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THIRTIETH ANNUAL REPORT

OF THE

Upper Colorado River Commission

SALT LAKE CITY, UTAH
SEPTEMBER 30, 1978

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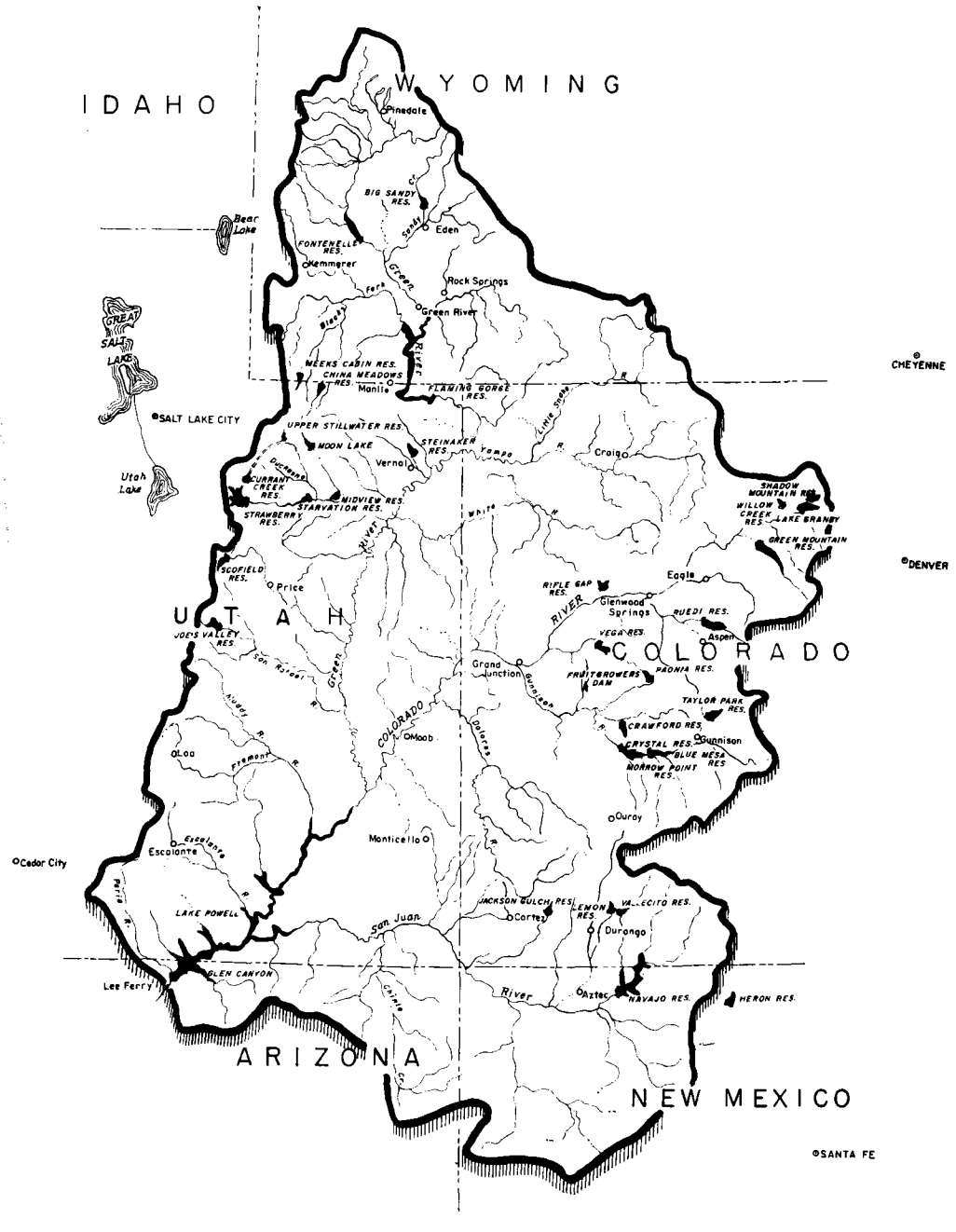
IVAL V. GOSLIN
Executive Director



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, 1978

Mr. President:

The Thirtieth 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 Thirtieth 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;

Status of the Storage Units and participating projects of the Colorado River Storage Project;

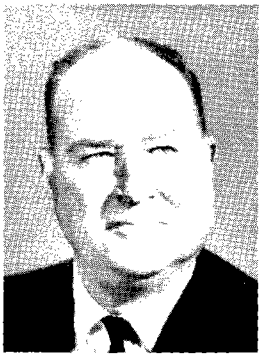
Appendices containing:

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

II. Commission

H. G. Berthelson
Commissioner for
Colorado

John H. Bliss
Commissioner for
New Mexico



H. P. Dugan
Chairman
Commissioner for
United States

Floyd A. Bishop
Commissioner for
Wyoming

Calvin
L. Rampton
Commissioner for
Utah

III. Officers of the Commission

Chairman, H. P. Dugan

Vice Chairman, Floyd A. Bishop

Secretary, Ival V. Goslin

Treasurer, William F. Homer

Assistant Treasurer, Ronald A. Schulthies

IV. Staff

Ival V. Goslin, Executive Director

Paul L. Billhymer, General Counsel

Robert F. Wilson, Chief Engineer

Mrs. Hanna I. Wetmore, Administrative Secretary

Miss Debra L. Evans, Clerk-Typist

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 exofficio members of all committees, Article V(4) of By-Laws):

STANDING COMMITTEES

Engineering Committee

Ival V. Goslin, Chairman	George L. Christopulos
Clarence J. Kuiper	C. R. Lord
Laren D. Morrill	Daniel F. Lawrence
Stephen E. Reynolds	Lynn S. Ludlow
David P. Hale	Barry C. Saunders, Alternate

Legal Committee

Felix L. Sparks, Chairman	Jack D. Palma II
David W. Robbins	Christan P. Mai
Richard A. Simms	Dallin W. Jensen
Charles M. Tansey	Reid W. Nielson

Budget Committee

John H. Bliss, Chairman	Floyd A. Bishop
H. G. Berthelson	Daniel F. Lawrence

SPECIAL COMMITTEES

Finance Committee

Bert A. Page
H. G. Berthelson

Education and Information Committee

H. G. Berthelson, Chairman
Floyd A. Bishop
Lynn S. Ludlow
John H. Bliss

Committee on Consumptive Use

Stephen E. Reynolds
Felix L. Sparks
Clarence Kuiper
Jack D. Palma II
C. R. Lord
Barry Saunders

VI. Advisers to Commission

The following individuals serve as advisers to their respective Commissioners:

COLORADO

Legal

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

David W. Robbins
Deputy Attorney General
Denver, Colorado

Engineering

Clarence J. Kuiper
State Engineer
Denver, Colorado

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

Alternate Commissioner

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

NEW MEXICO

Legal

Richard A. Simms
General Counsel
New Mexico Interstate Stream Commission
and State Engineer's Office
Santa Fe, New Mexico

Charles M. Tansey
Legal Adviser
New Mexico Interstate Stream Commission
Farmington, 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

UTAH

Legal

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

Engineering

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

Lynn S. Ludlow, Manager
Central Utah Water Conservancy District
Orem, Utah

Barry C. Saunders, Alternate
Division of Water Resources
Salt Lake City, Utah

Colorado River Advisory Committee to Utah Commissioner

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

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

Robert B. Hilbert, Chairman
Central Utah Water Conservancy District

Alternate Commissioner

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

WYOMING

Legal

Christan P. Mai, Assistant Attorney General
Jack D. Palma, II, Assistant Attorney General
Cheyenne, Wyoming

Engineering

George L. Christopulos, State Engineer
Cheyenne, Wyoming

C. R. Lord, Interstate Streams Engineer
Cheyenne, Wyoming

Alternate Commissioners

Dan S. Budd
Big Piney, Wyoming

Aaron H. McGinnis
Kemmerer, Wyoming

UNITED STATES OF AMERICA

Legal

Reid W. Nielson, Regional Solicitor
U.S. Department of the Interior
Salt Lake City, Utah

Engineering

J. R. Riter
Denver, Colorado

VII. Meetings of the Commission

During the Water Year ending September 30, 1978, the Commission met seven times as follows:

Meeting No. 146	October 13-14, 1977	Adjourned Annual Meeting Grand Junction, Colorado
Meeting No. 147	January 10, 1978	Special Meeting Salt Lake City, Utah
Meeting No. 148	February 6, 1978	Special Meeting Denver, Colorado
Meeting No. 149	March 20, 1978	Regular Meeting Salt Lake City, Utah
Meeting No. 150	May 15, 1978	Adjourned Regular Meeting Denver, Colorado
Meeting No. 151	July 10, 1978	Special Meeting Denver, Colorado
Meeting No. 152	September 18, 1978	Annual Meeting Salt Lake City, Utah

Upper Colorado River Commission — Left to Right: Calvin L. Rampton, Utah; Floyd A. Bishop, Wyoming; John H. Bliss, New Mexico; H. P. Dugan, United States; Ival V. Goslin, Executive Director; H. G. Berthelson, Colorado.

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 conferrred 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 1978 water year have consisted of: (A) research and studies of an engineering and hydrologic nature of various facets of the water resources of the Colorado River Basin especially as related to energy industries and salinity control; (B) collection and compilation of documents for a legal library relating to the utilization of waters of the Colorado River System for domestic, industrial, and agricultural purposes, and the generation of hydroelectric power; (C) legal analyses of associated laws, court decisions, reports, and problems; (D) analysis of environmental statements on water development projects of the Colorado River Storage Project and participating projects; (E) continuation of a general public relations program related to water resources of the Upper Colorado River Basin; (F) cooperation with water quality and water resources agencies of the Colorado River Basin States on water and water-related problems; (G) participation in the activities of the Colorado River Basin Salinity Control Forum, the Commission's office serving as a record depository for and the Executive Director of the Commission serving as Secretary of the "Forum"; (H) 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 for the construction of additional participating projects as the essential investigations and planning are completed; (I) 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; and (J) preparation of the Second National Water Assessment.

A. ENGINEERING – HYDROLOGY

1. Colorado River Salinity Problem

The Upper Colorado River Commission has continued its interest and involvement in the Colorado River Basin salinity problem. The Commission staff has worked closely with representatives of the Commission's member States in coordinating and correlating activities with other States and Federal Agencies. The Commission's Director has acted as Secretary for the Colorado River Basin Salinity Control Forum which is composed of representatives from the seven Colorado River Basin States. The "Forum" has developed water quality standards and a plan of implementation as required by the Environmental Protection Agency Regulation (40 CFR Part 120) Colorado River System Salinity Control Policy and Standards Procedure.

Section 303 of the Clean Water Act requires that water quality standards be reviewed from time to time and at least once during each three-year period. The "Forum" in 1978 reviewed the existing State-adopted and Environmental Protection Agency-approved numeric salinity criteria and found no reason to recommend changes for the three lower mainstem stations.

Those values are:

	Salinity in mg/l
Below Hoover Dam	723
Below Parker Dam	747
Imperial Dam	879

The "Forum" did recommend a revised plan of implementation consisting of the following elements:

1. Prompt construction and operation of three salinity control units authorized by Section 202, Title II, Public Law 93-320, namely, the Paradox Valley Unit, Grand Valley Unit, and Las Vegas Wash Unit, which will require additional planning before construction can be undertaken.

2. Authorization and construction of the Meeker Dome Unit and ten of the twelve units listed in Section 203(a) (1), Title II, Public Law 93-320, or their equivalents, after receipt of favorable planning reports.

3. The placing of effluent limitations on industrial and municipal discharges principally under the National Pollutant Discharge Elimination System (NPDES) permit program provided for in Section 402 of the Clean Water Act of 1977.

4. The reformulation of previously authorized, but unconstructed, Federal water projects to reduce the salt loading effect of return flows.

5. Inclusion of the 208 Water Quality Management Plans. The basin States are individually developing water quality management plans to conform to the requirements of Section 208 of the Clean Water Act.

The plan also contemplates the use of saline water for industrial purposes whenever practicable, programs by water users to cope with higher salinity water, improvements in irrigation systems and management to reduce salt pickup, studies of means to minimize salinity in municipal discharges, and studies of future possible salinity control programs not now included in the plan.

Many natural and man-made factors affect the river's salinity. Consequently, the actual salinity will vary above and below the recommended numerical criteria.

The State-adopted and EPA-approved standards permit temporary increases above the 1972 levels if control measures are included in the plan of implementation. Should water development projects be completed before control measures are brought on line, temporary increases above the criteria could result. These increases will be deemed in conformance with the standards. The plan of implementation contains sufficient salinity control measures which when implemented will offset the increases in salinity caused by the projected 1990 level of development.

Periodic increases above the criteria as a result of unfavorable reservoir conditions or periods of below normal annual river flows will also be in conformance with the standards; provided that, with satisfactory reservoir conditions and when river flows return to normal, concentrations can be expected to be at or below the criteria level.

a. Environmental Defense Fund Lawsuit

The Environmental Defense Fund, Inc. (EDF), filed suit August 22, 1977 in the United States District Court for the District of Columbia against the Environmental Protection Agency (EPA), the Department of the Interior, and the Bureau of Reclamation to set aside EPA's approval of the water quality standards for the Colorado River Basin.

Each of the seven basin States have sought to intervene in this lawsuit and have been allowed to do so by the judge of the District Court.

2. Second National Water Assessment

The Second Assessment of the Nation's Water and Related Land Resources is one of the functions assigned to the Water Resources Council by the Congress in the Water Resources Planning Act of 1965 (Public Law 89-80). The Assessment is for the purpose of identifying, describing, and placing in priority the Nation's severe water and water-related problems from both the State/Regional and National Viewpoint. The major components of the study are:

Step I – National Analysis
Step II – Specific-Problem Analysis
Step III – National Priorities Analysis

The Water Resources Council has the primary responsibility for conducting both the National Analysis and the National Priorities Analysis. The Specific-Problem Analysis was done at the State/Regional level with the Bureau of Reclamation, Department of the Interior, acting as Regional Sponsor and the Upper Colorado River Commission acting as Study Director.

Fifty copies of a draft of the Second National Assessment arrived at the Commission office late in June 1978 for distribution and review. The report consisted of nine volumes in addition to the regional chapters and a 60-day review period was specified with a closing date of August 28, 1978.

The draft was disappointing to the western States and particularly to the Upper Colorado Region. Very critical comments were furnished to the Water Resources Council by the Upper Colorado Region and several other States and Regions. The report is biased against irrigation and against ground water use, and contains many technical errors. In spite of considerable effort and time expended by State/Regional water resource people, the draft of the Assessment almost totally ignores the State/Regional viewpoint and is essentially a Federal document. The Regional chapters which were prepared by regional sponsors or consultants were revised by the Water Resources Council to reflect its language and computer-developed data. The main report contains much superfluous information and lacks the credibility to be of use to State/Regional water resource people.

3. Forecasts of Stream Flow

April 1, 1978 Forecasts of Inflow to Lake Powell[1]

Agency	*Acre-Feet*
Soil Conservation Service Department of Agriculture (April-July)	9,780,000
National Weather Service Department of Commerce (April-July)	10,500,000
Bureau of Reclamation Department of the Interior (April-July)	10,800,000

The reconstructed inflow to Lake Powell for the period April-July 1978 amounted to 8,995,000 acre-feet[2] which was about 115 percent of the normal inflow.

During the April-July 1978 period, changes in storage in Colorado River Storage Project reservoirs above Lake Powell resulted in an overall increase of 1,859,000 acre-feet with 62,000 acre-feet of evaporation and 186,000 acre-feet increase in bank storage.[3] Excluding bank storage and evaporation, Fontenelle Reservoir stored 153,000 acre-feet; Blue Mesa storage increased by 571,000 acre-feet; Flaming Gorge storage increased by 809,000 acre-feet; and Navajo Reservoir storage increased by 326,000 acre-feet.

Actual regulated inflow to Lake Powell for the period April-July 1978 was 6,821,000 acre-feet.

The virgin flow of the Colorado River at Lee Ferry for the 1978 water year amounted to 15.3 million acre-feet[4].

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[1]Including water to be stored upstream in other Colorado River Storage Project Reservoirs.

[2]Exclusive of evaporation and seepage losses.

[3]Including Fontenelle Reservoir on Green River in Wyoming.

[4]Provisional records subject to revision.

4. Summary of Reservoir Levels and Contents

Runoff during the year ending September 30, 1978 ranged from a low of 59 percent of the 65-year (1914-1978) mean at the San Juan River station near Bluff, Utah, to a high of 104 percent of the 65-year mean at the Green River station at Green River, Utah. Runoff of the Colorado River near Cisco, Utah was 94 percent of the 65-year mean.

Lake Powell's lowest elevation of the 1978 water year occurred on March 6, 1978. On September 30th the lake was at elevation 3,640 feet (live content 16,563,000 acre-feet). The lake was at its highest point on July 24, 1978 at elevation 3,652.75 feet with a content of 18,143,000 acre-feet. A total of 8,214,000 acre-feet was released to the river below Glen Canyon Dam during the 1978 water year. The 1969-1978 (10-year) delivery to the Lower Basin (measured at Lee Ferry) was 88,158,000 acre-feet.

Lake Mead on September 30, 1978 contained 20,869,000 acre-feet* of available storage water at elevation 1,185.43 feet. Lake Mead held 7.3 million acre-feet in the 62.40 feet above its rated head. On September 30, 1978 the live storage of Lake Mead was 4,306,000 acre-feet more than the storage in Lake Powell.

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 on the following pages for the 1978 water year. There was no equalization of storage in Lake Powell and Lake Mead during the year.

*Based on April 1, 1967 Capacity Table revised according to Sedimentation Survey 1963-1964.

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	5,775	13	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

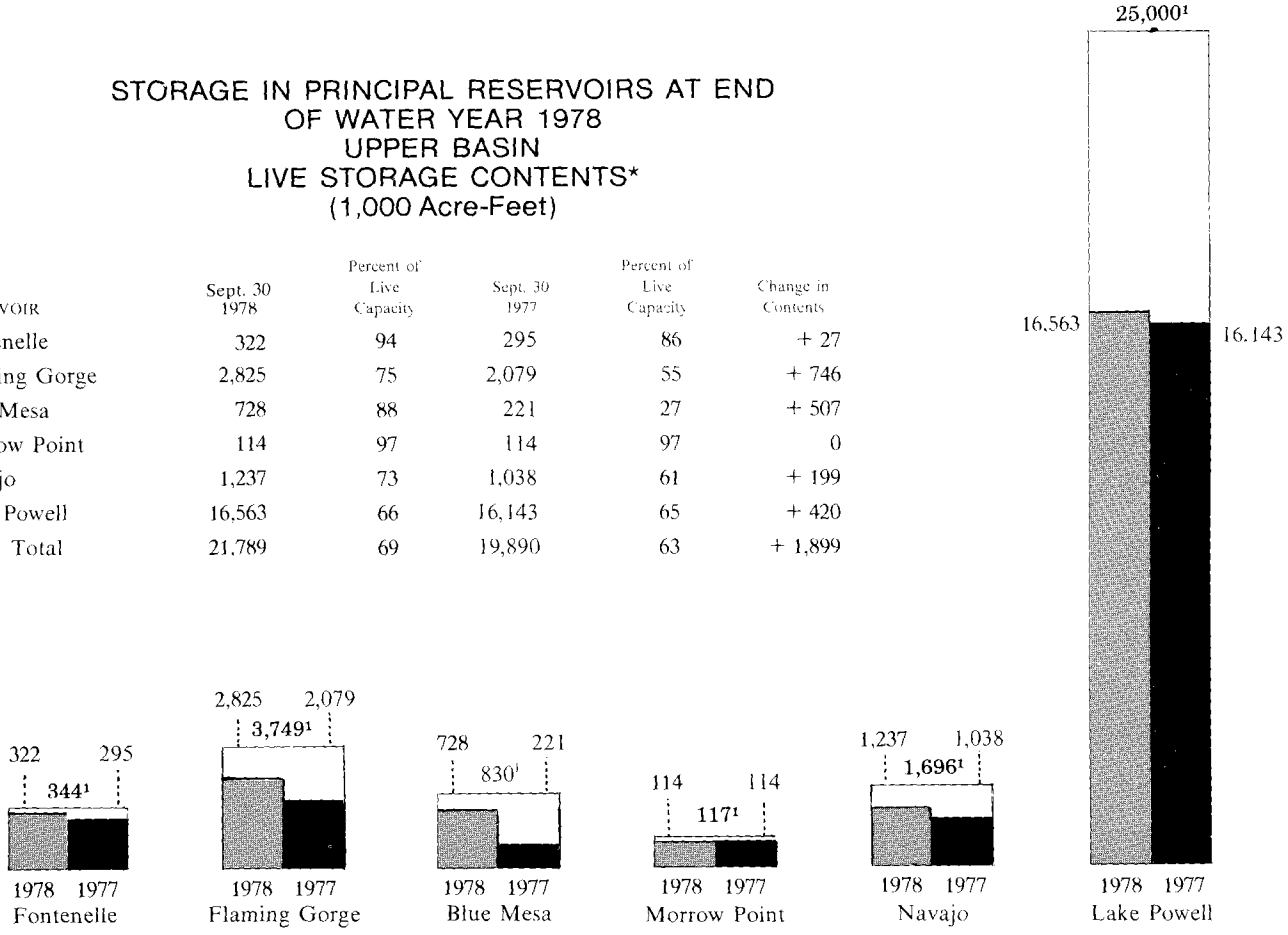
(Usable Surface Capacity)

	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 District's Colorado River Aqueduct.

