Annual Operating Plans

Niobrara, Lower Platte, and Kansas River Basin

Calendar Year 2001
Summary of Actual Operations

and

Calendar Year 2002
Annual Operating Plans

U.S DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GREAT PLAINS REGION

A Century of Water for the West
1902-2002

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SYNOPSIS

General

This year is the 49th consecutive year that an Annual Operating Plan (AOP) has been prepared for the Federally-owned dams and reservoirs serving an irrigation function in the Niobrara, Lower Platte, and Kansas River Basins. The plan has been developed by the Water Operations Group in McCook, Nebraska for the 17 dams and reservoirs that are located in Colorado, Nebraska, and Kansas. These reservoirs, together with 11 diversion dams, 11 pumping plants, and 23 canal systems, serve approximately 327,600 acres of project lands in Nebraska and Kansas. In addition to irrigation and municipal water, these features serve flood control, recreation, and fish and wildlife purposes. A map at the end of this report shows the location of these features.

The reservoirs in the Niobrara and Lower Platte River Basins are operated by either irrigation or reclamation districts. The reservoirs in the Kansas River Basin are operated by either the Bureau of Reclamation (Reclamation), or the Corps of Engineers. Kirwin Irrigation District provides operational and maintenance assistance for Kirwin Dam. The diversion dams, pumping plants, and canal systems are operated by either irrigation or reclamation districts.

A Supervisory Control and Data Acquisition System (SCADA) located at McCook is used to assist in operational management of all 11 dams under Reclamation's jurisdiction that are located in the Kansas River Basin. A Hydromet system collects and stores near real-time data at selected stations in the Nebraska-Kansas Projects. The data includes water levels in streams, canals, and reservoirs and also gate openings. This data is transmitted to a satellite and downloaded to a Reclamation receiver in Boise, Idaho. The data can then be accessed by anyone interested in monitoring water levels or water usage in an irrigation system. The Nebraska-Kansas Projects currently has 86 Hydromet stations that can be accessed. The McCook Field Office has installed and maintains 21 Hydromet stations with plans to install more as time permits. When fully implemented, the projects will have a Hydromet station installed to provide real-time data on all reservoirs, most diversion dams, and most of the measuring structures in the irrigation systems. These stations can be found on the Internet by accessing Reclamation's home page at http://www.gp.usbr.gov/. From the home page, select "Water Supply Management" followed by selecting Hydromet Data System.

The Headlines 01 that follows this synopsis is indicative of the awareness that the local people have of the natural resource development and conservation in the Niobrara, Lower Platte, and Kansas River Basins.

2001 Summary

Climatic Conditions

Precipitation at the project dams during 2001 ranged from 87 percent of normal at Enders Dam to 122 percent of normal at Lovewell and Harlan County Dams. January and February were generally much wetter than normal throughout the projects with the temperatures well above

normal during January and well below normal in February. March brought weather that was much drier than normal throughout the projects with temperatures averaging near normal.

Precipitation during April, May and June varied considerably across the projects while temperatures averaged near normal. April precipitation was well above normal in northcentral Nebraska with those project dams recording the greatest April total since construction. Several dams located in southcentral Nebraska and northcentral Kansas recorded May precipitation totals that ranked in the top six ever recorded at the respective dam. Two separate storm systems, one in early May and another in late May, resulted in significant storage gains at Lovewell Reservoir and Waconda Lake. Precipitation was scarce during June with all 16 Reclamation dams, along with Harlan County Dam, recording below normal June precipitation.

Temperatures averaged well above normal in July while precipitation was generally above normal throughout the projects with the exception of northcentral Nebraska. Isolated thunderstorms produced significant rainfall amounts at various locations resulting in some short term runoff. Some crop damage was reported in the Kirwin and Frenchman-Cambridge Irrigation Districts due to hail. August saw weather conditions that continued warmer but much drier than normal. Several districts had finished with irrigation releases by the end of August, some as a result of limited water supplies. Temperatures during September averaged slightly below normal while precipitation was generally above normal throughout the projects.

Precipitation during October varied across the projects with dams located in southwest Nebraska recording near normal precipitation while dams located in Kansas and northern Nebraska received below normal amounts. Dams located in northcentral Kansas continued to record below normal precipitation amounts during November while other project dams received well above normal rainfall. December precipitation was generally well below normal throughout the projects with all dams recording less than .35 inch of moisture. Temperatures continued near normal during October and were above normal during both November and December. November temperatures averaged approximately five degrees above normal.

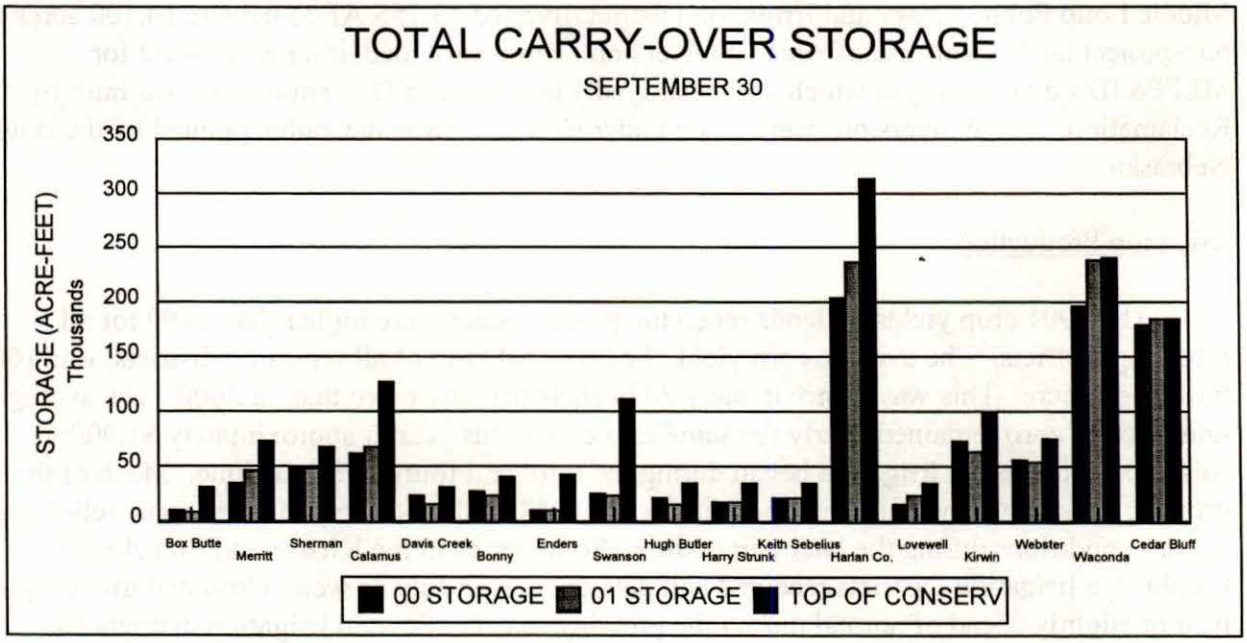
Storage Reservoirs

1. Conservation Operations. The 2001 inflow was below the dry-year forecast at Bonny and Enders Reservoirs, and Swanson and Hugh Butler Lakes in the Upper Republican River Basin. Box Butte, Davis Creek and Sherman Reservoirs along with Harlan County and Harry Strunk Lakes had inflows between the dry- and normal-year forecasts. Keith Sebelius and Waconda Lakes, along with Calamus, Merritt, Lovewell, Kirwin, Webster and Cedar Bluff Reservoirs had inflows between the normal- and wet-year forecasts. None of the project reservoirs had inflows above the wet-year forecast.

Project reservoirs had below average carryover storage from the 2000 water year with the exception of Keith Sebelius Lake and Kirwin, Webster and Cedar Bluff Reservoirs. Southwest Nebraska reservoirs along with Bonny Reservoir in eastern Colorado recorded below normal inflows for at least 10 months of 2001. Reservoirs in the Solomon River Basin recorded below average inflows for at least five of the last six months of the year. Reservoir releases were required from Medicine Creek, Lovewell, Glen Elder, Merritt and Virginia Smith Dams to either

reduce or maintain reservoir levels prior to the 2001 irrigation season. Just prior to the irrigation season, Enders and Box Butte Reservoirs, along with Keith Sebelius, Swanson and Hugh Butler Lakes, did not have sufficient storage to provide water users with a full water supply. Sargent and Farwell Irrigation Districts would receive their usual supply. Of the three project reservoirs that had some flood storage occupied prior to the irrigation season, only Lovewell Reservoir had water stored in the flood pool at the end of July. The high irrigation demand months of July and August significantly reduced storage in most project reservoirs. Precipitation during July and August was of little help in reducing the demands on project reservoirs in the Upper Republican River Basin. Storage in the Kansas River Basin project reservoirs was below normal at the end of the irrigation season with the exception of Keith Sebelius and Waconda Lakes, and Kirwin, Webster and Cedar Bluff Reservoirs.

The following summarized graph shows a comparison of 2000 and 2001 carry-over storage conditions as compared to the top of conservation storage for all reservoirs in the Niobrara, Lower Platte, and Kansas River Basins as of September 30th.



2. Flood Control Operations. Harry Strunk and Waconda Lakes along with Lovewell and Cedar Bluff Reservoirs utilized flood pool storage in 2001. Releases were required from Harry Strunk and Waconda Lakes and Lovewell Reservoir to reduce or maintain pool levels. The fiscal year 2001 flood control benefits accrued by the operation of Reclamation's Nebraska-Kansas Projects facilities was $2,964,000 as determined by the Corps of Engineers. An additional benefit of $1,943,000 was credited to Harlan County Lake. The accumulative total of flood control benefits for the years 1951 through 2001 by facilities in this report total $1,871,482,000 (see table 5). To date no benefits have been accrued by the operation of Box Butte, Merritt, Sherman, Calamus, or Davis Creek Reservoirs.

A summary of precipitation, reservoir storage and inflows at Nebraska-Kansas Projects facilities can be found in table 7.

Water Service

There were 523,378 acre-feet (AF) of water diverted to irrigate approximately 308,682 acres of project lands in the 14 irrigation districts (see tables 3 and 6). The project water supply was either inadequate or limited for 83,587 acres of the total project lands. This includes lands in Mirage Flats, Frenchman Valley, H&RW, Frenchman-Cambridge and Almena Irrigation Districts. The project water supplies for the other units mentioned in this report were more than adequate in 2001.

The water requirements of three municipalities, one rural water district, and two fish hatchery facilities were furnished from storage releases or natural flows.

Under a long-term contract with Reclamation for the use of Arcadia Diversion Dam, the Middle Loup Public Power and Irrigation District diverted 43,755 AF to irrigate 14,100 acres of non-project lands. This use of Arcadia Diversion Dam is provided as a replacement for MLPP&ID's diversion dam which was destroyed when Arcadia Diversion Dam was built by Reclamation. These diversions were made under natural-flow water rights granted by the state of Nebraska.

Irrigation Production

The 2001 crop yields on lands receiving project water were higher than 2000 for all reporting districts. The average corn yield, the principal crop of all reporting districts, was 160 bushels per acre. This was approximately 20 bushels per acre more than in 2000. The average unit price of corn remained nearly the same as the previous year at approximately $1.90/bu. Reservoir releases for irrigation began during the third and fourth week of June. Much of the growing season was warmer and drier than normal. Most districts experienced some relief from the dry conditions during the later part of July. Some crops in the Kirwin and Frenchman-Cambridge Irrigation Districts received hail damage during July as well. Crop maturity progressed near or slightly ahead of normal during the growing season. Several irrigation districts had finished with irrigation releases by mid to late August, some as a result of limited water supplies. Nearly all irrigation districts had finished delivering water by Labor Day with corn harvest commencing by the end of September.

Fish and Wildlife and Recreation Benefits

The National Recreational Fisheries Policy declares that the Government's vested stewardship responsibilities must work in concert with the state managing agency's recreational fisheries constituency and the general public to conserve, restore, and enhance recreational fisheries and their habitats. As a result of this policy, Reclamation has developed fishery management guidelines for reservoirs within the Nebraska-Kansas Projects. These guidelines outline a program which considers public use, fisheries, fish habitat, and improved communication and coordination. The Nebraska-Kansas Area Office is available for meetings if requested with

Nebraska, Colorado, and Kansas state management agencies to discuss the Annual Operating Plans (AOP). Information is solicited that will allow Reclamation the flexibility to enhance fisheries resources while still meeting contractual obligations with the various irrigation districts.

During the early part of the 2001 season, normal reservoir operations were favorable for recreation and fish and wildlife uses. Late in the season, irrigation operations substantially lowered the water levels of reservoirs in the Republican River Basin, limiting the recreation benefits. Normal summer drawdown due to irrigation releases did allow for late summer shoreline revegetation.

Re-authorization of the North Loup Project by the Act of October 18, 1986 [Public Law 99-591, Section 101(e)] authorized the construction of a fish hatchery below Virginia Smith Dam and Calamus Reservoir. The hatchery was constructed under Public Law 89-72 and a cost-sharing agreement with the Nebraska Game and Parks Commission (Commission) with 75 percent federal and 25 percent state funds. Administration of construction was accomplished by the Commission; construction began in July 1989, and was completed in September 1991. The hatchery consists of an office/visitor center, laboratory, 2 residences, a shop and feed storage building, 51 rearing ponds lined with VLDPE and covering 45.5 acres, 24 concrete raceways, 2 lined effluent ponds, 8 groundwater wells, a 36-inch diameter buried pipeline from Virginia Smith Dam, a groundwater degassing tank, and a computerized monitoring and alarm system. The hatchery is operated and maintained by the Commission and in full operation should produce about 53 million fish per year. The water supply is provided by natural flows passed through Virginia Smith Dam and from Calamus Reservoir storage through an agreement dated July 28, 1988, between the Commission and the Twin Loups Reclamation District.

2002 Outlook

Three detailed studies have been developed for each of the reservoirs in the Niobrara, Lower Platte, and Kansas River Basins conforming with established operating criteria under various reservoir inflow conditions. These operation studies are included in table 4, sheets 1 through 17. The municipal and rural water district water supply requirements will be met under all three inflow forecast conditions for all units.

Under reasonable minimum inflow forecast conditions, irrigation districts receiving storage water from the following lakes and reservoirs are expected to receive less than a full supply: Box Butte, Enders, Swanson, Hugh Butler, Harry Strunk, Keith Sebelius, Harlan County and Lovewell. The irrigation districts affected are Mirage Flats; Frenchman Valley and H&RW; Frenchman Cambridge; Almena; and Nebraska and Kansas Bostwick; respectively. If 2002 is a dry year, 140,200 of the total 312,400 acres estimated to be irrigated (45 percent) will have an inadequate water supply.

Under most probable inflow conditions, it is also expected that Frenchman Valley, H&RW, Almena and Mirage Flats Irrigation Districts would experience some shortages to irrigation demands from Enders Reservoir, Keith Sebelius Lake and Box Butte Reservoir. Irrigators in these districts plan to use water from private wells to supplement the project water supply. In an effort

to conserve reservoir storage, Almena Irrigation District will continue limiting farm deliveries to approximately five inches.

Even under reasonable maximum inflow conditions, Frenchman Valley and H&RW Irrigation Districts are expected to experience irrigation demand shortages from Enders Reservoir.

During 2002, under all inflow forecast conditions, storage water will be in excess of project needs at Bonny Reservoir and Waconda Lake. The state of Colorado will make Bonny storage water available to downstream water right appropriators.

Under reasonable minimum inflow conditions, the conservation pools at Merritt, Sherman, Calamus, Davis Creek and Lovewell Reservoirs along with Harry Strunk Lake are expected to fill during 2002.

