlook areas have been developed near the reservoir in the Ashley Forest.

3. Navajo Storage Unit

Navajo Dam is located in northwestern New Mexico on the San Juan River, 34 miles east of Farmington and 3½ miles downstream from the confluence of the Los Pinos and San Juan Rivers. The dam is a zoned earthfill embankment structure. The reservoir has 1,709,000 acre-feet total capacity and an active capacity of 1,036,000 acre-feet.

The major purpose of this reservoir is to regulate the flows of the San Juan River for the authorized Navajo Indian Irrigation Project near Farmington, the San Juan-Chama participating project in the Rio Grande Basin, and the Hammond participating project in New Mexico. Part of the water to be made available will also be used for industrial and municipal purposes in northwestern New Mexico.

Recreation

Navajo Reservoir draws visitors from many points. 648,894 visited during 1971. Recreational areas have been developed in

New Mexico on the Pine River Arm just above Navajo Dam and on Sims Mesa on the opposite shore, and near Arboles, Colorado on the upper portion of the lake. These recreation facilities are all complete. They include concrete boat ramps, visitor centers or administration buildings, picnic areas and campgrounds, modern restrooms, parking facilities, culinary water, sewer systems, and employee residences. In addition, concessionaries at Pine River and Arboles have developed marinas and have provided services including food and trailer park accommodations. They are preparing plans for lodges, restaurants, etc. Plans have been prepared by an Interagency Task Force for development, beginning in 1973, of recreation sites along the San Juan River below Navajo Dam. These sites include picnicking, camping, sanitary, and related facilities for fishermen and hunters. Fishing in the San Juan River downstream from Navajo Dam has become outstanding. In 1970 about 150,000 fisherman-hours were spent there and 86,200 trout were caught. Navajo Reservoir is also a popular fishing lake. During the 1971 season, 577,000 fish were taken from the reservoir.

Construction

There was no construction during 1972 and none is scheduled for 1973.

4. Curecanti Storage Unit

Curecanti Storage Unit includes three major dams and powerplants along the 40-mile canyon of the Gunnison River downstream from Gunnison, Colorado, and upstream from the Black Canyon of the Gunnison National Monument.

Flows of the Gunnison River are now controlled by the 940,800-acre-foot Blue Mesa Reservoir, the largest and uppermost of the lakes. Water released from the Blue Mesa Reservoir through a 60,000-kilowatt-capacity powerplant at the dam receives short-term regulation at the Morrow Point Reservoir immediately downstream. Morrow Point Reservoir has a total capacity of 117,190 acre-feet and an active capacity for power production of more than 42,000 acre-feet. The Morrow Point powerplant has a generating capacity of 120,000 kilowatts, of which only 60,000 kilowatts can be utilized until Crystal Dam is completed and can reregulate riverflows. Crystal Powerplant will have a capacity of 28,000 kilowatts.

Construction

Blue Mesa and Morrow Point Dams, Reservoirs, and Power-

Bureau of Reclamation Photo

Aerial view looking upstream at Crystal Damsite in the Black Canyon of the Gunnison River in western Colorado. Crystal Dam, when completed will impound the third and last reservoir of the Curecanti Storage Unit.

plants are in operation and produce electrical energy for the Colorado River Storage Project power system. During 1972, foot trails to theodolite stations, protective fencing, and theodolite piers were completed for systematic observation of the structural behavior of Morrow Point Dam. Beam-type guard rails were erected along the access road to Morrow Point Powerplant. Work was started on relocating about one-third mile of the access road. Construction was also started on an exhibit shelter and parking areas for visitors to Morrow Point.

Preliminary work was initiated at the Crystal Damsite early in 1972 with award of a contract for construction of a 12-foot-diameter horseshoe-shaped, 976-foot-long diversion tunnel and four foundation tunnels. The diversion tunnel and two of the foundation tunnels are completed. The two remaining foundation tunnels are nearing completion.

Work was also started on a 0.76-mile extension of the Curecanti-Crystal 115-kv transmission line to the vicinity of the crest of the proposed Crystal Dam. During the fall months, the contractor excavated pole holes and/or installed anchors for the guys. Work was discontinued for the winter due to difficult and hazardous working conditions on the steep, rocky hillside. Construction materials will be transported to the line when work is resumed in 1973.

The Final Environmental Statement on Crystal Dam and Reservoir was filed December 6, 1971, with the Council on Environmental Quality.

In order to effectively operate Blue Mesa Dam and Reservoir and to meet present and future requirements of the Fish and Wildlife program, it will be necessary to acquire additional properties adjacent to the Gunnison River and immediately above the Blue Mesa Dam and Reservoir. The fee lands and flowage easements purchased will be administered by the Park Service in connection with its recreational development of the reservoir area. During recent years this area has been affected by flooding associated with ice flows in the river channel.

Recreation

The National Park Service has recreation facilities on Blue Mesa Lake at Elk Creek adjacent to highway U.S. 50, at the Iola site across the lake and toward the upper end, and at Lake Fork near the Dam. Boat ramps, parking areas, picnic, and camping facilities are available at these recreation areas. A visitor center has been opened at Elk Creek. Recreation use during the 1971

season was enjoyed on 750,370 visitor days — an increase of 33.5 percent over the same period in 1970.

A joint Bureau of Reclamation-National Park Service Visitor Center at Cimarron, Colorado — gateway to Morrow Point Dam and to Crystal Reservoir and major information center for the Curecanti Unit — is planned for construction beginning in 1974.

C. TRANSMISSION DIVISION

The Transmission Division provides facilities for the delivery of Colorado River Storage Project power to major load centers or to delivery points from which other agencies may transmit the power to load centers and to interconnect the generating plants of the Colorado River Storage Project with each other and with adjacent Federal, public, and private utility transmission systems.

Advance Planning

Planning work is proceeding on future line construction to accommodate withdrawal of power from the Southern Division, new generation resulting from construction of Crystal segment of Curecanti Unit and the Central Utah Project, and to make further interconnection with electric utilities.

Construction

There were no construction contracts in force in 1972.

Power Marketing

Generation at Colorado River Storage Project powerplants amounted to 4.8 billion kilowatt-hours during the 1971 water year, an increase over the previous year of about 11 percent. The major portion of this, 3.6 billion kilowatt-hours, was produced at Glen Canyon Dam powerplant with the balance being produced at Flaming Gorge, Blue Mesa, Morrow Point, and Fontenelle Dams.

Storage Project power has been fully under contract in the summer seasons. No contracts are being executed. Some Storage Project power is being offered to customers on a season-by-season basis. It is anticipated that power from Crystal Dam will be available in 1978 and from the Central Utah powerplants in 1981. No commitments will be made for this power until the dates for initial operation are firmly established.

Following the 1972 summer season, the Bureau of Reclamation plans to review project loads and resources in order to determine the proper marketing policies to be implemented for the following years.

Revenue from the sale of power amounted to almost $30 million in the past 12-month period, up more than 15 percent from the previous year. The average revenue from the sale of one kilowatt-hour was 6.1 mills, up from 6.01 mills. This increase was due to the fact that surplus energy is no longer available for sale.

At the present time the Bureau is obligated to deliver firm power in 1975-76 as follows:

	1975 Summer (kw)	1975-76 Winter (kw)
Arizona	303,385	89,990
Colorado	311,005	326,460
New Mexico	133,920	155,725
Nebraska	1,200	1,200
Utah	304,880	325,420
Wyoming	134,425	103,725
California	25,005	—
Nevada	10,848	6,612
Total	1,224,668	1,009,132

Project Repayment

Power operating revenues in fiscal year 1972 paid all power operating and interest costs for that year and repaid $11 million of the principal for a cumulative total payment of $24.2 million to the end of the fiscal year. The present repayment schedule shows that the interest-bearing power investment will be repaid by the end of fiscal year 2010, and by fiscal year 2012 all power, irrigation, and municipal and industrial allocations of the Storage Project and the power allocations of the Seedskadee participating project and the Central Utah participating project (Initial Phase) will be entirely repaid.

Starting in fiscal year 2011, it is expected revenues will be available to Upper Basin States to assist in paying for participating projects. By the year 2059, total revenues for the States are estimated to be $1,354,779,000. This compares with $1,111,000,000 estimated in the fiscal year 1971 Fifteenth Annual Report, Colorado River Storage Project, of the Secretary of the Interior.

The increase is due to an assumed increase in the selling rate for power beginning in fiscal year 1990.

D. SALE OF MUNICIPAL AND INDUSTRIAL WATER

Revenues through June 30, 1971, from contracts for water from the four main stem reservoirs amounted to $417,622. Most of that income represents a "readiness to serve" charge from long-term contracts prior to actual use of water.

In October of 1969 the Secretary of the Interior executed a contract with Resources Company, Associated Southern Investment Company, and New Albion Resources Company for the sale of 102,000 acre-feet of water from Lake Powell for the Kaiparowits Powerplant expected to be constructed in Southern Utah. Negotiations were continued with Utah Power & Light Company during the year on a contract for the sale of 6,000 acre-feet of water from Joes Valley Reservoir for a thermal-electric generating plant in Huntington Canyon, Emery County, Utah. Construction of Huntington Canyon Powerplant was started March 1, 1971.

In January 1969, a water-use contract was executed with the Salt River Project Agricultural Improvement and Power District for a diversion of 40,000 acre-feet of water annually from Lake Powell with a water depletion limitation of 34,100 acre-feet annually. This water will be used for the Navajo Powerplant four miles from Page, Arizona. Construction of the plant was started in April 1970.

Congress enacted Public Law 90-272, March 22, 1968, approving three long-term water service contracts for 64,250 acre-feet of water annually from Navajo Reservoir. These contracts have been executed, two of which are to provide water for thermal-electric generation.

Of three short-term water service contracts for water from Navajo Reservoir which were executed in 1967, one has been renewed, one has expired, and one will expire December 8, 1972.

Pursuant to Title III, Water Supply Act of 1958, 60,000 acre-feet of capacity in Fontenelle Reservoir were contracted for in 1962 by the State of Wyoming for future municipal and industrial water uses in the State. Wyoming has option contracted with corporations for the water yield from its acquired capacity in Fontenelle Reservoir.

E. SAFEGUARDING THE ENVIRONMENT

The water service contracts, grants of right-of-way, indentures of lease, and participation agreements which are being negotiated or have been executed between the Secretary of the Interior and the various power interests contain specific language providing for water and air pollution controls as safeguards against the possible nega-

tive effects of such plants on the environment. Contract language on water pollution control provides limits on and the monitoring of effects of plant effluents on streams within the Federal and State standards. Air pollution control language provides for (a) compliance with Federal and State standards; (b) approval of designs for air pollution control equipment by the Secretary of the Interior in advance of installation; (c) reports to the Secretary on operation of such equipment at least once annually; and (d) periodic review of technological advances in air pollution control equipment to insure maximum effectiveness within the state of the art.

Efforts to protect the environment are concentrated on the Navajo, San Juan, and Four Corners Powerplants. The United States will own 24.3 percent of the Navajo plant for the purpose of providing pumping power for the Central Arizona Project.

F. AUTHORIZED PARTICIPATING PROJECTS

Twenty-one participating projects have been authorized by Congress. Eleven were authorized by the initial authorizing Act of April 11, 1956 (70 Stat. 105); two were authorized by the Act of June 13, 1962 (76 Stat. 96); three were authorized by the Act of September 2, 1964 (78 Stat. 852); and five by the Act of September 30, 1968 (82 Stat. 886). Eleven are in Colorado, three in New Mexico, two in Utah, three in Wyoming, one in both Colorado and Wyoming, and one in both Colorado and New Mexico. Participating projects consume water of the Upper Colorado River System for irrigation and municipal and industrial purposes and participate in the use of revenues in the Basin Fund to help repay the costs of irrigation features beyond the ability of the water users to repay.

Revenue came from eight participating projects in fiscal year 1972 as a result of providing municipal, industrial, and irrigation water, and, representing both interest and principal repayment, amounted to $754,000 as of June 30, 1971.

The Pine River Project Extension in Colorado was eliminated as a participating project by the Colorado River Basin Project Act of September 30, 1968. Construction of the La Barge participating project in Wyoming has been indefinitely deferred.

Although the Fryingpan-Arkansas Project is not a full-fledged participating project of the Colorado River Storage Project (because it does not participate in the use of Basin Fund revenues), it could be called a "limited" participating project in the Upper Basin development plan because it does use water apportioned to

the Upper Basin by the Colorado River Compact and to the State of Colorado by the Upper Colorado River Basin Compact. This project was authorized by Public Law 87-590, which was signed by the President August 16, 1962.