STORAGE IN PRINCIPAL RESERVOIRS AT END OF WATER YEAR 1978 UPPER BASIN LIVE STORAGE CONTENTS* (1,000 Acre-Feet)

RESERVOIR	Sept. 30 1978	Percent of Live Capacity	Sept. 30 1977	Percent of Live Capacity	Change in Contents
Fontenelle	322	94	295	86	+ 27
Flaming Gorge	2,825	75	2,079	55	+ 746
Blue Mesa	728	88	221	27	+ 507
Morrow Point	114	97	114	97	0
Navajo	1,237	73	1,038	61	+ 199
Lake Powell	16,563	66	16,143	65	+ 420
Total	21,789	69	19,890	63	+ 1,899

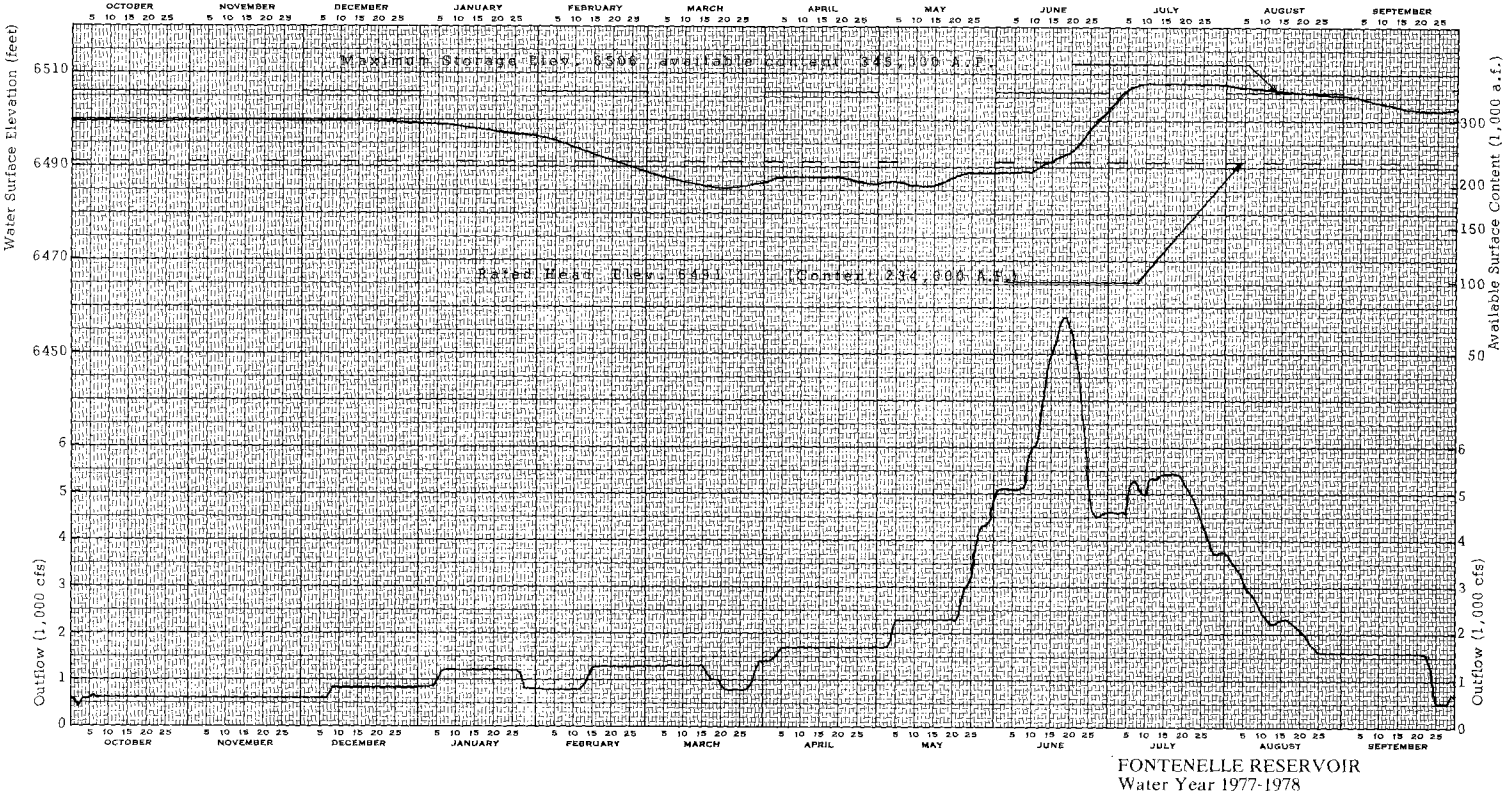


¹Maximum live storage (exclusive of surcharge)

*As of September 30 (excludes bank storage).

FONTENELLE

Live Storage Capacity -- 344,400 acre-feet
Power Generating Capacity -- 10,000 KW
Live Storage 9/30/78 -- 322,000 acre-feet



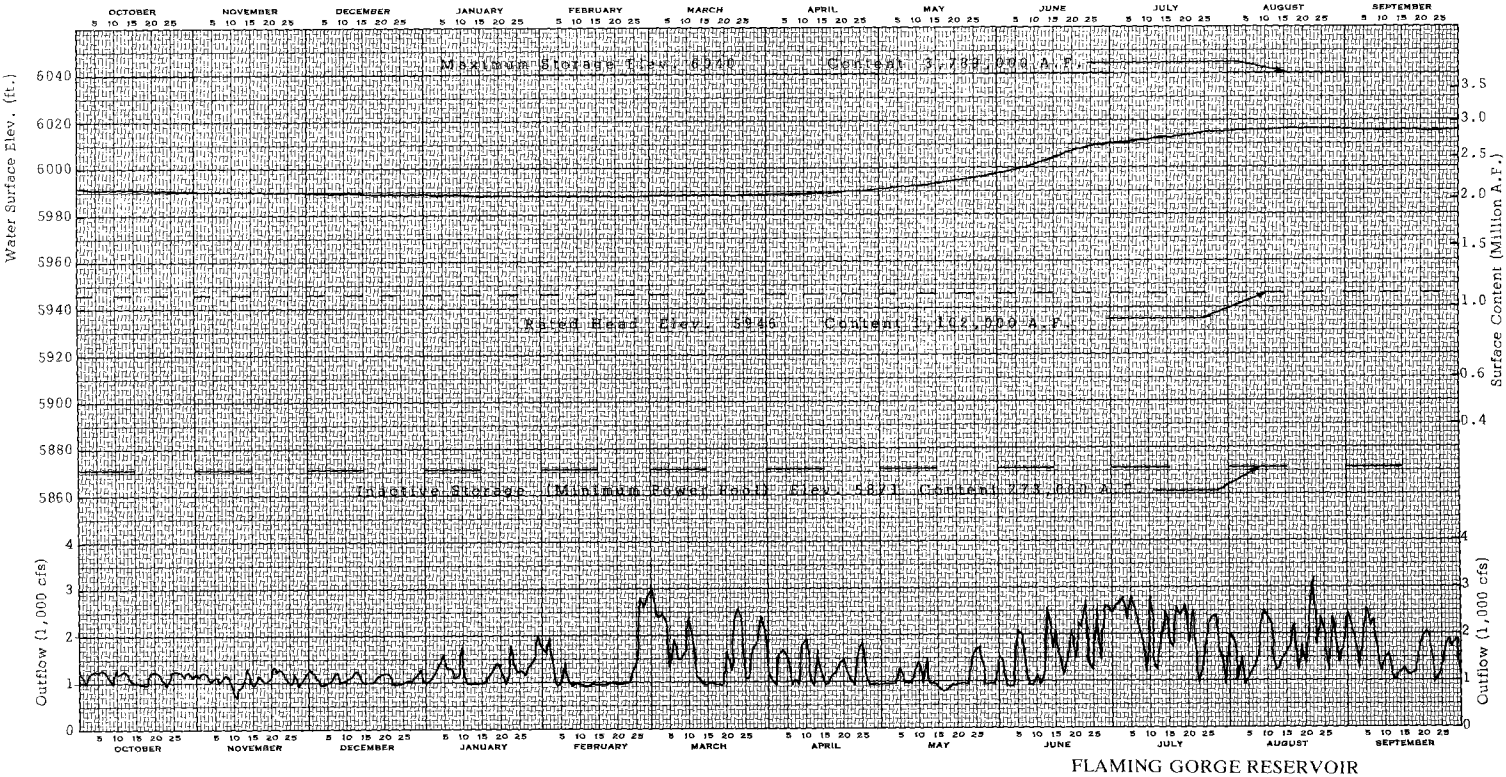
FONTENELLE RESERVOIR
Water Year 1977-1978

FLAMING GORGE

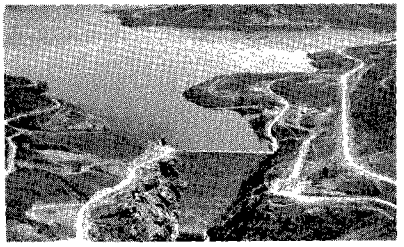
Live Storage Capacity — 3,749,000 acre-feet

Power Generating Capacity — 108,000 KW

Live Storage 9/30/78 — 2,825,000 acre-feet

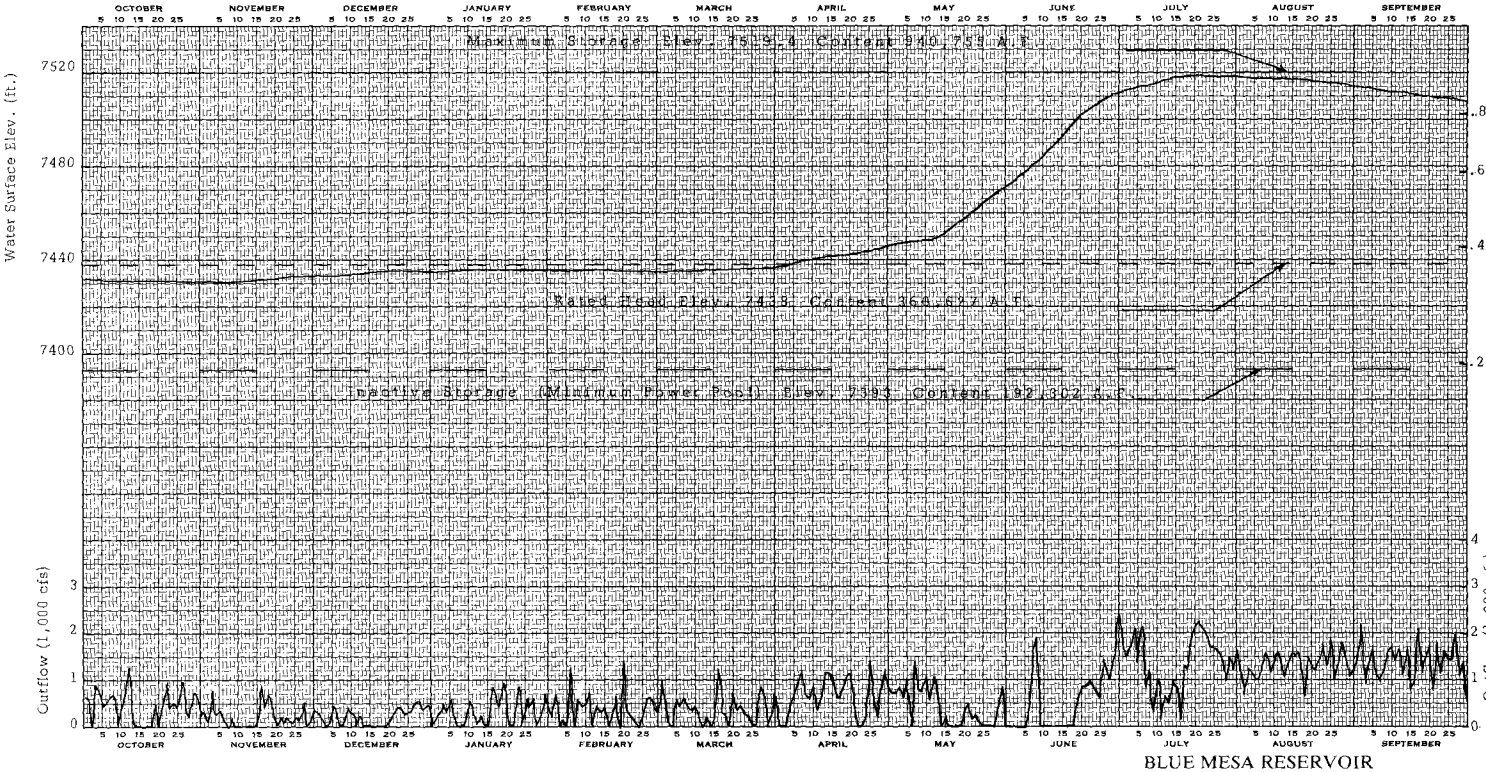


FLAMING GORGE RESERVOIR
Water Year 1977-1978

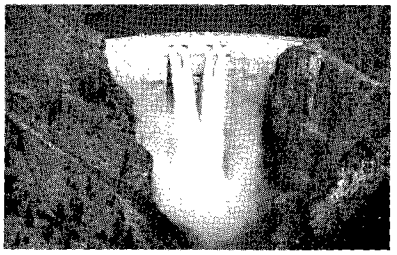


BLUE MESA

Live Storage Capacity — 830,000 acre-feet
Power Generating Capacity — 60,000 KW
Live Storage 9/30/78 — 728,000 acre-feet

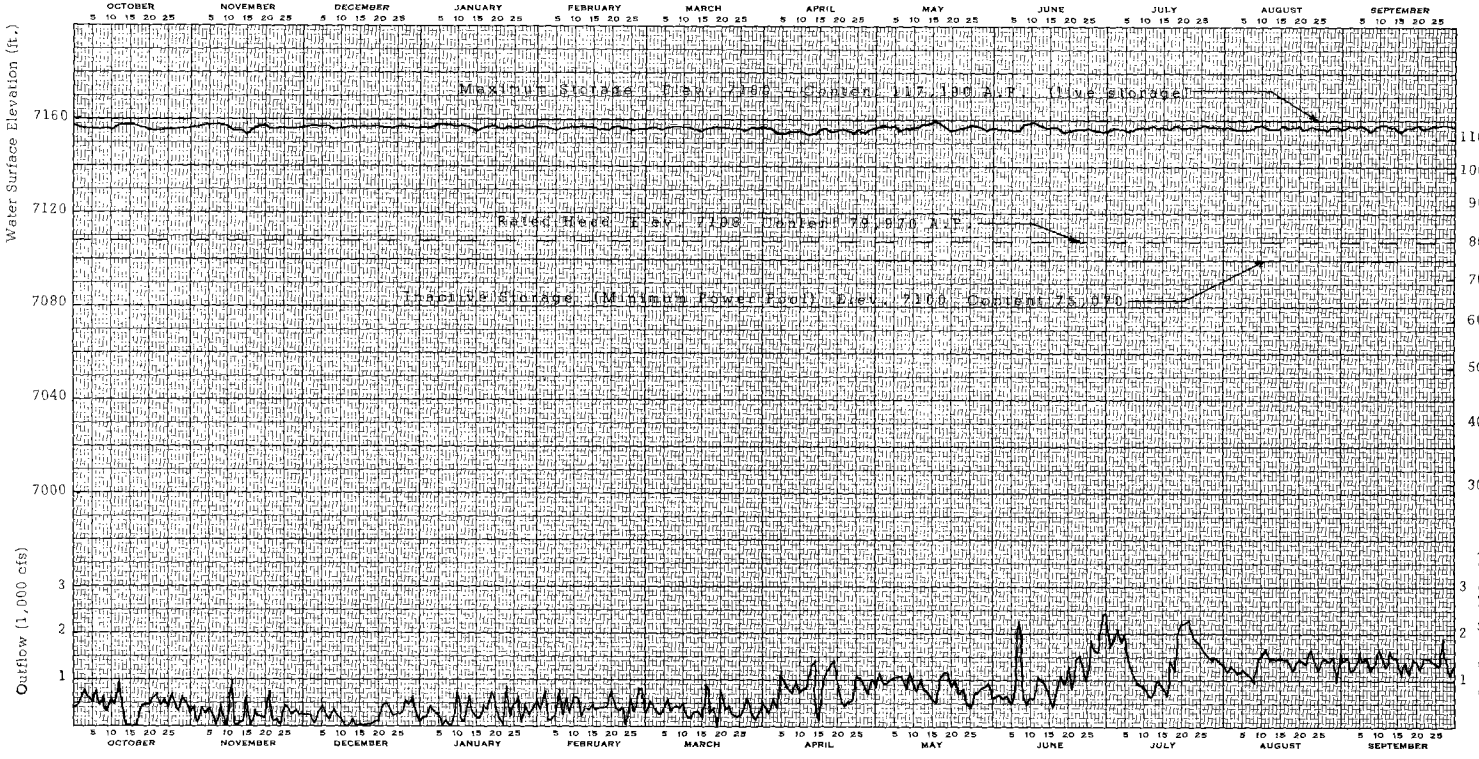


BLUE MESA RESERVOIR
Water Year 1977-1978

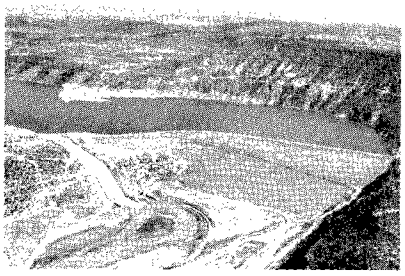


MORROW POINT

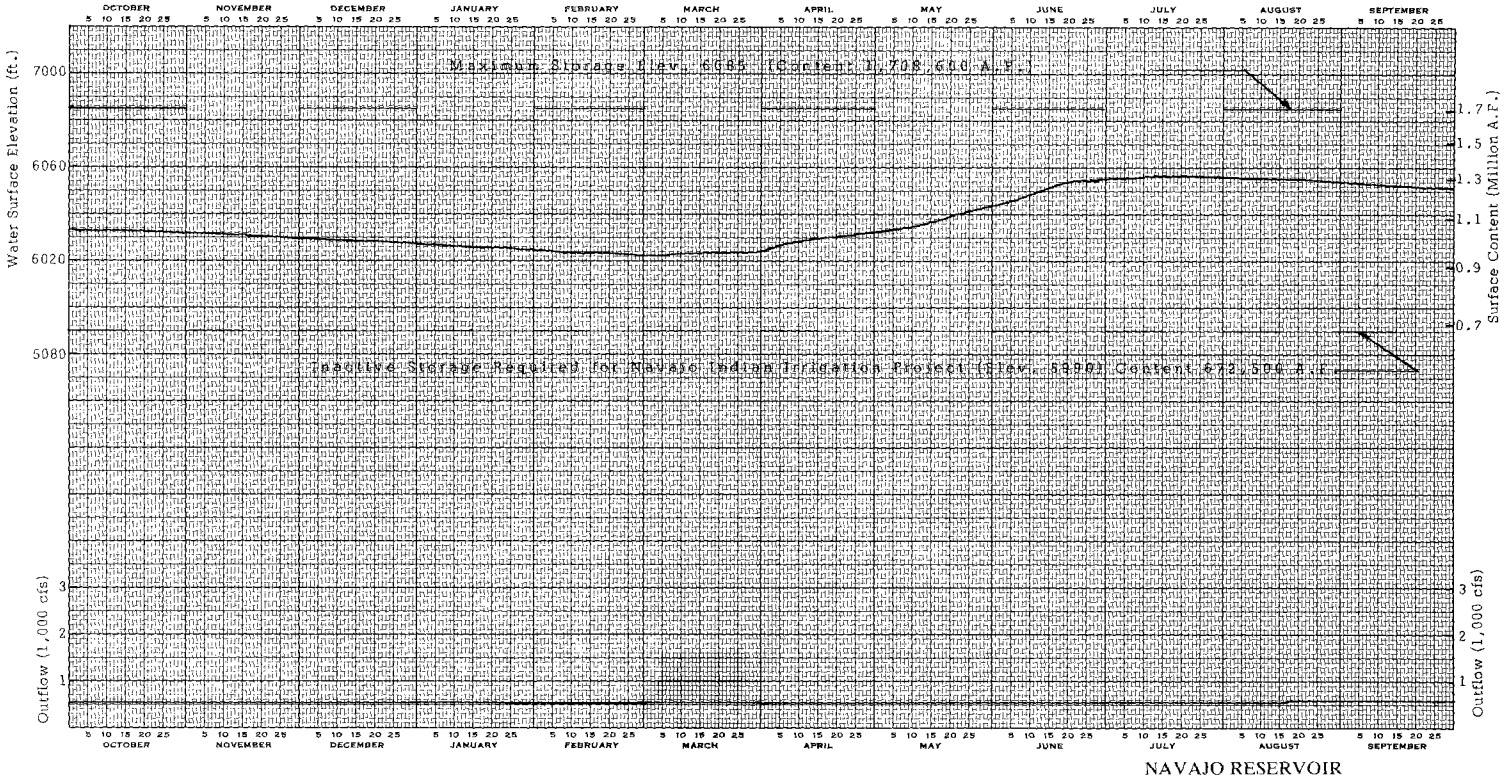
Live Storage Capacity -- 117,000 acre-feet
Power Generating Capacity -- 120,000 KW
Live Storage 9/30/78 -- 114,000 acre-feet



