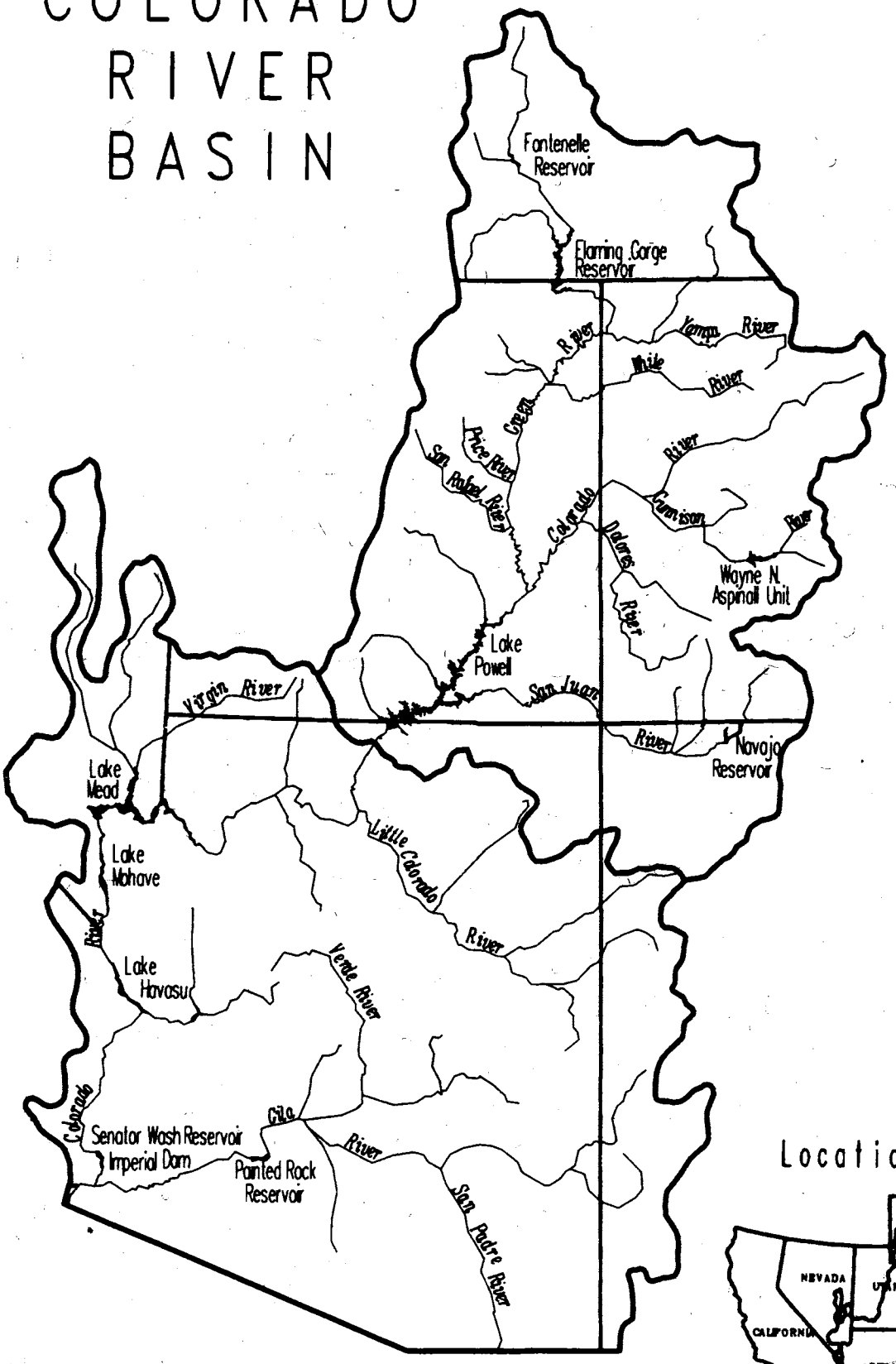
OPERATION OF THE COLORADO RIVER BASIN 1991

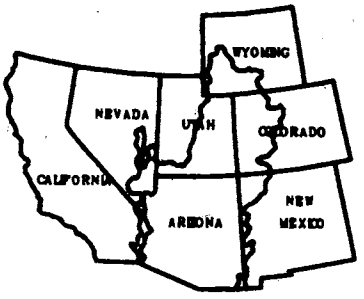
PROJECTED OPERATIONS 1992

21st ANNUAL REPORT

COLORADO RIVER BASIN



Location Map



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United States
Department of the Interior
Bureau of Reclamation

January 1992

Prepared pursuant to the Colorado River
Basin Project Act of 1968
Public Law 90-537

Introduction

The operation of the Colorado River Basin during the past year and the projected operation for the current year reflect flood control, river regulation, beneficial consumptive uses, hydroelectric power generation, water quality control, enhancement of fish and wildlife, recreation, and Colorado River Compact requirements.

Storage and release of water from the Upper Basin reservoirs are governed by all applicable laws and agreements concerning the Colorado River, including the impoundment and release of water in the Upper Basin required by Section 602(a) of the Colorado River Basin Project Act of September 30, 1968 (Public Law 90-537). The operation of the Lower Basin reservoirs reflects Mexican Treaty obligations and Lower Basin contractual commitments.

Nothing in this report is intended to interpret the provisions of the Colorado River Compact (45 Stat. 1057), the Upper Colorado River Basin Compact (63 Stat. 31), the Water Treaty of 1944 with the United Mexican States (Treaty Series 994, 59 Stat. 1219), the United States/Mexico agreement in Minute No. 242 of August 30, 1973, (Treaty Series 7708; 24 UST 1968), the Decree entered by the Supreme Court of the United States in Arizona v. California et al. (376 U.S. 340), the Boulder Canyon Project Act (45 Stat. 1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 U.S.C. 618a), the Colorado River Storage Project Act (70 Stat. 105; 43 U.S.C. 620), the Colorado River Basin Project Act (82 Stat. 885; 43 U.S.C. 1501), the Colorado River Salinity Control Act (88 Stat. 266; 43 U.S.C. 1951), or the Hoover Power Plant Act of 1984 (98 Stat. 1333).

Authority for Report

Pursuant to the Colorado River Basin Project Act (Public Law 90-537) of 1968, I am pleased to present to the Congress, and to the Governors of the Colorado River Basin States, the twenty-first annual report on the Operation of the Colorado River Basin.

This report describes the actual operation of the reservoirs in the Colorado River drainage area constructed under the authority of the Colorado River Storage Project Act, the Boulder Canyon Project Act, and the Boulder Canyon Project Adjustment Act during water year 1991, and the projected operation of these reservoirs during water year 1992, under the "Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs," (Operating Criteria) published in the Federal Register June 10, 1970.

The Operating Criteria and Section 602 of Public Law 90-537 mandate consultation with representatives of the Governors of the seven Basin States and the Upper Colorado River Commission relative to annual plans for operation of the Colorado River reservoirs. The 1991 Annual Operating Plan (AOP) was prepared by the Bureau of Reclamation in consultation with the Governors' representatives of the seven Basin States, the Upper Colorado River Commission, and others.

Manuel Lujan, Jr., Secretary
United States Department of the Interior

Actual Operations Under Criteria - Water Year 1991

Climatic conditions in the Colorado River Basin for water year 1991, as in 1988, 1989, and 1990 were dry. Precipitation for the water year was approximately 95 percent of average. The extended drought, however, and the associated soil moisture deficit caused spring runoff in the Upper Basin to be considerably below average. Unregulated April-July inflow to Lake Powell was 5,286,000 acre-feet, 65 percent of the long-term average. Unregulated runoff is the inflow to Lake Powell adjusted for the change in storage of the upstream reservoirs. Lake Powell recorded a peak regulated inflow of 38,000 cubic feet per second on June 17, 1991. The total unregulated runoff into Lake Powell for the water year was 8,385,000 acre-feet, 70 percent of the long-term average.

All of the Upper Basin reservoirs recorded below normal inflows in water year 1991. San Juan River inflow to Navajo Reservoir was 98 percent of the long-term average. Unregulated inflow of the Gunnison River to Blue Mesa Reservoir was 78 percent of normal, while unregulated inflow of the Green River to Flaming Gorge Reservoir was 80 percent of the long-term average. Inflow to Fontenelle Reservoir from April through July was 82 percent of normal.

Upper Basin reservoirs, Flaming Gorge, Blue Mesa, and Navajo, experienced modest rebounds in storage in water year 1991. Storage in Lake Powell and Lake Mead, however, is down 1.0 and 1.4 million acre-feet, respectively. The October 1, 1991, Colorado River system vacant space was 18.6 million acre-feet. Aggregate Colorado River live storage at the end of the year was 42.2 million acre-feet. Aggregate storage decreased in water year 1991 by 1.7 million acre-feet.

Total releases from Glen Canyon Dam (deliveries from the Upper Basin to the Lower Basin) for water year 1991 were 8.23 million acre-feet. The 1991 operation plan allowed the water needs of the Lower Basin states to be satisfied, up to 7.5 million acre-feet of beneficial consumptive use, during the calendar year.

During water year 1991, Mexico received a total delivery of about 1,390,000 acre-feet at the Northerly International Boundary (NIB). Of the 1,390,000 acre-feet of Colorado River water reaching the NIB, about 506,000 acre-feet were delivered through the Pilot Knob Powerplant and Wasteway from the All-American Canal. An estimated 303,000 acre-feet were released through Laguna Dam. The remainder of the flow at the NIB was made up of return flows to the Colorado River below Laguna Dam.

Projected Plan of Operation - Water Year 1992

Determination of "602(a) Storage"

Section 602(a)(3) of the Colorado River Basin Project Act of September 30, 1968 (Public Law 90-537), stipulates that Colorado River water, which is not required to be released under article III(c) and III(d) of the Colorado River Compact, be stored in Upper Basin reservoirs to the extent the Secretary of the Interior (Secretary) finds such storage necessary to assure compact deliveries without impairment of annual consumptive uses in the Upper Basin.

Article II of the Operating Criteria provides that the annual plan of operation shall include a determination by the Secretary of the quantity of water considered necessary to be in Upper Basin storage as of September 30 of the current year.

This determination shall consider all applicable laws and relevant factors including, but not limited to, the following: (a) historic streamflows; (b) the most critical period of record; (c) probabilities of water supply; (d) estimated future depletions in the Upper Basin, including the effects of recurrence of critical periods of water supply; (e) the "Report of the Committee on Probabilities and Test Studies to the Task Force on Operating Criteria for the Colorado River," dated October 30, 1969, and such additional studies as the Secretary deems necessary; and (f) the necessity to assure that Upper Basin consumptive uses are not impaired because of failure to store sufficient water to assure deliveries under Section 602(a)(1) and (2) of Public Law 90-537.

Taking into consideration these relevant factors, the Secretary has determined that the active storage in Upper Basin reservoirs forecast for September 30, 1992, exceeds the "602(a) Storage" requirement under any reasonable range of assumptions which might be applied to those items previously listed. Therefore, the accumulation of "602(a) Storage" is not the criterion governing the release of water during the current year.

Mexican Treaty Obligations

Annual calendar year schedules of monthly deliveries of water in the limitrophe section of the Colorado River, allotted in accordance with the Mexican Water Treaty signed in 1944, are formulated by the Mexican Section and presented to the United States Section, International Boundary and Water Commission (Commission), before the beginning of each calendar year. Upon 30 days advance notice to the United States Section, Mexico has the right to modify, within the total schedule, any monthly quantity prescribed by the schedule by not more than 20 percent.

Based on the current water supply conditions, the United States will make scheduled deliveries of 1,500,000 acre-feet of Colorado River water to the Republic of Mexico in calendar year 1992. Representatives of the Republic of Mexico will be kept informed of operating schedules through the United States Section of the Commission.

