FORTY-SEVENTH ANNUAL REPORT

OF THE

Upper Colorado River Commission

SALT LAKE CITY, UTAH

SEPTEMBER 30, 1995

UPPER COLORADO RIVER COMMISSION

355 South 400 East • Salt Lake City • Utah 84111 • 801-531-1150 • FAX 801-531-9705

MEMORANDUM

TO: "Interested People"

FROM: Executive Director

DATE: April 10, 1996

SUBJECT: *Selected Legal References, Volume VIII*

In 1965, the staff of the Upper Colorado River Commission issued the first volume of *Selected Legal References*. Six more volumes were issued in subsequent years. The purpose of these volumes is to make readily available to interested people a collection of major statutes, compacts, treaties, regulations, operating principles and other documents that have an impact on the development of the water and related resources of the Colorado River Basin States.

Selected Legal References, Volume VIII will be issued before June 30, 1996 and available for purchase at an estimated cost of $50 per book plus postage. A limited number of *Volumes I - VII* are available for immediate shipment at a cost of $50 per book plus postage. A complete set of eight volumes may be purchased for $350 plus the cost of postage, assuming the availability of all eight volumes.

Please return the form on the following page to reserve your copy of *Selected Legal References, Volume VIII*. When the books are printed, we will send you an official order form that you can return with your check. If you would like to order any of the previous volumes for immediate shipment, please indicate that on the form below. We will verify that all of the past copies are available, calculate the postage required to ship your order and return a confirmation and bill that you can return with your check. We appreciate your interest in these publications and trust they will be useful for you.

Wayne E. Cook

Upper Colorado River Commission Staff:

I wish to order the following volumes of *Selected Legal References* for immediate shipment:

_____ First Volume ($50)	_____ *Volume V* ($50)
_____ *Volume II* ($50)	_____ *Volume VI* ($50)
_____ *Volume III* ($50)	_____ *Volume VII* ($50)
_____ *Volume IV* ($50)	_____ Complete set of eight volumes* ($350)

When the Commission Staff receives your order, we will verify the availability of the past volumes, calculate the postage required to ship your order and return a confirmation form with the payment required. When we receive your check for the total amount, we will ship the book(s) you have ordered to you.

Volume VIII

_____ Please reserve my copy of *Selected Legal References, Volume VIII.* I understand that I will receive an order form within the next three months that I can return with my check for $50 plus the cost of postage to receive my book.

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Return this form to: Upper Colorado River Commission
355 South 400 East
Salt Lake City, UT 84111

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*Since *Volume VIII* has not yet been printed, the set will be mailed to you no later than June 30, 1996 when all eight volumes are available.

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FORTY-SEVENTH ANNUAL REPORT

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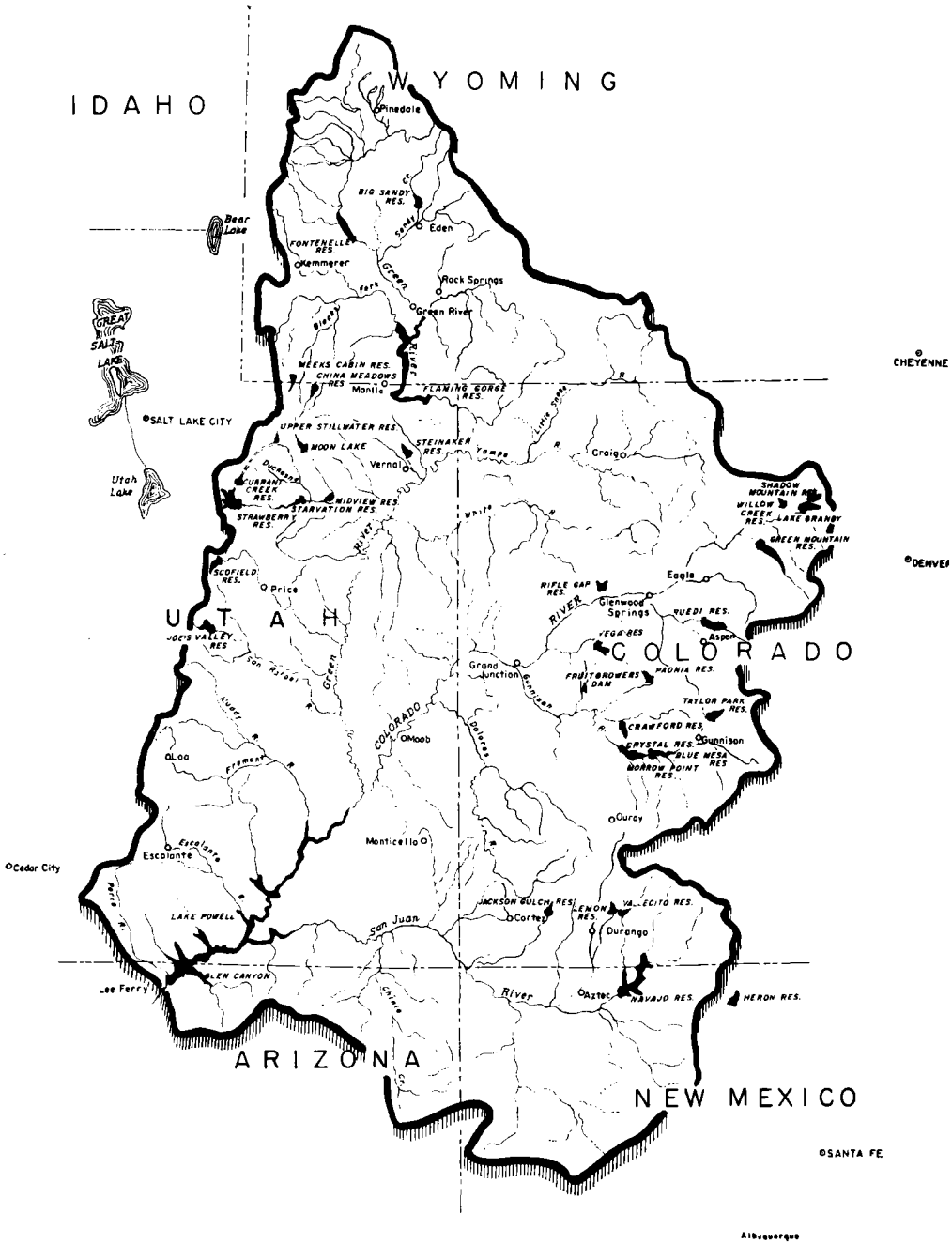
Upper Colorado River Commission

SALT LAKE CITY, UTAH

SEPTEMBER 30, 1995



UPPER COLORADO RIVER BASIN

UPPER COLORADO RIVER
COMMISSION

UPPER COLORADO
RIVER COMMISSION
355 South 400 East • Salt Lake City • Utah 84111 • 801-531-1150 • FAX 801-531-9705

Mr. President:

The Forty-Seventh 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 for fiscal year 1997 (July 1, 1996 - June 30, 1997) 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,

Wayne E. Cook
Executive Director

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

Enclosure

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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 Forty-Seventh 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;

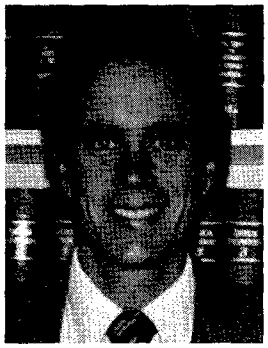
Map of the Upper Colorado River Basin;

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.

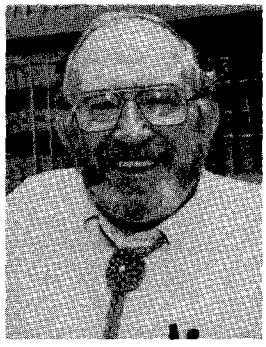
Transmountain diversions, etc.

COMMISSION



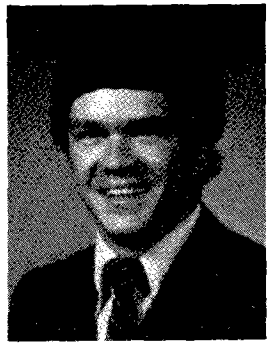
James S. Lochhead
Commissioner for
Colorado

Philip B. Mutz
Commissioner for
New Mexico



Frank E. (Sam) Maynes
Chairman
Commissioner for
United States

D. Larry Anderson
Commissioner for
Utah



Gordon W. Fassett
Commissioner for
Wyoming

ALTERNATE COMMISSIONERS

Daries C. (Chuck) Lile	State of Colorado
William J. Miller	State of New Mexico
Dallin W. Jensen	State of Utah
Dan S. Budd	State of Wyoming
Aaron H. McGinnis	State of Wyoming

OFFICERS OF THE COMMISSION

Chairman	Frank E. (Sam) Maynes
Vice Chairman	James S. Lochhead
Secretary	Wayne E. Cook
Treasurer	Ronald A. Schulthies
Assistant Treasurer	Christian M. Feinauer

STAFF

Executive Director	Wayne E. Cook
Assistant to the Executive Director and General Counsel	Jane Bird
Chief Engineer	Clinton D. Stevens
Administrative Secretary	P. J. Magura

COMMITTEES

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

Engineering Committee:

Barry C. Saunders, Chairman
Eugene I. Jencsok
David H. Merritt
Harold (Hal) Simpson
William J. Miller
Jay C. Groseclose
Robert L. Morgan
John W. Shields

Legal Committee:

Jennifer Gimble, Chairman
Gale Norton
Daries C. (Chuck) Lile
David C. Hallford, Alternate
Peter White
Dallin W. Jensen
Michael M. Quealy
Larry M. Donovan

Budget Committee:

Gordon W. Fassett, Chairman
Daries C. (Chuck) Lile
Philip B. Mutz
D. Larry Anderson

ADVISERS TO COMMISSIONERS

The following individuals serve as advisers to their respective Commissioner:

COLORADO

Legal:

Daries C. (Chuck) Lile, Director
Colorado Water Conservation Board
Denver, Colorado

Gale Norton
Attorney General
State of Colorado
Denver, Colorado

Frank E. (Sam) Maynes
Attorney at Law
Durango, Colorado

David C. Hallford
General Counsel
Colorado River Water
Conservation District
Glenwood Springs, Colorado

Engineering:

Eugene I. Jencsok
Colorado Water Conservation
Board
Denver, Colorado

Harold (Hal) Simpson
State Engineer
Denver, Colorado

David H. Merritt
Colorado River Water
Conservation District
Glenwood Springs, Colorado

Eric Kuhn
Colorado River Water
Conservation District
Glenwood Springs, Colorado

NEW MEXICO

Legal:

Peter White
General Counsel
New Mexico Interstate Stream
Commission
Santa Fe, New Mexico

Engineering:

William J. Miller
Interstate Stream Engineer
New Mexico Interstate
Stream Commission
Santa Fe, New Mexico

Jay C. Groseclose
New Mexico Interstate Stream
Commission
Santa Fe, New Mexico

UTAH

Legal:

Dallin W. Jensen
Attorney at Law
Salt Lake City, Utah

Michael M. Quealy
Assistant Attorney General
Salt Lake City, Utah

Engineering:

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

Robert L. Morgan
State Engineer
Division of Water Rights
Salt Lake City, Utah

General Advisers:

Don A. Christiansen, Manager
Central Utah Water Conservancy District
Orem, Utah

David Rasmussen, Manager
Uintah Water Conservancy District
Vernal, Utah

WYOMING

Legal:

Larry M. Donovan
Assistant Attorney General
Cheyenne, Wyoming

Engineering:

John W. Shields
Interstate Streams Engineer
Cheyenne, Wyoming

General Adviser:

George L. Christopulos
Cheyenne, Wyoming

MEETINGS OF THE COMMISSION

During the Water Year ending September 30, 1995 the Commission met three times as follows:

Meeting No. 228	December 9, 1994	Adjourned Annual Meeting Las Vegas, Nevada
Meeting No. 229	March 20, 1995	Regular Meeting Salt Lake City, Utah
Meeting No. 230	July 18, 1995	Adjourned Regular Meeting Salt Lake City, Utah

ACTIVITIES OF THE COMMISSION

Within the scope and limitations of Article I(a) of the Upper Colorado River Basin Compact and under the powers conferred upon the Commission by Article VIII(d), the principal activities of the Commission 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 operation of the Colorado River reservoirs; (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) participation in activities and providing comments on proposals that would increase the beneficial consumptive uses in the Upper Basin, including environmental, fish and wildlife, endangered species and water quality activities to the extent that they might impair Upper Basin development; (E) cooperation with water resources agencies of the Colorado River Basin States on water and water-related problems; (F) 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; and (G) 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 the Committees of the Congress.

A. ENGINEERING - HYDROLOGY

1. Colorado River Salinity Program

The Upper Colorado River Commission has continued its interest and involvement in the Colorado River Basin salinity problem. The Commission staff has worked with representatives of the Commission's member States in coordinating and correlating activities with other State and Federal agencies, particularly 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 to meet the Environmental Protection Agency Regulation (40 CFR Part 120, Water Quality Standards--Colorado River System: Salinity Control Policy and Standards Procedures).

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 1990 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.

The values are:

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

The Forum is continuing to study salinity conditions and to develop new salinity projections. The Forum is also developing flow versus salt load relationships that will reflect present and anticipated conditions.

Salinities at each of the three lower mainstem stations for which numeric criteria have been established have decreased since 1972.

2. Forecast of Stream Flow

The April 1, 1995 forecast of inflow to Lake Powell by the National Weather Service, Department of Commerce, for April-July was estimated to be 8,300,000 acre-feet[1] The unregulated inflow to Lake Powell for the period April-July 1995 amounted to 11,747,000 acre-feet[2], which was about 145 percent of the 30-year (1963-1990) average flow.

During the April-July 1995 period, changes in storage in Colorado River Storage Project reservoirs including Lake Powell resulted in an overall increase of 4,538,000 acre-feet, with 538,000 acre-feet of evaporation and a 819,200 acre-foot increase in bank storage[3].

Actual regulated inflow to Lake Powell for the period April-July 1995 was 10,533,000 acre-feet.

For the period October 1, 1994 through September 30, 1995, the change in reservoir storage, excluding bank storage and evaporation, at selected reservoirs above Lake Powell was: Fontenelle increased 66,000 acre-feet; Flaming Gorge increased 601,000 acre-feet; Taylor Park decreased 3,000 acre-feet; Blue Mesa increased 168,000 acre-feet; Morrow Point decreased 1,000 acre-feet; Crystal increased 1,000 acre-feet; and Navajo decreased 155,000 acre-feet.

The virgin flow[4] of the Colorado River at Lee Ferry[5] for the 1995 water year amounted to 20,819,000 acre-feet[6].

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

[2]Adjusted for upstream regulation and depletions.

[3]Includes Flaming Gorge Reservoir on the Green River.

[4]Virgin flow is the estimated flow of the stream if it were in its natural state and unaffected by the activities of man.

[5]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.

[6]Based on Provisional records subject to revision.

3. Summary of Reservoir Levels and Contents

Runoff[7] during the year ending September 30, 1995 ranged from 114.0 percent of the 82-year (1914-1995) mean at the Green River station at Green River, Utah to 142.1 percent of the 82-year mean at the Colorado River station near Cisco, Utah. The volumes of runoff at these stations were 4,399,700 acre-feet and 7,608,200 acre-feet respectively. Runoff of the San Juan River station near Bluff, Utah totaled 2,011,500 acre-feet, which was 124.2 percent of the 82-year mean.

Lake Powell's lowest elevation of the 1995 water year occurred on March 4, 1995 when the lake level was at elevation 3,644.59 feet (live content 16,551,700 acre-feet). Lake Powell was at its highest point on August 3, 1995 at elevation 3,693.75 feet with a content of 23,332,000 acre-feet. A total of 9,285,000 acre-feet was released to the river below Glen Canyon Dam during the 1995 water year. The 1985-1995 (10-year) delivery to the Lower Basin (measured at Lee Ferry) was 96,555,000 acre-feet.

Lake Mead, on September 30, 1995, contained 20,713,800 acre-feet[8] of available storage water at elevation 1,184.28 feet. On September 30, 1995, the live storage of Lake Mead was 1,597,300 acre-feet less than the storage in Lake Powell.

Table 1 on page 11 shows the Statistical Data for Principal Reservoirs in the Upper Colorado River Basin. Table 2 on page 12 provides the same information for the Lower Colorado River Basin reservoirs.

The results of the long-range reservoir operation procedures adopted by the Secretary of the Interior for Lake Powell, Flaming Gorge, Fontenelle, Navajo, and Blue Mesa reservoirs in the Upper Colorado River Basin and for Lake Mead in the Lower Basin are illustrated on pages 14-21 for the 1995 water year.

In water year 1995, there was no equalization of storage as dictated by Section 602(a) of Public Law 90-537. The drawdown of Lake Powell was governed by factors other than the equalization criteria.

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[7]Adjusted for the change in storage in Colorado River Storage Project Reservoirs.

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

TABLE 1

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)

	Fontenelle		Flaming Gorge		Taylor Park		Blue Mesa		Morrow Point		Crystal		Navajo		Lake Powell	
	Elv.	Cap.	Elv.	Cap.	Elv.	Cap.	Elv.	Cap.	Elv.	Cap.	Elv.	Cap.	Elv.	Cap.	Elv.	Cap
River elevation at dam (average tailwater)	—	—	5,603	0	9,174	0	7,160	0	6,775	0	6,534	0	5,720	0	3,138	0
Dead Storage	6,408	0.56	5,740	40	—	—	7,358	111	6,808	0	6,670	8	5,775	13	3,370	1,893
Inactive Storage (minimum power pool)	—	—	5,871	273	—	—	7,393	192	7,100	75	6,700	12	5,990[1]	673	3,490	5,890
Rated Head	6,491	234	5,946	1,102	—	—	7,438	361	7,108	80	6,740	20	—	—	3,570	11,000
Maximum Storage (without surcharge)	6,506	345	6,040	3,789	9,330	106	7,519	941	7,160	117	6,755	25	6,085	1,709	3,700	26,215

[1] Required for Navajo Indian Irrigation Project.

TABLE 2

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	
	Elv.	Capacity	Elv.	Capacity	Elv.	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 surchage)	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.

4. Flows of Colorado River

Table 3 on pages 22 and 23 shows the estimated virgin flow of the Colorado River at Lee Ferry, Arizona for each water year from 1896 through 1995. Column (4) of the table shows the average virgin flow for any given year within the period computed through water year 1995. Column (5) shows the average virgin flow for a given year within the period computed since water year 1896. Column (6) shows the average virgin flow for each progressive ten-year period beginning with the ten-year period ending on September 30, 1905. The difference between the virgin flow for a given year and the average flow over the 100-year period, 1896 through 1995, is shown in Column (7).

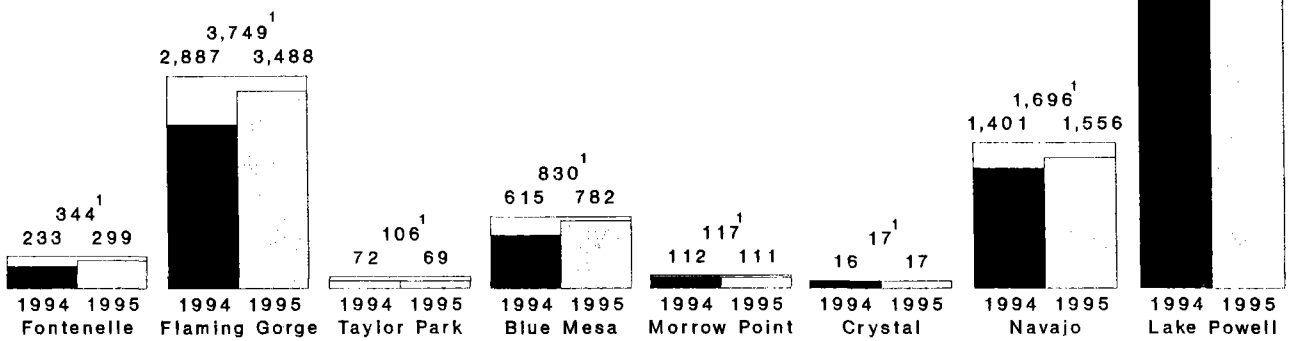
Article III(d) of the Colorado River Compact stipulates that "the States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years reckoned in a continuing progressive series beginning with 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 regulated the river above Glen Canyon Dam. Table 4, on page 24, shows the historic flow at Lee Ferry for the period 1953 through 1995. The historic flow for each progressive ten-year period from 1953 through 1995, beginning with the 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, 1995 was 96,555,000 acre-feet.