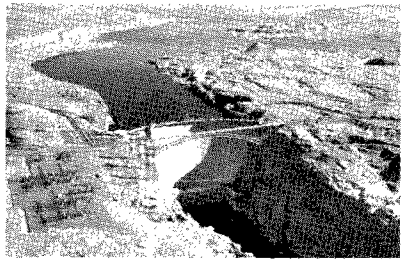
MORROW POINT RESERVOIR
Water Year 1977-1978



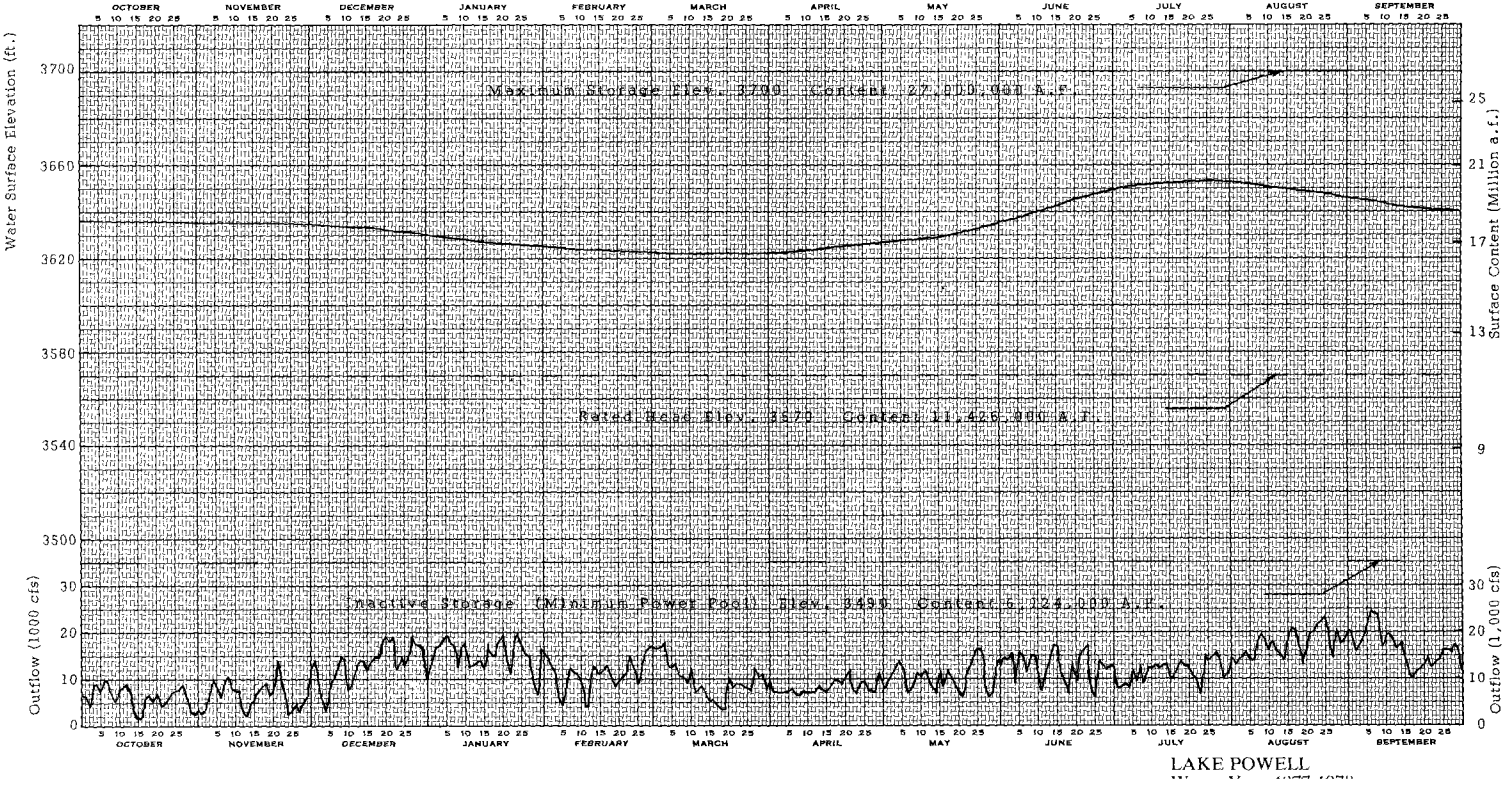
NAVAJO
Live Storage Capacity — 1,696,000 acre-feet
Power Generating Capacity — 0
Live Storage 9/30/78 — 1,237,000 acre-feet



NAVAJO RESERVOIR
Water Year 1977-1978

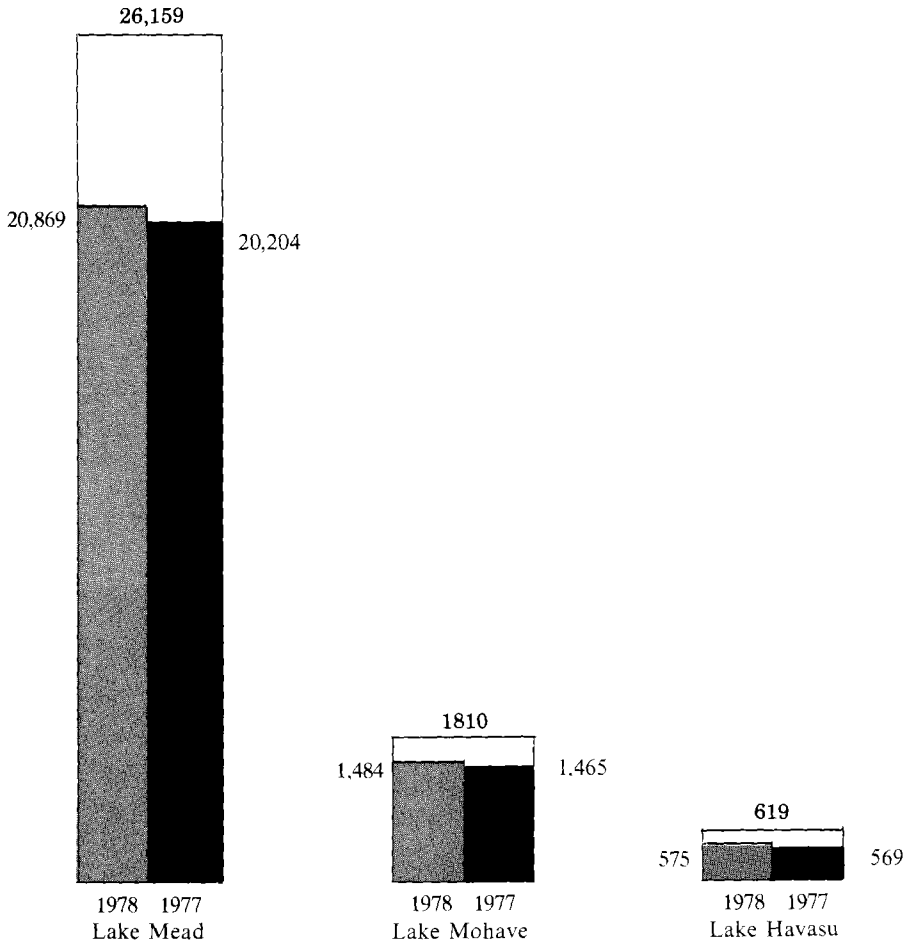


LAKE POWELL GLEN CANYON DAM
Live Storage Capacity — 25,000,000 acre-feet
Power Generating Capacity — 950,000 KW
Live Storage 9/30/78 — 16,563,000 acre-feet



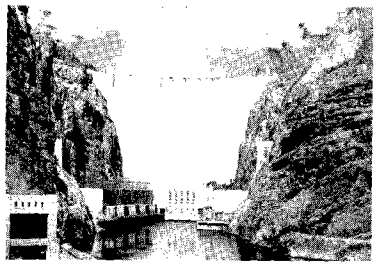
STORAGE IN PRINCIPAL RESERVOIRS AT END OF WATER YEAR 1978 LOWER BASIN LIVE STORAGE CONTENTS[1] (1,000 Acre-Feet)

RESERVOIR	Sept. 30 1978	Percent of live Capacity	Sept. 30 1977	Percent of Live Capacity	Change in Contents
Lake Mead*	20,869	80	20,204	77	+ 665
Lake Mohave	1,484	82	1,465	81	+ 19
Lake Havasu	575	93	569	92	+ 6
Total	22,928	80	22,238	78	+ 690



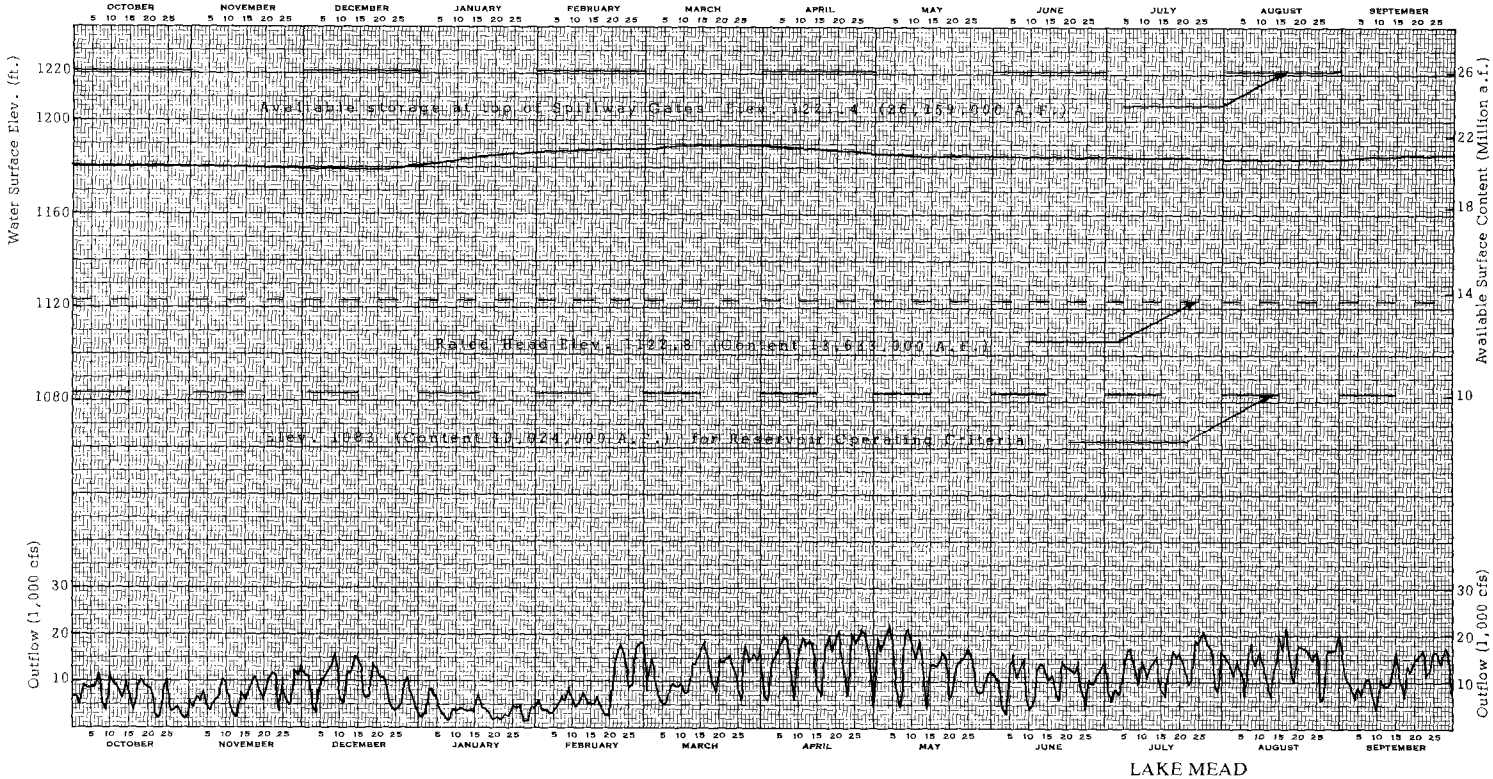
*Contents based on April 1967 revised capacity tables according to 1963-64 sedimentation survey at Lake Mead.

[1]As of September 30.



LAKE MEAD — HOOVER DAM

Live Storage Capacity — 26,159,000 acre-feet
Power Generating Capacity — 1,344,800 KW
Live Storage 9/30/78 — 20,869,000 acre-feet



LAKE MEAD
Water Year 1977-1978

5. Flows of Colorado River

Table VIII (a) on pages 40 and 41 shows the estimated virgin flow* of the Colorado River at Lee Ferry, Arizona** for each water year from 1896 to 1978. Column (4) of the table shows the average virgin flow from any given year within the period computed through water year 1978. Column (5) shows the average virgin flow for each progressive ten-year period beginning with the ten-year period ending on September 30, 1905.

Article III (d) of the Colorado River Compact stipulates that "the states of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years reckoned in a continuous progressive series beginning with the first day of October next succeeding the ratification of this Compact."

Prior to the storage of water in the Colorado River Storage Project reservoirs, which began in 1962, the flow of the river at Lee Ferry in any ten consecutive years was greatly in excess of the 75,000,000 acre-feet required by the Compact. Beginning in 1962, Colorado River Storage Project reservoirs have fully regulated the river above Glen Canyon Dam. Table VIII (b) on page 42 shows the historic flow at Lee Ferry for the period 1953-1978. The progressive ten-year period ending September 30, 1962, the commencement of storage in Colorado River Storage Project reservoirs, is shown in Column (3).

In each consecutive ten-year period, the total flow equaled or exceeded the 75,000,000 acre-feet required by the Compact. The flow at Lee Ferry during the ten-year period ending September 30, 1978 was 88,158,000 acre-feet.

*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 downstream 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)*
Average to 1978	*Year Ending Sept. 30*	*Estimated Virgin Flow*	*Average to 1978*	*Progressive 10-Year Running Average*
83	1896	10.1	14.7	
82	97	18.0	14.7	
81	98	13.8	14.7	
80	99	15.9	14.7	
79	1900	13.2	14.7	
78	01	13.6	14.7	
77	02	9.4	14.7	
76	03	14.8	14.8	
75	04	15.6	14.8	
74	05	16.0	14.8	14.0
73	06	19.1	14.8	14.9
72	07	23.4	14.7	15.5
71	08	12.9	14.6	15.4
70	09	23.3	14.6	16.1
69	1910	14.2	14.5	16.2
68	11	16.0	14.5	16.5
67	12	20.5	14.5	17.6
66	13	14.5	14.4	17.6
65	14	21.2	14.4	18.1
64	15	14.0	14.3	17.9
63	16	19.2	14.3	17.9
62	17	24.0	14.2	18.0
61	18	15.3	14.0	18.2
60	19	12.5	14.0	17.1
59	1920	22.0	14.0	17.9
58	21	23.0	13.9	18.6
57	22	18.3	13.8	18.4
56	23	18.3	13.7	18.8
55	24	14.2	13.6	18.1
54	25	13.0	13.6	18.0
53	26	15.9	13.6	17.6
52	27	18.6	13.5	17.1
51	28	17.3	13.4	17.3
50	29	21.4	13.4	18.2
49	1930	14.9	13.2	17.5
48	31	7.8	13.2	16.0
47	32	17.2	13.3	15.9
46	33	11.4	13.2	15.2
45	34	5.6	13.2	14.3
44	35	11.5	13.4	14.2
43	36	13.8	13.5	14.0

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

(1)	(2)	(3)	(4)	(5)
Years to 1978	*Year Ending Sept. 30*	*Estimated Virgin Flow*	*Average to 1978*	*Progressive 10-Year Running Average*
42	1937	13.7	13.4	13.5
41	38	17.5	13.4	13.5
40	39	11.1	13.3	12.5
39	1940	8.6	13.4	11.8
38	41	18.1	13.5	12.8
37	42	19.1	13.4	13.0
36	43	13.1	13.2	13.2
35	44	15.2	13.2	14.2
34	45	13.4	13.2	14.4
33	46	10.4	13.2	14.0
32	47	15.5	13.3	14.2
31	48	15.6	13.2	14.0
30	49	16.4	13.1	14.5
29	1950	12.9	13.0	15.0
28	51	11.6	13.0	14.3
27	52	20.7	13.1	14.5
26	53	10.6	12.8	14.2
25	54	7.7	12.9	13.5
24	55	9.2	13.1	13.1
23	56	10.7	13.2	13.1
22	57	20.1	13.4	13.6
21	58	16.5	13.0	13.6
20	59	8.6	12.9	12.9
19	1960	11.3	13.1	12.7
18	61	8.5	13.2	12.4
17	62	17.3	13.5	12.1
16	63	8.5	13.2	11.8
15	64	10.2	13.5	12.1
14	65	18.9	13.8	13.1
13	66	11.2	13.4	13.1
12	67	11.9	13.6	12.3
11	68	13.6	13.7	12.0
10	69	14.4	13.7	12.6
9	1970	15.4	13.7	13.0
8	71	14.8	13.4	13.6
7	72	11.9	13.2	13.1
6	73	19.3	13.5	14.2
5	74	12.8	12.4	14.4
4	75	16.8	12.3	14.2
3	76	11.5	10.8	14.2
2	77	5.5	10.4	13.6
1	78	15.3*	15.3	13.7

*Based upon provisional streamflow records subject to revision

TABLE VIII (b)
HISTORIC FLOW AT LEE FERRY
1953-1978

unit: 1000 a.f.

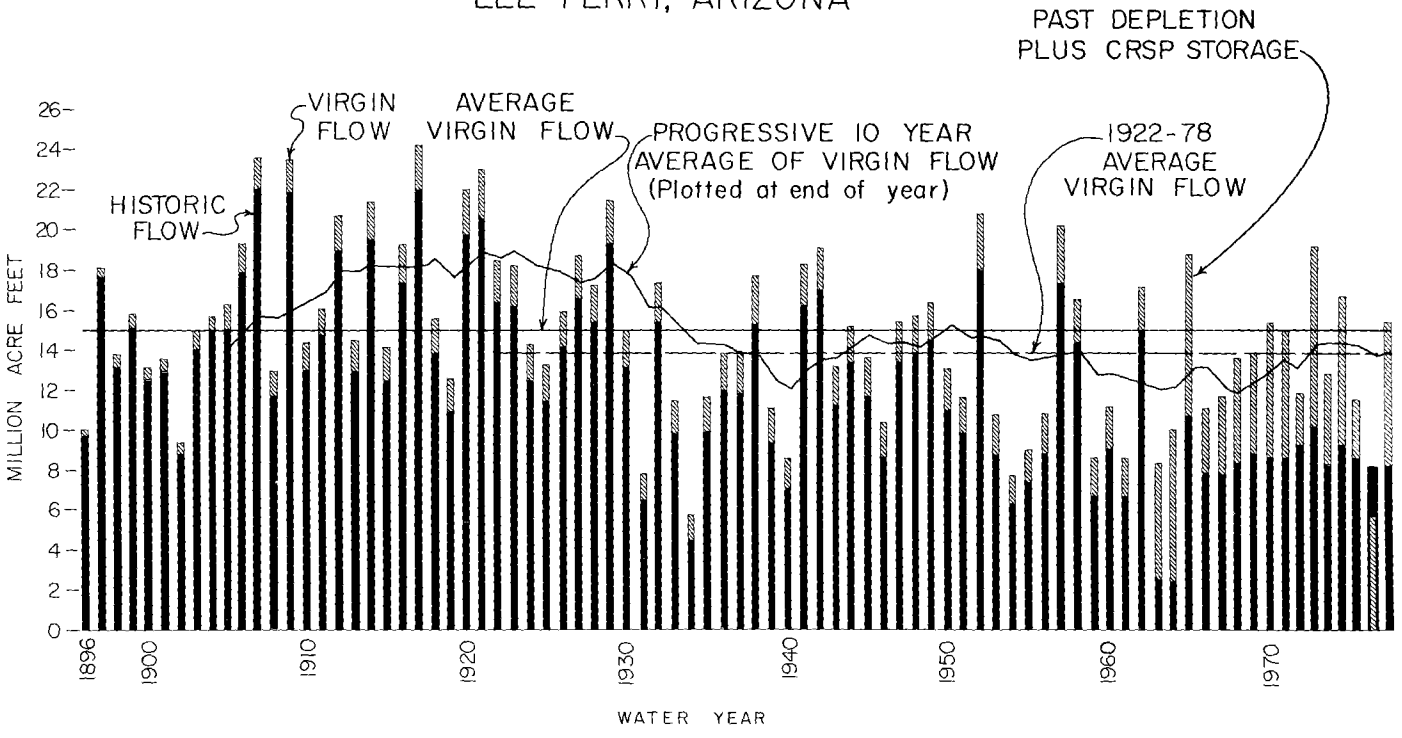
1	*2*	*3*
Water year Ending Sept. 30	*Historic Flow*	*Progressive 10-year Total*
1953	8,805	
1954	6,116	
1955	7,307	
1956	8,750	
1957	17,340	
1958	14,260	
1959	6,756	
1960	9,192	
1961	6,674	
1962[1]	14,790	99,990
1963[2]	2,520	93,705
1964[3]	2,427	90,016
1965	10,835	93,544
1966	7,870	92,664
1967	7,824	83,148
1968	8,358	77,246
1969	8,850	79,340
1970	8,688	78,836
1971	8,607	80,769
1972	9,330	75,309
1973	10,140	82,929
1974	8,277	88,779
1975	9,274	87,218
1976	8,494	87,842
1977	8,269	88,287
1978	8,229	88,158