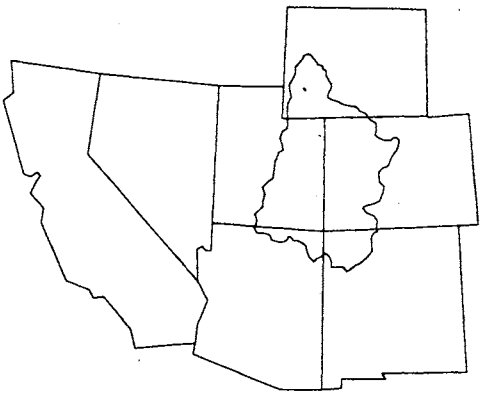
Projected Plan

In addition to compliance with the Operating Criteria, several specific operating issues were addressed during the preparation of the annual operating plan for water year 1992. Consideration was given to the dry condition of the basin, the vacant reservoir space that currently exists, requests for water by holders of water delivery contracts with the United States, and other rights recognized in Arizona vs. California. The operating issues addressed which are listed in no particular order of priority are: (1) meeting the reasonable beneficial Colorado River mainstream consumptive water uses in the Lower Division States as provided by the Operating Criteria, (2) the delivery of firm power in accordance with energy contracts, (3) minimum and specific releases for fish and wildlife and recreational purposes, (4) refilling of vacant system reservoir storage space, (5) potential for flood control releases in years before shortages may occur, (6) water wasted to the Gulf of California, (7) compliance with the 1944 Mexican Water Treaty and Minute No. 242 of the IBWC, (8) the use of allocated but yet undeveloped in the Upper Basin, and in Arizona, and Nevada of the Lower Basin, (9) the ability to store unused water apportionments, (10) guidelines for reservoir filling and drawdown recommended for fish spawning periods in Lake Mead, (11) complying fully with compact, decree, statutory, and water delivery obligations, and (12) other short- and long-term effects of 1992 water use decisions.

For 1992 operations, three reservoir inflow scenarios were developed and analyzed. The projected monthly inflows were based upon current hydrological conditions and the following assumptions: (1) probable maximum, based upon the annual volume of inflow which would be exceeded about 10 percent of the time, (2) most probable, based upon annual volume of inflow which would be exceeded about 50 percent of the time; and, (3) probable minimum, based upon the annual volume of inflow which would be exceeded about 90 percent of the time. Each scenario was adjusted for current basin conditions; therefore, the magnitude of the three scenarios does not necessarily match the historical upper decile, mean, and lower decile inflows, respectively. The National Weather Service's computer model, known as the Extended Streamflow Prediction model (ESP), uses current basin conditions as well as historical data to predict a range of possible future stream flows. Although there is a wide confidence band associated with stream flow forecasts made a year in advance, the data are valuable in analyzing the possible impacts on project uses and purposes. The inflow volumes resulting from these assumptions were used as input data in Reclamation's monthly reservoir operation planning computer model, which is used to plan reservoir operations for the upcoming 12-month period. With assumed water year 1992 inflow and current reservoir storage conditions, projected monthly releases were adjusted until release and storage levels accomplished project purposes and priorities.

Special long-range studies using Reclamation's Colorado River Simulation System (CRSS) were conducted to determine whether sufficient quantities of mainstream water were available for release from Lake Mead to satisfy reasonable beneficial consumptive use requests in excess of 7,500,000 acre-feet in the Lower Division States. The studies were conducted using the entire hydrologic record (1906 through 1990), utilizing 85 hydrologic sequences indexed by one year. These studies simulated operations 30 years into the future to assess the risks of shortages to all users of Colorado River water for beneficial purposes and evaluated several specific parameters.

At several locations in both Upper and Lower Basins, minimum instream flows have been established in order to preserve the present aquatic resources downstream of certain Colorado River dams. In many cases, these resources were poor or nonexistent prior to the time of dam construction, and the subsequent controlled, cool water releases have provided an improved environment for aquatic resources and sport fisheries. However these releases are believed to be detrimental to endangered endemic species of fish. In 1992, studies on the Green River will continue, studies on the Gunnison and San Juan Rivers will be initiated in order to better understand the water needs of the endangered endemic species of fish in the basin. In general, controlled releases allow for an extended recreation season, reduce the high flow periods, and improve sport fisheries, but may be detrimental to endemic species of fish.



UPPER BASIN RESERVOIRS

FONTENELLE RESERVOIR (GREEN RIVER)

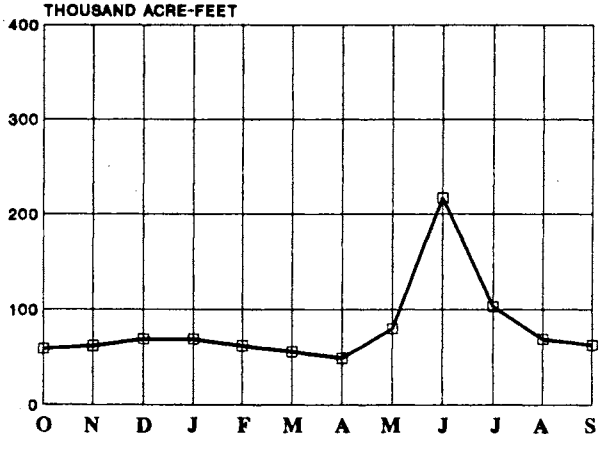
Water Year 1991

Water year 1991 marked the second full year of normal operations for Fontenelle Reservoir since the construction of a concrete cutoff wall to reduce seepage through the dam. The concrete cutoff wall is performing satisfactorily, as seepage past the dam has been reduced considerably.

The April through July runoff into Fontenelle Reservoir was 693,000 acre-feet which was 82 percent of average. Inflow for the entire 1991 water year was 1,017,000 acre-feet, 85 percent of average. The total release from Fontenelle Dam for water year 1991 was 958,000 acre-feet.

Peak inflow to Fontenelle Reservoir was 9,900 cubic feet per second on June 16, 1991. The reservoir filled in July of 1991. Approximately 150,000 acre-feet of water bypassed the powerplant's turbines.

ACTUAL RELEASES 1991



FONTENELLE RESERVOIR

Reservoir	Acre-feet	Elevation, feet
Storage Capacity	344,834	6506
Rated Head	233,789	6491
Minimum Power	194,962	6485
Surface Area, full		8,058 Acres
Reservoir Length, full		18 Miles

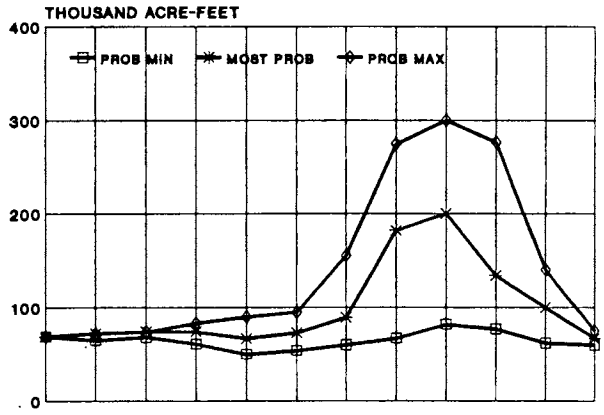
Powerplant	
Number of Units	1
Total Capacity	10,000 KW

Water Year 1992

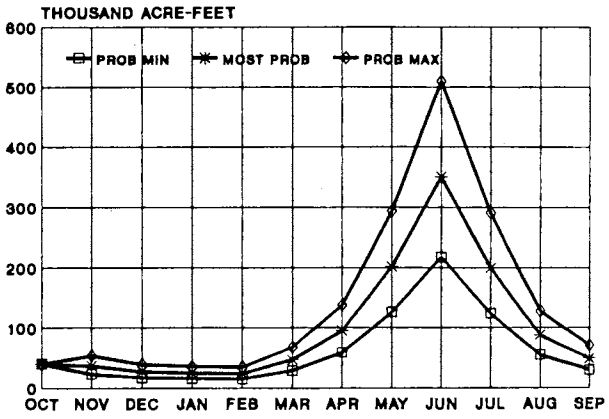
Since the mean annual inflow of 1.2 million acre-feet far exceeds the storage capacity of 345,000 acre-feet, there is little chance that the reservoir will not fill during water year 1992. In order to minimize the high releases that occur in the spring and to ensure that the reservoir fills, it will be drawn down to an appropriate level this winter, probably to minimum pool elevation (6463 feet) which corresponds to a volume of 93,000 acre-feet.

Releases should average about 1,200 cubic feet per second (cfs) through the fall and winter months. Releases at this level will provide an appropriate level of drawdown for next season, the water quality of the river for downstream municipal and industrial uses. Under all but the most adverse inflow assumption, the reservoir is expected to fill in the summer of 1992.

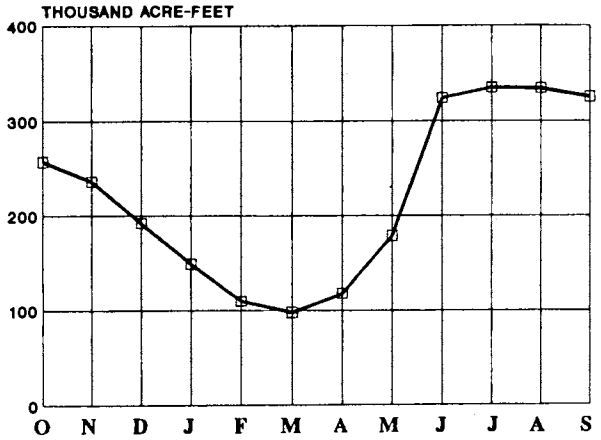
PROJECTED RELEASES 1992



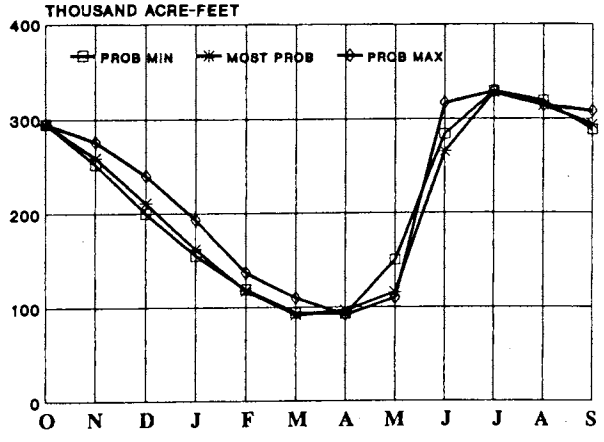
PROJECTED UNREGULATED INFLOW 1992

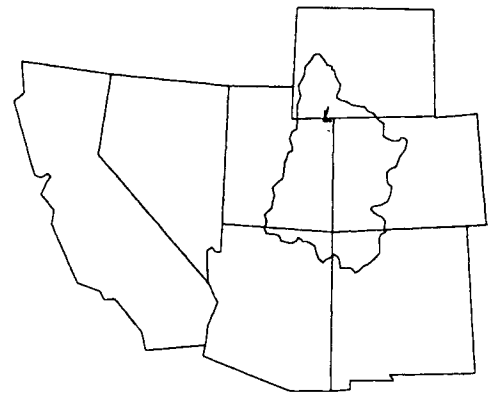


ACTUAL STORAGE 1991



PROJECTED STORAGE 1992





FLAMING GORGE RESERVOIR (GREEN RIVER)

Water Year 1991

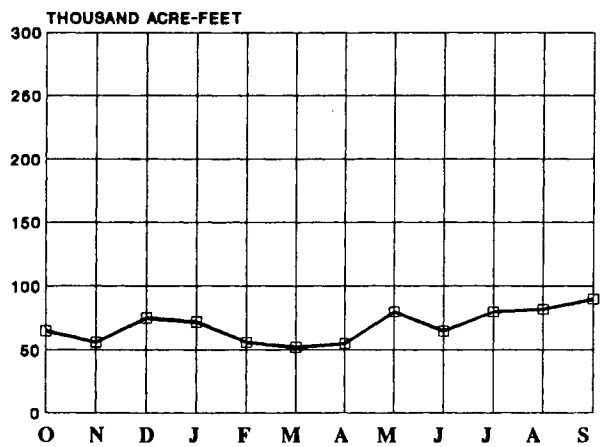
The elevation of Flaming Gorge Reservoir at the beginning of water year 1991 was 6022.9 feet with 3,081,000 acre-feet of live storage (82 percent of capacity). At the end of the water year, the elevation was 6031.1 feet. Live storage on September 30, 1991 was 3,390,465 acre-feet (90 percent of capacity).

