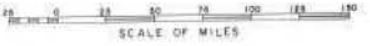
U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

ANNUAL REPORT

1974 Operation of the Colorado River Basin
1975 Projected Operations

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

Colorado River Basin



ANNUAL REPORT

1974 Operation of the Colorado River Basin 1975 Projected Operations

(prepared pursuant to the Colorado River Basin Project Act of 1968, Public Law 90-537)

U. S. Department of the Interior
Rogers C. B. Morton, Secretary

Bureau of Reclamation
Gilbert G. Stamm, Commissioner

January 1975

Table of Contents

	Page
Map--Upper Colorado and Lower Colorado River Basins	Inside Cover
Authority for Report	ii
Introduction	ii
Actual Operations under Criteria--Water Year 1974	1
Upper Basin Reservoirs	2
Lower Basin Reservoirs	14
River Regulation	20
Beneficial Consumptive Uses	21
Upper Basin Uses	21
Lower Basin Uses and Losses	21
Water Quality Control	22
Water Quality Operations during Water Year 1974	22
Future Water Quality Control	22
Enhancement of Fish and Wildlife	23
Upper Basin	23
Lower Basin	23
Preservation of Environment	25
Projected Plan of Operation under Criteria for Current Year	26
Determination of "602(a) Storage"	26
Lower Basin Requirements	27
Plan of Operation--Water Year 1975	29
Upper Basin Reservoirs	29
Lower Basin Reservoirs	33

Glen Canyon Visitor Center

Authority for Report

Pursuant to the Colorado River Basin Project Act (P.L. 90-537) of 1968, I am pleased to present to the Congress and to the Governors of the Colorado River Basin States, the fourth Annual Report on the Operation of the Colorado River.

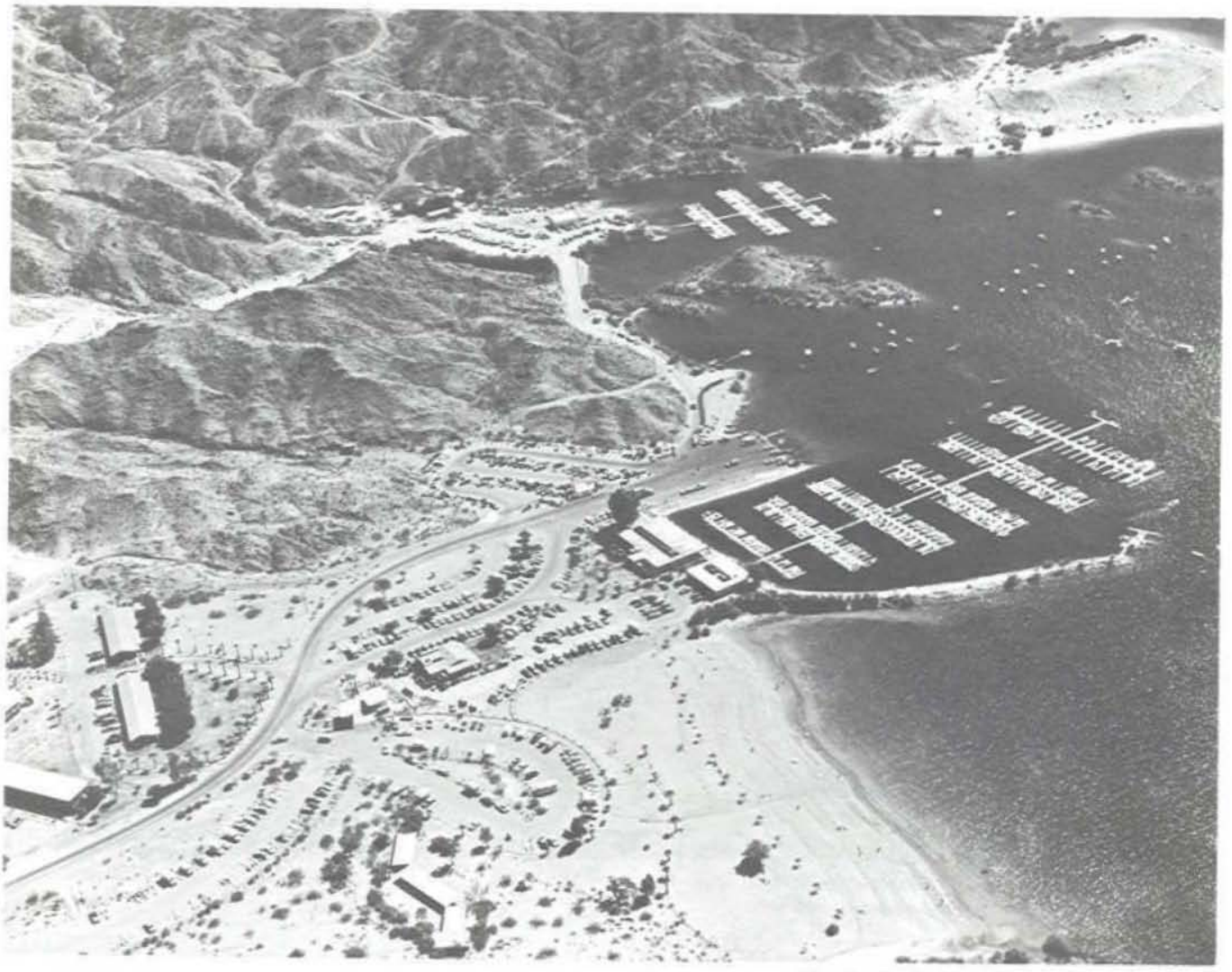
This report describes the actual operation of the reservoirs in the Colorado River drainage area constructed under the authority of the Colorado River Storage Project Act, the Boulder Canyon Project Act, and the Boulder Canyon Project Adjustment Act during Water Year 1974 and the projected operation of these reservoirs during Water Year 1975 under the Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs published in the Federal Register June 10, 1970.

ROGERS C. B. MORTON
Secretary, United States
Department of the Interior

Introduction

The operation of the Colorado River during the past year and the projected operation for the current year reflect domestic use, irrigation, hydroelectric power generation, water quality control, fish and wildlife propagation, recreation, flood control, and Colorado River Compact requirements.

Storage and release of water from the Upper Basin reservoirs recognize all applicable laws and relevant factors governing the Colorado River, including the impoundment of water in the Upper Basin required by Section 602(a) of Public Law 90-537. The operation of the Lower Basin reservoirs reflects Mexican Treaty obligations and Lower Basin contractual commitments.



Katherine's Landing, Lake Mohave

Actual Operations Under Criteria - Water Year 1974

Operation of the Colorado River during 1974 was based on a forecast of runoff. Starting January 1, the snowmelt runoff was forecast and the required release of stored water to meet demands was scheduled for each reservoir through September. At the beginning of each month thereafter through June, the forecast was revised based on precipitation and snow data collected during the month and the scheduled operation was revised accordingly.

A description of the actual operation of each of the reservoirs in the Colorado River Basin is given in the following paragraphs. Charts 1 through 9 show hydrographs of monthly outflow from the reservoirs and water surface elevation and active storage in the reservoirs for water year 1974.

Upper Basin Reservoirs

Fontenelle Reservoir

Chart 1

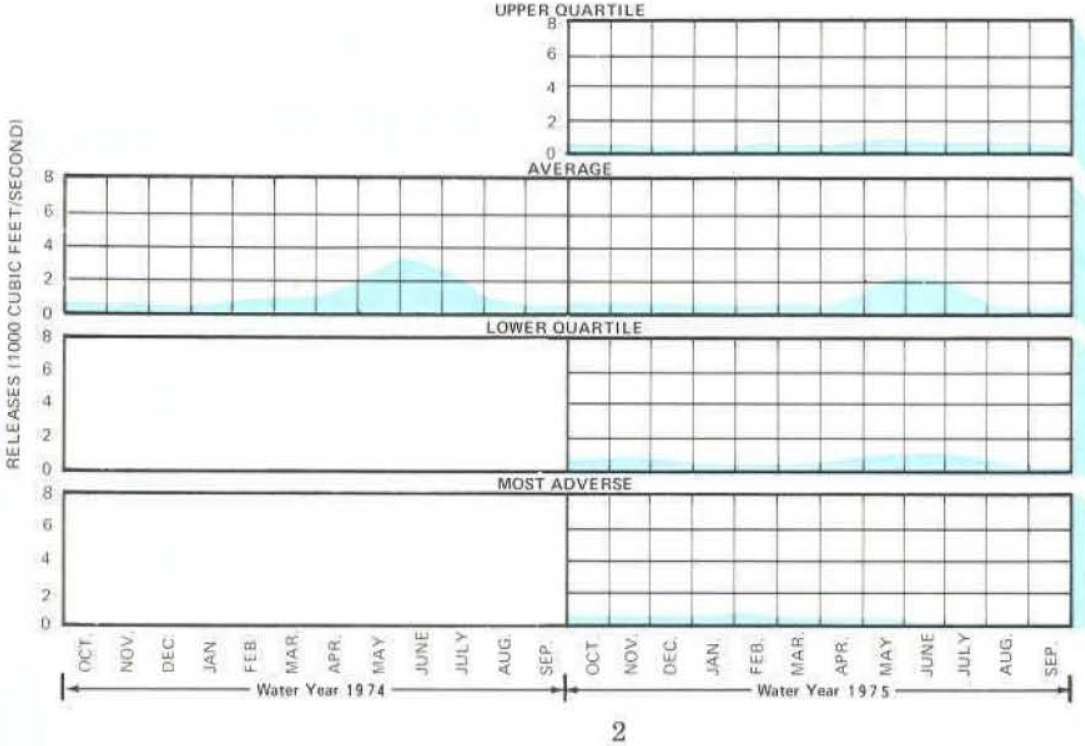
During the past year, Fontenelle Reservoir was operated for hydroelectric generation, flood control, fish and wildlife enhancement, and for recreation. During the fall and winter of 1973-74, the reservoir was slowly reduced from elevation 6,505 feet at the beginning of the water year to a low elevation of 6,480 feet prior to spring runoff in April. The minimum release during the fall and winter was 700 cubic feet per second (ft^3/s) in order that power could be generated at the powerplant and fish flows maintained. Releases during March were high enough to force the geese in the Seedskadee National Bird Refuge to build their nests on higher ground. After the actual geese nesting and hatching period, releases were controlled to allow the reservoir to fill late in June. Maximum releases of 8,800 ft^3/s from the reservoir occurred late in June. The reservoir as of September 30, 1974, had 315,000 acre-feet of active storage at elevation 6,502 feet. (Chart 1)

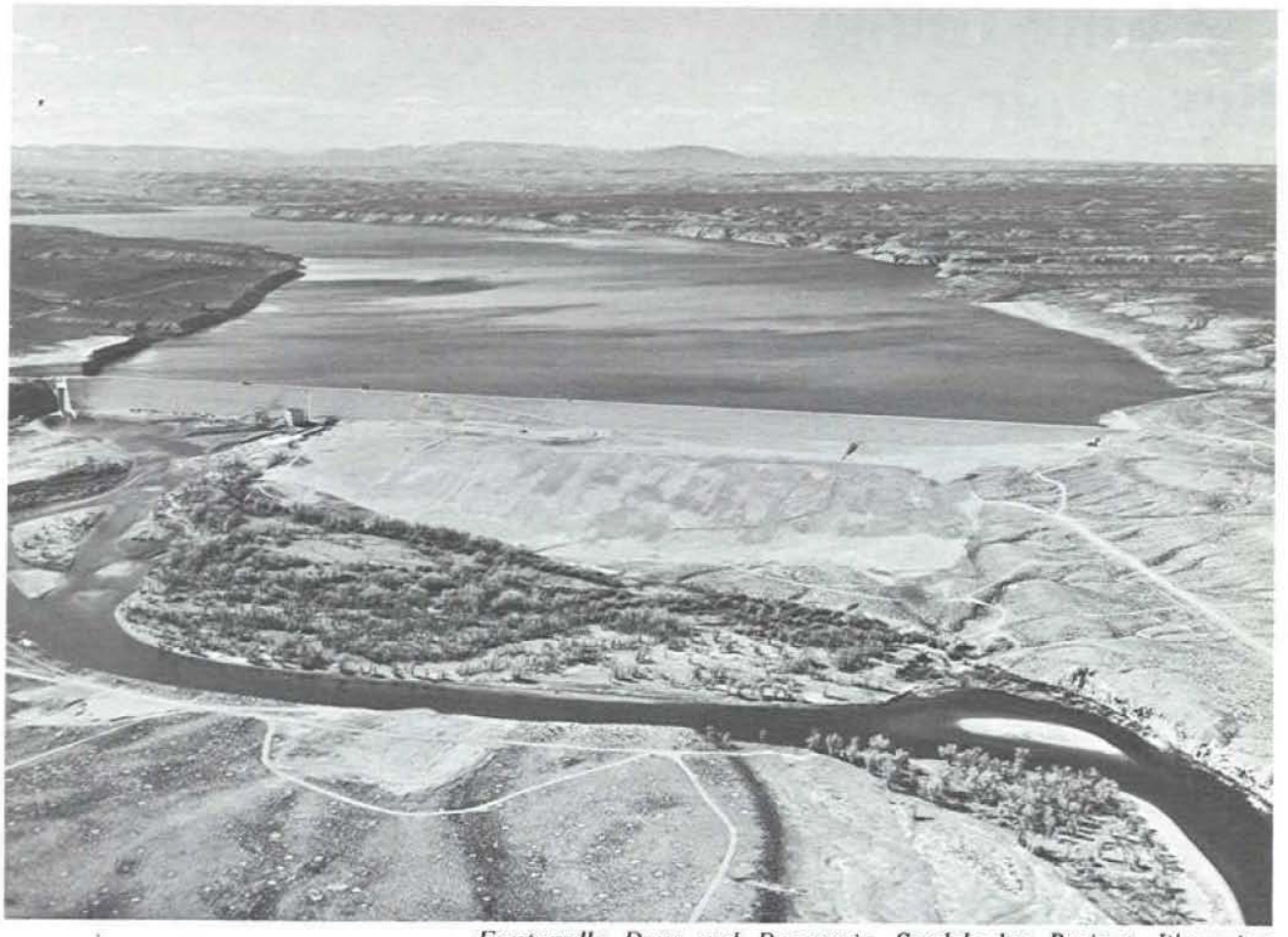
STATISTICS

RESERVOIR	ACTIVE STORAGE* (ACRE-FEET)	ELEVATION (FEET)
MAXIMUM STORAGE	344,834	6506
RATED HEAD	233,789	6491
MINIMUM POWER	194,962	6485
SURFACE AREA (FULL)	8058 ACRES	
RESERVOIR LENGTH (FULL)	18 MILES	
POWER PLANT		
NUMBER OF UNITS	1	
TOTAL CAPACITY	10,000 KILOWATTS	

**does not include 563 acre feet of dead storage below 6408 feet*

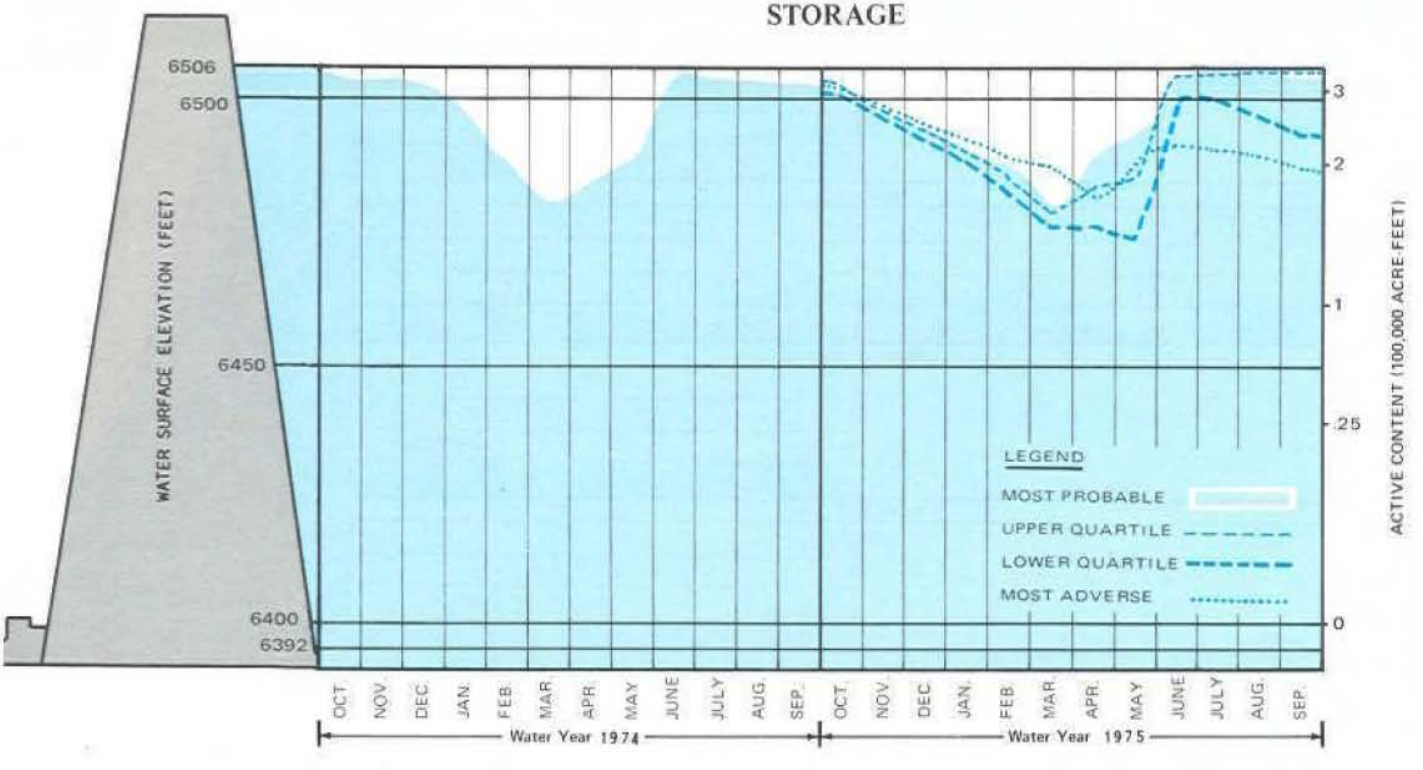
OUTFLOW





Fontenelle Dam and Reservoir, Seedskadee Project, Wyoming

STORAGE



Flaming Gorge Reservoir

Chart 2

Flaming Gorge Reservoir has been operated as part of the Colorado River Storage Project in accordance with governing compacts and laws to provide optimum power production, recreational opportunities, and fish and wildlife benefits.