[1]Storage in Flaming Gorge and Navajo Reservoirs began in 1962
[2]Storage in Glen Canyon Reservoir began in 1963
[3]Storage in Fontenelle Reservoir began in 1964

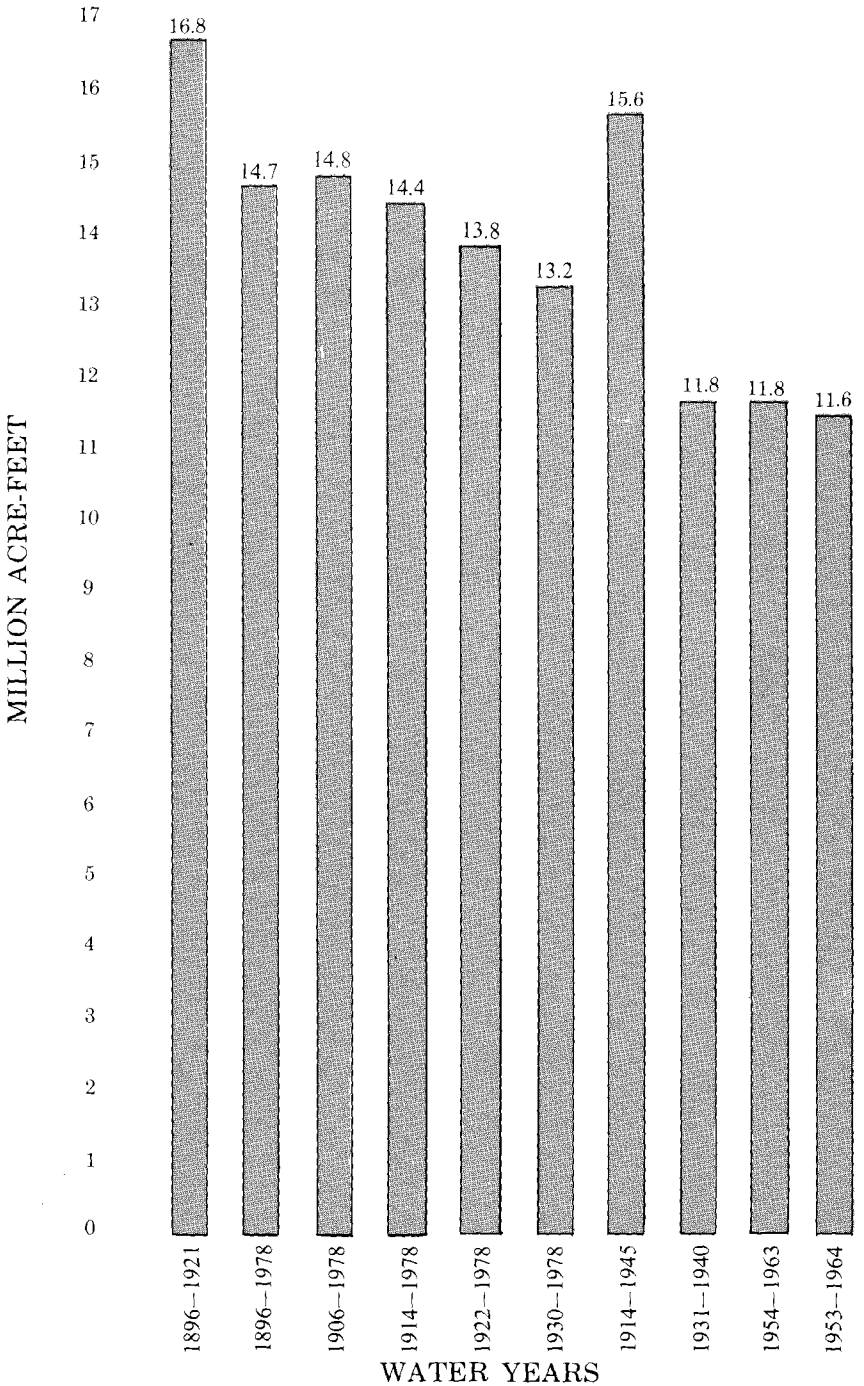
The next two charts illustrate some of the pertinent historical facts related to the amounts of water produced by the Colorado River system above Lee Ferry, Arizona, the compact division point between the Upper and Lower Colorado River Basins. See maps on page 3 and page 57. The first chart is entitled COLORADO RIVER FLOW AT LEE FERRY, ARIZONA. The top of each vertical bar represents the estimated virgin flow of the river, i.e., the flow of the river in millions of acre-feet past Lee Ferry 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 horizotal line is plotted to show the progressive ten-year average virgin flows. In only one decade (1941-1950) following 1933 has the progressive ten-year average virgin flow exceeded the long-term average virgin flow.

The second chart entitled LEE FERRY AVERAGE ANNUAL VIRGIN FLOW FOR SELECTED PERIODS is a graphical 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) Two completely unrelated ten-year periods of minimum

(2) In only one decade, 1941-1950, following the 1924-1933 decade has the progressive ten-year average flow exceeded the average virgin flow.

(3) 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 Lees Ferry, Arizona was not installed until 1921. The annual flows at Lees Ferry prior to the 1922 Compact are estimates based upon records obtained at other stations.

(4) For the longest period shown, 1896-1978 the estimated annual average flow was 14.7 million acre-feet.

(5) For the next longest period, 1906-1978, the estimated annual average virgin flow was 14.8 million acre-feet. Many of the early records for this series of years, as well as for the 1896-1978 period, were based upon the estimates of flows made at other gaging stations, as mentioned in (3) above. This average is slightly less than that used for the 1906-1967 period as the basis for justification of a water supply for the Central Arizona Project which was authorized in 1968.

(6) The estimated annual average virgin flow during the 1914-1978 period was 14.4 million acre-feet. This period is an extension of the 1914-1965 period used in the Upper Colorado Region Comprehensive Framework Studies of 1971.

(7) The average annual virgin flow for 1914-1945 was 15.6 million acre-feet. This is the period of record used by the negotiators of the Upper Colorado River Basin Compact of 1948.

(8) For 1922-1978, the period since the signing of the Colorado River Compact, the annual average was 13.8 million acre-feet. Records for this series of years are based upon actual measurements of flows at Lees Ferry. The ten-year moving average flow since 1922 has been considerably less than the ten-year moving average prior to 1922.

(9) For the 48-year period, 1930-1978, the annual average virgin flow dropped to 13.2 million acre-feet.

(10) Two completely unrelated ten-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* ten-year period amounted to only 11.8 million acre-feet.

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

B. LEGAL

The legal staff continues to inform the Commissioners and their advisers on various legal matters by the *Aqualante Newsletter.* Current information can be made readily available by the newsletter. In matters needing more than detailed treatment, legal memoranda have been furnished.

The fifth volume of *Selected Legal References,* together with an index, is in preparation and will cover laws passed by the 95th Congress.

Lawsuit Asking for an Injunction on All "New Water Resources Development"

Another lawsuit was filed during the year against the Department of the Interior and the Bureau of Reclamation in an effort to stop all construction in the Colorado River Basin or any project using Colorado River water.

The suit was filed by the Environmental Defense Fund, Trout Unlimited, and The Wilderness Society to require the Department of the Interior and its Bureau of Reclamation to prepare a Comprehensive Environmental Impact Statement analyzing existing and future water resource projects and operations in the Colorado River Basin, and to enjoin construction of the new Federal water resource projects in the Basin until the impact statement analysis is completed. The States of Arizona, Nevada, Wyoming, and Colorado have moved to intervene, and the intervention was granted.

The State of Utah filed suit in the U.S. District Court for the State of Utah alleging that the Secretary of the Interior does not have authority to prepare a Comprehensive Environmental Statement.

IX. Legislation

A. LAWS ENACTED

1. Amendment re: Basin-wide Programmatic Environmental Statement

The threat of an injunction that would stop all construction of projects using Colorado River water as a result of the Environmental Defense Fund lawsuit caused great concern in the Colorado River Basin. The Executive Director and others met with several members of the House and Senate from the Basin States to discuss the matter. They concluded that language should be prepared and used as an amendment to an appropriation bill. It was subsequently added to the Department of the Interior and Related Agencies Appropriation Bill. After strong opposition from environmentalists and much bitter debate, it passed both Houses of Congress. The President signed the bill (H.R. 12932), as amended, and it became Public Law 95-465.

The language essentially states that notwithstanding any provisions of the National Environmental Policy Act of 1969, Public Law 91-190, construction of any features of the specified projects shall proceed if a Final Environmental Impact Statement has been filed on such feature.

The language applies to the Colorado River Storage Project, the Colorado River Basin Project, and the Southern Nevada Water Project. The intent of the amendment is to remove the projects from the threat of an injunction that would stop development.

2. Proposed La Verkin Springs Salinity Control Unit and Amendment of Endangered Species Act

The U.S. Fish and Wildlife Service served notice that it intended to establish a critical habitat for the woundfin in the Virgin River under the Endangered Species Act. This would prevent the construction of two proposed salinity control projects that are part of the Colorado River Basin salinity control program. It would also prevent storage of water for the Warner Valley Power Project.

The intent of the following resolution was to request that the Secretary of the Interior refrain from declaring a critical habitat in the Virgin River, and that Congress amend the Endangered Species Act to clarify the law so that reasonable precedence can be given to the environment, health, and general welfare of American citizens over other forms of plant or animal species.

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION

re:

Proposed LaVerkin Springs Salinity Control Unit
and
Amendment of Endangered Species Act

WHEREAS, the U.S. Fish and Wildlife Service has published in the Federal Register on November 2, 1977 (42 F.R. 57329) a proposal to establish a critical habitat under the Endangered Species Act of 1973 (87 Stat. 884) for the woundfin (Plagopterus argentissimus, *a minnow-type fish) in the Virgin River from the backwaters of Lake Mead upstream to Hurricane, Utah; and*

WHEREAS, in the news release on November 3, 1977 the Fish and Wildlife Service stated, "Once critical habitat is determined no Federal agency could authorize funds or carry out any action that would jeopardize the continued existence of the species or alter its critical habitat," and by such opinion the Fish and Wildlife Service appears to have decided, prior to habitat classification, that any utilization of the waters of the Virgin River is detrimental to the woundfin; and

WHEREAS, adoption of the proposed regulations would have an adverse impact on the basinwide salinity control program for the Colorado River system as formulated, adopted, and approved by the seven Colorado River Basin States and the Environmental Protection Agency by precluding the construction of two proposed salinity control projects, the LaVerkin Springs and Lower Virgin River Salinity Control Units which, when completed, would remove approximately 185,000 tons of salt annually from the river system, equivalent to a reduction in salt concentration of 19 mg/l at Imperial Dam, a significant step towards achieving the goal of maintaining salinity levels at or below those of 1972 in the lower mainstem of the Colorado River, while the basin States continue to develop their compact-apportioned waters; and

WHEREAS, the establishment of the proposed critical habitat for the woundfin would contravene the intent of the Congress as expressed in the Colorado River Basin Salinity Control Act (88 Stat. 266); and

WHEREAS, adoption of the proposed regulations may preclude further utilization of the waters of the Virgin River by preventing its storage in reservoirs and subsequent releases therefrom when needed for domestic, agricultural, municipal and industrial purposes, including the Warner Valley Water and Power Project that would generate electrical energy for hundreds of thousands of human beings in the Pacific southwest and supply domestic water and power to the rapidly growing city of St. George, Utah; and

WHEREAS, an examination of the available literature reveals that there is a difference of opinion among authorities concerning the need for establishment of a critical habitat for the woundfin; and

WHEREAS, the Colorado River Basin Salinity Control Forum representing the seven Colorado River Basin States by letter of December 8, 1977 to the Secretary of the Interior has expressed its opposition to the proposed regulations and has stated that " — there must be alternatives which will not bring a halt to the construction of the salinity control units"; and

WHEREAS, the health, well-being, and domestic and economic welfare of millions of American human beings should be of more concern to the members of the U.S. Congress and their constituents than a species of fish that has persisted in its existence throughout over one-hundred years of water development in the Virgin River Valley:

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission at a special meeting convened at Salt Lake City, Utah on January 10, 1978 that the Secretary of the Interior is hereby requested to refrain from declaring a critical habitat in the Virgin River as described in the Federal Register (42 F.R. 57329);

BE IT FURTHER RESOLVED that prior to February 1, 1978, each of the governors of the four member States of the Upper Colorado River Commission be requested to transmit comments expressing the tenor of this resolution to the Secretary of the Interior and to the Associate Director — Federal Assistance, Fish and Wildlife Service;

BE IT FURTHER RESOLVED that the members of the Congress from the Upper Division States of the Colorado River Basin are hereby urged to seek amendments by the U.S. Congress to the Endangered Species Act (87 Stat. 884) that will clarify that law in such a manner that reasonable precedence can be given to the environment, health, and general welfare of American citizens over other forms of plant or animal species;

BE IT FURTHER RESOLVED that copies of this resolution be transmitted to the Governors and Members of the U.S. Congress of the Upper Colorado River Basin States, the Secretary of the Interior, the Director of the U.S. Fish and Wildlife Service, Commissioner of Reclamation, 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 the Special Meeting held in Salt Lake City, Utah on January 10, 1978.

WITNESS my hand this 13th day of January, 1978.

IVAL V. GOSLIN
Executive Director

X. 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.

The Commission has continued to cooperate with members of the Congregational 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

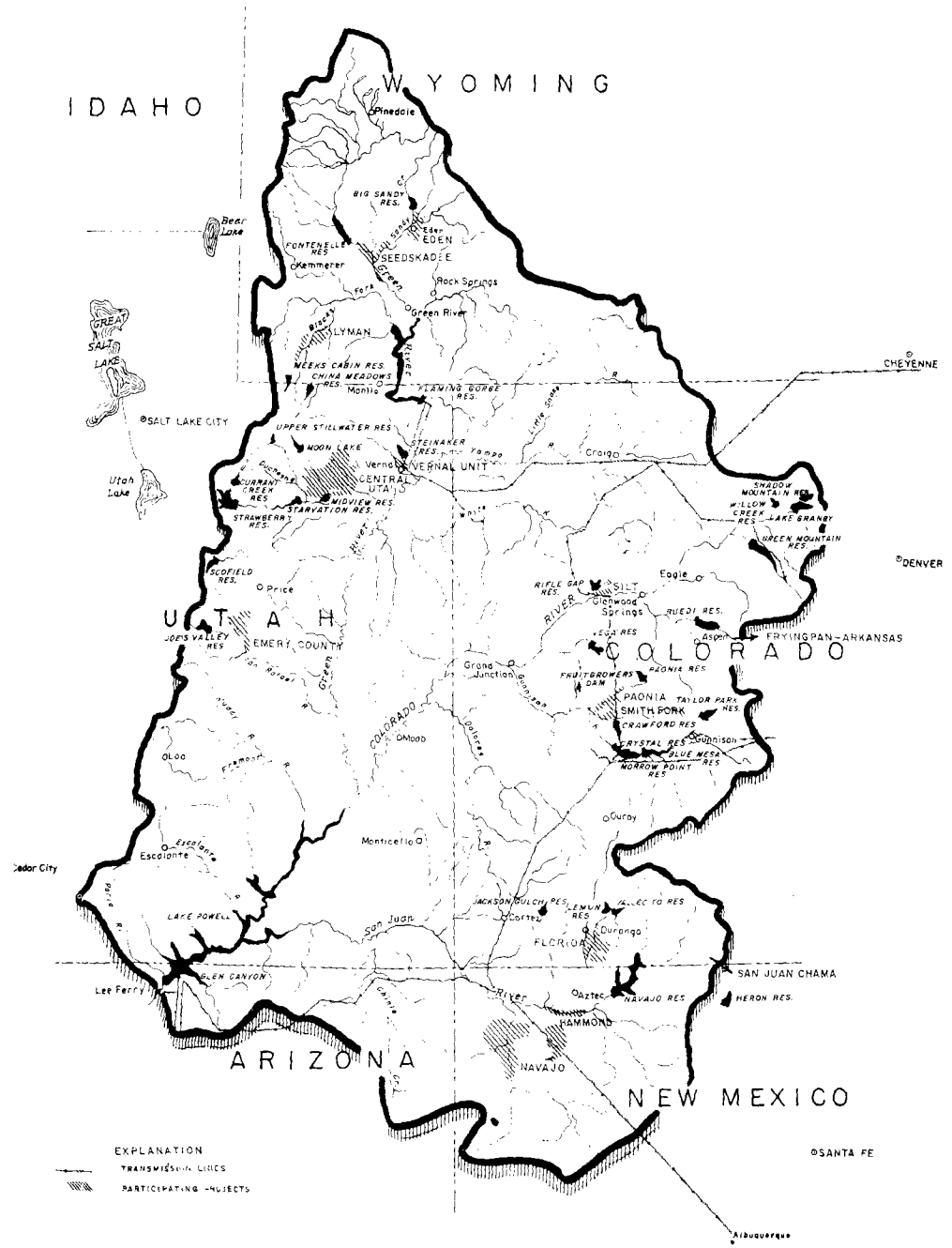
The Relief Model of the Upper Colorado River Basin and adjacent areas is available for display at conventions and other public events and has proved to be extremely interesting and instructive in promoting an understanding of the physical and hydrologic problems of the Upper Colorado River Basin and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

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.

The continuing program of library expansion has been maintained. Emphasis is placed on the acquisition of information which illumines that growing body of law known as the "law of the river." Since the Environmental Protection Agency has assumed a growing importance in the water development field, it is important that documents from the agency be monitored and acquired as a part of the Commission's library.



UPPER COLORADO RIVER BASIN

COLORADO RIVER STORAGE PROJECT

UPPER COLORADO RIVER COMMISSION

XI. Colorado River Storage Project and Participating Projects

A. 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 authorized the construction of eleven participating irrigation projects. Ten additional participating projects have been authorized by subsequent Congressional legislation.

The Storage Units and participating projects are described in the twenty-seventh and earlier annual reports of the Upper Colorado River Commission. Progress in construction, planning, and investigations of the Storage Units and participating projects accomplished during the past water year are briefly outlined below.

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. Glen Canyon Dam was completed in 1964.

Recreation

During 1977, approximately 2,127,000 people visited the Glen Canyon National Recreation Area.

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 1974 there were 55,104 visitors, or more than two and one-half times the number of people who viewed the Bridge from 1909 through 1961. There were 750,000 fish taken from the reservoir in 1977.

2. Flaming Gorge Storage Unit

The Flaming Gorge Dam and powerplant were completed in 1963. A contract for modification of the powerplant intake structures was awarded March 22, 1977 to Osberg Construction Company for $4,198,000. The purpose of the modification is to permit better control of water temperature below the dam to enhance trout fishing.

The structures were operable in June 1978 and essentially complete by September 1978. Water temperature downstream of the dam in the Green River reached 50°F which was the target temperature. Preliminary data indicates game fish are more active and have achieved more growth. Endemic fish are moving up from the confluence of the Yampa River into sections of the Green River in Brown's Park. Studies will continue for two more years on results of the temperature change.

Work on the Flaming Gorge Visitors Center is also essentially complete.

Recreation

Flaming Gorge National Recreation Area recorded about 680,000 visitations in 1977.

Fishing is an important recreation activity at Flaming Gorge Reservoir and in the Green River below the dam. During 1977, there were 600,000 trout taken from the reservoir.

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 campgrounds and overlook areas have been developed near the reservoir in the Ashley Forest.

3. Navajo Storage Unit

The major purpose of the Navajo Dam and 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 is also used for industrial and municipal purposes in northwestern New Mexico.

The Navajo Dam was completed in 1963. There were no construction activities during 1978.

Recreation

Navajo Reservoir draws visitors from many points. Nearly 487,000 people visited the reservoir during 1977. Recreational areas have been developed in New Mexico on the Pine river just above Navajo Dam and on Sims Mesa on the opposite shore, and near Arboles, Colorado on the upper portion of the lake. Plans have been prepared by an Inter-agency Task Force for development of recreation sites along the San Juan River below Navajo Dam. These sites include picnicking, camping, sanitary, and related facilities for fishermen and hunters.

Navajo Reservoir is a popular fishing lake. During the 1977 season 277,000 fish were taken from the reservoir.