Even with low reservoir levels and inadequate water supplies for some project lands, the recommendations of various state agencies will be considered. As in the past, irrigation and reclamation districts will advise state agencies regarding aquatic weed control and canal operations. Reclamation will continue to operate the reservoirs and other facilities under its jurisdiction in the best interests of all project functions and for the optimum public benefit.

HEADLINES '01

Lakes show little improvement

State considers leasing water to save Enders

Civil Defense Learns Valuable Lessons From Last Week's Mock Flooding Drill

Nebraska waits for reply from Kansas for lawsuit talks

Assistant attorney general to speak at water conference

Bureau releases plans for southwest reservoirs

Ground water just another limited resource

■ *Wells must be registered this month.*

Court gives Chase County farmers go-ahead to sue Upper Republican NRD

StatePaper.com

Road across dam to close for six weeks starting April 9

McCook Daily Gazette

TRENTON —

Trail closings upset consumers

Omaha World-Herald

Spring rains slowly easing drought

OMAHA (AP) —

McCOOK DAILY GAZETTE

Drought takes its toll

Kirwin restricts access points

By DAVID CLOUSTON
The Salina Journal

Republican River interests await special master's ruling

Area lakes prepared for summer fun

Another winter storm belts Nebraska

Official inspects Republican River basin

Comments on water regs due Monday

Let's make lakes truly accessible

Some of state's small dams showing age

Fishing folks keep lake busy

Resources district ponders groundwater management area

McCook Daily Gazette

Republican River basin NRDs meet

Trail closings provide agenda for meeting

Bartley wetlands

Rivers receding into banks after rainy weekend

By The Associated Press

Proposed water rule raises fears

By RONDA GRAFF
City Editor

Special master ruling is against Nebraska

Dwindling lake reveals the memories of careless past

Lake levels

MAY 23, 2001

	MAY 23, 2001 Reservoir		APRIL 23, 2001 Reservoir		MAY 17, 2000 Reservoir	
	Storage	Elevation	Storage	Elevation	Storage	Elevation
Hugh Butler Lake	28,448	2,576.26	27,824	2,576.26	31,422	2,576.75
Swanson Lake	45,456	2,735.08	42,948	2,734.24	98,389	2,743.04
Harry Strunk Lake	37,237	2,366.03	35,574	2,366.03,	38,062	2,367.35
Enders Reservoir	17,406	3,093.18	16,828	3,092.58	26,929	3,099.0

Storage totals are presented in acre feet of water.

Source: U.S. Bureau of Reclamation

CHAPTER I - INTRODUCTION

Purpose of This Report

This AOP advises water users, cooperating agencies, and other interested groups or persons of the actual operations during 2001 and serves as a guideline for the 2002 operations. This report also describes the responsibilities of Reclamation, Corps of Engineers, and the irrigation and reclamation districts in the Niobrara, Lower Platte, and Kansas River Basins.

Operational Responsibilities

Reclamation is responsible for irrigation operations at all federal reservoirs in the Nebraska-Kansas Projects. Reclamation is also responsible for the operation and maintenance (O&M), safety of the structure, and reservoir operations not specifically associated with regulation of the flood control storage at the reservoirs constructed by Reclamation. Regulation of the flood control storage is the responsibility of the Corps of Engineers. In addition to irrigation and flood control, these reservoirs provide recreation, fish and wildlife, and municipal benefits.

By contractual arrangements with Reclamation, the irrigation or reclamation districts in the Niobrara, Lower Platte, and Kansas River Basins are responsible for the O&M of the canals and irrigation distribution facilities constructed or rehabilitated by Reclamation. In addition, the appropriate irrigation or reclamation districts are responsible for operating and maintaining Box Butte, Merritt, Sherman, Virginia Smith and Davis Creek Dams. The Corps of Engineers operates and maintains Harlan County Dam and Lake. The state of Colorado provides operational guidelines for Bonny Reservoir. Operational guidelines for Cedar Bluff Reservoir will be provided by the State of Kansas. Reclamation operates and maintains 11 dams and reservoirs in the Republican, Solomon, and Smoky Hill River Basins. Under a contract with Reclamation, Kirwin Irrigation District performs certain operational and maintenance functions at Kirwin Dam.

An updated Field Working Agreement was executed on July 17, 2001 between the Corps of Engineers and Reclamation regarding operation of Harlan County Dam and Lake. The agreement provides for a sharing of the decreasing water supply into Harlan County Lake. Storage capacity allocations were redefined based on the latest sediment survey (2000) and a procedure was established for sharing the reduced inflow and summer evaporation among the various lake uses.

The states of Nebraska, Colorado, and Kansas are responsible for the administration and enforcement of their state laws pertaining to the water rights and priorities of all parties concerned with the use of water. The states are also responsible for administering the water surface activities and the federal lands around the reservoir. The U.S. Fish and Wildlife Service administers the water surface activities and most of the federal lands at Kirwin Reservoir.

Reclamation cooperates with all state agencies and compact commissions to ensure that all operations are in compliance with state laws and compact requirements.

Tables and Exhibits

Records for the facilities reported in the AOP are included as tables and exhibits and are located following page 40.

Water Supply

For forecasting purposes, values of annual inflows that will be statistically equaled or exceeded 10, 50, and 90 percent of the time were selected from the probability data to be reasonable maximum (wet year), most probable (normal year), and reasonable minimum (dry year) inflow conditions, respectively.

Inflow records from 1970 through 2000 were used for the analysis of those reservoirs in the Kansas River Basin with the exception of Enders Reservoir and Harlan County Lake in which records from 1980 through 2000 were used to better represent present inflows. Inflow records from 1970 through 2000 were also used for the analysis of the reservoirs located in the Niobrara and Lower Platte Basins, except for Calamus and Davis Creek Reservoirs. The more recent available record of 1986 through 2000 was used for Calamus Reservoir. Davis Creek Reservoir is an off-stream storage facility with only 6.3 square miles of drainage area. Inflow to Davis Creek Reservoir is supplied by diversions from Calamus Reservoir and the North Loup River.

Reservoir Operations

All operations are scheduled for optimum benefits of the authorized project functions. Monthly, or as often as runoff and weather conditions dictate, Reclamation evaluates the carry-over storage and estimated inflow at each reservoir to determine whether excess water is anticipated. If excess inflow is apparent, controlled releases will be made to maximize the downstream benefits, including flood control.

Major Features

The Mirage Flats Project was constructed under the Water Conservation and Utilization Act and includes an irrigation storage reservoir, diversion dam, and canal system. The other features discussed in this report are all a part of the Pick-Sloan Missouri Basin Program and include single and multipurpose reservoirs, diversion dams, pump stations, and canal systems. The 17 storage facilities now in operation are listed below.

Constructed by Reclamation

1. Operated by irrigation or reclamation districts--Box Butte and Merritt Dams in the Niobrara River Basin and Sherman, Virginia Smith and Davis Creek Dams in the Lower Platte River Basin.

2. Operated by Reclamation--Bonny, Trenton, Enders, Red Willow, Medicine Creek, Norton, Lovewell, Kirwin, Webster, Glen Elder, and Cedar Bluff Dams in the Kansas River

Basin. A contract provides for Kirwin Irrigation District to perform certain operational and maintenance functions at Kirwin Dam.

Constructed and Operated by the Corps of Engineers

1. Harlan County Dam in the Kansas River Basin.

Irrigation and Reclamation Districts

Fourteen irrigation districts and two reclamation districts in the Niobrara, Lower Platte, and Kansas River Basins have contracted with Reclamation for water supply and irrigation facilities. The Sargent and Farwell Irrigation Districts have contracted their O&M responsibilities to the Loup Basin Reclamation District. The Twin Loups Irrigation District has contracted their O&M responsibilities to the Twin Loups Reclamation District. Bostwick Irrigation District in Nebraska has contracted their O&M responsibilities for Courtland Canal between the headgates and the Nebraska-Kansas state line to Kansas Bostwick Irrigation District.

The contracted irrigation season for the Mirage Flats Irrigation District is April through September. The contracted irrigation season for Frenchman Valley, H&RW and Frenchman-Cambridge Irrigation Districts is from May 1st through October 15th or such additional period from April 1st through May 1st of each year as determined between the District and Reclamation. The contracted irrigation season for Almena, Bostwick in Nebraska, Kansas-Bostwick and Twin Loups Reclamation District is May 1st through September 30th or such additional period from April 1st through November 15th of each year as determined between the District and Reclamation. For all other districts, the contracted irrigation season is from May 1st through September 30th.

Long Term Water Service Contract Renewal

The renewal of the long term water service contracts with Frenchman-Cambridge, Kansas Bostwick, Nebraska Bostwick, and Almena Irrigation Districts was completed in 2000. The Districts negotiated the conversion of their water service contracts to repayment contracts with a 40 year repayment period. These contracts were signed July 25, 2000 and confirmed in District Court. These contracts became effective January 1, 2001. These contracts include provisions that provide for water supply and distribution works reserve funds, water conservation commitments to improve efficiencies, environmental commitments, and provisions for irrigation policies/deliveries to help preserve lake levels.

The renewal of the long term water service contract with Frenchman Valley Irrigation District was completed in 2000. The district negotiated the renewal of their water service contract that includes a 40 year term. The contract was signed July 25, 2000 and was confirmed in District Court. The contract became effective January 1, 2001. This contract includes provisions that provide for a water supply reserve fund, water conservation commitments to improve efficiencies, environmental commitments, and provisions for irrigation policies/deliveries to help preserve lake levels.

The new contracts require that Reclamation meet with the districts listed above prior to March 1st of each year for an annual water operations meeting. Discussions include the previous year's water operations season, the upcoming year's water supplies, historic water supplies and delivery efficiencies and potential water conservation measures.

The long term water service contracts with Kirwin Irrigation District No. 1 and Webster Irrigation District No. 4 initially would have expired on December 31, 1999 and December 31, 2001, respectively. These contracts were extended for an additional four years as authorized by Congress (Public Law 104-326) on October 19, 1996. The process for renewing long term water service contracts with the Kirwin and Webster Irrigation Districts began in 1997. In March 2001, Reclamation initiated contract negotiations with the districts. On August 3, the remaining outstanding issues were resolved which allowed for the assembly of the final draft contracts. The draft Environmental Assessment and draft contracts were made available to the public for review in December, 2001. The final Environmental Assessment will be completed when a Biological Opinion has been received from the U.S. Fish and Wildlife Service, which will allow the completion of the NEPA process and execution of the contracts.

Transfer of title of the assets of the Middle Loup Division to the Farwell Irrigation District, Sargent Irrigation District, and the Loup Basin Reclamation District was approved by Congress and signed into law on October 27, 2000 (Public Law 106-366). The transfer legislation directs the Secretary of Interior to convey all right, title, and interest in and to the property comprising the assets of the Middle Loup Division in accordance with the Memorandum of Understanding dated July, 2000. The draft Environmental Assessment was made available to the public for review. The final Environmental Assessment will be completed when a Biological Opinion has been received from the U.S. Fish and Wildlife Service, which will allow the completion of the NEPA process and execution of the transfer documents. The transfer is scheduled to be completed in mid-2002 to ensure all actions are accomplished prior to the expiration of the long term water service contract with the Loup Basin Reclamation District which expires December 31, 2002.

The long term water service contract with the Ainsworth Irrigation District will expire in 2006. Meetings have been held with the district to present information concerning the contract renewal process. Resource data collection within the Niobrara Basin has been initiated.

Municipal Water

Three municipalities and one rural water district have executed water service contracts for full or supplemental water supplies.

Fish and Wildlife

The State of Kansas is presently using the fish hatchery facility below Cedar Bluff Reservoir for waterfowl habitat. The Calamus Fish Hatchery located below Calamus Reservoir is operated by the State of Nebraska for fish production.

State of Colorado Division of Wildlife

The Colorado Division of Wildlife provides operational guidelines for Bonny Reservoir. The entire conservation pool storage was purchased by the State of Colorado on June 24, 1982.

State of Kansas Department of Wildlife and Parks

The State of Kansas acquired the use and control of portions of the conservation capacity at Cedar Bluff Reservoir following the reformulation of the Cedar Bluff Unit in October of 1992. The City of Russell's existing water storage right and contract with the United States remained unchanged.

Power Interference Considerations

A Power Interference Agreement exists between Reclamation, the Twin Loups Reclamation District, and the Loup River Public Power District. Provisions of this agreement will be incorporated into the 2002 operations.

Environmental Considerations

A "Statement of Operational Objectives" for Harlan County Lake sets forth the general operational objectives and the specific reservoir uses that are desirable. The operational objectives indicate that fish and wildlife interests are best served by high reservoir levels with minimum fluctuations, and regulation of the outflow in excess of the minimum desired flows. Although the statement recognizes flood control and irrigation as primary purposes, it indicates that comprehensive operational plans should be developed for maximum integration of the secondary uses.

These objectives are also considered in the operation of all Reclamation reservoirs in the Kansas River Basin, Niobrara River Basin, and the Lower Platte River Basin. The regulated outflow will also benefit farmers, ranchers, cities, and other interests below the reservoirs.

Republican River Compact - Kansas v. Nebraska

On May 26, 1998, the State of Kansas filed suit in the U.S. Supreme Court complaining that the State of Nebraska had violated the Republican River Compact by allowing the development of thousands of wells hydraulically connected to the Republican River and its tributaries, by failure to protect surface flows from unauthorized appropriation, and by other acts and omissions. Kansas claimed that through these acts and omissions Nebraska was using more water than its allocated share and had deprived Kansas of its full entitlement under the Compact. Since the Republican River headwaters are in Colorado, Colorado is also a party in this case. The United States, acting as *amicus curiae*, filed a brief with the Supreme Court on December 18, 1998. In our brief we generally supported Kansas' position and stated that the Compact is not working as the states intended when they negotiated it. On January 19, 1999, the Supreme Court accepted Kansas' lawsuit. On August 2, 1999, Nebraska filed a motion to dismiss the case on the grounds that the Compact does not include groundwater. The Special Master held a hearing on January 4, 2000,

and thereafter recommended that the Court deny Nebraska's motion to dismiss. On June 29, 2000, the Court entered an order denying Nebraska's motion to dismiss and recommitted the case to the Master. The Special Master has ruled that the Compact restricts a compacting state's consumption of groundwater to the extent that the consumption depletes streamflow in the Republican River Basin.

In an Order dated October 18, 2000, the Special Master set for briefing three "subsidiary issues" for resolution with initial briefs due by January 15, 2001. The three issues are: 1) Are the Republican River Compact Administration's determination for a given year conclusive so as to foreclose a complaining State from stating a claim, 2) Is any State entitled to consume any water allocated to another State that the latter does not put to beneficial use, and 3) Must a complaining State show injury to obtain prospective relief. Reclamation, through the Solicitor's Office, provided its input on these issues to the Department of Justice (DOJ) on December 19, 2000. The ruling stated that the calculations for the period 1959-94 are conclusive and binding on the States; no State is entitled to consume any water allocated to another State that the latter does not put to consumptive use; and a complaining State need not show injury to obtain prospective relief. In Memorandum of Decision No. 2, dated June 15, 2001, concerning adjusted allocations for 1959-77, the Special Master ruled that the calculations for adjusted allocations provided using consistent methodology with the other periods was conclusive and binding on the States. The Special Master in Memorandum of Decision No. 3, dated October 19, 2001, ruled on the First Set of Preliminary Questions regarding Kansas/Nebraska Claims and Counterclaims for Years 1959-94.

On December 18, 2000, Colorado, Nebraska, and Kansas jointly made an initial request for documents from the United States. The request was extensive, requesting documents from the Bureau of Reclamation, the Corps of Engineers, the Geological Survey, Fish and Wildlife Service, and the Department of Agriculture. Reclamation documents were identified and examined by the States at these locations: Grand Island, McCook, Billings, Denver Technical Service Center, Denver Record Center and Denver archives. Document imaging has been completed with some final evaluation of imaging results being conducted as necessary.