The charts on pages 26 and 27 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. The first chart, on page 26, 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 not been depleted by activities of man. Each vertical bar has two components: The lower shaded part represents the estimated or measured historic flow at Lee Ferry, and the difference between the two sections of the bar in any given year represents the stream depletion, or the amount of water estimated to have been removed by man from the virgin supply upstream from Lee Ferry. It is worth noting that in 1977 and again in 1981 the historic flow at Lee Ferry exceeded

Storage in Principal Reservoirs at the End of Water Year 1995
Upper Basin
Live Storage Contents*
(1,000 Acre-Feet)

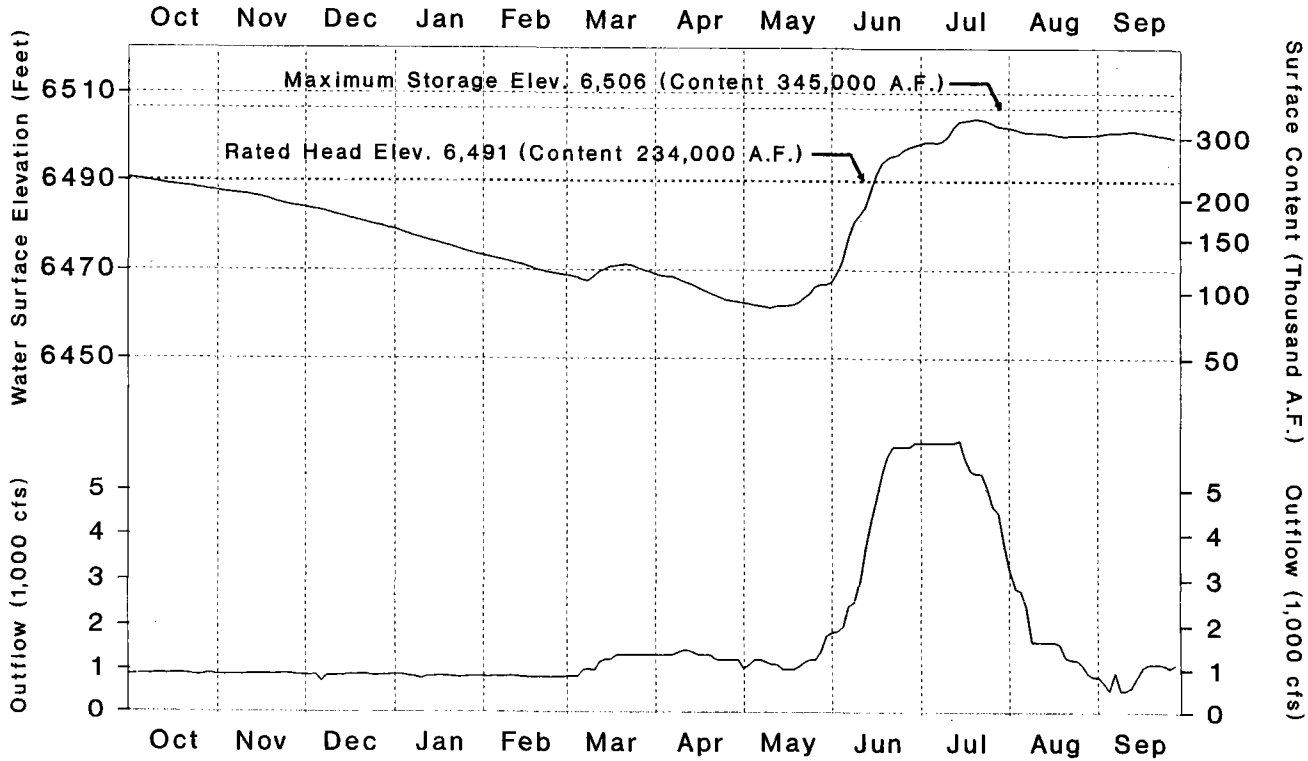
	Sept. 30 1994	Percent Live Capacity	Sept. 30 1995	Percent Live Capacity	Changes in Contents
Fontenelle	233	68	299	87	66
Flaming Gorge	2,887	77	3,488	93	601
Taylor Park	72	68	69	65	-3
Blue Mesa	615	74	782	94	168
Morrow Point	112	96	111	95	-1
Crystal	16	94	17	100	1
Navajo	1,401	83	1,556	92	155
Lake Powell	17,773	73	22,311	92	4,538
TOTAL	23,109	74	28,633	92	5,525



*As of September 30, 1995 (excludes bank storage)

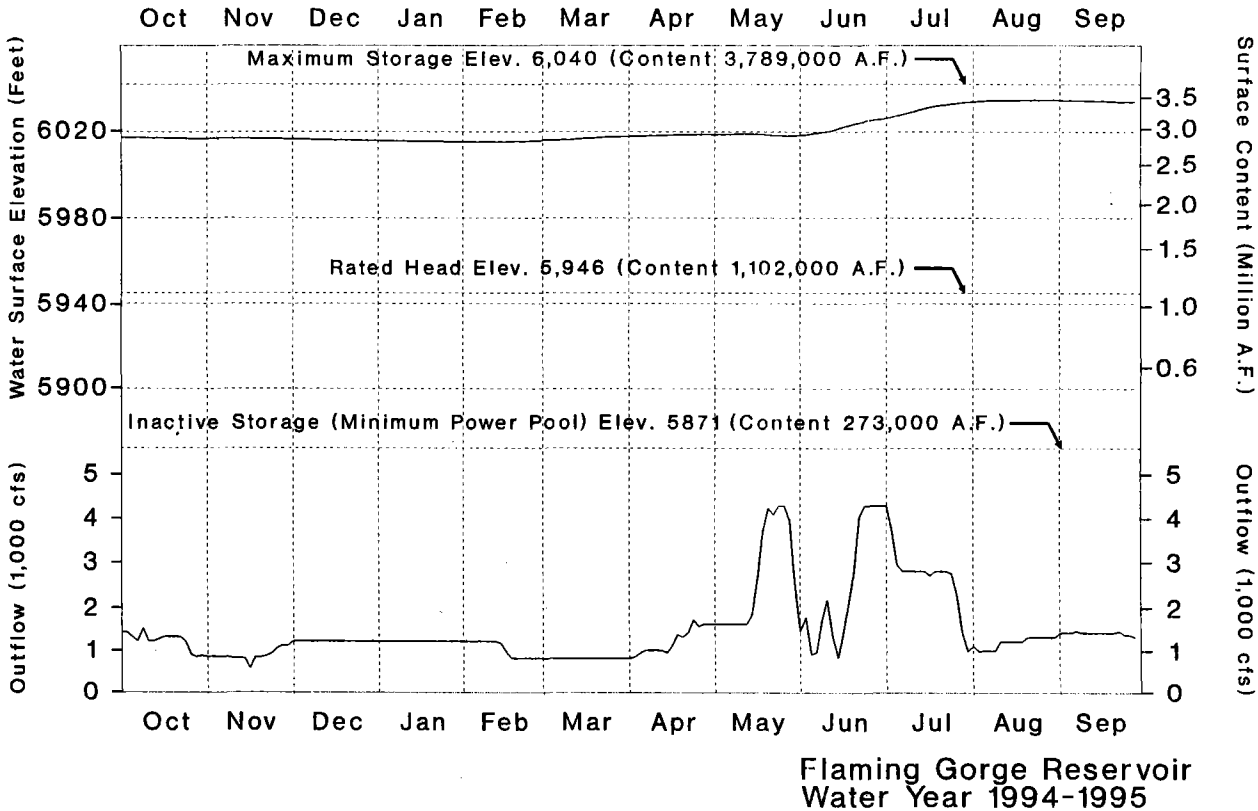
[1]Maximum live storage (exclusive of surcharge)

FONTENELLE
Live Storage Capacity - 344,400 acre-feet
Power Generating Capacity - 13,000 KW
Live Storage 9/30/95 - 298,800 acre-feet



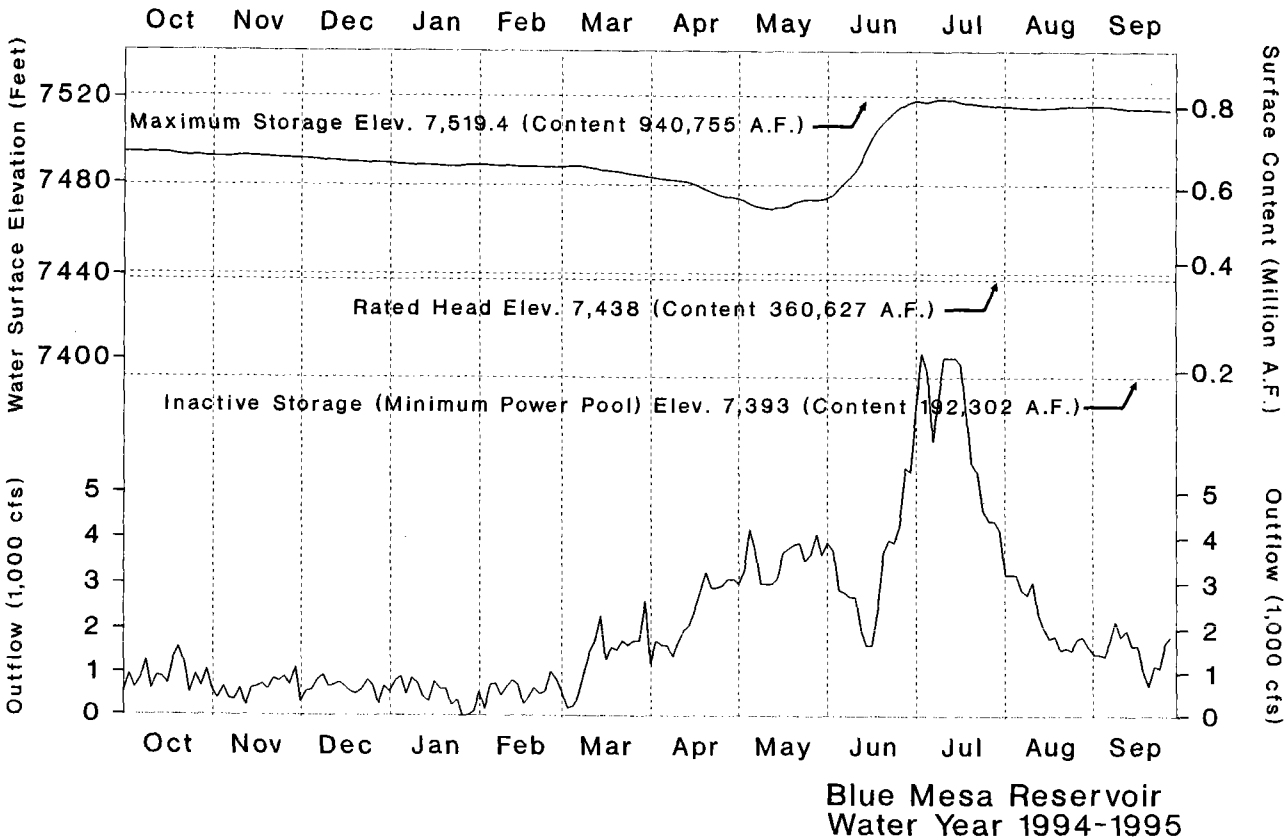
Fontenelle Reservoir
Water Year 1994-1995

FLAMING GORGE
Live Storage Capacity - 3,749,000 acre-feet
Power Generating Capacity - 144,000 KW
Live Storage 9/30/95 - 3,487,800 acre-feet



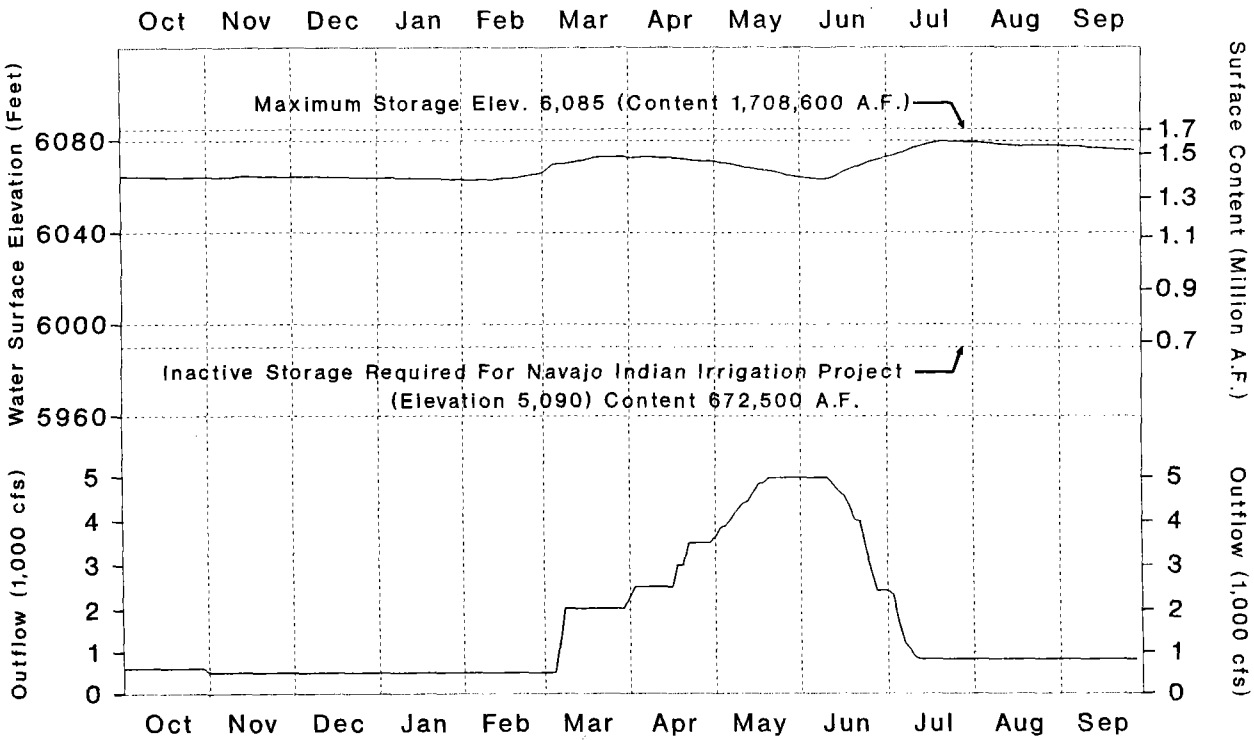
Flaming Gorge Reservoir
Water Year 1994-1995

BLUE MESA
Live Storage Capacity - 830,000 acre-feet
Power Generating Capacity - 96,000 KW
Live Storage 9/30/95 - 781,900 acre-feet



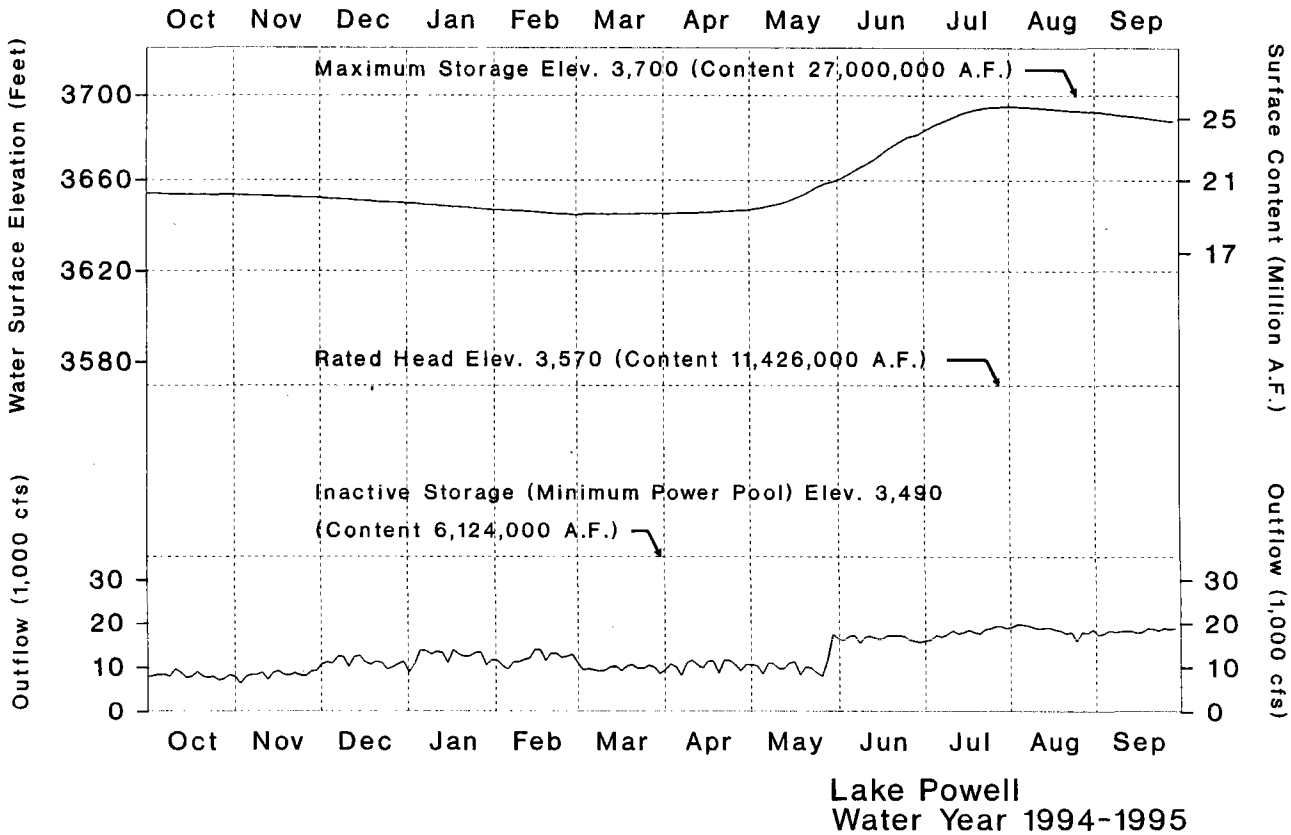
Blue Mesa Reservoir
Water Year 1994-1995

NAVAJO
Live Storage Capacity - 1,696,000 acre-feet
Power Generating Capacity - 0 KW
Live Storage 9/30/95 - 1,555,600 acre-feet



Navajo Reservoir
Water Year 1994-1995

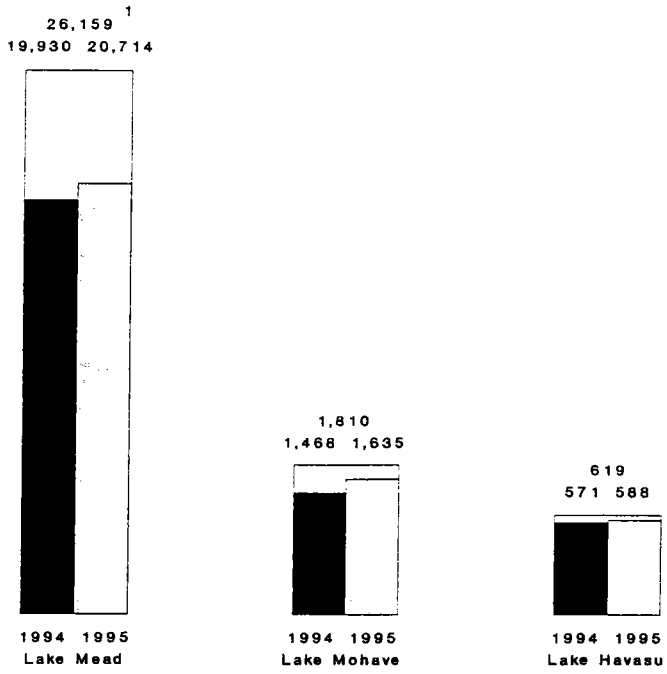
LAKE POWELL - GLEN CANYON DAM
Live Storage Capacity - 24,322,000 acre-feet
Power Generating Capacity - 1,356,000 KW
Live Storage 9/30/95 - 22,311,100 acre-feet



Lake Powell
Water Year 1994-1995

Lower Basin
Live Storage Contents
(1,000 Acre-feet)

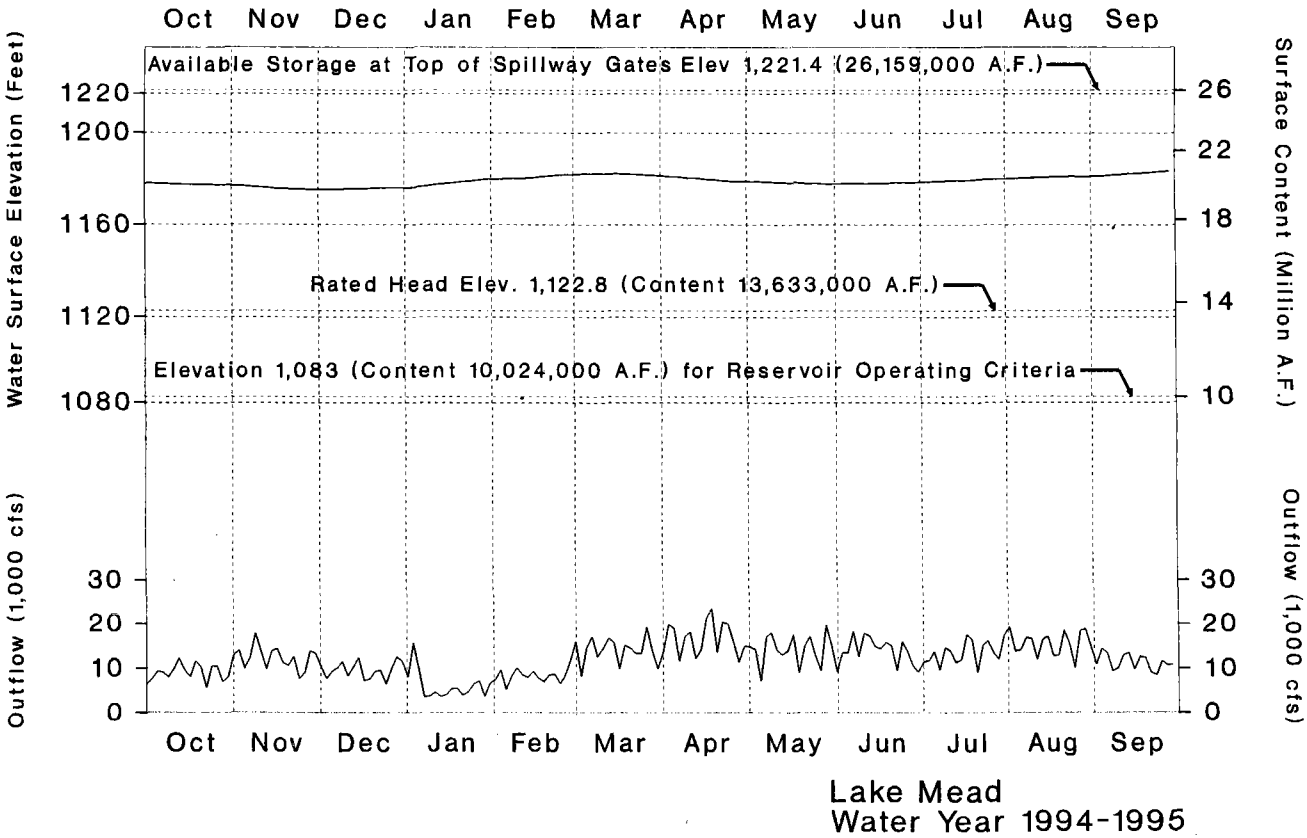
	Sept. 30 1994	Percent Live Capacity	Sept. 30 1995	Percent Live Capacity	Change in Contents
Lake Mead	19,930	76	20,714	79	784
Lake Mohave	1,468	81	1,635	90	167
Lake Havasu	571	92	588	95	17
Total	21,969	77	22,937	80	968