A brief description of each of the authorized participating projects and the present status of its construction or investigations follow:

1. COLORADO

a. Paonia Project

Paonia Dam was completed in January 1962 — the first participating project of the Colorado River Storage Project to be completed. Responsibility for operating and maintaining the dam was transferred to the North Fork Water Conservancy District on June 1, 1962. Recreation facilities have been constructed and are in use.

The project is located near Paonia and Hotchkiss in west-central Colorado on the North Fork of Gunnison River. Water stored in the 21,000-acre-foot capacity Paonia Reservoir is distributed to project lands through the enlarged and extended Fire Mountain Canal. Irrigation water supply is supplemented for 13,070 acres of land previously irrigated and a full water supply provided for 2,320 acres of new land. Flood damages have been reduced and fish and wildlife values enhanced.

b. Smith Fork

Smith Fork Project is located in Delta County, along the Smith Fork of the Gunnison River. The project was completed in the fall of 1962. Principal features include Crawford Dam and Reservoir, Smith Fork Diversion Dam, Smith Fork Feeder Canal, and the Aspen Canal. Crawford Reservoir with a total capacity of 14,395 acre-feet was constructed on Iron Creek, a tributary of Smith Fork. The reservoir regulates the flow of Iron Creek and surplus flows of the Smith Fork that are conveyed to it by the Smith Fork Feeder Canal. Small quantities of reservoir storage water are released to Iron Creek and diverted by several small ditches. The remainder is released to the new Aspen Canal and conveyed by this canal to ditches for distribution. Some of the storage water releases through the Aspen Canal replace present direct flow diversions from Smith Fork, thus permitting additional direct flow diversions to be made higher on the streams through existing ditches.

Smith Fork Project provides a full water supply for irrigating 1,423 acres of new land and a supplemental supply for 8,056 acres of irrigated land located near Crawford, Colorado.

The project was transferred to the Crawford Water Conservancy District for operation and maintenance on January 1, 1964.

Recreation facilities for boating, picnicking, and camping have been developed at Crawford Reservoir, and local use of the reservoir is significant. About 114,400 visits were recorded during the 1971 season.

c. Florida Project

The Florida Project is located in southwestern Colorado, southeast of Durango in the Florida River Valley and on Florida Mesa. Its principal features include Lemon Dam on the Florida River with a reservoir capacity of 40,100 acre-feet, enlargement of the existing Florida Farmers Ditch and Florida Canal, Florida Diversion Dam and construction of the Florida laterals to serve approximately 2,210 additional acres of project lands. Flood control and fish and wildlife values are enhanced. The project includes 5,730 acres of new land and 13,720 acres of presently irrigated land needing a supplemental water supply.

All work contracted by the Bureau of Reclamation on Florida Project has been accomplished. Lemon Dam, key feature of the project, was completed in November 1963. Under provisions of the Drainage and Minor Construction Act of June 13, 1956 (70 Stat. 274), the United States advanced funds to the Florida Water Conservancy District to rehabilitate four existing irrigation systems on the Florida Mesa. All work has been completed.

Lemon Dam and Reservoir were transferred to the Florida Water Conservancy District for operation and maintenance on January 1, 1968. All conveyance and distribution facilities were transferred to the District for operation and maintenance on April 1, 1967.

Recreational use at Lemon Reservoir far exceeds estimates made before the construction of the dam and reservoir. The reservoir area sustained 49,255 visits during the 1971 season. Recreation facilities include a boat ramp, picnic areas, campgrounds, parking, water, and sanitation facilities.

d. Silt Project

The Silt Project is located between Rifle and Elk Creeks near the towns of Silt and Rifle in western Colorado. An improved water supply for 4,628 acres of partially irrigated land and a full supply for 2,416 acres of new land is provided. Constructed features include

Bureau of Reclamation Photo

Dedication ceremony at outlet of Charles H. Boustead Tunnel —
Fryingpan-Arkansas Project, Colorado.

Rifle Gap Dam which has created a reservoir of 13,600-acre-foot total capacity, the Silt Pumping Plant, headworks and inlet channel, rehabilitation of the abandoned Davie Ditch, and construction of laterals and drains. Rifle Gap Dam is a 1,768,000-cubic yard earth and rockfill structure, rising 120 feet above the streambed and is 1,450 feet long at the crest. The dam was accepted as complete in June 1967.

Recreation facilities include a boat ramp, picnic areas, campground, parking, water, and sanitary facilities. The area sustained 78,100 visits during the 1971 season.

e. Fryingpan-Arkansas Project

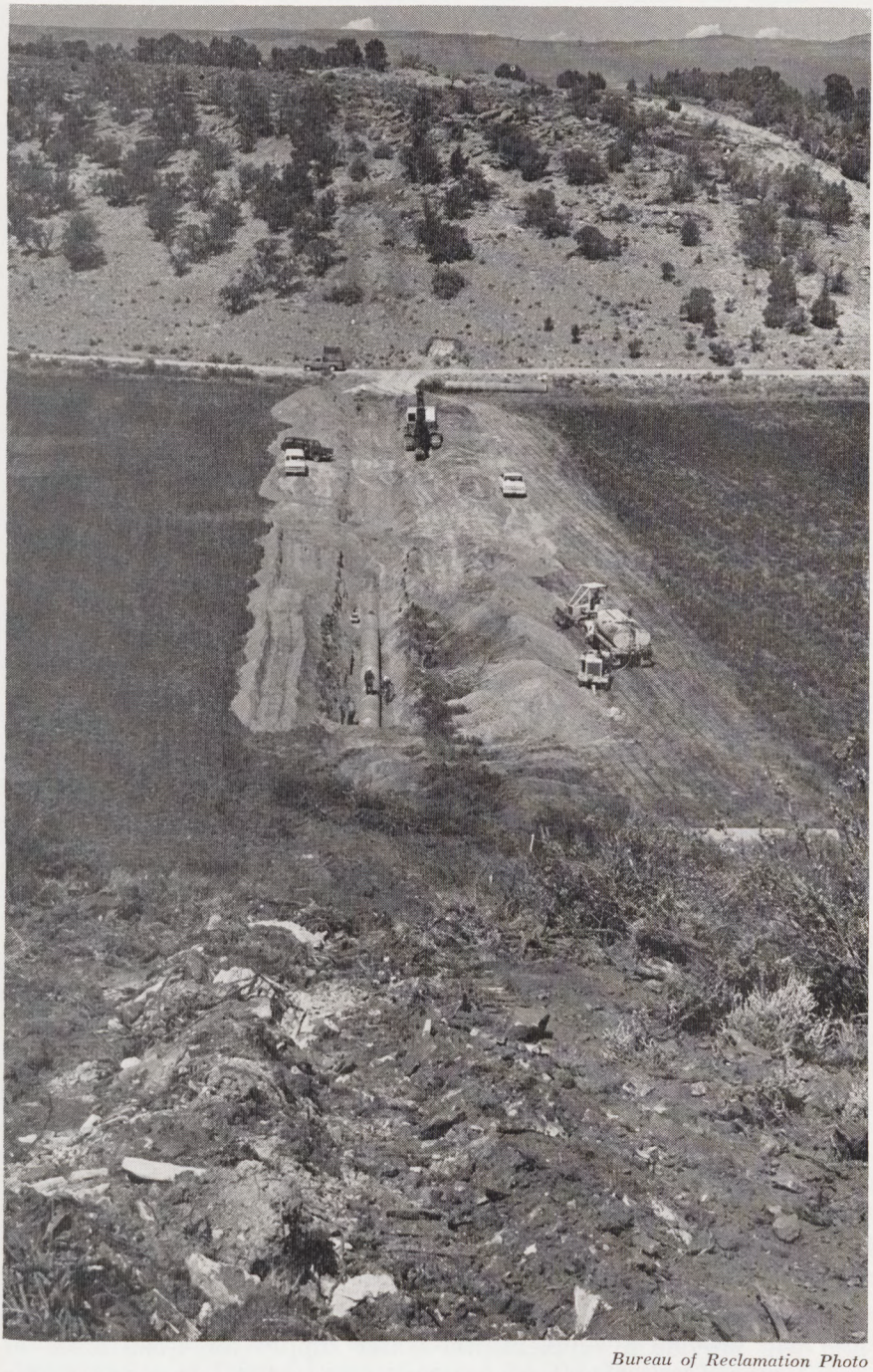
Although the Fryingpan-Arkansas Project is not a full-fledged participating project of the Colorado River Storage Project because it does not participate in the use of Upper Colorado River Basin Fund revenues, it could be called a "limited" participating project in the Upper Basin development plan because it does use water apportioned to the Upper Basin by the Colorado River Compact and to the State of Colorado by the Upper Colorado River Basin Compact. This project was authorized by Public Law 87-590, which was signed by the President August 16, 1962.

Construction

Work under the initial contract for construction of Pueblo Dam was completed on December 23, 1971. The Bureau of Reclamation awarded the second contract for the concrete dam, spillway and earth embankment on June 29, 1972 in the amount of $36,252,769. During November 1971 a contract for $2,220,421 was awarded for furnishing and installing the generator motor and starter for the Mt. Elbert pumped-storage powerplant. On January 6, 1972 a contract for $16,569,333 was awarded by the Bureau for the Mt. Elbert pumped-storage powerplant structures including penstock, intake channel, visitor center and related items.

Excavation continued on the Nast Tunnel using a mole and on the Hunter Tunnel using conventional blasting methods. Both tunnels are parts of the western slope water collection system. In addition, several small contracts were awarded and/or completed during the last year.

Transmountain diversions of water through the Charles H. Boustead Tunnel were started on May 16, 1972. Formal ceremonies



Bureau of Reclamation Photo

Replacing Gould Canal siphons on the Fruitland Mesa Project — Colorado.

dedicating the tunnel were held on June 29, 1972 with Hon. Rogers C. B. Morton, Secretary of the Interior, as the featured speaker.

f. Fruitland Mesa Project

The Fruitland Mesa Project, located in west-central Colorado, was authorized by Congress in September 1964. The project will provide supplemental water for 7,010 acres of presently inadequately irrigated land and a full supply of irrigation water to 15,870 acres of land. In addition, recreation and fish and wildlife benefits will be provided. Principal project features will include the Soap Park Dam and Reservoir, the Black Mesa Conduit, the 22-mile Fruitland Canal, and two diversion dams.

Advance Planning

Advance planning studies were initiated in fiscal year 1965. Preconstruction activities have been in progress since completion of the definite plan report in 1967. Acquisition of right-of-way for Gould Canal structure is underway and additional drilling has been completed for Soap Park Dam and for Black Mesa Tunnel. The Fruitland Mesa repayment contract was executed June 25, 1969, and was validated by the District Court of Delta County, Colorado, on September 29, 1969. Plans are being developed for settlement of new farm units in the project area. Preparation of the Environmental Statement is in progress. Land acquisition is scheduled for late in 1973.

Construction

Approval was received in 1972 to replace two existing deteriorated welded steel pipe siphons in the Gould Canal. This work is to be performed in advance of initiation of construction for other project features. Work was started on the new siphons in the fall of 1972 and is scheduled for completion mid-year in 1973. This work will not interfere with operation of the existing siphons. Construction of other project facilities is scheduled to start in 1975, if funds become available.

g. Bostwick Park Project

Congress authorized construction of the Bostwick Park Project in September 1964. The project is located in west-central Colorado, and will provide a supplemental water supply for 4,500 acres of presently inadequately irrigated land and a full water supply for 1,455 acres of new land. The project will also provide recreation

and fish and wildlife benefits. Regulation of flows of Cimarron Creek is provided by the Silver Jack Dam, principal feature of the project. Released storage water and usable natural flows will be diverted from Cimarron Creek into the existing Cimarron Canal and conveyed 23 miles to the vicinity of the project lands where distribution will be made through existing ditches. Two laterals will be constructed to convey water to lands above those presently irrigated.

Construction

Silver Jack Dam was completed in 1971 and the reservoir filled and spilled for the first time on June 10, 1971. Late in 1972 a contract was awarded for replacing approximately 1,470 feet of 54-inch-diameter corrugated metal pipe siphon in the Vernal Mesa Ditch with 48-inch-diameter concrete pipe siphon. This work should be completed in 1973 prior to the irrigation season.