At the unanimous request of the parties and the concurrence of the United States, and in order to allow the full development of settlement talks, the schedule for the court case was delayed by three and one-half months or from mid-December through the end of March. Two-day meetings were scheduled at approximate two-week intervals throughout the delay period. Meetings have been held and Reclamation has participated in each meeting and has presented operational data and information on several occasions.

The end of the delay period is March 31st with additional briefings scheduled for April 24, 2002 in the event that settlement discussions are unsuccessful. By incorporating the delay period, the date for the trial to begin is July 1, 2003. This is a very aggressive schedule compared to similar cases.

Emergency Management

The Nebraska-Kansas Area Office (NKAO) continued to coordinate with local jurisdictions that could potentially be impacted by flooding from large operational releases and/or dam failure. During calendar year 2001, two functional exercises and one tabletop was conducted. Orientation meetings were held for all of the NKAO dams. Functional exercises were held for the Enders Dam Emergency Action Plan (EAP) and the Lovewell Dam EAP. A combined tabletop exercise was held for Virginia Smith, Davis Creek and Sherman Dams. Emergency radios have been installed at 14 of the 16 dams. These radios will be used as a backup means of communication when notifying the local emergency management officials in the event of an emergency at the dam. Satellite phones have been purchased for both the Nebraska-Kansas Area Office and the McCook Field Office.

There were no emergency response levels declared at any of the NKAO projects in 2001.

Four functional exercises involving six NKAO facilities are scheduled to take place in 2002. Orientation meetings will be held for all NKAO dams. Currently, NKAO is in the process of developing a plan to meet annually with local law enforcement and facility managers in conjunction with the annual EAP orientations. Since the events of September 11, 2001, the communication between local law enforcement and NKAO has greatly improved thus increasing awareness and enhancing the security of NKAO facilities. Site Specific Security Plans are also scheduled to be completed by the end of FY 2002.

Public Safety Reviews

The Nebraska-Kansas Area Office is involved in an ongoing safety review of project facilities to identify potential safety hazards to the public and operating personnel. Safety and security reviews performed at NKAO facilities have prompted initiation of several fencing projects to control public access to facilities, especially to spillway operating decks where there are gated spillways.

The Nebraska-Kansas Area Office will be involved with emergency personnel at all NKAO facilities. A tour of our facilities will be initiated to familiarize EMT's and rescue groups to the location and hazards involved with our daily work routines as well as our inspections. Inspections can involve many people and hazards do exist. If an accident was to happen then the rescue team and EMT's can respond to the accident site informed of our location and the hazards involved.

Another safety issue is the training that takes place at different times during the year. Safety training is always a priority for NKAO employees. Training that will be emphasized this year includes Defensive Driving, Confined Space Entry, Personnel Protective Equipment, First Aid and CPR. This training will also include purchasing of protective equipment each employee needs to make their workplace environment safe.

General Maintenance

Annual Site Inspections were conducted at all NKAO dams in 2001. The site inspections were accomplished between June 8th and December 5th. There were no Periodic or Comprehensive Facility Reviews conducted during 2001 although five Comprehensive Facility Reviews are scheduled for 2002.

Both the spillway and outlet works stilling basins at Medicine Creek Dam were de-watered, examined and cleaned in October 2001.

The regional climb team conducted inaccessible features inspections at both Lovewell and Webster Dams in September 2001.

Work continued on upgrading the equipment and rehabilitating all of the piezometer wells. Improvements include the replacement of old and inoperative gauges, pumps, lines, fittings and water filters. Additional work includes the replacement of frost floors and improvements in ventilation.

A program has been initiated to develop baseline air quality readings in all identified permit and non-permit required confined spaces. Readings in the piezometer wells at Bonny and Cedar Bluff Dams indicated potential problems with lack of oxygen and hazardous atmosphere.

Construction of security fences around various outlet works and spillway structures continues at NKAO dams.

Video inspections of the toe drains at Sherman and Davis Creek Dams have been conducted. A program was initiated in 2001 to examine all of our toe drain systems over the next few years.

Classroom dam operator training was conducted in February of 2001 for all primary and alternate dam operators. This is required training every three years. On site dam operator training was conducted at Red Willow, Medicine Creek and Sherman Dams in 2001.

CHAPTER II - NIOBRARA AND LOWER PLATTE RIVER BASINS

Mirage Flats Project in Nebraska

General

Flows in the Niobrara River along with Box Butte Reservoir storage provide a water supply for the 11,662 acre Mirage Flats Project. From 1992 to 2001, the project water supply averaged 13,650 AF, which is about 1.17 acre-foot per irrigable acre. Many irrigators supplement their water supply with private wells.

The Mirage Flats Irrigation District cooperates with the Nebraska Game and Parks Commission (Commission) by operating the Box Butte Dam outlet works gate and the Dunlap Diversion Dam gates in a manner to avoid sudden large changes in the flows of the Niobrara River. A 30-year agreement was made in 1990 between the district and the Commission whereby the district would not draw the reservoir water level below elevation 3978.00 feet (2,819 AF). In return the district received an up-front payment which was used to improve the efficiency of the project's delivery system. On March 17, 2000, the district agreed to increasing the minimum reservoir level by one additional foot to elevation 3979.00 feet (3,244 AF). In return the district received an additional payment from the Commission for the 20 years left on the original agreement.

A data collection platform (DCP) was installed in May of 1992 to monitor the reservoir elevation and outflow at Box Butte Dam. A telephone (primary communication system) and a radio (backup communication system) have been installed at the outlet works for contacting the Region 23 Emergency Management Agency.

The Mirage Flats Irrigation District updated their Water Management Plan in 1997, and in 1999 the district developed a Long Range Plan that outlined the mission, operation and maintenance guidelines, and future direction of the district. Past water conservation measures implemented by the district include lining a one mile section of the main canal which was causing problems with an adjacent landowner, an increased measurement program where the district installed six additional measurement structures throughout two of the district's four laterals, a surge valve loaner program to promote on-farm efficient improvements and improve groundwater contamination, hosting various irrigation scheduling workshops, attending various Reclamation courses, cost sharing for on-farm efficiency improvements, and remote monitoring of Box Butte Dam and Dunlap Diversion Dam.

2001 Summary

The flows of the Niobrara River plus the carry-over storage in Box Butte Reservoir were not adequate to provide a full water supply for the project lands. Precipitation at the Mirage Flats Irrigation District Office totaled 18.53 inches, which is 108 percent of normal. Precipitation recorded during the first six months of the year averaged only 81 percent of normal at 7.73 inches. July precipitation alone totaled 9.28 inches, the greatest ever for the month and 50 percent of the yearly total. The total inflow (16,668 AF) was between the dry- and normal-year forecasts.

From July through early September, diversions of 12,571 AF to the Mirage Flats Canal provided irrigation water for approximately 11,092 acres, 95 percent of the service available acreage. The farm deliveries from the project water supply totaled 7,755 AF (0.66 acre-foot per irrigable acre), which is a delivery efficiency of 62 percent. The reservoir contained only 7,384 AF of water at the end of the irrigation season. Privately owned irrigation wells supplemented the project water supply.

An orientation meeting to review the Box Butte Dam EAP took place in June 2001 and the Annual Site Inspection of Box Butte Dam was conducted in September.

New embankment measurement points were installed and surveyed along the crest of Box Butte Dam in September 2001. Another survey of the points will be completed in 2002 and then once every six years.

The Mirage Flats Irrigation District continued to implement water conservation measures as outlined in their Water Management Plan and their Long Range Plan. In the spring of 2000, the district (with assistance from Reclamation) installed automation equipment at the split of the Mirage Flats Canal. In the spring of 2001, the district automated canal gates at the two main lateral splits. The automation of these gates allows the district to adjust these gates remotely with scheduled setpoints. The district expanded their monitoring program by installing monitoring devices at the four lateral wasteways, which were previously just recorded. This allows the district to immediately access the lateral waste. These additional automation and remote monitoring sites improve the operations, scheduling, and accounting of the district's system. The district also expanded their water measurement program by installing six additional CMP Ramp flumes in the district's two other laterals. The district began utilizing new computer software that improved system operations, scheduling, and accounting and developed a web page that allows irrigators to place water orders, review water accounts, and keep updated on district operations.

2002 Outlook

The project water supply is expected to be inadequate in 2002 as it has been since the early 1960's. In the spring, the district will inform their water users of the amount of water that will be available from storage in Box Butte Reservoir. The district plans for the irrigators to continue the use of water from privately-owned irrigation wells as a supplemental supply.

The Standing Operating Procedures (SOP) for Box Butte Dam is scheduled to be updated and republished this year.

A functional exercise of the Box Butte Dam EAP is scheduled for 2002. On-site dam operator training is also scheduled to take place early in 2002.

Ainsworth Unit, Sandhills Division in Nebraska

General

Within the Ainsworth Irrigation District, there are 34,539 acres with service available. The project water supply is provided by storage of Snake River flows in Merritt Reservoir. The reservoir is filled each fall after the irrigation season to elevation 2944.0 feet. This level is approximately two feet below the top of conservation capacity and within the repaired area of soil cement on the upstream face of the dam. The reservoir is regulated to maintain this level until the ice clears each spring. Maintaining the reservoir at this elevation during the winter will help avoid ice damage to the older existing soil cement at lower elevations. Upon ice-out the outlet pipe is drained, inspected, and repaired as necessary. The reservoir will then be rapidly filled to elevation 2946.0 feet to reduce shoreline erosion around the reservoir and minimize sand accumulations on the face of the dam. This reservoir level is maintained until irrigation releases begin to draw on the pool. A minimum release of 75 cubic feet per second (cfs) will be made to the river during spring filling operations. This operation also enhances the spring fish spawn. Seepage, pickup and toe drain flow normally result in flows of up to 15 cfs below Merritt Dam. Whenever possible, daily changes in releases to the river should be made in no more than 50 cfs increments. This will minimize adverse impacts on the Snake River trout fishery downstream of the dam.

The district has a basic water supply. If available, additional water can be purchased by the district as a supplemental supply.

2001 Summary

Precipitation, as recorded near Merritt Dam, totaled 22.57 inches, which was 112 percent of normal. April precipitation and the corresponding computed inflow was the greatest ever recorded for the month. The inflow for the year totaled 193,571 AF. This inflow was between the normal- and wet-year forecasts. The water supply was more than adequate to meet the project's irrigation requirement. There were 75,390 AF diverted from Merritt Reservoir into Ainsworth Canal, with 47,302 AF delivered to the farm headgates (delivery efficiency of 63 percent). There were 34,269 acres of land irrigated in 2001.

The district executed several temporary water service contracts which provided a total of 318 AF of irrigation water from holding ponds located within the district's service area.

An orientation meeting to review the Merritt Dam EAP took place in June 2001 and the Annual Site Inspection of Merritt Dam was conducted in September.

2002 Outlook

During the winter months, the reservoir will be regulated to maintain elevation 2944.0 feet (2.0 feet below the top of conservation capacity). In order to alleviate erosive action to the lands around the reservoir and to maximize all benefits associated with the reservoir, releases from Merritt Reservoir will be regulated to fill the conservation capacity during the early spring. This filling generally takes place during April. The reservoir level will be maintained from the end of

April until irrigation releases begin in late June. If weather conditions or irrigation demands dictate, it may be necessary to begin filling the reservoir prior to this time. The water supply is expected to be adequate in 2002 for the irrigation of 34,500 acres.

A functional exercise of the Merritt Dam EAP is scheduled for 2002.

The process of renewing the long term water service contract with Ainsworth Irrigation District is beginning. The existing contract will expire in 2006.

Sargent Unit, Middle Loup Division in Nebraska

General

With financial support from the Loup Basin Reclamation District, the Sargent Irrigation District performs the O&M of Milburn Diversion Dam and the Sargent Canal system which serves 13,936 acres. The water supply is diverted from the Middle Loup River into the Sargent Canal under an appropriated natural-flow water right from the State of Nebraska. These diversions may exceed the natural-flow water appropriation of 202 cfs by an exchange of storage from Sherman Reservoir, provided that water is available after all senior appropriations are satisfied, and the excess is not greater than the compensating storage releases from Sherman Reservoir.

2001 Summary

Precipitation in the Sargent Unit (26.11 inches at district headquarters) was 112 percent of normal. The irrigation diversions into the Sargent Canal totaled 24,892 AF (15,131 AF were delivered to the farm headgates for a delivery efficiency of 61 percent). The diversions exceeded the direct-flow water right for 16 days. Approximately 13,936 acres were irrigated. The irrigators grow corn as the principal crop, creating very high water demands in July and August. Normally these high demands cannot be met within canal capacity, so the district institutes a rationing process through the peak period, as necessary.

2002 Outlook

The Sargent Irrigation District estimates that 13,900 acres in the Sargent Unit will be irrigated in 2002. The Farwell and Sargent Irrigation Districts are required to share any shortages in accordance with their contract.

The Sargent Irrigation District has expressed an interest in the automation of the Sargent Canal gate at Milburn Diversion Dam. The automation of this gate would improve system operations by increasing opportunities to make diversion adjustments to the Sargent Canal system and improve water accounting. The district has also taken advantage of Reclamation training opportunities by attending the Water Management Workshop and the Modern Methods of Canal Operation Course.

Farwell Unit, Middle Loup Division in Nebraska

General

With financial support from the Loup Basin Reclamation District, the Farwell Irrigation District operates and maintains the Arcadia Diversion Dam, Sherman Feeder Canal, Sherman Dam and Reservoir, and the Farwell Canal system, which serves 50,051 acres of land. Diversions are also made through the Arcadia Diversion Dam to 15,000 acres of non-project lands in the Middle Loup Public Power and Irrigation District under their appropriated natural-flow water rights.

Middle Loup Public Power and Irrigation District, Loup Basin Reclamation District, Farwell Irrigation District and Sargent Irrigation District have executed an agreement to temporarily cease diversions from the Middle Loup River when conservation storage space in Sherman Reservoir has been evacuated. The agreement was executed December 10, 1984.

During the winter months, Sherman Reservoir is normally regulated to five feet or more below the top of the conservation capacity. Doing so minimizes seepage from the reservoir into the groundwater table. Maintaining the pool below the top of conservation provides time for seeding of exposed shore areas to prevent wind erosion. The seedings also provide winter food and cover for wildlife, and spawning habitat for fish in the spring when these areas are inundated. Each spring, diversions into Sherman Feeder Canal from the Middle Loup River are regulated to fill the conservation capacity of Sherman Reservoir by late May. The gradually rising water surface in the spring is desirable for fish spawning.

Reclamation developed two wetland sites through mitigation of the Middle Loup Valley during 1995. Phase I involved construction of a 25 acre wetland near Sherman Feeder Canal. Water is diverted into the wetland via the Feeder Canal. Also, a 110 acre wetland tract was developed near Fullerton, Nebraska as Phase II of the mitigation.

2001 Summary

Diversions from the Middle Loup River at Arcadia Diversion Dam totaled 43,755 AF to the Middle Loup Public Power and Irrigation District and 112,232 AF into the Sherman Feeder Canal. During the fall of 1985 the Middle Loup Public Power and Irrigation District constructed a turnout in the Sherman Feeder Canal near mile post 11.4. The turnout diverts water directly to the Number 4 Canal. Releases to the turnout amounted to 92 AF and the losses charged as a result of these deliveries totaled 9 AF.

Sherman Feeder Canal diversions into Sherman Reservoir were started on April 16th, and the conservation capacity was filled on June 1st. The annual precipitation at Sherman Dam totaled 20.93 inches, which is 92 percent of normal. Precipitation recorded during the spring was above normal while summer rainfall amounts were well below normal. Releases into the Farwell Canals totaled 85,674 AF (49,958 AF were delivered to the farm headgates for a delivery efficiency of 58 percent). The Farwell Irrigation District reported that 48,422 acres of land were irrigated in 2001. Sherman Feeder Canal was shut off October 11th.