As of September 30, 1995 (excludes bank storage)

[1] Contents based on April 1967 revised capacity tables according to 1963-64 sedimentation survey at Lake Mead

LAKE MEAD - HOOVER DAM
Live Storage Capacity - 26,159,000 acre-feet
Power Generating Capacity - 1,914,000 KW
Live Storage 9/30/95 - 20,713,800 acre-feet



Lake Mead
Water Year 1994-1995

Table 3

ESTIMATED VIRGIN FLOW AT LEE FERRY

(million acre-feet)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Years to 1995	Year Ending Sept. 30	Estimated Virgin Flow	Average to 1995	Average Since 1896	Progressive 10-year Moving Average	Virgin Flow Minus 100-year Average
100	1896	10.1	14.9	10.1	0.0	-4.8
99	97	18.0	14.9	14.1	0.0	3.1
98	98	13.8	14.9	14.0	0.0	-1.1
97	99	15.9	14.9	14.5	0.0	1.0
96	1900	13.2	14.9	14.2	0.0	-1.7
95	01	13.6	14.9	14.1	0.0	-1.3
94	02	9.4	14.9	13.4	0.0	-5.5
93	03	14.8	15.0	13.6	0.0	-0.1
92	04	15.6	15.0	13.8	0.0	0.7
91	05	16.0	15.0	14.0	14.0	1.1
90	06	19.1	15.0	14.5	14.9	4.2
89	07	23.4	14.9	15.2	15.5	8.5
88	08	12.9	14.9	15.1	15.4	-2.0
87	09	23.3	14.9	15.7	16.1	8.4
86	1910	14.2	14.8	15.6	16.2	-0.7
85	11	16.0	14.8	15.6	16.5	1.1
84	12	20.5	14.8	15.9	17.6	5.6
83	13	14.5	14.7	15.8	17.6	-0.4
82	14	21.2	14.7	16.1	18.1	6.3
81	15	14.0	14.6	16.0	17.9	-0.9
80	16	19.2	14.6	16.1	17.9	4.3
79	17	24.0	14.6	16.5	18.0	9.1
78	18	15.4	14.5	16.4	18.2	0.5
77	19	12.5	14.4	16.3	17.2	-2.4
76	1920	22.0	14.5	16.5	17.9	7.1
75	21	23.0	14.4	16.8	18.6	8.1
74	22	18.3	14.2	16.8	18.4	3.4
73	23	18.3	14.2	16.9	18.8	3.4
72	24	14.2	14.1	16.8	18.1	-0.7
71	25	13.0	14.1	16.6	18.0	-1.9
70	26	15.9	14.1	16.6	17.7	1.0
69	27	18.6	14.1	16.7	17.1	3.7
68	28	17.3	14.1	16.7	17.3	2.4
67	29	21.4	14.0	16.8	18.2	6.5
66	1930	14.9	13.9	16.8	17.5	0.0
65	31	7.8	13.9	16.5	16.0	-7.1
64	32	17.2	14.0	16.6	15.9	2.3
63	33	11.4	13.9	16.4	15.2	-3.5
62	34	5.6	14.0	16.1	14.3	-9.3
61	35	11.6	14.1	16.0	14.2	-3.3
60	36	13.8	14.1	16.0	14.0	-1.1
59	37	13.7	14.2	15.9	13.5	-1.2
58	38	17.5	14.2	16.0	13.5	2.6
57	39	11.1	14.1	15.8	12.5	-3.8
56	1940	8.6	14.2	15.7	11.8	-6.3
55	41	18.1	14.3	15.7	12.9	3.2
54	42	19.1	14.2	15.8	13.1	4.2
53	43	13.1	14.1	15.8	13.2	-1.8
52	44	15.2	14.1	15.7	14.2	0.3
51	45	13.4	14.1	15.7	14.4	-1.5
50	46	10.4	14.1	15.6	14.0	-4.5
49	47	15.5	14.2	15.6	14.2	0.6
48	48	15.6	14.2	15.6	14.3	0.7

Table 3

ESTIMATED VIRGIN FLOW AT LEE FERRY

(million acre-feet)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Years to 1995	Year Ending Sept. 30	Estimated Virgin Flow	Average to 1995	Average Since 1896	Progressive 10-year Moving Average	Virgin Flow Minus 100-year Average
47	49	16.4	14.1	15.6	15.2	1.5
46	1950	12.9	14.1	15.6	14.6	-2.0
45	51	11.6	14.1	15.5	13.8	-3.3
44	52	20.7	14.2	15.6	14.6	5.8
43	53	10.6	14.0	15.5	14.1	-4.3
42	54	7.7	14.1	15.4	13.5	-7.2
41	55	9.2	14.2	15.3	13.4	-5.7
40	56	10.7	14.4	15.2	12.8	-4.2
39	57	20.1	14.5	15.3	13.6	5.2
38	58	16.5	14.3	15.3	13.6	1.6
37	59	8.6	14.2	15.2	12.9	-6.3
36	1960	11.3	14.4	15.1	12.7	-3.6
35	61	8.5	14.5	15.0	12.4	-6.4
34	62	17.3	14.7	15.0	12.1	2.4
33	63	8.4	14.6	15.0	11.8	-6.5
32	64	10.2	14.8	14.9	12.1	-4.7
31	65	18.9	14.9	14.9	13.1	4.0
30	66	11.2	14.8	14.9	13.1	-3.7
29	67	11.9	14.9	14.8	12.3	-3.0
28	68	13.7	15.0	14.8	12.0	-1.2
27	69	14.4	15.1	14.8	12.6	-0.5
26	1970	15.4	15.1	14.8	13.0	0.5
25	71	15.1	15.1	14.8	13.7	0.2
24	72	12.2	15.1	14.8	13.1	-2.7
23	73	19.4	15.2	14.9	14.2	4.5
22	74	13.3	15.0	14.8	14.6	-1.6
21	75	16.6	15.1	14.9	14.3	1.7
20	76	11.6	15.0	14.8	14.4	-3.3
19	77	5.8	15.2	14.7	13.8	-9.1
18	78	15.2	15.7	14.7	13.9	0.3
17	79	17.9	15.8	14.8	14.3	3.0
16	1980	17.5	15.6	14.8	14.5	2.6
15	81	8.2	15.5	14.7	13.8	-6.7
14	82	16.2	16.0	14.7	14.2	1.3
13	83	24.0	16.0	14.8	14.6	9.1
12	84	24.5	15.4	14.9	15.8	9.6
11	85	20.8	14.5	15.0	16.2	5.9
10	86	21.9	13.9	15.1	17.2	7.0
9	87	16.9	13.0	15.1	18.3	2.0
8	88	11.6	12.5	15.1	18.0	-3.3
7	89	9.2	12.7	15.0	17.1	-5.7
6	1990	8.0	13.3	14.9	16.1	-6.9
5	91	12.1	14.3	14.9	16.5	-2.8
4	92	10.3	14.9	14.9	15.9	-4.6
3	93	18.0	16.4	14.9	15.3	3.1
2	94	10.3	15.6	14.8	13.9	5.9
1	95	20.8	20.8	14.9	13.9	
						9.6
Maximum		24.5			18.8	-9.3
Minimum		5.6			11.8	0.0

Table 4

HISTORIC FLOW AT LEE FERRY
1953-1995

Unit: 1,000 a.f.

1 Water Year Ending Sept. 30	2 Historic Flow	3 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	14,790	99,990
1963	2,520	93,705
1964	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	10,141	82,930
1974	8,277	88,780
1975	9,274	87,219
1976	8,494	87,843
1977	8,269	88,288
1978	8,369	88,299
1979	8,333	87,782
1980	10,950	90,044
1981	8,316	89,753
1982	8,323	88,746
1983	17,520	96,125
1984	20,518	108,366
1985	19,109	118,201
1986	16,866	126,573
1987	13,450	131,754
1988	8,231	131,616
1989	7,995	131,278
1990	7,952	128,280
1991	8,111	128,075
1992	8,002	127,754
1993	8,137	118,371
1994	8,306	106,159
1995	9,505	96,555

Storage in Flaming Gorge and Navajo Reservoirs began in 1962.
Storage in Glen Canyon Reservoir began in 1963.
Storage in Fontenelle reservoir began in 1964.
Based upon provisional streamflow records subject to revision.
Note: The 1995 flow is 9,485,100 a.f. at Lees Ferry, Arizona
and 19,643 a.f. at the Paria River.

the virgin flow. 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 from 1896 through 1995. Because the Colorado River Compact is administered on the basis of running averages covering periods of ten years, the progressive ten-year average historic and virgin flows are displayed on this chart.

The second chart on page 23, entitled Lee Ferry Average Annual Flow for Selected Periods, is a graphical representation of historic and virgin flow averages for several periods of record. 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.

Several important hydrologic facts are apparent from these two charts on pages 26 and 27.

(1) A vast majority of the high flows occurred prior to 1929.

(2) Since the 1924-1933 decade, the progressive ten-year average virgin flow has not exceeded the average virgin flow except in the 1941-1950 and the exceptionally wet 1975-1984 through 1983-1992 decades.

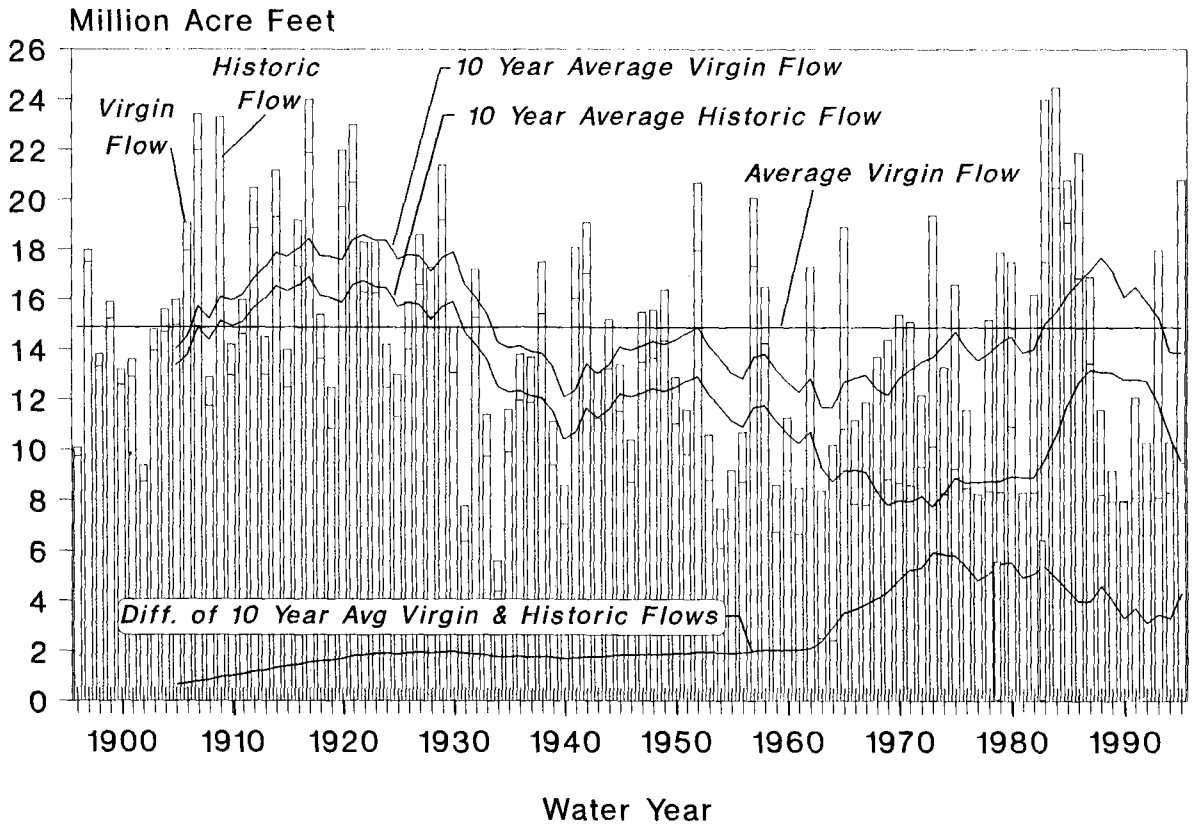
(3) For the period 1896-1921, which is prior to the Colorado River Compact of 1922, the average virgin flow was estimated to be 16.8 million acre-feet per year, which is considerably greater than for any other period selected, including the long-term average. A stream-gaging station at Lees Ferry, Arizona was not installed until 1921. Thus, the virgin flow at Lees Ferry prior to the 1922 Compact is estimated based upon records obtained at other stations, e.g. the stream gage on the Colorado River at Yuma, Arizona for the period 1902-1921.

(4) For the longest period shown, 1896-1995, the estimated average annual virgin flow is 14.8 million acre-feet and the average annual historic flow is 12.2 million acre-feet.

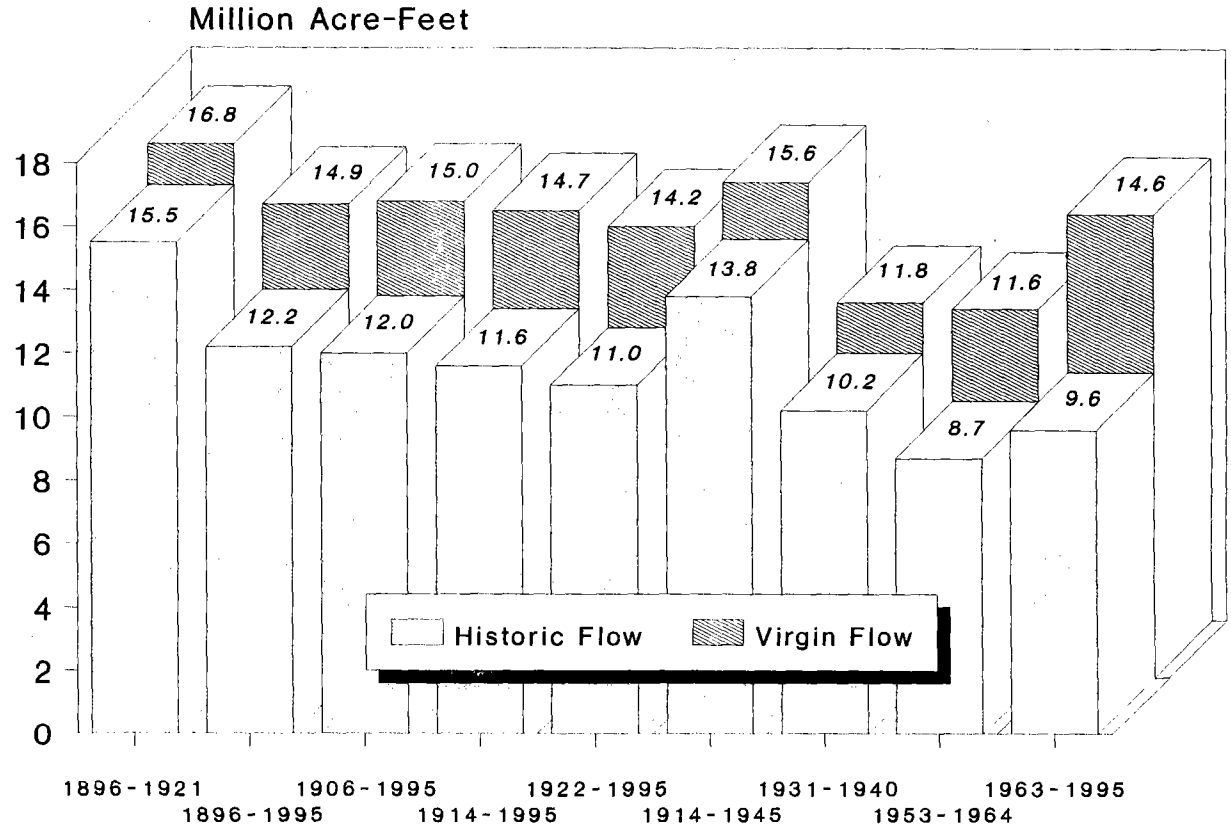
(5) For the next longest period, 1906-1995, the estimated average annual virgin flow is 15.0 million acre-feet and the average annual historic flow is 12.0 million acre-feet. Many of the early records for this series of years, as well as for the 1896-1995 period, are based upon the estimates of flows made at other gaging stations, as mentioned in (3) above. This average is about equal to the 15.0 million acre-feet estimated for the 1906-1967 period which was used as the basis for justification of a water supply for the Central Arizona Project authorized in 1968.

(6) The estimated average annual virgin flow during the 1914-1995 period is 14.7 million acre-feet. This period is an extension of the 1914-1965

Colorado River Flow
At Lee Ferry, Arizona



Lee Ferry Average Annual Flow
For Selected Periods



period used in the Upper Colorado Region Comprehensive Framework Studies of 1971. The average annual virgin flow for the 1914-1965 time period is 14.6 million acre-feet.

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

(8) For the period 1922-1995, which is the period of record since the signing of the Colorado River Compact, the average annual virgin flow is 14.2 million acre-feet and the average annual historic flow is 11.0 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 is considerably less than the ten-year moving average flow prior to 1922.

(9) Two completely unrelated ten-year periods of minimum flows have occurred since 1930. During these periods, 1931-1940 and 1954-1963, the average annual virgin flow amounts to only 11.8 million acre-feet.

(10) For a 12-year period, 1953-1964, the average annual virgin flow amounts to only 11.6 million acre-feet.

(11) Since Glen Canyon Dam was closed in 1963, the estimated virgin flow for the subsequent 33 years is 14.6 million acre-feet. The estimated historical flow for the same period (1963-1995) is 9.6 million acre-feet.

B. LEGAL

1. Water Newsletter

The legal staff continues to inform the Commissioners, their advisers, and other interested parties about developments in the courts, Congress, and certain Federal agencies through the *Water Newsletter*. Current information can be found in the newsletter. In addition, the legal staff has prepared legal memoranda on matters needing more detailed treatment.

2. Court Cases

Action has been taken in a number of cases of importance to the Upper Colorado River Basin States. These cases include:

Babbitt v. Sweet Home Chapter of Communities for a Great Oregon, 515 U.S. ___, 132 L.Ed.2d 597, 115 S.Ct. ___. Respondents Sweet Home brought this declaratory judgment action against petitioners including the Secretary of the Interior (Secretary) challenging on its face a regulation promulgated by the Secretary pursuant to the Endangered Species Act of 1973 (ESA). The issue in the case is whether the Secretary exceeded his authority under the ESA by promulgating a regulation that defines the statute's prohibition on taking endangered or threatened species to include "significant habitat modification or degradation where it actually kills or

injures wildlife" (emphasis added). Reversing the decision of the D. C. Circuit, the Court held that when Congress enacted the ESA, it gave the Secretary broad administrative and interpretive power, and the proper interpretation of a term such as "harm" involves a "complex policy choice" better left to the Secretary. The Court concludes that the Secretary reasonably construed the intent of Congress when he defined "harm" in this regulation. The Court's conclusion is based on its finding that the text of the ESA provides three reasons for deciding that the Secretary's interpretation is reasonable: (1) an ordinary understanding of the word "harm" supports it, since the dictionary definition neither includes the word "directly" nor in any way suggests that only direct or willful action that leads to injury constitutes "harm"; (2) the broad purpose of the ESA "to halt and reverse the trend toward species extinction, whatever the cost" (*TVA v. Hill*, 437 U.S. 153, 184 (1978)) supports the Secretary's decision to extend protection against activities that cause the precise harms Congress enacted the ESA to avoid; and (3) the fact that Congress authorized the Secretary in 1982 to issue permits for takings that §9(a)(1)(B) would otherwise prohibit, "if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity," 16 U.S.C. §1539(a)(1)(B), "strongly suggests" that Congress understood §9(a)(1)(B) to prohibit indirect as well as deliberate takings. The Court found support for its conclusion in the legislative history of the ESA as well, finding that while the Committee Reports accompanying the bills that became the ESA do not specifically discuss the meaning of "harm," they "make clear that Congress intended 'take' to apply broadly to cover indirect as well as purposeful actions." The Court recognizes that in the elaboration and enforcement of the ESA, the Secretary and the people who must comply with the law will confront "difficult questions of proximity and degree," but the Court states that these questions must be addressed "through case-by-case resolution and adjudication."

Nebraska v. Wyoming, 515 U.S. ___, 132 L.Ed.2d 1, 115 S.Ct. ___. A 1945 Supreme Court decree allocated the water of the North Platte River among users in Wyoming, Nebraska and Colorado. Nebraska brought the matter before the Court again by petition in 1986, and the Court appointed a Special Master to conduct the proceedings. The Master has filed his Third Interim Report, on Motions to Amend Pleadings, and made recommendations for rulings on requests for leave to amend filed by Nebraska and Wyoming. Before the Court at this time are the parties' exceptions to the Master's report, all of which the Court overrules. The Court overrules Wyoming's first amended counterclaim, which alleges that Nebraska has "circumvented and violated the equitable apportionment by demanding natural flow water for diversion by irrigation canals at and above Tri-State Dam in excess of the beneficial use requirements of the Nebraska lands entitled to water from those canals under the Decree," holding that Wyoming is really calling for a

fundamental modification of the apportionment scheme settled by the 1945 decree without alleging a change in conditions that would justify the modification. The Court overrules Wyoming's second exception to the Master's stated intention to consider a broad array of downstream interests (including wildlife and its habitat) in ruling on Nebraska's claims that Wyoming's proposed developments on tributaries of the North Platte will deplete the tributaries and disturb the "equitable balance" of the River established in the decree, holding that Nebraska must show "substantial injury" before the Court will modify the decree to enjoin tributary development, so Nebraska should be able to present evidence of all kinds of injury to satisfy this significant burden. The Court overrules Wyoming's third exception to the Master's recommendation to allow Nebraska to proceed with its challenge to Wyoming's actions on Horse Creek, a tributary to the North Platte. The Court finds that even though Horse Creek is below the apportioned reach of the river, the "territorial scope" of the case extends downstream of the pivotal reach and Nebraska should be allowed to show that Wyoming's actions are threatening to deplete the return flows from Horse Creek that provide a contribution to the North Platte during the irrigation season, a change in conditions that would be sufficient, if proven, to warrant the injunctive relief Nebraska seeks. The Court also overrules Wyoming's exception to the Master's recommendation that Nebraska be allowed to amend its petition to allege that increased groundwater pumping within Wyoming threatens substantial depletion of the natural flow of the river, holding that equity does not preclude Nebraska's claim merely because Nebraska is allowing unregulated pumping within its State, since Wyoming is upstream and has not made a showing that Nebraska's pumping is injuring Wyoming or anyone else. Finally, the Court rules that in asserting that a basis of the 1945 decree was that the United States would adhere to beneficial use limitations in administering storage water contracts, the United States no longer adheres to such limitations and this change has caused or permitted significant injury to Wyoming interests, Wyoming has said enough to state a serious claim that should be allowed to go forward.