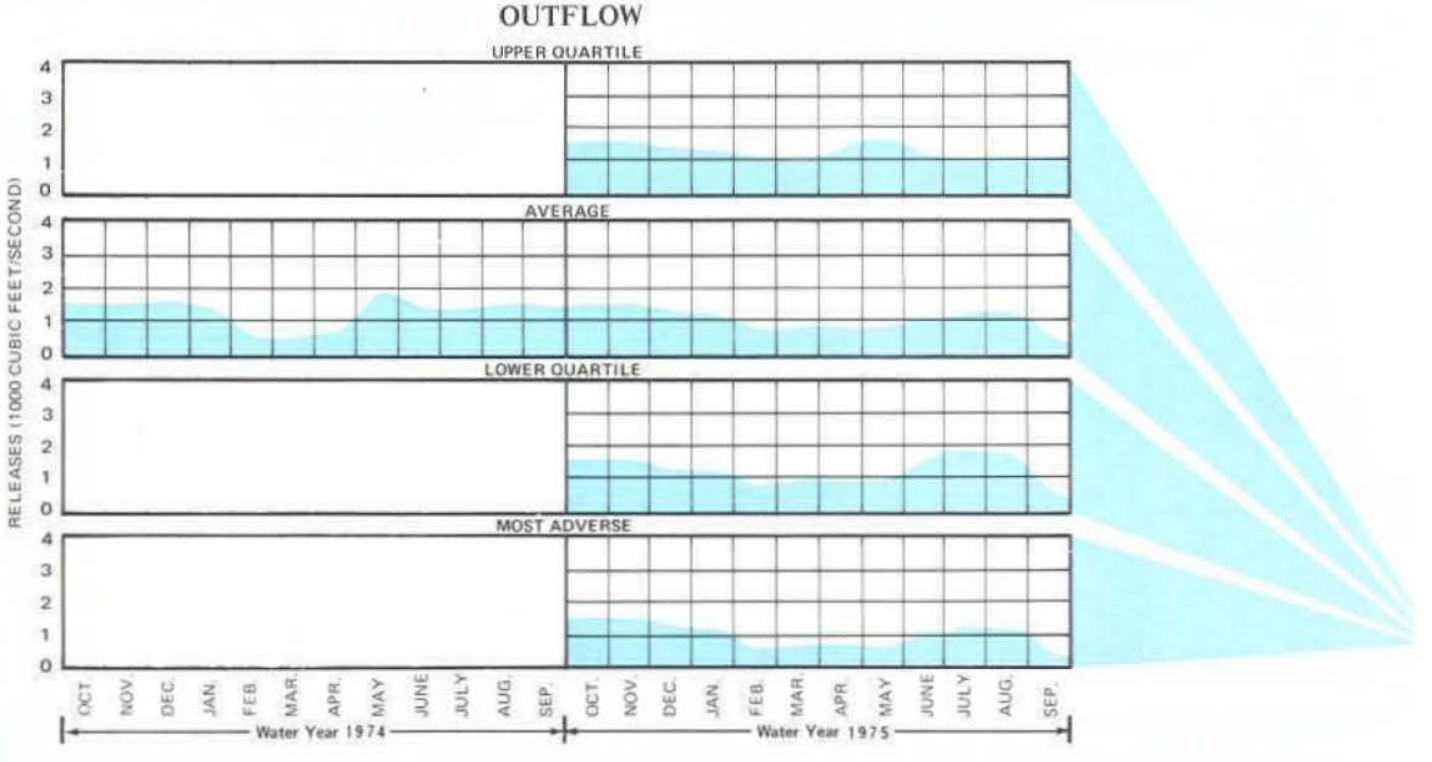
On September 30, 1973, Flaming Gorge was at elevation 6,026 feet with an active storage of 3,180,000 acre-feet. Releases for power production caused the reservoir to recede 9 feet during the fall and winter to elevation 6,017 feet. The April-July 1974 runoff above Flaming Gorge was 1,430,000 acre-feet, or 123 percent of the long-time average. With this runoff, Flaming Gorge filled for the first time on August 1, 1974, at elevation 6,040 feet with an active storage of 3,750,000 acre-feet. The reservoir was held near the seasonal maximum through the recreation season. (Chart 2)

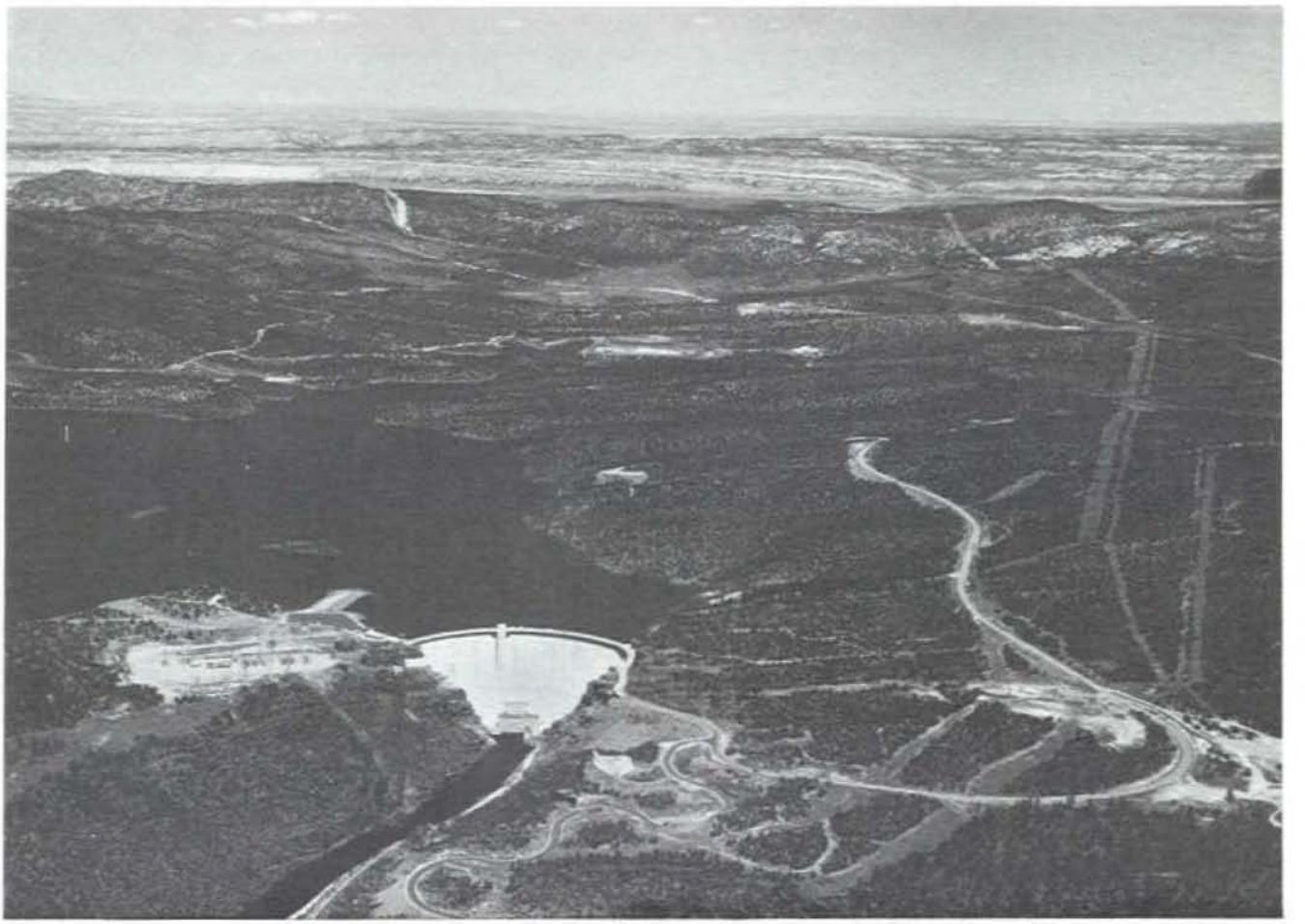
Reservoir releases were higher than normal during August and September 1974. This was a result of coordinated operation with other reservoirs so we could reduce Glen Canyon releases to meet the operation criteria.

STATISTICS

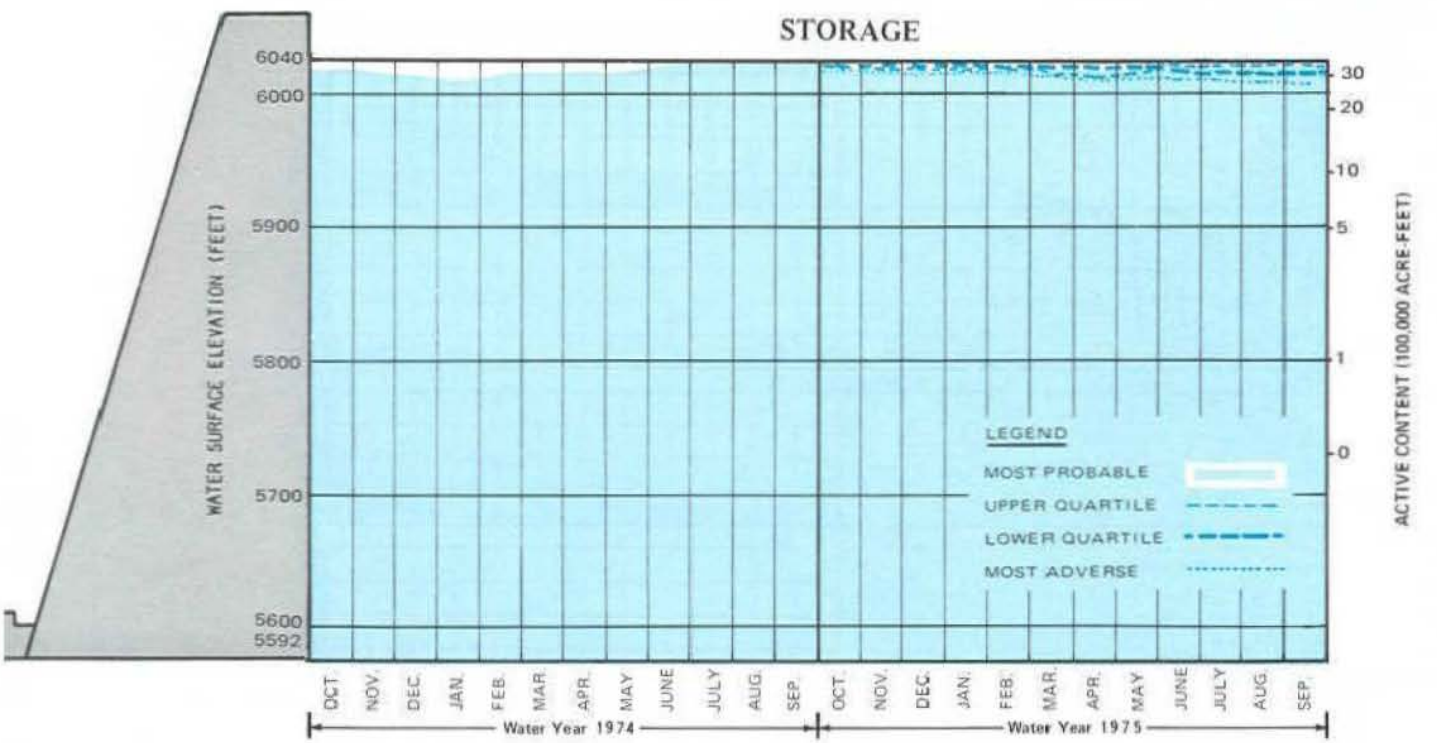
RESERVOIR	ACTIVE STORAGE* (ACRE-FEET)	ELEVATION (FEET)
MAXIMUM STORAGE	3,749,000	6040
RATED HEAD	1,062,000	5946
MINIMUM POWER	233,000	5871
SURFACE AREA (FULL)	42,020 ACRES	
RESERVOIR LENGTH (FULL)	91 MILES	
POWER PLANT		
NUMBER OF UNITS	3	
TOTAL CAPACITY OF UNITS	108,000 KILOWATTS	

**does not include 40,000 acre feet of dead storage below 5740 feet*





Flaming Gorge Dam and Reservoir, Flaming Gorge Unit, Colorado River Storage Project, Utah-Wyoming



Curecanti Unit

Chart 3/ Blue Mesa Reservoir

STATISTICS

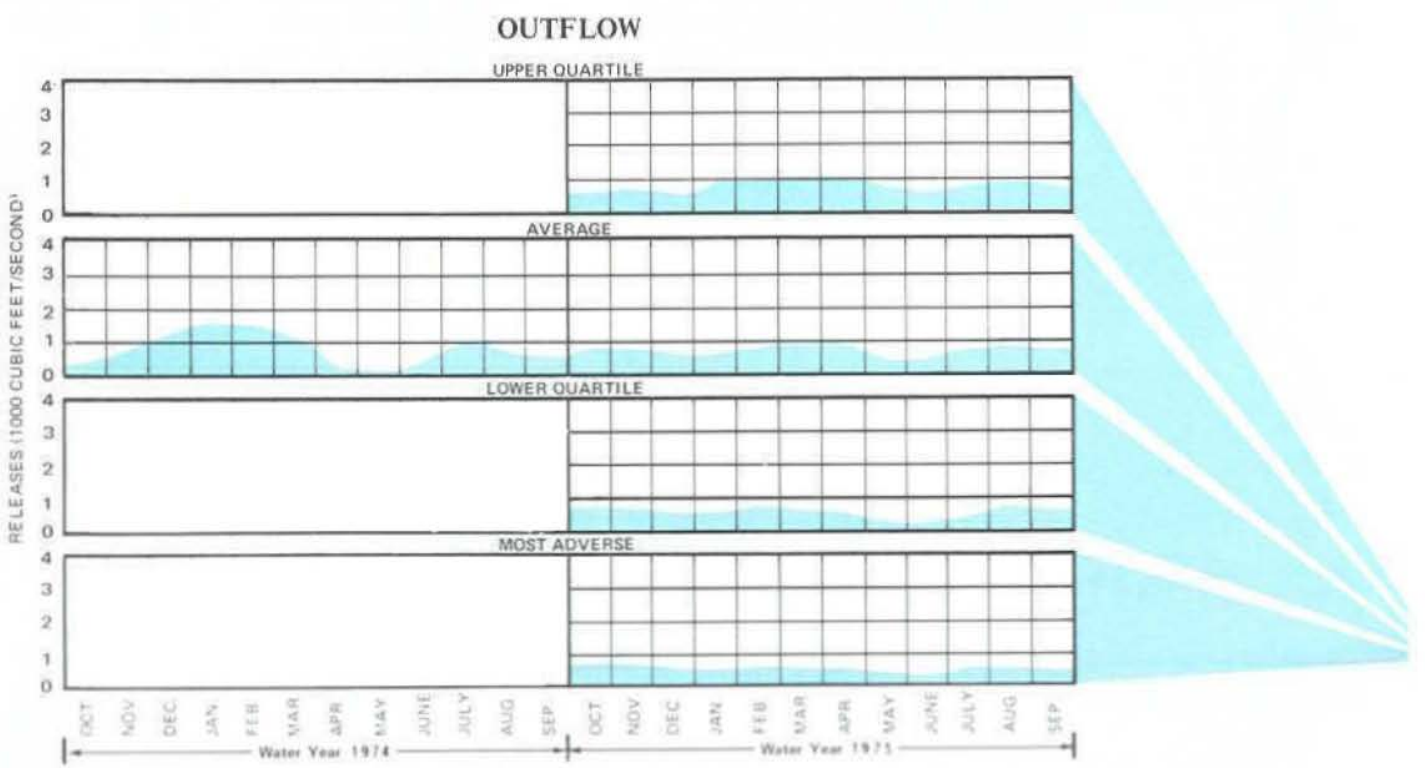
RESERVOIR	ACTIVE STORAGE* (ACRE-FEET)	ELEVATION (FEET)
MAXIMUM STORAGE	829,523	7519
RATED HEAD	249,395	7438
MINIMUM POWER	81,070	7393
SURFACE AREA (FULL)	9180 ACRES	
RESERVOIR LENGTH (FULL)	24 MILES	
POWER PLANT		
NUMBER OF UNITS	2	
TOTAL CAPACITY OF UNITS	60,000 KILOWATTS	

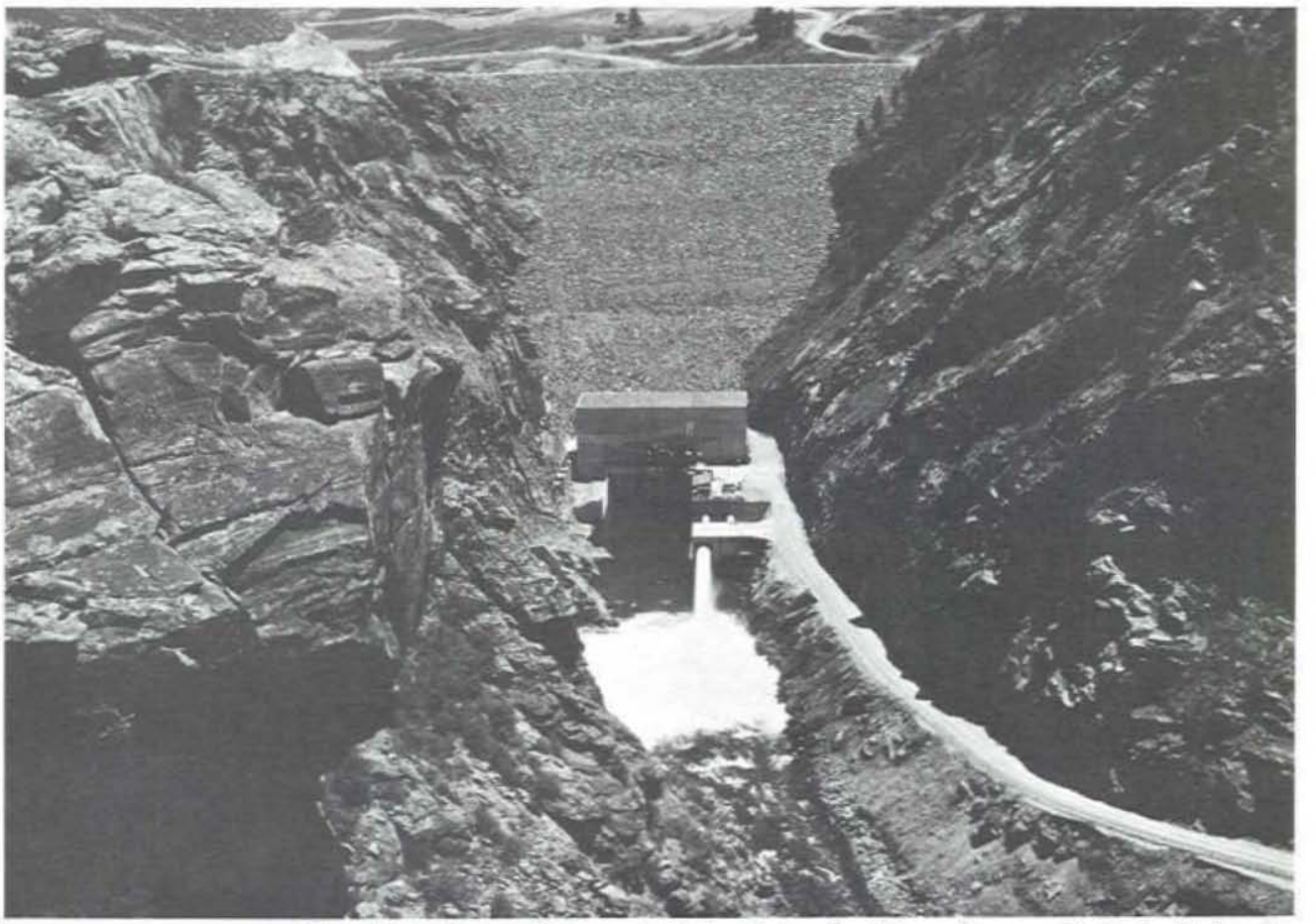
**does not include 111,232 acre feet of dead storage below 7358 feet*

At the end of September 1973, Blue Mesa Reservoir had 716,000 acre-feet of active storage and a water surface elevation of 7,506 feet. The reservoir was drawn down to elevation 7,441 feet by April 1, 1974, with a content of 267,000 acre-feet. During April-July 1974, inflow to Blue Mesa was 555,000 acre-feet, with a 1974 water year total of 767,000 acre-feet. The seasonal high for the reservoir was elevation 7,497 feet and an active storage of 640,000 acre-feet. During water year 1974, a minimum flow of 200 ft^3/s was maintained below Gunnison Tunnel.