As with other drainage areas in the Upper Colorado River Basin, precipitation in the Green River Basin was near normal, but the quantity of runoff was reduced due to the dry antecedent conditions of the basin. Unregulated inflow into Flaming Gorge Reservoir for water year 1991 was 1,320,000 acre-feet, 80 percent of normal. Actual regulated inflow was 1,261,000 acre-feet.

Releases from Flaming Gorge Reservoir were maintained above the minimum level of 800 cubic feet per second for most of water year 1991. Because of the initiation of research releases at Glen Canyon Dam, releases from Flaming Gorge were increased above minimum levels. This was done to give Western Area Power Administration (WAPA) more flexibility in maintaining the power system in the event of an emergency. Even with this increase, releases from Flaming Gorge Reservoir averaged only 1,150 cubic feet per second for the water year. Although inflow was below normal, a modest increase in storage was realized for the reservoir during water year 1991.

A limited number of specific releases for research and data collection for studies concerning endangered fish survival requirements were provided from Flaming Gorge in 1991. The Colorado Squawfish is currently being studied as part of the Recovery Implementation Program in the Upper Colorado River Basin.

ACTUAL RELEASES 1991



FLAMING GORGE RESERVOIR

Reservoir	Acre-feet	Elevation, feet
Storage Capacity	3,749,000	6040
Rated Head	1,062,000	5946
Minimum Power	233,000	5871
Surface Area, full		42,020 Acres
Reservoir Length, full		91 Miles

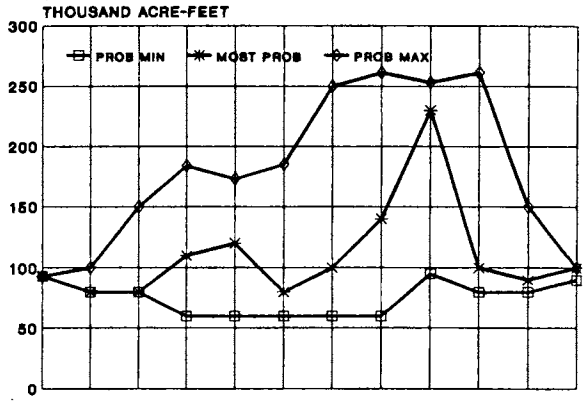
Powerplant	
Number of Units	3
Total Capacity	108,000 KW

Water Year 1992

Releases for water year 1992 will again be maintained at, or above normal levels under most probable and probable minimum scenarios. Under all but the most adverse inflow assumption, Flaming Gorge Dam will fill in the summer of 1992.

The Green River below Flaming Gorge Dam has been determined to be habitat of Colorado Squawfish. Restrictions on releases from Flaming Gorge Reservoir have been implemented to improve habitat conditions for young Colorado Squawfish. During water year 1992, release restrictions, as recommended by the U.S. Fish and Wildlife Service, will be maintained.

PROJECTED RELEASES 1992



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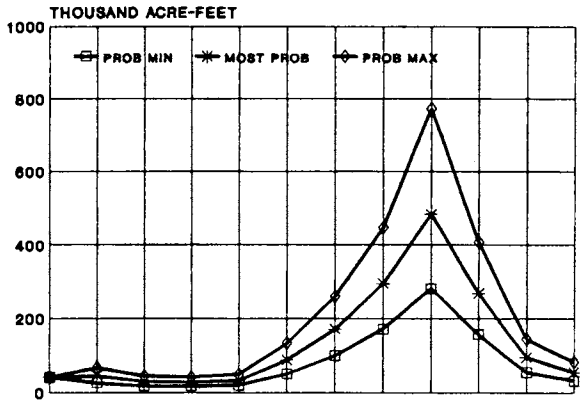
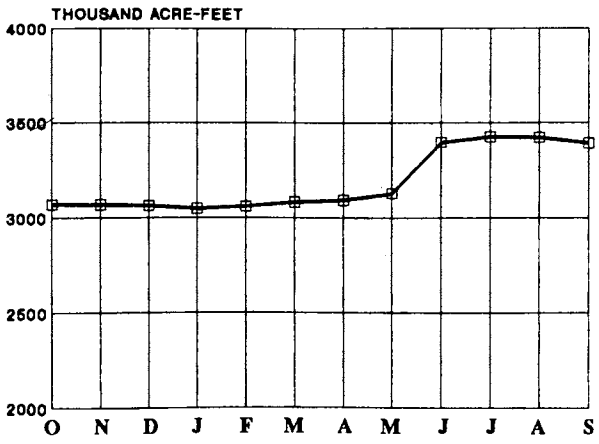
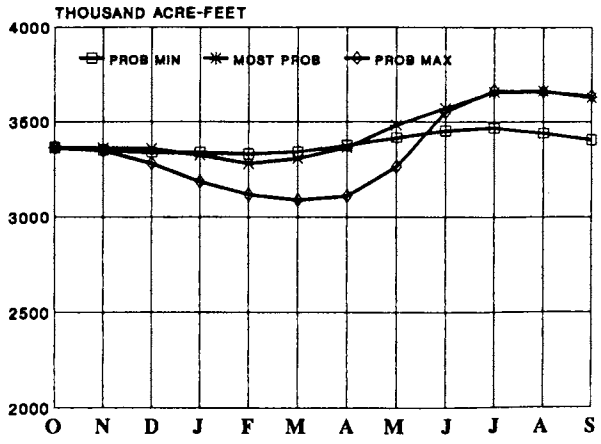
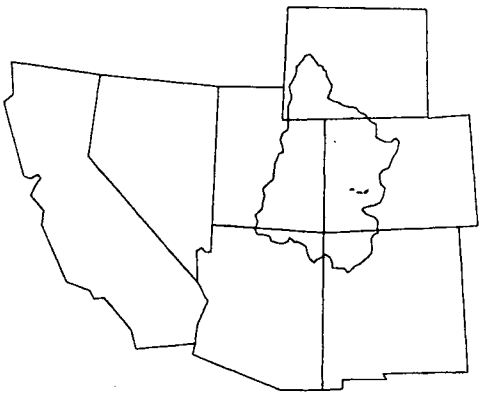


ACTUAL STORAGE 1991



PROJECTED STORAGE 1992





WAYNE N. ASPINALL UNIT
BLUE MESA, MORROW POINT, AND CRYSTAL RESERVOIRS
(GUNNISON RIVER)

Water Year 1991

The Wayne N. Aspinall Unit, is comprised of Blue Mesa, Morrow Point, and Crystal Reservoirs. Blue Mesa provides nearly all of the long-term storage for all three powerplants. Morrow Point provides peaking power, and thus has highly variable releases. The primary function of Crystal Reservoir is to regulate the variable Morrow Point releases. Live storage capacities for Morrow Point and Crystal Reservoirs are 117,000 and 17,500 acre-feet respectively.

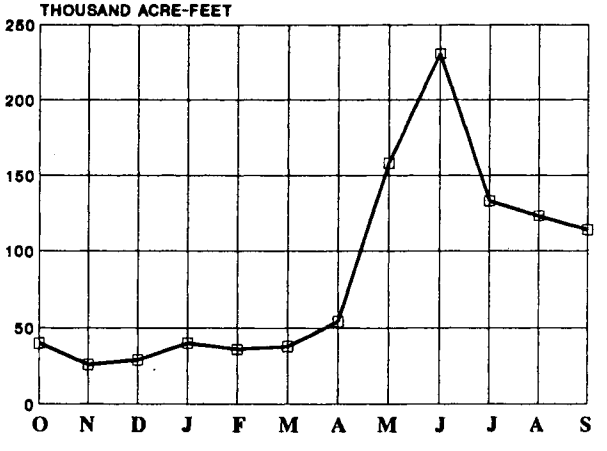
Even though water year 1991 inflow was only 78 percent of normal, the Aspinall Unit filled in early June. The filling of Aspinall Unit facilities during 1991 resulted because only minimum releases were made during 1989 and 1990. The minimum release objective of the Aspinall Unit is to meet the delivery requirements of the Uncompahgre Valley Project and to keep a minimum of 300 cfs flowing through the Black Canyon of the Gunnison National Monument. During 1991 flows of over 4,000 cfs were experienced in the Black Canyon as reservoir inflows of over 8,000 cfs occurred. To protect the blue ribbon trout fishery in the Black Canyon, releases were carefully planned to minimize large fluctuations in the daily and monthly flows. This was accomplished with only minimal amounts of water bypassing the powerplants at Blue Mesa and Morrow Point.

April through July unregulated runoff into Blue Mesa Reservoir was 601,000 acre-feet, or 78 percent of average. The total unregulated inflow for water year 1991 inflow was 854,000 acre-feet, or 78 percent of average. The peak regulated inflow to Blue Mesa was 5,800 cubic feet per second on June 15, 1991. Releases from Blue Mesa Reservoir totaled 758,000 acre-feet for the water year.

Morrow Point Reservoir was operated between elevations 7152 and 7160 feet. Side inflow to Morrow Point Reservoir for water year 1991 was 84,000 acre-feet. A total of 757,000 acre-feet was released during the water year, with all but 2,000 acre-feet passing though the powerplant.

During water year 1991 the maximum daily release from Crystal Reservoir was 5,000 cubic feet per second. The amount that bypassed through the turbine at Crystal was 172,000 acre-feet.

ACTUAL CRYSTAL RELEASES 1991



BLUE MESA RESERVOIR

Reservoir	Acre-feet	Elevation, feet
Storage Capacity	829,523	7519
Rated Head	249,395	7438
Minimum Power	81,070	7393
Surface Area, full		9,180 Acres
Reservoir Length, full		24 Miles

Powerplants (Blue Mesa, Morrow Point, & Crystal)

Number of Units	5
Total Capacity	208,000 KW

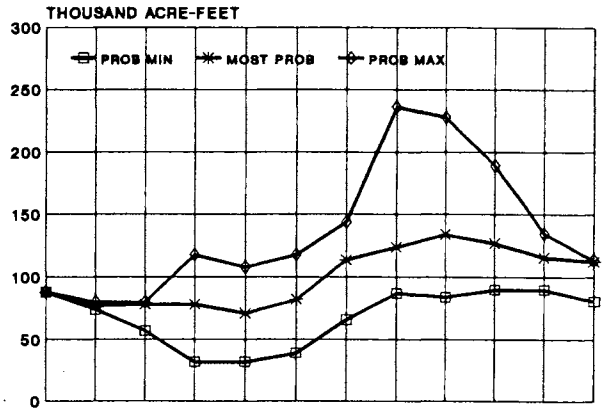
Water Year 1992

By December 1992, Blue Mesa Reservoir will be drawn down to at least an elevation of 7495.0 acre-feet in order to minimize icing problems in the Gunnison River. Blue Mesa will continue to be drawn down through April of 1992 to the level that will accommodate the most probable inflow scenario and accomplish the release objectives with a minimum of powerplant bypasses. Under all but the most adverse inflow scenarios, Blue Mesa is expected to fill in the summer of 1992. The filling of the reservoir next year will insure that reasonable specific releases required to study the protection and improvement of habitat for endangered fish can be made. The forecasted runoff during the spring of 1992 will be constantly monitored to achieve these objectives.

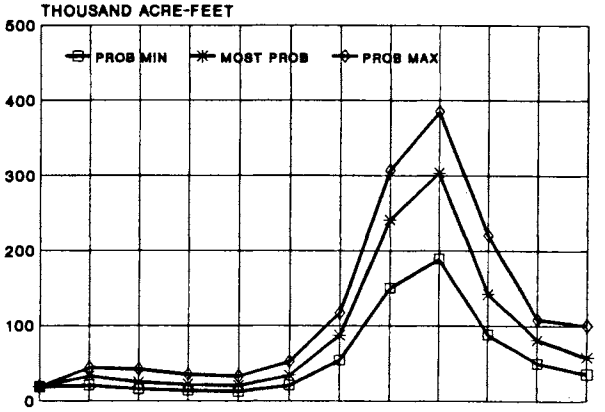
Morrow Point Reservoir releases are expected to fluctuate up to powerplant capacity during water year 1992. Crystal Reservoir will be operated to regulate releases from Morrow Point Reservoir, to meet downstream requirements for diversions through the Gunnison Tunnel, and to protect the blue ribbon trout fishery in the Black Canyon. Releases are carefully planned to minimize large monthly changes in flow below the Gunnison Tunnel Diversion. The forecasted runoff during the spring of 1992 will be constantly monitored to achieve this objective.