Kansas v. Colorado, 514 U.S. ___, 131 L.Ed.2d 759, 115 S.Ct. ___. This original action involves a dispute among Kansas, Colorado and the United States over alleged violations of the Arkansas River Compact (Compact). The Special Master filed a report detailing his findings and recommendations concerning the liability phase of the trial, and both Kansas and Colorado have filed exceptions to those findings and recommendations. In this opinion the Supreme Court agrees with the Special Master's disposition of the liability issues and overrules the parties' exceptions. Regarding Kansas' exceptions, the Supreme Court holds, in part, that the

Special Master correctly (1) dismissed Kansas' claim that a violation of the operating principles for the Trinidad Project constituted a violation of the Compact, since Kansas had failed to demonstrate that the Trinidad operations caused a material depletion within the meaning of Article IV-D; and (2) found that Kansas failed to prove that operation of Colorado's Winter Water Storage Program resulted in material depletions of usable flows in violation of Article IV-D. Overruling Colorado's exceptions, the Supreme Court holds that the Special Master correctly (1) concluded that the defense of laches should not bar Kansas' claim that increases in post-Compact groundwater well pumping in Colorado have caused a significant decline in the Arkansas River's surface flow in violation of Article IV-D, since the vague and conflicting evidence available to Kansas defeats Colorado's claim of inexcusable delay; (2) determined that the highest annual amount of groundwater shown to have been pumped during the negotiations of the Compact is the amount of post-Compact well pumping that should be allowed; (3) concluded that the 1980 Operating Plan for John Martin Reservoir was "separately bargained for" and should not offset depletions caused by post-Compact well pumping in Colorado; and (4) concluded that, regardless of what burden of proof applies, post-Compact pumping in Colorado had caused material depletions of the usable Stateline flows of the Arkansas River in violation of the Compact.

Douglas County v. Babbitt, 9th Cir., 48 F.3d 1495. The issue in this case is whether, as the district court held, the Secretary of the Interior must comply with the National Environmental Policy Act (NEPA) in designating critical habitat pursuant to the Endangered Species Act (ESA). Affirming the decision of the district court on standing, the Ninth Circuit holds that the County meets all of the strict procedural standing requirements in *Lujan v. Defenders of Wildlife*, 112 S.Ct. 2130 (1992): The County has a procedural right, as well as a concrete interest that could be harmed by the critical habitat designation, and that interest is within the zone of interests protected by NEPA. The Ninth Circuit reverses the decision of the lower court on the merits, holding that NEPA does not apply to the Secretary of the Interior's decision to designate critical habitat for an endangered or threatened species under the ESA because (1) Congress intended that the ESA critical habitat procedures displace the NEPA requirements, (2) NEPA does not apply to actions that do not change the physical environment, and (3) applying NEPA to the ESA would not further the purposes of either statute.

3. Legislation

In the First Session of the 104th Congress (without regard to the water year), Congress enacted the following statutes that are important to the Upper Colorado River Basin States:

Public Law 104-46, approved November 13, 1995, Energy and Water Development Appropriations Act, 1996.

Public Law 104-37, approved October 21, 1995, Agriculture, Rural Development, Food and Drug Administration and Related Agencies Appropriations Act, 1996.

Public Law 104-20, approved July 28, 1995, Colorado River Basin Salinity Control Act, Amendment.

C. EDUCATION-INFORMATION

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

2. 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. As materials are collected for inclusion in the library, they are cataloged in the Commission's computer system. Also, many thousands of pages of documents have been placed on microfiche. 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, supplemented, or collected to address the many problems associated with the development, utilization, and conservation of water and hydroelectric 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 and the Western Area Power Administration have assumed an increasing importance in the water development field, documents from those agencies are being monitored and acquired as a part of the Commission's library.

3. Relief Model

The Relief Model of the Upper Colorado River Basin and the adjacent areas is available for display at conventions and other public events.

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 (CRSP) was authorized for construction by the United States Congress in the Act of April 11, 1956, (70 Stat. 105). Four storage units were authorized by this Act: Glen Canyon Dam and Reservoir (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 Wayne N. Aspinall Storage Unit (Aspinall Unit), formerly named the Curecanti Storage Unit and rededicated in July 1981, on the Gunnison River in Colorado. The Aspinall Unit consists of three dams and reservoirs: Blue Mesa, Morrow Point, and Crystal. Combined, the four storage units provide about 33,583,000 acre-feet of water storage capacity. The Act authorized the construction of eleven participating projects. Ten additional participating projects have been authorized by subsequent congressional legislation.

The storage units and participating projects are described in the 45th and earlier annual reports of the Upper Colorado River Commission. Progress in construction, planning, operation and investigation of the storage units and participating projects accomplished during the past water year is briefly outlined as follows:

1. Glen Canyon Storage Unit

Glen Canyon Dam and Reservoir (Lake Powell) comprises the key Storage Unit of the CRSP and is the largest of the initial four, providing about 80 percent of the storage and generating capacity. Glen Canyon Dam was completed in 1964.

a. Glen Canyon Dam Environmental Impact Statement (EIS) and Glen Canyon Environmental Studies (GCES)

In 1982, the Department of the Interior initiated the GCES to quantify and qualify the environmental and recreational impacts of the operations of Glen Canyon Dam. Phase I of these studies was completed in 1988. Upon review by Interior, it was determined that additional data were required on the impacts of low and fluctuating flows before any conclusions could be made. Phase II of the GCES began in November of 1988 and included

sediment and hydrology, water quality and limnology, geomorphic/geologic studies, biological resources, native and endangered species, recreation, archeology, economics and long-term monitoring. Final reports were scheduled for completion in 1995, and an integrated report is scheduled for completion thereafter. The GCES serve as the basis and foundation of evaluation of the alternatives for the Glen Canyon Dam EIS.

On July 27, 1989, the Secretary of the Interior directed that an EIS be prepared on the operation of Glen Canyon Dam. The Bureau of Reclamation (Reclamation) was directed to be the lead agency, with other agencies having jurisdictional responsibilities or special expertise in the area as cooperating agencies. The number of cooperating agencies has grown to 12. These include: the Arizona Game and Fish Department; Bureau of Indian Affairs (BIA); Reclamation (lead agency); National Park Service (NPS); Fish and Wildlife Service (Service); Hopi, Hualapai, and San Juan Southern Paiute Tribes; the Navajo Nation; Pueblo of Zuni; Southern Paiute Consortium; and Western Area Power Administration (Western).

The primary objective of the EIS, as stated in the December 1990 Management Plan, is to evaluate the impacts of current and alternative dam operations on the downstream environment and ecological resources of the Glen Canyon National Recreation Area and Grand Canyon National Park.

Nine alternatives covering a full range of possible operations of Glen Canyon Dam were developed for evaluation in the Draft EIS. Two of the alternatives, including no action and maximum powerplant capacity, would allow unrestricted hourly and daily fluctuations of flow; four would provide various levels of restricted fluctuations; and three would provide steady flows on a daily, seasonal, or annual basis. Additional measures are combined with the alternative operations, where appropriate, to provide additional resource protection and enhancement. These common elements include adaptive management, monitoring and protecting cultural resources, flood frequency reduction measures, beach/habitat-building flows, a new population of humpback chub, further study of selective withdrawal and emergency exception criteria.

Over 33,000 comments were received on the Draft EIS. As a result of comments on both the Draft EIS and Draft Biological Opinion and discussions with the Service, and with the broad support of the cooperating agencies, the preferred alternative was modified for the Final EIS. This modification includes the two changes in operating limits previously proposed as deviations to interim flows: increasing the maximum flow from 20,000 to 25,000 cubic feet per second (cfs) and increasing the upramp rate from 2,500 to 4,000 cfs per hour. The Final EIS was filed with the Environmental Protection Agency (EPA) on March 21, 1995.

The endangered fish research flows, described in the Draft EIS, were moved from the preferred alternative and addressed from a scientifically based position within the Adaptive Management Program (AMP). This modification has been made because Reclamation believes that the potential effects of steady flows should be further studied before implementation to evaluate uncertainties concerning the interactions between native and non-native fish. Moving the endangered fish research flows to the AMP will allow further investigations over the next two to three years to alleviate these uncertainties.

Reclamation believes that these modifications are justified based upon the comments received from the cooperators and the public, additional information from meetings with researchers and other scientists and reevaluations.

In addition, Reclamation will request, through the Federal appropriations process, accelerated implementation of the selective withdrawal structure since temperature modification has been determined to be the most critical factor affecting the recovery of endangered fish in Glen and Grand Canyons.

The following table gives a detailed description of the parameters of the preferred alternative in the Final EIS:

Description of the Preferred Alternative
for the
Final EIS on the Operation of Glen Canyon Dam

	Low Volume Months	Medium Volume Months	High Volume Months
Minimum release (cfs)	8,000 between 7 am and 7 pm 5,000 between 7 pm and 7 am	8,000 between 7 am and 7 pm 5,000 between 7 pm and 7 am	8,000 between 7 am and 7 pm 5,000 between 7 pm and 7 am
Habitat maintenance flow (cfs)	Between 30,000 and 33,200	Between 30,000 and 33,200	Between 30,000 and 33,200
Maximum release (cfs)	25,000 (will be exceeded for habitat maintenance flows)	25,000 (will be exceeded for habitat maintenance flows)	25,000 (will be exceeded for habitat maintenance flows)
Daily fluctuation (cfs/24 hrs)	5,000	6,000	8,000
Monthly release volume (acre-feet)	<600,000	600,000 to 800,000	>800,000
Ramp rate (cfs-/hr)	4,000 up, 1,500 down	4,000 up, 1,500 down	4,000 up, 1,500 down

Elements common to all alternatives, described in detail in the Final EIS, include:

- Adaptive management
- Flood frequency reduction measures
- New population of humpback chub
- Emergency exception criteria
- Monitoring and protecting cultural resources
- Beach/habitat-building flows
- Further study of selective withdrawal

Habitat maintenance flows, designed to reform backwaters and maintain sandbars, will consist of high, steady releases within the powerplant capacity of 33,200 cfs for one or two weeks in March, or other months if recommended through the AMP. These flows have been selected to redistribute sediment accumulation in pools and backwaters, rebuild portions of sandbars above the normal peak stage, and prevent return channels from becoming dominated with vegetation. Habitat maintenance flows, defined as steady flows with minor fluctuations of up to $\pm$1,000 cfs, would permit limited voltage regulation within the power grid. The month of March was selected to allow backwater channels to reform prior to the humpback chub spawning period and because more sediment is likely to be supplied by tributary flow in March than later in the spring.

Habitat maintenance flows would not be scheduled when the projected storage in Lake Powell on January 1 is greater than 19 million acre-feet (maf). Annual release volumes under such conditions are typically greater than the minimum annual release volume of 8.23 maf, and such flows already may be near or exceed powerplant capacity.

Maintenance flows would begin by increasing flows at a rate no greater than 4,000 cfs per hour and would conclude by decreasing flows back to the normal operating range at a rate no greater than 1,500 cfs per hour. The limit on daily change in flow would not apply during these transitions.

Habitat maintenance flows would differ from beach/habitat-building flows because they would be within powerplant capacity and would occur nearly every year when the reservoir is low. Beach/habitat-building flows would be less frequent. Habitat maintenance flows would not occur in years when a beach/habitat-building flow occurs. Neither of these special releases would be scheduled in a year when there is concern for endangered fish or other sensitive resources.

Interim flows implemented on November 1, 1991 as a temporary measure to reduce the adverse change on downstream resources resulting from dam operations will remain in effect until the Record of Decision is implemented.

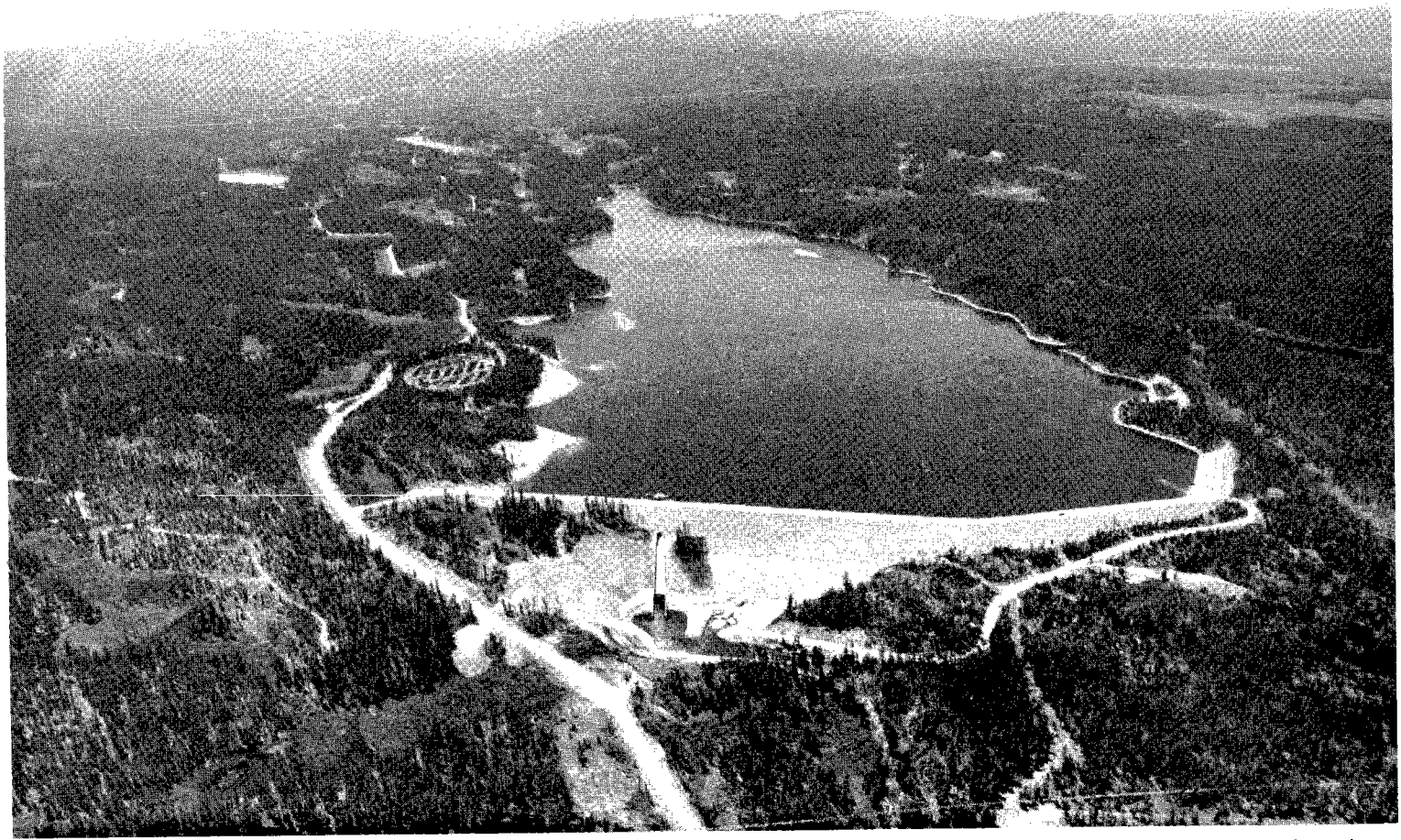
Reclamation proposes to conduct a one-time test of a beach/habitat-building flow from Glen Canyon Dam in the spring of 1996 to allow for collection of data for use in determining future dam operations. The test flow will begin on or about March 22, 1996. The first four days will consist of a constant 8,000 cfs flow. On March 26, 1996, discharge will be increased at an upramping rate of 4,000 cfs per hour until a flow of 45,000 cfs is reached. Flows will be held essentially constant at 45,000 cfs for seven days (until April 2, 1996), with flow changes less than $\pm$1,000 cfs. Discharge will then be decreased to 8,000 cfs in the following manner: (1) Between flows of 45,000 cfs and 35,000 cfs, the down-ramping rate will be 1,500 cfs per hour; (2) Between flows of 35,000 cfs and 20,000 cfs, the down-ramping rate will be 1,000 cfs per hour; and (3) Between 20,000 cfs and 8,000 cfs, the down-ramping rate will be 500 cfs per hour. Discharge will be maintained at $\pm$8,000 cfs for four days (through April 7, 1996).

It is believed that this staggered down-ramp will more closely mimic the reduction of flows after a natural flood. The 8,000 cfs constant flows preceding and following the 45,000 cfs release will permit aerial photography and on-the-ground evaluation of sedimentation patterns and impacts to river resources. Data collected during the test flow will demonstrate the extent to which planned flooding can be used as an ecosystem management tool. Interim flows will resume on or about April 8, 1996.

b. Recreational Use

The extensive recreational use of Glen Canyon National Recreation Area, which surrounds Lake Powell, is demonstrated by the visitation of 2,538,684 people during 1995. The NPS has concession-operated facilities at Wahweap, Dangling Rope, Halls Crossing, Hite, and Bullfrog Basin on the reservoir and Lees Ferry, 16 miles below the dam on the Colorado River. The San Juan Marina, which was operated on Lake Powell by the Navajo Nation, is now closed due to a flood in 1989.

From 1909 through 1961, an estimated total of 20,972 people visited Rainbow Bridge. When access to the bridge by water was made available by completion of the dam in 1963, visitation rapidly increased. In 1966, 20,468 people visited Rainbow Bridge, almost as many people as had visited the site during the previous 53 years. In 1994, 298,357 people (latest figure available) visited Rainbow Bridge.



Stateline Dam and Reservoir - Wyoming

-Bureau of Reclamation photo

2. Flaming Gorge Storage Unit

Flaming Gorge Dam and Powerplant were completed in 1963. Uprating of the units in 1992 increased the plant nameplate capacity from 108 megawatts (MW) to about 151 MW. Plans have been developed to retrofit the visitor center and dam tour areas to make the facilities fully accessible to persons with disabilities.

Flaming Gorge National Recreation Area, which surrounds Flaming Gorge Dam and Reservoir, recorded approximately 2,000,000 visitors during 1994. The site is administered by the Ashley National Forest. Fishing is an important recreational activity both on the reservoir and in the Green River below the dam.

3. Navajo Storage Unit

The major purposes of Navajo Dam and Reservoir are to regulate the flows of the San Juan River and to provide a water supply for the Navajo Indian Irrigation Project near Farmington, the San Juan-Chama Participating Project in the Rio Grande Basin, and the Hammond Participating Project, all in New Mexico. Part of the water is also used for municipal and industrial (M&I) purposes in northwestern New Mexico. Navajo Dam was completed in 1963.

The Colorado Division of Parks and Outdoor Recreation (CDPOR) and Reclamation have entered into a Memorandum of Agreement for water and waste water improvements at Navajo State Park. The cooperative agreement also provides for the rehabilitation of four existing sites administered by the CDPOR on Reclamation projects lands on the Western Slope.

The State of New Mexico has also entered into a cooperative agreement with Reclamation to upgrade and/or replace worn-out and over-used recreation facilities on the New Mexico side of Navajo Reservoir. Total visitation to Navajo Reservoir was 545,474 people for 1994.

4. Wayne N. Aspinall Storage Unit

The Aspinall 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 Blue Mesa, Morrow Point and Crystal.

Uprating of Morrow Point Dam generator units was completed in 1993. The plant nameplate capacity was increased from 120 MW to 156 MW.

The NPS administers the recreational facilities. In 1994 there were 1,064,538 visitors (latest available figures).

5. Storage Units Fishery Information

The Flaming Gorge, Wayne N. Aspinall, Glen Canyon and Navajo Units continue to provide excellent warm- and cold-water fishing both in the reservoirs and in the tailwater streams below the dams. Use on the reservoirs currently totals approximately 946,000 angler days each year. Lake Powell provides approximately half of the total use, with the remainder coming from the other reservoirs. Lake Powell is almost exclusively a warm-water fishery with striped bass, crappie, walleye, channel catfish and smallmouth and largemouth bass as the harvested species. Angling use on reservoirs appears to be constant, while demand and use for the tailwaters is increasing dramatically.

Navajo and Flaming Gorge Reservoirs provide both warm-water and cold-water fishing, with rainbow trout and kokanee the predominant cold-water harvest and catfish, bass and crappie (at Navajo only) the preferred warm-water fishes. Flaming Gorge also provides a world-class lake trout fishery. The Aspinall reservoirs are exclusively cold-water fisheries, with kokanee and rainbow trout the predominant catch.

The four tailwaters (the San Juan River below Navajo Dam, the Green River below Flaming Gorge Dam, the Gunnison River below Crystal Dam and the Colorado River below Glen Canyon Dam) have provided "blue ribbon" trout fishing that many view as some of the best in the western United States. Combined, the annual use of these tailwaters is approximately 500,000 angler days. The Green River (below Flaming Gorge Dam) receives about half of the total use with the Colorado River (below Glen Canyon Dam), the San Juan River (below Navajo Dam) and the Gunnison River (below Crystal Dam) providing the remainder.

The net economic value of angling from Glen Canyon Dam to Lees Ferry has been estimated at $1.2 million.