Initiation of construction on Bostwick Lateral and improvement of existing drains is expected to be started during 1973.

h. Dallas Creek Project

Advance planning studies initiated in fiscal year 1971 included site selection for Ridgway Dam and Reservoir, foundation drilling, plan formulation studies, preparation of diagrams and estimates, and report preparation. The Dallas Creek Project will develop water of the Uncompahgre River and tributaries for irrigation and municipal and industrial use. It also will provide benefits to recreation, fish and wildlife, and flood control.

Studies of data have resulted in the relocation of Ridgway Dam and Reservoir site approximately 5 miles downstream from the site considered in the 1966 feasibility report. The new site is environmentally more desirable as the reservoir would not inundate the town of Ridgway and would reduce the loss of residential and irrigated lands. Better foundation conditions make the new site geologically superior to the original.

Water storage will be provided in the Ridgway Reservoir on the Uncompahgre River and the Dallas Divide Reservoir on Pleasant Valley Creek to serve about 8,000 acres of land. Natural flows at Ridgway Reservoir will be supplemented by flows of Cow Creek diverted by the Cow Creek Feeder Canal. Natural flows at Dallas Divide Reservoir will be supplemented by flows of the East and West Forks of Dallas Creek diverted by the Dallas Feeder Canal. Water from this reservoir will be delivered to project lands by the

Log Hill Mesa Canal and Pipeline. Project laterals and drains will be constructed as needed.

About 60,000 acre-feet of municipal and industrial water will be delivered to the Tri-County Water Conservancy District.

Recreation facilities will be provided at project reservoirs, and measures will be taken for the protection of fish and wildlife. Conservation storage water in Ridgway Reservoir will be evacuated for control of snow-melt floods as the need is indicated by streamflow forecasts.

	Ridgway	Dallas Divide
Dam type	Earth	Earth
Dam height (feet above streambed)	260	165
Crest length (feet)	2,550	4,420
Total reservoir capacity (acre-feet)	125,000	17,600

i. Dolores Project

Advance planning studies were initiated in fiscal year 1971. Agricultural surveys, land classification, preparation of preliminary cost esimates, plan formulation studies, including several alternatives involving sprinkler irrigation, and environmental asesssment of the project are in progress. The National Park Service with assistance of the University of Colorado is making an archeological survey of the project.

The Dolores Project will develop water of the Dolores River for irrigation, municipal and industrial use, recreation, fish and wildlife conservation, and flood control.

Storage will be provided in McPhee Reservoir on the Dolores River. All project water will be released from the reservoir to the potential Dove Creek Canal which, with other project branch canals and existing systems, will deliver the water to the land. The offstream Cahone, Ruin Canyon, and Monument Creek Reservoirs will be constructed as part of the distribution system to facilitate water regulation.

In the event sprinkler irrigation is adopted, Ruin Canyon and Cahone Reservoirs would be eliminated from the project plan. Lower portions of Dove Creek Canal would also be eliminated, thus consolidating the project service area by pumping to lands above the gravity canal near McPhee Reservoir in lieu of those under the portion of the canal eliminated.

The project will provide irrigation water for 61,000 acres, including 32,340 acres that are not irrigated at present. About 1,500 acres of the land are in Indian ownership. About 6,100 acre-feet of

municipal and industrial water annually will be provided for the commuities of Dove Creek and Cortez, Colorado.

	McPhee	Cahone	Ruin Canyon	Monument Creek
Type	Earth	Earth	Earth	Earth
Height (feet above streambed)	268	75	169	107
Crest length (feet)	1,300	2,000	2,350	5,000
Reservoir capacity (acre-feet)	364,000	4,340	16,400	5,040

A research and demonstration farm was established on lands adjacent to the Montezuma Valley Irrigation Company system. Sprinkler irrigation and demonstration methods will receive close study.

The farm is being jointly financed by the Colorado State University, the Bureau of Reclamation, Four Corners Regional Commission, and the Dolores Water Conservancy District.

j. San Miguel Project

Advance planning initiated in fiscal year 1972 consists mainly of plan formulation studies and some foundation drilling. The San Miguel Project will regulate flows of the San Miguel River for irrigation, municipal and industrial use, fish and wildlife conservation, recreation and flood control.

Storage will be provided at the Saltado Reservoir on the San Miguel River. Part of the stored water will be released into the river for downstream uses, but the major part will be diverted at the reservoir outlet into the Norwood Canal, the first link in a chain of canals and reservoirs that will further control the water and convey it to places of use. This chain will include in successive order the Norwood Canal, Naturita Reservoir, Basin Canal, Radium Reservoir, and Paradox Canal. Existing irrigation reservoirs and distribution systems will be integrated with project works. Some lands above project facilities will be served by water exchanges.

The project will irrigate 38,950 acres including 26,420 acres that have no present water supply. It will provide 44,000 acre-feet of water annually for municipal and industrial uses associated with the area's mineral and forest resources.

			Radium Reservoir	
	Saltado	Naturita	Radium Dam	Stone Cabin Dam
Type	Earth	Earth	Earth	Earth
Height (feet above streambed)	278	207	77	98
Crest length (feet)	1,470	2,760	3,700	575
Reservoir capacity (acre-feet)	72,600	9,200	25,600	(same)

k. West Divide Project

Advance planning studies are scheduled to be undertaken late in fiscal year 1973. Contributed funds from the State of Colorado and local interests are currently being used. The funds will be used for preliminary data gathering preparatory to initiating advance planning studies in fiscal year 1974.

The West Divide Project is planned primarily to provide water for irrigation and for municipal and industrial use in connection with development of oil shale reserves.

Crystal River flows will be regulated by Placita Reservoir. Some reservoir water will be released directly to the river for downstream use. Most of the releases will be diverted into the Huntsman Canal, which will supply other project canals in conveying the water westward to places of use. About 17 miles of the Huntsman Canal will be in tunnel. Yank Creek Reservoir will be constructed on North Thompson Creek to meet water needs in the eastern portion of the project area.

About 39,920 acres will be irrigated, including 18,890 acres not presently irrigated. About 77,500 acre-feet of water annually will be made available in the Colorado River or in project canals for municipal and industrial uses.

	Placita Reservoir	Haystack Reservoir	Yank Creek Reservoir
Type	Earth	Earth	Earth
Height (feet above streambed)	301	132	188
Crest length (feet)	1,630	1,350	1,540
Reservoir capacity (acre-feet)	105,660	7,590	9,210

2. COLORADO AND NEW MEXICO

a. Animas-La Plata Project

Advance planning studies were initiated in fiscal year 1971. Plan formulation studies, engineering field surveys, agricultural surveys, water supply studies, geologic investigations, and land classification have been initiated in the area.

The Animas-La Plata Project will develop flows of the Animas and La Plata Rivers for irrigation, municipal and industrial use, recreation, and fish and wildlife conservation.

Animas River water will be regulated at a reservoir site yet to be selected. The Bureau of Mines has completed an appraisal of mineral values and land acquisition costs for Howardsville Reser-

voir site. Water will be conveyed in the Animas Diversion Canal to the La Plata River Basin and adjacent areas. Some water will be diverted from the Animas River for municipal use at Durango, Colorado, and Aztec and Farmington, New Mexico. Part of the Durango water will replace present diversions to the city from the Florida River, permitting the replaced water to add to the supply for the Florida Project.

Water delivered to the La Plata River Basin and unused flows of the La Plata River will be regulated in the offstream Hay Gulch, Three Buttes, and Ute Meadow Reservoirs and distributed by private and project works for irrigation and for anticipated industrial uses associated with the area's extensive coal fields.

3. COLORADO AND WYOMING

a. Savery-Pot Hook Project

Construction of the Savory-Pot Hook Project as a participating project was authorized by Congress in September 1964. The project is located in Moffat County, Colorado, and Carbon County, Wyoming. Principal project features consist of two storage reservoirs — the Savery Reservoir and the Pot Hook Reservoir — and a system of canals to provide a full supply of project water to 10,940 acres of land in Colorado and 6,980 acres in Wyoming and a supplemental water supply to 3,640 acres of inadequately irrigated land in Colorado and 10,690 acres in Wyoming. The project will also provide benefits to recreation, fish and wildlife, and flood control.

Congress appropriated $250,000 for starting construction of this project in 1971. The Office of Management and Budget "froze" these funds in a budgetary reserve for fiscal years 1971-72-73.

The Draft Environmental Statement was submitted to the Commissioner of Reclamation on June 27, 1972, for distribution for official review and comment. Start of construction is dependent on availability of funds.

4. NEW MEXICO

a. Hammond Project

The Hammond Project located in northwestern New Mexico, was completed late in 1962 and has been operated and maintained by the Bureau of Reclamation through the 1972 irrigation season.

Water has been supplied to project lands on a rental basis. The project works consist of Hammond Diversion Dam on San Juan River, the main gravity canal, a hydraulic turbine-driven pumping plant, three main laterals, and distribution laterals.

The water table has risen sufficiently in several areas to indicate a definite need for drainage. The first segment of drains, including 0.1 mile of open and 2.4 miles of closed drain, have been completed. During 1972 the Armenta Canyon siphon on the Main Canal was lowered as a protective measure and Sullivan wasteway was extended 0.4 mile to discharge into San Juan River. Other protective work on the Main Canal included enlargement of five cross drainage structures and construction of a new cross drainage structure. Late in 1972 a construction contract was awarded for restoring and reshaping about 9,625 linear feet of the Main Canal and placing unreinforced concrete lining in the restored segments of the canal. Construction was also undertaken on a weed trap adjacent to the Sullivan wasteway and the Sullivan Canyon siphon. Collection of field design data also continued for other structures and erosion control facilities to add necessary safeguards for operation of project facilities.

The project provides irrigation water for 3,933 acres of which approximately 2,095 acres are now irrigated. Project lands are divided into 62 farms (23 full-time and 39 part-time).

b. Navajo Indian Irrigation Project

The Navajo Indian Irrigation Project was authorized for construction by Public Law 87-483 of the 87th Congress as a Bureau of Indian Affairs project. The bill was signed into law by the President on June 13, 1962. The project, authorized as a participating project of the Colorado River Storage Project, is being constructed by the Bureau of Reclamation for the principal purpose of furnishing irrigation water to approximately 110,630 acres of land. An average annual diversion of 508,000 acre-feet of water will be required from Navajo Reservoir for delivery to project lands.

Location

The project lands proposed for irrigation are situated on an elevated plain south of the San Juan River in San Juan County, in northwestern New Mexico. The project lands range in elevation from 5,580 feet to 6,450 feet and lie from 200 to 1,000 feet above the river. The project area has a temperate and semi-arid climate with a frost-free growing season of about 160 days. The annual average

Bureau of Reclamation Photo

Pipemobile transporting prestressed concrete pipe for placement in Horn Siphon of Navajo Indian Irrigation Project, New Mexco. The huge pipe is 210 inches in diameter, 20 feet long, and weighs 150 tons. The novel pipemobile is 63 feet long and 21 feet (two stories) high.

precipitation is only about eight inches with about half of this amount occurring as rainfall during the growing season. Irrigation is necessary for successful crop production in the San Juan River Basin. The irrigable lands in the project are well suited to the cultivation and production of adapted crops. Under irrigation, it is expected that the lands will be devoted primarily to alfalfa, corn, beans, and irrigated pasture, with some acreage devoted to orchards and vegetables. All of the lands in the project are presently undeveloped and, due to the lack of moisture, are used only for grazing.

Project Plan

The proposed plan of development of the Navajo Indian Irrigation Project depends upon the construction of facilities to provide a water supply for the irrigation of lands to be developed solely for Indian use as a fulfillment of a national obligation to the Navajo Tribe. The project area will include some off-reservation lands, the acquisition of which, for inclusion in the reservation, is provided in the legislation. The project works will consist of a canal system, laterals, pumping plants, a small powerplant, and additional related facilities as may be required.

The project is adapted to serve municipal and industrial water users as well as its primary purpose of irrigation. The officials of the State of New Mexico anticipate that a relatively large municipal and industrial water demand will develop in the San Juan River Basin. The authorizing Act provides for such purposes over and above that needed for irrigation on the Navajo Indian Irrigation Project.

The Bureau of Reclamation is responsible for the design and construction of irrigation facilities to the turnouts to the individual farm units. The development of the farm units rests with the Bureau of Indian Affairs and the Navajo Tribe. Such work would include the farm distribution system, land leveling, farm drainage, and construction of improvements.