An orientation meeting to review the Sherman Dam EAP took place in October 2001 and a combined tabletop exercise of the Sherman Dam, Virginia Smith Dam and Davis Creek Dam EAP's took place in November 2001. The Annual Site Inspection of Sherman Dam and on-site dam operator training were also conducted in November.

The Farwell Irrigation District has implemented an extensive buried pipe program to replace high loss sections of open ditch laterals. The district provides on-farm benefits with this buried pipe program by relocating turnouts and increasing the delivery water surface. The district has also taken advantage of Reclamation training opportunities by attending the Water Management Workshop and the Modern Methods of Canal Operation Course. The district is investigating canal automation opportunities for the future.

2002 Outlook

Diversions from the Middle Loup River into Sherman Feeder Canal are expected to start in the spring. These diversions will be made for the normal filling of the conservation capacity of Sherman Reservoir prior to the irrigation season.

Large irrigation requirements can be expected for corn production during the months of July and August. Farwell and Sargent Irrigation Districts are required to share any shortages in accordance with their contract.

The Standing Operating Procedures (SOP) for Sherman Dam has been updated and is scheduled to be republished in 2002.

North Loup Division in Nebraska

General

The North Loup Division is located in the Loup River drainage basin. Water is diverted from both the Calamus and North Loup Rivers for the irrigation of approximately 53,000 acres of project lands. Operation of the division will also provide a sustained groundwater supply for an additional 17,000 acres. Principal features of the division include Virginia Smith Dam and Calamus Reservoir, Calamus Fish Hatchery, Kent Diversion Dam, Davis Creek Dam and Reservoir, five principal canals, one major and one small pumping plant and numerous open ditch and buried pipe laterals.

Calamus Reservoir is normally regulated at three to four feet below the top of conservation capacity during the winter months. Maintaining the reservoir at this elevation during the winter will help avoid ice damage to the soil cement on the upstream face of the dam. After the ice clears in the spring, the reservoir will be filled to conservation capacity. The North Loup Division project operation is restricted to no water diversions from the Calamus and North Loup Rivers during the months of July and August, and also during the month of September whenever sufficient water is available in storage reservoirs to deliver canal design capacity. During this time, inflows to Calamus Reservoir are required to be bypassed under the Power Interference

Agreement between Reclamation, the Twin Loups Reclamation District, and the Loup River Public Power District and as required in the authorizing legislation.

Davis Creek Reservoir is normally regulated at elevation 2040.0 feet following the irrigation season and throughout the winter months. This carry-over elevation provides a minimal recreational pool while reducing increases in groundwater storage due to reservoir seepage. The reservoir is filled via Mirdan Canal, starting in April and reaching full content by the end of June. A 160-acre recreation area adjoining the reservoir was constructed and is managed by the Lower Loup Natural Resources District. The area includes a boat ramp, a handicapped fishing pier, a day-use area, a primitive camping area, shelter and a hiking path. Kent Diversion Dam is also open to day-use fishing with handicapped accessibility provided.

2001 Summary

Precipitation at Virginia Smith Dam was 25.63 inches which is 108 percent of normal. February and April precipitation totals were the greatest ever recorded for the respective months at the dam. The inflow was 297,092 AF which was between the normal- and wet-year forecasts. Calamus Reservoir reached an historical high elevation of 2244.80 feet on June 18th. There were 64,699 AF of water released into Mirdan Canal and 23,746 AF diverted through Kent Canal from the North Loup River. A total of 39,270 AF was diverted for district use above Davis Creek Reservoir. The farm headgate delivery was 21,117 AF which is a delivery efficiency of 54 percent. Land irrigated in 2001 totaled 32,216 acres above Davis Creek Reservoir. Reservoir inflows were bypassed during July, August, and September as required. The reservoir elevation at the end of the year was at 2240.16 feet. The Calamus Fish Hatchery used bypassed natural flows and storage from Calamus Reservoir totaling 6,110 AF during 2001.

Repairs to the outlet works stilling basin floor at Virginia Smith Dam were completed in January 2001.

A section of the Mirdan Canal lining failed in the spring of 1999. Repairs were initiated by contract and were completed in the fall of 2001.

The precipitation of 27.04 inches near Davis Creek Dam was 114 percent of normal. Precipitation recorded during April was the greatest for the month since dam construction. Inflow to Davis Creek Reservoir totaled 42,824 AF during 2001, including 41,571 AF via Mirdan Canal. Beginning in mid May, Davis Creek Reservoir was filled from an elevation of approximately 2064.5 feet to a peak elevation of 2073.48 feet on July 18th using diversions from the North Loup River and Calamus Reservoir. Davis Creek Reservoir had been wintered over 20 feet above normal due to Mirdan Canal construction activities. A release of 44,388 AF was made from Davis Creek Dam into Fullerton Canal, with 24,389 AF delivered to the farm headgates (55 percent delivery efficiency). There were 19,779 acres irrigated below Davis Creek Reservoir. The reservoir carry-over elevation at the end of the 2001 season was again maintained higher than normal as a result of the repairs being made to Mirdan Canal.

An orientation meeting to review the Virginia Smith and Davis Creek Dams EAPs took place in October 2001 and a combined tabletop exercise of the EAP's for Virginia Smith, Davis

Creek and Sherman Dams took place in November 2001. The Annual Site Inspections for Virginia Smith and Davis Creek Dams were conducted in December.

A video examination of the toe drain system for Davis Creek Dam was completed in November 2000. It revealed several locations where the drain has collapsed. Investigations into the cause are currently underway at the Technical Service Center.

2002 Outlook

Filling of Calamus Reservoir will continue through early spring. The reservoir will be allowed to fill to an elevation of 2244.0 feet (top of conservation capacity) by late March or April. This reservoir level will be maintained in order to minimize shoreline erosion until demands begin to draw on the reservoir. Bypasses of inflows will be made during July, August and September. In the fall the reservoir will be filled to an elevation of approximately 2240.0 feet, if possible.

Water will be available for all irrigable acres with service from the Mirdan, Geranium and Scotia Canals and Lateral Systems. It is estimated that approximately 32,200 acres will be irrigated from these canals. Water supplies will be sufficient to meet the full dry-year requirements.

Filling of Davis Creek Reservoir will take place this spring with flows diverted from the North Loup River at Kent Division Dam and transported through Kent and Mirdan Canals. Storage water can also be transferred from Calamus Reservoir into Davis Creek Reservoir during the summer months via Mirdan Canal. Water will be sufficient to irrigate an estimated 20,200 acres from Elba and Fullerton Canals under all inflow forecast conditions. The reservoir level will be regulated to normal winter levels at the end of this season. Repairs to Mirdan Canal were completed during the fall of 2001 allowing unrestricted diversions into Davis Creek Reservoir.

The fish hatchery demand for 2002 is expected to be similar to that of the last few years with approximately 6,000 AF passing through the hatchery.

On-site dam operator training at Davis Creek Dam was rescheduled for early 2002.

The Twin Loups Irrigation District and Reclamation entered into an agreement in 1997 to improve the canal operations of the Fullerton Canal system. This agreement provided cost share opportunities for the installation of three pneumatic bladder overflow check structures which will improve the operational flexibility of Fullerton Canal by reducing the need for operational spills and reducing the downstream seepage. The installations were completed in the fall of 1999. The district entered into an agreement with Reclamation for an increased measurement program in which Reclamation provided cost share funds for the purchase of an ultrasonic meter and other approved water conservation measures. The ultrasonic meter will allow the district to verify the accuracy of the district's 750+ propeller meters and to spot check problem deliveries. The district has also expressed an interest in pursuing some automatic water control devices along the Mirdan Canal system. Reclamation will begin working with the district in the development of a water conservation plan in 2002.

CHAPTER III - REPUBLICAN RIVER BASIN

Armel Unit, Upper Republican Division in Colorado

General

Normal reservoir operations for Bonny Reservoir are primarily for recreation and fish and wildlife support, although water will be available for water right administration and irrigation purposes.

Bonny Reservoir inflows from the South Fork of the Republican River and Landsman Creek are released into Hale Ditch as requested by the Colorado State Engineer. The state will make Bonny storage water available to Hale Ditch and other natural flow appropriators under short-term water service contracts. Most of the 700 acres served by Hale Ditch are now owned and operated by the Division of Wildlife, Colorado Department of Natural Resources.

The normal operation pattern of Bonny Reservoir, with a slowly rising or stable pool, enhances fish spawning in the spring and provides excellent fishing opportunities during the summer and hunting conditions each fall.

2001 Summary

The annual precipitation total of 20.72 inches at Bonny Dam was 120 percent of normal. The annual computed inflow of 10,334 AF to Bonny Reservoir was below the dry-year forecast and the second lowest ever recorded at this site. Below normal inflows were recorded during every month of the year with January, April, August and October inflows equaling the lowest computed inflows for the respective months since first filling. The reservoir level was 8.2 feet below the top of conservation at the first of the year. Due to dry conditions during the first six months of the year, the reservoir level increased only 1.6 feet to a maximum reservoir level of 3665.39 feet on May 10th. Bonny Dam recorded 3.05 inches of precipitation overnight on July 15th and recorded a record 8.56 inches of precipitation for the month of July. August precipitation (.09 inches) was the second lowest ever recorded at the dam. The minimum pool elevation of 3661.47 feet recorded on November 24th was an historical low for the reservoir. On December 31, 2001, the reservoir elevation was 10.3 feet below the top of conservation. The end of year storage was the lowest ever recorded on December 31st since initial filling. The Corps of Engineers determined that the reservoir prevented $4,000 in flood damages.

As directed by the Colorado Water Commissioner, 555 AF of reservoir inflows from the South Fork of the Republican River and Landsman Creek were passed through Bonny Reservoir into Hale Ditch. In addition, the Colorado Department of Natural Resources requested storage releases of 1,520 AF for irrigation purposes into Hale Ditch. Releases to the Hale Ditch began on June 5th and ended on September 7th.

Toe drains were added at Bonny Dam in 1988 and 1994 to address Safety of Dams concerns. These drains were constructed to minimize the potential for dam failure due to piping when the reservoir elevation exceeds 3691.0 feet. An Early Warning System (EWS) was selected as the

preferred hydrologic alternative for the danger of the dam overtopping. The EWS will greatly reduce the threat to downstream populations if the dam were to overtop and fail due to large floods.

An orientation meeting to review the Bonny Dam EAP took place in August 2001 and the Annual Site Inspection of Bonny Dam was conducted in June.

The Standing Operating Procedures (SOP) for Bonny Dam was updated in 2001 and will be republished in early 2002.

The Technical Service Center conducted an investigation of a series of holes located on the downstream side of Bonny Dam in November of 2001 to determine whether or not these were sinkholes. Preliminary indications from the investigation indicate that these were not sinkholes and not a threat to the integrity of the dam. A final report is expected in early 2002.

2002 Outlook

Water stored in Bonny Reservoir will be available for sale to Hale Ditch and other private irrigators under short-term water service contracts executed with the state.

Inflows will be stored during the winter until filling of the conservation pool is certain. Releases can be made during this period to maintain a constant reservoir elevation when filling of the reservoir is imminent or if icing were to become a problem.

A Comprehensive Facility Review (CFR) of Bonny Dam is scheduled for 2002.

Frenchman Unit, Frenchman-Cambridge Division in Nebraska

General

The Culbertson Canal and the Culbertson Extension Canal systems serve 9,295 acres in the Frenchman Valley Irrigation District and 11,695 acres in the H&RW Irrigation District. The water supply for these lands is furnished by flows from Frenchman and Stinking Water Creeks and off-season storage in Enders Reservoir located on Frenchman Creek, a tributary of the Republican River in southwest Nebraska.

The normal operation of Enders Reservoir, with the gradual rise in water surface during the spring months, provides desirable fish spawning conditions. Irrigation releases will normally deplete the conservation storage by late summer, thereby limiting the fishing and recreational usage.

2001 Summary

The annual precipitation total of 16.47 inches at Enders Dam was below normal (87 percent). The 2001 inflow into Enders Reservoir of 11,263 AF was below the dry-year forecast. This inflow was the lowest ever recorded at the site. All twelve months recorded below normal inflows during

2001 and ranked within the three lowest on record for the respective months. Due to extensive groundwater pumping above the reservoir, the inflow was only 19 percent of the average historical preconstruction runoff at the Enders Dam site (60,700 AF from 1929-1947). This year was the 34th consecutive year with below-normal inflows in which the conservation pool did not fill. A total of 2,252 AF of water was conserved between the 2000 and 2001 irrigation seasons by pumping seepage back into the reservoir. The reservoir level was 24.0 feet below the top of conservation at the first of the year. The reservoir pool gradually increased with late winter and spring inflows peaking at 3093.55 feet (18.8 feet below the top of conservation). This was the lowest annual peak since initial filling of the reservoir. Reservoir releases for irrigation began on July 1st and were discontinued on July 29th. Approximately 9,170 AF of water was released from Enders Reservoir for irrigation and by the end of the season the reservoir level bottomed out at 3082.51 feet. The greatest 24-hour precipitation total recorded during the year at Enders Dam was 1.37 inches overnight on July 26th. Precipitation recorded during August (.24 inches) was the second lowest ever recorded for the month at the dam. The end of the year storage was the lowest ever recorded for December 31st since initial reservoir filling. The Corps of Engineers determined that $6,000 in flood prevention benefits were realized from the operation of Enders Reservoir during 2001.

The farm delivery averaged about 0.29 foot per irrigated acre for the two districts. Some farmers were able to supplement their project water supply from private irrigation wells. The Frenchman Valley Irrigation District reports that approximately 8,619 acres received water in 2001, and the H&RW Irrigation District reports approximately 10,989 acres, which are 93 and 94 percent, respectively, of the lands with service available. Farm delivery efficiency was 45 and 37 percent respectively for the two districts.

A construction contract was issued in October 2001 to place a filtered drainage collection pipe and monitoring system in the existing open drain below Enders Dam. This Safety of Dams modification was deemed necessary to control seepage and improve the level of safety, ensuring the continuation of project benefits and public safety downstream from the dam. The installation of additional piezometer wells was completed in 1999 and data collection was initiated. Several years of data collection will likely be necessary to better evaluate the need for additional modifications. The need for additional corrective measures will be evaluated in conjunction with the next Comprehensive Facility Review (CFR), which is scheduled in 2004. With the possibility of reservoir level restrictions and/or additional modifications, Enders Dam emergency planning has been given a higher priority. An orientation meeting to review the Enders Dam EAP took place in March and a functional exercise of the Enders Dam EAP took place in May 2001. The Annual Site Inspection of Enders Dam was conducted in October.

The Frenchman Valley and H&RW Irrigation Districts updated their water conservation plans in 1999 with technical assistance provided by Reclamation. The districts implemented a surge valve loaner program in 1999 with assistance from Reclamation, the NRCS, and the Middle Republican NRD. The majority of the surge valves loaned out were purchased by the irrigators in each year and the program will continue in 2002. In the spring of 2000 the Frenchman Valley Irrigation District installed a new type of water level control gate (called a LOPAC gate) as part of a demonstration project with Reclamation. This gate has been used in Canada but is new to the Midwest. The district reported that the gate has operated well and it will be used again in 2002. In

the spring of 2001 the Frenchman Valley Irrigation District completed a project that replaced a section of high loss open ditch lateral with buried pipe. The districts have expressed an interest in other lateral pipe projects that will be investigated in 2002.