B. TRANSMISSION DIVISION

The power system includes high voltage transmission lines that interconnect to the CRSP hydro-powerplants and deliver 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 Western, Department of Energy, in fiscal year 1978.

Generation at CRSP powerplants amounted to 5.9 billion kilowatt-hours during water year 1995. The major portion, 4.4 billion kilowatt-hours, was produced at Glen Canyon Dam. The balance was produced at Flaming Gorge, Blue Mesa, Morrow Point, Crystal, Fontenelle and Towaoc Powerplants. (McPhee Powerplant was out of service for repairs during fiscal year 1995.)

The following table lists the gross generation for fiscal years 1994 and 1995 and the percentage of change:

GROSS GENERATION (Kilowatt-Hours)

POWERPLANT	FY 1994	FY 1995	PERCENT CHANGE
Glen Canyon	3,861,085,000	4,425,341,000	+ 13.0
Flaming Gorge	481,412,000	393,314,000	- 22.0
Blue Mesa	254,120,000	354,145,000	+ 28.0
Morrow Point	319,507,000	519,009,000	+ 38.0
Crystal	170,914,000	56,482,000	+ 4.0
Fontenelle	46,825,000	-0-	+ 17.0
McPhee	5,043,519	-0-	---
Towaoc	14,613,450	13,049,000	- 12.0
TOTAL:	5,153,519,969	5,925,865,000	+ 13.0

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, 1963 (76 Stat. 96), three were authorized by the Act of September 2, 1964 (78 Stat. 852) and five were authorized 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 develop, or would develop, water in the Upper Colorado River System for irrigation, M&I uses and other purposes and participate in the use of revenues from the Upper Colorado River Basin Fund to help repay the costs of irrigation features that are beyond the ability of the water users to repay.

The following are completed participating projects:

PROJECT	STATE	DAM	YEAR COMPLETED
Paonia	Colorado	Paonia	1962
Smith Fork	Colorado	Crawford	1962
Florida	Colorado.	Lemon	1963
Silt	Colorado	Rifle Gap	1966
Bostwick Park	Colorado	Silver Jack	1971
Dallas Creek	Colorado	Ridgway	1991
Hammond	New Mexico	---	1962
San Juan-Chama	New Mexico	Heron	1971
Vernal Unit,CUP	Utah	Steinaker	1961
Emery County	Utah	Joes Valley	1966
Eden	Wyoming	Big Sandy	1952
Eden	Wyoming	Eden	1959
Lyman	Wyoming	Meeks Cabin	1971
Lyman	Utah	Stateline	1979
Seedskadee	Wyoming	Fontenelle	1968

The present status of construction or investigation for the remaining participating projects follows:

1. Colorado

a. Fryingpan-Arkansas Project

Although the Fryingpan-Arkansas 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 water diverted from the Upper Colorado River System to the eastern slope of Colorado.

The Eastern Colorado Area Office, located in Loveland, Colorado, directs the operation and maintenance activities of the Colorado-Big Thompson and Fryingpan-Arkansas Projects. A field office is located in Pueblo to coordinate with the Southeastern Colorado Water Conservancy District and the State Division Engineer.

National Environmental Policy Act (NEPA) compliance on the Ruedi Round II water marketing program was completed on January 16, 1990 with signing

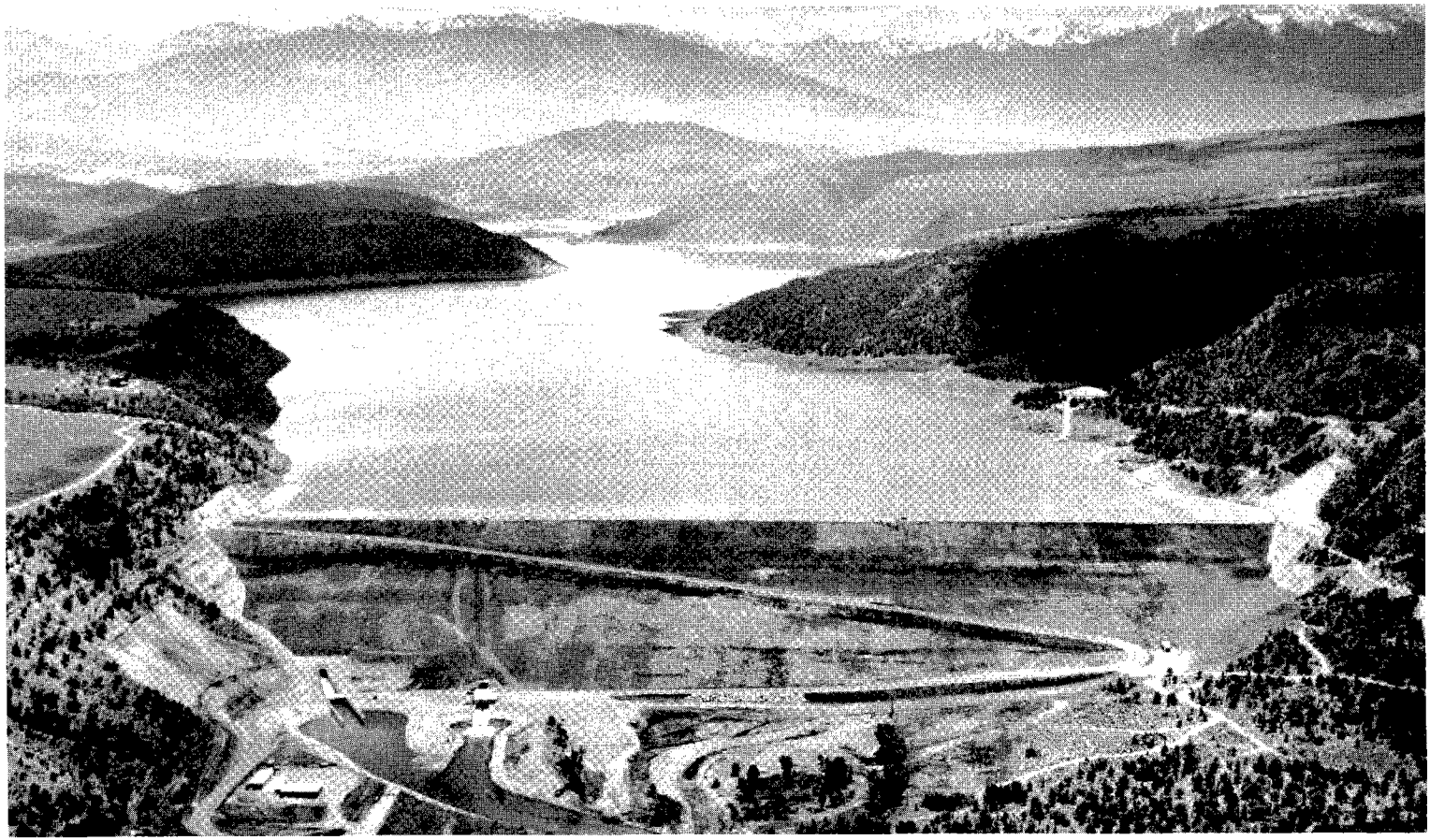
of a record of decision on the proposed action. The proposed action made 51,500 acre-feet of water available for marketing to western slope contractors. As a result of Endangered Species Act (ESA) consultation on the proposed action, 5,000 acre-feet of this total would be withheld from water sales and released to benefit Colorado River endangered fishes. Operational changes would make an additional 5,000 acre-feet of water available to benefit the Colorado River endangered fishes in 4 years out of 5. Considering Round I sales of 7,850 acre-feet, this left 38,650 acre-feet of water available for marketing in Round II. Since 1990, the Service has listed the razorback sucker and identified and listed critical habitat for the four Colorado River endangered fishes, both of which could be affected by the Round II water marketing program.

To comply with the ESA, Reclamation re-initiated consultation with the Service on the effects of the Ruedi Water Marketing Program on the Colorado River endangered fishes and critical habitat. On May 26, 1995, the Service issued a biological opinion on the effects of the Ruedi Round II water marketing program on the Colorado River endangered fishes and designated critical habitat. As part of the consultation process, Reclamation identified that there were 17,000 acre-feet of immediate needs that should be contracted for in Round II. This left approximately 21,650 acre-feet of uncommitted water in Ruedi. The Service's May 26, 1995 biological opinion contained two reasonable and prudent alternatives to jeopardy. One was continuing the commitments made in the 1990 EIS and the other was to develop an agreement among the Service, Reclamation, and the Colorado Water Conservation Board to make the remaining uncommitted yield available for 15 years to benefit endangered Colorado River fishes in the 15-mile reach of the Colorado River.

Contents of reservoirs within the Fryingpan-Arkansas Project as of September 30, 1995 were as follows: Ruedi Reservoir, 99,615 acre-feet; Turquoise Lake, 127,703 acre-feet; combined Mt. Elbert Forebay and Twin Lakes Reservoir, 144,762acre-feet; and Pueblo Reservoir, 253,552acre-feet. During water year 1995 (October 1, 1994 through September 30, 1995) transmountain diversions from the Colorado River Basin in Colorado by the Fryingpan-Arkansas Project via the Charles H. Boustead Tunnel totaled 90,500 acre-feet.

b. Dolores Project

A contract for $7.1 million was awarded in March of 1993 for construction of Montezuma Valley Irrigation Company (MVIC) Canal Lining, a feature of the Colorado River Salinity Reduction Project. The work included constructing 5.4 miles of earth-lined canal and associated structures and turnouts and replacing portions of an existing unlined irrigation canal. Construction was completed in 1995.



Dallas Creek Project - Colorado 1987

-Bureau of Reclamation photo

Contracts for installation of a Programmable Master Supervisory Control System for the Dolores Project, Cahone Pumping Plant Motor Replacement ($0.4 million), and Towaoc Powerplant Forebay ($0.6 million) were completed in 1995.

Dolores Project construction is scheduled for completion in 1998. Work yet to be completed includes remaining wetland mitigation, Towaoc Drains, Rocky Ford Lateral operation and maintenance (O&M) Roads, Great Cut Dike Road Improvements, other remaining construction and design deficiency work and acquisition of water for downstream fish and wildlife purposes. Reclamation has entered into agreements with the Dolores Water Conservancy District; these agreements provide for acquisition of 3,900 acre-feet of downstream fish and wildlife water and allow the District to complete its remaining work items. Reclamation has entered into a grant agreement with MVIC allowing the company to complete its remaining work, including the Rocky Ford Lateral roads, and for transfer of Company facilities upon full payment under the grant. Reclamation is working with the Ute Mountain Ute Indian Tribe on an agreement for completion of its remaining work, including the Towaoc Drains.

The first payment for Block Notice Number One, issued March 23, 1987 to the Dolores Water Conservancy District, was received in February of 1990. That notice is for all irrigable land using supplemental water within MVIC's system.

Block Notice Number Two was issued on May 29, 1987. Block Notice Number Three was issued on February 22, 1988.

Block Notice Number Four was issued on September 4, 1990 and covers all irrigable lands within Fairview and Cahone full-service pipeline lateral delivery systems. The notice is for 27,644 acre-feet of water. Repayment will begin on February 1, 1997.

Block Notice Number Five was issued to the Ute Mountain Ute Indian Tribe for 1,000 acre-feet of municipal and industrial water. Pursuant to the Colorado Ute Indian Water Rights Settlement Act of 1988, the first repayment on February 1, 1991 was for 160 acre-feet of water. Repayment on the remaining 840 acre-feet will be held until the water is first used.

Block Notice Number Six was issued on April 28, 1992 and covers all irrigable lands within the Pleasant View, Ruin Canyon and Hovenweep full-service pipeline lateral systems. The Notice is for 21,321 acre-feet of water. Repayment will begin on February 1, 1999.

Block Notice Number Seven was issued on July 8, 1993 and covers all irrigable lands within the Cross Canyon and Monument Creek full-service pipeline lateral delivery systems. The Notice is for 6,317 acre-feet of water. Repayment will begin on February 1, 2000.

Block Notice Number Eight was issued to the Ute Mountain Ute Indian Tribe on April 10, 1995 and covers 6,025 acres of irrigable lands in the Towaoc area. The approximately 1,575 acres of additional lands will go under block notice as the Tribal lands are developed via amendments to the block notice. Pursuant to the Colorado Ute Indian Water Rights Settlement Act, the Tribe will not repay construction costs associated with the irrigation water.

c. Fruitland Mesa Project

Reclamation has requested that all the lands previously withdrawn for the Fruitland Mesa Project be terminated in their entirety. Through the Withdrawal Review Report submitted to the Bureau of Land Management (BLM), Reclamation has recommended that approximately 22,600 acres be returned to the public domain. The recommendation has not yet been processed by the BLM.

d. San Miguel Project - West Divide Project

Both projects have been found to be economically unjustified at this time. No activity has occurred on either project since 1982.

e. Dallas Creek Project

Block Notice Number One was issued on May 31, 1989, covering all M&I water use. The notice involves 28,100 acre-feet of water. Repayment on that notice began in 1990.

Block Notice Number Two was issued for the Dallas Creek Project on March 21, 1990. The notice includes all irrigation waters for the project, involving 11,200 acre-feet. The notice was issued to Tri-County Water Conservancy District. The first payment under the repayment contract was made in February of 1993 and will continue until February of 2042.

Recreation development at Ridgway Reservoir (Ridgway State Park) continued into fiscal year 1995. This area was opened to the public in the spring of 1992. The Cow Creek Recreation Area, just below Ridgway Dam, opened for the first time in the summer of 1994, adding a large campground, visitor center and facilities for large group activities. Development of the recreation facilities is expected to continue in fiscal year 1996, with emphasis on accessible trail development and interpretive features, for a total cost of $21.5 million.

Access for persons with disabilities is a high priority at Ridgway State Park. In fact, Ridgway is one of the most accessible parks in the country.

Reclamation received an award in 1989 from the group "Physically-Challenged Access to the Woods" for its efforts in accessibility. In addition, in January of 1991 Reclamation received recognition from the Great Outdoors Colorado Citizens Committee for Ridgway State Park for "exemplifying creativity and cooperation in the enhancement of Colorado's outdoor resources."

2. Colorado and New Mexico

a. Animas-La Plata Project

In 1979, the Service issued a non-jeopardy opinion on the project. However, between 1986 and 1989, additional data were collected concerning the Colorado squawfish in the San Juan River in New Mexico. That data reaffirmed the existence of a small population of the fish.

As a result, in February of 1990, Reclamation requested re-initiation of consultation under the ESA. In May of 1990, the Service rendered a Draft Biological Opinion which contained a jeopardy opinion with no reasonable and prudent alternatives.

Following exhaustive consultation between Reclamation and the Service, a revised Draft Biological Opinion was issued on March 21, 1991 which allowed for construction of the Ridges Basin Dam, Durango Pumping Plant and inlet pipeline. A Final Opinion was issued on October 25, 1991 by the Service following the October 24, 1991 signing of a Memorandum of Understanding (MOU) by the States of Colorado, New Mexico, and Utah; the Secretary of the Interior; the Southern Ute and Ute Mountain Ute Indian Tribes; and the Jicarilla Apache Tribe. The MOU provides for a Recovery Implementation Program for the endangered fish and makes possible the initiation of construction of the project. The MOU also provides for the protection of the San Juan River flows through the occupied habitat stretch of the river.

The Biological Opinion contains five elements:

1. An initial depletion of 57,100 acre-feet per year is anticipated. This depletion will allow construction of Ridges Basin Dam and Reservoir, Durango Pumping Plant and inlet pipeline.

2. Seven years of research on the San Juan River and its tributaries to collect critical information about the endangered fish and their habitats are being funded by Reclamation until the Recovery Implementation Plan is in place. Further Section 7 consultation will be required before beginning construction of any project facilities that would require the depletion of more than 57,100 acre-feet.

3. Over the next seven years, Navajo Dam will be operated under study guidelines to mimic a natural hydrograph, including test flows that consist of high spring flows followed by low summer, fall and winter flows.

4. At the end of the seven-year research period, Navajo Dam would be operated to mimic a natural hydrograph based on research flow recommendations.

5. Reclamation affirms that releases of water from Navajo Dam specifically for the purpose of restoring or enhancing the endangered fish must be legally protected before any depletions occur from the Animas-La Plata Project.

Additionally, a Recovery Implementation Program for the San Juan River Basin has been signed by the Secretary and some of the participants. Not all parties that were signatory to the MOU have signed the cooperative agreement that implemented the San Juan River Recovery Implementation Program. The State of Utah has declined to become an official member of the Recovery Program, citing unresolved issues including water depletion. The Navajo Nation has been solicited to participate in the Program but so far has declined due to concerns over protection of flows. In addition, the NPS petitioned to become a member of the Program in 1993 but was not accepted at that time.

The Bureau of Reclamation is preparing a Supplement to the Final Environmental Statement (Supplement) for the Animas-La Plata Project to address issues arising since the original 1980 document was completed. Work on the Supplement has been conducted with four main areas of emphasis: (1) Compliance with provisions of the Clean Water Act, (2) changed requirements on certification of project lands for potential toxic or hazardous irrigation return flows, (3) new or updated information that has become available since the 1980 Final Environmental Statement and (4) evaluation of design and other refinements to the project

Significant comments, both positive and negative, were received from Federal and State agencies, as well as the general public. Statements in support of the project, emphasizing compliance with the Colorado Ute Indian Water Rights Settlement Act, economic benefits of the project, and fulfillment of long-awaited Federal commitments, were received from State agencies and project sponsors. Statements in opposition to the project include: Inadequate NEPA analysis, inadequate 404(b)(1) analysis, inadequate wetlands identification and mitigation and no updated analysis of project needs and alternatives to meet those needs. Based on the comments received on the draft, Reclamation is preparing a Final Supplement which is scheduled to be filed with the EPA in April 1996. An updated economic and financial analysis was completed and provided to Congress in July 1995.

3. Colorado and Wyoming

a. Savery-Pot Hook Project

Reclamation has submitted a Withdrawal Review Report to the BLM that will terminate all the withdrawn lands, totaling 11,303 acres, that were previously withdrawn from the public domain for construction of the Savery-Pot Hook Project. The recommendation has not yet been processed by the BLM.

4. New Mexico

a. Navajo Indian Irrigation Project

Reclamation is continuing toward completion of the Navajo Indian Irrigation Project in San Juan County, New Mexico.

Reclamation is providing design and construction management for the BIA. In this process, funding is sought by BIA in its budget appropriation rather than by Reclamation. The President's fiscal year 1996 budget includes $34.2 million for continued design and construction of the project.

By the end of 1994, Blocks 1 through 7 were producing high-value crops on approximately 63,800 acres of land.

The entire project involves 11 blocks of development and will have a total of 110,630 acres of irrigated land.

Construction of facilities to serve Block 8 started in 1992. Some major facilities have been completed, and progress is continuing under two contracts totaling about $18 million for construction of a major pumping plant.

b. Dam Safety

Reclamation is also providing technical assistance to BIA and the Navajo Nation for correction of deficiencies on 12 dams. Modification of Round Rock Dam was completed in 1994. The second contract for corrective action was awarded by BIA on September 28, 1994 to Stimpel-Wiebelhaus Associates for Ganado Dam Modification for $4.1 million. Modifications to Ganado Dam were completed in 1995.

5. Utah

a. Central Utah Project (CUP)

The Central Utah Project provides water for irrigation, M&I uses, and power generation. Benefits are also being realized in the areas of outdoor

recreation, fish and wildlife conservation, flood control, water quality control, and area development. The Initial Phase consists of six units. The largest of these is the Bonneville Unit, which involves the diversion of water from the Uintah Basin, a part of the Colorado River Basin, to the Great Basin, with associated resource developments in both Basins. The other five units, Vernal, Uintah, Upalco, Jensen, and Ute Indian, provide for local development in the Uintah Basin.

i. **Bonneville Unit.** Jordanelle Dam, a primary feature of the M&I system, was topped off in October of 1992. Filling of the reservoir began in the spring of 1993 along with completion of the installation of gates and control and control structures. The amount of water stored in the reservoir on December 1, 1995 was 210,821 acre-feet.

With the completion of the Hailstone Recreation Area at Jordanelle Reservoir in the summer of 1995, the recreation development is primarily finished. The Rock Cliff recreation site, located along the Provo River upstream from the dam, opened in the summer of 1994 and received moderate to heavy recreational use throughout the summer. Access for persons with disabilities is a priority for all facilities at Jordanelle.

Legislation introduced in 1991 by the Utah congressional delegation to increase the ceiling to allow completion of the Bonneville Unit of the Central Utah Project, primarily the irrigation and drainage (I&D) system, was passed on October 30, 1992 as Public Law 102-575. The legislation allows the Central Utah Water Conservancy District (District) to plan and construct the I&D system under the purview of the Department of the Interior. Planning studies are underway by the District for this effort.

6. Wyoming

a. Lyman Project

Under the Safety of Dams Program, a contract for construction of a concrete cutoff wall in Meeks Cabin Dam was awarded on July 26, 1993 to Bauer of America Corporation of Waltham, Massachusetts for $5.9 million. The cutoff wall was designed to reduce seepage through the dam and increase its safety. The work was completed in the fall of 1995.

D. RECREATIONAL USE AT RESERVOIRS

The following estimated recreation visits occurred in 1994 (latest available figures) at the reservoirs listed below:

RESERVOIR	YEAR FIRST VISITED	1994
Curecanti (Aspinall)	1966	1,064,538
Currant Creek	1982	62,816
Crawford	1963	98,704
Flaming Gorge	1962	2,178,300
Fontenelle	1965	13,500
Heron	1973	71,067
Horsethief	1992	750
Huntington North	1967	75,543
Joes Valley	1967	97,240
Lake Powell	1962	2,844,999
Lemon	1964	33,000
McPhee	1985	181,800
Meeks Cabin	1973	7,600
Nambe Falls	1977	42,502
Navajo	1963	545,474
Paonia	1962	10,262
Red Fleet	1982	68,086
Ridgway	1989	390,000
Rifle Gap	1967	105,040
Silver Jack	1973	83,085
Starvation	1970	118,014
Steinaker	1962	38,889
Strawberry [enlargement]	1985	277,493
TOTAL		***8,408,702**

*This represents a net economic value of approximately $80,393,637.