Assuming most probable inflow conditions, releases from Crystal Reservoir will range from 1,200 cubic feet per second to the maximum capacity of 4,200 cubic feet per second.

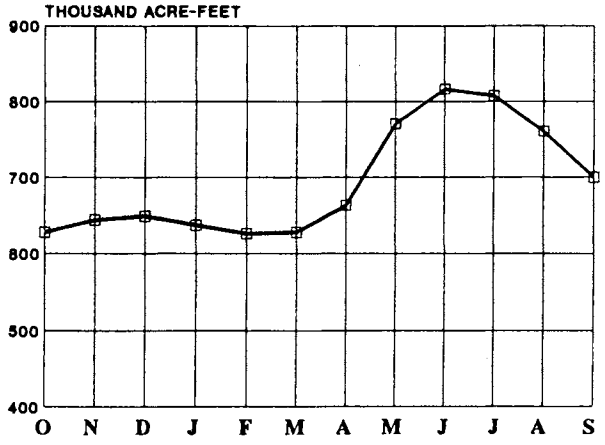
PROJECTED CRYSTAL RELEASES 1992



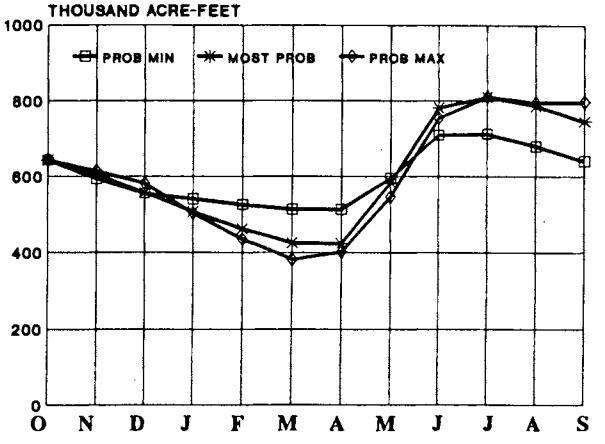
BLUE MESA UNREGULATED INFLOW 1992



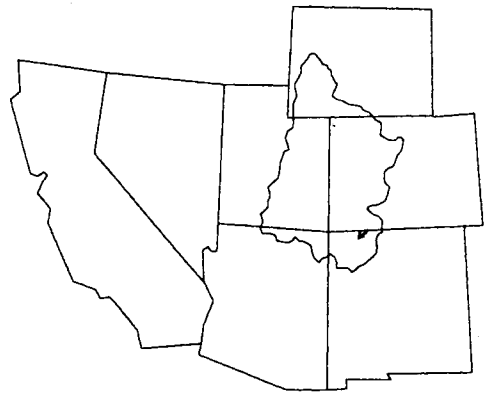
ACTUAL BLUE MESA STORAGE 1991



PROJECTED BLUE MESA STORAGE 1992



NAVAJO RESERVOIR
(SAN JUAN RIVER)



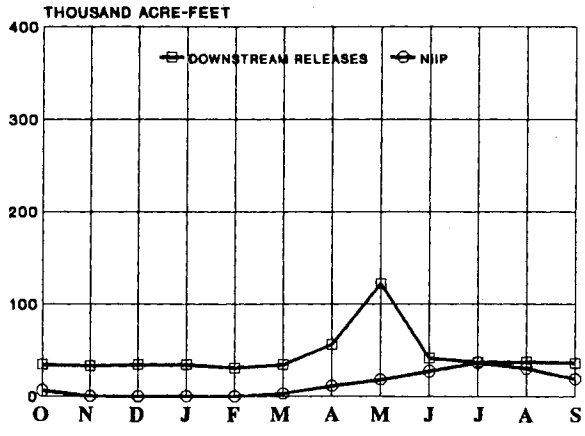
Water Year 1991

The elevation of Navajo Reservoir at the beginning of the water year was 6061.4 feet with 1,362,138 acre-feet of live storage (80 percent of capacity). At the end of water year 1991, the elevation was 6077.7 with 1,586,397 acre-feet of live storage (94 percent of capacity).

As with other drainage areas in the Upper Colorado River Basin, precipitation in the San Juan Basin was near normal. Actual inflow to Navajo Reservoir for water year 1991 was 937,000 acre-feet, 98 percent of normal. Peak inflow into Navajo Reservoir occurred on April 7, 1991 at 5,565 cubic feet per second. The reservoir reached a peak elevation of 6,078.7 feet on June 29, 1991.

During May of 1991, release of 3,000 cfs were made in order to accommodate studies for endangered fish and to flush silt from the river bed that has accumulated over the past 2 years of minimal release. After the completion of the specific releases, discharge from the reservoir was reduced to 600 cfs.

ACTUAL RELEASES 1991



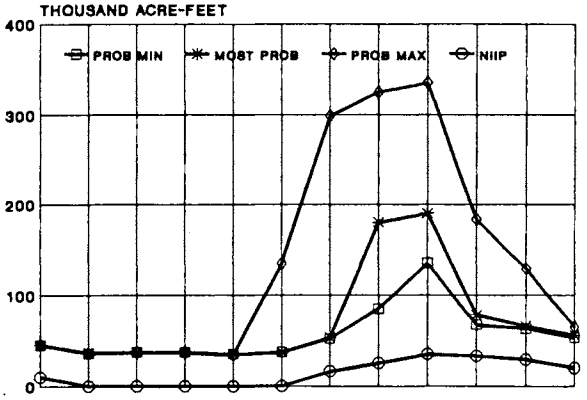
NAVAJO RESERVOIR

Reservoir	Acre-feet	Elevation, feet
Storage Capacity	1,696,400	6085
Inactive Storage	660,500	5990
Surface Area, full		15,610 Acres
Reservoir Length, full		33 Miles

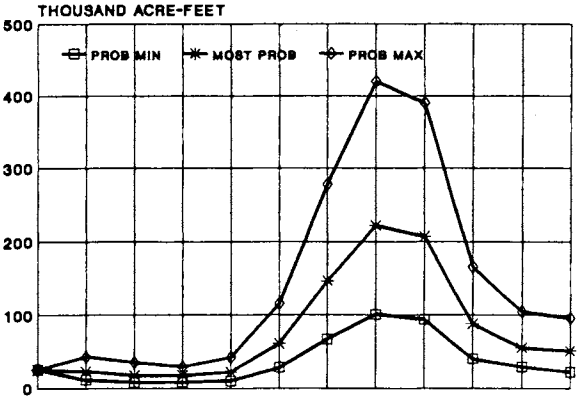
Water Year 1992

Navajo Reservoir should fill in 1992. Releases from the reservoir will be held near 600 cfs through the fall and winter months and large releases will be made in May and June in order to provide better spawning conditions for endangered fish located in the San Juan River. Additionally, specific releases will be made from the reservoir in order to study habitat requirements of the endangered fish. These specific releases will be part of a seven-year study of the habitat needs of the endangered fish in the San Juan River Basin conducted by the United States Fish and Wildlife Service. After the study period, the data collected will be used to determine flow requirements for these fish.

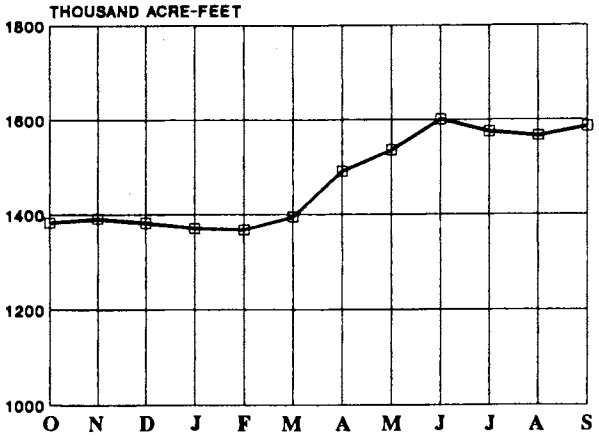
PROJECTED RELEASES 1992



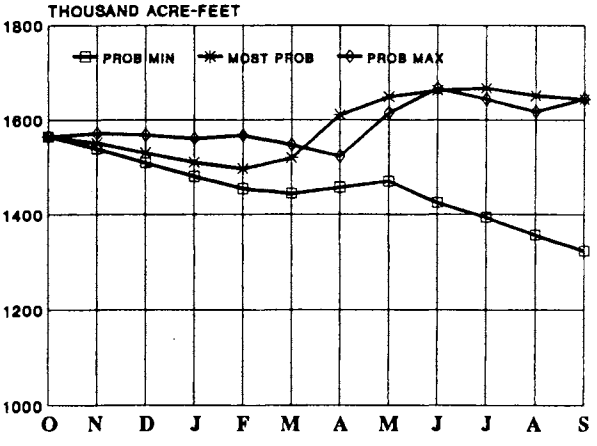
PROJECTED INFLOW 1992



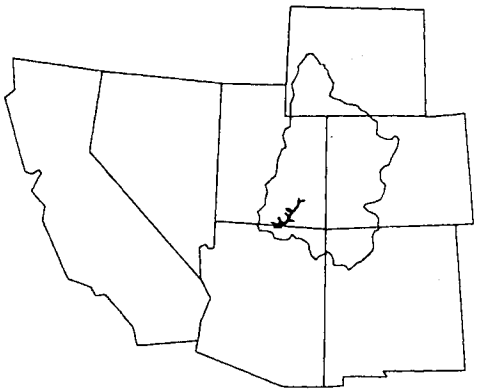
ACTUAL STORAGE 1991



PROJECTED STORAGE 1992



LAKE POWELL
(COLORADO RIVER)



Water Year 1991

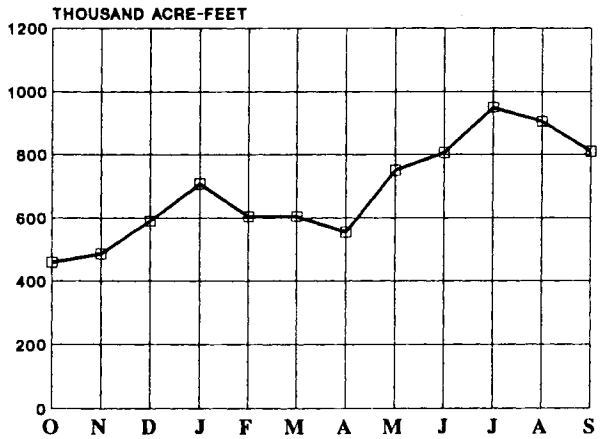
Lake Powell, which is impounded by Glen Canyon Dam, is operated as part of the Colorado River Storage Project (CRSP) in accordance with governing compacts and laws to provide conservation storage, river regulation, power generation, recreation, and fish and wildlife enhancement.

Lake Powell began water year 1991 at elevation 3637.6 feet with a live content of 15,720,000 acre-feet (65 percent full). April through July unregulated inflow to Lake Powell was 5,286,000 acre-feet (65 percent of average). Total unregulated inflow into Lake Powell in water year 1991 was 8,385,000 acre-feet, only 70 percent of the 11,900,000 acre-feet unregulated average. Actual regulated inflow for water year 1991 was 7,510,000 acre-feet. Regulated inflow to Lake Powell peaked at 38,000 cubic feet per second on June 17, 1991.

Beginning on August 7, 1991, test interim minimum and maximum releases and controlled fluctuations were established below Glen Canyon Dam, pending development and implementation of the interim criteria on November 1, 1991. The interim criteria are intended to reduce the effects of power operations on downstream natural resources until the Glen Canyon Environmental Impact Statement is completed. Lake Powell has a minimum objective annual release of 8.23 million acre-feet, as set forth in the Operating Criteria. The delivery of the 8.23 million acre-feet, coupled with continued below normal inflow, reduced live storage at the end of water year 1991 to 14,699,000 acre-feet (60 percent full). The reservoir elevation on September 30, 1991 was 3628.6 feet, over 70 feet below the maximum pool elevation of 3700 feet.