2002 Outlook

The fall and early winter inflows into Enders Reservoir were below the dry-year forecast. If reasonable minimum inflow conditions prevail, the project water supply is expected to experience a shortage of about 66,000 AF. Most probable inflow conditions are expected to be inadequate by 41,000 AF and reasonable maximum inflow conditions by 11,200 AF, to irrigate the estimated 8,700 acres in the Frenchman Valley Irrigation District and 11,000 acres in the H&RW Irrigation District. Approximately 3,000 AF are expected to be conserved by pumping seepage water back into Enders Reservoir.

The Standing Operating Procedures (SOP) for Enders Dam is being updated and is expected to be republished in 2002.

Construction of the filtered drainage collection pipe and monitoring system below Enders Dam will be completed in the spring of 2002. Investigations into the Safety of Dams modifications will continue with the information obtained from the added instrumentation.

Wire rope and attachment hardware for the spillway gates were purchased in 2000 and are scheduled for replacement by Reclamation personnel in 2002.

Meeker-Driftwood, Red Willow, and Cambridge Units, Frenchman-Cambridge Division in Nebraska

General

During the spring months, Swanson, Hugh Butler, and Harry Strunk Lakes normally have a rising or stable pool which enhances the spawning of northern pike and walleye. These lakes provide excellent opportunities for fishing, water sports, and recreation.

Service is provided for Frenchman-Cambridge Irrigation District by Meeker-Driftwood Canal to 16,562 acres; Red Willow Canal to 4,877 acres; Bartley Canal to 6,435 acres; and Cambridge Canal to 17,297 acres. The water supply for these lands is provided by storage in Swanson, Hugh Butler, and Harry Strunk Lakes, and inflows of the Republican River and Red Willow and Medicine Creeks. The Frenchman-Cambridge Irrigation District has replaced all of the open laterals which were physically or economically feasible with pipe laterals which has significantly increased both system and on-farm efficiencies.

2001 Summary

The annual precipitation total of 19.57 inches at Trenton Dam was 98 percent of normal. The inflow of 28,443 AF to Swanson Lake was well below the dry-year forecast. This was the lowest annual computed inflow ever recorded at the lake. The inflow was below normal for all twelve months. The computed inflows for the months of January, February, June and December were the

second lowest ever recorded for the respective months at Swanson Lake. The reservoir level began the year approximately 24.6 feet below the top of conservation pool. The reservoir level gradually increased during the spring and peaked at 2735.25 feet on May 16th (approximately 16.7 feet below full). This was the lowest annual peak since first filling of the reservoir. Irrigation releases began on June 19th and the reservoir level dropped throughout the summer. The greatest 24-hour precipitation event recorded at Trenton Dam in 2001 was 1.72 inches overnight on July 26th. Trenton Dam recorded 4.66 inches of precipitation from July 12th through July 27th. Due to the limited water supply, irrigation releases were shut off on August 15th. Nearly 20,600 AF of water was released from Swanson Lake for irrigation. On November 7, 2001, the water surface level of Swanson Lake reached an historical low of 2725.89 feet. At the end of the year the reservoir level was 25.4 feet below the top of conservation at 2726.56 feet. This was the lowest end of year storage ever recorded at Swanson Lake. Swanson Lake was credited with preventing $12,000 in flood damages as determined by the Corps of Engineers.

Swanson Lake storage, along with inflows and river pickup flows were not sufficient in furnishing a full water supply to each irrigable acre of the project lands served by the Meeker-Driftwood and Bartley Canal systems. The Frenchman-Cambridge Irrigation District diverted 17,816 AF into Meeker-Driftwood Canal to irrigate 14,213 acres and 5,872 AF into Bartley Canal for 6,423 acres. Delivery efficiency was 58 and 61 percent respectively for the two canals.

The annual precipitation total of 20.86 inches at Red Willow Dam was 106 percent of normal. The inflow of 13,943 AF into Hugh Butler Lake was below the dry-year forecast and the second lowest since dam construction. The computed inflow was below normal during eleven of the twelve months. The June computed inflow was the second lowest ever recorded for the month. The reservoir level at the first of the year was 8.8 feet below the top of conservation. Inflows gradually increased the level of the reservoir to a peak of 2576.83 feet (5.0 feet below full) on May 14th. The greatest precipitation event recorded at Red Willow Dam in 2001 was 2.58 inches from May 3rd through May 5th. Irrigation releases began on June 16th and due to the limited water supply were discontinued on August 14th. Approximately 12,500 AF was released from the reservoir for irrigation. The level of Hugh Butler Lake at the end of the year was 13.6 feet below the top of conservation, the lowest end of year storage ever recorded. The Corps of Engineers determined that $7,000 of flood damages were prevented by the operation of Hugh Butler Lake.

The water supply was inadequate to meet the diversion requirements for Red Willow Canal. The district diverted 5,355 AF of water to irrigate 4,430 acres of land served by Red Willow Canal. The farm headgate delivery was 2,977 AF for a delivery efficiency of 56 percent.

The annual precipitation total of 21.74 inches at Medicine Creek Dam was 105 percent of normal. The inflow of 37,783 AF was between the dry- and normal-year forecasts. The computed inflow was below normal during ten of the twelve months. The reservoir level at the beginning of 2001 was 6.6 feet below the top of conservation. The reservoir pool gradually increased, filling the conservation pool on April 25th (2366.1 feet). A 50 cfs release was made to the river from mid March through the end of April to regulate the reservoir level. The reservoir level continued to increase into mid June peaking at 2367.14 feet on June 17th (1.1 feet into the flood pool). Irrigation releases began on June 17th dropping the reservoir level from the flood pool on June 25th. Flood pool storage was regulated in cooperation with the Nebraska Game and Parks Commission. High irrigation demands during July and August reduced reservoir storage significantly. Medicine

Creek Dam received 3.60 inches of rainfall from July 20th through July 26th and another 1.83 inches overnight on August 14th. Nearly 25,000 AF of water was released from the reservoir for irrigation through August 28th. Harry Strunk Lake was 6.5 feet below the top of conservation at the end of the year. The Corps of Engineers determined that the reservoir prevented $455,000 in flood damages.

The water supply was limited with 19,629 AF of water diverted to irrigate 15,741 acres of land served by the Cambridge Canal (farm delivery efficiency was 59 percent).

Replacement of the spillway radial gate wire ropes which are connected to the counter weights and floats at Trenton Dam was completed during early summer 2001. Repairs were made to the spillway floor at Medicine Creek Dam in August and September of 2001. The spillway and outlet works stilling basins at Medicine Creek Dam were de-watered and cleaned in October.

An EAP orientation meeting took place in September of 2001 for Red Willow, Medicine Creek and Trenton Dams. Annual Site Inspections were conducted in June for each of the dams. On-site dam operator training was also conducted at Red Willow and Medicine Creek Dams during June.

Reclamation continues to work with the Frenchman Cambridge Irrigation District to update their water conservation plan. The district began a surge valve loaner program in 2000 in cooperation with Reclamation, the NRCS, and the Middle and Lower Republican NRDs. Many of the cooperators were hailed out during the 2000 irrigation season and were given another year to use the surge valve. The district purchased an ultrasonic meter in 2000 through an agreement with Reclamation that permits the district to verify the accuracy of the propeller meters (over 450 in the district) and check other problem delivery sites.

2002 Outlook

Forecasts show that carry-over storage, streamflow gains, plus reasonable minimum inflows for the three lakes supplying the Frenchman-Cambridge Irrigation District will be inadequate to meet the full dry-year irrigation requirement by 14,700 AF. It is estimated that 14,200 acres will be served from the Meeker-Driftwood Canal; 15,800 acres will be served from the Cambridge Canal; 4,400 acres will be served from the Red Willow Canal; and 6,400 acres will be served from the Bartley Canal.

A combined functional exercise of the EAPs for Red Willow, Trenton and Medicine Creek Dams is scheduled for 2002.

Safety of Dams activities will continue at Red Willow Dam. A contract is scheduled to be awarded in 2002 that includes the installation of relief well outfall pipes and a seepage collection system in the existing relief well seepage collection trench below the dam.

The district is working with Reclamation on a remote monitoring program. This will allow the district to remotely monitor wasteways and other key system measurement sites that will improve system operations and accounting. In 2002 the district and Reclamation will complete

installations on four wasteways and one parshall flume. The district has also been taking advantage of Reclamation-sponsored training such as ditchrider training, surge valve training, and the Water Management Workshop. The district sponsors water resource activities such as water conferences and irrigation water management seminars.

Almena Unit, Kanaska Division in Kansas

General

Service is available to 5,764 acres in the Almena Irrigation District. The project water supply is provided by Prairie Dog Creek flows and Keith Sebelius Lake storage.

The water service contract for the City of Norton, Kansas, provides for a maximum annual use of 1,600 AF from Keith Sebelius Lake.

New Area-Capacity Tables for Keith Sebelius Lake will become effective on January 1, 2002. The revised tables are a result of a sedimentation survey conducted in September 2000.

2001 Summary

The annual precipitation at Norton Dam totaled 26.59 inches, which is 108 percent of normal. Precipitation recorded during February, May and July were well above normal while the months of June and August were well below normal. The total inflow of 11,299 AF, was between the normal- and wet-year forecasts. The reservoir level was 7.0 feet below the top of conservation on December 31, 2000. Norton Dam received 4.49 inches of rain from May 3rd through May 5th and recorded a total of 6.88 inches of precipitation during May. Inflows gradually increased the reservoir level to a peak elevation of 2299.78 feet on June 11th (4.5 feet below full pool). Irrigation releases began on June 30th with demands reducing the level of Keith Sebelius Lake to 2297.07 feet by the end of the season on August 23rd. Norton Dam recorded 5.44 inches of precipitation from July 18th through July 26th. The timely rainfall helped in reducing demands on the lake. Only 4,425 AF was released from the reservoir for irrigation during 2001. Keith Sebelius Lake was 7.5 feet below the top of conservation (2296.81 feet) at the end of the year. The Corps of Engineers determined that $13,000 in flood prevention benefits were accrued by the operation of Keith Sebelius Lake.

The district delivered 1,938 AF to approximately 4,971 acres of farmland. Farm delivery averaged .39 acre-foot per irrigated acre from the project water supply. Water was being supplied from privately-owned irrigation wells to conserve reservoir water storage for future use. The city of Norton used 559 AF of municipal water during 2001.

An orientation meeting to review the Norton Dam EAP took place in May 2001 and the Annual Site Inspection at Norton Dam was conducted in July.

A Safety of Dams recommendation was made in 2000 concerning the seepage through the left abutment and around the outlet works house at Norton Dam. Technical Service Center personnel

inspected the seepage areas in June 2001 and recommended consideration of monitoring improvement and additional instrumentation.

The Almena Irrigation District completed a Water Conservation Plan with technical assistance from Reclamation in 2000. Past conservation implementation activities included replacing high loss sections of open ditch lateral with buried pipe and an updated computer system. In the spring of 2001 a section of open ditch lateral was replaced with buried pipe which reduced seepage losses and maintenance requirements, and provided improvements in on-farm efficiencies. A surge valve loaner program began in the late spring of 2000.

2002 Outlook

The district expects to deliver water to approximately 4,900 acres. If 2002 is a dry year without significant runoff producing storms above Keith Sebelius Lake, it is anticipated that the water supply may be inadequate by as much as 9,200 AF. Requirements for the city of Norton will be met in full in 2002.

The Standing Operating Procedures (SOP) for Norton Dam is being updated and is scheduled to be republished in 2002.

A Comprehensive Facility Review of Norton Dam and a functional exercise of the Norton Dam EAP are both scheduled for 2002.

The surge valve program will continue in 2002. The district and Reclamation will be installing remote monitoring equipment in the spring of 2002 on one of the district's main wasteways which will improve system operations, scheduling, and accounting. Another lateral pipe project is planned for the spring of 2002 that will reduce seepage losses, lessen maintenance requirements, and provide improvements in on-farm efficiencies.

Franklin, Superior-Courtland, and Courtland Units, Bostwick Division in Nebraska and Kansas

General

Harlan County Lake storage and Republican River flows provide a project water supply for 22,935 acres in the Bostwick Irrigation District in Nebraska, and 13,378 acres in the Kansas-Bostwick Irrigation District No. 2 above Lovewell Reservoir. These flows, together with White Rock Creek flows and Lovewell Reservoir storage, furnish a water supply for 29,122 acres below Lovewell Reservoir in the Kansas-Bostwick Irrigation District.

The lands in the Franklin and Superior-Courtland Units are in the Bostwick Irrigation District in Nebraska. The lands in the Courtland Unit downstream of the Kansas state line are in the Kansas-Bostwick Irrigation District.

In accordance with the off-season flow alternative outlined in Reclamation's final environmental assessment dated December 16, 1983, Harlan County Lake releases will be 10 cfs during the months of December, January, and February, except when the reservoir is at low levels.

During water-short years releases for these three months will be either zero or 5 cfs depending on reservoir levels. At the request of the State of Nebraska, releases of 30 cfs for a maximum 5-day period may be made to relieve icing conditions in the river.

Natural gain in streamflow, plus irrigation return flows, and operational bypass at Superior-Courtland Diversion Dam will provide some flow downstream.

The Kansas Department of Wildlife and Parks has requested that the Kansas-Bostwick Irrigation District and Reclamation maintain, when possible, a flow of 20 cfs into Lovewell Reservoir when the Courtland Canal is in operation and the conservation pool is below capacity. This recommended inflow provides excellent fishing around the canal inlet to the reservoir. The seepage below Lovewell Dam into White Rock Creek maintains a small live stream throughout the year.

2001 Summary - Bostwick Division - Harlan County Lake Operations

The annual precipitation at Harlan County Dam totaled 27.97 inches of rainfall, which is 122 percent of normal. The inflow of 157,844 AF was slightly less than the normal-year forecast. A 5 cfs release was required during January and February, and a 10 cfs release was required during December in accordance to the environmental assessment and the annual operating plan.

Harlan County Lake began 2001 approximately 8.6 feet below the top of conservation pool, at 1937.38 feet. Inflows during the first four months of the year gradually filled the reservoir pool to 1943.51 feet by the end of April. Harlan County Dam recorded 4.23 inches of rain from May 3rd through May 5th and another 2.60 inches overnight on May 29th. May precipitation ranked as the third highest ever recorded at the dam. The peak average daily inflow was 2,200 cfs on May 5th. The reservoir elevation continued to increase reaching a peak of 1945.77 feet on June 14th (top of conservation pool is elevation 1945.73 feet). Irrigation releases began on June 18th and continued through September 8th. The dam recorded 4.02 inches of precipitation from July 18th through July 27th and 1.82 inches overnight on August 23rd. These timely rainfall events helped in reducing irrigation demands during the summer. An additional 3.23 inches of rain was recorded during a five day period in mid September at Harlan County Dam. The level of Harlan County Lake at the end of 2001 was 6.0 feet below the top of conservation. Harlan County Lake prevented $1,943,000 of downstream flood damages during 2001 according to the Corps of Engineers.

Approximately 35,183 irrigated acres of the Bostwick District in Nebraska and the Kansas-Bostwick District above Lovewell Dam were furnished a full water supply. A total of 30,909 AF (approximately 46 percent of total inflow) was delivered to Lovewell Reservoir through the Courtland Canal.

2001 Summary - Bostwick Division - Nebraska

The Bostwick Irrigation District in Nebraska diverted 48,226 AF for the irrigation of 22,935 acres. Farm delivery efficiency averaged 40 percent in the district.