4. Curecanti Storage Unit

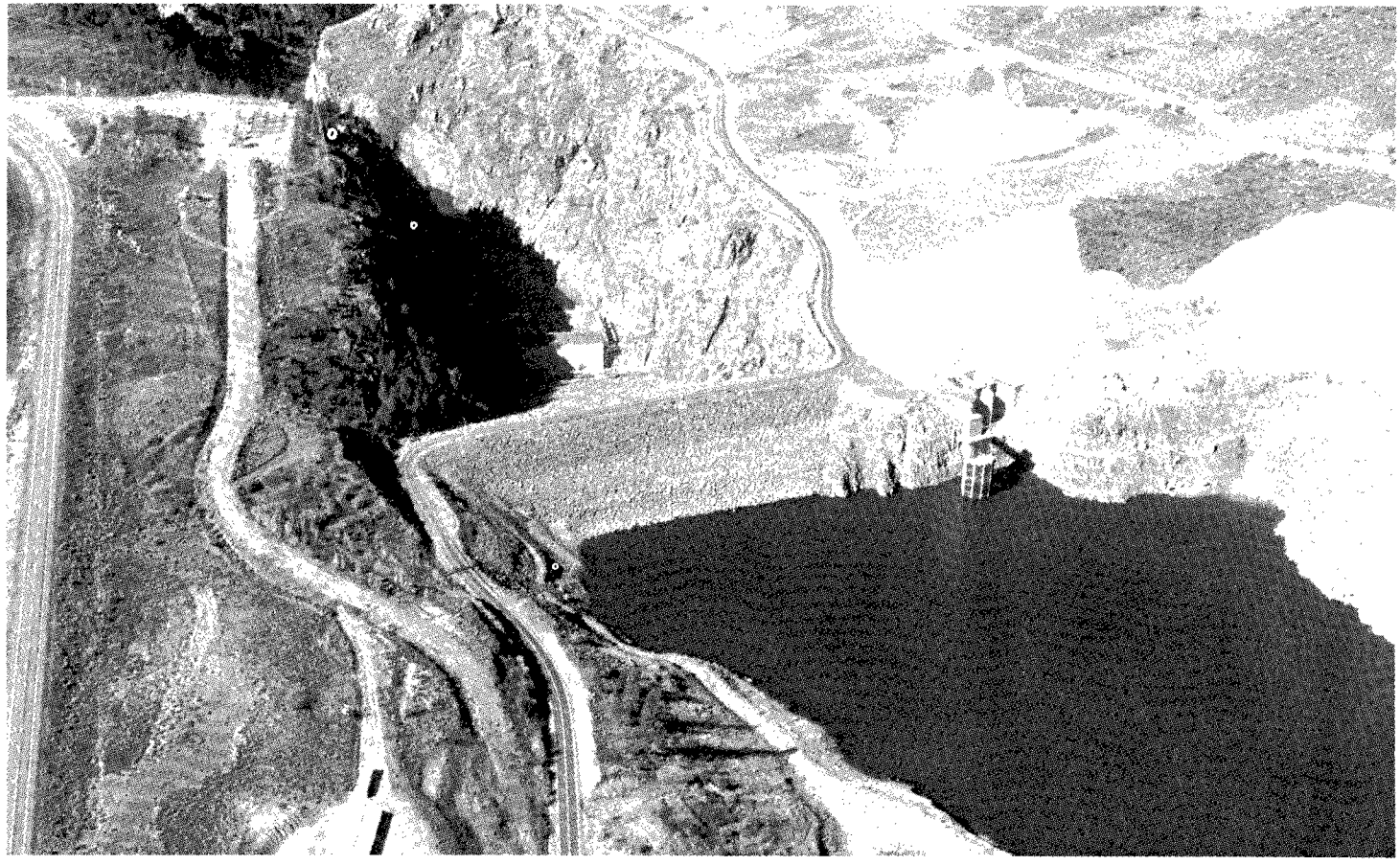
Curecanti Storage Unit includes three major dams and powerplants in the canyon of the Gunnison River downstream from Gunnison, Colorado, and upstream from the Black Canyon of the Gunnison National Monument. The three dams are the Blue Mesa, Morrow Point, and Crystal Dams.

Construction

Blue Mesa, Morrow Point and Crystal Dams, Reservoirs, and Powerplants are all in operation and produce electrical energy for the Colorado River Storage Project power system. The Crystal powerplant began generating electricity in June 1978.

Recreation

The National Park Service has recreational facilities on Blue Mesa Reservoir at Elk Creek adjacent to highway U.S. 50, at the Iola site across the lake, and at Lake Fork near the dam. A total of 155,000 fish were taken from the reservoirs during the year and there were 866,000 visitors to the area.



Blue Mesa Dam, Curecanti Unit, Colorado, October 1977 — water is 88 feet below normal maximum.

Photo by Bureau of Reclamation

B. TRANSMISSION DIVISION

The power system includes high voltage transmission lines that interconnect the Colorado River Storage Project hydroplants and delivers power to major load centers or to other delivery points. The system is interconnected with adjacent Federal, public, and private utility transmission systems. The transmission division was transferred to the Department of Energy in fiscal year 1978.

Power Marketing

Generation at Colorado River Storage Project powerplants and Fontenelle powerplant amounted to 4.5 billion kilowatt hours during the 1978 water year (October 1977-September 1978). The major portion, 3.7 billion kilowatt hours, was produced at Glen Canyon with the balance being produced at Flaming Gorge, Blue Mesa, Morrow Point, Crystal, and Fontenelle powerplants. The total production was .4 billion kilowatt hours less than was produced even in the drought year of 1977 because of the need to regain storage in the upstream reservoirs.

Sale of power by the Colorado River Storage Project during water year 1978 amounted to about 5.6 billion kilowatt hours for total revenue of over $45,000,000.

The average price of purchased energy in 1978 was much less than in 1977 because of improved power purchasing conditions, but still much higher than in other previous years.

A substantial rate increase will be sought by the Department of Energy to bring the Colorado River Storage Project payout back on schedule.

C. 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, 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. The participating projects are described in the Twenty-Eighth and earlier Annual Reports.

The present status of construction or investigations for each of the participating projects follows:

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.

b. Smith Fork

Smith Fork Project, completed in the fall of 1962, 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.

Recreation facilities for boating, picnicking, and camping have been developed at Crawford Reservoir, and local use of the reservoir is significant. About 61,000 visits were recorded during the 1977 season.

c. Florida Project

Lemon Dam, key feature of the project, was completed in November, 1963.

Recreational use at Lemon Reservoir far exceeds estimates made before the construction of the dam and reservoir. The reservoir area sustained 96,000 visits during the 1977 season. Recreation

facilities include a boat ramp, picnic area, campgrounds, parking, water, and sanitation facilities.

d. Silt Project

Rifle Gap Dam was completed in June, 1967.

Recreation facilities include a boat ramp, picnic areas, campgrounds, parking, water, and sanitation facilities. The area sustained 106,000 visits during the 1977 season.

e. Fryingpan-Arkansas Project

Although this project is not a participating project of the Colorado River Storage Project because it does not participate in the Upper Colorado River Basin Fund, it is sometimes referred to as a limited participating project because it does utilize waters diverted from the Upper Colorado River System to the eastern slope of Colorado. Therefore, mention is made of it in this report.

The Fryingpan-Arkansas Project was authorized in 1962 and benefits will result from municipal and industrial water, supplemental irrigation, hydroelectric power production, flood control, and fish and wildlife enhancement. A Draft Environmental Statement was filed during March, 1974, and the Final Environmental Statement was filed during April, 1975. A Final Environmental Supplement concerning the Fountain Valley Conduit portion of the project is in preparation.

The project plan consists of fcilities designed primarily to divert water from the western slope to the water-short areas on the eastern slope. Major facilities consist of six storage dams and reservoirs, 16 diversion structures, and nine tunnels. When completed, the project will make possible an average annual diversion of 69,200 acre-feet of water.

Contracts have been or will be awarded for Twin Lakes Dam, Granite Siphon, penstock modification at Mt. Elbert Pumped-Storage Powerplant, and other facilities.

During fiscal year 1979, work will be completed on Hunter Tunnel, South Fork, Chapman, and Mormon-Carter diversion facilities. Stage 01 of the Mt. Elbert Powerplant will also be completed, as will land acquisition for the Fountain Valley Conduit. Work will continue on Twin Lakes Dam, Cunningham Conduits, Mormon and Carter Tunnels, Mormon Conduit, Granite Siphon, and other facilities.

Pitkin Board of County Commissioners filed a civil action in District Court claiming the final environmental statement for the project was inadequate. During April 1977, the court dismissed the suit and awarded damages to the defendant. The Board of County Commissioners subsequently appealed the decision to the Tenth Circuit Court of Appeals and the appeal is pending.

In late June, the Interior Solicitor ruled that Reclamation must seek congressional authority before taking more than 3,000 acre-feet from the Midway and No-Name diversions of Hunter Tunnel. He also ruled the water could only be used to be exchanged with the Twin Lakes Canal Company on the eastern slope. The Bureau had originally planned to divert 10,300 acre-feet from the two diversions and use the water for general project purposes. The ruling would have resulted in a substantial decrease in the total project water authorized to be delivered. Legislation has been enacted by the Congress to overcome the Solicitor's ruling.

Exports of project water from the Colorado River Basin in water year 1978 amounted to 49,357 acre-feet. This was an increase from water year 1977 exports of 11,418 acre-feet. Reservoir contents as of September 30, 1978, were 98,334 acre-feet at Ruedi Reservoir, 81,835 acre-feet at Turquoise Lake, and 30,882 acre-feet at Pueblo Reservoir.

f. Fruitland Mesa Project

The Public Works Appropriation Bill contained $75,000 for advance planning work on this project in fiscal year 1979. President Carter vetoed the Bill. The House of Representatives was unable to override the veto. Fruitland Mesa was one of the projects deleted before the Bill was considered again by the Congress.

g. Bostwick Park Project

Regulation of flows of Cimarron Creek is provided by the Silver Jack Dam, principal feature of the project which was completed in 1971. There was no construction in 1978.

h. Dallas Creek Project

Land acquisition for Dallas Creek Project is almost completed. Construction is underway for the relocation of Highway 550 including erection of a deer-proof fence along the highway right-of-way. The contractor completed work on the field station in August and is continuing with foundation exploration work on Ridgway Dam.

Dolores Project, Colorado — Evidence of 1977 drouth is shown in this short and spotty cornfield.

Photo by Bureau of Reclamation

i. Dolores Project

Part I of the McPhee access road was nearly completed at the end of September. As part of the cultural resources mitigation program, archeolgical excavations are underway by the University of Colorado in the area to be affected by McPhee Dam and Reservoir.

j. San Miguel Project

Aerial topography and mapping of the project area have been completed and both the Definite Plan Report and the draft Environmental Statement are scheduled for completion in mid-1979.

k. West Divide Project

Work is continuing on collecting material for a wildlife inventory and cultural resources. The draft environmental Statement and the Definite Plan Report are also scheduled for completion in mid-1979.

2. Colorado and New Mexico

a. Animas-La Plata Project

Feasibility designs and estimates have been completed on project features. The draft Environmental Statement and the Definite Plan Report are scheduled for completion early in 1979.

3. Colorado and Wyoming

a. Savery-Pot Hook Project

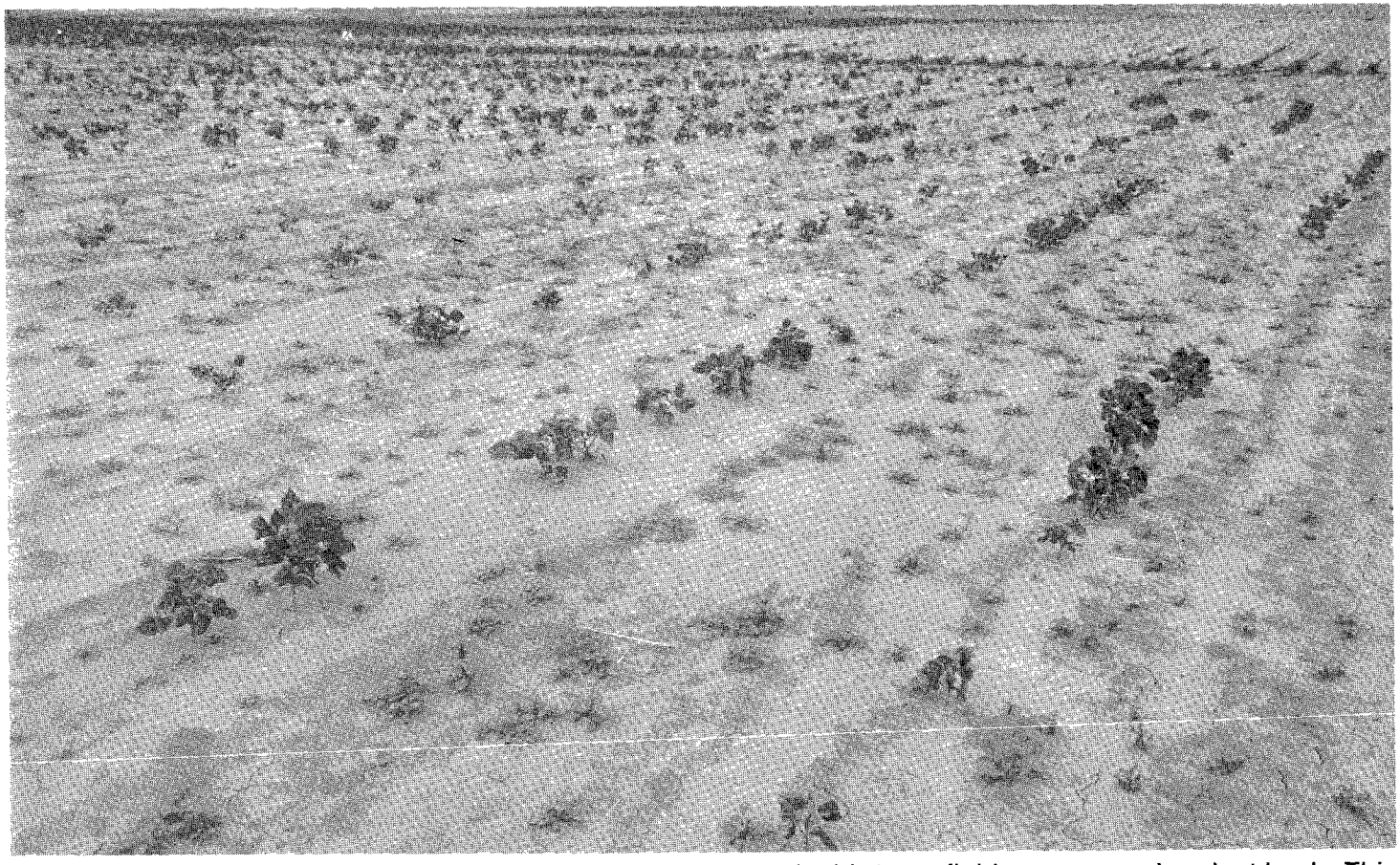
The Public Works Appropriation Bill contained $75,000 for advance planning work on this project in 1979. The President vetoed the bill in the closing days of the 95th Congress. The House of Representatives failed to override the veto. The Savery-Pot Hook Project was deleted before the Bill was again passed by the Congress.

4. New Mexico

a. Hammond Project

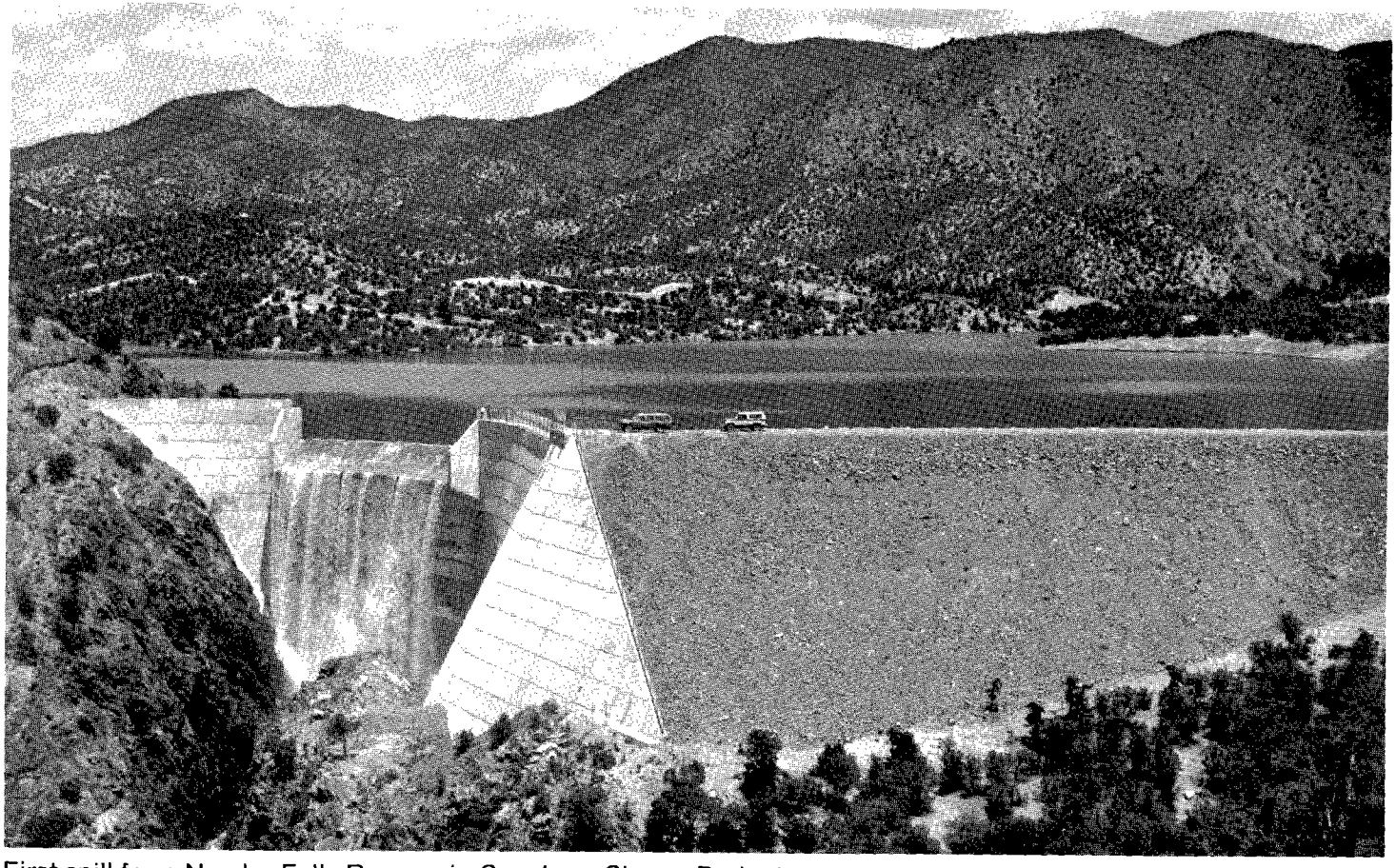
The Hammond Project is located in northwestern New Mexico and was completed in 1962.

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



Dolores Project, Colorado — Results of 1977 drouth are shown in this bean field on proposed project lands. This field, like many others had to be plowed up as it was not worth harvesting.

Photo by Bureau of Reclamation



First spill from Nambe Falls Reservoir. San Juan-Chama Project.

Photo by Bureau of Reclamation

b. Navajo Indian Irrigation Project

In September, 1978, water flow was started through Amarillo Canal and initial delivery to the gravity lateral system serving Block 3 lands was accomplished. A major contract for construction of the pipe laterals and pumping plants for Block 4 was awarded and work has been initiated. Other work in progress includes Kutz Substation, 60 percent complete; Gallegos Substation, 28 percent; 115-kV connecting power transmission line, 66 percent; Blocks 1 and 4 power distribution line, 20 percent; and Block 4 pumping equipment, 15 percent. Overall project completion was approximately 39 percent at the end of the fiscal year.

c. San Juan-Chama Project

Construction of Nambe Falls Dam, key feature of the Pojoaque Unit, was completed in April, 1976. Reservoir recreational facilities, access roads, and a floating safety boom were constructed this year.

Additional recreation facilities are being constructed at Heron Reservoir.