Maintaining a minimum release of 8,230,000 acre-feet annually from Lake Powell combined with the lowest consecutive 5 years of inflow on record (1987 through 1991), and a refilling of the upstream reservoirs has reduced the storage of the reservoir below its capacity by approximately 9,500,000 acre-feet.

ACTUAL RELEASES 1991



LAKE POWELL

Reservoir	Acre-feet	Elevation, feet
Storage Capacity	24,322,000	3700
Rated Head	9,428,000	3570
Minimum Power	4,126,000	3490
Surface Area, full		161,390 Acres
Reservoir Length, full		186 Miles

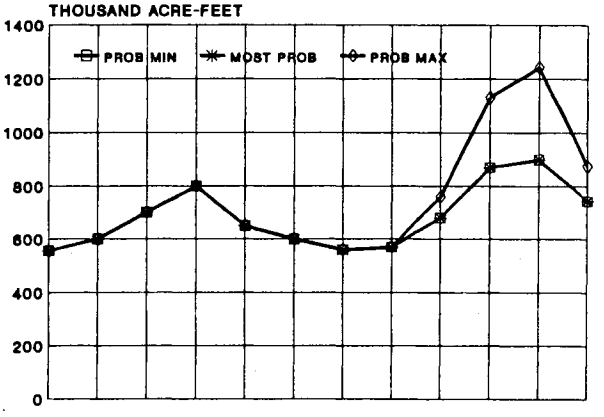
Powerplant	
Number of Units	8
Total Capacity	1,247,000 KW

Water Year 1992

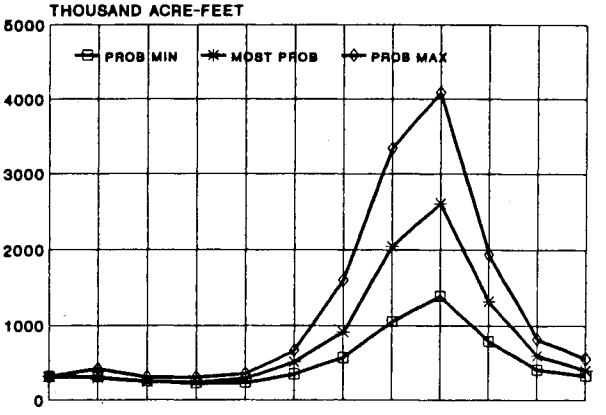
The reservoir storage is projected to continue to decline through the fall and winter, reaching a seasonal low in March 1992 of 13,600,000 acre-feet, which is about 82 feet from full. During water year 1992, the minimum objective release of 8.23 million acre-feet will be made. Under most probable inflow conditions, the reservoir will recover to only 17,200,000 acre-feet which is about 50 feet from full. Due to the extended drought, it may take approximately nine years of average inflow to refill the reservoir.

Because the level of Lake Powell has dropped considerably since 1987, the risk of releases greater than powerplant capacity during water year 1992 is negligible.

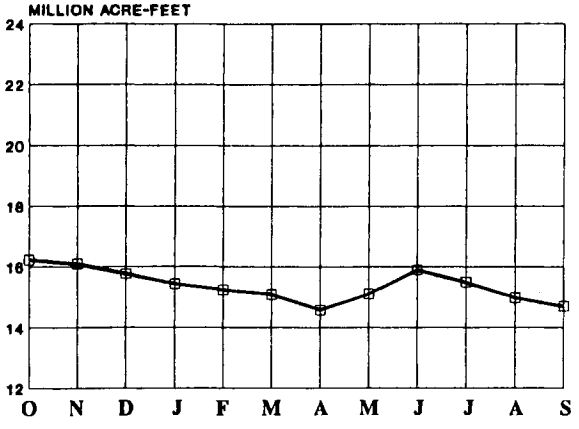
PROJECTED RELEASES 1992



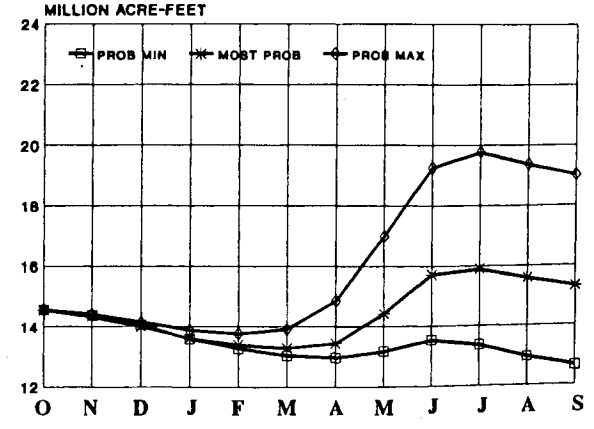
PROJECTED UNREGULATED INFLOW 1992

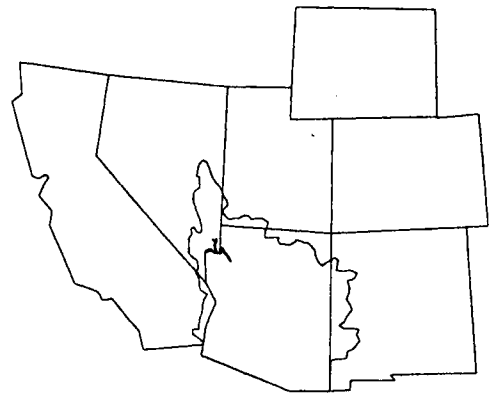


ACTUAL STORAGE 1991



PROJECTED STORAGE 1992





LOWER BASIN RESERVOIRS

LAKE MEAD (COLORADO RIVER)

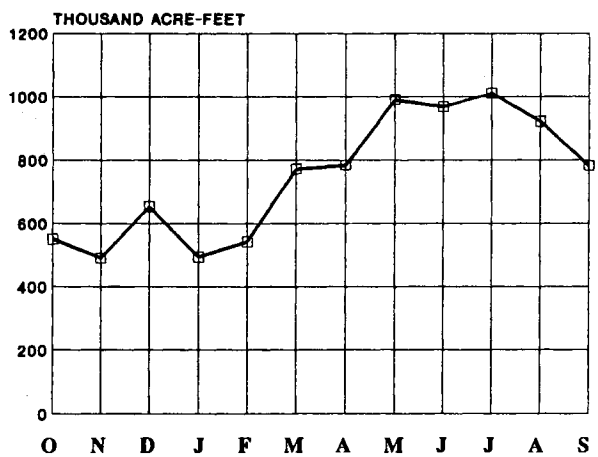
Water Year 1991

At the beginning of water year 1991, Lake Mead, impounded by Hoover Dam, had a water surface elevation of 1180 feet and an active storage of 20,144,000 acre-feet. During the winter months, the water level gradually declined to about 1178 by early January, and rose to about 1180 feet by the end of March 1991 and then gradually declined to 1176 feet near the end of May 1991. During the period June through September, Lake Mead continued to drop, reaching a low elevation of about 1173 feet during the last week of September, with a corresponding active storage of 18,694,800 acre-feet.

During the water year, releases were made to meet downstream water use requirements in the United States and Mexico, programmed levels of Lake Mohave and Havasu, and net transit losses which include river and reservoir evaporation, uses by phreatophytes, changes in bank storage, unmeasured inflows, and diversions to the Las Vegas, Nevada area via the Robert B. Griffith Water Project (Project). The total release from Lake Mead through Hoover Dam during the water year 1991 was approximately 8,961,000 acre-feet. All of the amount passed through the turbines for power production.

In addition, 267,000 acre-feet were diverted from Lake Mead by the Project. At the end of the water year, Lake Mead had a water surface elevation of 1173 feet and an active of 19,233,000 acre-feet which reflects a decrease in storage during the water year of 911,000 acre-feet. On September 30, 1990, the active storage of Lake Mead was 4,534,000 acre-feet greater than the active storage in Lake Powell.

ACTUAL RELEASES 1991



LAKE MEAD

Reservoir	Acre-feet	Elevation, feet
Storage Capacity	27,377,000	1229
Rated Head	13,653,000	1123
Minimum Power	10,024,000	1083
Surface Area, full		162,700 Acres
Reservoir Length, full		115 Miles

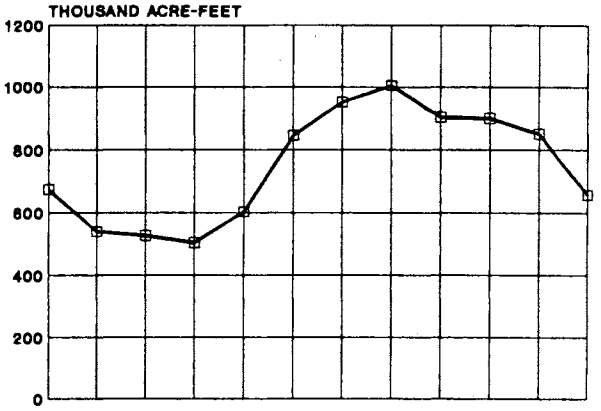
Powerplant	
Number of Units	17
Total Capacity	1,952,500 KW

Water Year 1992

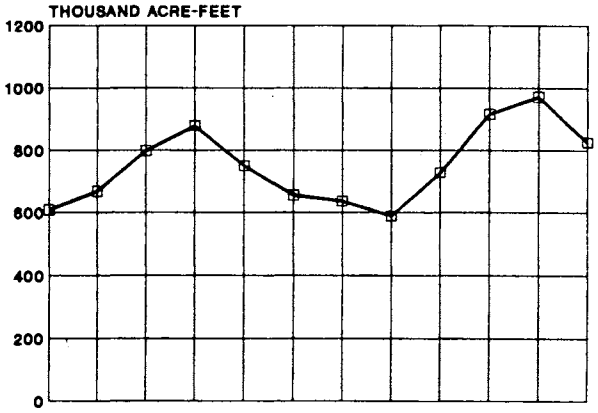
Under most probable inflow conditions during the 1992 water year, the Lake Mead water level is expected to be drawn down to elevation 1164 feet at the end of August 1992. At that level, the lake will have in active storage approximately 18.2 million acre-feet. During water year 1992, a total of approximately 8.96 million acre-feet is scheduled to be released from Lake Mead under most probable conditions, all passing through the powerplant.

The outlook for lowest and highest monthly releases of 1992 will be about 500,000 acre-feet and 1,000,000 acre-feet, respectively. Drawdown, during the peak large mouth bass spawning period in April and May, is expected to be within the limits of decline recommended in a July 1982 report. That report summarized results of a 5 year study by the Arizona Game and Fish Department and the Nevada Department of Wildlife and recommended a drawdown rate of less than 2 inches per day.