2001 Summary - Bostwick Division - Kansas

The 2001 precipitation at Lovewell Dam totaled 33.35 inches, which was 122 percent of normal. Lovewell Reservoir began 2001 with a water surface elevation only 2.9 feet below the top of conservation. Diversion of Republican River flows into Lovewell Reservoir were made throughout January. The dam recorded the greatest February precipitation (3.01 inches) ever at the site. The diversions combined with inflows from White Rock Creek to gradually fill the reservoir conservation pool on March 16th (elevation 1582.6 feet). Inflows from White Rock Creek increased the pool level to elevation 1583.11 feet by the end of April. Lovewell Dam received 5.97 inches of rainfall from May 2nd through May 5th. Runoff from these storms increased the storage in Lovewell Reservoir approximately 9,500 AF with a peak average daily inflow of 1,800 cfs. The reservoir level increased 3.0 feet peaking at 1586.10 feet on May 10th. A 100 cfs river release began on May 8th to gradually reduce flood storage from the reservoir. Lovewell Dam recorded a record 9.93 inches of precipitation during the month of May. The dam received 3.12 inches of precipitation from May 29th through June 4th. This latest round of storms increased the reservoir level to a peak of 1586.14 feet on June 6th. The river release was discontinued on June 18th at which time irrigation releases began in earnest. The reservoir level dropped from the flood pool on July 10th. From July 18th through July 26th, Lovewell Dam received another 5.20 inches of rainfall. The reservoir level encroached into the flood pool again reaching 1583.34 feet on July 31st. August was much drier and irrigation demands dropped the reservoir pool to 1576.29 feet by the end of the season. Diversions of Republican River natural flows into Lovewell Reservoir continued after irrigation releases had ended. These diversions via Courtland Canal were maintained through late October. The water surface elevation gradually increased to 1580.63 feet on December 31, 2001 (2.0 feet below the top of active conservation). The Corps of Engineers estimated the reservoir reduced local and downstream damages by $523,000.

The Kansas-Bostwick Irrigation District diverted a total of 72,700 AF to serve 12,248 acres above Lovewell Dam and 26,925 acres below Lovewell Dam. Farm delivery efficiency averaged 54 percent in the district.

An orientation meeting to review the Lovewell Dam EAP took place in July and a functional exercise of the Lovewell Dam EAP took place in October 2001. The Annual Site Inspection of Lovewell Dam was conducted in late June.

Riprap was purchased and placed during November of 2001 on the face of Lovewell Dam to cover an old access road. The Regional climb team also conducted an inaccessible features inspection in September 2001.

2002 Outlook - Bostwick Division

The Bostwick Irrigation District in Nebraska and the Kansas-Bostwick Irrigation District No. 2 expect to deliver water to 22,700 and 41,000 acres, respectively. The storage in Harlan County Lake and Lovewell Reservoir and flows of the Republican River and White Rock Creek may be inadequate by as much as 27,900 AF in meeting the full dry-year irrigation requirement for the Bostwick lands.

Diversions from the Republican River via Courtland Canal will begin in early spring to insure that Lovewell Reservoir is filled prior to the irrigation season.

The Bostwick Irrigation District in Nebraska submitted an updated Water Conservation Plan in 1998. The district entered an agreement with Reclamation for an increased measurement program in which Reclamation will provide cost share funds for the purchase of an ultrasonic meter and other approved water conservation measures. The ultrasonic meter will allow the district to verify the accuracy of the district's propeller meters and to spot-check problem deliveries. Other projects discussed with the district include the replacement of open ditch with buried pipe and canal lining opportunities. The pipe projects began in the fall of 2001 and will continue in the spring of 2002. The district has also implemented new, stricter water ordering policies as a water conservation measure. The district has updated the Water Conservation Plan and it will be finalized in the spring of 2002.

The Kansas Bostwick Irrigation District submitted an updated Water Conservation Plan in 1999. Reclamation reviewed the plan and provided comments. The main implementation activity of the district is the replacement of open ditch laterals with buried pipe. The district will replace high loss sections of open ditch with buried pipe by utilizing district funds and cost share funds with irrigators. This program has been in place for a number of years and in 1998 Reclamation began providing cost share funds so the program could be expanded. The district will also cost share on improvements initiated by irrigators that provide benefits to the district and to the irrigator. The district also assists irrigators with the relocation of turnouts and placement of pipe for on-farm improvements. The district has policies in place concerning cost share programs, water ordering policies, and water right transfers.

Kirwin Unit, Solomon Division in Kansas

General

The water supply for the 11,465 acres of land in the Kirwin Irrigation District is furnished by Kirwin Reservoir storage and inflows from the North Fork Solomon River and Bow Creek.

The operation of Kirwin Dam and Reservoir affords many opportunities for recreation, fishing, hunting, water sports, fish spawning, and preservation of waterfowl species.

2001 Summary

The annual precipitation total of 25.42 inches at Kirwin Dam was 108 percent of normal. The inflow of 27,694 AF was between the normal- and wet-year forecasts. Kirwin Reservoir was 5.2 feet below the top of conservation pool at the first of the year. February precipitation (2.97 inches) was the greatest ever recorded for the month at the site. Kirwin Dam recorded 3.57 inches of rainfall during the first week of May and another 2.50 inches overnight on May 29th. The late winter and spring inflows increased the reservoir level to a peak elevation of 1727.25 feet (2.0 feet below full) on June 11th. Irrigation releases began on June 12th and continued through August 31st reducing the pool level to 1722.02 feet. Some crop damage was experienced in the district due to a July hailstorm. During 2001, 22,360 AF was released into Kirwin Canal. The reservoir level at the end of the year was 1721.74 feet (7.5 feet below the top of conservation). The reservoir prevented $28,000 in flood damages as determined by the Corps of Engineers.

Demands for project water were met in full during the irrigation season. A total of 9,150 acres received project water during 2001 with 9,508 AF delivered to farms. Farm delivery efficiency was 43 percent.

An orientation meeting to review the Kirwin Dam EAP took place in September 2001 and the Annual Site Inspection of Kirwin Dam was conducted in October.

A bent control stem and operator on the river outlet works slide gate was replaced in April 2001.

The Kirwin Irrigation District completed a draft Water Conservation Plan with technical assistance from Reclamation in 2001. The Kirwin Irrigation District continues to focus its implementation activities on replacing high loss section of open ditch lateral with buried pipe. The district has funded these projects using districts' funds, funds provided through agreement with Reclamation, and individual landowner contributions. Projects have not only eliminated seepage loss, but improved district operations and provided on-farm efficiency improvements. In 2001 the district replaced a stretch of approximately 1.2 miles of open ditch lateral M-4.9 with buried pipe. The district continues to explore other funding sources for conservation measures. The district has also notified irrigators that there may be cost share opportunities for projects that will improve on-

farm efficiencies, such as relocating turnouts or piping laterals. The district currently has a list of potential pipe projects that are awaiting funding opportunities.

2002 Outlook

An estimated 9,200 acres may be irrigated in 2002. Even with below normal precipitation and dry-year forecasted inflows from the North Fork Solomon River the water supply will be more than adequate to irrigate these lands.

A Comprehensive Facility Review of Kirwin Dam is scheduled to be conducted in 2002.

A new prefabricated generator building has been placed next to the spillway control house for the new generator. Installation of the new generator and removal of the old generator should be completed in early 2002.

Webster Unit, Solomon Division in Kansas

General

The Webster Irrigation District has service available to 8,537 acres. The project water supply is provided by Webster Reservoir storage and flows of the South Fork Solomon River.

2001 Summary

In 2001, the precipitation at Webster Dam was 108 percent of normal (25.67 inches). The inflow of 29,877 AF was between the normal- and wet-year forecasts. Webster Reservoir began 2001, 5.6 feet (elevation 1886.81 feet) below the top of conservation pool. The reservoir pool gradually increased with late winter and early spring inflows. Webster Dam recorded 3.04 inches of rainfall during the first week of May and 2.83 inches of rain at the end of May. Runoff from the storm in late May resulted in a peak inflow of approximately 2,300 cfs and a peak average daily inflow of 830 cfs. Reservoir storage increased nearly 4,500 AF from the storm runoff. The reservoir level peaked at elevation 1892.16 feet (only .3 foot below full) on June 18th. Irrigation releases began on June 25th and continued through August 30th. Webster Dam received 5.76 inches of rainfall from July 24th through July 27th. Approximately 17,900 AF was released for irrigation. The reservoir level was 5.8 feet below the top of conservation on December 31, 2001. The Corps of Engineers determined that the reservoir prevented $465,000 in flood damages.

The district diverted 14,986 AF for irrigation of 5,287 acres. Farm deliveries totaled 6,047 AF for an efficiency of 40 percent. Project water demands were met in full.

An orientation meeting to review the Webster Dam EAP took place in December 2001 and the Annual Site Inspection of Webster Dam was conducted in July. On-site dam operator orientation was conducted by the Area Office in August.

The Regional climb team conducted an inaccessible features inspection at Webster Dam in September 2001.

The Webster Irrigation District completed a Water Conservation Plan with technical assistance from Reclamation in 2001. Reclamation worked with the district to complete the installation of a new ramp flume at the upper end of the Osborne Canal in 2000. This flume provides a more accurate measurement of canal diversion and will improve canal operations and accounting. Remote monitoring equipment was installed on the flume so diversions are available over the internet. The district continues to focus it's implementation activities on replacing high loss sections of open ditch lateral with buried pipe. Open ditch Osborne Lateral 15.5 was placed in buried pipe in the fall of 2001. Lateral 16.3 will be replaced with buried pipe in the spring of 2002. These projects were funded with district funds, funds provided by an agreement with Reclamation, and individual landowner contributions.

The Hydraulic Facilities Superintendent position at Webster Dam was filled in 2001.

2002 Outlook

The carry-over storage and the flows in the South Fork Solomon River will be more than adequate under the dry-year forecast to irrigate 5,500 acres in the district during 2002.

A Comprehensive Facility Review of Webster Dam is scheduled to be conducted in 2002.

The Standing Operating Procedures (SOP) for Webster Dam is scheduled to be updated and republished this year.

Glen Elder Unit, Solomon Division in Kansas

General

Releases from Waconda Lake will be regulated as outlined in two memorandums of understanding between the State of Kansas and Reclamation. Releases are made for the city of Beloit, the Mitchell County Rural Water District, the long-term water service contract with Glen Elder Irrigation District, and for water right administration.

The water service contract with Beloit, Kansas, provides for the annual use of up to 2,000 AF of Waconda Lake storage. Water is measured at the Glen Elder Dam river outlet works. In any year that the city's water supply is insufficient and there is surplus water in Waconda Lake, such additional water may be released for the city at a rate of $15.00 per acre-foot.

The water service contract with the Mitchell County Rural Water District No. 2 provides for 1,009 AF of storage water as available from Waconda Lake. Based on the current State of Kansas Certificate of Appropriation, water usage is not to exceed 737 AF per calendar year.

The water service contract with the Glen Elder Irrigation District provides for the use of up to 18,000 AF of storage water each year. Based on the current State of Kansas Certificate of Appropriation, water usage is not to exceed 15,170 AF per calendar year. Water is released and measured through the river outlet works.

To lessen ice damage to the upstream face of Glen Elder Dam during the winter months, releases from Waconda Lake will be regulated each year to maintain a constant water surface level while the lake is ice-covered.

The available facilities along the shores of Waconda Lake and the large water surface area afford opportunities to thousands of people for picnics, sightseeing, recreation, water sports, hunting, and fishing.

When compatible with flood control operations, the operating criteria for Waconda Lake provide for a stable or rising pool level during the fish spawning period each spring.

When possible, drawdowns will be scheduled for late summer and early fall so that exposed shore areas can be seeded. This seeding helps prevent wind erosion, provides winter food and cover for wildlife, and provides spawning habitat for fish in the spring when these areas are inundated.

2001 Summary

The annual precipitation total of 26.52 inches at Glen Elder Dam was 103 percent of normal. The inflow of 169,744 AF was between the normal- and wet-year forecasts. Waconda Lake began the year 3.7 feet below the top of conservation. February precipitation at Glen Elder Dam was the greatest ever recorded for the month (2.20 inches). The reservoir level increased slowly during the first four months of the year reaching 1454.23 feet (1.4 feet below full) at the end of April. From May 2nd through May 5th, Glen Elder Dam received 4.43 inches of rainfall. The storm runoff increased the storage in Waconda Lake by nearly 21,000 AF. The lake level increased 1.7 feet peaking at .3 foot into the flood pool. A river release of 200 cfs began on May 8th and the flood pool was evacuated on May 28th. A second storm system resulted in 2 to 4 inches of rainfall in northcentral Kansas on the evening of May 29th. Reports of isolated thunderstorms producing up to 10 inches of rain were reported directly above Waconda Lake. Peak average daily inflows reached 7,000 cfs at Waconda Lake increasing the storage in the lake an additional 25,000 AF. Runoff from the latest storm increased the lake level to 1.9 feet into the flood pool. The lake level peaked at elevation 1457.98 feet on June 7th (2.4 feet into the flood pool). The river release was increased to 500 cfs on June 1st, 750 cfs on June 7th and 1,000 cfs on June 8th. The 1,000 cfs flood release was maintained through June 28th and then staged down to 130 cfs by July 3rd. The 130 cfs release was being made for irrigation demands. The lake level dropped from the flood pool on July 2nd. Irrigation demands continued through September 7th reducing the lake level to 1454.80 feet. Runoff from rainfall on September 17th increased the storage in Waconda Lake approximately 7,800 AF (.63 foot). The pool level increased to 1455.49 feet on December 3rd. A 250 cfs river release began at this time to drop the pool to the winter target level. On December 31, 2001 the lake level was 1454.53 feet (1.1 feet below full). The Corps of Engineers determined that Waconda Lake operations prevented $1,006,000 in flood damages during 2001.

Approximately 95,800 AF of water was released from Glen Elder Dam in 2001. No storage releases were made for the City of Beloit; however, 8,447 AF was bypassed for quality control as directed by the State Water Commissioner. Storage releases of 7,262 AF combined with natural flow releases of 7,505 AF for the irrigation of 7,037 acres. Releases to the Mitchell County Rural Water District No. 2 totaled 739 AF.

An orientation meeting to review the Glen Elder Dam EAP took place in August 2001 and the Annual Site Inspection of Glen Elder Dam was conducted in June.

2002 Outlook

The municipal requirement of Beloit and the requirements of the Mitchell County Rural Water District No. 2 will be met in full with releases as required from Waconda Lake. It is expected that the Kansas Water Commissioner will request that inflows be passed through the lake for water right administration. The Glen Elder Irrigation District estimates that approximately 7,000 acres will be irrigated in 2002. The storage in Waconda Lake and flows in the North and South Forks of the Solomon River will furnish an adequate water supply to the district. The active conservation pool will be allowed to fill prior to the irrigation season. The reservoir will be regulated to maintain a constant level during the winter months when the reservoir is ice-covered to minimize ice damage. Under normal-year conditions, the lake is expected to be maintained at about two feet below the top of the conservation pool during the winter.

A new pump for the Cawker City pump station has been delivered and is expected to be installed in the spring of 2002.

Cedar Bluff Unit, Smoky Hill Division in Kansas

General

Cedar Bluff Reservoir storage furnishes a maximum of 2,000 AF each year for the City of Russell, Kansas when required. Prior to 1993, Cedar Bluff Reservoir storage and Smoky Hill River flows had provided a water supply for 6,800 acres in the Cedar Bluff Irrigation District. No water had been available for delivery to the district since 1978. Reformulation of the Cedar Bluff Unit in October of 1992 allowed the Cedar Bluff Irrigation District to begin the proceedings to disband, and the Kansas Water Office and Kansas Department of Wildlife and Parks to acquire the use and control of portions of the reservoir conservation capacity. The district completed all activities necessary to accomplish disbandment in 1994. A "designated operating pool" has been established for Cedar Bluff Reservoir and includes the following suballocation pools: The City of Russell's existing water storage right which remained unchanged; an artificial recharge pool under control of the Kansas Water Office; and a fish, wildlife and recreation pool under control of the Kansas Department of Wildlife and Parks. The "designated operating pool" consists of water stored between the dead pool and elevation 2109.05 feet. A "joint-use pool" has been established between the operating pool and the flood control pool for water supply, flood control, environmental and fish, wildlife and recreation purposes. Water rights for the "joint-use pool" are held jointly between the Kansas Department of Wildlife and Parks and the Kansas Water Office.