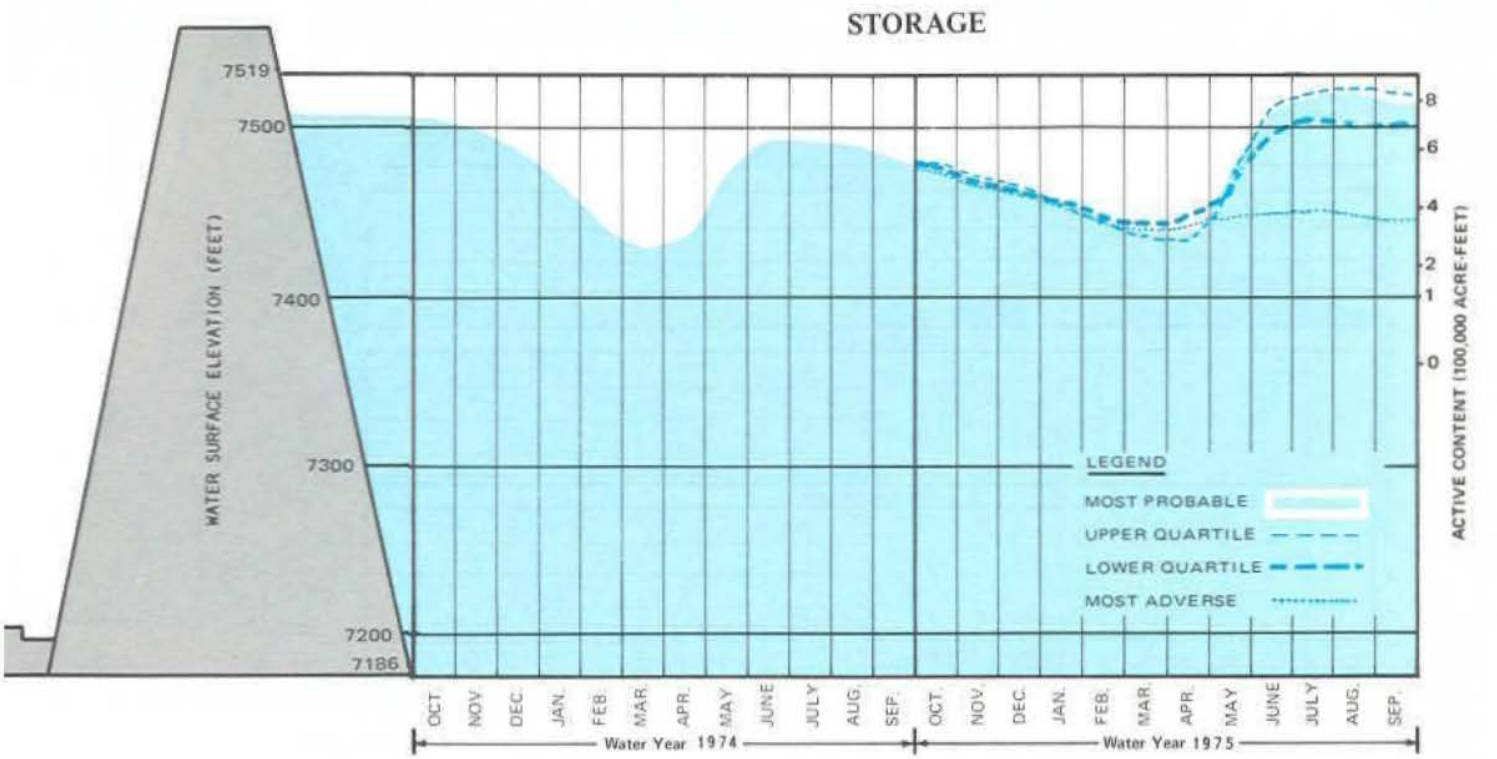
The March 1, 1974, forecast of the April-July 1974 inflow to Blue Mesa was 800,000 acre-feet. The flood control diagram showed that the reservoir could have remained full the remainder of the snowmelt season; therefore, the operation of Blue Mesa did not include releases for flood control. (Chart 3)

During the period May 1 through September 30, 1974, low releases from Blue Mesa insured a flow of not more than 1,500 ft^3/s in the Crystal Dam site area. Most of the spring runoff was stored behind Blue Mesa Dam.





Blue Mesa Dam, Curecanti Unit, Colorado River Storage Project, Colorado



Curecanti Unit

Chart 4 / Morrow Point Reservoir

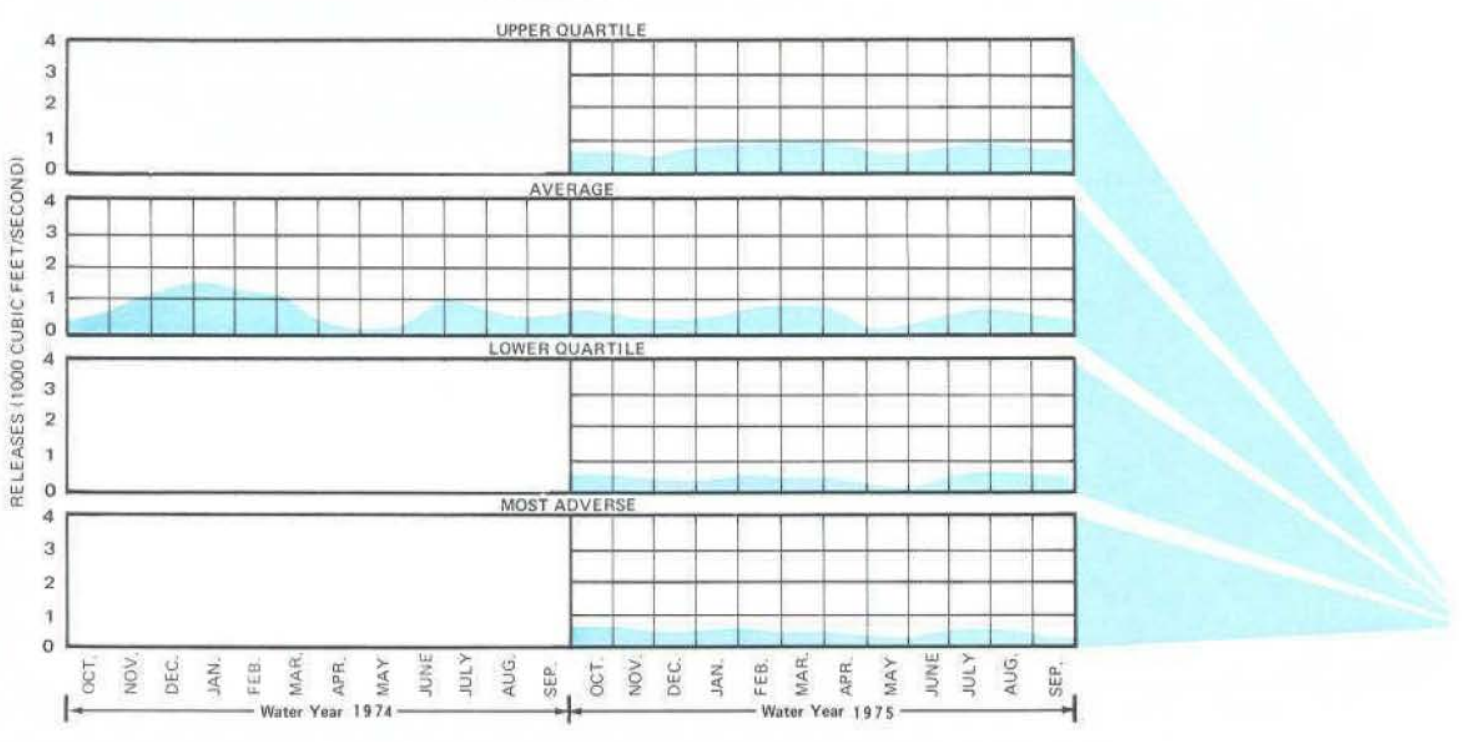
STATISTICS

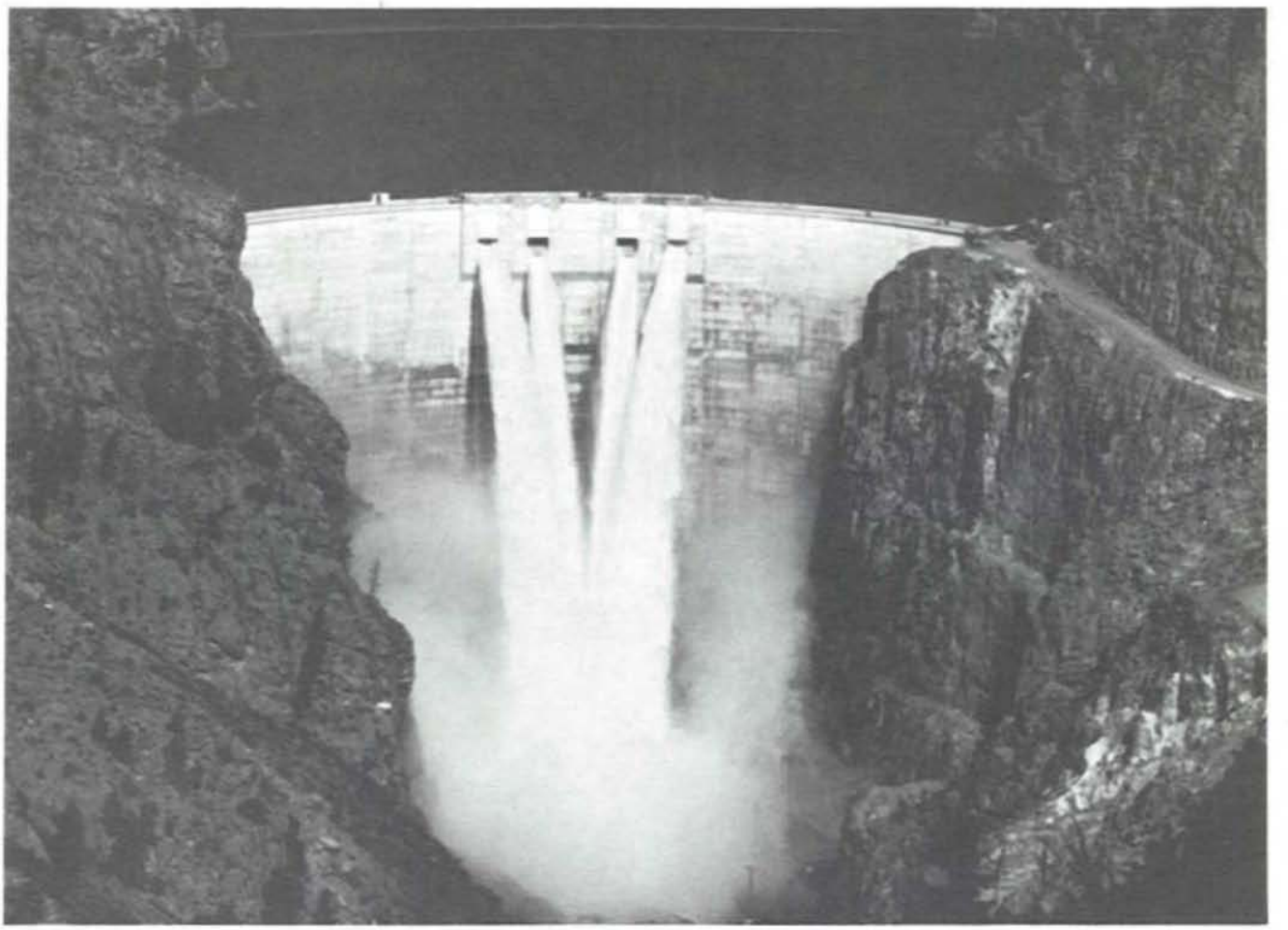
RESERVOIR	ACTIVE STORAGE* (ACRE-FEET)	ELEVATION (FEET)
MAXIMUM STORAGE	117,025	7160
RATED HEAD	79,805	7108
MINIMUM POWER	74,905	7100
SURFACE AREA (FULL)	817 ACRES	
RESERVOIR LENGTH (FULL)	11 MILES	
POWER PLANT		
NUMBER OF UNITS	2	
TOTAL CAPACITY OF UNITS	120,000 KILOWATTS	

**does not include the 165 acre feet of dead storage below 6808 feet*

Morrow Point Reservoir was essentially full during water year 1974. On September 30, 1973, the reservoir contained 115,000 acre-feet of active storage at elevation 7,158 feet. Its inflow is extensively controlled by the larger Blue Mesa Reservoir which is upstream.

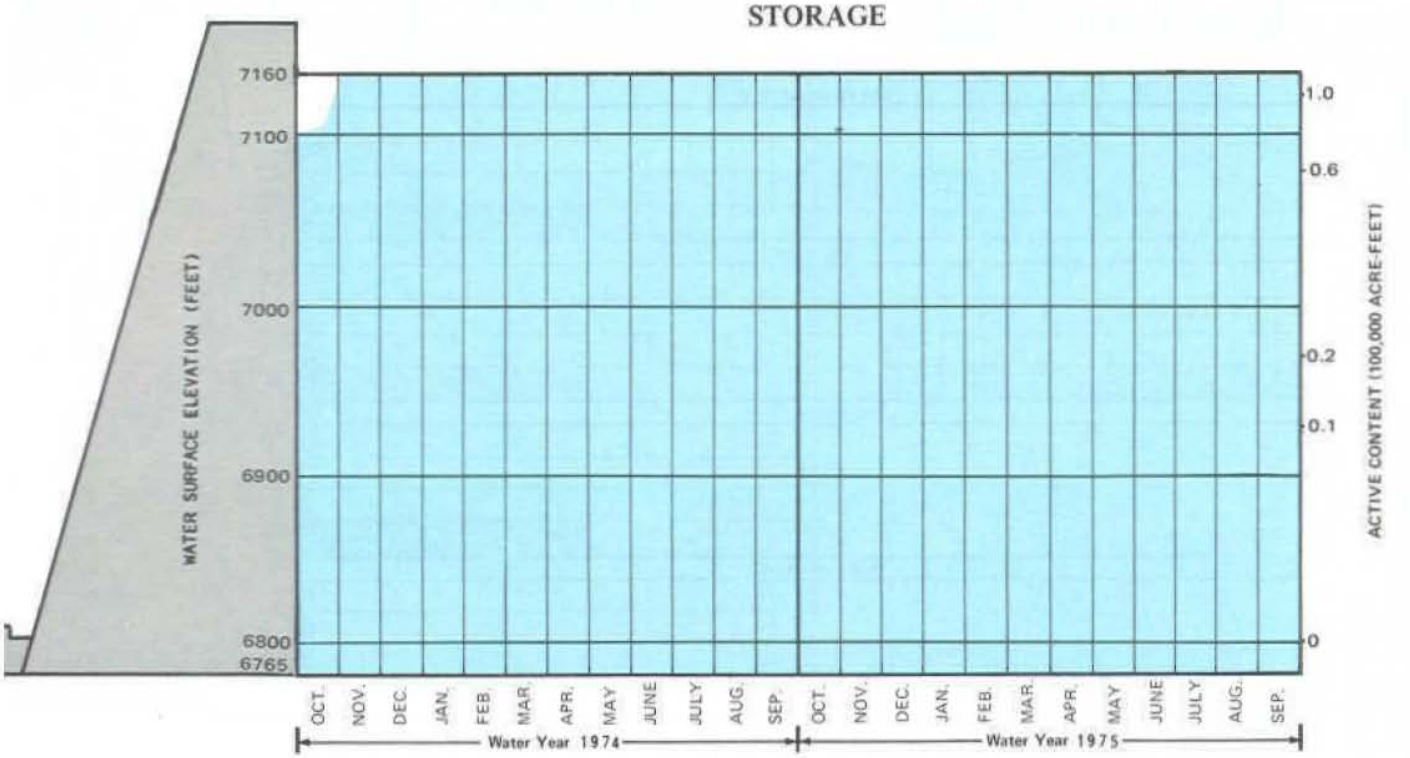
Morrow Point Reservoir will normally be operated at or near full capacity regardless of the amount of snowmelt runoff. (Chart 4)





Morrow Point Dam and Reservoir, Curecanti Unit, Colorado River Storage Project, Colorado

STORAGE



Navajo Reservoir

Chart 5

STATISTICS

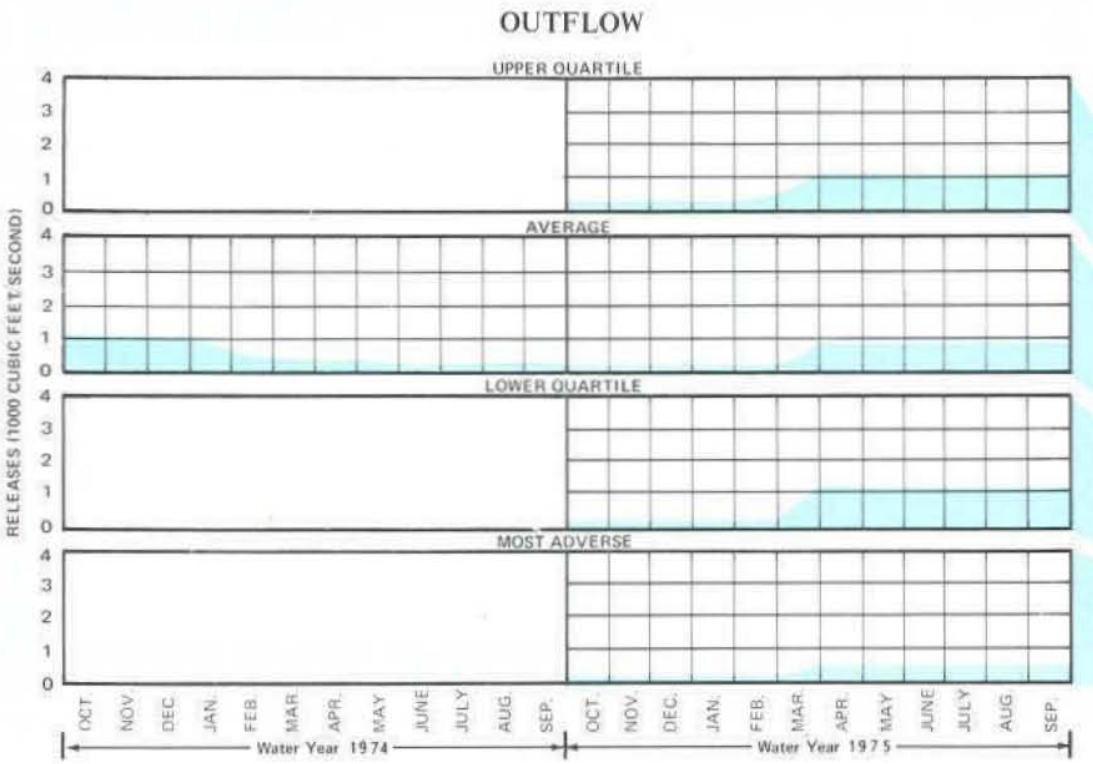
RESERVOIR	ACTIVE STORAGE* (ACRE-FEET)	ELEVATION (FEET)
MAXIMUM STORAGE	1,696,400	6085
INACTIVE STORAGE	660,500	5990
SURFACE AREA (FULL)	15,610 ACRES	
RESERVOIR LENGTH (FULL)	33 MILES	