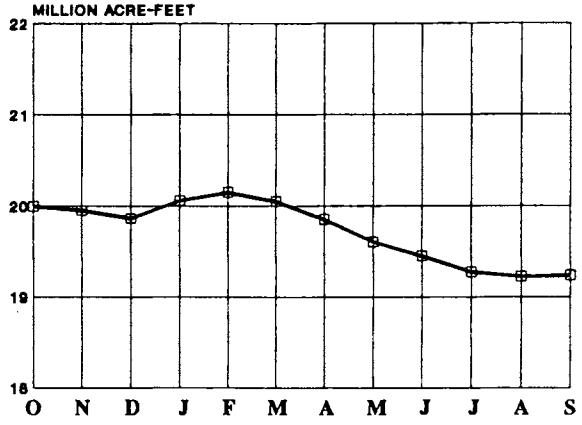
MOST PROBABLE RELEASES 1992



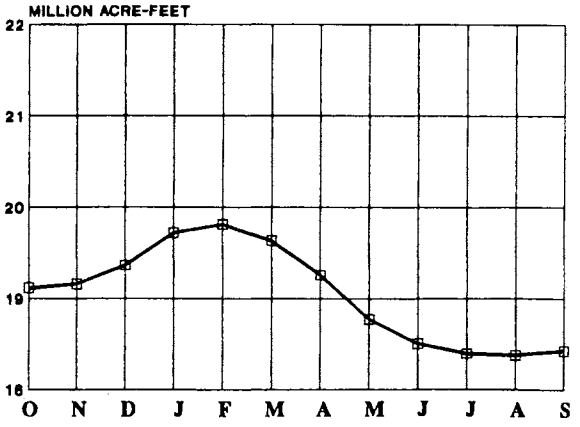
MOST PROBABLE REGULATED INFLOW 1992



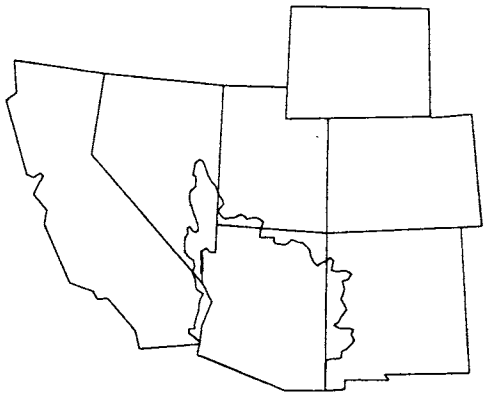
ACTUAL STORAGE 1991



MOST PROBABLE STORAGE 1992



LAKE MOHAVE
(COLORADO RIVER)



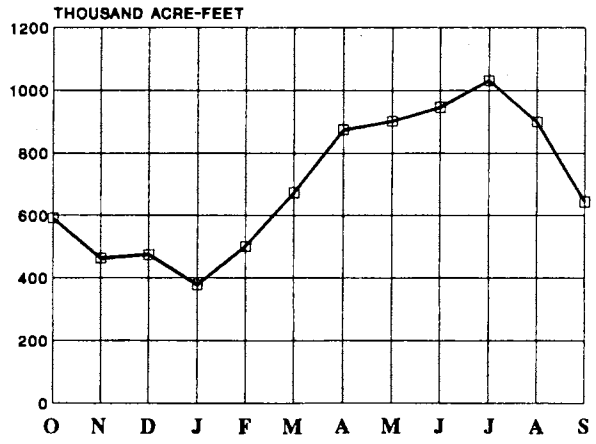
Water Year 1991

At the beginning of water year 1991, the water surface elevation of Lake Mohave, which is impounded by Davis Dam, was 632.9 feet, with an active storage of approximately 1,431,000 acre-feet.

During the winter months, after some fluctuation, the water level was gradually raised to approximately 645 feet, with an active storage of approximately 1,760,000 acre-feet by the end of March 1991. The water level was then lowered during the April through May period. The reservoir declined to elevation 639 feet during the latter part of June 1991. During July and August, Lake Mohave gradually lowered further to an elevation of 635 feet, with an active storage of approximately 1,487,000 acre-feet, in the middle of August. Lake Mohave fluctuated around the elevations of 635 and 636 feet during August through mid-September then gradually rose to an elevation of 638 feet by the end of September. The reservoir ended the water year at an elevation of 638.3 feet, with 1,571,400 acre-feet in active storage.

Lake Mohave releases were made for downstream water use requirements, including diversions by users in the vicinities of Laughlin, Nevada; Bullhead City, Arizona; and Needles, California, by The Metropolitan Water District of Southern California (MWD), the Central Arizona Project (CAP), and the users downstream from Parker Dam. During the water year, total releases of approximately 8,377,000 acre-feet were made at Davis Dam, all of which passed through the turbines for power production. Of that amount, approximately 1,253,000 acre-feet were then pumped from Lake Havasu by MWD, and 473,000 acre-feet were pumped for the CAP.

ACTUAL RELEASES 1991



LAKE MOHAVE

Reservoir	Acre-feet	Elevation, feet
Storage Capacity	1,810,000	647
Rated Head	1,188,000	623
Minimum Power	217,500	570
Surface Area, full		28,200 Acres
Reservoir Length, full		67 Miles

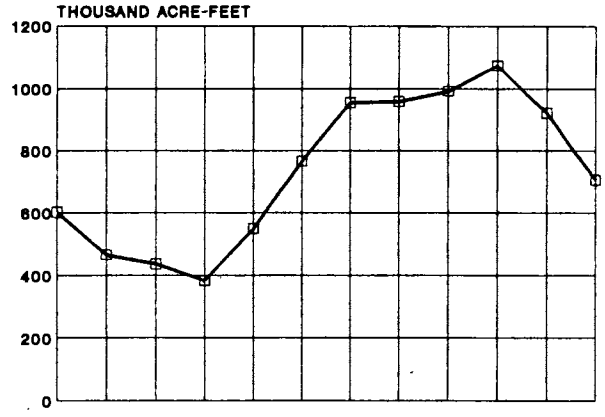
Powerplant	
Number of Units	5
Total Capacity	240,000 KW

Water Year 1992

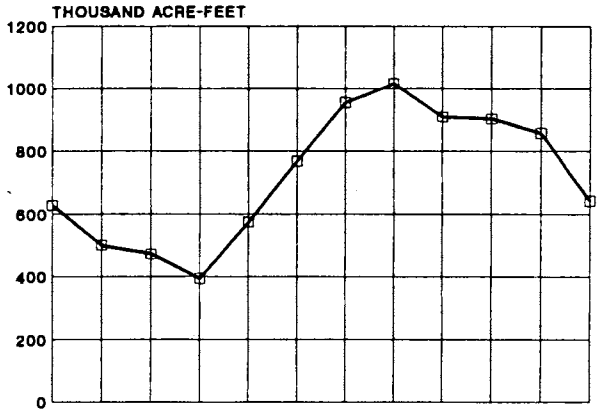
Both Lake Mohave and Lake Havasu are scheduled to be drawn down in the winter months to provide storage space for local storm runoff and will be filled in the spring to meet higher summer water needs. This drawdown will also correspond with maintenance at both Davis and Parker Powerplants which is scheduled for September through December. The normal filling pattern of these two reservoirs coincides well with the fishery spawning period. Since lake elevations will be similar to previous years, relatively normal conditions are expected for boating and other recreational uses.

Under most probable inflow condition, the water level of Lake Mohave is scheduled to reach an elevation of about 643 feet by the end of February 1992 and then remain at that elevation until the end of May. The reservoir will gradually drop to an elevation of approximately 630 feet by the end of the water year. During the water year a total of 9.0 million acre-feet is scheduled to be released from Lake Mohave to meet all downstream requirements. All of that total is scheduled to pass through the powerplant.

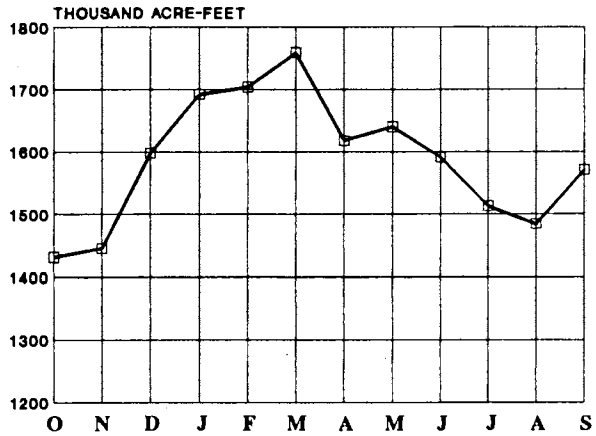
MOST PROBABLE RELEASES 1992



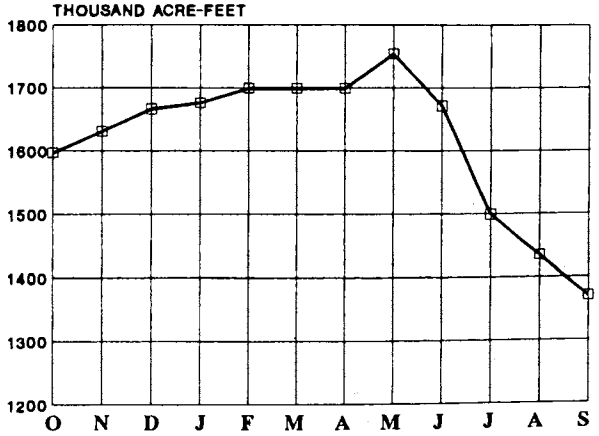
MOST PROBABLE REGULATED INFLOW 1992



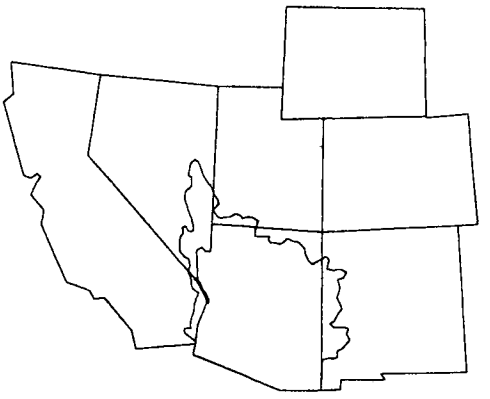
ACTUAL STORAGE 1991



MOST PROBABLE STORAGE 1992



LAKE HAVASU
(COLORADO RIVER)



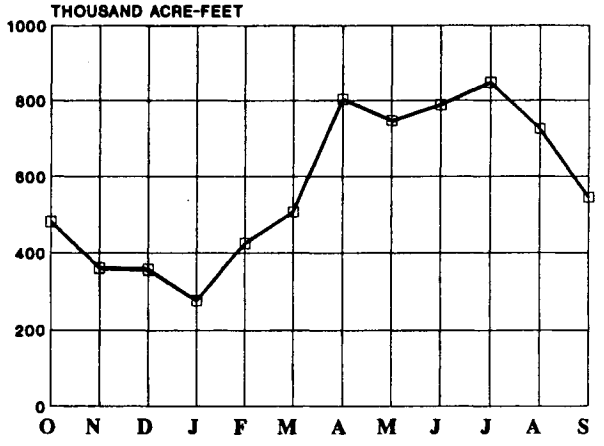
Water Year 1991

At the beginning of water year 1991, the water level of Lake Havasu, impounded by Parker Dam, was at an elevation of about 447 feet with an active storage of approximately 560,000 acre-feet. During October and November 1989, the reservoir fluctuated between elevations 446 feet and 447 feet. By March 1990, the reservoir was at an approximate elevation of 446 feet to provide vacant space for runoff from the drainage area between Davis and Parker Dams. The water level was then raised to an elevation of 450 feet by the middle of May with an active storage of about 610,000 acre-feet. At the end of the water year, Lake Havasu was at an elevation of about 447 feet with an active storage of 556,000 acre-feet.

During the water year, approximately 6,867,000 acre-feet were released at Parker Dam, all of which passed through the turbines for power production. In addition to the releases from Parker Dam, approximately 1,253,000 acre-feet were diverted from Lake Havasu by The Metropolitan Water District of Southern California. Diversions from Lake Havasu for the Central Arizona Project were 473,000 acre-feet during the water year.

Space in the top 10 feet of Lake Havasu (about 180,000 acre-feet) is reserved by the United States for control of floods and other uses, including river regulation. Normally, only about the top 4 feet, or 77,000 acre-feet of space, have been used for this purpose since the Alamo Reservoir on the Bill Williams River has been in operation.