New Area-Capacity Tables for Cedar Bluff Reservoir will be in effect beginning January 1, 2002. These revised tables resulted from a sedimentation survey conducted in September 2000.

2001 Summary

The annual precipitation total at Cedar Bluff Dam was 23.24 inches which is 110 percent of normal. The inflow (34,151 AF) was between the normal- and wet-year forecasts. At the beginning of the year, the level of Cedar Bluff Reservoir was 2143.09 feet (top of active conservation is 2144.00 feet). Inflows during the first four months of the year resulted in a reservoir level increase of only .38 foot. Rainfall during May and early June (8.69 inches) increased the reservoir elevation an additional .43 foot to 2143.90 feet on June 14th. The reservoir pool gradually decreased to an elevation of 2143.10 feet by September 13th. During the overnight hours of September 13th, a localized thunderstorm produced up to 8 inches of rainfall directly above Cedar Bluff Reservoir. Storm runoff increased the storage in the lake approximately 3,000 AF. The reservoir level increased nearly .5 foot reaching 2143.55 feet. A second storm system resulted in another 2 to 3 inches of rainfall in the basin above Cedar Bluff Reservoir on the evening of September 17th. Peak average daily inflows reached 1,300 cfs increasing the storage in the reservoir an additional 4,700 AF. Runoff from the latest storm increased the reservoir level to .24 foot into the flood pool (elevation 2144.24 feet). The September computed inflow at Cedar Bluff Reservoir was the second greatest for the month since 1963. By December 31, 2001 the reservoir level had decreased to 2143.62 feet. Cedar Bluff Reservoir was estimated to have prevented $445,000 in flood damages by the Corps of Engineers.

The State of Kansas used the fish hatchery facility located below Cedar Bluff Dam for waterfowl habitat with 360 AF released to the facility. No releases were made for the City of Russell.

An orientation meeting to review the Cedar Bluff Dam EAP took place in August 2001 and the Annual Site Inspection was conducted in July.

Construction of a new maintenance shop at the Hydraulic Facilities Superintendent's residence has been completed.

2002 Outlook

Storage in Cedar Bluff Reservoir on December 31, 2001 was in the joint use pool, with 138,848 AF of storage above the designated operating pool. The Kansas Department of Wildlife and Parks estimates up to 400 AF of water could be used in the operations of the fish hatchery facility. The Kansas Water Office may request a minimal release to the river for recharge in 2002.

The Standing Operating Procedures (SOP) for Cedar Bluff Dam has been updated and is scheduled to be republished in 2002.

A Comprehensive Facility Review (CFR) is scheduled at Cedar Bluff Dam in 2002.

TABLE 1

RESERVOIR DATA - NIOBRARA, LOWER PLATTE AND KANSAS RIVER BASINS

RESERVOIR		CAPACITY ALLOCATIONS 1/ DEAD	LIVE CONSERVATION Inactive	LIVE CONSERVATION Active	FLOOD CONTROL
Box Butte	- Elevation Ft.	3969.0	3976.5	4007.0	---
	Total Acre-feet	640	2,275	31,060	---
	Net Acre-feet	640	1,635	28,785	---
Merritt	- Elevation Ft.	2875.0	2896.0	2946.0	---
	Total Acre-feet	1,614	6,800	74,486	---
	Net Acre-feet	1,614	5,186	67,686	---
Sherman	- Elevation Ft.	2118.5	2129.0	2162.3	---
	Total Acre-feet	3,839	10,496	69,076	---
	Net Acre-feet	3,839	6,657	58,580	---
Calamus	- Elevation Ft.	2185.0	2213.3	2244.0	---
	Total Acre-feet	817	24,646	127,400	---
	Net Acre-feet	817	23,829	102,754	---
Davis Creek	- Elevation Ft.	1998.5	2003.0	2076.0	---
	Total Acre-feet	76	172	31,158	---
	Net Acre-feet	76	96	30,986	---
Bonny	- Elevation Ft.	3635.5	3638.0	3672.0	3710.0
	Total Acre-feet	1,418	2,134	41,340	170,160
	Net Acre-feet	1,418	716	39,206	128,820
Enders	- Elevation Ft.	3080.0	3082.4	3112.3	3127.0
	Total Acre-feet	7,516	8,948	42,910	72,958
	Net Acre-feet	7,516	1,432	33,962	30,048
Swanson Lake	- Elevation Ft.	2710.0	2720.0	2752.0	2773.0
	Total Acre-feet	2,118	12,430	112,214	246,291
	Net Acre-feet	2,118	10,312	99,784	134,077
Hugh Butler Lake	- Elevation Ft.	2552.0	2558.0	2581.8	2604.9
	Total Acre-feet	5,185	8,921	36,224	85,070
	Net Acre-feet	5,185	3,736	27,303	48,846
Harry Strunk Lake	- Elevation Ft.	2335.0	2343.0	2366.1	2386.2
	Total Acre-feet	4,160	8,859	35,705	88,420
	Net Acre-feet	4,160	4,699	26,846	52,715
Keith Sebelius Lake 4/	- Elevation Ft.	2275.0	2280.4	2304.3	2331.4
	Total Acre-feet	1,636	3,993	34,510	133,740
	Net Acre-feet	1,636	2,357	30,517	99,230
Harlan County Lake	- Elevation Ft.	1885.0	1927.0 3/	1945.73	1973.5
	Total Acre-feet	0	118,099	314,111	814,111
	Net Acre-feet	0	118,099	196,012	500,000
Lovewell	- Elevation Ft.	1562.07	1571.7	1582.6	1595.3
	Total Acre-feet	1,659	11,644	35,666	86,131
	Net Acre-feet	1,659	9,985	24,022	50,465
Kirwin	- Elevation Ft.	1693.0	1697.0	1729.25	1757.3
	Total Acre-feet	4,969	8,515	98,154	313,290
	Net Acre-feet	4,969	3,546	89,639	215,136
Webster	- Elevation Ft.	1855.5	1860.0	1892.45	1923.7
	Total Acre-feet	1,256	4,231	76,157	259,510
	Net Acre-feet	1,256	2,975	71,926	183,353
Waconda Lake	- Elevation Ft.	1407.8	1428.0	1455.6	1488.3
	Total Acre-feet	1,236	36,671	241,460	963,775
	Net Acre-feet	1,236	35,435	204,789	722,315
Cedar Bluff 4/	- Elevation Ft.	2090.0	2107.8	2144.0	2166.0
	Total Acre-feet	4,402	28,574	172,452	364,342
	Net Acre-feet	4,402	24,172	143,878	191,890
Total Storage (A.F.)		42,541	297,408	1,574,083	3,930,978 2/
Total Net Acre-feet		42,541	254,867	1,276,675	2,356,895

1/ Includes space for sediment storage.

2/ Includes total active storage for Box Butte, Merritt, Sherman, Calamus, and Davis Creek Reservoirs.

3/ Bottom of irrigation pool for Harlan County Lake is 1932.5 feet.

4/ New Area-Capacity Tables in effect 1-1-02. Sedimentation surveys conducted in September 2000.

TABLE 2
SUMMARY OF 2001 OPERATIONS

MIRAGE FLATS PROJECT

BOX BUTTE RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	MIRAGE FLATS CANAL Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	1,292	61	90	0.30	14,506	0	0
Feb.	1,354	56	118	0.74	15,686	0	0
Mar.	2,644	61	222	0.29	18,047	0	0
Apr.	2,798	60	388	1.79	20,397	0	0
May	1,313	79	476	1.98	21,155	0	0
June	750	77	634	2.63	21,194	0	0
July	299	5,710	539	9.28	15,244	4,911	2,599
Aug.	686	7,452	432	0.32	8,046	6,757	4,576
Sep.	1,396	970	322	0.25	8,150	903	580
Oct.	1,327	61	200	0.65	9,216	0	0
Nov.	1,390	60	117	0.28	10,429	0	0
Dec.	1,419	61	73	0.02	11,714	0	0
TOTAL	16,668	14,708	3,611	18.53	--	12,571	7,755

NOTE -- Acres irrigated 2001: Mirage Flats Canal - 11,092 acres.

SANDHILLS DIVISION
AINSWORTH UNIT

MERRITT RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	AINSWORTH CANAL Release To Canal (AF)	Delivered To Farms (AF)
Jan.	15,242	14,731	240	0.68	68,831	0	0
Feb.	14,635	14,051	305	0.24	69,110	0	0
Mar.	19,920	19,216	425	1.34	69,389	0	0
Apr.	19,708	13,587	729	5.57	74,781	0	0
May	15,823	15,376	1,029	3.02	74,199	3,416	111
June	14,243	14,380	1,296	2.07	72,766	5,992	1,282
July	15,120	33,775	1,329	3.22	52,782	30,964	20,902
Aug.	15,488	31,527	1,029	1.73	35,714	30,109	21,716
Sep.	17,585	6,135	752	2.15	46,412	4,909	3,291
Oct.	16,308	893	661	0.91	61,166	0	0
Nov.	14,469	6,363	441	1.64	68,831	0	0
Dec.	15,030	15,255	318	0.00	68,288	0	0
TOTAL	193,571	185,289	8,554	22.57	--	75,390	47,302

NOTE -- Acres irrigated 2001: Ainsworth Canal - 34,269 acres.

MIDDLE LOUP DIVISION

MIDDLE LOUP UNIT

SARGENT UNIT

Month	SARGENT CANAL Diversions To Canal (AF)	Delivered To Farms (AF)	MIDDLE LOUP PUBLIC POWER CANALS Diversions To Canals (AF)	Diversions To Sherman Feeder Canal (AF)
Jan.	0	0	0	0
Feb.	0	0	0	0
Mar.	0	0	0	0
Apr.	0	0	0	6,805
May	0	0	3,874	17,357
June	2,346	277	6,803	18,415
July	10,457	6,506	13,455	19,152
Aug.	9,372	6,735	13,948	20,184
Sep.	2,717	1,613	5,675	22,141
Oct.	0	0	0	8,178
Nov.	0	0	0	0
Dec.	0	0	0	0
TOTAL	24,892	15,131	43,755	112,232

NOTE--Acres irrigated 2001: Sargent Canal - 13,936 acres.

FARWELL UNIT

SHERMAN RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	FARWELL CANALS Release To Canals (AF)	Delivered To Farms (AF)
Jan.	837	1,309	260	1.44	52,476	0	0
Feb.	666	1,291	322	0.60	51,531	0	0
Mar.	1,636	1,309	564	0.84	51,294	0	0
Apr.	7,124	1,303	942	3.79	56,173	0	0
May	15,071	1,533	923	4.70	68,788	0	0
June	17,017	18,480	1,360	1.20	65,965	16,810	4,039
July	19,097	34,980	1,351	1.87	48,731	33,677	22,440
Aug.	18,504	32,785	993	1.84	33,457	31,690	21,167
Sep.	20,647	4,272	641	2.05	49,191	3,497	2,312
Oct.	7,315	1,083	750	0.52	54,673	0	0
Nov.	503	1,303	419	2.05	53,454	0	0
Dec.	334	1,309	238	0.03	52,241	0	0
TOTAL	108,751	100,957	8,763	20.93	--	85,674	49,958

Middle Loup P.P. Canals - 14,100 acres.

Farwell Canals - 48,422 acres.

NORTH LOUP DIVISION

CALAMUS RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release to Calamus Fish Hatch. (AF)	ABOVE DAVIS CREEK MIRDAN CANAL Release to Canal (AF)	Canal Use (AF)	Delivered To Farms (AF)
Jan.	21,790	1,795	447	1.05	117,759	381	0	0	0
Feb.	20,126	16,338	596	1.47	120,951	353	0	0	0
Mar.	28,761	27,400	1,064	0.65	121,248	315	0	0	0
Apr.	37,509	29,601	1,756	6.14	127,400	530	0	0	0
May	30,421	26,932	1,842	3.62	129,047	485	0	1,423	506
June	22,892	21,582	2,392	1.29	127,965	663	4,669	3,775	1,539
July	23,478	50,150	2,346	2.00	98,947	900	30,284	15,144	8,575
Aug	24,515	44,900	1,963	3.83	76,599	857	23,427	16,013	8,943
Sep.	21,445	28,096	1,514	3.67	68,434	738	6,319	2,915	1,554
Oct.	23,325	15,475	1,005	0.24	75,279	276	0	0	0
Nov.	21,642	4,278	599	1.55	92,044	289	0	0	0
Dec.	21,188	4,138	390	0.12	108,704	323	0	0	0
TOTAL	297,092	270,685	15,914	25.63	--	6,110	64,699	39,270	21,117

NOTE -- Acres irrigated 2001: Mirdan Canal - 32,216 acres.

NORTH LOUP DIVISION (Continued)

DAVIS CREEK RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Mo. Content (AF)	BELOW DAVIS CREEK FULLERTON CANAL Release To Canal (AF)	Delivered To Farms (AF)
Jan.	169	627	87	2.31	21,210	0	0
Feb.	32	347	107	0.43	20,788	0	0
Mar.	50	167	187	0.63	20,484	0	0
Apr.	483	347	300	6.73	20,320	0	0
May	5,238	4,598	320	4.39	20,640	3,693	0
June	13,376	5,754	464	0.98	27,798	8,876	1,928
July	13,643	15,015	532	2.23	25,894	13,702	10,059
Aug.	6,452	15,878	398	2.87	16,070	15,092	10,830
Sep.	3,258	3,007	302	4.34	16,019	3,025	1,572
Oct.	0	393	201	0.00	15,425	0	0
Nov.	118	331	107	2.03	15,105	0	0
Dec.	5	163	61	0.10	14,886	0	0
TOTAL	42,824	46,627	3,066	27.04	--	44,388	24,389

NOTE - Acres irrigated 2001: Fullerton Canal - 19,779 acres.