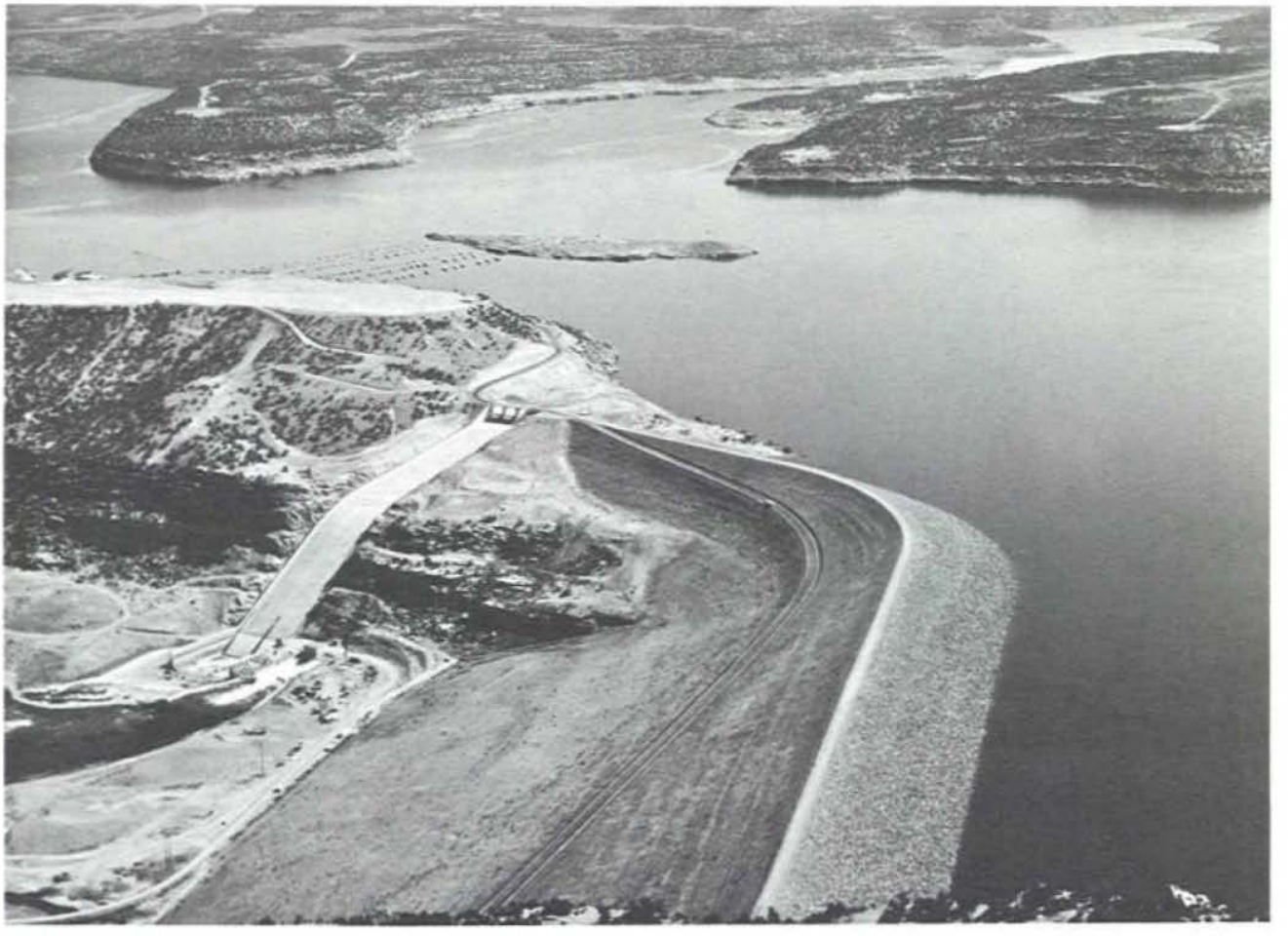
*does not include 12,600 acre feet of dead storage below elevation 5775 feet

During water year 1974 Navajo Reservoir was kept within the limits specified by the Bureau of Reclamation in its interim operation rules. The reservoir was lowered to elevation 6,027 feet during the winter of 1973 and spring of 1974. The actual April-July inflow to Navajo Reservoir was 271,000 acre-feet or 32 percent of the long-time April-July runoff average above Navajo.

Navajo Reservoir is operated under a formal flood control plan. On March 1, 1974, Navajo Reservoir had 986,000 acre-feet of storage. The April-July inflow forecast on March 1 was 600,000 acre-feet. The current flood control diagram allowed the reservoir to be full with an active storage of 1,696,400 acre-feet during the entire 1974 snowmelt runoff season based on the March 1 forecasts and subsequent forecasts made during the snowmelt runoff period. Therefore, the scheduled operation of the reservoir did not include any releases specifically required for flood control. (Chart 5)

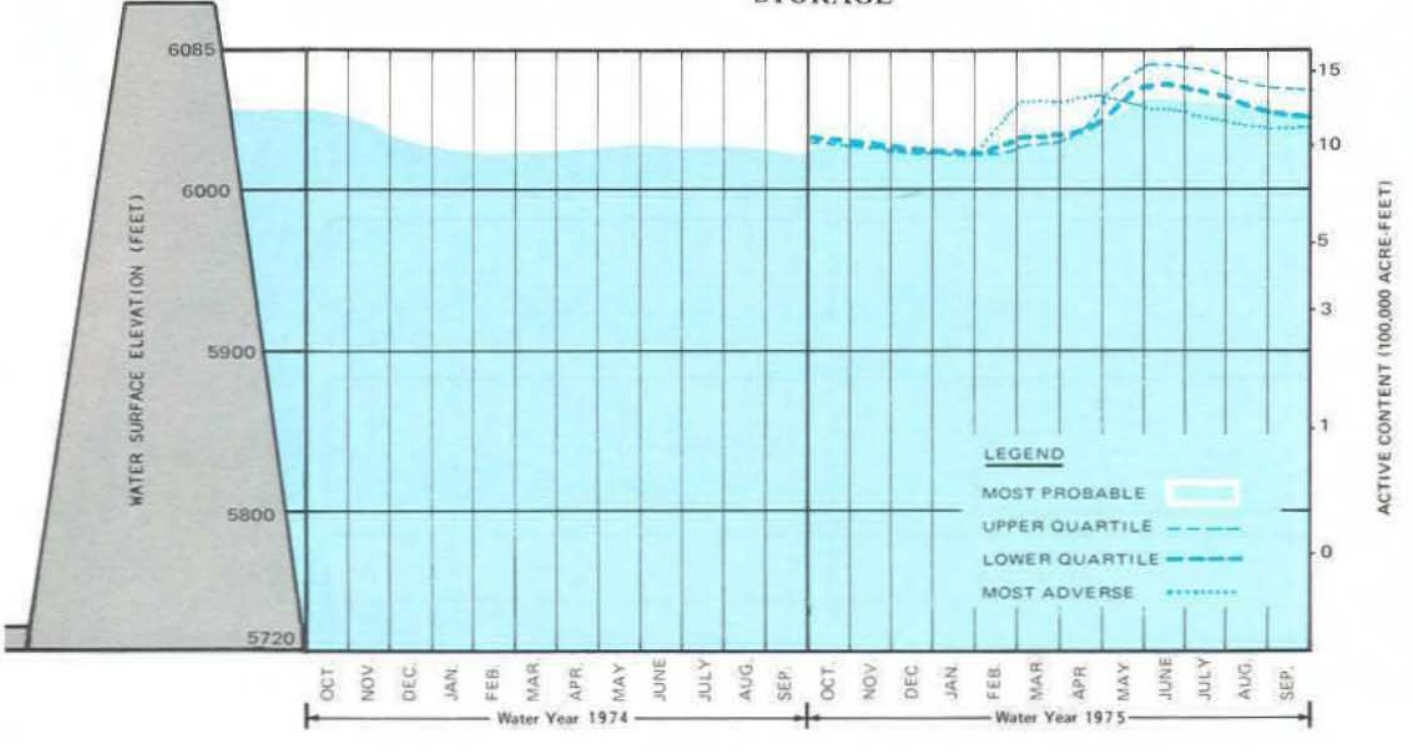
Releases were scheduled to control downstream flows to the minimum level practical in order to minimize bank erosion.





Navajo Dam and Reservoir, Navajo Unit, Colorado River Storage Project, New Mexico-Colorado

STORAGE



Glen Canyon Dam
Lake Powell

Chart 6

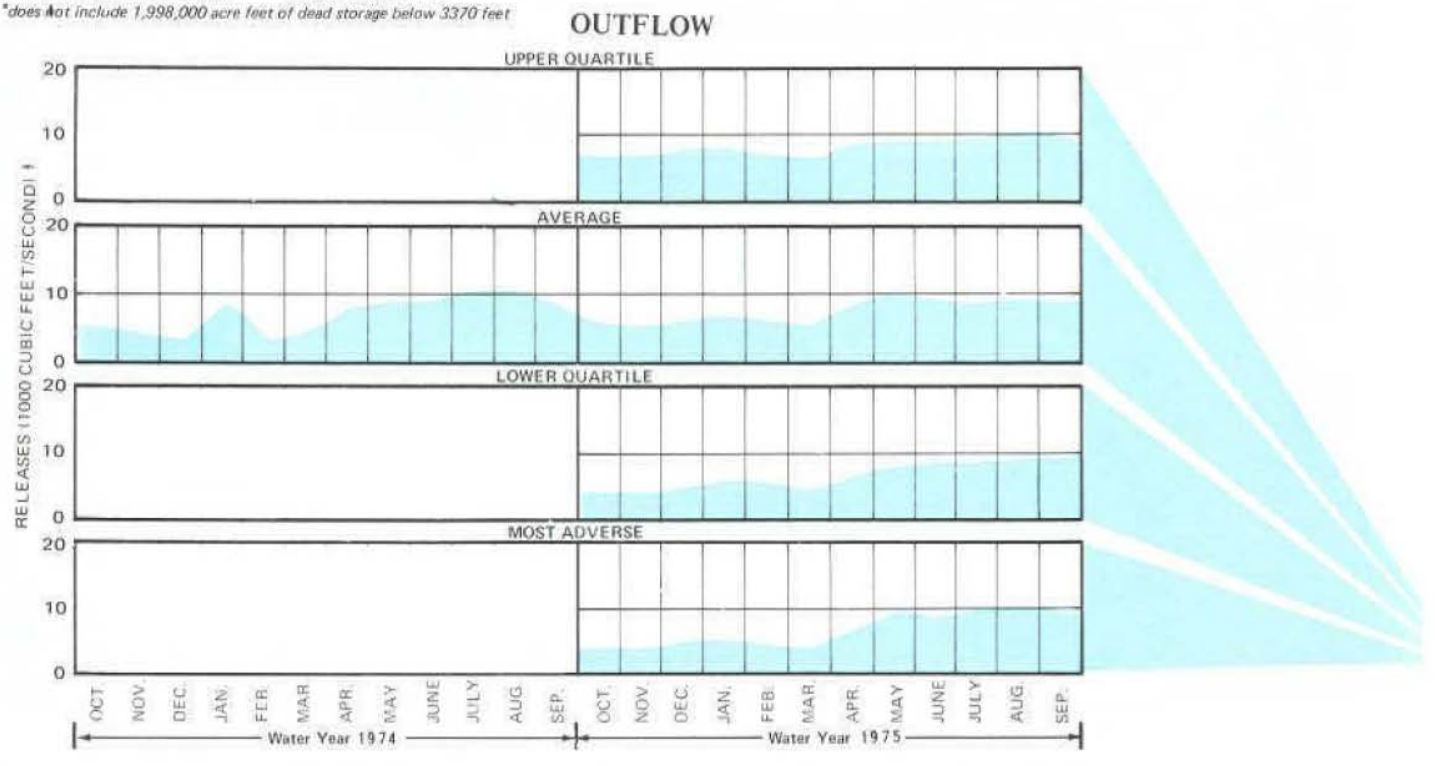
STATISTICS

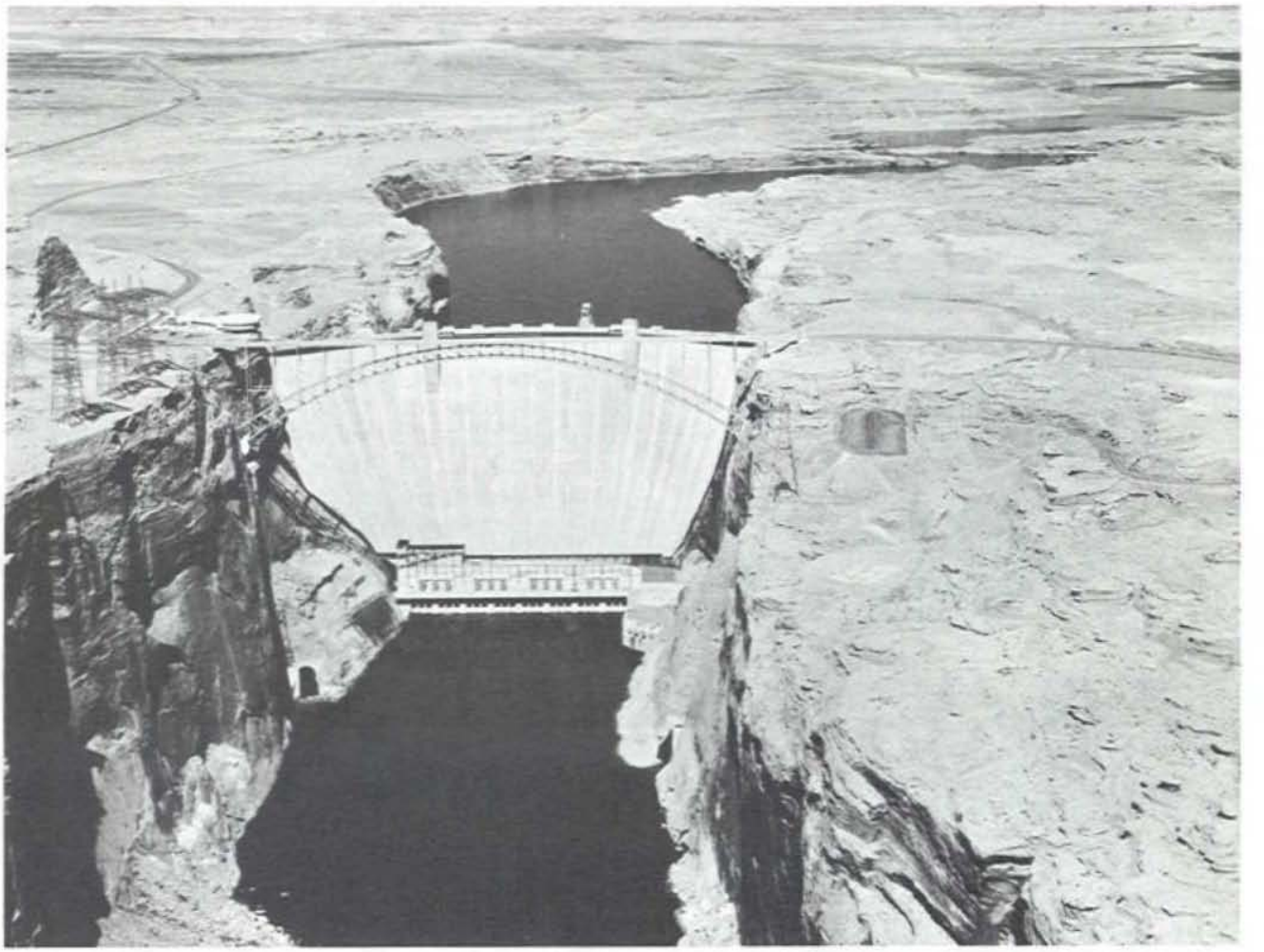
RESERVOIR	ACTIVE STORAGE* (ACRE-FEET)	ELEVATION (FEET)
MAXIMUM STORAGE	25,002,000	3700
RATED HEAD	9,428,000	3570
MINIMUM POWER	4,126,000	3490
SURFACE AREA (FULL)	161,390 ACRES	
RESERVOIR LENGTH (FULL)	186 MILES	
POWER PLANT		
NUMBER OF UNITS	8	
TOTAL CAPACITY OF UNITS	900,000 KILOWATTS	

*does not include 1,998,000 acre feet of dead storage below 3370 feet

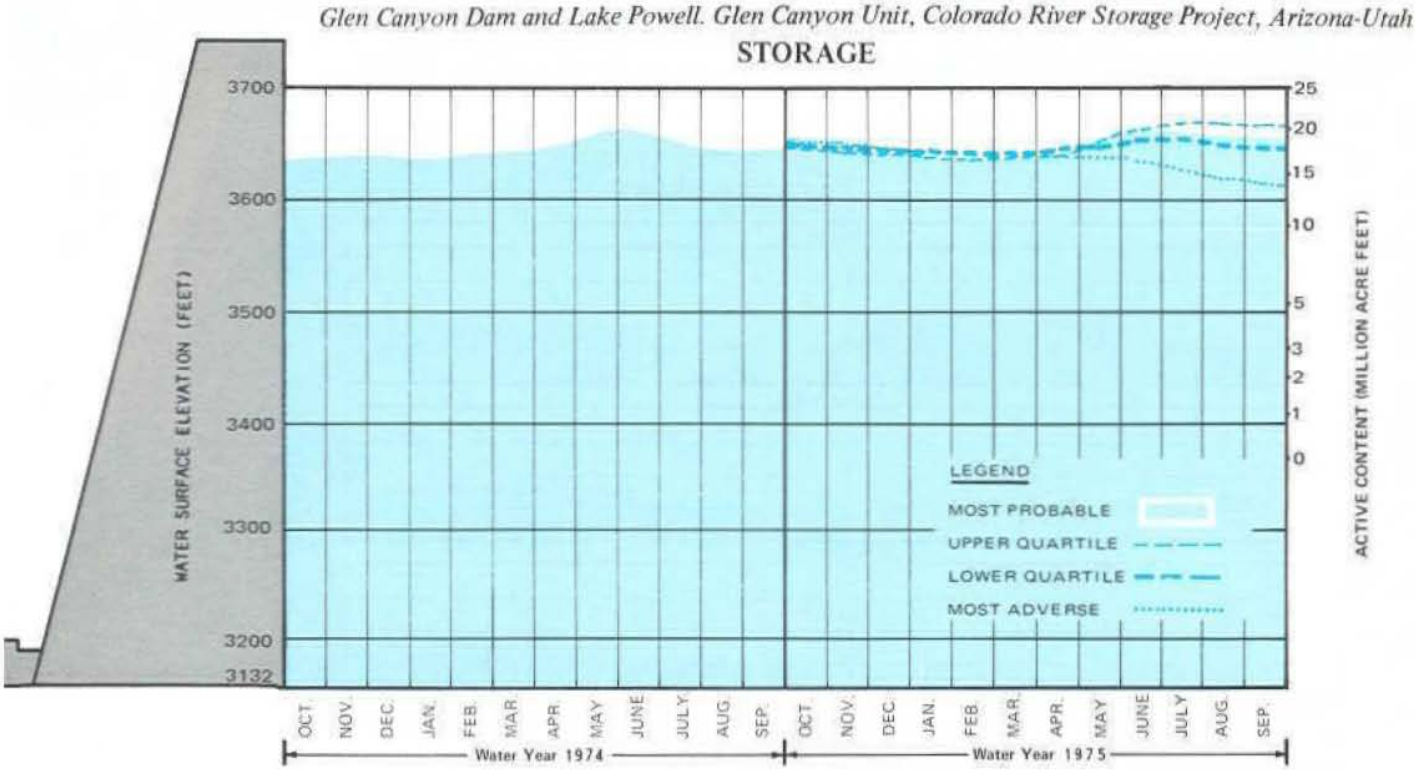
Lake Powell was operated during water year 1974 as part of the Colorado River Storage Project in accordance with governing compacts and laws to provide optimum power production, recreational opportunities, and fish and wildlife benefits.

On September 30, 1973, Lake Powell water surface elevation was at 3,646 feet with an active storage of 17,284,000 acre-feet. During the fall and winter months, the reservoir remained fairly constant. Releases were scheduled in the early spring to integrate surplus hydroelectric power from the Northwest with CRSP power production. The April-July 1974 runoff above the gage at Lees Ferry, Arizona, undepleted by Colorado River Storage Project reservoirs, was 7.1 million acre-feet or 85 percent of the 1906-68 average. Although the snowmelt runoff was below average, an all-time high water elevation occurred on June 30, 1974, when the reservoir contained 20,103,000 acre-feet of active storage at elevation 3,667 feet. This was about 21 feet higher than the former all-time high that occurred in 1973.