5. Utah

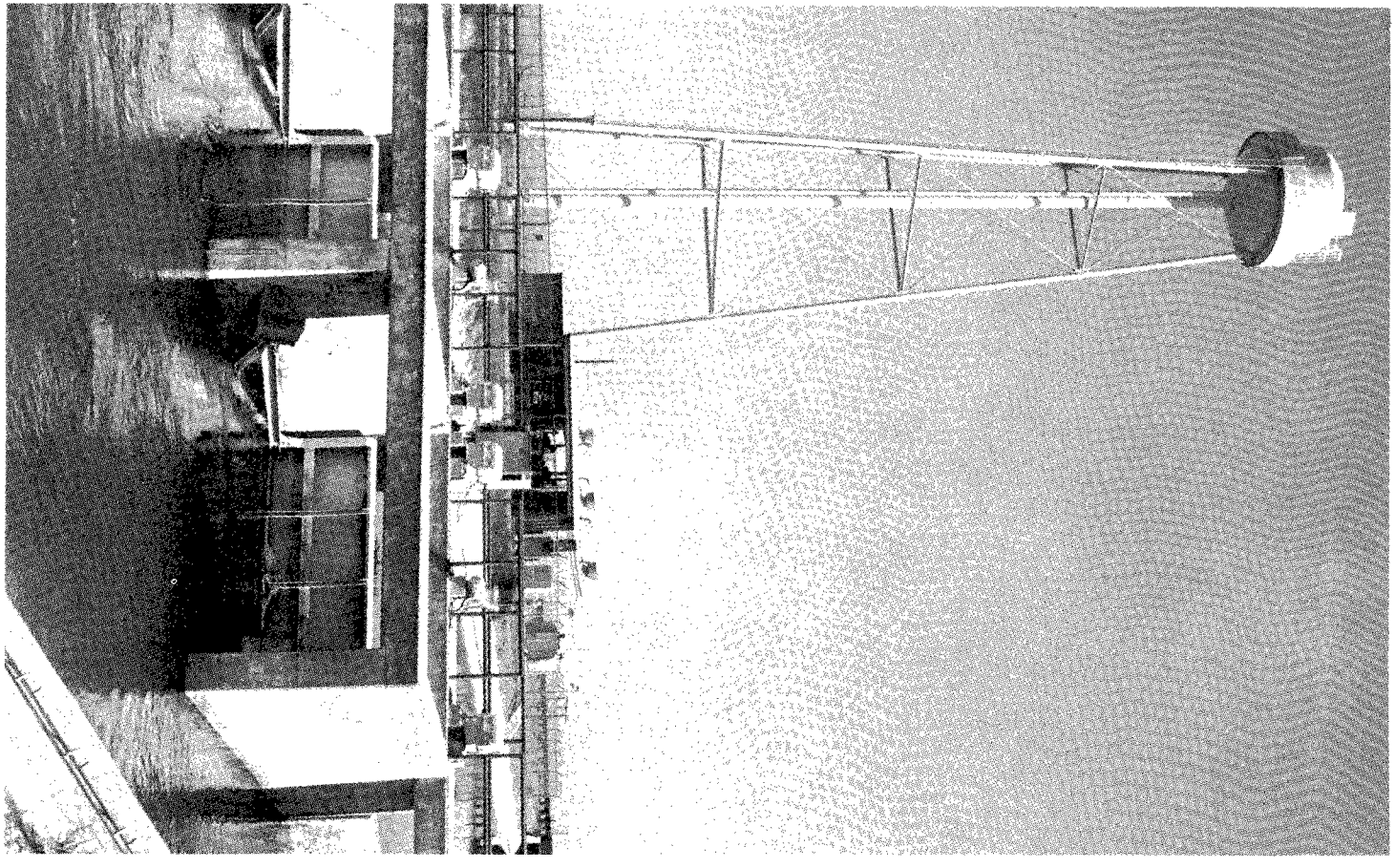
a. Central Utah Project (Initial Phase)

The Central Utah Project will provide water for irrigation, municipal and industrial uses, 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 consists of six units. Largest of these is the Bonneville Unit which involves diversion of water from the Uinta Basin, a part of the Colorado River Basin, to the Bonneville Basin with associated resource developments in both Basins. The other five units, the Vernal, Uintah, Upalco, Jensen, and Ute Indian, provide for local development in the Uinta Basin.

i. Vernal Unit

The Vernal Unit, near Vernal, Utah, was completed in 1962. The Vernal Unit, through storage of water diverted from Ashley Creek, provides supplemental water to 14,700 acres of irrigated land, assures farmers an adequate, year-round supply of water, and augments the municipal water supply for three communities in Ashley Valley, Vernal, Maeser, and Naples, by providing 1,600 acre-feet of municipal and industrial water.

The Unit provides recreation and fishing at Steinaker Reservoir. About 6,400 people visited the reservoir in 1977.



Check structure in foreground. Main Canal and Pumping Plant in background. Navajo Indian Irrigation Project.

Photo by Bureau of Reclamation

Since completion of the project in 1962 it has been necessary to install drains in certain areas. The drains in Block 4A are nearly completed.

ii. Bonneville Unit

The Bonneville Unit will provide irrigation water to 44,600 acres of full-service lands, and 213,170 acres of supplemental service lands; develop 133,500 kw of power; and supply 99,000 acre-feet of municipal and industrial water.

The development of lands on Leland Bench, a new segment of the Bonneville Unit, is under investigation.

Soldier Creek Dam and the enlarged Strawberry Reservoir were completed in 1972.

The Starvation Dam was completed in 1970. Starvation Reservoir filled and spilled for the first time on June 14, 1971. More than 106,000 people visited the reservoir during 1977.

Construction work now in progress includes Vat Tunnel, Stillwater Tunnel, Alpine Aqueduct and the placement of riprap on the upstream embankment of Soldier Creek Dam. Construction of Vat Tunnel is behind schedule and Stillwater Tunnel is ahead of schedule.

iii. Upalco Unit

This unit will provide a supplemental water supply for 42,610 acres of land, 27,540 acres being in non-Indian ownership and 15,070 acres having Indian water rights.

Local requirements for additional municipal and industrial water have developed since completion of the 1969 definite plan report and will be considered in the reevaluation of the plan. Fish and wildlife and recreation uses will be enhanced at 14 upstream mountain reservoirs through reservoir stabilization. This will be accomplished by replacing irrigation storage water presently provided by the upstream reservoirs with project storage water from Taskeech Reservoir.

Advance Planning will be completed during the year.

Construction funds for 1979 were rescinded by the Congress after the Presidential veto of the appropriation bill.

iv. Uintah Unit

Water developed by this unit will aid agricultural development and alleviate the poor economic and social conditions of the Ute

Bonneville Unit, Central Utah Project — Looking downstream at upper portal of Stillwater Tunnel and Upper Stillwater Damsite.

Photo by P[redacted]

Indians. It would virtually eliminate flooding of agricultural lands, allowing earlier planting on lands which were previously inundated by spring floods and subjected to loss by frequent changes in stream channels.

Congress intended for this unit to go into construction in 1979, but the Presidential veto eliminated it from the construction list.

v. Jensen Unit

Construction work is continuing on this unit with the Red Fleet Dam being 56 percent complete at the end of September. Water was diverted through the outlet works on September 6, 1978. The stilling basin is still under construction. The access roads to the recreation area and the boat ramp are nearly complete.

b. Emery County

The Emery County Project was completed in 1966. This project provides supplemental water for 18,000 acres of land and a full supply for 771 acres in Emery County, Utah. Drainage work is continuing with $391,000 allotted for this work in fiscal year 1979.

6. Wyoming

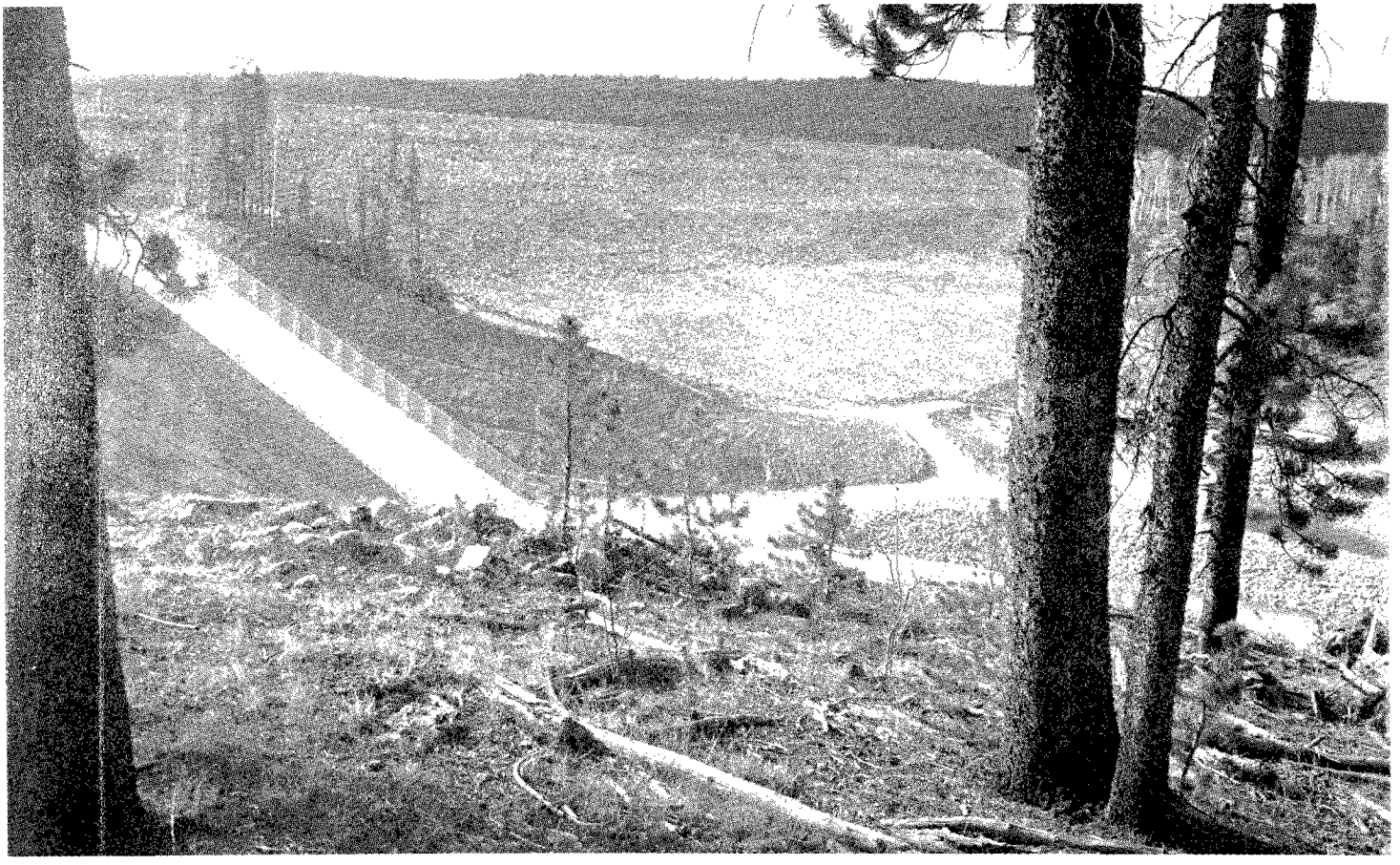
a. Lyman Project

The Lyman Project is located in Uinta County in southwestern Wyoming. The project will deliver supplemental water to 42,674 acres of presently irrigated lands. Two dams — Meeks Cabin and Stateline — comprise the principal features of this project. Meeks Cabin Dam and Reservoir were completed in 1971. Construction on Stateline Dam had been underway during the past year and was essentially complete at the end of the water year.

b. Seedskadee Project

Construction of Fontenelle Dam and Reservoir was completed in 1964 and 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 under Section 8 of the Colorado River Storage Project Act.

The State of Wyoming has contracted for additional water from Fontenelle Reservoir for municipal and industrial uses. Involved are 60,000 acre-feet of reservoir capacity and certain direct stream-flows appropriated for municipal and industrial use and irrigation, limited to a total of 125,000 acre-feet. The United States will retain the remaining 65,000 acre-feet of storage capacity in Fontenelle



Stateline Dam, Lyman Project, Wyoming.

Photo by Bureau of Reclamation

Reservoir, and the proportional part of the direct flow rights to the Green River for other uses. Water deliveries and points of diversion that would be compatible with maintaining the substantial stream fishery in the Green River downstream from Fontenelle Dam are to be encouraged by the parties to the contract. Execution of the municipal and industrial water contract will preclude any substantial irrigation developments under the Seedskadee Project.

Recreation facilities which have been provided at Fontenelle Reservoir include a boat ramp, parking areas, campgrounds, picnic sites, water, and comfort stations. The reservoir area accommodated 51,000 visits during 1977.

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.

D. POTENTIAL PARTICIPATING PROJECTS

In carrying out further investigations of projects under Federal Reclamtion 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.

1. Colorado

a. Grand Mesa Project

Plan formulation studies are continuing on this project. The project area presently attracts a large number of tourists. Project facilities are expected to enhance the area and attract even more tourists by providing more water-oriented recreational opportunities.

b. Dominguez Reservoir Project

A planned reservoir on the Gunnison River would impound about 300,000 acre-feet of water. As now conceived, a 500-megawatt pumping-generation station would be included. Rim Basin Reservoir, about 800 feet above the river would provide 5,800 acre-feet of pumped storage for eight hours of generation during peak demand periods. The proposed feasibility report is scheduled for completion in late 1979. A contract has been awarded for drilling of Rim Basin forebay reservoir.

The project would provide at least 76,000 acre-feet of municipal and industrial water for population expansion in the Grand Junction-Fruita area and for energy development in the Delta area. Problems and needs of the area have been identified and power market studies, preliminary cost estimates, hydrology studies, and environmental studies are continuing.

2. Utah

a. Central Utah Project, Ute Indian Unit

The Ute Indian Unit feasibility report will cover an evaluation of the most promising alternatives for the potential development.

This Unit will provide water for irrigation and municipal and industrial use and for generation of hydroelectric power and for use in coal-fired steam powerplants. Other purposes will include recrea-

tion development, fish and wildlife conservation, and flood control. A concluding report is scheduled for 1979.

3. Wyoming

a. Sublette Project

The State of Wyoming has recommended that completion of the feasibility of investigations be delayed until the future long-term water needs of the Green River Basin are better known. The State has indicated that the Bureau of Reclamation should analyze standards on an appraisal level so that they may be cataloged in a status report for utilization in future decisions.

4. Colorado and Utah

a. Upper Colorado Resource Study

Multiple Objective Planning studies are continuing for the Yampa, White, and a portion of the Green River Basins in northwest Colorado and eastern Utah. Exploratory drilling was completed at Sawmill Mountain Damsite.

Colorado and Utah have a joint effort underway to reach agreement on a satisfactory division of flows of the White River and push forward with development. Three conservancy districts, Yellow Jacket Water Conservancy District, Juniper Water Conservancy District, and Great Northern Water Conservancy District, have been organized, which indicates great interest in development of the resources in the White River Basin.

5. Other Projects

a. Power Peaking Capacity

A Peaking Power Status Report was completed by the Bureau of Reclamation in September 1978, including a two-volume appendix. Previously, a preliminary report on pumped storage investigations in the Upper Colorado Region was issued by the Bureau in March 1964. The results led to the 1966 authorization of a study of the feasibility of developing peaking power in the region. Although authorized, the investigations were not funded until fiscal year 1975.

A Multiple Objective Planning (MOP) Team was formed in April 1975 and several subteams were created to aid in the study process.

Power interests and the Upper Colorado River Commission expressed a strong desire to explore the possibilities of Federally-sponsored hydropeaking power. Other interests suggested that conservation measures and load modification efforts, interties, etc. be explored before going into new construction. These suggestions were acknowledged. All things considered, it was deemed expedient to proceed with the hydropeaking studies while recognizing that it would be 1986 before anything recommended in the study could become a producer.

The peaking power needs for the Colorado River Storage Project marketing area were estimated for the target period from 1986 to 2000. Around 150 sites were identified and analyzed by the MOP Team members. Analytical methods involved ranged from field visits to computer ranking of the sites. The initial goal of this analysis was to formulate a plan from the sites analyzed which could meet the peaking needs projected. These sites would then be recommended for feasibility study. The goal was eventually changed so that the study would become an ongoing process. Sites were to be recommended for feasibility study on an individual basis as future needs were projected. The plan formulation process eventually resulted in the selection of 26 sites to be presented to the public. Six public meetings were held in different locations around the Region. The input gained from these meetings was combined with the previously accumulated data. As a result, three sites, Utah Lake Pumped Storage and Blue Mesa and Glen Canyon Outlet Works, were recommended for feasibility study in fiscal year 1979.

E. RESERVOIR OPERATIONS

The 1978 snowmelt runoff in the Upper Colorado Basin during the April through July period totaled 8,995,000 acre-feet, or 115 percent of the long-term average. The computed unregulated runoff at Lees Ferry for the water year ending September 30, 1978 was 11,442,000 acre-feet:

	Acre-feet
Net Storage	1,899,000
Bank Storage	747,000
Evaporation	567,000
Releases to Lower Basin (including Paria River)	8,229,000
TOTAL	11,442,000

The Upper Basin reservoirs had a net increase of 1,899,000 acre-feet of water in storage during water year 1978. During the same twelve-month period, storage in Lake Mead increased 665,000 acre-feet.

1. Lake Powell

The highest water surface in Lake Powell during the year was 3,653 feet elevation on July 24, 1978, with an active surface storage of 18,143,000 acre-feet. On September 30, 1978 the lake was down to elevation 3,640 feet, with a storage content of 16,563,000 acre-feet. A total of 8.214 million acre-feet of water was released from Lake Powell to the Lower Basin during water year 1978. All of the water released was used to generate power for both Upper and Lower Basin consumers. The annual discharge of the Paria River was 14,981 acre-feet, making a total of 8.229 million acre-feet at Lee Ferry.

a. Releases of Water Stored in Lake Powell for the Enhancement of Bass Production in Lake Mead

The Secretary of the Interior in operating the Colorado River Storage Project has caused water to be released from Lake Powell for enhancement of bass production in Lake Mead. Congress specified other purposes in the Project Act and directed that powerplants be operated to produce the greatest practicable amount of power and energy that can be sold at firm power and energy rates. Past releases for bass have resulted in the loss of revenues required

for payment of project costs. Since other factors affect bass production, the purpose of the following resolution was to object to further releases from Lake Powell for bass production in Lake Mead.

Subsequently, by letter of February 15, 1978 to the Commission, the Bureau of Reclamtion responded that it had made a detailed evaluation of options to be considered in planning the water releases from Lake Powell. The Bureau selected the option of mitigation development for the Lake Mead Bass, and stated "That option will permit optimum power production at Glen Canyon Dam."

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION
re:
Releases of Water Stored in Lake Powell for the Enhancement of Bass Production in Lake Mead

WHEREAS, the Secretary of the Interior in the operation of the reservoirs of the Colorado River Storage Project has caused storage water to be released from Lake Powell for the enhancement of bass production in Lake Mead; and

WHEREAS, section 1 of the Colorado River Storage Project Act (70 Stat. 106) specifies the primary purposes of that Act as being: ". . . regulating the flow of the Colorado River, storing water for beneficial consumptive use, making it possible for the States of the Upper Basin to utilize, consistently with the provisions of the Colorado River Compact, the apportionments made to and among them in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, providing for the reclamation of arid and semiarid land, for the control of floods, and for the generation of hydroelectric power, as an incident of the foregoing purposes . . .," and fish and wildlife purposes are not included among the project purposes; and

WHEREAS, Congress in Section 5 of the Colorado River Storage Project Act (70 Stat. 108) specified for what purposes all revenues *collected as a result of operations of the Colorado River Storage Project may be used, and none of these purposes are related to fish and wildlife; and*

WHEREAS, section 7 of the Colorado River Storage Project Act (70 Stat. 109) within the limitations of the applicable compacts and laws specifically directs that the powerplants shall be operated ". . .so as to produce the greatest practicable amount of power and energy that can be sold at firm power and energy rates"; and

WHEREAS, releases of storage water from Lake Powell during the spring for the enhancement of bass production in Lake Mead in past years has precluded the accrual of revenues to the Upper Colorado River Basin Fund that otherwise would have accrued therein; and

WHEREAS, the release of stored water from Lake Powell during the spring of 1978 for the enhancement of bass production in Lake Mead would preclude the accumulation of approximately $4.3 million to the credit of the Upper Colorado River Basin Fund for the repayment of project costs and interest thereon; and

WHEREAS, other factors such as water temperature, wind, cover, and availability of food also affect the reproduction of bass to unknown degrees:

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission in special meeting convened at Salt Lake City, Utah on January 10, 1978 that said Commission strongly objects to the resumption of the practice of releasing water from Lake Powell for the enhancement of bass production in Lake Mead for the reasons that such releases are not in compliance with the law, and, by preventing the proper accumulation of revenues in the Upper Colorado River Basin Fund, adversely affect the conservation, utilization, and development of the water and related natural resources of the Upper Division States of the Colorado River Basin as intended by the Congress when it approved the Colorado River Storage Project Act;

BE IT FURTHER RESOLVED that copies of this resolution be transmitted to the Secretary of the Interior, Commissioner of the Bureau of Reclamation, Director of the Office of Management and Budget, Members of the Congress from the member States of the Upper Colorado River Commission, and other interested parties.

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 the Special Meeting held in Salt Lake City, Utah on January 10, 1978.

WITNESS my hand this 13th day of January, 1978.

IVAL V. GOSLIN
Executive Director

2. Flaming Gorge Reservoir

The water surface of Flaming Gorge Reservoir on the Green River was at its highest elevation of the year on August 20, 1978, with 2,848,000 acre-feet of active storage at elevation 6,016 feet. The April through July runoff of the Green River above the reservoir was about 1,469,000 acre-feet, or 133 percent of normal.

3. Fontenelle Reservoir

On October 1, 1977 Fontenelle Reservoir on the Upper Green River in Wyoming held 295,000 acre-feet of water at elevation 6,500 feet. During the 1977-1978 winter, the reservoir was drawn down to elevation 6,485 feet. The reservoir was at the maximum level for the year on July 13, 1978.

4. Navajo Reservoir

On October 1, 1977, Navajo Reservoir was at elevation 6,033 feet and held 1,038,000 acre-feet. The reservoir was drawn down to a low of 6,023 feet in February with contents of 935,000 acre-feet. Fifty thousand acre-feet of water were furnished to the Navajo Indian Irrigation Project during the year. The year-end storage was 1,237,000 acre-feet on September 30, 1978. It is estimated that the Navajo Indian Irrigation Project will use 100,000 acre-feet of water in 1979.

a. El Paso Natural Gas Company Contract for Water from Navajo Reservoir

The El Paso Natural Gas Company had proposed to contract with the Secretary of the Interior for 15,000 acre-feet of water annually from Navajo Reservoir for a coal gasification plant. The Upper Division States and the Upper Colorado River Commission were requested to comment on a statement prepared by the Bureau of Reclamation as to the availability of water. The Commission found, through its Legal and Engineering Committees, that the water would likely be available for the proposed contract. The purpose of the following resolution was to support Congressional approval of the contract.