Cost and Repayment

The total estimated construction cost for the project is $206,000,000 (P. L. 91-416). The costs associated with the development of farm units are not considered a part of the construction cost for which the Bureau of Reclamation has the responsibility.

The authorizing act provides that the cost allocated to Indian, tribal, or restricted lands served by the project, and beyond the capability of such lands to repay, shall be nonreimbursable. This is in recognition of the fact that assistance to the Navajo Indians is the overall responsibility of the entire nation.

Construction

Because the Executive Department of the Federal Government has failed to approve the appropriation of Federal funds in sufficient amounts, construction progress on this project has been unreasonably slow for the past ten years.

As of October 1, 1971, the Bureau of Reclamation had three contracts in force, totaling $13,097,890, and a fourth was awarded on January 17, 1972, in the amount of $14,753,240.

The oldest contract in force was for the construction of about 2.5 miles of concrete-lined main canal, and two 17.5-foot-diameter siphons totaling 700 feet in length. At the beginning of the 1972 water year the work was approximately 73 percent completed. The work was completed and accepted on June 23, 1972, for the final amount of $2,111,214.

The contract for Cutter Dam, in the amount of $2,385,665, was 60 percent completed as of October 1, 1971. Cutter Dam is an earthfill structure, about 90 feet high, 950 feet long, and located in the upper end of Cutter Canyon, a tributary of Cañon Largo. The dam and appurtenant works were completed on June 8, 1972.

The third contract, in the amount of $8,690,286, is for the construction of two 17.5-foot-diameter tunnels totaling over 3.5 miles in length, and a 0.6-mile connecting link of concrete-lined main canal. At the beginning of the report year, the contract was about 10 percent completed. The contractor drilled both tunnels using a boring machine called a mole. The machine cost $1,250,000, weighed 230 tons, is about 58 feet long, and cuts a hole about 20.5 feet in diameter. During the week of June 22 to July 1, 1972, the mole set a record by excavating 1,066 feet of tunnel. The contractor had completed all the excavation and commenced the concrete lining operations by the end of the water year. At that time the work was 61 percent completed.

On January 17, 1972, a new construction contract in the amount of $14,753,240 was awarded. The work under this contract consists of construction of about four miles of concrete-lined main canal, four 17.5-foot-diameter siphons totaling about 16,000 feet in length, access roads and appurtenant structures. By the end of the 1972 water year, the contractor had completed about 20 percent of the work.

c. San Juan-Chama Project

The San Juan-Chama Project was authorized as a participating project of the Colorado River Storage Project by Public Law 87-483, signed June 13, 1962 (76 Stat. 96).

Location

The project is designed to make possible an average annual diversion of 110,000 acre-feet of water from the upper tributaries of the San Juan River in the Upper Colorado River Basin, through the Continental Divide, for utilization in the Rio Grande Basin, New Mexico. The imported waters are to be used to provide an irrigation water supply for 39,300 acres of land in the Rio Grande Basin. These lands in the Cerro, Taos, Llano, and Pojoaque tributary irrigation units consist of 22,800 acres presently irrigated and 16,500 acres presently dry land. A supplemental water supply will also be provided for irrigation of 81,600 acres in the Middle Rio Grande Conservancy District.

Initial authorization is limited to the plans for diverting and regulating the project water and for furnishing water to the city of Albuquerque and for irrigation.

Project Plan

Principal construction features include three diversion dams, three feeder conduits, three tunnels, two river siphons, and one storage dam and reservoir.

Blanco Diversion Dam on Rio Blanco will divert water to the Blanco feeder conduit. The Blanco feeder conduit is to consist of a closed conduit of 520 cubic feet per second capacity conveying water from Blanco Diversion Dam to Blanco Tunnel. Blanco Tunnel is planned as a concrete-lined structure with 520 cubic feet per second capacity to carry water 8.6 miles from Rio Blanco to Little Navajo River. Little Navajo River siphon, a concrete siphon with a capacity of 520 cubic feet per second, will carry water under Little Navajo River to the Oso Tunnel. The Little Oso Diversion Dam on the Little Navajo River upstream from the Little Navajo River siphon will divert water from the Little Navajo River through the Little Oso feeder conduit, a closed conduit with a capacity of 150 cubic feet per second, to the entrance to the Oso Tunnel.

The Oso Tunnel will be a concrete-lined structure with a capacity of 550 cubic feet per second and a length of 5.22 miles, from Little Navajo River to Navajo River. The 550-cubic-foot-per-second Navajo River siphon is to carry water under the Navajo River where the Oso Diversion Dam diverts water to the Oso feeder conduit. This conduit, with a capacity of 650 cubic feet per second, will run from Oso Diversion Dam to Azotea Tunnel.

The 12.8-mile-long concrete-lined Azotea Tunnel will convey water from Navajo River to Azotea Creek in Rio Grande Basin. These

imported waters will flow down Azotea and Willow Creeks 11.78 river miles to Heron Reservoir.

The regulating and storage reservoir will be formed by Heron Dam on Willow Creek just above the point where Willow Creek enters the Chama River. The dam will be an earthfill structure about 265 feet high and will form the reservoir with a capacity of about 400,000 acre-feet, with a surface area of about 6,000 acres. The spillway will have a capacity of 450 cubic feet per second, and the outlet works will have a capacity of 4,220 cubic feet per second.

Construction is also to include the enlargement of the outlet of the existing El Vado Dam so that releases from Heron Reservoir can be bypassed through El Vado Reservoir as desired.

Benefits

The project will provide a dependable municipal and industrial water supply for the city of Albuquerque, supplemental irrigation water for the Middle Rio Grande Conservancy District, and an additional supply of irrigation water for the Cerro, Taos, Llano, and Pojoaque tributary units. Substantial fish and wildlife and recreational benefits will be created by the project, particularly Heron Reservoir.

On January 3, 1971, the first water from the Colorado River Basin was diverted to the Rio Grande Basin through the project as a test of regulatory and measuring facilities.

Construction

All major construction under contract for the collection and diversion unit were completed prior to the period covered by this report. Minor corrections were made to the diversion control works and to water measuring and monitoring devices. The Bureau of Reclamation will continue studying the amount and timing of diversions of water to protect the interests of all parties, including fish and wildlife.

The Bureau collected design data for the construction of Nambe Falls Dam of the Pojoaque tributary unit during the past year. A contract for exploratory foundation drilling of the damsite was awarded on June 29, 1972 for $44,038. Additional drilling for foundation investigations is being continued. Studies are also being made for a 3.5 mile access road to the damsite and a loop road around the proposed reservoir area. It is expected that all prerequisites for initiation of construction will be completed during the spring of 1973.

Plans are still being developed by the Bureau of Reclamation for the Llano and Taos tributary units.

5. UTAH

a. Central Utah Project (Initial Phase)

The Central Utah Project (Initial Phase) will provide water for irrigation, municipal and industrial use, and power generation. Benefits also will be realized in the fields of outdoor recreation, fish and wildlife conservation, flood control, water quality control, and area redevelopment. The Initial Phase will consist of four units. Largest of these is the Bonneville Unit which involves diversion of water from the Uinta Basin to the Bonneville Basin and associated developments in both basins. The other three units — the Vernal, Upalco, and Jensen — provide for local development in the Uinta Basin.

In view of increased municipal and industrial water demands in Salt Lake County, the Bureau of Reclamation has rescheduled construction so that water deliveries could be started as early as 1973. The Bureau of Reclamation studies show that through joint use of present and new water conveyance features, available sources of water can meet the public water supply needs of Salt Lake County, including Salt Lake City, until about 1990.

On June 29, 1971, a petition was approved by the Central Utah Water Conservancy District for the Salt Lake Water Conservancy District to receive up to 50,000 acre-feet of municipal and industrial water annually.

Under the Bonneville Unit the Strawberry Aqueduct (now under construction) will intercept flows of Uinta Mountain streams as far east as Rock Creek and convey the water to the existing Strawberry Reservoir which will be enlarged by construction of Soldier Creek Dam. Stored water will be released through the Wasatch Mountains to the Central Utah area. Through various exchanges of water and by the construction of new facilities, the water will be made available to an area extending from Salt Lake City about 75 miles south to the city of Nephi. The completed Starvation Dam and Reservoir, on Strawberry River with a feeder canal from Duchesne River develops water for use in the Uinta Basin.

Under present plans 36,000 acre-feet of water annually will be diverted to the Sevier River Basin for supplemental irrigation in that area.

Bureau of Reclamation Photo

Aerial view of Soldier Creek Dam of Central Utah Project.

To convey water to the Sevier River Basin, a 29-mile canal from near the Nephi area to the existing Sevier Bridge Reservoir on the Sevier River will be built. Irrigation in the Sevier River Basin will be accomplished both by exchange of water with upstream reservoirs and by direct diversion from the Sevier Bridge Reservoir.

The Central Utah Water Conservancy District signed a repayment contract in 1965.

i. Vernal Unit

The Vernal Unit, near Vernal, Utah, was the first unit of the Initial Phase of the Central Utah Project to be constructed. Project features include Steinaker Reservoir, offstream from Ashley Creek with a capacity of 38,200 acre-feet; Fort Thornburgh Diversion Dam; Steinaker Feeder Canal; and Steinaker Service Canal. Construction started in 1959 and was completed by 1962. The Vernal Unit, through storage of waters diverted from Ashley Creek, provides supplemental water to 14,700 acres and assures farmers an adequate, year-round supply of water; augments municipal water supply for three communities in Ashley Valley; Vernal, Maeser, and Naples by providing 1,600 acre-feet of municipal and industrial water; and provides recreation and fishing at Steinaker Reservoir.

Water storage and distribution facilities have been completed and were turned over to the water users for operation and maintenance on January 1, 1967. Drainage construction continued through 1972, with completion of work on construction on Block No. 2 Drains, comprised of 4.4 miles of buried pipelines. Design data have been assembled for a 6.0-mile system of buried pipe drains to serve a third drainage-deficient area.

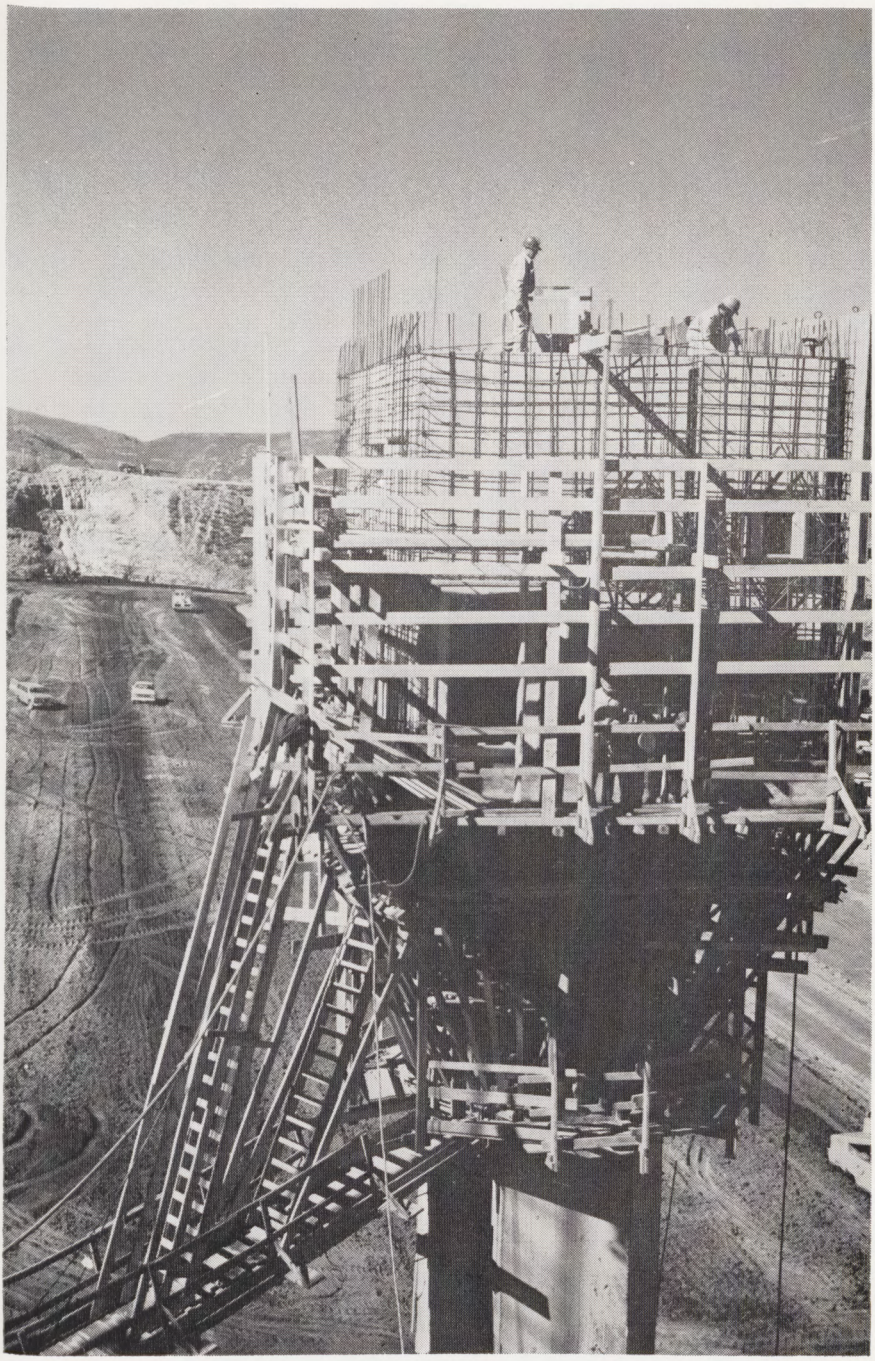
Construction

ii. Bonneville Unit

The Bonneville Unit will provide irrigation water to 43,740 acres of full-service lands, 112,790 acres of supplemental service lands; develop 133,500 kw of power; and supply 79,000 acre-feet of municipal and industrial water.