Glen Canyon Dam and Lake Powell. Glen Canyon Unit, Colorado River Storage Project, Arizona-Utah



Lower Basin Reservoirs

Hoover Dam
Lake Mead

Chart 7

STATISTICS

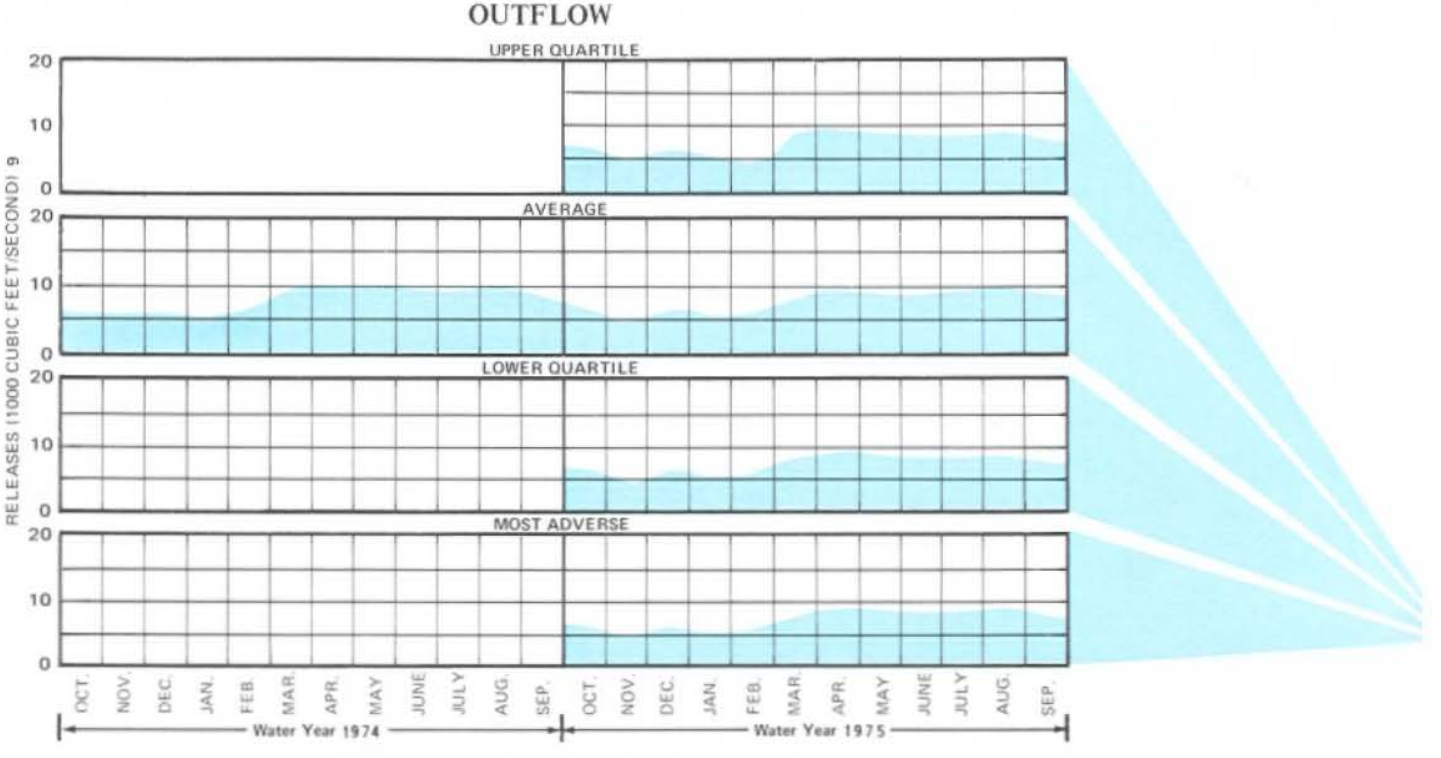
RESERVOIR	ACTIVE STORAGE* (ACRE-FEET)	ELEVATION (FEET)
MAXIMUM STORAGE	27,377,000	1229
RATED HEAD	13,653,000	1123
MINIMUM POWER POOL	10,024,000	1083
SURFACE AREA (FULL)	162,700 ACRES	
RESERVOIR LENGTH (FULL)	115 MILES	
POWER PLANT		
NUMBER OF UNITS	17	
TOTAL CAPACITY OF UNITS	1,344,800 KILOWATTS	

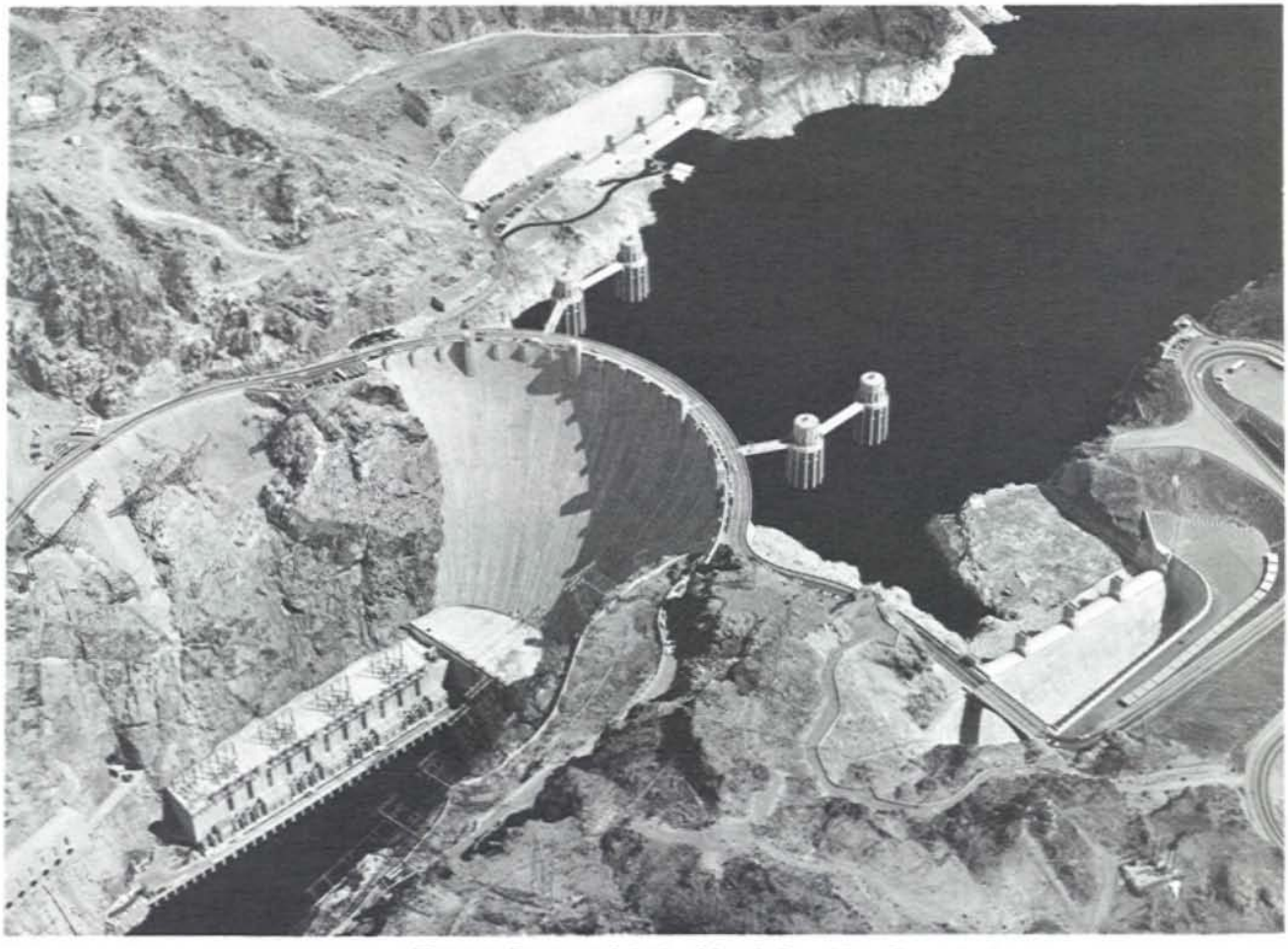
**does not include 2,378,000 acre-feet of dead storage below elevation 895 feet*

Lake Mead at the beginning of water year 1974 had a water surface level of 1,180 feet and an active storage of 20,176,000 acre-feet. During the water year, releases were made to meet downstream water use requirements in the United States and Mexico, programed levels of Lakes Mohave and Havasu, and transit losses which include river and reservoir evaporation, uses by phreatophytes, changes in bank storage, unmeasured inflows, and diversions. The total release from Lake Mead through Hoover Dam was 8,846,500 acre-feet. At the end of the water year, Lake Mead had a water surface elevation of 1,174 feet and an active storage of 19,358,000 acre-feet, which reflect a decrease in storage during the water year of 818,000 acre-feet. On September 30, 1974, the active storage of Lake Mead was 1,348,000 acre-feet greater than the active storage in Lake Powell.

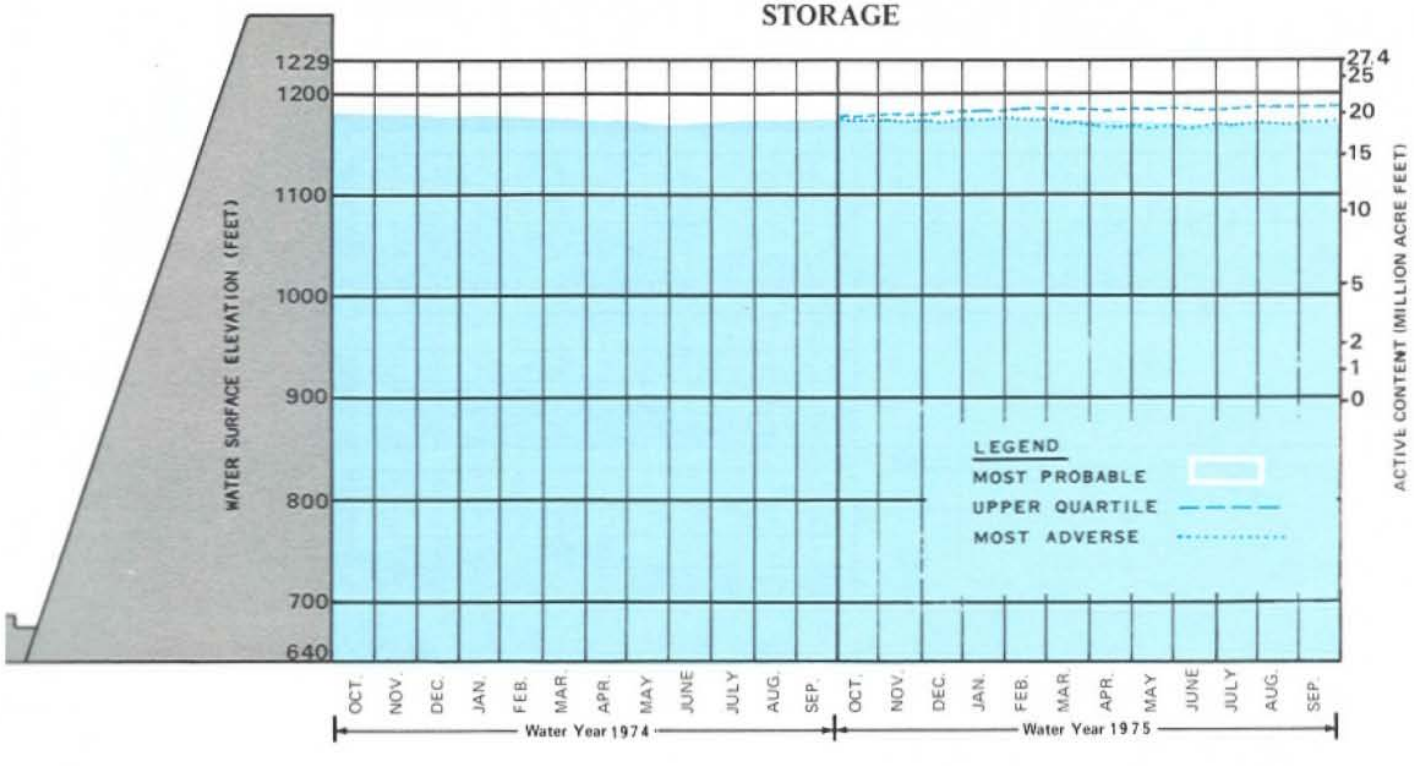
Lake Mead is the only reservoir on the Colorado River in which a specified space is exclusively allocated for mainstream flood control. Flood control regulations have been published. These regulations take into account effective space in CRSP reservoirs as well as in Lake Mead.

Space in Lake Mead and CRSP reservoirs during water year 1974 was such that no unusual Hoover releases were required to operate pursuant to provisions of the flood control regulations. (Chart 7)





Hoover Dam and Lake Mead, Boulder Canyon Project, Arizona-Nevada



Davis Dam
Lake Mohave

Chart 8

STATISTICS

ACTIVE STORAGE*

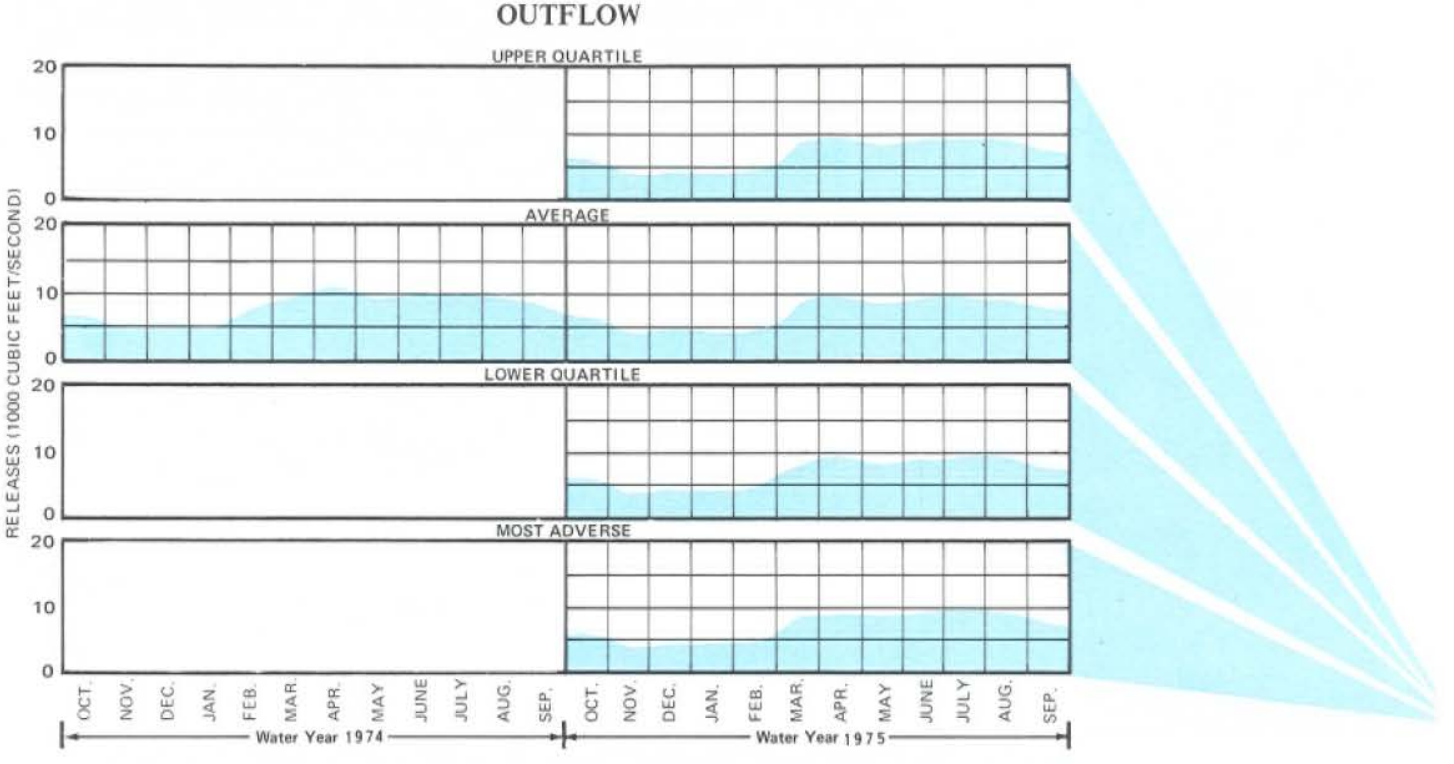
RESERVOIR	(ACRE-FEET)	ELEVATION (FEET)
MAXIMUM STORAGE	1,810,000	647.0
RATED HEAD	1,188,000	623.0
MINIMUM POWER	217,500	570.0
SURFACE AREA (FULL)	28,200 ACRES	
RESERVOIR LENGTH (FULL)	6 7 MILES	
POWER PLANT		
NUMBER OF UNITS	5	
TOTAL CAPACITY OF UNITS	225,000 KILOWATTS	

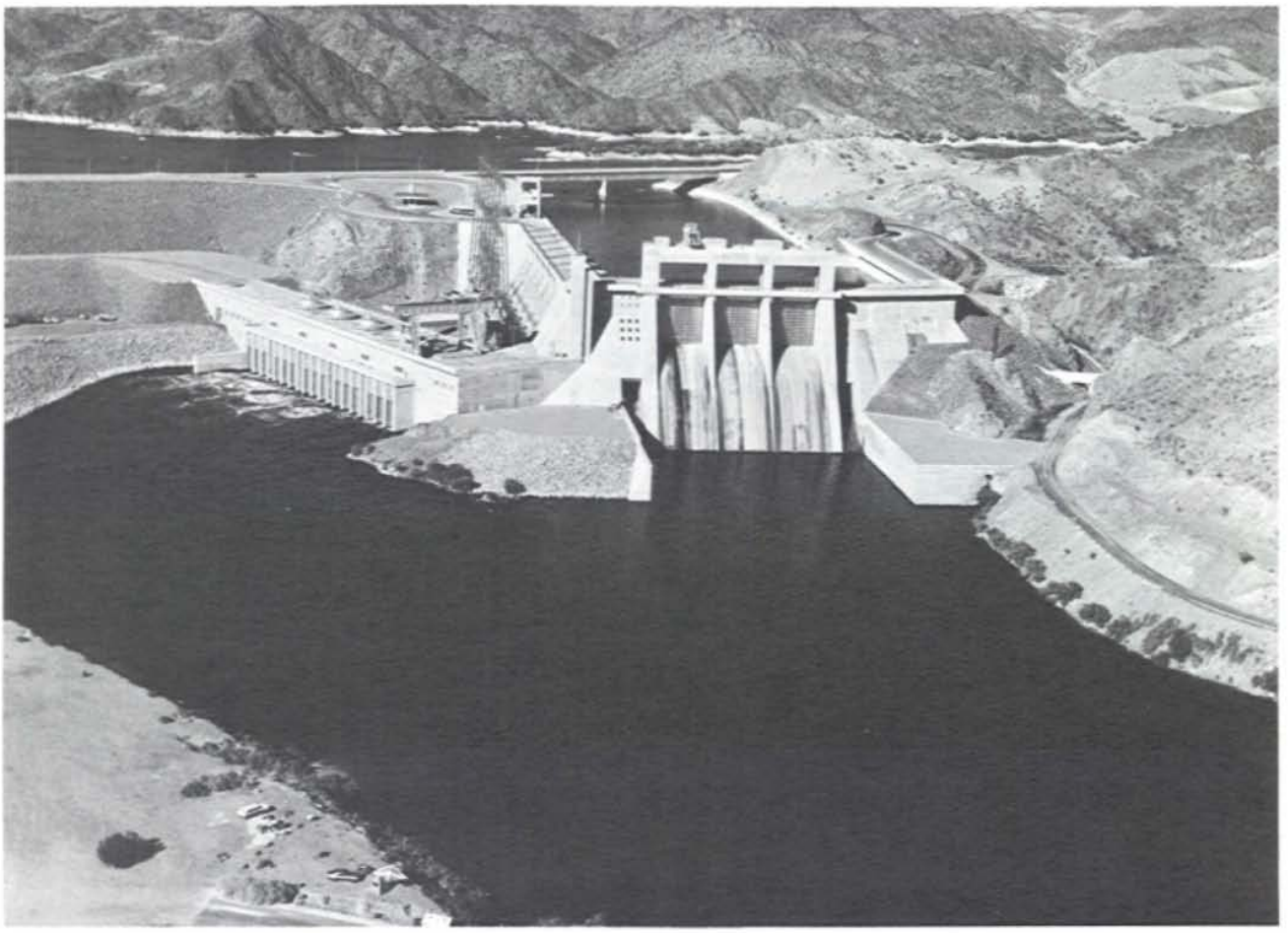
**does not include 8,530 acre-feet of dead storage below elevation 533.39 feet*

At the beginning of Water Year 1974, the level of Lake Mohave was 632 feet with an active storage of 1,412,000 acre-feet. During the winter months the level was raised to about 642 feet by the middle of March and maintained between that level and 638 feet through April. The high level of Lake Mohave was 642 feet with an active storage of 1,667,000 acre-feet on June 14 which is about the beginning of the heavy irrigation season. The level was drawn down during the summer months to elevation 631 feet with an active storage of 1,384,000 acre-feet at the end of the water year.