ACTUAL RELEASES 1991



LAKE HAVASU

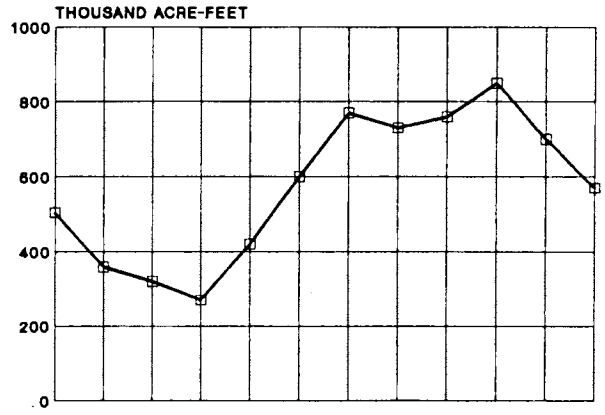
Reservoir	Acre-feet	Elevation, feet
Storage Capacity	619,400	450
Rated Head	619,400	450
Minimum Power	439,400	440
Surface Area, full		20,400 Acres
Reservoir Length, full		35 Miles

Powerplant	
Number of Units	4
Total Capacity	120,000 KW

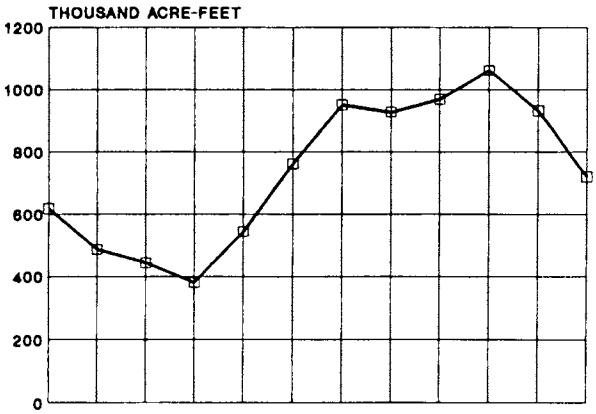
Water Year 1992

Lake Havasu is scheduled at the highest levels consistent with the requirements for maintaining reservoir regulation space. A yearly low elevation of approximately 446 feet is scheduled for October through February to provide storage space for local storm runoff. The yearly high of about 450 feet is scheduled in the spring to meet higher summer water needs. During water year 1992, a total of approximately 7.0 million acre-feet is scheduled to be released from Lake Havasu to meet all downstream requirements. All of that amount is scheduled to pass through the Parker Powerplant.

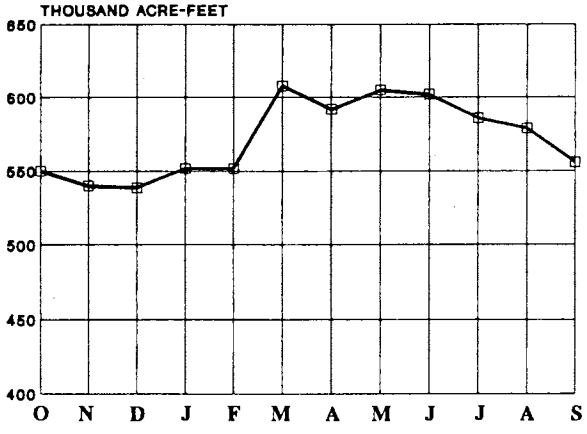
MOST PROBABLE RELEASES 1992



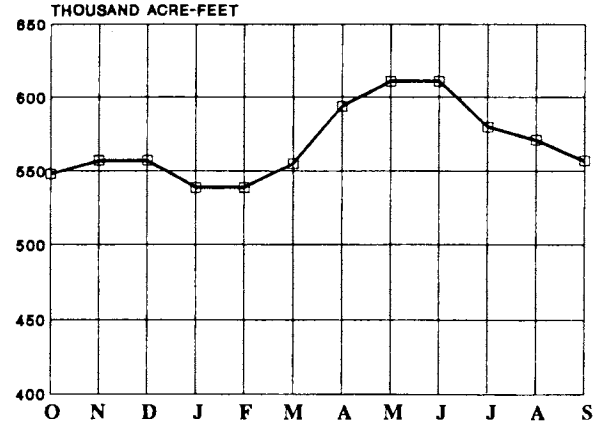
MOST PROBABLE REGULATED INFLOW 1992



ACTUAL STORAGE 1991



MOST PROBABLE STORAGE 1992



River Regulation

The runoff into Lake Powell for water year 1991 continued to be well below normal for the fourth straight year. Unregulated inflow into Lake Powell was 71 percent of normal for water year 1991. Unregulated inflows for water years 1988, 1989 and 1990 were 70 percent of normal, 54 percent of normal and 46 percent of normal respectively. Upper Basin reservoirs, Flaming Gorge, Blue Mesa, and Navajo, experienced modest rebounds in storage in water year 1991. These increases in storage occurred because releases from these reservoirs were primarily constrained to minimum levels. Storage in Lake Powell and Lake Mead, however, is down significantly. The October 1, 1991, vacant space in these two reservoirs was approximately 17.8 million acre-feet. This vacant space has resulted from three successive years of low inflow and the requirement to maintain the minimum deliveries to meet obligations pursuant to "The Law of the River".

Daily releases are provided from the storage reservoirs in the Lower Basin to meet the needs of water user agencies, for river regulation, and as needed for flood control. When possible, all water passes through the powerplant units. The daily releases are regulated on an hourly basis to balance the power needs of the hydroelectric power customers, the flow needs of endangered species of fish and recreational needs. At appropriate locations, minimum instream flow objectives have been established, which preserve the present aquatic resources downstream of certain Colorado River dams. In many cases, these resources were poor or nonexistent prior to the time of dam construction, and the subsequent minimum, cool water releases have provided an improved environment for aquatic resources and sport fisheries. In general, controlled releases allow for an extended recreation season, and reduce the high flow periods in May and June. Water years 1988, 1989, 1990 and 1991 have been dryer than normal and a return to more normal reservoir inflow levels in future years will provide increased benefits to fish, wildlife and recreation uses.

Operational objectives at and below Laguna Dam are to conserve water, control sediment, and maintain the river channel. Storage of water above Laguna Dam in the reservoir, in surcharge, and in bank storage provides for controlled flows in the river at Yuma. When combined with seepage and drainage, this storage allows a continuous live stream serving recreational and fish and wildlife purposes. On a few occasions each year, higher daily flows below Laguna, caused by rainstorms or user rejected water orders, are used to maintain sufficient river channel capacity through flushing of sediment. This occasional practice reduces channel maintenance expense without impairment to water conservation or power production.

Based on existing reservoir conditions and river regulation operations below Hoover Dam, the total 1992 delivery to Mexico is scheduled to be a treaty delivery of 1,500,000 acre-feet for the calendar year. In addition, approximately 140,000 acre-feet of drainage waters are expected to bypass to the Gulf of California via the Bypass Drain during calendar year 1991. This bypass channel was constructed pursuant to provisions of Minute No. 242 of the International Boundary and Water Commission.

Flood Control

Lake Mead is operated in accordance with updated flood control regulations which are specified in the Field Working Agreement between Reclamation and the Corps of Engineers, signed in 1982. The regulations stipulate the minimum release levels needed from Lake Mead to route the reasonable maximum inflow. The reasonable maximum inflow is the estimated inflow volume that, on the average, will not be exceeded 19 out of 20 times. This volume is derived by adding an "uncertainty" term to the most probable runoff forecast. In 1983, unusual hydrometeorological events resulted in unprecedented large forecasting errors. Subsequent reassessment of the estimate of the "uncertainty" term led to adoption of larger values for use in determining the reasonable maximum inflow in 1984 and thereafter.

No flood control releases are scheduled for 1992, but in future years, as Lake Mead refills and flood control releases are again required by the Hoover Dam Flood Control Regulations, consideration will be given to making those releases over the fall and winter months to avoid high flow rates during the January to July runoff season. This distribution of water reduces the chance of bypassing hydroelectric powerplants below Hoover Dam and avoids the adverse impacts of higher flood control releases on fish and wildlife, recreation, water quality, and river stabilization.

Routine maintenance of bankline protection facilities were carried out during water year 1991. As in the previous years, greater than normal bankline repair was necessitated in part by increased wave action from boating and other recreational river traffic. During water year 1991, the river channel in the Lower Basin has remained in good balance, neither aggrading nor degrading significantly in any particular reach.

Total Colorado River reservoir system storage at the start of water year 1991 was approximately 43.9 million acre-feet and about 42.2 million acre-feet at the end of the water year, representing a 1.7 million acre-foot increase in total remaining available reservoir space.

Alamo Dam on the Bill Williams River (in the Lower Basin) received minor flood inflow during water year 1991. During water year 1992, Painted Rock (Gila River) and Alamo Reservoirs are scheduled to be operated in accordance with established flood control criteria to maximize the available flood control space in their respective reservoirs.

Beneficial Consumptive Uses

An extensive discussion of consumptive uses is treated in detail in Reclamation's "Colorado River System Consumptive Uses and Losses Report, 1981-1985." This report is prepared jointly by the Upper and Lower Colorado Regional Offices. The report presents estimates of the consumptive uses and losses from the Colorado River System for each year from 1981 through 1985. The table on the following page was created using the data from the Consumptive Uses and Losses Report (June 1991). The table summarizes annual water use from the system by States, including water use supplied by ground-water overdraft. The 1986-1990 report, is expected to be available in 1992.

Upper Basin Uses and Losses

The three largest categories of consumptive use and losses in the Upper Colorado River Basin are agricultural uses within the basin, transbasin diversions to adjacent drainages, and evaporation losses from the major reservoirs. Estimated evaporation losses were about 591,000 acre-feet from Upper Basin reservoirs in water year 1991. In water year 1990, 746,244 acre-feet were diverted for use in adjacent drainages. The total for transbasin diversions in water year 1991 has not yet been tabulated but the figure is expected to be similar to the 1990 total.

Lower Basin Uses and Losses in the United States

During water year 1991, an estimated 5.5 million acre-feet of water were released from Lake Havasu (Parker Dam) to meet the requirements for water deliveries at Imperial Dam, as well as those of the Colorado River Indian Reservation near Parker, Arizona, the Palo Verde Irrigation District near Blythe, California, other miscellaneous users along the river, and transit losses between Parker Dam and Imperial Dam.

The major water diversions above Parker Dam were by The Metropolitan Water District (MWD) of Southern California and the Central Arizona Project (CAP). MWD pumped approximately 1,253,000 acre-feet from Lake Havasu during water year 1991, and approximately 473,000 acre-feet were pumped for the CAP.

Releases of approximately 8.4 million acre-feet were made from Lake Mohave during water year 1991, to provide for releases to meet minimum downstream needs in the United States at Parker Dam; to supply diversion requirements of MWD and CAP, miscellaneous contractors, and other users; to offset evaporation and other transit losses between Davis and Parker dams; and to maintain the scheduled levels of Lake Havasu.

During water year 1991, releases of approximately 8.9 million acre-feet were made from Lake Mead at Hoover Dam. These releases regulate the levels of Lake Mohave, provide for the small users on that reservoir, and provide for releases at Davis Dam to meet needs in the United States as well as deliveries to Mexico. In addition, 270,000 acre-feet were diverted from Lake Mead for use by the Lake Mead National Recreation Area; Boulder City; Basic Management, Inc.; and contractors of the Colorado River Commission of Nevada. Of the diversions from Lake Mead, approximately 160,000 acre-feet were consumptively used and the remainder returned to Lake Mead. Total releases and diversions from Lake Mead during water year 1991 were an estimated 9,200,000 acre-feet.

For water year 1992, a total release of 7.0 million acre-feet from Lake Havasu is projected, including consumptive use requirements in the United States below Parker Dam, transit losses and regulation in the river between Parker Dam and the Mexican Border, and treaty deliveries to Mexico.

Based on studies made in October 1991, it is expected that MWD will divert 1,300,000 acre-feet by pumping from Lake Havasu during water year 1992. Similarly, the CAP is expected to pump approximately 645,000 acre-feet. These figures may change as the water year progresses. Consumptive uses by small users, river losses or gains, and reservoir losses between Davis Dam and Parker Dam are projected to be a net loss of 66,000 acre-feet.

There are no major users between Hoover Dam and Davis Dam. During water year 1992, diversions from Lake Mead are projected at 308,000 acre-feet. Evaporation from Lake Mead is projected to be about 820,000 acre-feet and net gain between Glen Canyon Dam and Lake Mead is expected to be about 820,000 acre-feet.

Water Use by States and Water Passing to Mexico

Water use by states, basins, and tributaries[1]

(1,000 acre-feet)

State	1981	1982	1983	1984	1985	Average 1981-85
Arizona	6,167	5,143	4,237	5,041	4,838	5,085
California	4,839	4,349	3,953	4,679	4,710	4,506
Colorado	2,086	2,106	1,920	1,865	1,994	1,994
Nevada	350	352	339	355	373	354
New Mexico	342	425	425	417	401	402
Utah	782	746	718	762	879	777
Wyoming	341	330	346	307	336	332
Other[2]	1,598	1,403	1,896	1,197	1,783	1,575
Total Colorado River Basin	16,505	14,854	13,834	14,623	15,314	15,025
Water Passing to Mexico						
Treaty	1,751	1,495	1,646	1,694	1,671	1,652
Minute 242	131	146	166	138	131	142
Excess Releases	2,115	176	7,970	15,160	11,594	7,403
Total Water Passing to Mexico	3,997	1,817	9,782	16,992	13,396	9,197
Total - Colorado River System and Water Passing to Mexico	20,502	16,671	23,616	31,615	28,710	24,222

NOTE:

[1]The above states' uses are onsite consumptive uses and losses and include water uses satisfied by groundwater overdrafts.