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION
re:
El Paso Natural Gas Company Contract
for Water from Navajo Reservoir, New Mexico

WHEREAS, the El Paso Natural Gas Company proposes to contract with the Secretary of the Interior for 15,000 acre-feet of water annually from Navajo Reservoir for a coal gasification plant under the provisions of Section 11 of P.L. 87-483; and

WHEREAS, each of the Governors of the four Upper Division States by letters of December 2, 1977 from David Crandall, Regional Director, Upper Colorado Region, U.S. Bureau of Reclamation, have been requested to provide views and comments on a statement titled "Availability of Water for Contract with El Paso Natural Gas Company pursuant to Section 11 of the Act of June 13, 1962, authorizing the Navajo and San Juan-Chama Projects, New Mexico"; and

WHEREAS, the Upper Colorado River Commission has also been requested to comment on the Bureau of Reclamation statement if it so desires; and

WHEREAS, it is assumed by the Commission that the contract between the Secretary of the Interior and the El Paso Natural Gas Company will be conditioned on compliance with the terms of the Colorado River Compact, the Upper Colorado River Basin Compact, and P.L. 87-483; and

WHEREAS, New Mexico's use of waters of the Upper Colorado River system by existing and authorized projects, including the proposed contract, is estimated to be less than New Mexico's currently estimated entitlement; and

WHEREAS, the Commission finds on the advice of its legal and engineering committees that it is reasonably likely that water will be available for the proposed contract; and

WHEREAS, the Upper Colorado River Basin Compact fully protects the rights of each of the Upper Division States against any excessive use of water by any other Upper Division State:

NOW, THEREFORE, BE IT RESOLVED that the Upper Colorado River Commission, at a special meeting in Denver, Colorado on February 6, 1978, supports Congressional approval of the El Paso Natural Gas Company contract for 15,000 acre-feet of water annually from Navajo Reservoir;

BE IT FURTHER RESOLVED that a copy of this resolution be transmitted to the Governors and Congressional members of the four Upper Division States and to the Secretary of the Interior.

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 the Special Meeting held in Denver, Colorado on February 6, 1978.

WITNESS my hand this 8th day of February, 1978.

IVAL V. GOSLIN
Executive Director

5. Blue Mesa Reservoir

Blue Mesa Reservoir gained 507,000 acre-feet of storage during the year and on September 30, 1978 contained 728,000 acre-feet of water.

6. Morrow Point Reservoir

Morrow Point Reservoir was operated at or near full stage (117,000 acre-feet) through the 1978 water year.

7. Crystal Reservoir

Crystal Dam and Powerplant were completed during the year and began generating power in June 1978. At full stage this reservoir would contain 25,000 acre-feet of water. It was operated during the 1978 water year at about 17,000 acre-feet capacity.

F. WATER QUALITY PROGRAM IN THE UPPER COLORADO RIVER BASIN

1. Colorado River Water Quality Improvement Program

The Colorado River Basin Salinity Control Act, Public Law 93-320, June 24, 1974, authorized and directed the Secretary of the Interior to expedite completion of the planning reports on the following units:

Irrigation Source Control

- Lower Gunnison Basin
- Uinta Basin
- Colorado River Indian Reservation
- Palo Verde Irrigation District

Point Source Control

- La Verkin Springs
- Littlefield Springs
- Glenwood-Dotsero Springs

Diffuse Source Control

- Price River
- San Rafael River
- Dirty Devil River
- McElmo Creek
- Big Sandy River

The principal purposes of the investigations are to study sources and causes of salinity in the Upper Colorado River Basin, and develop plans for maintaining salinity in the lower reaches of the Colorado River at or below present levels while States of the Basin continue to develop and use their compact apportionments of water.

a. Uinta Basin Unit

A proposed feasibility report is scheduled for completion in 1979 and a draft Environmental Impact Statement in early 1980. The Soil Conservation Service has completed a report describing on-farm conditions and the proposed modifications and improvements.

b. Big Sandy River Unit

An inflow-outflow study indicates an average of 4,500 acre-feet of seepage occurs each year and may be part of the recharge to the

aquifer discharging saline water into the Big Sandy River. A contract to drill five test wells and 17 observation wells to investigate seepage from Big Sandy Reservoir was awarded in September.

c. Lower Gunnison Unit

The irrigation management service program served 4,630 acres in the 1978 Season. Ponding tests and a subsurface investigation program were initiated during the year but a feasibility report will be delayed.

d. McElmo Creek Unit

Basic data collection and evaluation are continuing. The draft Environmental Impact Statement and a proposed feasibility report are scheduled for completion in 1980.

e. Meeker Dome Unit

An architectural and engineering contract is being prepared for consultants to prepare the feasibility study on this unit. This is a first attempt at this method of preparing a feasibility report. It is being done by contract primarily because of the Bureau of Reclamation's manpower shortage.

f. Glenwood-Dotsero Unit

Collection of basic data is continuing which includes evaporation data and water sampling.

2. Colorado River Basin Salinity Control Project

Title II of the "Colorado River Basin Salinity Control Act" of June 24, 1974 (P.L. 93-320) authorized the Secretary of the Interior to construct, operate, and maintain four salinity control units as the initial stage of the Colorado River Basin Salinity Control Program. The four units are: Paradox Valley Unit, Grand Valley Unit, Crystal Geyser Unit, and Las Vegas Wash Unit.

a. Paradox Valley Unit

The plan for removing salt from the Dolores River consists of installing and pumping brine wells to eliminate the natural brine inflow to the river. Wells have been installed and will undergo pumping tests for a period of time. If the pumping tests are satisfactory, the remaining facilities will be installed. These include a reservoir for storage and evaporation of the brine, a hydrogen sulfide stripping plant, pumping plants and high pressure pump line. A contract was awarded in July for a temporary brine pipeline and pumping tests of the brine well field are continuing.

b. Crystal Geyser Unit

Construction of the Crystal Geyser Unit has been authorized. Because of the low cost effectiveness and the minor salinity improvement that could be obtained, construction has been deferred.

c. Grand Valley Unit

The Reed Wash drainage, which enters the Colorado River upstream from Salt Wash, will be the site for initial construction beginning in 1979. This area covers about 6,000 acres and would involve lining 6.7 miles of the Government Highline Canal and associated laterals. The second stage would include the balance of the project.

Designs and specifications for the lining of the Government Highline Canal and associated laterals are being prepared by the Bureau of Reclamation.

G. WEATHER MODIFICATION

Research experiments and operational cloud seeding projects indicate weather modification has a potential for increasing mountain snowfall and thus augmenting water supplies in the Colorado River Basin.

Seeding winter orographic clouds to increase snowfall may be a major alternative in helping meet long-range water problems in the Colorado River area. Before this can happen, the remaining scientific uncertainties need to be resolved to develop an improved technology and a practical demonstration and evaluation of water production. A comprehensive augmentation demonstration program, including research experiments, coordinated operational seeding and associated impact studies could be conducted within the next 15 years.

The Bureau of Reclamation has an appropriation of $500,000 for fiscal year 1979 under the title "Colorado River Augmentation Demonstration Program." This will be carried out under the Atmospheric Water Resources Management Program by the Engineering and Research Center in Denver.

H. APPROPRIATION OF FUNDS BY THE UNITED STATES CONGRESS

The funds appropriated for fiscal year 1979 for the construction of the Colorado River Storage Project and participating projects total $76,799,000.

The largest item is for construction of participating projects amounting to $70,486,000. Drainage work is continuing on the Emery County Project. Advance planning is also continuing on the Uintah and Upalco units of the Central Utah Project, Animas-La Plata Project, San Miguel Project, and West Divide Project.

Recreation and fish and wildlife activities receive a total of $10,600,000 with $6,635,000 for recreation and the major portion of the balance for the Bonneville Unit of the Central Utah Project and the Curecanti Unit of the Colorado River Storage Project. In addition, Congress appropriated $28,000,000 to continue work on the Navajo Indian Irrigation Project. This money is appropriated to the Bureau of Indian Affairs and transferred to the Bureau of Reclamation for construction.

On June 16, 1978, the U.S. House of Representatives passed the Public Works for Water and Power Development and Energy Research Appropriation Bill, 1979 (H.R. 12928) by a vote of 263 to 59. During the House debate an amendment was offered by Congressman Edgar of Pennsylvania to delete six of the President's 1977 "hit list" water development projects. This amendment was defeated by a vote of 142 to 234. The House-passed Bill applied a 2 percent across-the-board reduction to amounts recommended by the President in his budget message to the Congress in January 1978.

The U.S. Senate passed H.R. 12928 on August 10, 1978, but without the 2 percent reduction imposed by the House.

The Committee of Conference reported H.R. 12928 on August 14th after removing the 2 percent reduction imposed by the House.

The Conference Report was approved by the House on September 14, 1978 by a vote of 319 to 71, and by the Senate on September 27th by a vote of 86 to 9.

The President held the Bill until early October when he vetoed it. On October 5, 1978, after impassioned pleas on the House floor by the Speaker, Majority Leader, and Minority Leader supporting a

motion to override the veto, the House failed to support the motion by a vote of 223 to 190. A two-thirds majority is necessary to override a presidential veto; thus, the veto was sustained by 53 votes.

Of the Representatives from the 19 western reclamation States only 69 percent of those voting supported the motion to override the veto. Of those voting from the seven Colorado River Basin States 33 (62 percent) voted for the override motion and 20 (38 percent) voted to sustain the veto. Of those voting from the four member States of the Upper Colorado River Commission, seven (78 percent) voted in favor of the override motion and two (22 percent) voted in opposition.

By October 11, 1978 Congressional negotiators and the White House agreed on a compromise in the form of a continuing resolution to substitute for H.R. 12928, the vetoed Bill. This compromise was attached to H.J. Resolution 1139 and approved by the Congress on October 11, 1978. The President subsequently affixed his signature to it.

Major features of the compromise were:

(a) deletion of construction funding for 6 projects first opposed by President in 1977 on his "hit list."

Bayou Bodeau — Louisiana
Yatesville Dam — Kentucky
Lukfata Dam — Oklahoma
Narrows Dam — Colorado
Savery-Pot Hook — Colorado
Fruitland Mesa — Colorado

(b) deletion of construction funding for 12 new projects — planning money was appropriated by the Congress.

Milan — Illinois (Carter's addition)
Burlington — North Dakota
Arcadia Lake — Oklahoma
Big Pine Lake — Texas
Animas-LaPlata — Colorado-New Mexico
Missouri R. Levee —
Kaskaskia Island Drainage and Levee — Illinois
Cedar River Harbor — Michigan
Uintah Unit — Utah
Upalco Unit — Utah
McGee Creek — Oklahoma

(c) deletion of hiring of 2300 new employees by Corps of Engineers and U.S. Bureau of Reclamation.

(d) commitment from Congress to hold hearings in 1979 on an upfront, full-funding policy for water projects.

(e) restored funding for Water Resources Council for one year plus an additional $1.7 million for the Council to administer the Water Resources Planning Act of 1965.

Senator J. Bennett Johnston, chairman of the Senate subcommittee on public works appropriations, who, along with Congressman Tom Bevill, chairman of the House counterpart subcommittee, negotiated the terms of the continuing resolution, stated that it was formulated from the standpoint of "necessity and practicality." He also made plain that by compromising, "we are not agreeing never again to consider projects on the President's 'hit list.' "

The legislation again contains the following language with reference to Rainbow Bridge: *"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."*

1. Fiscal Year 1979 Appropriations

Table XI (a) illustrates a general recapitulation of action by the Second Session of the 95th Congress pertaining to appropriations of funds for the construction program of the Colorado River Storage Project and participating projects.

Table XI (b) shows the total funds appropriated by the U.S. Congress for the Colorado River Storage Project and participating projects and chargeable against the limitations of various authorizing Acts (P.L. 485, 84th Congress, Colorado River Storage Project Act, as amended in 1972 by P.L. 92-370; P.L. 87-483, San Juan-Chama and Navajo Indian Irrigation Projects Act; P.L. 88-568, Savery-Pot Hook, Bostwick Park, Fruitland Mesa Projects Act; P.L. 90-537, Colorado River Basin Project Act).

Table XI (a)
COLORADO RIVER STORAGE PROJECT
(Fiscal Year 1979 Appropriations)

Project and State	Budget Request	House Approved* June 16, 1978	Senate and Conference Approved August 10 and 14, 1978	H.J. Res. 1139 October 15, 1978
Colorado River Storage Project				
Participating Projects:				
Animas-LaPlata - Colorado and New Mexico	---	$ 500,000	$ 500,000	---
Central Utah - Utah				
Bonneville Unit	$27,259,000	33,959,000	33,959,000	$33,989,000
Jensen Unit	7,707,000	7,707,000	7,707,000	7,707,000
Uintah Unit	---	2,300,000	2,300,000	---
Upalco Unit	---	1,800,000	1,800,000	---
Dallas Creek - Colorado	10,780,000	10,780,000	10,780,000	10,780,000
Dolores Project - Colorado	14,110,000	14,110,000	14,110,000	14,110,000
Lyman - Utah and Wyoming	3,900,000	3,900,000	3,900,000	3,900,000
	$63,756,000	$75,056,000	$75,056,000	$70,486,000
Drainage and Minor Construction:				
Additions to Completed Facilities	$ 2,607,000	$ 2,607,000	$ 2,607,000	$ 2,607,000
Emery County - Utah	391,000	391,000	391,000	391,000
San Juan-Chama - Colorado and New Mexico	615,000	615,000	615,000	615,000
	$ 3,613,000	$ 3,613,000	$ 3,613,000	$ 3,613,000
Advance Planning:				
Animas-LaPlata - Colorado and New Mexico	$ 300,000	---	---	$ 600,000
Central Utah - Utah				
Uintah Unit	300,000	---	---	900,000
Upalco Unit	300,000	---	---	700,000
Fruitland Mesa - Colorado	---	$ 75,000	$ 75,000	---
San Miguel - Colorado	300,000	300,000	300,000	300,000
Savery-Pot Hook - Colorado and Wyoming	---	75,000	75,000	---
West Divide - Colorado	200,000	200,000	200,000	200,000
	$ 1,400-000	$ 650,000	$ 650,000	$ 2,700,000
Undistributed reduction based on anticipated delays	-2,520,000	-2,520,000	-2,520,000	
Total -				
Upper Colorado River Basin Fund	$66,249,000	$76,799,000	$76,799,000	$76,799,000
Recreational & Fish and Wildlife Facilities:				
Recreational Facilities	$ 4,000,000	$ 6,635,000	$ 6,635,000	$ 6,635,000
Fish and Wildlife Facilities	25,000	3,956,000	3,965,000	3,965,000
	$ 4,025,000	$10,600,000	$10,600,000	$10,600,000
TOTAL -				
Colorado River Storage Project	$70,274,000	$87,399,000	$87,399,000	$87,399,000

*At the time the House passed H.R. 12928, it approved a two percent across-the-board reduction on all sums recommended to be appropriated by the House Committee on Appropriations.

Table XI (b)
APPROPRIATIONS BY THE CONGRESS FOR COLORADO RIVER STORAGE PROJECT AND PARTICIPATING PROJECTS*

Fiscal Year	*Amount*
1957	$ 13,000,000
1958	35,142,000
1959	68,033,335
1960	74,459,775
1961	58,700,000
1962	52,534,500
1963	108,576,000
1964	94,036,700
1965	55,800,000
1966	45,328,000
1967	46,648,000
1968	39,600,000
1969	27,700,000
1970	25,740,000
1971	24,230,000
1972	27,284,000
1973	45,770,000
1974	24,426,000
1975	22,967,000
1976	38,160,000
Transition Quarter (July, August, September 1976)	15,562,000
1977	55,200,000
1978	67,051,000
1979	76,799,000
TOTAL	$1,142,747,310
Plus:	
Navajo Indian Irrigation Project Appropriations	194,232,385
Total Appropriations	$1,336,979,695

*Exclusive of non-reimbursable funds for fish and wildlife, recreation, etc. under Section 8 of P.L. 485, 84th Congress.

2. Appropriation of Funds by U.S. Congress For Participating Projects

Although the Colorado River Storage Project Act was passed in 1956, the recent lack of support by the Executive Branch of the Government for adequate funding of water projects has delayed construction of participating projects. The need for water storage projects as insurance against drought and to assist the United States in fulfilling energy requirements is urgent. The President's budget request contains no money for two projects and inadequate funding for others. The purpose of the following resolution is to petition the Congress to make sufficient funds available for construction and to utilize fully the capability of the Bureau of Reclamation.

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION
re:
Appropriations of Funds
by the U.S. Congress for Participating Projects
of the Colorado River Storage Project

WHEREAS, in 1956 the Congress of the United States approved the Colorado River Storage Project Act (70 Stat. 105) which authorized the construction of participating water projects as integral parts of an upper Colorado River comprehensive, basin-wide water and related natural resosurces development plan designed to meet present and future needs for water from the Colorado River system legally apportioned to the States of Colorado, New Mexico, Utah, and Wyoming by the Colorado River Compact and Upper Colorado River Basin Compact; and

WHEREAS, lack of support by the Executive Branch of the Federal Government for adequate funding and its imposition on the Bureau of Reclamation of unrealistic limitations on personnel in recent years have unduly delayed construction of participating projects while requirements for water have increased at unprecedented rates to the point where water shortages are imminent in the four upper division States of the Colorado River Basin; and

WHEREAS, much of the rapid increase in population and industrial development in the Upper Colorado River Basin is directly associated with efforts to assist the United States in fulfilling national energy requirements through the development of the basin's coal, natural gas, oil, and mineral resources; and

WHEREAS, the economic, social, and environmental importance of water storage and regulation in the lives of western United States citizens was vividly portrayed during the drought year, 1977; and

WHEREAS, the President's budget request to the Congress for fiscal year 1979 contains no funding for two authorized participating projects, the Fruitland Mesa Project and Savery-Pot Hook Project, and inadequate funding for a number of others including the Bonneville, Uintah, and Upalco units of the Central Utah Project, the Animas LaPlata Project, San Miguel Project, and West Divide Project, and recreation and fish and wildlife facilities; and

WHEREAS, the Animas LaPlata Project and the Uintah and Upalco units of the Central Utah Project will provide many substantial and greatly needed economic, social, and environmental benefits to Indian Tribes; and

WHEREAS, the production of food, fiber, and energy that depends upon having adequate quantities of good quality water available at the right places and at the right times is of the utmost importance in maintaining the health and general welfare of the expanding population of the United States of America and in international affairs:

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission in Special Session convened this sixth day of February, 1978, in Denver, Colorado that the United States Congress and its Committees on Appropriations are hereby petitioned to make available sufficient funds for fiscal year 1979 to utilize the full capabilities of the Bureau of Reclamation in initiating and continuing the construction of the authorized participating projects of the Colorado River Storage Project and to increase the capability of the Bureau to execute authorizations and directives of the Congress in a realistic, economic, timely, and efficient manner;

BE IT FURTHER RESOLVED that copies of this resolution be transmitted to the Governors and Congressional delegations of the Upper Division States of the Colorado River Basin, Members of the Committees on Appropriations of the United States Congress, 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 the Special Meeting held in Denver, Colorado on February 6, 1978.

WITNESS my hand this 9th day of February, 1978.

IVAL V. GOSLIN
Executive Director

3. Adequate Funding of Public Recreational Facilities Under Section 8 of the Storage Project Act

Section 8 of the Storage Project Act provides for the planning and construction of certain recreational facilities in connection with development of the Colorado River Storage Project. This work has lagged behind water project construction in some instances. The purpose of the following resolution is to urge the Office of Management and Budget, the Secretary of the Interior and Congress to support the annual appropriation of funds under Section 8 to accomplish the construction of pertinent features to properly implement the intention of Congress to provide recreation features and facilities and measures to mitigate losses of, and improve conditions for, the propagation of fish and wildlife under Section 8 of the Colorado River Storage Project Act.

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION
re:
Adequate Funding by the Congress of Public Recreational Facilities Authorized to be Developed by Section 8 of the Colorado River Storage Project Act

WHEREAS, under section 8 of the Colorado River Storage Project Act (70 Stat. 110) the Secretary of the Interior is authorized and directed to investigate, plan, construct, operate, and maintain public recreational facilities on lands withdrawn or acquired for the development of the storage units and participating projects of the Colorado River Storage Project; and

WHEREAS, under said section 8 the Secretary is authorized and directed to investigate, plan, construct, operate, and maintain facilities to mitigate losses of, and improve conditions for, the propagation of fish and wildlife; and

WHEREAS, under section 8 the Secretary is authorized to acquire lands and to withdrawn public lands from entry or other disposition under the public land laws and to dispose of them to federal, state, and local governmental agencies upon such terms and conditions as will best promote their development and operation in the public interest; and

WHEREAS, all costs incurred pursuant to said section 8 are nonreimbursable and nonreturnable, and, consequently, have no effect upon the accrual of excess power revenues in the Upper Colorado River Basin Fund; and

WHEREAS, funding of public recreational facilities and facilities to mitigate losses of, and improve conditions for, the propagation of fish and wildlife in some instances has lagged behind water project construction; and

WHEREAS, participating projects of the Colorado River Storage Project now in construction status, participating projects that are authorized and for which construction is pending, and others that are in planning or investigation status either have, or will have, extensive recreational features and/or facilities for mitigation of losses of fish and wildlife habitats under existing policies applicable to the development of water projects:

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission in Special Meeting convened at Salt Lake City, Utah on January 10, 1978 that whenever there is agreement between the involved State or States and the Department of the Interior with respect to the construction of public recreational features and/or facilities and measures to mitigate losses of, and improve conditions for, the propagation of fish and wildlife under section 8 of the Colorado River Storage Project Act, the Office of Management and Budget, Secretary of the Interior, and the Congress are hereby urged to support annual appropriations of funds under said section 8 for those purposes described therein in sums adequate to accomplish the expeditious construction of the pertinent features, facilities and measures and to implement the intent of the Congress as expressed in said section 8;

BE IT FURTHER RESOLVED that copies of this Resolution be transmitted to the Director of the Office of Management and Budget, the Secretary of the Interior, Commissioner of Reclamation, Members of the Congress of the four member States of the Upper Colorado River Commission, the Committees on Appropriations of the House of Representatives and Senate of the U.S. Congress, and other interested parties.