E. POTENTIAL PARTICIPATING PROJECTS

In carrying out further investigations of projects under Federal Reclamation laws in the Upper Colorado River Basin, the Secretary of the Interior is directed to give priority to completion of planning reports on a number of potential projects. Reclamation, so far as limited funds and personnel will permit, is continuing studies on these projects.

Colorado River Storage Project, Rainbow Bridge - Utah -Bureau of Reclamation photo 1959

1. Colorado

a. Grand Mesa Project

No activity has occurred on this project since 1982. A planning report concluding the study was approved July 13, 1982.

2. Utah

a. Central Utah Project, Ute Indian Unit

No activity has occurred on this unit since 1980. A concluding report was approved on May 30, 1980.

3. Wyoming

a. Sublette Project

A concluding report was approved on April 24, 1980.

F. STATUS OF OTHER RECLAMATION PROJECTS IN THE UPPER COLORADO RIVER BASIN

1. Colorado

a. Fruitgrowers Dam Project

Reclamation entered into an agreement with the Audubon Society to manage the lands around Fruitgrowers Reservoir for wildlife habitat enhancement and viewing. A watchable wildlife trail and viewing area which is accessible to persons with disabilities has been constructed.

b. Uncompahgre Project

The AB Lateral Hydropower Facility (Project) would be funded, built and operated by the Uncompahgre Valley Water Users Association (UVWUA) and Montrose Partners. The Project would be constructed under a lease of power privilege (Lease) using existing features of Reclamation's Uncompahgre Project. The 1991 Record of Decision on the Project provided that Reclamation would not execute a Lease permitting the Project until a Section 404 Permit was obtained. The Section 404 Permit application for the Project was initially rejected by the Army Corps of Engineers; project sponsors are working on revising the application. Negotiations on the Lease will not be initiated until the 404 Permit is obtained.

Uncompahgre Riverway, Inc. is a non-profit organization made up of several community groups promoting the development of a trail. Reclamation's role in this project is to identify and coordinate the acquisition of rights-of-way for the trail.

The Uncompahgre Projects Office Building, built in 1905, is the oldest Reclamation-built projects office and is on the National Register of Historic Places. The UVWUA has occupied the building since 1932. The building has structural and roof problems, fire safety violations, inadequate accessibility, dangerous wiring and high utility bills. In 1991, the UVWUA requested permission from Reclamation to tear down the building and build a new structure entirely at its cost.

The State Historic Preservation Officer and Advisory Council for Historic Preservation consider the building a very important resource, and they requested Reclamation to consider alternatives that would preserve the structure. A 1994 draft Environmental Assessment considered alternatives ranging from rehabilitation to replacement (demolition).

In December 1995, after studying all of the alternatives for many years, Reclamation decided to demolish/dispose of the building and have the UVWUA replace it at UVWUA's cost. Reclamation will begin development of a Memorandum of Agreement and a mitigation plan that will include a Historic American Building Survey and preservation of existing records and photographs.

c. Dominquez Project (Whitewater)

Approximately 28,000 acres of withdrawn Dominquez Project lands have been recommended by Reclamation for termination through the Withdrawal Review Report that was submitted to BLM on December 29, 1988. The recommendation has not yet been processed by the BLM.

G. INVESTIGATIONS

The Upper Colorado Region General Investigations budget for fiscal year 1995 was about $3.4 million, with about 49 percent being directed within the Upper Colorado River Basin. About half of the General Investigations funds spent in the Basin were for salinity control activities including support of the Colorado River Storage System model, monitoring for program verification and evaluation, program coordination and other salinity control activities described later in this report.

Other investigations include the Yampa River Water Supply Study and the Grand Valley Project Water Conservation Study. Under funds appropriated through a congressional write-in, Reclamation provided planning and technical assistance to the City of Gallup, New Mexico, and the Navajo Nation on the San Juan River Gallup/Navajo Water Supply Study. Reclamation also continues to provide assistance, as requested, through its Technical

Assistance to the States Program and continues to coordinate with other natural resource agencies on critical water resource related problems and issues. Continuing this year is a program (Investigation of Existing Projects) for evaluating system optimization on some existing projects, with several projects scheduled for evaluation. Under the General Planning Studies account, Reclamation has some funding to participate in special studies requested by other natural resource agencies.

1. Colorado

a. Upper Gunnison-Uncompahgre Basin Study

In cooperation with the Colorado Department of Natural Resources and the Colorado River Water Conservation District (CRWCD), Reclamation developed a detailed hydrologic model and accounting system for the Gunnison River Basin.

These products will be used by Federal, State and local entities to resolve Federal reserved water rights, Colorado River endangered fish species and other issues relating to Aspinall Unit operations. Technical work is being accomplished by Reclamation's Grand Junction Area Office and Reclamation Service Center in Colorado and Hydrosphere Resources Inc., under contract with the CRWCD. The final report was delayed due to problems with development of the software and is now scheduled for spring of 1996.

b. Dolores River Water Quality Study

This study was initiated in fiscal year 1992 to identify the source of mercury causing elevated levels in the fish from McPhee, Narraguinnep and Totten Reservoirs. An intense, Basin-wide water quality sampling program was conducted, and several sources of heavy metals pollution were identified, most of which were associated with historic mining activities near the town of Rico. No point source of mercury contamination was found. The final report was completed in 1995, and copies are available from the Western Colorado Area Office - Southern Division.

c. Yampa River Water Supply Study

Reclamation began its participation in this study in fiscal year 1994. Other participants include the Colorado Water Conservation Board, the CRWCD, the City of Craig and the Colorado River Recovery Implementation Program. The purpose of the study is to conduct a feasibility-level investigation of the possible rehabilitation, enlargement and reoperation of Elkhead Creek Reservoir for the purposes of endangered species habitat enhancement and M&I water supplies for Yampa River Basin water users. The study will be completed in fiscal year 1996.

d. Grand Valley Project Water Conservation Study

This study was initiated in fiscal year 1994 in cooperation with the Colorado Water Conservation Board, the CRWCD, Northern Colorado Water Conservancy District, Denver Water, the Service and the Colorado River Recovery Implementation Program. The purpose of the study is to quantify water that can be salvaged from operational waste that is currently diverted by the Grand Valley Project and returned to the Colorado River through project wasteways. Alternative uses for the salvaged water are being identified, and implementation plans are being developed. The plans will include economic, financial and environmental analyses and will identify institutional constraints that need to be addressed. This study has identified about 30,000 acre-feet of water that can be salvaged annually at an annual cost of only $12 per acre-foot. The study will be completed in fiscal year 1996.

2. New Mexico

a. San Juan Gallup/Navajo Water Supply Study

This study is providing planning and technical assistance to the Navajo Nation and the City of Gallup, New Mexico to formulate a project to divert water from the San Juan River to augment domestic water supplies of rural Navajo communities on the eastern side of the reservation, the Cities of Gallup, New Mexico, and Window Rock, Arizona. Existing groundwater supplies in the area are inadequate to meet expected future demands.

H. RESERVOIR OPERATIONS

Water year 1995 signalled the end of dry hydrological conditions in the Basin. Basin-wide precipitation during 1995 was above average and translated into an above-average snowpack. At the beginning of the runoff season, the Basin-wide runoff forecast was 128 percent of average, varying between 114 percent of normal in the Green River Basin to 142 percent of normal in the Colorado River Basin. However, very cold, wet weather dominated late April and May, resulting in very deep snowpacks above the 10,000 feet elevation. Hot weather in mid-June produced high runoff peaks and boosted the runoff volume significantly. This produced a well-above-average runoff throughout the Basin.

With the high runoff during 1995, there were numerous reports of local flooding, but most damage was minimal.

Unregulated inflow into Lake Powell in water year 1995 was 16,291,000 acre-feet, 139 percent of the long-term average. This inflow resulted in the gain of 4,538,000 acre-feet of storage in Lake Powell.

Approximately 987,000 acre-feet of storage was gained in upstream reservoirs. With an additional gain of approximately 968,000 acre-feet within the Lower Basin reservoirs, the total Colorado storage system gained approximately 6,493,000 acre-feet during water year 1995. It is now estimated that it would take two years of average inflow to completely fill the storage system. During 1995, all deliveries of water to meet obligations pursuant to "The Law of the River" were maintained.

1. Annual Operating Plan Development

The Secretary of the Interior has approved an Annual Operating Plan (AOP) for water year 1996. The Operating Plan was developed through the cooperation of representatives of the seven Basin States, Reclamation, other State and Federal agencies and others interested in Colorado River operations. The AOP reflects uses of the reservoirs for all purposes consistent with the Operating Criteria.

The 1996 AOP calls for the Upper Basin to release from Glen Canyon sufficient water in water year 1996 to equalize, as nearly as practicable, the active reservoir contents of Lakes Powell and Mead on September 30, 1996 in accordance with Article II(3) of the Operating Criteria unless the minimum objective release criterion in Article II(2) (8.23 maf) is controlling.

In the Lower Basin, taking into account the existing and predicted water supply conditions in the Basin and that the reasonable beneficial consumptive use requirements of the Lower Division States are expected to be less than 7.5 maf, the 1996 AOP states that the "normal" condition is the criterion governing the operation of Lake Mead for calendar year 1996 in accordance with Article III(3)(a) of the Operating Criteria and Article II(B)(1) of the decree in *Arizona v. California*. If it becomes evident that water needs in the Lower Division States will exceed 7.5 maf, compensation will be required from any State exceeding the apportionment according to the terms of the AOP.

The AOP also states that any Lower Division State will be allowed to utilize apportioned, but unused, water from another Lower Division State in accordance with Article II(B)(6) of the decree in *Arizona v. California*, provided that the calendar year 1996 consumptive use by mainstream Lower Division States users does not exceed 7.5 maf. The guaranteed annual quantity of 1.5 maf of water will be delivered to Mexico during calendar year 1996 in accordance with Article 15 of the 1944 Mexican Water Treaty and Minute No. 242 of the International Boundary and Water Commission.

2. Runoff and Reservoir Contents and Releases

In 1995, the unregulated inflow into Lake Powell during the April through July period totaled 11.7 maf, or approximately 149 percent of the 1906-1985 average. The computed unregulated discharge at Lees Ferry for the water year ending September 30, 1995 was 16.3 maf, which is approximately 139 percent of the 1906-1985 average. The following tabulation lists the breakdown of discharges in acre-feet in the Upper Colorado River Basin:

	Acre-feet
Net change in surface storage	5,525,000
Net change in bank storage	819,000
Net evaporation	669,000
Glen Canyon releases	9,285,000
Paria River discharge	19,000[1]
Total unregulated discharge at Lees Ferry	16,317,000

Dam releases simulating natural hydrographs that are intended to preserve the endangered species downstream of specific Colorado River Basin dams are being tested at several locations in the Upper and Lower Basins. Regulation of the Colorado River has had both positive and negative effects on aquatic resources. Controlled cool-water releases from dams in the Colorado River Basin have provided for increased productivity of some aquatic resources and the development of significant sport fisheries. However, the same releases could be detrimental to endangered and other native species of fishes.

Consultations with the Service in compliance with Section 7 of the ESA (Section 7 consultations) on the operation of Glen Canyon Dam on the Colorado River, the Aspinall Unit on the Gunnison River, Navajo Dam on the San Juan River and Flaming Gorge on the Green River will continue in 1996. Studies associated with these consultations will be used to better understand the flow-related needs of endangered and other native species of fish. Additionally, interim flow restrictions on releases from Glen Canyon Dam will continue in water year 1996 while awaiting the issuance of a record of decision on the Glen Canyon Dam EIS.

The following paragraphs discuss the operations of each of the Colorado River mainstem reservoirs in water year 1995 and projected operations in water year 1996.

[1] The data for the flow of the Paria River is preliminary and subject to change.

a. Lake Powell

Lake Powell began water year 1995 at elevation 3654.4 feet with a live content of 17,773,000 acre-feet, only 73 percent of capacity. Unregulated inflow into Lake Powell for water year 1995 was 16,291,000 acre-feet, 136 percent of the long-term average. The peak regulated inflow to Lake Powell was 2,680 cubic meters per second (94,500 cfs) on June 21, 1995.

Lake Powell finished water year 1995 at an elevation of 3687.1 feet and storage of 22,311,000 acre-feet, 92 percent of capacity. Lake Powell rose to about 6 feet from full in August 1995.

During water year 1996, releases greater than the minimum release objective of 8,230,000 acre-feet will only be made if required to equalize the storage between Lakes Powell and Mead or to avoid spills from Lake Powell. Under the most probable inflow conditions, releases of 11,655,000 acre-feet would be made, and the reservoir would lose 399,000 acre-feet of storage. Under the probable maximum inflow scenario, approximately 16,234,000 acre-feet will be released during the water year, and Lake Powell would gain 570,000 acre-feet of storage. This maximum probable inflow would require releases greater than 20,000 cfs for a lengthy period of time. It is estimated that it will take two years of average inflow to refill Lake Powell.

The interim flow restrictions on the daily and hourly releases from Glen Canyon Dam implemented in August 1991 will continue during water year 1996. A Record of Decision on the Glen Canyon Dam EIS will be completed following the audit specified in the 1992 Grand Canyon Protection Act. A monitoring program has been implemented and will continue to measure the effect of interim flow restrictions on downstream resources.

Based on a request from the Transition Work Group of the Glen Canyon Dam EIS, one week of high steady flows for research purposes is planned from Glen Canyon Dam in March/April 1996. These flows would test the effectiveness of the Beach/Habitat-Building flow recommendation in the Glen Canyon Dam EIS and would require bypassing the powerplant.

b. Flaming Gorge Reservoir

Unregulated inflow into Flaming Gorge Reservoir for water year 1995 was 1,854,000 acre-feet, 112 percent of normal. Actual regulated inflow was 1,774,000 acre-feet. The April through July runoff was 1,175,500 acre-feet, or 98 percent of the long-term average. With this inflow, Flaming Gorge gained 601,000 acre-feet) of storage in water year 1995.

In 1995, Flaming Gorge was operated in accordance with the Final Biological Opinion on the Operation of Flaming Gorge (FBOFG), issued in November 1992.

The FBOFG outlines the reservoir operations during the spring, summer and early fall months that may provide an improved habitat for endangered endemic species of fish. To accommodate the FBOFG, a special release was made from Flaming Gorge during May and June. The goal of the special release in 1995 was to maintain flows on the Green River at Jensen, Utah between 17,000 to 18,000 cfs. This target range was established because flooding begins to occur at Jensen when flows exceed 18,500 cfs. Jensen is below the confluence of the Green and Yampa Rivers, and flows from the Yampa River alone in 1995 exceeded 18,000 cfs. Releases from Flaming Gorge were adjusted during this special release between minimum levels of 800 cfs and maximum power levels of 4,300 cfs. During the period when the Yampa River reached its peak, flows from Flaming Gorge were at minimum levels, producing a flow at Jensen of 19,300 cfs.

In 1996, Flaming Gorge will again be operated in accordance with the FBOFG. If water year 1996 runoff is similar to the probable minimum, most probable, or probable maximum inflow scenarios, then high spring releases for three, eight, or in excess of eight weeks duration will likely be made, respectively.

Water year 1996 will be the final year of the five-year study called for in the FBOFG to further examine the flow needs of the endangered fish during the spring and winter months.

In order to observe the effects of high spring flows in occupied habitat above the Yampa-Green confluence and to produce high flows in the Jensen reach of the Green River, the researchers and the Service requested a bypass release from Flaming Gorge Dam. Combined with full powerplant releases, the requested release totaled 8,700 cfs. The proposal met strong opposition from State, county and private interests, particularly those living along the river who would be adversely impacted by the flows through increased power costs, farmland flooding, trout habitat degradation and recreation disruption and facility degradation.

In response to this opposition, the Service withdrew its request for 1996. It has also resumed informational discussions in the Flaming Gorge Work Group and elsewhere in an effort to explain the need for these high releases for research, seek consensus on the long-term operation of the dam and gain support for recovery efforts. The issue of high spring flows and powerplant bypasses will likely continue to be a controversial topic for work group meetings.

c. Fontenelle Reservoir

The Upper Green River Basin, after eight consecutive years of below-normal flows, experienced an above-average year. The April through July runoff into the reservoir during water year 1995 was 938,000 acre-feet, or 115 percent of the long-term average. Fontenelle easily filled in 1995.

Releases of up to 6,121 cfs were made in 1995. Peak inflow into Fontenelle Reservoir was 11,400 cfs on June 19, 1995. Approximately 445,600 acre-feet of water bypassed the turbines in water year 1995.

Because the mean annual inflow of 1,200,000 acre-feet far exceeds the storage capacity of 345,000 acre-feet, significant powerplant bypasses are expected under the most probable and maximum probable inflow scenarios. Additionally, there is little chance that the reservoir will not fill during water year 1996. In order to minimize high spring releases and to maximize downstream fishery resources and power production, the reservoir will probably be drawn down to minimum pool elevation 6463 feet, which corresponds to a volume of 93,000 acre-feet of live storage.

To meet the above-stated operation objectives, a constant release of approximately 1,100 to 1,200 cfs will be made through the fall and winter months. Releases at this level will provide an appropriate level of reservoir drawdown for the 1996 runoff season while ensuring that downstream water rights and M&I needs are met. The reservoir is expected to fill under the most probable and maximum probable scenarios.

d. Navajo Reservoir

Actual inflow to Navajo Reservoir for water year 1995 was 1,503,000 acre-feet, 157 percent of average. Peak inflow into Navajo Reservoir occurred on June 18, 1995 at 10,700 cfs. The reservoir reached a peak elevation of 6079.4 feet on July 28, 1995. The April through July inflow into Navajo Reservoir in water year 1995 was 1,001,800 acre-feet, or 152 percent of average. Navajo Reservoir filled in July 1995.

Section 7 consultation with the Fish and Wildlife Service on the operation of Navajo Dam continued in 1995. Water year 1995 was the fifth year of a 7-year study to evaluate alternative operations of Navajo Reservoir to benefit endangered fish. In accordance with this 7-year study, spring operations of Navajo were modified in 1995, and large releases of up to 5,000 cfs were made during much of May and June to coincide with the peak flows of the Animas River to study the effect of large spring flows on the habitat improvement and spawning success of endangered endemic species of fish. This

Navajo Dam and Reservoir - New Mexico -Bureau of Reclamation photo 1982

resulted in flows of over 12,000 cfs at Bluff, Utah. After the completion of the large spring releases, flows were reduced to approximately 800 cfs for the remainder of the year.

The operation of Navajo Dam has been impacted through the Service's Biological Opinion on the Animas-La Plata Project. In addition to requiring high spring releases to mimic a natural hydrograph, the updated 1996 Biological Opinion required low winter releases to store water in Navajo Reservoir for the following spring release.

Historically, a flow of at least 500 cfs has been attempted to be released to support the quality trout fishery immediately below the dam. The modeling associated with the Animas-La Plata Biological Opinion revealed that in order to produce large spring releases in nearly all years, the winter flows would have to be reduced to about 300 cfs. Test releases of this flow were conducted in January 1996 and will be followed by a 4-month period in the winter of 1996-1997. Results of the tests will be used to evaluate the impacts of changing the flow regime below Navajo Dam.

In 1996, Navajo Reservoir is expected to nearly fill except under the probable minimum inflow scenario. Releases from the reservoir will be held near 600 cfs through the fall and winter months, and large releases will likely be made in May and June in order to improve the habitat and provide better spawning conditions for endangered fish in the San Juan River. The release from Navajo will be closely coordinated with all parties interested in the operation of Navajo Reservoir.

e. Blue Mesa, Morrow Point and Crystal Reservoirs (Aspinall Unit)

In water year 1995, the April through July unregulated runoff into the Aspinall Unit was 1,605,000 acre-feet, or 230 percent of average. Water year 1995 unregulated inflow into Blue Mesa was 1,643,000 acre-feet, or 151 percent of average. Water year 1995 powerplant bypasses were 953,000 acre-feet at Crystal, 285,000 acre-feet at Blue Mesa and 187,000 acre-feet at Morrow Point.

Section 7 consultation with the Service on the operation of the Aspinall Unit continued in 1995. As part of this consultation, a five-year plan was outlined to study the effect of various release patterns on habitat and possibly on the reproductive success and reintroduction of endangered fish in the Gunnison River. Water year 1995 was the fourth year of this 5-year study and was considered a high-flow scenario.

Additionally, the Aspinall Unit was operated as if the draft contract were in place among Reclamation, the National Park Service and the State of

Colorado to deliver water from the Aspinall Unit to the Black Canyon of the Gunnison National Monument. The operation was coordinated with the National Park Service, State of Colorado and the Service and others interested in the operation of the Aspinall Unit.

For water year 1996 operations, Blue Mesa Reservoir will be drawn down to at least an elevation of 7490.0 feet by December 31, 1995 in order to minimize icing problems in the Gunnison River. Blue Mesa will continue to be drawn down through April 1996 to a level that will accommodate the most current probable inflow scenario and accomplish the release objectives with minimum powerplant bypasses.

The minimum release objective of the unit is to meet the delivery requirements of the Uncompahgre Valley Project and to keep a minimum of 300 cfs flowing through the Black Canyon of the Gunnison National Monument. Under the most probable and the maximum probable inflow scenarios, Blue Mesa is expected to fill in the summer of 1996, and flows through the Black Canyon of the Gunnison National Monument are expected to be above the minimum release objective during the summer months. The filling of the reservoir next year will ensure that reasonable specific releases required to study the protection and improvement of habitat for endangered fish can be accommodated. The forecast runoff for the spring of 1996 will be monitored to achieve these objectives. To protect the blue ribbon trout fishery in the Black Canyon and maximize recreation potential, releases during 1996 will be planned to minimize large fluctuations in the daily and monthly flows.

I. FISH AND WILDLIFE

The Upper Colorado River Recovery Implementation Program (UC RIP) for endangered fish is in its seventh year of implementation. In fiscal year 1995, research projects funded totaled almost $3 million. In fiscal year 1995, capital projects totaling almost $10 million were initiated to accomplish physical habitat improvements.