The Starvation Dam Complex has been completed. Starvation Reservoir filled and spilled for the first time on June 14, 1971.

Starvation Reservoir is a popular recreation attraction, but more recreation facilities are needed. A boat ramp and parking area have been developed and an access road completed. Water and sanitary systems and camping and picnic facilities are being pro-



Bureau of Reclamation Photo

Completing the housing for the outlet gates at Soldier Creek Dam — Central Utah Project.

grammed for construction in fiscal year 1974. The reservoir area sustained 58,660 visits during 1971.

Excellent progress was maintained at all construction sites. Earthfill placements were completed for Soldier Creek Dam on November 2, 1972 and riprap armoring of the dam embankment was finished November 11, 1972. Construction cleanup will be completed as early in 1973 as weather permits, and the 1973 snowmelt flood waters will be captured in the reservoir storage basin between Strawberry and Soldier Creek Dams.

The 3.2-mile-long Layout Tunnel was holed through July 7, 1972, and concrete lining operations commenced September 6th. The entire invert section of the lining was completed prior to shutdown of concrete placements for the winter. Moling operations for the 1.7-mile-long Currant Tunnel commenced July 26, 1972, and were completed October 31st. Concrete lining operations will commence early in 1973.

The contractor for the first 15-mile segment of Jordan Aqueduct maintained excellent progress throughout 1972 and has completed nearly 90 per cent of the work in 54 percent of allotted contract time. It is expected that all work will be completed early in 1973, about one year ahead of schedule.

Advance notice was given to prospective bidders in the fall of 1972 of proposed early 1973 bid calls for constructing a 20-mile reach of Rock Creek Road, Vat Tunnel, and Currant Creek Dam and Pipeline. Preconstruction work continues on other features of Bonneville Unit.

The Draft Environmental Statement for Bonneville Unit was submitted to Council of Enviornmental Quality August 14, 1972, and the Final Environmental Statement was nearly completed at the year end.

iii. Upalco Unit

The Upalco Unit Definite Plan Report was completed in May 1968. Start of construction is dependent upon availability of funds.

The Upalco Unit will develop waters of Lake Fork and Yellowstone Rivers for irrigation, recreation, fish and wildlife, and flood control. Storage regulation will be provided at Taskeech Reservoir on Lake Fork below Moon Lake Reservoir. Total capacity of Taskeech Reservoir will be 78,400 acre-feet. Surplus flows of Yellowstone River will be diverted at the Bonita Diversion Dam

and conveyed 8.5 miles in the 250-second-foot Taskeech Feeder Canal. Irrigation water will be released from the reservoir to Lake Fork River and distributed from the river through existing canal systems and through the 3.6-mile, 50-second-foot Taskeech Service Canal that will extend to Yellowstone River. The project will provide supplemental irrigation water to 27,540 acres of non-Indian lands and 15,070 acres of Indian lands.

Part of the storage in Taskeech Reservoir will replace irrigation storage presently provided in Twin Potts Reservoir and 14 upstream mountain lakes and thus permit water levels in these facilities to be stabilized for fish and wildlife and recreation.

iv. Jensen Unit

Advance Planning

Preconstruction activities continued through fiscal year 1972 on the Jensen Unit. Repayment contract negotiations are in progress. A Definite Plan Report was completed in April 1971. Since that time the axis of Tyzack Dam, a principal feature of the project, has been moved downstream from the previously selected site, and the report has been revised to reflect the resulting changes. A Draft Environmental Statement is expected to be completed and distributed for review late in 1972.

The project, located along the Green River in Uintah County east of Vernal, will develop flows of the Green River to provide irrigation water for 4,080 acres — of which 3,640 acres will receive supplemental and 440 acres full-service water supplies. The project will furnish 18,000 acre-feet annually of municipal and industrial water for use in the vicinity of Vernal. It will also provide flood control and fish and wildlife benefits.

Project commitments will be met by releases of water from the Tyzack Reservoir to be constructed on Big Brush Creek with a storage capacity of 26,000 acre-feet, the 35-second-foot Tyzack Pumping Plant which empties into the 4.1-mile Tyzack Aqueduct, and the Burns Pumping Plant on the Green River.

b. Emery County

The Emery County Project provides supplemental water for 18,004 acres of land and a full supply for 771 acres in Emery County in east-central Utah near the towns of Huntington, Castle Dale, and Orangeville. Principal components of the project include Joes Valley Dam and Reservoir on Cottonwood Creek with a storage

capacity of 62,460 acre-feet, the Swasey Diversion Dam located about 10 miles downstream from Joes Valley, the 16-mile Cottonwood-Huntington Canal heading at the Swasey Diversion Dam, the Huntington North Dam and Reservoir with a capacity of 5,420 acre-feet, and the 3½-mile Huntington North Service Canal. Laterals and drains will be constructed as required. Recreation facilities are provided at the project reservoirs. The Emery County Project was completed in June 1966.

Construction

Early in 1972 work was completed for an open pilot drain. A short reach of closed drain was constructed utilizing a plastic pipe. Late in 1972 bids were taken for constructing 5.5 miles of buried plastic pipe drain to serve Block No. 1 of drainage-deficient lands.

6. WYOMING

a. Lyman Project

The Lyman Project is located in Uinta County in southwestern Wyoming near the town of Lyman. The project will deliver supplemental water to 42,674 acres of presently irrigated lands. Two dams — the Meeks Cabin and China Meadows — will comprise the principal features of the project as planned.

Construction

Meeks Cabin Dam was completed in the spring of 1971 and the new reservoir partially filled during the 1971 runoff season. It filled and spilled for the first time on June 16, 1972. Advance notice was given to prospective bidders in the fall of 1972 of intent to issue the Invitation for Bids in the winter of 1972-73 for construction of China Meadows Dam.

The Final Environmental Statement for China Meadows Dam and Reservoir was filed with the Council on Environmental Quality on May 19, 1972.

b. Seedskadee Project

The Seedskadee Project, located in the Upper Green River Basin in southwestern Wyoming, was authorized in 1956, and construction of Fontenelle Dam and Reservoir was completed in 1965. In early 1962 the Congressional Committee, the Bureau of Reclamation, and a special Wyoming Projects Review Team became con-

Bureau of Reclamation Photo

Meeks Cabin Dam of Lyman Project in southwest, Wyoming. Looking south with Uinta Mountains in the background.

cerned with signs of settler distress on several Reclamation projects in Wyoming. In March 1962 all construction on the irrigation facilities was discontinued pending completion of additional studies.

The Seedskadee Project Development Farm was established in 1964 to determine and demonstrate the most effective, economic, and best adapted water management practices, crop production and livestock handling techniques, and their relationships to optimum size family units and type of irrigation systems. These data have been assembled, analyzed, and used as a primary basis for inputs to advance planning studies for the area of initial development. The Definite Plan Report is almost completed for submission to the Commissioner of Reclamation for review and approval. The Development Farm was operated for six years by the University of Wyoming and is currently being operated by a private individual.

The plan for initial development of the Seedskadee Project, still under study, could provide for irrigation of 9,720 acres of dry irrigable land in the original Blocks 1 and 2 on the west side of the Green River immediately below Fontenelle Dam and Reservoir. The remaining 34,000 acres in the project, for which water has been reserved for irrigation, would be deferred for later stage development under this plan.

Fontenelle Dam and Reservoir (total capacity of 345,400 acre-feet) will provide water for irrigation and for municipal and industrial needs. The 10,000-kilowatt powerplant at the toe of the dam began operation in May 1968. Development of the wildlife refuge downstream from the dam is proceeding as an adjunct to the project under Section 8 of the Colorado River Storage Project Act.

Several miles of canals, laterals, and drains will be constructed in the initial area of development to convey water from the reservoir to 22 new farm units.

Recreation

Recreation facilities which have been provided at Fontenelle Reservoir include a boat ramp, parking areas, campground, picnic areas, water, contact station, and comfort stations. The reservoir area accommodated 17,610 visits during 1971, an increase of 50 percent over 1970.

c. Eden Project

The Eden Project is located in Sweetwater County, southwestern Wyoming, about 45 miles north of Rock Springs. Major

physical features consist of the Big Sandy Reservoir (39,700 acre-feet) and the Eden Reservoir (8,000 acre-feet). There are 113 miles of canals and laterals to serve the project. The present project area under water right is 17,088 acres.

Construction started in 1950 and was completed in 1960. First water was available through Bureau-constructed works in 1952. By contract dated June 8, 1950, the Eden Valley Irrigation and Drainage District assumed responsibility for repayment of construction costs of $75 an acre over a 60-year period with the remaining costs to be repaid from revenues of the Colorado River Storage Project. Operation and maintenance was assumed by the water users on January 1, 1970.

Short water supplies in some years, short growing season, limited crop production, general economic conditions, and farm management have been factors limiting farm income.

The Farmers Home Administration, Agricultural Stabilization and Conservation Service, the Soil Conservation Service, and the Bureau of Reclamation have been active in improving adverse project conditions.

Work was completed early in 1972 under the contracts awarded in the Fall of 1971 for placing compacted earth linings in an additional 2.1 miles of Eden Area laterals, enlarging about 1.1 miles of existing laterals, increasing the capacity of seven turnouts and constructing a 0.5-mile-long wasteway. Additional work was initiated in 1972 under a contract for modification of the existing Eden Reservoir outlet works and outlet tunnel, reinforcement of reservoir dikes, placing earth lining and beach belt protection for approximately 0.6 mile of Eden Canal, and constructing a 50-second-foot turnout in Big Sandy Dike of the Big Sandy Reservoir. The work was nearly 60 percent completed at the years end.

Throughout the year preconstruction activities have been directed toward assembly of design data for modification of the outlet and dike protection for the existing Eden Reservoir and lining various reaches of Eden Canal. Investigations are continuing to determine the need for providing additional drainage through either deepening existing drains or constructing new facilities.

G. POTENTIAL PARTICIPATING PROJECTS

In carrying out further investigations of projects under Federal Reclamation Laws in the Upper Colorado River Basin, the Secretary of the Interior is directed to give priority to completion of planning reports on a number of potential projects.

The Bureau of Reclamation, so far as limited funds and personnel will permit, is continuing its studies on these projects. Considerable progress in investigations has been accomplished during the past year.