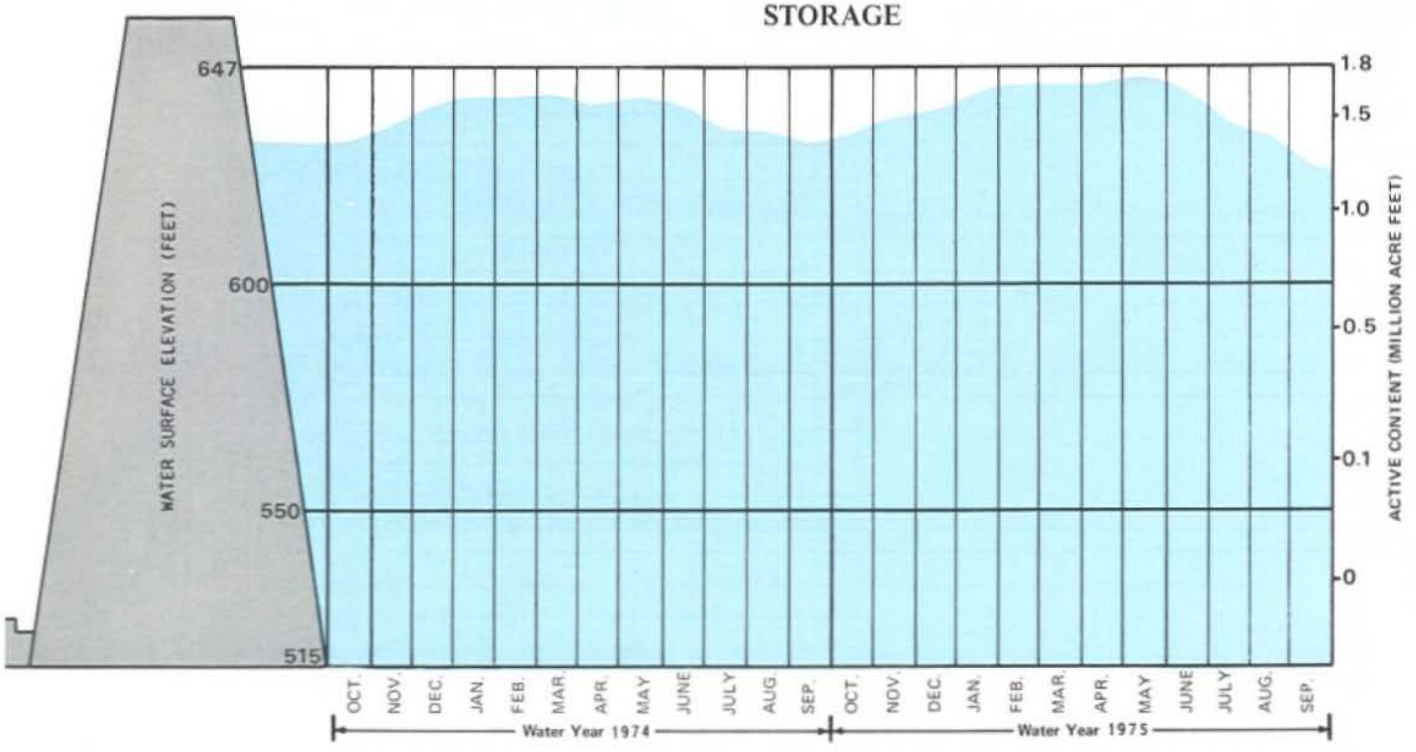
Releases from Lake Mohave were made monthly to satisfy downstream requirements with a small amount of reregulation by Lake Havasu. There were 8,913,700 acre-feet released at Davis Dam during the water year, all of which was passed through the turbines for power production. (Chart 8)

September 14, 1974, a flash flood 24 miles below Hoover Dam destroyed a recreational development in Eldorado Canyon on Lake Mohave. Operations of Lakes Mead and Havasu were adjusted to maintain a stable water surface on Lake Mohave and thereby assist the National Park Service in its search and recovery efforts. Normal reservoir operation was resumed October 16, 1974.





Davis Dam and Lake Mohave, Parker-Davis Project, Arizona-Nevada



Parker Dam
Lake Havasu

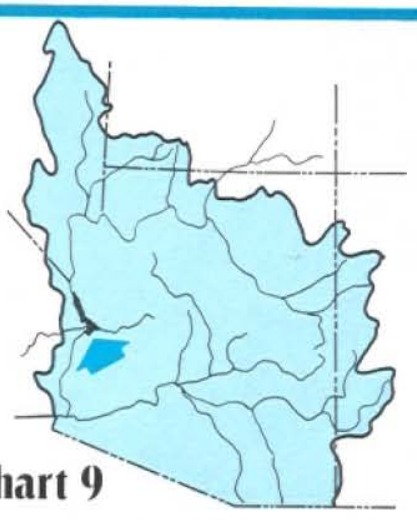


Chart 9

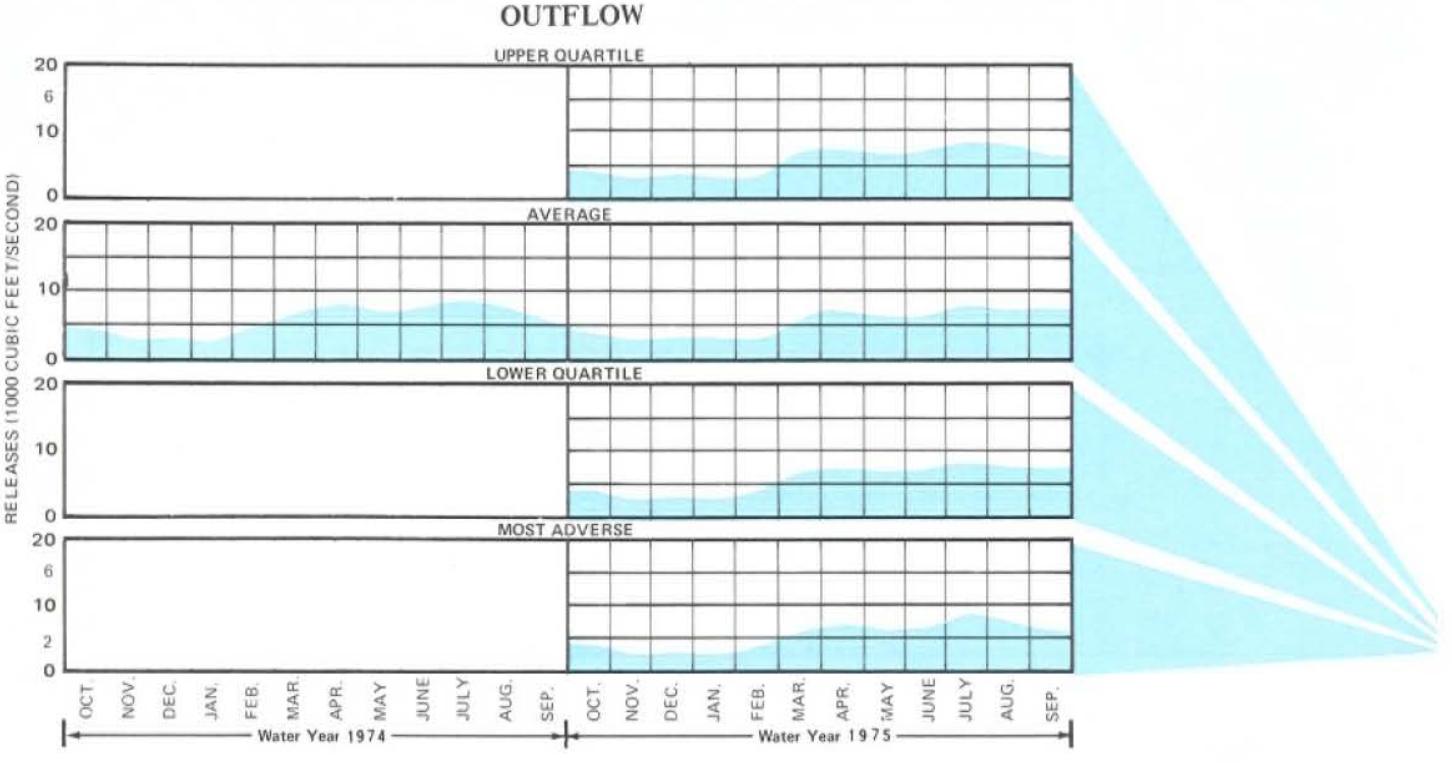
STATISTICS

RESERVOIR	ACTIVE STORAGE* (ACRE-FEET)	ELEVATION (FEET)
MAXIMUM STORAGE	619,400	450.0
RATED HEAD	619,400	450.0
MINIMUM POWER	439,400	440.0
SURFACE AREA (FULL)	20,400 ACRES	
RESERVOIR LENGTH (FULL)	35 MILES	
POWER PLANT		
NUMBER OF UNITS	4	
TOTAL CAPACITY OF UNITS	120,000 KILOWATTS	

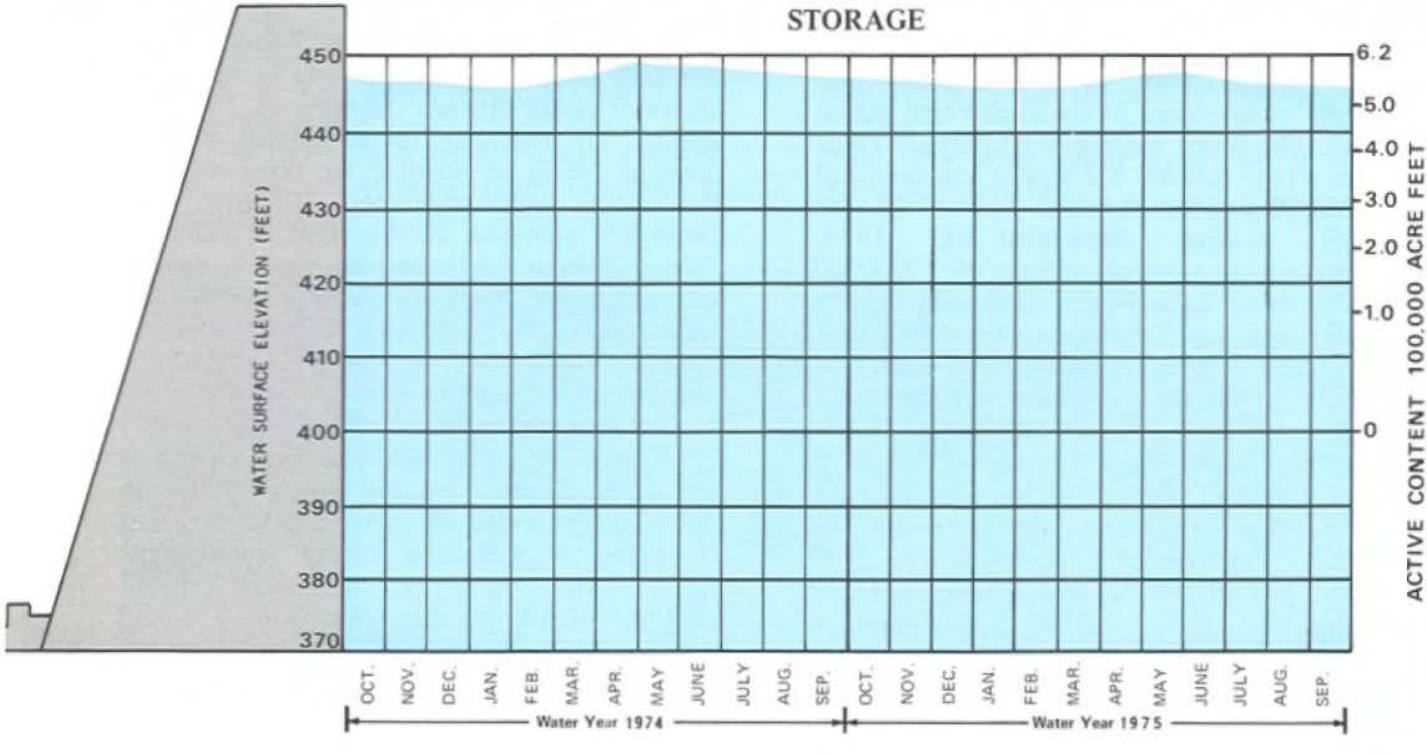
**does not include 28,600 acre-feet of dead storage below elevation 400.0 feet*

At the beginning of water year 1974, the level of Lake Havasu was 447 feet with an active storage of 559,000 acre-feet. The level was drawn down to about 445 feet with an active storage of about 525,000 acre-feet on January 25 and remained near that level through March 13 to provide flood control space for runoff from the drainage area between Davis and Parker Dams. The level was then raised to near full condition by mid-May. During the May 15 through June 30 period, the level was maintained near maximum with an active storage of about 605,000 acre-feet and then was drawn down to 447 feet with an active storage of 561,100 acre-feet by the end of the water year. There were 7,282,800 acre-feet released at Parker Dam during the water year, all of which passed through the turbines for power production.

Joint use 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. Now that Alamo Reservoir on the Bill Williams River is in operation, only about the top 4 feet or about 77,000 acre-feet of space is normally used for this purpose. (Chart 9)



Parker Dam and Lake Havasu, Parker-Davis Project, Arizona-California



Colorado River below Davis Dam, Arizona-Nevada

River Regulation

Water release from Glen Canyon Reservoir during Water Year 1974 was 8,259,000 acre-feet as measured at the Lees Ferry gaging station. The water passing the Compact Point at Lee Ferry totalled 8,270,000 acre-feet and 88,773,000 acre-feet for the 1-year and 10-year periods ending September 30, 1974, respectively. The annual release of 8,736,000 acre-feet from Lake Powell scheduled for the current year based on most probable runoff when added to the flow of the Paria River will result in Upper Basin delivery of about 86.7 million acre-feet for the 10-year period ending September 30, 1975.

Water releases scheduled for the Colorado River Storage Project and participating project reservoirs were planned to accommodate all of the multiple purposes for which the project was designed plus many day-to-day demands that developed throughout the year.

Daily releases are normally made from the storage reservoirs in the Lower Basin to meet the daily orders of the water user agencies and all water passes through the turbines. The daily releases are regulated on an hourly basis to meet as nearly as possible the powerloads of the electric power customers. Minimum daily flows are provided in the river to maintain fishery habitat. Adjustments to the normal releases are made when possible to provide for more satisfactory conditions for water-oriented recreation activities, to provide transport for riverborne sediment to desilting facilities, and to provide a degree of control of water quality.

River regulation below Hoover Dam was accomplished in a manner which resulted in delivery to Mexico of only 157,495 acre-feet in excess of minimum Treaty requirements during water year 1974. There were 151,486 acre-feet of this quantity which were delivered pursuant to provisions of Minutes Nos. 241 and 242 of the Mexican Treaty.

Beneficial Consumptive Use

UPPER BASIN USES

The three largest categories of depletion in the Upper Basin are agricultural use within the drainage basin, diversions for all purposes to adjacent drainage basins, and evaporation losses from all reservoirs.

During water year 1974, agriculture and M&I uses in the Upper Basin are estimated to have been about 2,100,000 acre-feet due to below normal runoff above points of diversion in the San Juan and parts of the main stem Colorado River drainage areas. About 569,000 acre-feet were diverted to adjacent drainage basins and 615,000 acre-feet were evaporated from main stem reservoirs in the Upper Basin. An additional 150,000 acre-feet are estimated as evaporation from other reservoirs and stockponds in the Upper Colorado Basin.

Water is being stored in the Upper Basin reservoirs and will be released to the Lower Basin as specified by Section 602(a) of Public Law 90-537 and the laws, compacts, and treaties upon which Section 602(a) is based.

LOWER BASIN USES AND LOSSES

Releases of 7,283,000 acre-feet from Lake Havasu during water year 1974 were made 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. Deliveries to Mexico consisted of river water delivered to Imperial Dam and waste and drainage return flows from water users below Imperial Dam. The small regulatory waste of 6,009 acre-feet was the result of beneficially using the small amount of regulatory storage space in Imperial, Laguna, and Senator Wash Reservoirs.

The major water diversion above Parker Dam was by Metropolitan Water District of Southern California. Metropolitan Water District pumped 1,145,000 acre-feet from Lake Havasu during water year 1974. Releases of 8,914,000 acre-feet were made from Lake Mohave during water year 1974 to meet the requirements for releases at Parker Dam, diversions to Metropolitan Water District, diversions to contractors for small uses, diversions to other miscellaneous users, along with quantities to offset evaporation and other transit losses between Davis and Parker Dams and to maintain the scheduled levels of Lake Havasu.

Releases of 8,847,000 acre-feet were made from Lake Mead at Hoover Dam during water year 1974 to regulate the levels of Lake Mohave and to provide for the small uses and the losses from that reservoir. In addition there were 86,400 acre-feet diverted from Lake Mead for use by Lake Mead National Recreation Area, Boulder City, Basic Management, Inc., and contractors of the Division of Colorado River Resources. The total releases and diversions from Lake Mead during water year 1974 were 8,933,000 acre-feet.

Water for sugar beets in Grand Valley, Colorado

Water Quality Control

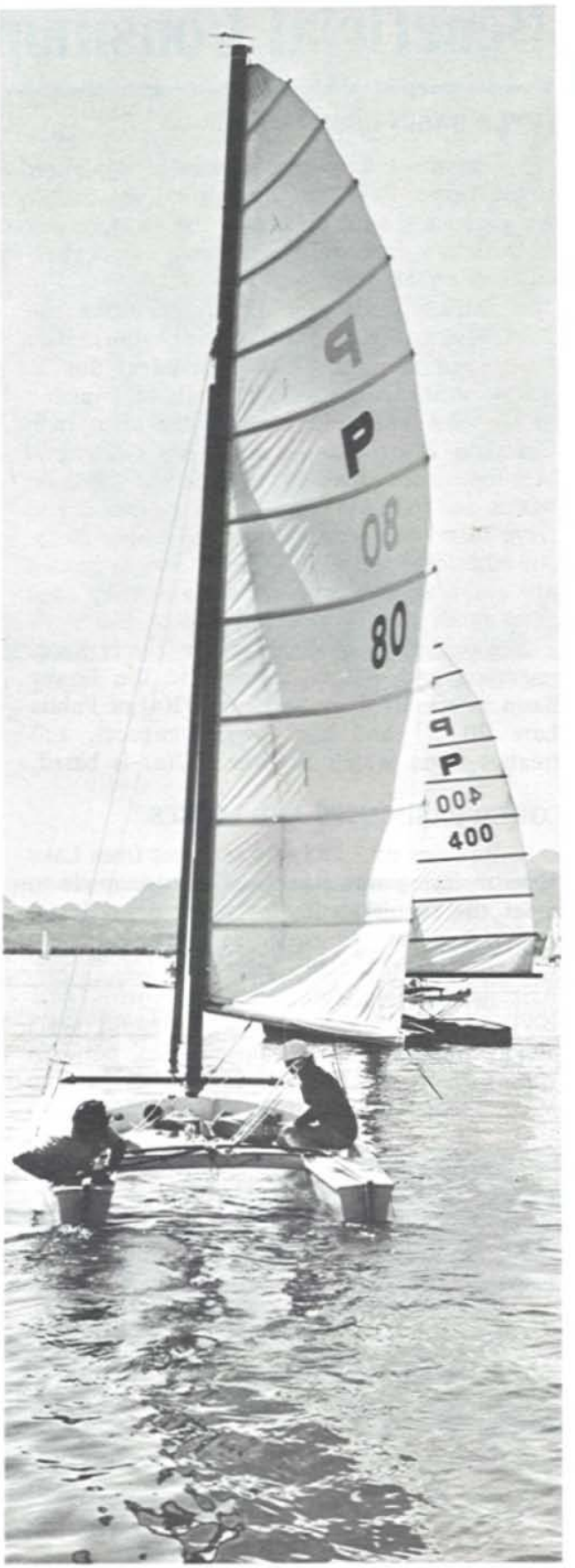
WATER QUALITY OPERATIONS DURING WATER YEAR 1974

Since water quality aspects of Colorado River operations are extensively described in the biennial series of reports entitled "Quality of Water, Colorado River Basin," only minimal discussion of this aspect of operation is presented in this report. Report No. 7 of this series will be issued in January 1975.