Other UC RIP studies are continuing on the Green River to monitor effects of the recommendations made in the 1992 Biological Opinion for Flaming Gorge Reservoir and to refine the recommendations at the end of a five-year research period. These studies include a series of test flows designed to simulate a wide range of hydrologic conditions. Specific research on the effects of the operation of the Aspinall Unit will continue in 1995. Consultation on the operation of the Aspinall Unit is expected to be initiated in five years. Efforts are still ongoing to acquire water rights for endangered fish on the Yampa and 15-mile reach of the Colorado River from the confluence of the Gunnison River to the Grand Valley Diversion.

As a result of a 1991 Biological Opinion on the Animas-La Plata Project, the Secretary of the Interior signed a MOU with the States of Colorado, Utah and New Mexico and affected Native American Tribes for the development of a Recovery Implementation Program for the San Juan River. The goal of the San Juan River Recovery Implementation Program is to protect and recover the endangered fish in the San Juan River while providing a consultation process for water development consistent with State and Federal laws. Reclamation and BIA committed to fund research starting in fiscal year 1993 on the San Juan River as a condition of the reasonable and prudent alternative for the Animas-La Plata Project opinion and for Blocks 7-8 of the Navajo Indian Irrigation Project. As part of the research being conducted on the San Juan River, Reclamation will conduct a test of low winter flows from Navajo Dam in January 1996. Information will be collected to determine the impacts to downstream resources in preparation for a four-month low flow test to be conducted during the winter of 1996-1997.

Reclamation and the Service are currently undergoing consultation on the Animas-La Plata Project due to new information and the designation of critical habitat for endangered fishes in the Colorado River system, including the San Juan River. A new Biological Opinion is scheduled to be completed in February 1996.

J. APPROPRIATIONS OF FUNDS BY THE UNITED STATES CONGRESS

The funds appropriated for fiscal year 1995 for construction of the CRSP, participating projects and recreational and fish and wildlife activities totaled $30,478,000, including $261,000 for drainage and minor construction. Recreation and fish and wildlife activities received a total of $7,206,000, with $3,835,000 for recreation and the balance for fish and wildlife.

In addition, under the Colorado River Basin Salinity Control Program, $7,270,000 were appropriated for the Grand Valley Unit, $3,050,000 for the Paradox Valley Unit and $698,000 for Stage 1 of the Lower Gunnison Unit.

Table 5, page 67, illustrates a general recapitulation of action by the 104th Congress pertaining to appropriations of funds for the construction program of the CRSP and participating projects.

Table 6, page 68, shows the total funds approved by the United States Congress for the CRSP 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. 32-370 and in 1988 by P.L. 100-563; P.L. 87-485, San Juan-Chama and Navajo Indian Irrigation Projects Act; P.L. 88-568, Savery-Pot Hook, Bostwick Park, and Fruitland Mesa Projects Act; and P.L. 90-537, Colorado River Basin Project Act).

Table 5
COLORADO RIVER STORAGE PROJECT
FISCAL YEAR 1996 PROGRAM

Project and State	Budget Estimate	House Allowance	Senate Allowance	P.L. 104-046 Nov. 13, 1995
Construction Program				
CRSP Participating Projects:				
Animas-La Plata - Colorado	$ 4,879,000	$10,000,000	$10,000,000	$10,000,000
Central Utah Project - Utah				
Bonneville Unit	13,579,000	13,579,000	13,579,000	13,579,000
Dolores Project - Colorado	3,470,000	3,470,000	3,470,000	3,470,000
	$21,928,000	$27,049,000	$27,049,000	$27,049,000
Drainage and Minor Construction				
CRSP Participating Projects:				
Dallas Creek Project - Colorado	-0-	-0-	-0-	-0-
	$ -0-	$ -0-	$ -0-	$ -0-
TOTAL - Upper Colorado River Basin Fund	$21,928,000	$27,049,000	$27,049,000	$27,049,000
Recreational and Fish and Wildlife Facilities				
Recreational Facilities	$ -0-	$ -0-	$ -0-	$ -0-
Fish and Wildlife Facilities	1,920,000	1,920,000	1,920,000	1,920,000
	$ 1,920,000	$ 1,920,000	$ 1,920,000	$ 1,920,000
TOTAL - Colorado River Storage Project	$23,848,000	$28,969,000	$28,969,000	$28,969,000

Table 6

APPROPRIATIONS BY CONGRESS FOR THE 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
1980	81,502,000
1981	125,686,000
1982	130,063,000
1983	132,942,000
1984	161,104,000
1985	163,503,000
1986	97,412,000
1987	110,929,000
1988	143,143,000
1989	174,005,000
1990	163,653,000
1991	145,063,000
1992	92,093,000
1993	69,333,000
1994	46,507,000
1995	23,272,000
1996	27,049,000
TOTAL	$3,030,006,310
Plus: Navajo Indian Irrigation Project Appropriations (FY 1996 funds not yet appropriated)	347,367,494
TOTAL APPROPRIATIONS	$3,377,373,804

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

COLORADO RIVER BASIN
SALINITY CONTROL PROGRAM

(Information relative to the Colorado River Basin Salinity Control Program in the Colorado River Basin has been obtained from the United States Department of the Interior, Bureaus of Reclamation and Land Management, and the United States Department of Agriculture (USDA), Natural Resources Conservation Service.)

Title II of the Colorado River Basin Salinity Control Act, Public Law 93-320 (approved June 24, 1974), directs the Secretary of the Interior to expedite the investigation, planning and implementation of the salinity control program. The program objective is to treat salinity as a Basin-wide problem in order to maintain salinity concentrations at or below 1972 levels in the lower main stem of the river while the Basin States continue to develop their compact-apportioned waters. Specifically, the Act authorizes the construction, operation and maintenance of four salinity control projects (Paradox Valley, Grand Valley, Las Vegas Wash and Crystal Geyser Units) and the expeditious completion of planning reports for 12 other projects. It also requires cost-sharing by non-Federal entities. The Secretary of the Interior, Secretary of Agriculture and Administrator of the EPA are directed to cooperate and coordinate their activities to meet the program objectives.

Public Law 98-569, signed into law on October 30, 1984, amends Public Law 93-320. This law amends the original salinity control program by authorizing construction of additional units by Reclamation and deauthorizing Crystal Geyser because of poor cost effectiveness. The Secretary of Agriculture is directed to establish a major voluntary onfarm cooperative salinity control program. The authorizing legislation provides for cost-sharing and technical assistance to participants for planning and installing needed salinity reduction practices, including voluntary replacement of incidental fish and wild-life values foregone. Participants pay at least 30 percent of the costs to install salinity reduction and wildlife habitat practices. Public Law 98-569 also directs that the BLM develop a comprehensive program for minimizing salt contributions from the 48 million acres of Basin lands that it administers.

Public Law 104-20 was signed into law on July 28, 1995. This law amends the Salinity Act to authorize a new approach to salinity control for Reclamation. Past authorities were unit specific. This amendment authorized Reclamation to pursue salinity control anywhere in the Basin. The amendment also increases Reclamation's appropriation ceiling by $75,000,000 to continue its ongoing efforts to control salinity. The Basin-wide program will request proposals from the public in 1996, rank the proposals based on cost and performance risk factors and fund the most highly ranked projects. Awards are scheduled for next fall.

A. PROGRAM STATUS

1. Bureau of Land Management Salinity Control Program

The July 1987 Report to Congress, "Salinity Control on BLM-Administered Public Lands in the Colorado River Basin," addresses the extent of salt contributed from public lands, current actions and future recommendations to achieve the objective of minimizing salinity contributions while recognizing multiple-use objectives and authorized uses.

During 1991, BLM established a salinity strategy for future project funding and implementation beginning in 1994. The strategy provisions include:

Phase I - ranking of watersheds in the Colorado River Basin by interagency teams.

Phase II - reconnaissance plans of watersheds by interagency multidisciplinary teams who determine which areas have the best potential for improvement. This phase uses Pacific Southwest Interagency Committee (PSIAC) procedures to determine the physical feasibility of potential treatments.

Phase III - comprehensive plans will use the Revised Universal Soil Loss Equation (RUSLE) to estimate soil erosion. Planning will involve all users and interested publics to ensure coordination and implementation; economic analysis is based upon cost-effectiveness and is comparable with Reclamation and USDA procedures.

Phase IV - implementation will be accomplished as rapidly as funding is available.

Phase V - maintenance will assure continued functioning of treatments.

Phase VI - monitoring will be designed for efficient and effective progress evaluations and quantified to assure assumptions used in planning were correct and realistic.

During 1995, the BLM worked in cooperation with the Natural Resources Conservation Service (NRCS), the Arizona Department of Environmental Quality (DEQ) and the Arizona Department of Water Resources to complete identification of high priority watersheds where management could significantly decrease salt yields. With the assistance of the DEQ, 84 watersheds were digitized and entered into a Global Information System, together with soil salinity and other key resource themes. The final 30 watersheds (nearly half of which involve tribal lands) were ranked for salinity control feasibility.

Off-Highway Vehicle (OHV) plans have been implemented on the Glenwood Springs, White River and Grand Junction Resource Areas to reduce movement of saline sediments. Gully plug construction and a shift in grazing practices at White Face Butte are expected to create salt savings. Colorado's Dry Creek Basin Coordinated Resource Management Plan was completed and funded by a grant to the local soil and water conservation district from the EPA. Dry Creek, the highest contributor of salinity to the San Miguel, should experience decreases in total dissolved solids with implementation of the plan. Landowners would participate through the San Miguel Soil Conservation District Board. Also cooperating with BLM are the Colorado Division of Wildlife, Colorado State University Extension, the NRCS and the Board of Land Commissioners.

In the San Juan Basin, the BLM has cooperated, financially and technically speaking, with the U.S. Geological Survey (USGS) and the Aneth Interagency Technical Committee during 1995. The USGS has assisted BLM in southern Nevada, through collection of hydrologic and water-quality information, on Las Vegas and Meadow Valley Washes and at Muddy River. A final report describing water and salt budgets was distributed in 1995.

Most of the Vernal District's efforts were centered on the Monument Butte Oil Field, in the form of private oil and gas company mitigation. In southern Utah, BLM performed fire rehabilitation and seeding on areas recently burned, for modest salt savings. The BLM also monitored at three locations in Sagers Wash for precipitation, runoff, sediment and salt yield.

The BLM continued implementing measures in the Red Creek Watershed of the Wyoming Green River Basin. A mile of two-track road was upgraded and drainage improved. Roads have been a major source of sediment in Red Creek. Union Pacific Resources worked with the BLM to complete five miles of road maintenance north of Rock Springs. This maintenance will reduce sediment movement along ditches and the clogging of culverts.

The BLM has all the necessary pieces in place in order to proceed with implementation of ecosystem management. The concept of ecosystem management recognizes that natural systems must be sustained in order to meet the social and economic needs of future generations. This concept is based on the integration of ecological, economic and social principles for the management of biological systems so that long-term ecological sustainability is safeguarded. The primary goal of BLM in ecosystem management is to develop management strategies that maintain and restore the ecological integrity, productivity, and biological diversity of public lands. Among other things, BLM expects that sustainable ecosystems will provide clean water, productive wildlife habitat and improved recreational and economic opportunities. Ecosystem management provides a comprehensive and powerful framework for meeting the salinity control goals in the Colorado River Basin.

2. Bureau of Reclamation and U. S. Department of Agriculture Salinity Control Program General Investigations and Construction

a. Big Sandy River Unit

Studies have been completed recommending only onfarm improvements. Canal and lateral lining were found to be prohibitively expensive. Most observation wells and monitoring stations have been closed or turned over to the USDA.

USDA funding for salinity control contracts has been available in the Big Sandy River Unit since 1988. The salinity control program in this area focuses on assisting farmers to convert inefficient surface irrigation systems to low-pressure sprinklers. Surface irrigation improvements are being applied on a small portion of the area. As of September 30, 1995, a total of 76 salinity control contracts have been signed by farmers. Participants have installed 73 low-pressure sprinkler systems and 28 miles of underground pipeline and gated pipe. Three surface irrigation systems have been improved on 56 acres. Wildlife habitat practices are also being applied. The annual salt-load reduction achieved to date is 24,640 tons.

b. Colorado River Simulation System (CRSS)

The CRSS is used to evaluate the impacts of present and future water development in the Basin. Data are collected on flows, quality and water use throughout the Basin to determine, among other things, salinity effects. The CRSS is also used to evaluate compliance with the salinity standards, both present and future. Salinity funds are used to support the data collection, data analysis and model development.

c. Demonstration Programs

Under the authorities of the Salinity Control Act, Reclamation and the USDA have been demonstrating new irrigation technologies to conserve water and improve salinity. Participating farmers have been given one surge valve to test and have been trained in its use. As a result, many farmers have purchased their own valves without any further government participation. Even without considering the value of these private purchases, the cost-effectiveness of this program has been monitored and verified by Colorado State University to be less than $30 per ton (the cost of monitoring is included in the cost per ton).

In 1990, Reclamation was asked by the USDA to participate in a 2-year surge irrigation research and demonstration program in the Grand Valley. Due

to its outstanding success, Reclamation and USDA will continue this program as part of Reclamation's ongoing construction program in the Grand Valley Unit. In 1992, the research and demonstration portion of the program was moved to the Uncompahgre Valley, Colorado. The program was started in the Grand Junction area, progressed through the Uncompahgre Valley and into the Price-San Rafael River Basins.

d. Dolores/McElmo Creek Unit

In 1984, Public Law 98-569 authorized integration of the McElmo Creek salinity features into the Dolores Project. The plan combined existing canals into the new Towaoc-Highline Canal (a Dolores Project feature), lined existing non-project canals and replaced a non-project canal and open lateral system with a pipe lateral system. All salinity features are essentially complete.

USDA initiated implementation in this unit in 1990. As of September 30, 1995, 192 salinity control contracts have been signed with farmers. In this unit, surface irrigation systems are being converted to predominately side- roll sprinkler systems. Where feasible, gravity pressure systems are installed. To date, 197 sprinkler systems and 103 miles of underground and gated pipe have been installed. In addition, 60 surface irrigation systems have been improved. The annual salt-load reduction achieved is 11,000 tons. Close coordination of the onfarm salinity control actions with the Reclamation canal and lateral construction program continues.

e. Glenwood-Dotsero Springs Unit

This unit would desalt saline springs through a cooperative agreement with the Glenwood Salt Company at a cost of $97 per ton for up to 73,000 tons per year. The project sponsor is investigating alternative technologies and ways to reduce the cost to more competitive levels.

f. Grand Valley Unit

This unit was authorized by Public Law 93-320 in 1974 to reduce delivery-system seepage by lining canals and placing laterals into pipe. Stage I of the unit has been completed. Stage II of the unit was originally divided into over 20 increments, most of which have been deferred indefinitely due to poor cost effectiveness. Of the remaining cost-effective increments, the West End Canal and laterals have been completed. Construction of the Middle Government, Price and Stubb laterals continues. Construction of Reach 1b has been completed. Construction of Reach 1a will be deferred due to poor cost effectiveness and insufficient construction ceiling. All five increments organized under the Grand Valley Irrigation Company have been deferred due to a stockholder vote against participation in the program.

In its 1977 memorandum to the Service on the Grand Valley Unit, Reclamation agreed to underwrite the USDA habitat replacement requirements (up to 1,200 acres). Because of recent shortfalls in the USDA wildlife habitat replacement program, Reclamation and the Colorado River Basin Salinity Control Forum have agreed to implement a portion of this 1,200-acre requirement to bring the USDA habitat replacement program up to date. Reclamation plans will expand on its Horsethief Canyon Wildlife Area development along the Colorado River.

USDA salinity control actions were initiated in the Grand Valley in 1979 under existing authorities. In 1987, funding became available for implementation under the USDA Colorado River Salinity Control Program. In this unit, the emphasis is on improvement of surface irrigation systems and conversion to drip and microjet irrigation on vineyards and orchards. As of September 30, 1995, 508 miles of underground pipelines, gated pipe and concrete-lined ditch have been installed; 5,165 acres of land have also been leveled. Installation of surge irrigation systems is rapidly increasing. This method of irrigation has proven to be a very cost-effective way to reduce salt loading. In addition, wildlife habitat practices are being applied. Technical assistance is provided to all participants on irrigation water management. The annual salt-load reduction achieved is 66,780 tons.

g. Implementation of Inspector General's Recommendations

In response to the Inspector General's Audit recommendations 4, 5 and 6 contained in Audit Report No. 93-I-810 dated March 1993, the Commissioner of Reclamation committed (memorandum dated March 12, 1993) to:

1. *Monitor and verify the effectiveness of the ongoing salinity control efforts of the Departments of the Interior and Agriculture.* An overall plan of study has been prepared. Units to be monitored and evaluated include: Meeker Dome, Uintah Basin, Dolores/McElmo, Grand Valley, Lower Gunnison and Las Vegas Wash.
2. *Expedite the completion of salinity control studies on lands administered by the BLM.* This recommendation is being implemented through cooperative studies between the BLM and Reclamation utilizing each agency's respective expertise in rangeland management and salinity analysis. Studies include Non-Point Source Control Studies in Sagers Wash, Castle Peak and North Desert.
3. *Seek changes in the Salinity Control Act to simplify the process for obtaining approval of new cost-effective projects.* Legislation has been drafted by Reclamation to implement this recommendation.

h. Lower Gunnison Basin Unit

In 1984, Public Law 98-569 authorized the implementation of Stage I of the unit. Stage I consists of two parts: (1) a plan to eliminate winter stockwatering from the canal system and (2) selective lining of the canal and lateral system. Both improvements would reduce seepage from the delivery system.

Winter Water - Most of the facilities were completed in 1995. The winter water facilities eliminate about 39,000 tons per year of salt loading from the river by eliminating winter stockwatering from the canal system and replacing it with domestic water service. The cost effectiveness of this portion of the project is $58 per ton.

East Side Laterals - Extensive work with the water users to restructure construction management, eliminate O&M payments by the government, selectively implement only the most cost-effective portions of the plan, and combine and straighten the alignments of the lateral-lining program has reduced its estimated cost from $147 to about $70 per ton of salt removed. This work will compete for funding within Reclamation's new program.

Implementation of the USDA salinity control program began in 1988. As of September 30, 1995, 267 contracts have been signed by participants. Salinity control measures in this unit focus on improving surface irrigation systems by land leveling, lining or placing earthen laterals and onfarm ditches in pipelines, and installing surge irrigation systems. Since the program was initiated, 147 miles of pipelines, concrete-lined ditch, and gated pipe have been installed. In addition, 431 surface irrigation systems have been improved and 57 sprinkler systems installed. Installation of surge irrigation systems is rapidly increasing. Microjet, drip and other specially-designed systems are being installed on orchards, vineyards, and vegetable crops. The application of wildlife habitat practices is on schedule. A salt-load reduction of approximately 26,677 tons per year has been achieved.

i. Navajo Indian Irrigation Project Return Flow Study

This project may contribute significant amounts of salt to the river system through irrigation return flows. Planning studies estimated that the project would return over 400,000 tons of salt per year to the San Juan River. Water quality surveys will be conducted to determine if planning estimates were correct. Control methods may be evaluated in the future.

j. Paradox Valley Unit

This unit was authorized by Public Law 93-320 in 1974 to intercept natural saline springs that surface in the Dolores River channel. The springs are

approximately 100 times more saline (260,000 mg/L) than irrigation return flows. The original plan was to evaporate the saline spring water using a surface reservoir once it was collected. However, due to EPA objections, this plan was modified to provide for disposal of the brine through deep-well injection.

After drilling the injection well (16,000 feet) and testing the receiving formation, chemical compatibility problems were discovered (at depth). The Paradox brine will be diluted with fresh water to control this problem. A treatment process is being investigated. Laboratory tests indicate that the process works. A pilot test of the process is scheduled for 1996.

Fiscal year 1995 funds were used to complete the deep-well injection test. Results obtained indicate that the injection zone is physically capable of receiving brine for at least 10 years. The test pumps will be replaced with continuous service pumps in 1996. The facility should be in production later in 1996.

k. Price-San Rafael Rivers Unit

This unit would remove up to 161,000 tons of salt per year at $39 per ton in a cooperative irrigation improvement program with USDA and local irrigators. Over 50 percent of the onfarm program would be cost-shared by non-Federal entities in recognition of local benefits. The plan calls for Reclamation to combine laterals into a closed pipe to create a pressurized system for USDA to tap for sprinkler irrigation. The program would greatly reduce subsurface irrigation return flows, improving salinity. The plan also includes elimination of winter water stockwatering from the canal and lateral system. This project may compete for funding from Reclamation's new program. No further activities in the project are planned until the Bureau of Reclamation and USDA future funding decisions are made and wildlife, wetland habitat and depletion charge payment issues are resolved. As of this time, the Record of Decision has not been issued for the project.

l. San Juan River Unit

The Hammond Area portion of the unit would remove 27,700 tons of salt per year at a cost of $42 per ton through a canal lining program on selected portions of the Hammond Project, a Reclamation project. A Planning Report/Environmental Assessment/Finding of No Significant Impact has been completed.

A salinity investigation has been completed on irrigated lands along the San Juan River in New Mexico from the vicinity of Fruitland, westward to Cudei. This area, consisting of about 8,400 irrigated acres, lies within the boundaries of the Navajo Nation.

Findings from the investigation were published in a verification report in July 1993. The findings indicate that irrigation in the unit is contributing to increased salt loading of the San Juan River which ultimately flows into the Colorado River. It is recommended that the unit be studied further to produce an irrigation plan that will reduce irrigation return flow and salt loading to the San Juan River. No progress was made in fiscal year 1995 on any planning activities in this potential project due to uncertainty of future funding of the USDA program.

m. Uintah Basin Unit

This unit would remove 25,500 tons of salt per year at a cost of $88 per ton through selective lining of existing canals and laterals on private and Indian lands in the Uintah Basin. A final Planning Report/EIS has been completed and filed. The Department of the Interior reviewed the report and forwarded it to the Office of Management and Budget in 1991. This unit may compete for funding from Reclamation's new program.