1. FEASIBILITY INVESTIGATIONS

COLORADO

a. Yellow Jacket Project

The proposed feasibility report on the Yellow Jacket Project, completed in October 1968, has been revised and circulated to State and local agencies for their review. The plan for the project includes storage water regulation at Lost Park and Ripple Reservoirs in the White River drainage for development of lands in the White River Basin. The project will also include storage at Thornburgh Reservoir for irrigation of lands in the Axial Basin in the vicinity of Milk Creek. The revised project will provide a supplemental irrigation supply to 3,700 acres of land and a full supply to 10,500 acres of land. The project, as currently revised, would also develop 71,500 acre-feet of water annually for municipal and industrial supplies and provide recreation and fish and wildlife benefits.

b. Battlement Mesa Project

A proposed feasibility report on the Battlement Mesa Project was completed in 1967, but review of this report has not been completed. The proposed project would develop the flows of Buzzard Creek to provide supplemental irrigation water to 3,130 acres of land and a full water supply to 6,340 acres of land, develop 3,000 acre-feet of municipal and industrial water, and provide benefits to recreation and fish and wildlife. Owens and Buzzard Creek Reservoirs would be constructed on Buzzard Creek to regulate and store excess flows of the stream. Irrigation water released from the reservoirs would be distributed through a system of project facilities, including the Harrison, Brush Creek, and Colorado Canals, the Cheney Lateral, and a series of smaller laterals branching from the main canals.

c. Bluestone Project

A proposed feasibility report on the Bluestone Project was completed August 1971 and is under review. This report summarizes results of feasibility studies for the Bluestone Project and reconnaissance studies for a potential project extension. The pro-

posed project would provide a supplemental irrigation supply to 1,880 acres of land, a full supply to 750 acres of land, and 61,000 acre-feet of water for municipal and industrial use. The extension would involve the construction of Una Reservoir, a major storage feature on the Colorado River, to provide hydroelectric power, municipal and industrial water, recreation, fish and wildlife, flood control, and river regulation.

d. Grand Mesa Project

Feasibility investigations are well advanced. A draft of the proposed feasibility report is under review. Preparation of the Environmental Statement is in progress. Completion of a proposed feasibility report is scheduled for fiscal year 1973.

e. Upper Gunnison Project

Preparation of the draft of the proposed feasibility report and Environmental Statement is in progress. The financial and economic analyses remain to be completed. Completion of a proposed feasibility report is scheduled for fiscal year 1973.

f. Basalt Project

Feasibility designs and cost estimates of the project features have been completed. Preparation of the financial and economic analyses and the proposed feasibility report is in progress. Completion of a feasibility report is scheduled for fiscal year 1973.

g. Lower Yampa Project

Feasibility investigations were initiated in fiscal year 1969. Field work on land classification and drainage has been completed. Plan formulation, water supply studies, and agricultural surveys are in progress. The proposed feasibility report is scheduled for completion in fiscal year 1975.

UTAH

a. Central Utah Project (Ultimate Phase), Uintah Unit

The Uintah Unit was conditionally authorized by the Colorado River Basin Project Act of 1968. Construction is contingent upon completion and submission to Congress of a feasibility report and certification by the Secretary of the Interior that the unit is economically justified and financially feasible.

The proposed project would develop the flows of the Uinta and Whiterocks Rivers to provide supplemental irrigation water to 45,150 acres of land and a full supply to 7,820 acres of new land, develop 1,000 acre-feet of municipal and industrial water, and provide benefits to recreation, fish and wildlife, and flood control.

Uinta and Whiterocks Reservoirs would be constructed on Uinta and Whiterocks Rivers, respectively, to regulate and store surplus flows for project use. Project water would be delivered through present distribution systems requiring some rehabilitation. Stabilization of 13 upstream reservoirs will provide exchange water for irrigation as well as provide recreation and fish and wildlife benefits.

The Unit will be re-evaluated when the Water Resources Council's new procedures for plan formulation and evaluation of water and related land resources projects are available. This work is scheduled to be completed in fiscal year 1973.

b. Central Utah Project (Ultimate Phase), Ute Indian Unit

Feasibility investigations are currently in progress on the Ute Indian Unit. The proposed Ute Indian Unit would develop Colorado River water for irrigation, municipal and industrial use, and power production and would serve both Indian and non-Indian lands in the Uinta Basin. Municipal and industrial water would be developed for the Uinta Basin to facilitate development of vast deposits of phosphate, oil shale, minerals, and other natural resources. Water would also be diverted from the Uinta Basin to the Bonneville Basin to help satisfy the expanding water requirements of the Wasatch Front area.

The proposed feasibility report is scheduled for completion in fiscal year 1976; although under the Colorado River Basin Project Act Congress directed the Secretary of the Interior to have a planning report completed by December 31, 1974, to enable the United States to meet commitments heretofore made to the Ute Indian Tribe of the Uintah and Ouray Indian Reservation under an agreement dated September 20, 1965.

2. RECONNAISSANCE INVESTIGATIONS UTAH

a. Paria-San Rafael Investigations

Reconnaissance investigations initiated in fiscal year 1969 are nearing completion. The study area includes the San Rafael, Dirty

Devil, Escalante, and Paria River Basins and will provide a general appraisal of the overall water and related resources and development potentials of the area. A reconnaissance report is scheduled to be completed in fiscal year 1973.

WYOMING

a. Green River Project

A reconnaissance report on potential development in the Green River in Wyoming was completed in October 1971. Alternative plans of development to supply municipal and industrial water for in-basin uses, to export municipal and industrial water to North Platte River Basin, and to provide water for lands west and/or east of Green River are outlined in the report.

H. RESERVOIR OPERATIONS

The 1972 snowmelt runoff in the Upper Colorado River Basin during the period April through July totaled 5,578,000 acre-feet, or 68% of the long-term average. Runoff for the water year ending September 30, 1972, was 9.3 million acre-feet which was disposed of as follows:

	Acre-feet
Net Storage Decrease	—620,000
Bank Storage	180,000
Evaporation	500,000
Releases to Lower Basin	9,300,000
Total	9,360,000

All of the Upper Basin Reservoirs had a net decrease of water in storage during water year 1972 except Flaming Gorge which gained 534,000 acre-feet. During the same 12-month period, Lake Mead gained about 565,000 acre-feet of water.

Lake Powell's water surface reached a seasonal high at 3,620 feet elevation above sea level on June 27, 1972, with an active surface storage of 14,198,000 acre-feet. The lake is now at elevation 3,609 feet and is expected to drop approximately three more feet during the winter of 1972-73.

There were releases of 9.3 million acre-feet of water to the Lower Basin during water year 1972. During 1973 about 8.2 million acre-feet will be released to meet Lower Basin commitments, the

entire release being used to generate power for both Upper and Lower Basin consumers.

The water surface of Flaming Gorge Reservoir on the Green River reached its highest elevation on July 28, 1972, with 3,540,000 acre-feet of active storage at elevation 6,035 feet above sea level. The April-through-July runoff of Green River above the reservoir was about 1,938,000 acre-feet, or 167% of normal. Scheduled releases of water for power generation should draw the reservoir down to about elevation 6,022 feet with about 3,060,000 acre-feet of water by the time of spring runoff in 1973.

Fontenelle Reservoir on the upper Green River in Wyoming had a November 1st storage content of 340,000 acre-feet at elevation 6,505 feet above sea level. During the 1972-73 winter the reservoir will be drawn down to approximately elevation 6,483 feet. In future years the reservoir will normally fill each spring to elevation 6,506 feet and be drawn down to between elevation 6,480 and 6,485 feet late in each winter. Within this type of fluctuation, all purposes of the project will be served and minimum amounts of water will bypass the powerplant.

The inflow to Navajo Reservoir during April-July 1972 was 259,000 acre-feet or 31% of the long-time average.

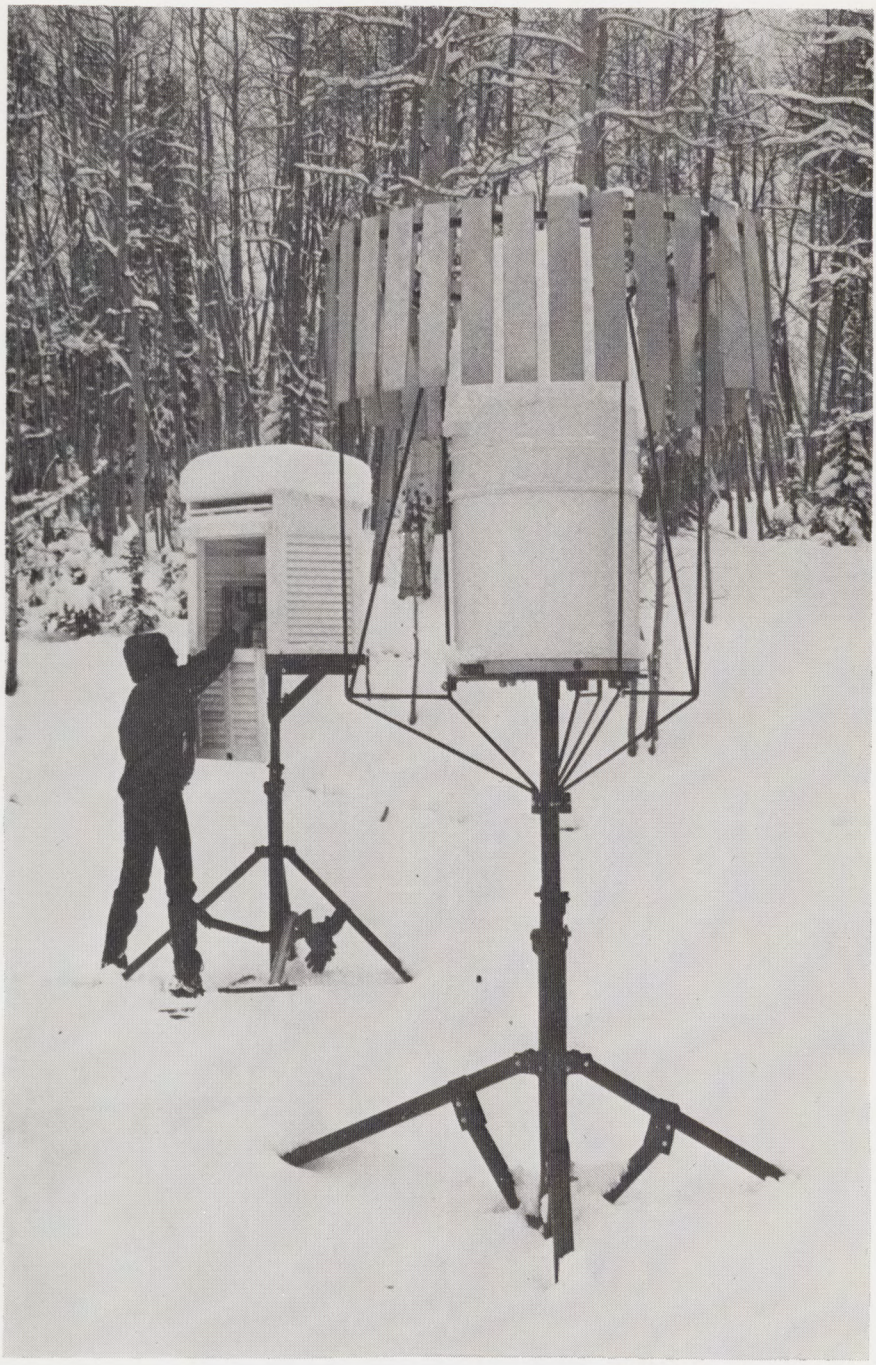
Blue Mesa Reservoir on the Gunnison River had 532,000 acre-feet in active storage at elevation 7,484 feet above sea level. The reservoir should recede during the winter to approximately elevation 7,456 feet with 348,000 acre-feet of water. Morrow Point Reservoir, which is located downstream from Blue Mesa Dam, should be operated at or near full stage as its inflow is largely controlled by the larger Blue Mesa Reservoir.

I. ATMOSPHERIC WATER RESOURCES PROGRAM IN THE UPPER COLORADO RIVER BASIN

Scientific investigation of atmospheric water resources continues in the mountains of the Upper Basin States. The scope of the investigation has been advanced from exclusively experimental studies by adding a pilot-type project.

Small scale cloud-seeding experiments are being conducted by the University of Wyoming in the Bridger Range of the Wind River Mountains.

Important to the Reclamation program are winter seeding experiments, now in their twelfth year, conducted by Colorado State



Bureau of Reclamation Photo

Observer making observations at a weather station near Purgatory, Colorado.

University at Climax, Colorado, under a grant from the National Science Foundation. These experiments, now largely concluded, are designed to show the quantitative change in precipitation by seeding and to determine criteria for optimum seeding conditions. Although most experiments have utilized the proven method of ground-based seeding, atmospheric scientists have shown increasing interest in the use of pyrotechnics (rockets) for seeding and the use of aircraft for observation. Lack of funds have prevented extensive investigation of new techniques.