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 the Special Meeting held in Salt Lake City, Utah on January 10, 1978.

WITNESS my hand this 13th day of January, 1978.

IVAL V. GOSLIN
Executive Director

XII. 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.

XIII. Acknowledgements

The Upper Colorado River Commission wishes to thank the Governors of Colorado, New Mexico, Utah and Wyoming 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.

The diligent devotion to duty by departments of health and environment, water pollution control commissions, and counterpart organizations of the Upper Division States in aiding in the resolution of pollution and salinity problems of the Upper Colorado River System deserves special commendation.

Special recogniition and appreciation is due to the Colorado River Basin Salinity Control Forum, several of whose members are advisers closely associated with the Commission, for the excellent work accomplished on the difficult salinity problem of the Colorado River.

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.

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION
Honoring David L. Crandall

WHEREAS, David L. Crandall assumed the responsibilities of Director of the Upper Colorado Region of the Bureau of Reclamation, Department of the Interior, in September 1965, and in which office he served until his retirement on December 31, 1977; and

WHEREAS, David L. Crandall faithfully served the Department of the Interior with distinction characterized by the highest type of performance that earned the Department of the Interior's Meritorious Service Honor Award in February 1974 and the Department's highest award, the Distinguished Service Award, in December 1976 for outstanding, innovative leadership in planning, constructing, and administering water resource projects in the Upper Basin of the Colorado River; and

WHEREAS, David L. Crandall in executing his assignments as Regional Director maintained an intense interest in all matters pertaining to the development, conservation, and utilization of the water and related natural resources of the Upper Colorado River Basin; and

WHEREAS, David L. Crandall alertly, ably, and reasonably mastered the art of blending water resource development and environmental protection under a heavy burden of new and complex laws, and rules, regulations never before encountered by engineers in resource management; and

WHEREAS, David L. Crandall demonstrated on many occasions during his over twelve years tenure as Regional Director that he understood the unique and serious problems of the Upper Colorado River Commission and its four member States of Colorado, New Mexico, Utah, and Wyoming, and was always willing, within the limits of his official position, to aid in their solution; and

WHEREAS, David L. Crandall with unusual enthusiasm and vigor cooperated wholeheartedly with the staff and technical and legal committees of the Upper Colorado River Commission in the resolution of problems of the Colorado River Basin; and

WHEREAS, David L. Crandall after having devoted so much of his energy, ability, and time to the welfare of the Upper Colorado River Basin States has more than earned his retirement, and his fine human qualities and voice of experience are going to be missed by all of his friends and associates:

NOW, THEREFORE, BE IT RESOLVED that the Upper Colorado River Commission at a Special Meeting in Salt Lake City, Utah on January 10, 1978, does hereby express the appreciation and thanks of the Commission and its staff for the effective leadership and diligent service rendered by David L. Crandall during his tenure as Regional Director of the Bureau of Reclamation's Upper Colorado Region that has contributed so much to the continuing development of the Upper Colorado River Basin States; and wish for David L. Crandall and his family the best of health, happiness, and prosperity in all of their future endeavors;

BE IT FURTHER RESOLVED that the Secretary of the Upper Colorado River Commission is hereby directed to forward copies of this Resolution to David L. Crandall and his family, the Secretary of the Interior, and the Commissioner of Reclamation and to cause it to be published in the Commission's thirtieth annual report.

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 the Special Meeting held in Salt Lake City, Utah on January 10, 1978.

WITNESS my hand this 20th day of January, 1978.

IVAL V. GOSLIN
Executive Director

APPENDIX A

Upper Colorado River Commission

Financial Statements
and
Supplementary Information
with
Report of Certified Public Accountants
Year Ended June 30, 1978

ELMER FOX, WESTHEIMER & CO.

CERTIFIED PUBLIC ACCOUNTANTS

REPORT OF CERTIFIED PUBLIC ACCOUNTANTS

The Commissioners
Upper Colorado River Commission
Salt Lake City, Utah

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, 1978 and the related statement of revenues and expenditures and fund balance of the General Fund 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 and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the financial statements designated above present fairly the financial position of the General Fund and the Property and Equipment Fund of the Upper Colorado River Commission at June 30, 1978 and the results of their operations for the year then ended in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

The accompanying supplementary information, while not necessary for a fair presentation of financial position or results of operations, has been examined and, in our opinion, is fairly stated in all material respects in relation to the financial statements taken as a whole.

Elmer Fox, Westheimer & Co.

Grand Junction, Colorado
August 23, 1978

UPPER COLORADO RIVER COMMISSION
GENERAL FUND
BALANCE SHEET
June 30, 1978

ASSETS

Cash:		
Office cash fund		$ 25
Cash on deposit with First Security Bank of Utah, N.A.:		
Demand deposit		12,729
Time certificates		85,000
		97,754
Receivables:		
Due on assessment	$4,000	
Pension trust insurance premiums from employees	407	4,407
Deposit — United Air Lines		425
		$102,586

LIABILITIES AND FUND BALANCE

Liabilities:	
Accounts payable	$ 790
Contingencies	—
Fund balance	101,796
	$102,586

The accompanying notes are an integral part of the financial statements.

UPPER COLORADO RIVER COMMISSION
GENERAL FUND
STATEMENT OF REVENUES AND EXPENDITURES AND FUND BALANCE WITH BUDGET COMPARISONS
Year Ended June 30, 1978

	Budget	Actual	Actual over (under) Budget
Revenues:			
Assessments	$160,000	$160,000	$ —
Interest on time deposits	—	6,611	6,611
	160,000	166,611	6,611
Expenditures:			
Personal services	113,000	111,328	(1,672)
Travel	19,000	12,198	(6,802)
General expenses	31,500	26,987	(4,513)
Capital outlay	4,500	2,407	(2,093)
Education and information	2,000	403	(1,597)
	170,000	153,323	(16,677)
Excess (deficit) of revenues over expenditures	$(10,000)	13,288	$23,288
Fund balance at July 1, 1977		88,508	
Fund balance at June 30, 1978		$101,796	

The accompanying notes are an integral part of the financial statements.

UPPER COLORADO RIVER COMMISSION
PROPERTY AND EQUIPMENT FUND
BALANCE SHEET
June 30, 1978

ASSETS

Property and equipment, at cost:	
Land and land improvements	$ 26,551
Building	47,627
Furniture and fixtures	24,962
Library	6,717
Automobile	6,432
Engineering equipment	2,781
Upper Colorado River Basin relief model	5,938
	$121,008

FUND BALANCE

Investment in property and equipment	$121,008

The accompanying notes are an integral part of the financial statements.

UPPER COLORADO RIVER COMMISSION
NOTES TO FINANCIAL STATEMENTS
June 30, 1978

1. Summary of significant accounting policies

History and activities

The Upper Colorado River Commission was formed pursuant to the terms of the Upper Colorado River Basin Compact on October 11, 1948, and consented to by the Congress of the United States of America by Act on April 6, 1949. As an administrative agency representing the Upper Division States of the Colorado River Basin, namely Colorado, New Mexico, Utah and Wyoming, the Commission consists of one commissioner representing each of the four Upper Division States and one representing the United States. The activities of the Commission are conducted for the purpose of promoting and securing agricultural and industrial development of the Upper Basin's water facilities.

The Commission is exempt from Federal income taxes under provisions of Section 501(c)(1) of the Internal Revenue Code.

Basis of accounting

The Commission utilizes the accrual basis of accounting. Under this basis of accounting, expenditures are recorded when incurred and revenues are recorded when earned.

Assessments

The Commission's major source of revenue is assessments levied against the four states and apportioned among them on the basis of the formula contained in the Upper Colorado River Basin Compact.

Property and equipment

Property and equipment purchased is recorded as capital outlay in the general fund at time of purchase and capitalized at cost in the property and equipment fund. Cost of maintenance, repairs and minor renewals are expensed as incurred. When assets are retired or otherwise disposed of, the related cost is

removed from the accounts. No provision for depreciation is provided on assets of the property and equipment fund.

2. Pension plan

The Commission initiated a pension plan in 1965 for the benefit of its employees. Each covered employee contributes 3% of his base monthly salary as his cost of the plan with the Commission paying the balance. Contributions to the plan are utilized to purchase insurance which provides retirement income and life insurance benefits for the participating employees. The pension plan expense for the year ended June 30, 1978 was $9,681.

3. Contingencies

In May, 1978, the Commission was notified that they are subject to the provision of the Utah Unemployment Insurance System. The Commission has elected to reimburse the Utah Department of Employment for any possible benefits to be paid under the system. Benefits, if paid, would be computed at fifty percent of the former employee's salary and could be paid for a maximum period of ten to thirty-six weeks.

Schedule of cash receipts and disbursements — General Fund

Cash at July 1, 1977		$ 85,503
Cash receipts:		
Assessments	$156,100	
Interest on time deposits	6,611	
Refunds	587	163,298
		248,801
Cash disbursements:		
Personal services	111,204	
Travel	12,361	
General expenses	24,673	
Capital outlay	2,406	
Education and information	403	151,047
Cash at June 30, 1978		$ 97,754

	Budget	Actual	Actual over (under) Budget
Summary of personal services with budget comparisons:			
Administrative salaries	$44,850	$44,820	$ (30)
Legal salary	25,520	25,512	(8)
Engineering salary	22,050	22,044	(6)
Clerical salaries	3,480	3,217	(263)
Janitorial	3,000	2,032	(968)
Social Security	4,100	4,022	(78)
Pension fund contributions	10,000	9,681	(319)
	$113,000	$111,328	$(1,672)
Summary of general expenses with budget comparisons:			
Reporting and accounting	$ 5,000	$ 4,470	$ (530)
Telephone and telegrams	3,600	2,897	(703)
Office supplies and postage	6,600	6,624	24
Insurance and bonds	2,350	2,638	288
Secretarial services	500	6	(494)
Engineering supplies and services	500	102	(398)
Printing	4,500	2,814	(1,686)
Library supplies and expenses	2,600	2,407	(193)
Meeting expenses	900	449	(451)
Utilities	2,000	1,676	(324)
Repairs and maintenance	1,100	1,293	193
Miscellaneous	1,500	1,290	(210)
Washington liaison expense not included in travel	350	321	(29)
	$ 31,500	$ 26,987	$(4,513)

Summary of insurance coverage

		Coverage	
	Type	Co-insurance Clause	Amount
Treasurer	Fidelity bond	—	$40,000
Assistant treasurer	Fidelity bond	—	40,000
Automobile	Comprehensive	—	Actual cash value
	Liability:		
	Each person	—	500,000
	Each accident	—	700,000
	Property damage	—	100,000
	Medical	—	2,000
	Collision	—	$100 deductible
	Uninsured motorists	—	15/30,000
Employees	Workmen's compensation	—	100,000
Office contents	Fire and comprehensive	90%	50,000
Office premises	Liability	—	300,000
Building	Special multi-peril	90%	106,000

APPENDIX B

Budget

Fiscal Year Ending June 30, 1980

UPPER COLORADO RIVER COMMISSION
BUDGET
Fiscal Year Ending June 30, 1980

PERSONAL SERVICES		
Administrative Salaries (including Administrative Secretary)	$51,890	
Legal Salary	29,540	
Engineering Salary	25,520	
Clerical-Secretary	8,600	
Janitor	3,000	
Pension Trust	9,200	
Social Security	6,000	
		$133,750
TRAVEL		$ 17,000
CURRENT EXPENSE		
Accounting	$ 2,800	
Telephone and Telegraph	3,700	
Insurance and Bond Premiums	1,000	
Printing	4,500	
Secretarial Services	500	
Engineering Supplies and Services	350	
Office Supplies and Postage	7,000	
Library	3,000	
Meeting Expense, including Reporting	4,000	
Utilities	2,200	
Building Repair and Maintenance	2,000	
Memberships and Meeting Registrations	1,200	
Miscellaneous	500	
		$ 32,750
CAPITAL OUTLAY		$ 4,500
EDUCATION AND INFORMATION		$ 2,000
TOTAL ESTIMATED EXPENSE Fiscal Year July 1, 1979 through June 30, 1980		$190,000

APPENDIX C

Transmountain Diversions
Upper Colorado River Basin

1968 - 1977

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN IN COLORADO 1967 — 1976

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
TO PLATTE RIVER BASIN										
Grand River Ditch	16,260	18,350	12,830	14,950	18,520	14,760	15,640	21,830	18,350	12,760
Eureka Ditch	63	116	32	12	53	0	15	0	6	0
Alva B. Adams Tunnel	198,600	170,500	204,600	190,800	235,000	230,700	231,100	239,300	256,100	294,400
Berthoud Pass Ditch	708	586	291	806	466	754	809	402	359	322
Moffat Water Tunnel	67,340	38,730	44,680	38,850	60,360	33,170	68,130	58,580	62,950	50,000
Boreas Pass Ditch	42	0	0	111	0	0	6	39	68	13
Vidler Tunnel				64	47	57	58	12	31	276
Harold D. Roberts Tunnel	45,660	48,610	10,620	18,990	34,280	2,245	34,730	47,260	63,050	92,140
TO ARKANSAS RIVER BASIN										
Hoosier Pass Tunnel	10,080	7,750	6,100	12,940	10,420	5,834	10,780	8,460	10,750	2,530
Columbine Ditch	1,750	1,910	2,160	886	1,970	2,466	1,690	2,000	1,660	1,010
Ewing Ditch	1,020	1,250	1,340	1,350	716	1,114	934	1,140	904	534
Wurtz Ditch	2,270	2,390	3,870	3,610	3,270	3,240	2,910	3,430	2,590	765
Homestake Tunnel	20,370	30,770	23,010	45,230	17,280	23,400	25,030	59,870	0	31,040
Twin Lakes Tunnel	49,860	50,570	62,020	51,660	43,710	55,900	43,490	49,540	48,850	22,490
Charles H. Boustead Tunnel					32,070	36,580	33,830	36,870	26,940	11,410
Busk – Ivanhoe Tunnel	7,130	6,750	7,910	7,460	6,720	6,330	5,680	7,100	4,800	3,110
Larkspur Ditch	157	535	488	327	269	722	237	328	199	0
TO RIO GRANDE BASIN										
Tarbell Ditch	252	410	386	453	524	74	133	692	662	172
Tabor Ditch	921	670	1,050	514	465	1,330	209	955	540	149
Treasure Pass Ditch	194	303	328	303	273	720	154	465	278	10
Don La Font Ditches No. 1 and 2	0	0	55	0	254	388	109	428	239	4
Williams Creek – Squaw Pass Ditch	137	144	108	181	0	211	62	223	86	124
Pine River – Weminuche Pass Ditch	425	980	423	289	255	628	134	123	227	0
Weminuche Pass Ditch	1,390	2,590	1,060	1,450	929	1,984	713	1,550	2,210	118
TOTAL	424,600	383,900	383,400	391,200	467,900	422,600	476,600	540,600	494,800	523,380

TRANSMOUNTAIN DIVERSION FROM[1] COLORADO RIVER BASIN IN UTAH 1968 — 1977

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
TO GREAT BASIN										
Fairview Tunnel	2,040	2,410	2,130	1,740	1,748	2,310	2,500	2,400	2,110	546
Ephraim Tunnel	5,050	5,670	6,120	4,717	2,290	5,466	4,690	4,480	2,488	846
Spring City Tunnel	1,620	3,490	864	2,607	2,310	2,145	2,090	1,190	2,304	754
Strawberry Tunnel	56,230	62,397	62,528	63,436	73,386	55,273	69,278	62,784	80,012	74,690
Duchesne Tunnel	15,560	9,391	33,175	20,565	33,185	21,853	18,048	18,359	15,380	5,207
TOTAL	80,500	83,358	104,817	93,065	112,919	87,047	96,606	89,213	102,294	82,043

[1]Streamgaging of the following small transmountain diversions in Utah was discontinued in 1959: Candland Ditch, Horseshoe Tunnel, Larsen Tunnel, Coal Fork Ditch, Twin Creek Tunnel, Cedar Creek Tunnel, Black Canyon Ditch, Reeder Ditch, Madsen Ditch, and John August Ditch. These diversions are from the San Rafael River in the Colorado River Basin to the Great Basin in Utah and total about 4000 acre-feet annually.

Transmountain Diversions from the Great Basin in Utah to Colorado River Basin in Utah

Water is diverted from the Great Basin to the Colorado River Basin in Utah through the Tropic and East Fork Canal averaging about 2,500 acre-feet annually.

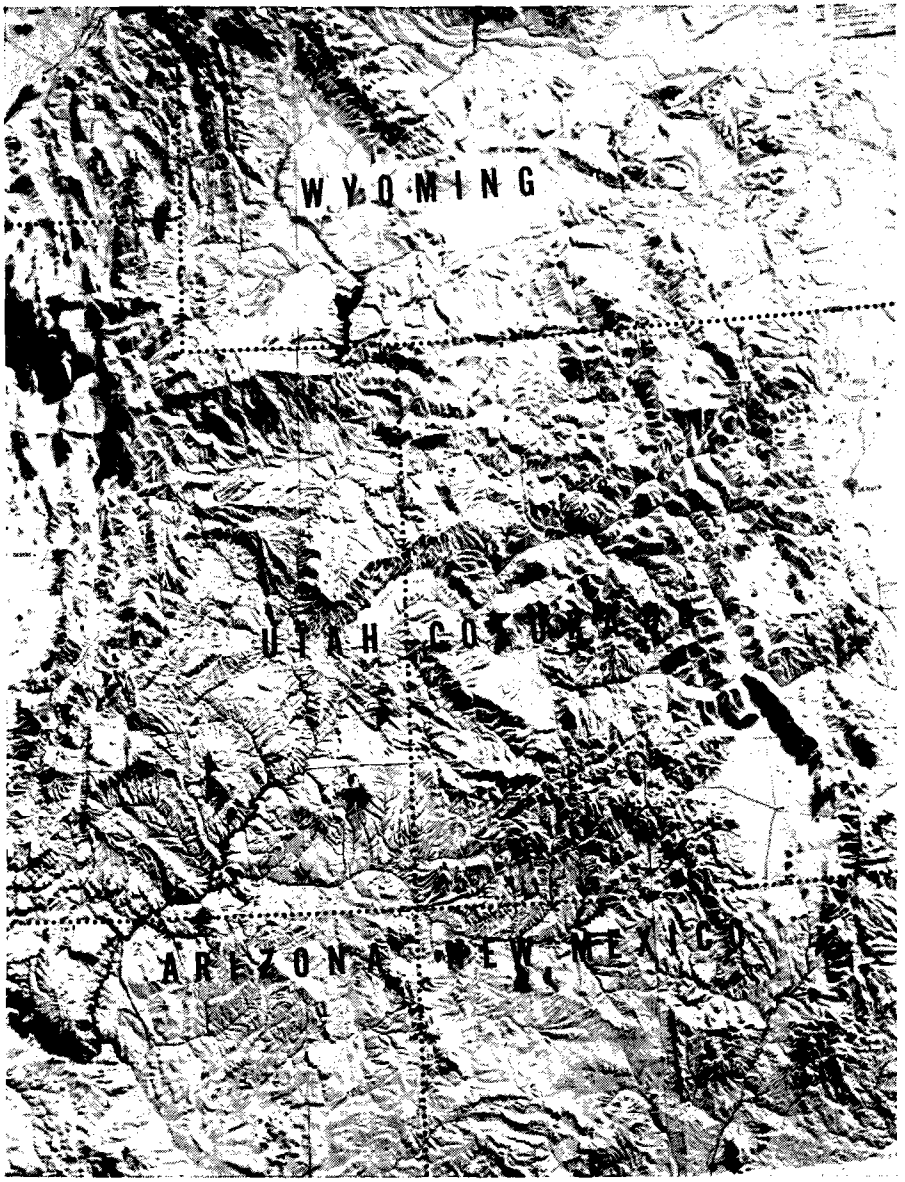
Transmountain Diversions from Colorado River Basin in Colorado to Rio Grande Basin in New Mexico

San Juan – Chama Diversions

1971	1972	1973	1974	1975	1976	1977
54,290	44,080	174,900	47,730	145,480	84,400	19,400

Transmountain Diversions from the Colorado River Basin to North Platte Basin in Wyoming

1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
7,848	8,207	7,955	4,496	7,193	8,124	6,965	5,086	4,327	6,933



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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