The USDA program has been underway in the Uintah Basin since 1980 when implementation was initiated under existing USDA authorities. Funding under the USDA salinity control program began in 1987. As of September 30, 1995, a total of 1,885 salinity contracts and Agriculture Conservation Program salinity and long-term agreements have been signed with participants. In this unit, the program focuses on assisting farmers to convert inefficient surface irrigation systems to sprinklers and replace earthen laterals and ditches with pipelines to reduce seepage. A high priority is given to working with groups of farmers where replacement of inefficient earthen laterals with pipelines will develop gravity pressure for onfarm sprinkler systems. To date, 794 miles of pipeline have been installed and 1,632 sprinkler systems have been applied on 84,500 acres. Irrigation water management is being applied on 70,446 acres. Participants are also installing wildlife habitat practices. The annual salt-load reduction achieved since the program started is 83,648 tons.

n. Las Vegas Wash Unit

Reclamation has discontinued efforts to develop and implement further salt reduction strategies for the Las Vegas Wash Unit. A strategy is apparently not available at this time that is cost effective, technically feasible and publicly acceptable. A final report was published in September of 1989. Quarterly water quality monitoring is continuing.

WEATHER MODIFICATION

Research experiments and operational cloud seeding projects indicate that weather modification has the potential to increase mountain snowfall, thus augmenting water in the Colorado River Basin. Seeding winter orographic clouds to increase snowfall may be the best major alternative to help meet long-range 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.

Prior to initiating operational cloud seeding, however, demonstration of the benefits including water production and its associated environmental and social impacts needs to be conducted. Because of the circumstances brought about by six years of sustained drought in the Colorado River Basin, the Basin States are renewing efforts to seek congressional approval of such a practical demonstration project.

The Upper Colorado River Commission has urged Congress to appropriate funds for Reclamation to maintain and improve the Federal capability in precipitation management research, further the transfer of this technology to operational plans, enable acceptance of State commitments for cooperative applied research programs and further the understanding of global climatological changes. The Commission has also urged Congress to obtain appropriate assurances that the Department of the Interior is giving high priority to delineating and implementing, in a timely manner, the most appropriate means of augmenting the Colorado River to satisfy the national obligation of meeting the Mexican Water Treaty, as mandated by the Colorado River Basin Project Act, so as not to diminish the already deficient river supply available to the Colorado River Basin States.

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.

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 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, Bureau of Land Management, Geological Survey, Bureau of Indian Affairs, Western Area Power Administration, the National Weather Service 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 recognition 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 problems 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.

UPPER COLORADO RIVER COMMISSION

REPORT OF INDEPENDENT AUDITOR
AND
FINANCIAL STATEMENTS

June 30, 1995

UPPER COLORADO RIVER COMMISSION

ANNUAL FINANCIAL REPORT

June 30, 1995

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Ulrich & Associates, P.C.
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Charles E. Ulrich, C.P.A.
Douglas G. Cannon
Roger L. Nuttall, C.P.A.
Michael E. Ulrich, C.P.A.

INDEPENDENT AUDITORS' REPORT

The Commissioners of the
Upper Colorado River Commission
Salt Lake City, Utah

We have audited the accompanying general purpose financial statements of the Upper Colorado River Commission as of and for the year ended of June 30, 1995. These general purpose financial statements are the responsibility of the Commission's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the general purpose financial statements referred to above present fairly, in all material respects, the financial position of the Upper Colorado River Commission, as of June 30, 1995, and the results of its operations and changes in fund balance for the year then ended in conformity with generally accepted accounting principles.

Our audit was made for the purpose of forming and opinion on the general purpose financial statements taken as a whole. The supplemental schedule of cash receipts and disbursements - general fund and the supplemental schedule of expenses - budget and actual, are presented for purposes of additional analysis and are not a required part of the general purpose financial statements of the Upper Colorado River Commission. Such information has been subjected to the auditing procedures applied in the audit of the general purpose financial statements and, in our opinion, is fairly stated in all material respects in relation to the general purpose financial statements taken as a whole.

Ulrich & Associates, P.C.

July 21, 1995

UPPER COLORADO RIVER COMMISSION
Combined Balance Sheet
June 30, 1995

With Comparative Totals for June 30, 1994

	Governmental Fund Type	Account Group		Totals (Memorandum Only)	
	General	General Fixed Assets	General Long-Term Debt	1995	1994
ASSETS					
Petty cash	$ 25	-	-	25	25
Cash in bank	58,473	-	-	58,473	18,812
Certificates of deposit	145,287	-	-	145,287	165,775
Interest receivable	7,129	-	-	7,129	6,781
Property and equipment:					
Land and land improvements	-	26,366	-	26,366	26,366
Building	-	56,919	-	56,919	56,919
Furniture and fixtures	-	51,863	-	51,863	45,791
Engineering equipment	-	1,411	-	1,411	1,411
Upper colorado river basin Relief model	-	5,938	-	5,938	5,938
Amount to be provided for payment of compensated absences	-	-	8,153	8,153	6,446
Total assets	$ 210,914	142,497	8,153	361,564	334,264
LIABILITIES AND FUND EQUITY					
Liabilities:					
Accounts payable	$ 276	-	-	276	2,978
Prepaid assessment	36,070	-	-	36,070	-
Obligation for compensated absences	7,541	-	8,153	15,694	13,987
Total liabilities	43,887	-	8,153	52,040	16,965
Fund equity:					
Investment in general fixed assets	-	142,497	-	142,497	136,425
Fund balance	167,027	-	-	167,027	180,874
Total fund equity	167,027	142,497	-	309,524	317,299
Total liabilities and fund equity	$ 210,914	142,497	8,153	361,564	334,264

See accompanying notes to financial statements.

UPPER COLORADO RIVER COMMISSION
General Fund
Statement of Revenues, Expenditures and Changes in Fund Balance – Budget and Actual

Year ended June 30, 1995

	Budget	Actual	Favorable (Unfavorable) Variance
Revenues:			
Assessments	$ 245,300	245,300	-
Interest	-	12,872	12,872
Other	-	1,808	1,808
Total revenues	245,300	259,980	14,680
Expenditures:			
Personal services	232,025	232,022	3
Travel	16,500	11,522	4,978
Current operating expenditures	25,975	24,211	1,764
Capital outlay	8,500	6,072	2,428
Contingencies	5,000	-	5,000
Total expenses	288,000	273,827	14,173
Excess of revenues over (under) expenditures	(42,700)	(13,847)	28,853
Fund balance, June 30, 1994	180,874	180,874	-
Fund balance, June 30, 1995	$ 138,174	167,027	28,853

See accompanying notes to financial statements

UPPER COLORADO RIVER COMMISSION
Notes to Financial Statements
June 30, 1995

(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 Basin, namely Colorado, New Mexico, Utah and Wyoming. The Commission consists of one commissioner representing each of the four states and one representing the United States of America. The activities of the Commission are conducted for the purpose of promoting and securing agricultural and industrial development of the Upper Basin's water resources.

The Commission is the reporting entity and it approves the budget. The Commission hires a director and other personnel to administer the day-to-day activities of the Commission.

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

Basis of Accounting

The financial statements are presented on the modified accrual basis of accounting. Under the modified accrual basis of accounting, expenditures are recorded at the time liabilities are incurred. Revenues are recognized as received except for revenue susceptible to accrual and revenues of a material amount that have not been received at the normal time of receipt. Revenues susceptible to accrual are those that are both measurable and available to finance the Commission's operations during the year.

Budgets and Budgetary Accounting

Annual budgets are prepared on the modified accrual basis of accounting and adopted as required by law. The Commission approves the annual budget in total and by major sub-items as identified in the statement of revenues, expenditures and changes in fund balance - budget and actual. The Executive Director has authority to transfer budget accounts within the sub-items with Commissioner approval required to transfer monies between expenditure categories. The budget amounts shown in the financial statements are the final authorized amounts as revised during the year.

(1) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONT.)

Assessments

The Commission's major source of revenue consists of 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 is recorded as capital outlay in the general fund at time of purchase and capitalized at cost in the general fixed assets account group. 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 in the general fixed assets account group.

Compensated Absences

According to Commission policy each employee accrues annual leave based on years of service with the commission. Employees may accumulate a maximum of 30 days of unused annual leave, which is paid in cash upon termination of employment. The Commission's secretary may grant additional carryover to employees provided that: (1) the employee requests the carryover in writing prior to June 30, and (2) the employee uses the additional carryover within 90 days of the start of the fiscal year.

The Obligation for Compensated Absences has been broken down into two components; current and non-current. The current portion is classified as part of the general fund and is an estimate of the amounts that will be paid within the next operating year. The non-current portion is classified as part of the General Long-Term Debt Account Group because the obligation is not expected to be paid from spendable available resources within the next operating year.

Total Column on the Combined Statements

The total column on the combined statement is captioned "Memorandum Only" to indicate that it is presented only to facilitate financial analysis. The data in this column does not present financial position in conformity with generally accepted accounting principles. Neither is such data comparable to a consolidation.

(2) CERTIFICATES OF DEPOSIT AND CASH

Time certificates of deposit held at three different banks at June 30, 1995 consist of:

	Amount	Maturity Date
5.45% certificate	$ 99,966	July 11, 1995
3.25% certificate	12,334	July 14, 1995
4.90% certificate	32,987	August 19, 1995
	$ 145,287	

The Commissioners have authorized the Commission to deposit funds in demand accounts at the First Security Bank of Utah and purchase time certificates of deposit at any United States bank only to the extent the deposits are covered by Federal Depository Insurance.

At year end, the carrying amount of the Commission's cash deposits and certificates was $203,760 and the balance per the bank statements was $222,999. All deposits as well as certificates are fully insured.

(3) CHANGES IN INVESTMENT IN GENERAL FIXED ASSETS

Changes in the components of general fixed assets are as follows:

	Fixed Assets July 1, 1994	Additions	Retirements and Disposal	Fixed Assets June 30, 1995
Land and Land improvements	$ 26,366	-	-	26,366
Building	56,919	-	-	56,919
Furniture and fixtures	45,791	6,072	-	51,863
Engineering equipment	1,411	-	-	1,411
Upper Colorado River Basin relief model	5,938	-	-	5,938
	$ 136,425	6,072	-	142,497

(4) PREPAID ASSESSMENT

Prior to year end the State of Wyoming paid its Fiscal year 1995-1996 assessment.

(5) OTHER INCOME

Other income consisted of the following at June 30, 1995:

Waternews Subscription fees	$ 1,725
Miscellaneous	83
	$ 1,808

(6) PENSION PLAN

The Commission's employee pension plan is a 401(K) defined contribution plan which covers all of the present employees. The Commission contributes 7% of the employees' gross salaries. In addition, the Commission will match contributions made by employees up to a maximum of 3%. Accordingly, the maximum allowable contribution by the Commission is 10%. The employees are allowed to contribute up to the maximum allowed by law. The employer's share of the pension plan contribution for the year ended June 30, 1995 was $19,715, which includes $645 of administrative costs.

UPPER COLORADO RIVER COMMISSION
Supplemental Schedule of Cash Receipts and Disbursements – General Fund

Year ended June 30, 1995

Cash at July 1, 1994		$ 184,612
Cash receipts:		
Assessments	281,370	
Interest on time deposits	12,524	
Waternews subscriptions	1,725	
Miscellaneous income	83	295,702
		480,314
Cash disbursements:		
Personal services	232,022	
Travel	14,104	
Current operating expenditures	24,332	
Capital outlay	6,072	(276,530)
Cash at June 30, 1995		$ 203,784

UPPER COLORADO RIVER COMMISSION
Expense Summary Schedules
Supplemental Schedule of Expenses – Budget and Actual

Year ended June 30, 1995

	Budget	Actual	Favorable (Unfavorable) Variance
Summary of Personal Services With Budget Comparisons			
Administrative salaries	$ 102,100	102,100	-
Legal salary	45,500	45,500	-
Engineering salary	43,100	43,100	-
Social security	13,375	13,478	(103)
Pension fund contributions	19,700	19,715	(15)
Employee medical insurance	6,450	6,413	37
Janitorial	1,800	1,716	84
	232,025	232,022	3
Summary of Current Operating Expenditures with Budget Total Comparison			
Accounting and auditing		1,700	
Telephone and telegraph		2,511	
Insurance		2,199	
Printing		2,824	
Office supplies, postage and printing		3,569	
Library		5,235	
Meetings, including reporter		693	
Utilities		3,339	
Building repair and maintenance		1,271	
Memberships and meeting registrations		870	
	* $ 25,975	24,211	1,764

* The budgeted amount for operating expenditures is not classified into specific expenditures. The total budgeted amount is shown as a comparison against total actual expenditures.

APPENDIX B

BUDGET

FISCAL YEAR ENDING JUNE 30, 1995

BUDGET

UPPER COLORADO RIVER COMMISSION
Fiscal Year ending June 30, 1997
As Recommended July 18, 1995

PERSONAL SERVICES	
Administrative Salaries	
Executive Director	$ 84,500
Administrative Secretary	23,700
Professional Services	
Legal Counsel	48,200
Chief Engineer	45,600
Janitor	2,000
Pension Trust	21,000
Social Security	14,300
Health Insurance	7,500
	$246,800
TRAVEL	$ 16,500
CURRENT EXPENSES	$ 27,500
CAPITAL OUTLAY	$ 1,200
CONSULTANT FEES	0
CONTINGENCIES	$ 5,000
	$297,000
TOTAL BUDGETED EXPENSES	
To be funded from surplus	$ 29,100
Total Assessments for FY 1997	267,900
	$297,000

ASSESSMENTS 1997

Colorado	51.75%	$138,640
New Mexico	11.25%	30,140
Utah	23.00%	61,620
Wyoming	14.00%	$ 37,500
		$267,900

APPENDIX C
TRANSMOUNTAIN DIVERSIONS
UPPER COLORADO RIVER BASIN
1991-1995

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN IN COLORADO
1986-1995

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995[1]	10 YEAR AVERAGE
TO PLATTE RIVER BASIN											
Grand River Ditch	24,481	17,640	19,050	18,630	20,980	18,410	21,360	24,770	17,870	19,808	20,320
Eureka Ditch	60	60	60	60	60	60	212	95	0	180	85
Alva B. Adams Tunnel	273,800	246,200	258,000	273,200	213,700	199,200	198,300	206,400	233,200	238,500	234,050
Berthoud Pass Ditch	911	271	710	843	623	624	1,010	1,260	874	815	794
Moffat Water Tunnel	60,720	50,130	75,530	66,530	67,390	64,900	49,890	34,470	43,310	24,220	55,709
Boreas Pass Ditch	0	0	0	0	0	82	175	334	83	0	67
Vidler Tunnel	493	396	758	975	660	1,240	1,150	1,150	465	760	805
Harold D. Roberts Tunnel	980	14,640	53,060	74,380	59,420	65,850	85,530	124,100	73,890	52,176	60,403
Straight Creek Tunnel	N/A	N/A	N/A	N/A	370	269	363	408	330	320	343
TO ARKANSAS RIVER BASIN											
Hoosier Pass Tunnel	11,940	8,830	9,680	10,720	11,200	12,400	11,570	11,186	9,188	4,532	10,125
Columbine Ditch	1,920	1,210	1,050	1,420	746	1,602	1,610	2,478	1,470	2,390	1,590
Ewing Ditch	1,070	813	1,030	786	785	869	934	1,622	796	1,410	1,012
Wurtz Ditch	3,860	2,200	881	2,070	1,702	2,260	2,173	4,031	2,073	4,241	2,549
Homestake Tunnel	16,930	18,540	28,690	26,840	27,480	638	26,910	28,110	24,230	23,505	22,187
Twin Lakes Tunnel	50,600	18,110	32,420	37,410	41,368	42,980	41,970	62,664	42,850	33,120	40,349
Charles H. Boustead Tunnel	31,750	3,340	14,280	37,240	47,270	61,130	57,060	88,740	55,040	91,300	48,715
Busk-Ivanhoe Tunnel	5,510	3,600	4,270	3,760	5,170	5,660	5,210	4,960	4,100	5,817	4,808
Larkspur Ditch	220	77	60	30	8	95	205	334	146	116	129
TO RIO GRANDE BASIN											
Tarbell Ditch	0	55	195	344	79	0	344	109	207	68	140
Tabor Ditch	1,330	1,310	384	487	627	997	684	1,060	639	1,240	876
Treasure Pass Ditch	411	0	223	163	53	9	63	113	94	0	113
Don La Font Ditches No. 1 & 2	13	361	754	339	138	473	480	0	364	50	297
Williams Creek-Squaw Pass Ditch	242	530	232	238	205	235	475	441	279	374	325
Pine River-Weminuche Pass Ditch	961	575	866	508	451	257	520	246	172	672	523
Weminuche Pass Ditch	3,150	16	419	878	960	685	2,630	0	0	0	874
TOTAL	511,352	388,904	502,602	558,051	501,445	480,925	510,828	599,101	511,670	505,614	507,187

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN IN COLORADO TO RIO GRANDE BASIN IN NEW MEXICO
1986-1995

San Juan-Chama Diversions	89,180	83,050	63,590	51,416	71,710	119,440	87,090	98,800	82,300	85,100[1]	83,168

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN IN UTAH [2]
1986-1995

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995[1]	10 YEAR AVERAGE
TO GREAT BASIN											
Fairview Tunnel	3,194	2,260	1,124	1,988	2,555	3,460	1,525	4,474	2,049	2,445	2,507
Ephraim Tunnel	1,625	901	549	533	2,682	2,751	1,808	4,007	1,004	2,629	1,849
Spring City Tunnel	1,869	1,490	683	844	2,033	2,149	1,632	3,391	1,334	2,670	1,809
Strawberry Tunnel	48,441	83,192	89,138	88,797	82,006	68,331	62,342	85,034	87,960	48,701	74,394
Hobble Creek Ditch	240	629	633	427	510	552	369	1,051	694	825	593
Strawberry-Willow Creek Ditch	1,412	739	743	1,113	1,773	1,342	2,041	2,171	962	953	1,325
Strawberry Tunnel-Deer Ck. Exchange	N/A	N/A	N/A	26,562	33,225	20,588	45,416	39,979	6,176	N/A	17,195
Duchesne Tunnel	11,094	23,239	25,025	25,609	29,125	21,062	15,678	35,648	22,817	39,859	24,916
TOTAL	**67,875**	**112,450**	**117,895**	**145,873**	**153,909**	**120,235**	**130,811**	**175,755**	**122,996**	**98,082**[1]	**124,588**

TRANSMOUNTAIN DIVERSIONS FROM GREAT BASIN IN UTAH TO COLORADO RIVER BASIN IN UTAH
1986-1995

Tropic and East Fork Canal	5,724	6,155	6,145	3,717	3,332	3,612	5,325	6,509	4,801	7,022	5,234

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN TO NORTH PLATTE BASIN IN WYOMING [3]
1986-1995

	12,107	8,379	7,044	12,489	13,894	16,462	12,450	23,422	14,405	12,144 [1]	13,280

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN[4]
1986-1995

TOTAL	**674,790**	**586,628**	**684,986**	**764,112**	**737,626**	**733,450**	**735,654**	**890,569**	**726,571**	**693,918** [1]	**722,850**

[1] Based on preliminary streamflow records obtained from U. S. Bureau of Reclamation, U. S. Geological Survey, Central Utah Water Conservancy District, Colorado Division of Water Resources, New Mexico Interstate Stream Commission, and Wyoming State Engineer's Office - subject to revision.

[2] Streamgaging of the following small transmountain diversions in Utah was discontinued in 1959 but the flow is estimated to be as follows: Candland Ditch - 200 acre-feet, Horseshoe Tunnel - 600 acre-feet, Larsen Tunnel - 690 acre-feet, Coal Fork Ditch - 260 acre-feet, Twin Creek Tunnel - 220 acre-feet, Cedar Creek Tunnel - 340 acre-feet, Black Canyon Ditch -290 acre-feet, Reeder Ditch - 250 acre-feet, Madsen Ditch - 40 acre-feet, and John August Ditch - 200 acre-feet. These diversions are from the San Rafael River in the Colorado River Basin to the Great Basin in Utah and total about 3,100 acre-feet annually.

[3] Does not include diversions for enlargement Continental Divide Ditch which services 437 acres or Ranger Ditch which services 391 acres. Neither ditch is gaged, and suitable estimates of diversion amounts are currently unavailable.

[4] The total diversion is the sum of all diversions except Tropic and East Fork Canal which imports water to the Colorado River Basin.

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION
Honoring Carroll E. Multz

WHEREAS, Carroll E. Multz has worked in the private practice of law for many years in Grand Junction, Colorado; and

WHEREAS, Carroll E. Multz was appointed United States Commissioner and Chairman of the Upper Colorado River Commission by President George Bush on July 1, 1992 and served in that capacity until May 1, 1995; and

WHEREAS, Carroll E. Multz ably and honorably performed his duties with the Commission with respect for the integrity and abilities of his fellow Commissioners, Commission staff and other interested parties with whom he was associated in the affairs of the Upper Colorado River Commission:

NOW, THEREFORE, BE IT RESOLVED that the Upper Colorado River Commission, at its Adjourned Regular Meeting held in Las Vegas, Nevada on July 18, 1995 does hereby express the gratitude and appreciation of the Commission and its staff for the service rendered by Carroll E. Multz as United States Commissioner and Chairman of the Upper Colorado River Commission;

BE IT FURTHER RESOLVED that the Upper Colorado River Commission, its advisers and staff sincerely wish Carroll E. Multz and his family the best of health, happiness and prosperity in all of their future endeavors;

BE IT FURTHER RESOLVED that the Executive Director of the Upper Colorado River Commission is hereby directed to send a copy of this Resolution to Mr. Carroll E. Multz and to the President of the United States.

CERTIFICATE

I, WAYNE E. COOK, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the above Resolution was unanimously adopted by the Upper Colorado River Commission at an Adjourned Regular Meeting held in Las Vegas, Nevada on July 18, 1995.

Wayne E. Cook

WAYNE E. COOK
Executive Directory and Secretary