The Colorado River Basin Pilot Project in the San Juan Mountains of southwestern Colorado is the last development step before possible full-scale seeding operations in the Upper Colorado River Basin, which, according to the Bureau of Reclamation, could increase streamflow an estimated two million acre-feet annually. The prime objective of the project is to develop information from operational-type cloud seeding over large areas to determine costs and amounts of increased precipitation. Preliminary meteorological measurements and project design studies were made in the project area during the winter of 1968-69. Equipment and instrumentation, except silver-iodide generators, were tested during the winter of 1969-70. A contract for the silver-iodide generators, their installation, and operation, was awarded by the Bureau of Reclamation to EG&G, Inc., with headquarters at Albuquerque, New Mexico. This equipment was installed during the summer of 1970, and seeding began during the winter of 1970-71. A minimum of four winter seasons of operation is considered necessary to adequately test and evaluate the project. There are about 90 days of snowfall in the area per year. During the past two seasons 59 days were suitable for seeding, of which 28 were seeded on a randomly selected basis. The results of seeded events will be compared with those of unseeded events at the conclusion of the pilot project in 1974.

This area generally has a heavy snowpack which contributes substantially to the flow of the Colorado River through some of its major tributaries, including the Gunnison, San Miguel, Dolores, and San Juan Rivers. The target area is almost entirely above 9,500-foot elevation and is publicly owned.

EG&G directs the cloud-seeding operations from its control center at Durango, Colorado. The Durango center continually appraises avalanche conditions and total snowpack depth in order to suspend seeding operations as required by safeguards included in operational design. Part of these safeguard standards require that there be no seeding of storms which forecasts indicate might be severe in nature.

Aerometric Research, Inc., of Santa Barbara, California, has been awarded a contract to evaluate the data being collected and to compile a factual and unbiased report. A preliminary evaluation of the first two years of cloud seeding is due March 1973.

Ecological studies of effects of the pilot cloud-seeding project have been contracted to the University of Colorado, Fort Lewis College, and Colorado State University. Continuing also is a parallel investigation by the University of Colorado Institute of Arctic and Alpine Research to determine whether avalanches can be forecast accurately, if meteorological precursors are known.

XI. Findings of Fact

No findings of fact pursuant to Article VIII of the Upper Colorado River Basin Compact have been made by the Upper Colorado River Commission. No part of this Annual Report is to be construed as a finding of fact by the Commission.

XII. Acknowledgments

The Upper Colorado River Commission wishes to acknowledge the united actions of the Governors of Colorado, New Mexico, Utah and Wyoming on the fundamental issues involved in the development of the water and land resources of the Upper Colorado River Basin and for their interest in and support of the Upper Colorado River Commission.

The Commission especially wishes to give recognition to the difficult and able work of the members of the United States Congress from the Upper Division States of the Colorado River Basin and to acknowledge with appreciation the assistance it has received from agencies of the Executive Branch of the Federal Government: the Department of the Interior, Bureau of Reclamation, Geological Survey, Environmental Protection Agency, Bureau of Indian Affairs, and the Department of Agriculture.

Special recognition and appreciation is due to the Committee of Fourteen, several of whom are advisers closely associated with the Commission, for the excellent work accomplished on the difficult international salinity problem of the Colorado River between the United States and Mexico.

Officers and personnel of many State agencies having their primary interests in various phases of water resources have also aided materially with cooperative efforts and information.

During the past year death took its toll of four prominent citizens who had been directly associated with the activities of the Upper Colorado River Commission and the conservation and development of the water resources of the Upper Colorado River Basin. On the following pages are resolutions of the Commission honoring Mr. Norman W. Barlow of Wyoming, Mr. I. J. Coury of New Mexico, Mr. George D. Clyde of Utah, and Mr. Earl Lloyd of Wyoming.

RESOLUTION

by

UPPER COLORADO RIVER COMMISSION

HONORING

NORMAN W. BARLOW

WHEREAS, through the death of the Honorable Norman W. Barlow, the State of Wyoming and the other States of the Upper Division of the Colorado River Basin lost a most distinguished and devoted citizen; and

WHEREAS, the Honorable Norman W. Barlow served a number of terms in the Wyoming Legislature where he evidenced a strong interest in water and related resource development; and

WHEREAS, the Honorable Norman W. Barlow served as an Alternate Commissioner and adviser to the Wyoming Commissioner on the Upper Colorado River Commission for a long period of time, and served for a number of years as Chairman of the Finance Committee of said Commission; and

WHEREAS, the Honorable Norman W. Barlow throughout his long career has maintained a keen interest in all matters pertaining to the development, conservation, and utilization of the water and land resources of the Upper Colorado River Basin; and

WHEREAS, the stilled voice and counsel of the Honorable Norman W. Barlow will be sorely missed in the State of Wyoming and in the States of the Upper Colorado River Basin:

NOW, THEREFORE, BE IT RESOLVED that the Upper Colorado River Commission, its advisers, and staff, at an Adjourned Annual Meeting and Regular Meeting held in Cheyenne, Wyoming on March 20, 1972, express their appreciation for the efforts of the Honorable Norman W. Barlow in the conservation and development of the waters and related resources of the Upper Division States and extend their sympathy and understanding of their deep loss to members of his family and friends;

BE IT FURTHER RESOLVED that the Secretary of the Upper Colorado River Commission is hereby directed to forward copies of this unanimously adopted resolution to members of the family of the Honorable Norman W. Barlow, and the Governor of the State of Wyoming, and cause the resolution to be published in the Commission's Twenty-Fourth Annual Report.

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION
In Memoriam
I. J. COURY

WHEREAS, the State of New Mexico and the other States of the Upper Division of the Colorado River Basin have, through the death of I. J. Coury on March 25, 1972, lost a distinguished and devoted citizen; and

WHEREAS, I. J. Coury served on the New Mexico Interstate Stream Commission from 1943 to the time of his death and served as Chairman of said Commission from 1958; and

WHEREAS, I. J. Coury served as an adviser to the New Mexico Commissioner in the negotiation of the Upper Colorado River Basin Compact; and

WHEREAS, since the inception of the Upper Colorado River Commission I. J. Coury served as an adviser to the New Mexico Commissioner, and maintained a keen interest in the affairs of the Upper Colorado River Basin; and

WHEREAS, as Treasurer of the Upper Colorado River Commission from November 30, 1960 until his death, I. J. Coury made invaluable contributions to operation of the Commission through his sound judgment and excellent foresight; and

WHEREAS, I. J. Coury always demonstrated unsurpassed personal dedication to furthering all constructive programs of said Commission; and

WHEREAS, I. J. Coury's personal insight, warm friendship and understanding will remain indelibly imprinted in the hearts of his friends and associates:

NOW, THEREFORE, BE IT RESOLVED that the Upper Colorado River Commission at its Adjourned Annual Meeting held in Denver, Colorado on October 25, 1972 wishes to express its sympathy and understanding of his family's deep loss in the death of I. J. Coury;

BE IT FURTHER RESOLVED, that the Secretary of the Upper Colorado River Commission is hereby directed to furnish copies of this unanimously adopted resolution to the family of I. J. Coury, the Governor of the State of New Mexico, and other appropriate parties, and to cause said resolution to be published in the Twenty-Fourth Annual Report of the Upper Colorado River Commission.

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION
In Memoriam
GEORGE D. CLYDE

WHEREAS, through the death of the Honorable George D. Clyde on April 2, 1972, the State of Utah and the other States of the Upper Division of the Colorado River Basin have lost a most distinguished and devoted citizen; and

WHEREAS, the Honorable George D. Clyde was an outstanding leader in the development and conservation of water resources in the West; and

WHEREAS, the Honorable George D. Clyde served as Governor of the State of Utah from 1957 to 1964; and

WHEREAS, the Honorable George D. Clyde served as Commissioner for the State of Utah on the Upper Colorado River Commission from 1953 to 1965, and served as Vice-Chairman of said Commission from 1955 until 1965; and

WHEREAS, the Honorable George D. Clyde served as adviser to the Utah Commissioner from 1965 until his death; and

WHEREAS, the Honorable George D. Clyde energetically provided wise counsel and courageous constructive proposals for the development and conservation of the water resources in the Upper Colorado River Basin; and

WHEREAS, the Honorable George D. Clyde, through his complete dedication and outstanding leadership, earned the deep respect and affection of all members of the Upper Colorado River Commission, its advisers, and staff:

NOW, THEREFORE, BE IT RESOLVED that the Upper Colorado River Commission at an Adjourned Annual Meeting in Denver, Colorado on October 25, 1972 expresses its appreciation of the unrelenting efforts of the Honorable George D. Clyde in the protection and development of the water and related land resources of the Upper Division States of the Colorado River Basin, and extends its sympathy and understanding of their deep loss to the members of his family and friends;

BE IT FURTHER RESOLVED, that the Secretary of the Upper Colorado River Commission is hereby directed to forward copies of this unanimously adopted resolution to members of the family of the Honorable George D. Clyde, the Governor of the State of Utah, and other appropriate parties, and to cause it to be published in the Twenty-Fourth Annual Report of the Upper Colorado River Commission.

RESOLUTION

of

UPPER COLORADO RIVER COMMISSION

In Memoriam

EARL LLOYD

WHEREAS, Earl Lloyd served the State of Wyoming as State Engineer and as Commissioner representing Wyoming on the Upper Colorado River Commission for several years; and

WHEREAS, Earl Lloyd devoted his exceptional technical experience and energy to the resolution of many complex controversial problems related to the conservation, development, and utilization of the water resources of the Upper Colorado River System in the four States of the Upper Division of the Colorado River Basin; and

WHEREAS, Earl Lloyd's broad knowledge of the development and utilization of water resources combined with his fair consideration and good judgment proved him to be a respected leader in his field; and

WHEREAS, Earl Lloyd continued to serve as an adviser to the State of Wyoming after his retirement as Wyoming State Engineer and Upper Colorado River Commissioner; and

WHEREAS, Earl Lloyd has been taken by death from our ranks; and

WHEREAS, Earl Lloyd's wise counsel and devotion to high ideals will be sorely missed by the Upper Colorado River Commission and its staff:

NOW, THEREFORE, BE IT RESOLVED that the Upper Colorado River Commission at its Adjourned Annual Meeting convened in Denver, Colorado, this twenty-fifth day of October, 1972, expresses its deep regret over the death of Mr. Earl Lloyd, friend and devoted co-worker, and extends its sympathy and understanding of its deep loss to members of his family and friends, and unanimously directs that this resolution be a part of the proceedings of the Upper Colorado River Commission and be transmitted to members of his family and the Governor of the State of Wyoming, and to cause said resolution to be published in the Twenty-Fourth Annual Report of the Upper Colorado River Commission.

Appendices

APPENDIX A

Report of Auditor

REPORT OF EXAMINATION

Upper Colorado River Commission

SALT LAKE CITY, UTAH

June 30, 1972

McNULTY, CHADWICK & STEINKIRCHNER
CERTIFIED PUBLIC ACCOUNTANTS
200 NORTH SIXTH STREET
GRAND JUNCTION, COLORADO 81501

AREA CODE 303 - 243-3180

JOHN E. McNULTY, C.P.A.
JERALD F. CHADWICK, C.P.A.
JOSEPH D. STEINKIRCHNER, C.P.A.
GEORGE H. WHITE, C.P.A.

DANNY G. DAVIS, C.P.A.
DANIEL L. McCOY, C.P.A.

August 3, 1972

Upper Colorado River Commission
Salt Lake City
Utah

Gentlemen:

We have examined the balance sheets of the General Fund and the Property and Equipment Fund of the Upper Colorado River Commission as of June 30, 1972, the related statement of revenue and expense - General Fund and reports on the treasurer for the year then ended. Our examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records as we considered necessary in the circumstances.