[2]Represents main stem reservoir evaporation in the Upper Basin and main stem reservoir evaporation and channel loss below Lee Ferry in the Lower Basin.

Source - "Colorado River System Consumptive Uses and Losses Report, 1981-1985 (June 1991)"

Power Operations and Major Maintenance Activities

Upper Basin - Colorado River Storage Project

During water year 1991, work was performed to uprate Unit 1 at Flaming Gorge. Unit 1 at Morrow Point and Unit 2 at Flaming Gorge are scheduled for uprating during water year 1992. Seal rings on Unit 3 at Glen Canyon are also scheduled to be replaced in water year 1992.

The following table summarizes CRSP generation, purchases, disposition, and revenues from power operations for fiscal year 1991, and present projections for fiscal year 1992. A breakdown by percent of power sources, disposition, and revenues for the fiscal year is shown on the opposite page. The total gross revenue from power operations in fiscal year 1991 was $96,249,052.

CRSP Power Generation

Water Year 1991

Sources of Energy	**Kilowatt-hours**
Net Generation	
Blue Mesa	234,907,000
Crystal	142,117,000
Flaming Gorge	303,363,000
Fontenelle	61,758,000
Glen Canyon	3,634,447,000
Morrow Point	287,812,000
Sub-total- Net Generation	4,664,404,000
Miscellaneous	**Kilowatt-hours**
Purchases	1,486,000,000
Interchange Receipts	450,000,000
Energy Charges to Transmission Service Customers	19,596,000
Sub-total-Miscellaneous	1,955,596,000
Total Energy From All Sources	6,620,000,000
Disposition of Energy	**Kilowatt-hours**
Firm Energy Sales	5,538,235,000
Nonfirm Energy Sales Emergency Fuel Replacement (Oil Conservation)	278,891,000
Interchange Deliveries	171,120,000
System Losses	631,754,000
Total Energy Distributed	6,620,000,000

Revenue	**Dollars**
Firm Power Sales	$ 84,237,761
Non Firm Power Sales Emergency Fuel Replacement (Oil Conservation)	4,699,771
Reserve Capacity	0
Parker-Davis Project Firming	0
Transmission Service	7,059,790
Rental of Substation Facilities	187,562
Miscellaneous Revenue	64,168
Total Gross Revenue	$ 96,249,052

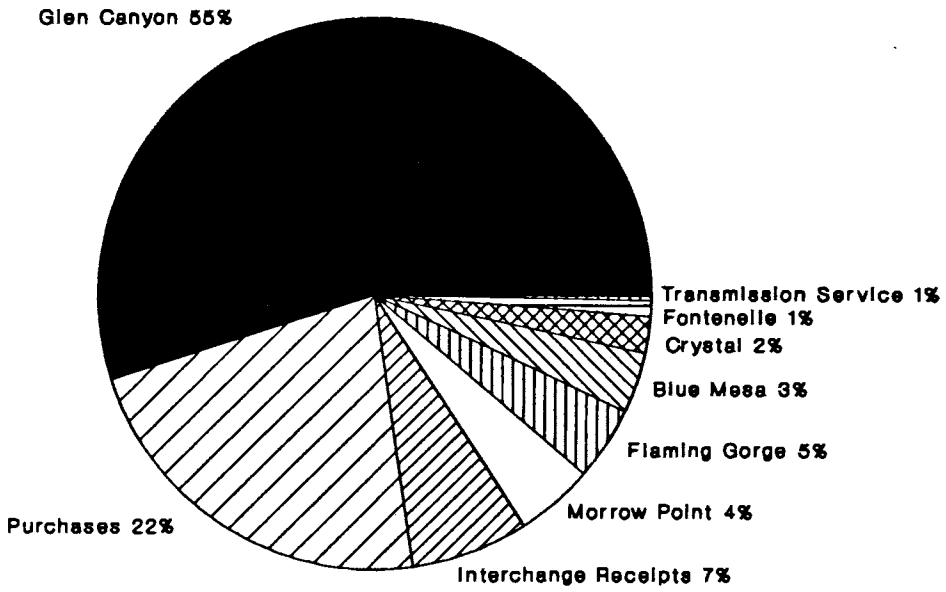
Water Year 1992

(Projected)	**Kilowatt-hours**
Estimated Firm Energy Sales	5,733,587,000
Estimated Nonfirm Sales	200,000,000
Estimated Purchases	1,367,783,000
Estimated Peaking Capacity Sales (Per Month)	
Winter 1991-92	0
Summer 1992	0
Estimated Revenue	$ 115,545,782

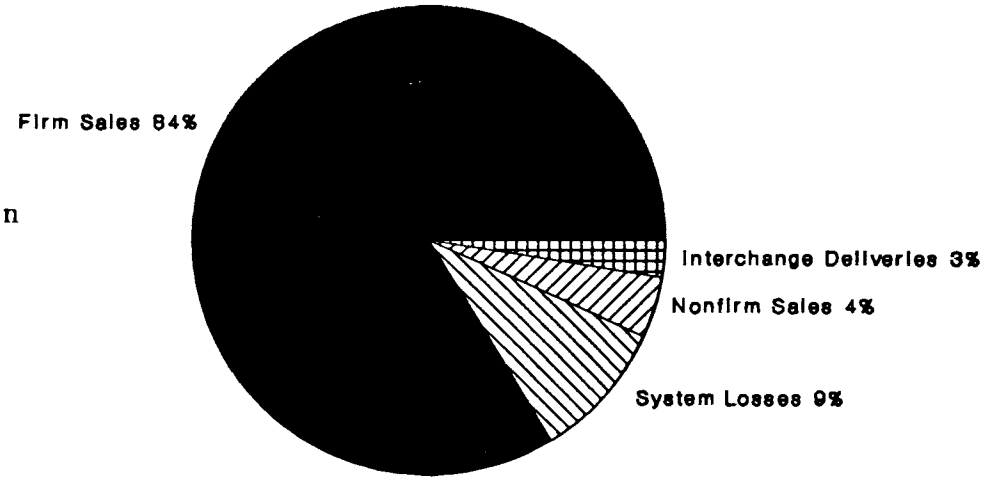
Colorado River Storage Project Power Operations

(Water Year 1991)

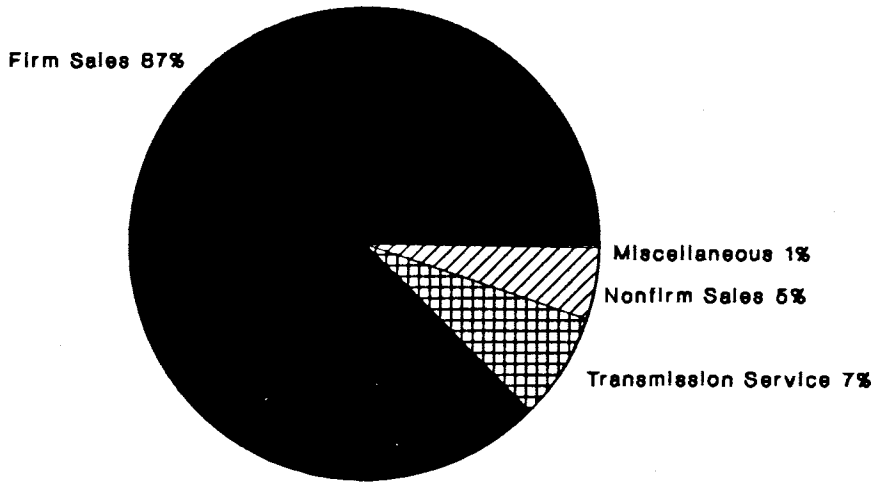
Energy Sources



Energy Disposition



Revenue



Power Operations [Cont.]

Lower Basin

Water Year 1991

On June 1, 1987, the United States assumed operation and maintenance responsibility of Hoover Powerplant and associated switching stations, after the 50-year contract with operating agents (The City of Los Angeles and its Department of Water and Power, and Southern California Edison Company, Ltd.) expired. The "General Regulations for Generation and Sale of Power in Accordance with the Boulder Canyon Project Adjustment Act", promulgated on May 20, 1941, provided the basis for computation of charges for electrical energy generated at Hoover Dam through May 31, 1987. The Department of Energy Organizational Act of 1977 transferred the responsibility for the power marketing and transmission functions of the Boulder Canyon Project from the Bureau of Reclamation (Reclamation) to the Western Area Power Administration (Western). The power marketing functions of Western include the responsibility for promulgating charges for the sale of power. The construction, power generation, operation, maintenance, and replacement responsibilities associated with the Hoover Powerplant and appurtenant works remained with Reclamation.

Marketing of Parker-Davis power and operating the transmission system are the responsibility of Western. Reclamation continues to operate and maintain the dams and their powerplants, a function of the Lower Colorado Dams Project Office.

Davis and Parker Powerplants continue to be operated by remote control from Western's Supervisory Control and Data Acquisition (SCADA) computer system located at their Phoenix Area Office. The SCADA system monitors and remotely controls the powerplant generating units to adhere to water schedules provided by Reclamation's water scheduling branch located at the Lower Colorado Dams Project, Hoover Dam. Routine maintenance was performed at Davis and Parker powerplants.

The total energy delivered to the Hoover contractors during the 1991 fiscal year (October 1, 1990 through September 30, 1991) was 3,986,719,000 kilowatt-hours. Of that amount, the Schedule A contractor received 3,313,211,000 kilowatt-hours and the Schedule B contractor received 673,508,000 kilowatt-hours. Schedule C contractor received no deliveries in the 1991 operating year.

In water year 1991, one generating unit, A9, at Hoover Powerplant was uprated. This increased the usable capacity by 8.5 megawatts and brought the total plant capacity to 1952.5 megawatts. Of the 17 generating units at Hoover powerplant, 13 have been uprated.

Four generating units remain to be uprated. Unit A8 is in the process of being uprated and is scheduled to be completed in February, 1992. Unit A3 is in the process of being uprated and is scheduled to be completed in May, 1992. Unit A4 is scheduled for completion in November, 1992. Unit N8 is scheduled for completion in December, 1992. The total Hoover powerplant capacity, at the completion of uprating, is estimated to be a maximum of 2,074 megawatts. Principal work under the contract includes conducting a study of each existing generator's design, furnishing and installing necessary new components, and modifying the generators, as required, to accomplish the proposed uprating. The objective is to uprate the generators by the optimum amount, based on water availability and economic feasibility. Studies show that sufficient water, head, and turbine capacity are available to produce significantly more generator output than the existing generator ratings will allow.

Water Year 1992

In operation studies of Lake Mead and Lake Powell for the operating year which ends September 30, 1992, the amounts released at Hoover Dam have been projected to satisfy both downstream water requirements, including diversions by The Metropolitan Water District and the Central Arizona Project, while also complying with the overall requirements to meet Compact, flood control, and operating criteria release provisions. The water scheduled to be released will generate Schedules A and B energy. The estimated monthly Hoover releases during water year 1992 total 8.96 million acre-feet. It is estimated that generation from these Hoover releases will result in delivery to the approved contractors of approximately 4.1 billion kilowatt-hours of electrical energy.

Normal routine maintenance at Hoover Powerplant has been scheduled around the uprating program outages, and upon completion of the uprating program in December of 1992, maintenance will return to a more normal schedule. The four main penstocks are scheduled for inspection and repair during the next 2 years.

The Hoover Uprating Program was authorized by the Hoover Powerplant Act of 1984 (ACT), which finalized an historic three-State agreement on the marketing of Hoover power after the original contracts terminated on May 31, 1987. The Act also requires that the Hoover Uprating Program be undertaken with funds advanced by the non-Federal purchasers of Hoover power.