Specific water quality operations are performed pursuant to Minute No. 242 with Mexico such that during water year 1974, the United States bypassed 151,486 acre-feet of drainage water to the Colorado River below Morelos Dam and replaced it with a like amount of other water. Even though this was the only specific operation carried out for quality purposes, other incidental benefits accrue to water quality from normal procedures. Water is stored in reservoirs during the nonirrigation season and during the snowmelt runoff period when the water is surplus to immediate requirements. As the streamflows diminish in late summer, storage water is released as needed to supplement the natural flows in meeting demands. Although water quality control is not generally recognized as a beneficial use of surface water, this type of release pattern greatly enhances the quality of water in the Basin.

FUTURE WATER QUALITY CONTROL

In recognizing the need to manage the water quality of the Colorado River, it has been recommended that salinity increases in the river will be minimized through a water quality improvement program generally described in the Department of the Interior's report "Colorado River Quality Improvement Program," dated February 1972. This program calls for a basin-wide approach to salinity control while the Upper Basin continues to develop its Compact-apportioned waters. To enhance and improve the quality of the river's water, Congress authorized the Colorado River Basin Salinity Control Act, P.L. 93-320, June 24, 1974.



Sailboats, Lake Havasu, Arizona-Californtia

Enhancement of Fish and Wildlife

UPPER BASIN

The interim operating rules for Fontenelle Reservoir provide for a continuous flow of at least 300 ft^3/s in the channel immediately below the dam for the benefit of fish habitat. Releases for power production and other purposes during water year 1974 provided flows in excess of 600 ft^3/s.

During the first part of March, releases at Fontenelle Dam were about 1,550 ft^3/s in order to add to the tributary flow downstream and provide a flow of 3,000 ft^3/s through the Seedskadee National Wildlife Refuge and thus force the geese to build their nests at a higher elevation and away from the river. Flows were maintained at less than 3,000 ft^3/s throughout the remainder of the geese-nesting period to avoid inundating the nests.

Fishing below Flaming Gorge Dam has been enhanced by keeping a minimum of 800 ft^3/s in the river.

A release of at least 54 ft^3/s throughout the winter 1973-74 assured good fish habitat between Taylor Park and Blue Mesa Reservoirs. Coordinated operation between Taylor Park and Blue Mesa Reservoirs in delivering irrigation water to the Uncompahgre Project provided additional fishery and recreational opportunities between the two reservoirs. The interim operating rules specify a minimum of 200 ft^3/s for good fish habitat below Morrow Point Dam and below the Gunnison Tunnel.

A continuous flow of at least 400 ft^3/s was maintained immediately below Navajo Dam for good fish propagation.

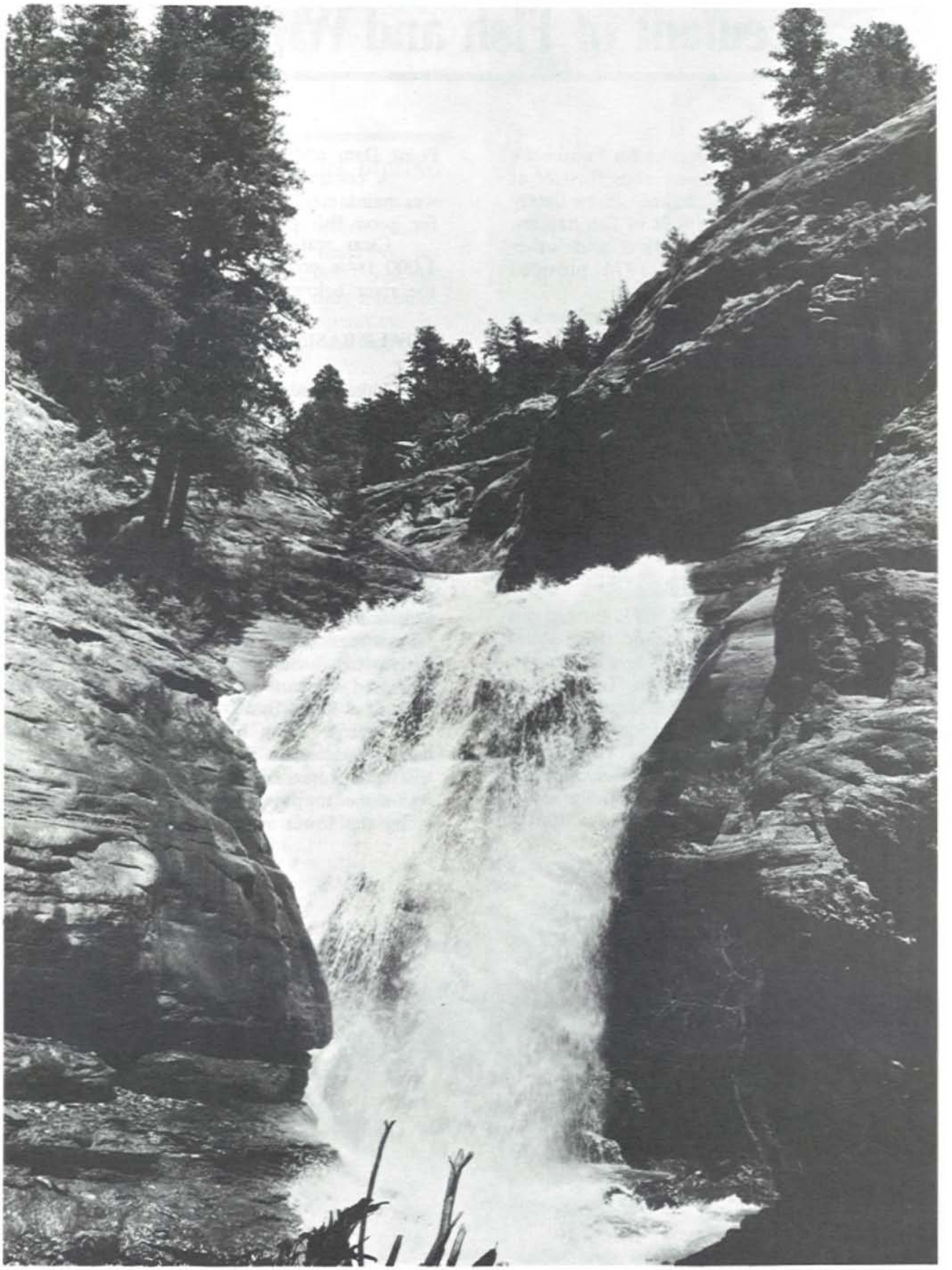
Clear water and a minimum release of 1,000 ft^3/s provided good habitat for fish in the river below Glen Canyon Dam.

LOWER BASIN

Lake Mead water levels were regulated to the maximum extent possible, consistent with other uses, to provide a stable or rising water surface during the bass spawning season. This resulted in a somewhat diminished spawn due to unusual power marketing conditions at Glen Canyon Dam. Reduced flows into Lake Mead during the bass spawn and high downstream water demands for agricultural use made it difficult to fully provide the scheduled elevations for fishery enhancement. Downstream water demands were greater than anticipated during the spawning season, due to increased cotton production in the Lower Colorado River Basin.

Releases from Lakes Mohave and Havasu were regulated so that minimum flows below the dams were never less than 1,500 ft^3/s. This was done to provide satisfactory fish habitat along the lower river.

Feral horses, near Lake Havasu, Arizona-California



Runoff from snowfall provides high quality water

Preservation of Environment

Preservation or enhancement of environment is a matter of the highest importance in the planning, construction, and operation of all Colorado River storage features. Contracts for water services, grants of rights-of-way and indentures of lease for use of Federal land, supply contracts, and participating agreements executed by the Secretary of the Interior include language to control water and air pollution, to require restoration and reseeding of lands scarred by construction and operation activities, and to encourage conservation of the esthetic beauty of nature.

Operation of the reservoirs of the Colorado River system recognizes the need to schedule releases from Fontenelle Reservoir so that the flow pattern will not adversely affect the ecology of downstream geese-nesting areas. Minimum flows are maintained below all dams to provide a desirable habitat for fish, animal, and plantlife. Flood control operations at Navajo Reservoir and Lake Mead protect the downstream channels and flood plains from erosion and scouring during periods of high flow. Recent proposals for several large thermal-electric generating plants cooled with water and for coal gasification plants utilizing water from Reclamation facilities in the Colorado River system have required special consideration to protect the environment and ecology of the area. Particulate emissions from combustion of coal, provision for control of noxious gasses, water quality, appearance, and esthetic considerations are some of the factors in which Reclamation has become involved while planning these plants. The Navajo, Four Corners, Huntington Canyon, and San Juan Powerplants, and two coal gasification plants all use water from the Colorado River system near the Four Corners area. The Secretary of the Interior's responsibility for pollution control has been delegated to the Commissioner of Reclamation and redelegated to the Regional Director of the Upper Colorado Region. The Regional Director of the Lower Colorado Region has been delegated responsibility for pollution control at the Mohave Powerplant.

Reclamation is presently involved in a Federal-State study to evaluate, among other things, the effects of reservoir operation on the Lake Mead bass fishery. The study is scheduled for completion in 1977 and should provide valuable information to help protect and enhance Lake Mead's environment.

Fish habitat was enhanced in the river below Glen Canyon Dam by maintaining adequate flow rates.

In order to assess the potential impact of thermal powerplants on the Colorado River Basin and adjacent areas, the Secretary of the Interior has made an appraisal report of the requirements and availability of resources needed to permit an orderly development of thermal-electric power to meet a logical portion of the projected demand for electric power through year 1990 while protecting the quality of the environment. One of the resources vital to any thermal power development in the semi-arid Southwest is water for cooling. The report identifies the sources and amounts of water available for thermal powerplant use as well as the compacts, laws, and other constraints likely to govern use of the available water for this purpose.

Projected Plan of Operation Under Criteria for Current Year.

DETERMINATION OF "602(a) STORAGE"

Section 602(a)(3) of the Colorado River Basin Project Act of September 30, 1968 (Public Law 90-537), provides for the storage of Colorado River water not required to be released under Articles III(c) and III(d) of the Colorado River Compact in Upper Basin reservoirs to the extent the Secretary finds it to be reasonably necessary to assure Compact deliveries without impairment of annual consumptive uses in the Upper Basin. Article II of the Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs pursuant to that Act provides that the annual plan of operation shall include a determination by the Secretary of the quantity of water considered necessary as of September 30 of the current year to be in storage as required by Section 602(a) of P.L. 90-537 after consideration of 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;
(f) The necessity to assure that Upper Basin consumptive uses not be impaired because of failure to store sufficient water to assure deliveries under Section 602(a)(1) and (2) of P.L. 90-537.

Taking into consideration these and other relevant factors, the Secretary has determined that the active storage in Upper Basin reservoirs forecast for September 30, 1975, on the basis of average runoff during the current year, exceeds this "602(a) Storage" requirement under any reasonable range of assumptions which might be realistically applied to those items which he is directed to consider in establishing this storage requirement. Therefore, the accumulation of "602(a) Storage" is not the criterion governing the release of water during the current year. The Lake Powell active storage forecast for September 30, 1975, is projected to be about equal to the Lake Mead active storage forecast for that date.

The plan of operation during the current year based on average conditions is to release about 8,736,000 acre-feet in accordance with Section 602(a)(3) of Public Law 90-537.

Imperial Dam and desilting works, Arizona-California

Lower Basin Requirements

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 International Boundary and Water Commission before the beginning of each calendar year. Mexico has the right, upon 30 days' notice in advance to the United States Section, to modify, within the total schedule, any monthly quantity prescribed by the schedule by not more than 20 percent of the monthly quantity. In addition to the 1.5 million acre-foot minimum Treaty requirement, approximately 210,000 acre-feet are projected for delivery pursuant to Minute No. 242 and approximately 5,000 acre-feet are projected in regulatory waste. The total delivery to Mexico for water year 1975 is estimated to be 1,715,000 acre-feet.

CONSUMPTIVE USE AND LOSS REQUIREMENTS

A release of 7,037,000 acre-feet from Lake Havasu has been projected for water year 1975 including 5,413,000 acre-feet to meet consumptive use requirements in the United States below Parker Dam, transit losses in the river between Parker Dam and the Mexican Border, and a 1,715,000 acre-foot delivery to Mexico.

The Metropolitan Water District of Southern California is expected to divert 879,000 acre-feet by pumping from Lake Havasu. Consumptive uses by small users, river losses or gains, and reservoir losses between Davis Dam and Parker Dam are projected to be 269,000 acre-feet for water year 1975.

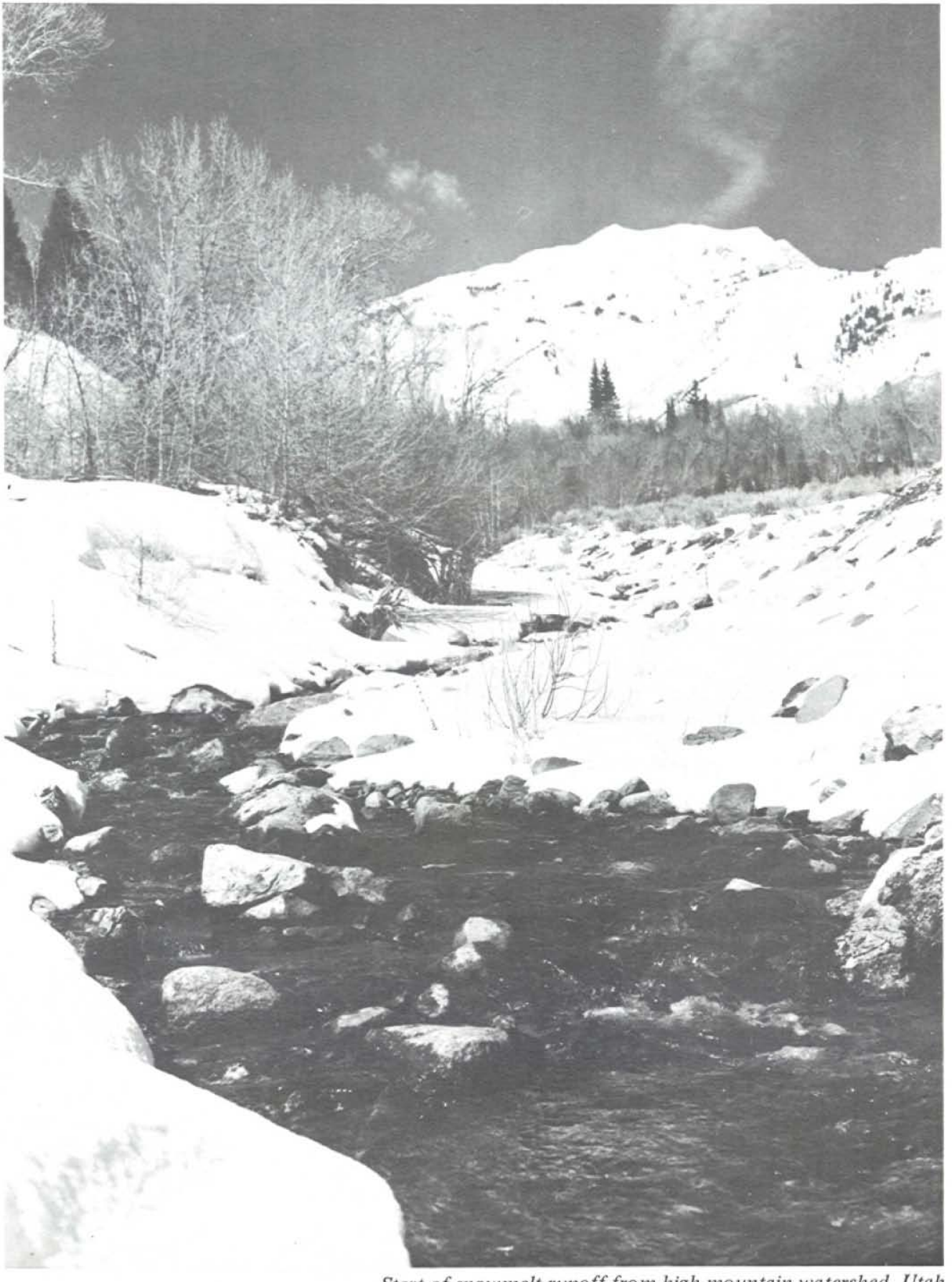
There are no major users between Hoover Dam and Davis Dam. Consumptive uses by small users, river losses or gains, and reservoir losses between Hoover Dam and Davis Dam are projected to be a net loss of 145,000 acre-feet for water year 1975.

The net diversions from Lake Mead are projected at 96,000 acre-feet for water year 1975. Evaporation from Lake Mead is expected to be about 833,000 acre-feet, and tributary inflow between Glen Canyon Dam and Lake Mead is expected to be about 320,000 acre-feet.

REGULATORY WASTES

A regulatory waste of 5,000 acre-feet has been projected as being lost from the Lower Colorado River for water year 1975 as indicated in the section under Mexican Treaty obligations.

The guides set forth in the Report on Reservoir Regulations for Flood Control Storage at Hoover Dam and Lake Mead are in effect, but no flood control releases are anticipated for water year 1975.



Start of snowmelt runoff from high mountain watershed, Utah

Plan of Operation - Water Year 1975

The projected operation of each of the reservoirs in the Colorado River Basin during water year 1975 for average runoff conditions is described in the following paragraphs. Charts 1 through 9 show hydrographs of the projected monthly outflow from the reservoirs and the projected end-of-month elevation and active storage in the reservoirs for average and three other assumptions of 1975 modified runoff from the Basin. The four assumptions are: (1) AVERAGE based on the 1906-68 record of runoff, (2) UPPER QUARTILE based on flows exceeded 25 percent of the time during 1906-68, (3) LOWER QUARTILE based on flows exceeded 75 percent of the time during 1906-68, and (4) MOST ADVERSE based on the lowest year of record which occurred in 1934.

The projected releases from Lake Powell are 8.23 million acre-feet for the Most Adverse and Lower Quartile assumed runoff conditions. Average and Upper Quartile assumed runoff conditions would cause a splitting of storage condition between Lake Mead and Lake Powell and releases from Lake Powell would be 8.7 and 9.9 million acre-feet, respectively. The Average and Upper Quartile release to Lake Mead would cause the reservoir to rise 4 feet and 13 feet higher at the end of the current year than the level reached by the Most Adverse and Lower Quartile conditions. The projected operations of Lake Mohave and Lake Havasu are the same under all four of the runoff assumptions.