In our opinion, the accompanying balance sheets, statement of revenue and expense and reports on the treasurer present fairly the financial position of the Upper Colorado River Commission at June 30, 1972 and the results of its operations for the year then ended in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

McNulty Chadwick & Steinkirchner

BALANCE SHEET — GENERAL FUND

UPPER COLORADO RIVER COMMISSION

June 30, 1972

ASSETS

CASH		
Office cash fund		$ 25.00
Cash on deposit with First Security Bank of Utah, N.A.:		
Demand deposit	$ 20,452.37	
Time certificates	91,000.00	111,452.37
OTHER ASSETS		
Returnable deposit—United Air Lines	425.00	
Pension trust insurance premiums to be withheld from employees	329.04	754.04
PREPAID EXPENSE		
Unexpired insurance premiums	691.50	
Prepaid pension trust insurance premiums	2,794.00	
Prepaid office and travel expense	1,245.42	4,730.92
TOTAL ASSETS		$116,962.33

LIABILITIES, RESERVES AND FUND BALANCE

ACCOUNTS PAYABLE		
For supplies and expenses		$ 1,562.55
RESERVE		
For fiscal year 1973 assessments received in advance		12,375.00
UNAPPROPRIATED FUND BALANCE		
Balance July 1, 1971	$104,741.65	
Add excess of revenue over expenses for fiscal year ended June 30, 1972	10,283.13	
	115,024.78	
Less appropriation for fiscal year ended June 30, 1972	12,000.00	
Balance June 30, 1972		103,024.78
TOTAL LIABILITIES, RESERVES AND FUND BALANCE		$116,962.33

Note — The accompanying Notes to Financial Statements — General Fund are an integral part of this statement.

BALANCE SHEET — PROPERTY AND EQUIPMENT FUND

UPPER COLORADO RIVER COMMISSION

June 30, 1972

ASSETS

PROPERTY AND EQUIPMENT — At cost	
Land and land improvements	$ 26,366.00
Building	47,627.24
Furniture and fixtures	19,305.63
Library	5,692.85
Automobile	4,245.44
Engineering equipment	3,409.07
Motion picture film — at nominal value	3.00
Upper Colorado River Basin relief model	5,937.77
TOTAL ASSETS	$112,587.00

FUND BALANCE

INVESTMENT IN PROPERTY AND EQUIPMENT		
Balance July 1, 1971		$112,414.16
Transactions for the fiscal year ended June 30, 1972:		
Additions:		
Capital outlay expenditures — General Fund	$2,918.54	
Retirements:		
Remove excess of book cost over trade-in allowance allowance on automobile	2,745.70	
NET INCREASE IN FUND BALANCE		172.84
FUND BALANCE JUNE 30, 1972		$112,587.00

Note — The accompanying Notes to Financial Statements — General Fund are an integral part of this statement.

STATEMENT OF REVENUE AND EXPENSE — GENERAL FUND

UPPER COLORADO RIVER COMMISSION

For the fiscal year ended June 30, 1972

	Budget	Actual	Actual Over (Under) Budget
REVENUE			
Assessments	$110,000.00	$110,000.00	$ —0—
Interest earned on time deposit	—0—	6,000.00	6,000.00
Appropriation from fund balance	12,000.00	12,000.00	—0—
TOTAL REVENUE	122,000.00	128,000.00	6,000.00
EXPENSE			
Personal services:			
Administrative salaries	29,600.00	29,580.00	(20.00)
Engineering salaries	1,300.00	700.00	(600.00)
Attorney's salary	17,300.00	17,280.00	(20.00)
Clerical salaries	3,100.00	3,040.75	(59.25)
Janitor	1,500.00	1,272.80	(227.20)
FICA tax	2,000.00	1,499.23	(500.77)
Pension Fund	12,000.00	11,601.17	(398.83)
	66,800.00	64,973.95	(1,826.05)
Current expenses:			
Reporting	650.00	639.42	(10.58)
Telephone and telegrams	2,350.00	2,332.37	(17.63)
Office supplies and postage	3,500.00	2,806.09	(693.91)
Insurance and bonds	1,475.00	1,062.02	(412.98)
Accounting	1,100.00	1,100.00	—0—
Secretarial service	400.00	364.00	(36.00)
Engineering supplies & services	23,050.00	23,009.49	(40.51)
Printing	5,600.00	5,552.65	(47.35)
Library supplies and expense	500.00	467.10	(32.90)
Meeting expense	150.00	146.31	(3.69)
Utilities	1,150.00	1,127.94	(22.06)
Building repair & maintenance	75.00	53.22	(21.78)
Miscellaneous	1,000.00	985.44	(14.56)
	41,000.00	39,646.05	(1,353.95)
Capital outlay	3,375.00	2,918.54	(456.46)
Education and information	1,125.00	658.64	(466.36)
Travel	9,700.00	9,519.69	(180.31)
	14,200.00	13,096.87	(1,103.13)
TOTAL EXPENSE	122,000.00	117,716.87	(4,283.13)
EXCESS OF REVENUE OVER EXPENSE	$ —0—	$ 10,283.13	$10,283.13

Note — The accompanying Notes to Financial Statements — General Fund are an integral part of this statement.

REPORT ON THE TREASURER

UPPER COLORADO RIVER COMMISSION

For the period July 1, 1971 through March 25, 1972

Balance on deposit in First Security Bank of Utah at July 1, 1971:			
Checking account			$ 24,286.05
Time certificates of deposit			99,000.00
			123,286.05
Less outstanding checks at July 1, 1971			10,244.39
			113,041.66
Cash received during the period:			
Assessments fiscal year 1972		$97,625.00	
Interest from time certificates of deposit		5,722.50	
Federal excise tax refund		243.46	
Insurance premium refunds		96.80	103,687.76
			216,729.42
Less cash disbursements during the period:			
For expenses applicable to 1971 fiscal year		613.94	
For expenses applicable to 1972 fiscal year		93,578.29	
		94,192.23	
Deduct:			
Cash disbursements charged to operating expenses above but actually paid out prior to July 1, 1971	$ 805.37		
Amounts withheld from employees for payroll taxes and insurance	1,255.38	2,060.75	92,131.48
			124,597.94
Add outstanding checks at March 25, 1972			5,108.06
Balance on deposit March 25, 1972			$129,706.00
Composition of balance on deposit at March 25, 1972:			
Checking account balance per bank statement March 25, 1972			$ 38,706.00
Time certificates of deposits on hand March 25, 1972			91,000.00
TOTAL			$129,706.00

Note — The accompanying Notes to Financial Statements — General Fund are an integral part of this statement.

REPORT ON THE TREASURER

UPPER COLORADO RIVER COMMISSION

For the fiscal year ended June 30, 1972

Balance on deposit in First Security Bank of Utah at July 1, 1971:		
Checking account		$ 24,286.05
Time certificates of deposit		99,000.00
		123,286.05
Less outstanding checks at July 1, 1971		10,244.39
		113,041.66
Cash received during the fiscal year:		
Assessments for fiscal year 1972	$97,625.00	
Assessment State of New Mexico for fiscal year 1973	12,375.00	
Interest from time certificates of deposit	6,000.00	
Insurance premium refunds	293.52	
Federal excise tax refund	243.46	116,536.98
		229,578.64
Less cash disbursements during the fiscal year		118,126.27
		111,452.37
Add outstanding checks at June 30, 1972		4,858.32
Balance on deposit June 30, 1972		$116,310.69
Composition of balance on deposit at June 30, 1972:		
Checking account balance per bank statement June 30, 1972		$ 25,310.69
Time certificates of deposit on hand June 30, 1972		91,000.00
TOTAL		$116,310.69

Note — The accompanying Notes to Financial Statements — General Fund are an integral part of this statement.

NOTES TO FINANCIAL STATEMENTS — GENERAL FUND

UPPER COLORADO RIVER COMMISSION

June 30, 1972

Note 1 — At June 30, 1972, unrecorded liability of the Commission to its full time employees for accrued leave amounted to $5,615.33. According to Commission policy (effective July 1, 1960), each employee is expected to take annual leave of 15 days each calendar year during which period of time regular salary payments are continued. Employees may accumulate a maximum of 30 days annual leave.

Note 2 — The Commission created the Upper Colorado River Commission Pension Trust effective October 1, 1965. The purpose of this trust is to purchase insurance policies which will provide retirement income and life insurance for qualified employees of the Commission. The Commission is required to pay the premiums on the policies one year in advance, in October of each year, and amounts equivalent to 3% of the base pay are withheld from the pay checks of the participating employees during the ensuing twelve month period to cover the employees' share of the premium cost.

Note 3 — In June, 1971, a representative of the United States Department of Health, Education and Welfare made an audit of Social Security coverage operations of the Commission for the calendar year 1970. The auditor noted in his report that Section (B)(5) of the agreement dated October 1, 1951, between the Commission and the Secretary of Health, Education and Welfare extending Social Security coverage to employees of the Commission excluded coverage of part-time employees. The Commission has, however, followed the practice of including all such employees in its Social Security contribution reports. Therefore, at the suggestion of the Director, Bureau of Retirement and Survivors Insurance, a modification of the original agreement to provide an extension of Social Security coverage to part-time Commission employees was approved by the Commission and approved December 21, 1971 by Edwin C. Simmons, Deputy Assistant Bureau Director, Bureau of Retirement and Survivors Insurance, United States Department of Health, Education and Welfare.

Note 4 — Mr. I. J. Coury, Treasurer of the Commission, died March 25, 1972. Since the Commission has the sole authority to appoint its officers, and due to the fact that the last meeting of the Commission within the fiscal year ended June 30, 1972 was held on March 20, 1972, the office of Treasurer was vacant as of the end of this fiscal year.

Supplementary Data

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS — GENERAL FUND

UPPER COLORADO RIVER COMMISSION

For the fiscal year ended June 30, 1972

Balance of cash and demand deposit at July 1, 1971		$113,066.66
Cash receipts:		
Assessments for fiscal year 1972	$97,625.00	
Assessments for fiscal year 1973	12,375.00	
Interest earned on time deposit	6,000.00	
Insurance premium and federal excise tax refunds	536.98	116,536.98
		229,603.64
Cash disbursements:		
Personal services	65,141.95	
Current expenses	40,046.70	
Capital outlay	3,082.00	
Education and information	958.64	
Travel	8,896.98	118,126.27
Balance of cash and demand deposit at June 30, 1972		$111,477.37

Note — The accompanying Notes to Financial Statements — General Fund are an integral part of this statement.

INSURANCE COVERAGE

UPPER COLORADO RIVER COMMISSION

June 30, 1972

	Coverage	
	Type	Amount (in dollars)
Treasurer	Fidelity bond	$ —0— (A)
Assistant Treasurer	Fidelity bond	$ 40,000
Automobile	Comprehensive	Actual cash value
	Liability:	
	Each person	$300,000
	Each accident	$500,000
	Property damage	$ 50,000
	Medical	$ 5,000
	Collision and upset	$100 deductible
	Uninsured motorists	10/20,000
Employees	Workmen's compensation	$100,000
Office contents	Fire and comprehensive	$ 50,000 (B)
Office premises	Liability	$300,000
Building	Special multi-peril	$ 70,000 (B)

Note A — Mr. I. J. Coury, Treasurer of the Commission, died March 25, 1972, and his fidelity bond was cancelled as of that date. The Commission received a refund of the unearned premium in the amount of $190.00 from the insurance company in June, 1972, which amount was credited to current expenses — insurance and bonds.

Note B — 90% co-insurance clause.

Note — The accompanying Notes to Financial Statements — General Fund are an integral part of this statement.

APPENDIX B

BUDGET

Fiscal year ending June 30, 1974

UPPER COLORADO RIVER COMMISSION

BUDGET

Fiscal Year Ending June 30, 1974

PERSONAL SERVICES		
Administrative Salaries (including Administrative Secretary)	$31,100	
Legal	18,150	
Engineering	15,000	
Clerical - Secretary	5,100	
Janitor	1,600	
Pension Trust	12,000	
Social Security	2,400	
		$ 85,350
TRAVEL		$ 14,000
CURRENT EXPENSE		
Reporting and accounting	$ 2,100	
Telephone and telegraph	3,100	
Insurance and bond premiums	1,150	
Printing	3,200	
Secretarial Services	500	
Engineering Supplies and Services	500	
Office Supplies and Postage	3,600	
Library and Miscellaneous	1,200	
Meeting expense	300	
Utilities	1,350	
Building Repair and Maintenance	500	
		$ 17,500
CAPITAL OUTLAY		$ 3,150
EDUCATION AND INFORMATION		$ 1,000
TOTAL ESTIMATED EXPENSE		
Fiscal Year July 1, 1973 through June 30, 1974		$121,000
To be funded from surplus		$ 11,000
Total Assessments for Fiscal Year 1974		$110,000

The relief model of the Upper Colorado River Basin, pictured above, was constructed by the Upper Colorado River Commission in cooperation with the Babson Institute of Business Administration. This model shows the topographic features of the area and indicates location of major units of the Colorado River Storage Project and Participating Projects. It is used by the Commission in work connected with administration of Upper Basin activities and is available for display at conventions and other public events.

UPPER COLORADO RIVER COMMISSION

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