Upper Basin Reservoirs

Fontenelle

It is planned to lower the level of the reservoir through the fall and winter months until a water surface elevation of about 6,480 feet is reached, then from the last of March through April to hold releases at about 1,400 ft^3/s to encourage wild geese to nest back away from the river. With average runoff during the spring months, Fontenelle Reservoir will fill by the end of June. After the spring runoff the reservoir level will be controlled by adjusting the releases through the powerplant to slowly reduce the elevation to 6,504 feet by the end of the summer of 1975. (Chart 1)

Flaming Gorge

At the beginning of water year 1975 the active reservoir storage was 3,580,000 acre-feet with a water surface at elevation 6,036 feet. The reservoir level will be lowered about 7 feet by March of the current year but should remain high enough until the spring runoff so that boats can be launched from all of the nine boat ramps. During the latter part of March and through April 1975, releases from the reservoir will be managed to encourage the geese to nest back away from the river in Brown's Park. This will be accomplished by varying the releases every other day from high to low flows until nests are established. Flow will then vary on a more uniform pattern throughout the summer, but the river should not exceed 4,500 ft^3/s and normally would not be less than 800 ft^3/s. Releases should average about 150,000 acre-feet per month through the rest of the summer for a water year total of 1,550,000 acre-feet. (Chart 2)

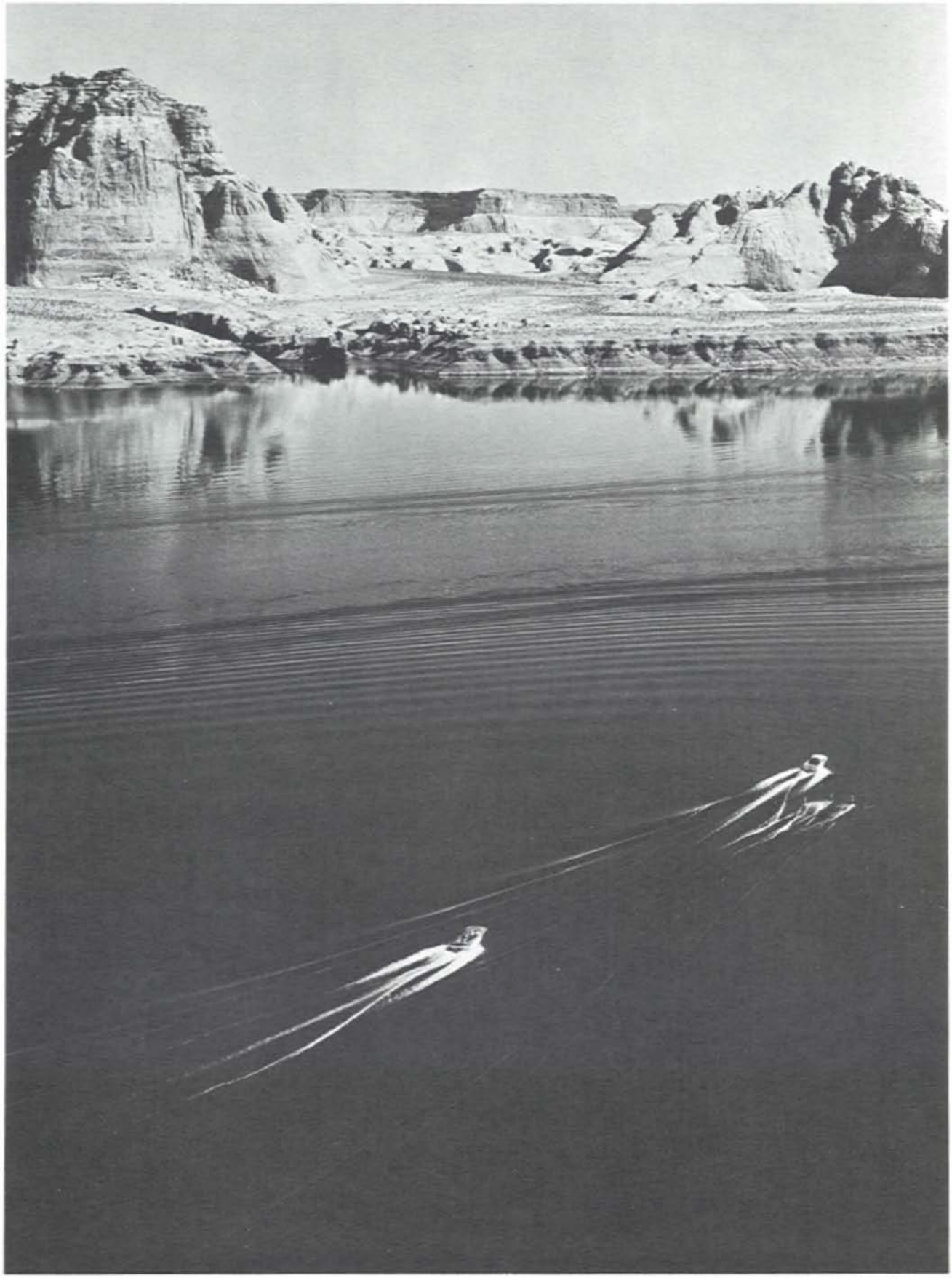
Curecanti Unit

During the current year, Blue Mesa should reach a low for the year in April 1975 of elevation 6,453 feet with an active storage of 330,000 acre-feet. With average inflow during the spring of 1975, the reservoir should reach elevation 7,518 feet with an active storage of 820,000 acre-feet. At this elevation the reservoir has a surface area of 9,102 acres and a reservoir length of 24 miles. (Charts 3 and 4)

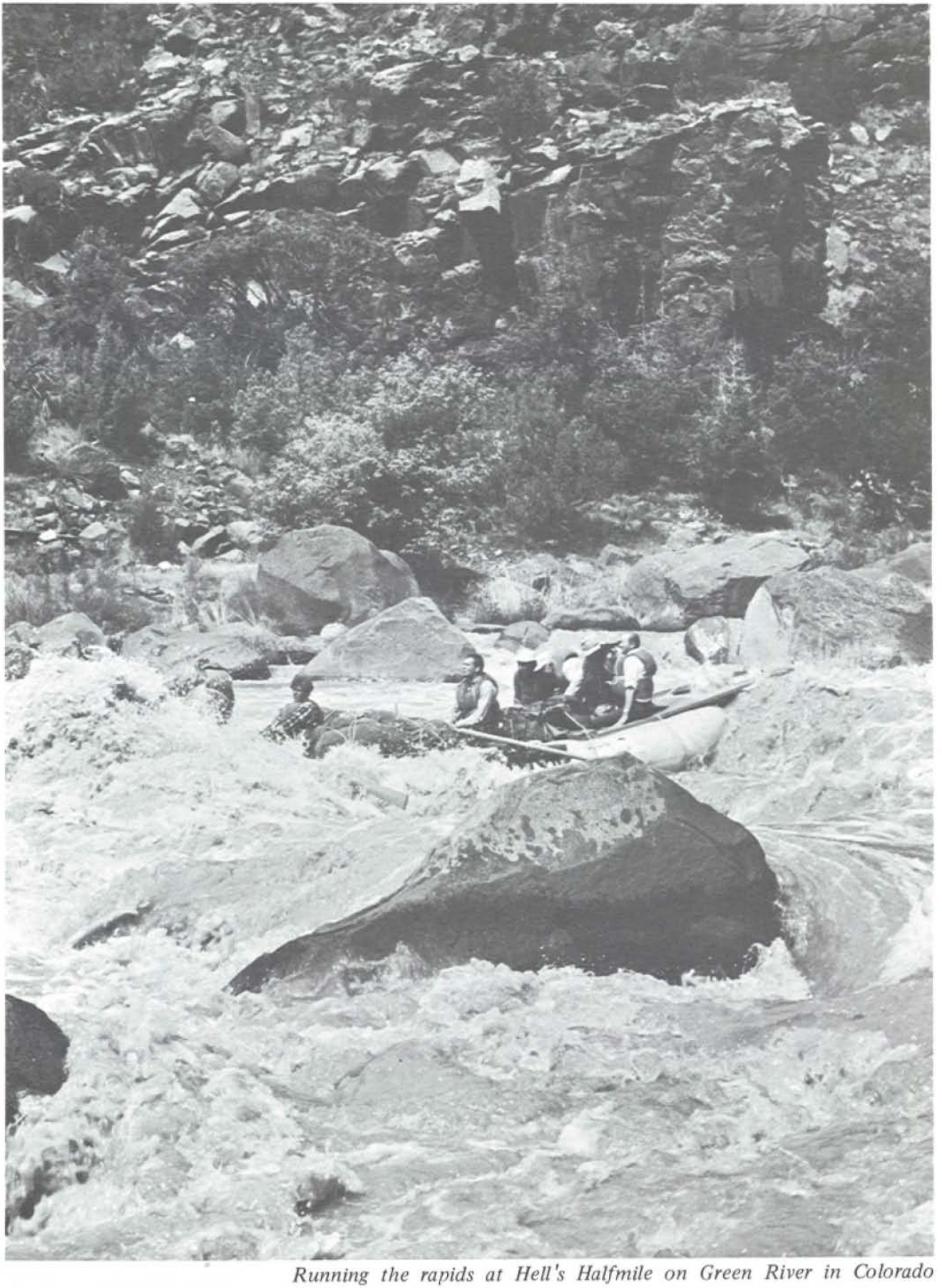
Morrow Point Reservoir will be operated near full during the current year. Releases will be made for downstream irrigation requirements plus a flow of 200 ft^3/s below the Gunnison Tunnel Diversion Dam.

Navajo Reservoir

On September 30, 1974, Navajo Reservoir had an active storage of 1,010,000 acre-feet with an elevation of 6,030 feet. During October through March releases will be controlled to lower the reservoir elevation to 6,028 feet prior to spring runoff. Average inflow would cause the reservoir to reach elevation 6,060 feet with an active storage of 1,350,000 acre-feet. It will be maintained for recreational purposes at or near this level for the remainder of the summer. (Chart 5)



Water skiers, Lake Powell



Running the rapids at Hell's Halfmile on Green River in Colorado

Glen Canyon Lake Powell

For the current year the level of Lake Powell should drop about 4 feet during the fall and winter months to elevation 3,648 feet with an active storage of 17.6 million acre-feet. Assuming an average April-July 1975 runoff, the resulting inflow of about 8.0 million acre-feet should cause the lake to reach an all-time high elevation of 3,668 feet during July with an active storage of 20.1 million acre-feet. This will be about 80 percent of the active capacity of the reservoir. The lake will have a length of 184 miles and a water surface area of 139,510 acres. Total release during water year 1975 of 8.7 million acre-feet is scheduled from Lake Powell, under average conditions, to satisfy storage requirements for Lake Mead and Lake Powell in compliance with Section 602 of Public Law 90-537. The scheduled release will pass through the turbines to generate power for customers in the Upper Colorado River Basin. (Chart 6)

Lower Basin Reservoirs

Lake Mead

The level of Lake Mead during the current year is scheduled to remain essentially level at about elevation 1,174 feet throughout water year 1975 to enhance the bass spawn and survival conditions. At this level, the lake will have an average active storage of about 19 million acre-feet. A total of 8.5 million acre-feet is scheduled to be released from Lake Mead during water year 1975 to meet all downstream requirements. All releases are scheduled to pass through the turbines for electric power production. (Chart 7)

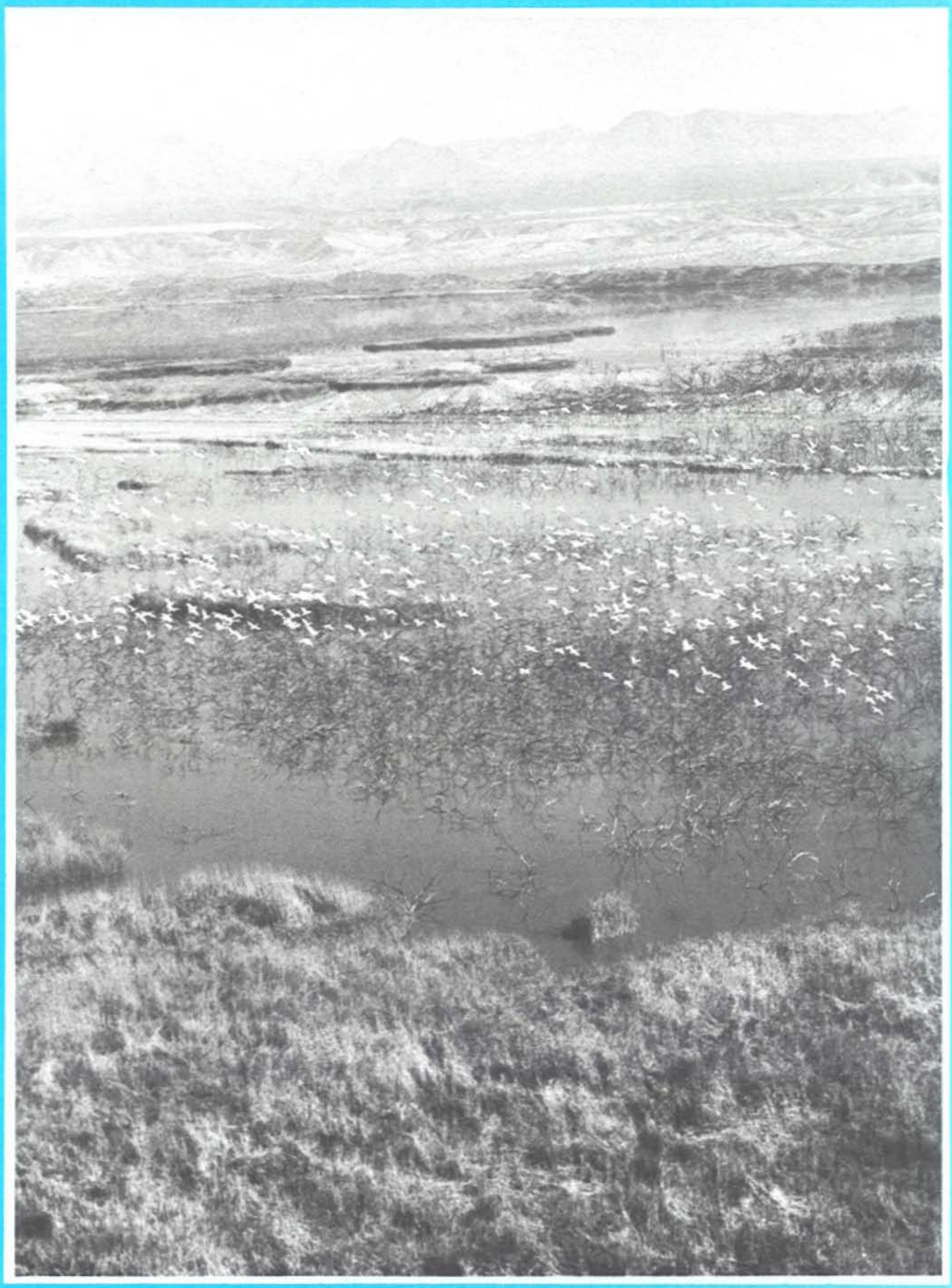
Lake Mohave

The level of Lake Mohave is scheduled at about its minimum elevation during October, the first month of the current water year. The level should rise through the fall and winter months to elevation 643 feet by February 28, 1975. It should remain near that elevation through April and rise to its yearly high of 645 feet at the end of May 1975. The level of Lake Mohave is expected to be drawn down during the summer months of heavy irrigation use to elevation 631 feet at the end of water year 1975. A total of 8.4 million acre-feet is scheduled to be released from Lake Mohave during this water year to meet all downstream requirements. All releases are scheduled to pass through the turbines for electric power production. (Chart 8)

Lake Havasu

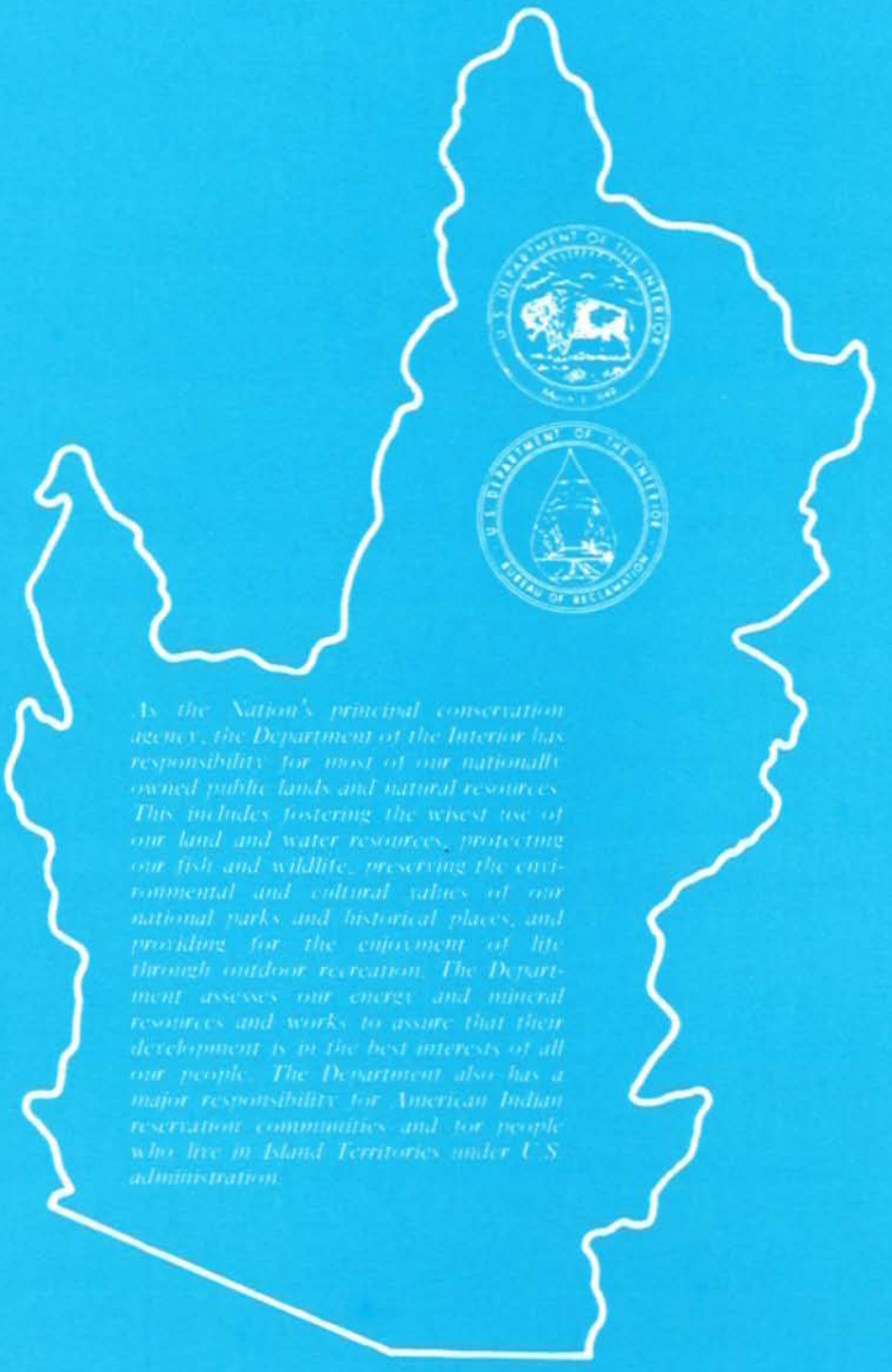
Lake Havasu is scheduled at the highest levels consistent with the requirements for maintaining flood control space. The yearly low elevation of 446 feet is scheduled for the December through February high flood-hazard period. The yearly high of 449 feet is scheduled for the low flood-hazard months of May and June. A total of 6.9 million acre-feet is scheduled to be released from Lake Havasu during this water year to meet all downstream requirements. All releases are scheduled to pass through the turbines for electric power production. (Chart 9)

Palo Verde Canal near Blythe, California



Snow Geese in flight over Topock Marsh near Needles, California

Interior - Reclamation, B.C., Nev. 12-74



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.