TABLE 2
SUMMARY OF 2001 OPERATIONS

UPPER REPUBLICAN DIVISION
ARMEL UNIT
BONNY RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Outflow To Hale Ditch (AF)
Jan.	1,209	369	148	0.96	27,208	0
Feb.	1,149	333	176	0.54	27,848	0
Mar.	1,476	369	267	0.52	28,688	0
Apr.	1,107	357	631	0.76	28,807	0
May	1,059	371	722	3.07	28,773	0
June	369	1,113	1,033	0.51	26,996	696
July	1,414	1,152	1,174	8.56	26,084	722
Aug.	0	1,021	918	0.09	24,145	591
Sep.	654	482	652	3.29	23,665	66
Oct.	301	430	546	0.68	22,990	0
Nov.	648	417	276	1.45	22,945	0
Dec.	948	430	173	0.29	23,290	0
TOTAL	10,334	6,844	6,716	20.72	--	2,075

TABLE 2
SUMMARY OF 2001 OPERATIONS

FRENCHMAN-CAMBRIDGE DIVISION
FRENCHMAN UNIT

	ENDERS RESERVOIR					CULBERTSON CANAL		CULBERTSON EXT.CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	1,263	61	60	0.60	14,217	0	0	0	0
Feb.	988	56	71	0.74	15,078	0	0	0	0
Mar.	1,091	61	128	0.30	15,980	0	0	0	0
Apr.	1,292	60	289	3.15	16,923	1,378	38	0	0
May	977	61	335	2.18	17,504	2,003	431	503	0
June	636	60	468	1.23	17,612	834	477	1,130	0
July	1,024	9,172	428	2.97	9,036	2,349	1,474	5,369	2,575
Aug.	721	61	334	0.24	9,362	400	313	96	40
Sep.	828	60	164	2.41	9,966	0	0	0	0
Oct.	841	61	124	1.47	10,622	0	0	0	0
Nov.	887	60	116	1.15	11,333	0	0	0	0
Dec.	715	61	67	0.03	11,920	0	0	0	0
TOTAL	11,263	9,834	2,584	16.47	--	6,964	2,732	7,098	2,615

NOTE: Acres irrigated 2001: Culbertson Canal - 8,619 acres; Culbertson Extension Canal - 10,989 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
MEEKER-DRIFTWOOD UNIT

	SWANSON LAKE					MEEKER-DRIFTWOOD		BARTLEY CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	2,157	61	165	0.99	27,683	0	0	0	0
Feb.	3,681	56	186	0.73	31,122	0	0	0	0
Mar.	8,661	61	369	0.47	39,353	0	0	0	0
Apr.	5,506	60	939	1.93	43,860	0	0	0	0
May	2,464	61	1,143	2.94	45,120	0	0	0	0
June	1,128	3,005	1,606	1.58	41,637	2,750	660	1,364	437
July	1,919	11,992	1,517	4.79	30,047	9,645	5,537	2,523	1,461
Aug.	730	5,712	1,262	1.97	23,803	5,421	4,139	1,985	1,676
Sep.	233	60	711	1.35	23,265	0	0	0	0
Oct.	10	61	502	1.12	22,712	0	0	0	0
Nov.	544	60	341	1.52	22,855	0	0	0	0
Dec.	1,410	61	193	0.18	24,011	0	0	0	0
TOTAL	28,443	21,250	8,934	19.57	--	17,816	10,336	5,872	3,574

NOTE: Acres irrigated 2001: Meeker-Driftwood Canal - 14,213 acres; Bartley Canal - 6,423 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
RED WILLOW UNIT

	HUGH BUTLER LAKE					RED WILLOW CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	1,131	246	82	0.83	24,317	0	0
Feb.	1,097	222	94	0.48	25,098	0	0
Mar.	1,711	246	180	0.38	26,383	0	0
Apr.	2,343	238	509	2.15	27,979	0	0
May	1,260	246	602	3.07	28,391	0	0
June	784	2,577	850	2.20	25,748	907	224
July	920	5,379	760	3.64	20,529	2,726	1,503
Aug.	1,040	4,794	648	2.03	16,127	1,722	1,250
Sep.	872	238	344	3.33	16,417	0	0
Oct.	817	246	258	1.32	16,730	0	0
Nov.	979	238	165	1.09	17,306	0	0
Dec.	989	246	91	0.34	17,958	0	0
TOTAL	13,943	14,916	4,583	20.86	--	5,355	2,977

NOTE -- Acres irrigated 2001: Red Willow Canal - 4,430 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
CAMBRIDGE UNIT

	HARRY STRUNK LAKE					CAMBRIDGE CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	2,935	61	92	0.69	28,054	0	0
Feb.	3,092	56	106	0.82	30,984	0	0
Mar.	4,884	1,146	214	0.81	34,508	0	0
Apr.	4,995	2,941	673	2.74	35,889	0	0
May	4,019	1,841	846	2.77	37,221	0	0
June	2,639	5,222	1,016	1.64	33,622	3,430	1,227
July	2,891	10,917	980	4.26	24,616	8,553	5,213
Aug.	2,749	9,626	641	2.78	17,098	7,646	5,144
Sep.	2,160	60	376	2.25	18,822	0	0
Oct.	2,381	61	323	1.68	20,819	0	0
Nov.	2,543	60	194	1.13	23,108	0	0
Dec.	2,495	61	107	0.17	25,435	0	0
TOTAL	37,783	32,052	5,568	21.74	--	19,629	11,584

NOTE -- Acres irrigated 2001: Cambridge Canal - 15,741 acres.

TABLE 2
SUMMARY OF 2001 OPERATIONS

KANASKA DIVISION
ALMENA UNIT

KEITH SEBELIUS LAKE

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To City Of Norton (AF)	ALMENA CANAL Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	489	60	107	0.88	23,223	28	0	0
Feb.	712	53	129	1.14	23,753	25	0	0
Mar.	1,400	59	229	1.16	24,865	29	85	0
Apr.	1,084	67	633	2.46	25,249	38	257	0
May	1,614	81	765	6.88	26,017	50	440	0
June	1,497	94	1,055	1.00	26,365	64	111	0
July	2,496	2,858	1,272	6.43	24,731	77	2,769	1,212
Aug.	394	1,748	1,052	1.60	22,325	75	1,659	726
Sep.	552	88	680	2.76	22,109	58	0	0
Oct.	255	77	500	1.00	21,787	46	0	0
Nov.	442	67	252	1.14	21,910	38	0	0
Dec.	364	61	135	0.14	22,078	31	0	0
TOTAL	11,299	5,313	6,809	26.59	--	559	5,321	1,938

NOTE: Acres irrigated 2001: Almena Canal - 4,971 acres.

BOSTWICK DIVISION
FRANKLIN UNIT

HARLAN COUNTY LAKE
Data from Corps of Engineers

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	FRANKLIN CANAL Release To Canal (AF)	FRANKLIN CANAL Delivered To Farms (AF)	NAPONEE CANAL Release To Canal (AF)	NAPONEE CANAL Delivered To Farms (AF)
Jan.	9,154	307	790	0.92	221,245	0	0	0	0
Feb.	13,557	278	736	1.37	233,788	0	0	0	0
Mar.	32,231	54	1,187	0.71	264,778	0	0	0	0
Apr.	23,970	0	3,341	2.32	285,407	0	0	0	0
May	24,218	10	3,594	7.72	306,021	0	0	0	0
June	13,210	9,344	5,677	1.34	304,210	2,203	544	448	261
July	12,288	34,254	6,443	4.49	275,801	11,869	3,927	1,158	605
Aug.	7,785	37,864	6,401	2.61	239,321	12,650	4,783	1,285	702
Sep.	6,783	4,824	4,758	4.17	236,522	1,822	417	97	40
Oct.	3,550	0	4,239	1.31	235,833	0	0	0	0
Nov.	5,326	0	2,569	0.96	238,590	0	0	0	0
Dec.	5,772	411	1,098	0.05	242,853	0	0	0	0
TOTAL	157,844	87,346	40,833	27.97	--	28,544	9,671	2,988	1,608

NOTE: Acres irrigated 2001: Franklin Canal - 11,254 acres; Naponee Canal - 1,628 acres.

BOSTWICK DIVISION (Continued)
SUPERIOR-COURTLAND UNIT

Month	FRANKLIN PUMP CANAL Diverted To Canal (AF)	FRANKLIN PUMP CANAL Delivered To Farms (AF)	SUPERIOR CANAL Diverted To Canal (AF)	SUPERIOR CANAL Delivered To Farms (AF)	Total Diversion (AF)	COURTLAND CANAL - ABOVE LOVEWELL NEBRASKA USE Total (AF)	NEBRASKA USE Delivered To Farms (AF)	KANSAS USE Diversion To Canal (AF)	KANSAS USE Delivered To Farms (AF)
Jan.	0	0	0	0	5,238	0	0	0	0
Feb.	0	0	0	0	722	0	0	0	0
Mar.	0	0	0	0	0	0	0	0	0
Apr.	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
June	108	63	1,263	244	7,544	180	122	4,931	1,277
July	1,343	810	3,613	1,461	19,525	693	424	7,337	3,340
Aug.	1,682	1,054	6,288	2,885	18,462	1,109	795	11,789	6,635
Sep.	276	146	139	0	9,726	0	0	1,399	742
Oct.	0	0	0	0	6,000	0	0	0	0
Nov.	0	0	0	0	0	0	0	0	0
Dec.	0	0	0	0	0	0	0	0	0
TOTAL	3,409	2,073	11,303	4,590	67,217	1,982	1,341	25,456	11,994

NOTE: Acres irrigated 2001: Franklin Pump Canal - 2,106 acres; Superior Canal - 5,979 acres.
Courtland Canal-Nebraska use - 1,968 acres.
Courtland Canal-Kansas use - 12,248 acres.

BOSTWICK DIVISION (Continued)
COURTLAND UNIT

Month	Est. Flow from White Rock Creek (AF)	Inflow from Courtland 34.8 (AF)	LOVEWELL RESERVOIR Total Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	COURTLAND (Below) Release To Canal (AF)	COURTLAND (Below) Delivered To Farms (AF)
Jan.	118	4,027	4,145	6	149	1.04	31,577	0	0
Feb.	47	764	811	11	187	3.01	32,190	0	0
Mar.	5,050	0	5,050	12	355	0.96	36,873	0	0
Apr.	1,187	0	1,187	18	833	1.27	37,209	0	0
May	13,935	0	13,935	4,519	1,006	9.93	45,619	0	0
June	4,891	1,324	6,215	9,988	1,400	2.99	40,446	6,748	2,676
July	6,742	8,933	15,675	16,727	1,476	5.93	37,918	16,166	8,920
Aug.	1,583	4,356	5,939	21,030	1,023	1.94	21,804	20,619	13,661
Sep.	995	6,713	7,708	4,105	589	3.84	24,818	3,711	1,983
Oct.	473	4,792	5,265	12	425	1.69	29,646	0	0
Nov.	577	0	577	12	405	0.64	29,806	0	0
Dec.	479	0	479	12	199	0.11	30,074	0	0
TOTAL	36,077	30,909	66,986	56,452	8,047	33.35	--	47,244	27,240

NOTE: Acres irrigated 2001: Courtland Canal below Lovewell - 26,925 acres.

TABLE 2
SUMMARY OF 2001 OPERATIONS

SOLOMON DIVISION
KIRWIN UNIT

	KIRWIN RESERVOIR					KIRWIN CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	1,295	0	271	0.72	74,782	0	0
Feb.	2,433	0	360	2.97	76,855	0	0
Mar.	4,359	0	601	0.75	80,613	0	0
Apr.	3,583	0	1,502	2.37	82,694	0	0
May	6,072	0	1,714	6.91	87,052	0	0
June	2,825	2,342	2,355	1.73	85,180	2,593	261
July	3,238	10,205	2,916	3.88	75,297	10,324	4,574
Aug.	1,761	8,975	2,330	2.26	65,753	9,443	4,673
Sep.	723	4	1,430	2.13	65,042	0	0
Oct.	141	0	1,003	0.62	64,180	0	0
Nov.	935	0	622	1.00	64,493	0	0
Dec.	329	0	329	0.08	64,493	0	0
TOTAL	27,694	21,526	15,433	25.42	--	22,360	9,508

NOTE: Acres irrigated 2001: Kirwin Canal - 9,150 acres.

SOLOMON DIVISION (Continued)
WEBSTER UNIT

	WEBSTER RESERVOIR					OSBORNE CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	1,144	0	224	0.52	57,588	0	0
Feb.	1,969	0	263	0.47	59,294	0	0
Mar.	3,401	0	474	0.41	62,221	0	0
Apr.	3,587	0	1,125	2.46	64,683	0	0
May	7,322	0	1,227	6.71	70,778	0	0
June	5,675	954	1,804	2.19	73,695	766	58
July	2,621	8,846	2,583	7.22	64,887	7,716	3,146
Aug.	449	8,057	1,898	1.18	55,381	6,504	2,843
Sep.	585	0	1,175	1.89	54,791	0	0
Oct.	992	0	868	1.55	54,915	0	0
Nov	974	0	508	0.78	55,381	0	0
Dec.	1,158	0	281	0.29	56,258	0	0
TOTAL	29,877	17,857	12,430	25.67	--	14,986	6,047

NOTE: Acres irrigated 2001: Osborne Canal - 5,287 acres.

SOLOMON DIVISION (Continued)
GLEN ELDER UNIT

	WACONDA LAKE					OUT FLOW TO RIVER				
						City of Beloit		Irrig.District	Other	Release To
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Storage Release (AF)	Quality Bypass (AF)	Storage Release (AF)	Controlled Releases (AF)	Mitchell Co. RWD No. 2 (AF)
Jan.	5,853	1,294	647	1.33	201,968	0	1,230	0	0	64
Feb.	6,837	1,166	828	2.20	206,811	0	1,111	0	0	55
Mar.	17,261	1,291	1,587	0.61	221,194	0	1,230	0	0	61
Apr.	9,704	1,253	5,073	1.09	224,572	0	1,191	0	0	62
May	46,069	9,392	5,041	6.92	256,208	0	327	0	9,007	58
June	41,691	47,767	6,411	3.61	243,721	0	0	153	47,557	57
July	12,812	10,482	7,732	2.77	238,319	0	0	3,118	7,288	76
Aug.	6,047	5,446	6,333	2.45	232,587	0	91	3,648	1,636	71
Sep.	11,640	1,473	3,933	3.71	238,821	0	850	343	222	58
Oct.	3,239	1,229	3,266	1.13	237,565	0	1,168	0	0	61
Nov.	5,297	1,190	1,971	0.55	239,701	0	1,131	0	0	59
Dec.	3,294	13,807	973	0.15	228,215	0	118	0	13,632	57
TOTAL	169,744	95,790	43,795	26.52	--	0	8,447	7,262	79,342	739

NOTE: Acres irrigated 2001: Glen Elder District - 7,037 acres.

SMOKY HILL DIVISION
ELLIS UNIT

	CEDAR BLUFF RESERVOIR					
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Fish Hatchery (AF)
Jan.	1,616	0	538	0.88	179,990	0
Feb.	1,946	0	596	0.95	181,340	0
Mar.	1,881	0	1,065	0.74	182,156	0
Apr.	2,356	0	2,900	1.00	181,612	0
May	5,060	0	3,149	5.76	183,523	0
June	3,677	6	4,085	3.21	183,109	6
July	4,119	1	5,479	4.12	181,748	1
Aug.	3,884	2	4,831	2.13	180,799	2
Sep.	8,685	65	3,294	3.81	186,125	65
Oct.	294	190	2,431	0.29	183,798	190
Nov.	495	78	1,175	0.24	183,040	78
Dec.	138	18	664	0.11	182,496	18
TOTAL	34,151	360	30,207	23.24	--	360

No releases were made for the City of Russell, Kansas.

TABLE 3

ACRES IRRIGATED IN 2001 AND ESTIMATES FOR 2002

Irrigation District and Canal	Acres With Service Available	Acres Irrigated in 2001	Estimated Acres to be Irrigated in 2002
Mirage Flats Irrigation District			
Mirage Flats Canal	11,662	11,092	11,100
Ainsworth Irrigation District			
Ainsworth Canal	34,539	34,269	34,500
Sargent Irrigation District			
Sargent Canal	13,936	13,936	13,900
Farwell Irrigation District			
Farwell Canal	50,051	48,422	49,700
Twin Loups Irrigation District			
Above Davis Creek	32,216	32,216	32,200
Below Davis Creek	20,784	19,779	20,200
Total Twin Loups Irrigation District	53,000	51,995	52,400
Frenchman Valley Irrigation District			
Culbertson Canal	9,295	8,619	8,700
H & RW Irrigation District			
Culbertson Extension Canal	11,695	10,989	11,000
Frenchman-Cambridge Irrigation District			
Meeker-Driftwood Canal	16,562	14,213	14,200
Red Willow Canal	4,877	4,430	4,400
Bartley Canal	6,435	6,423	6,400
Cambridge Canal	17,297	15,741	15,800
Total Frenchman-Cambridge Irrigation District	45,171	40,807	40,800
Almena Irrigation District			
Almena Canal	5,764	4,971	4,900
Bostwick Irrigation District in Nebraska			
Franklin Canal	11,262	11,254	11,200
Naponee Canal	1,628	1,628	1,600
Franklin Pump Canal	2,106	2,106	2,100
Superior Canal	5,972	5,979	5,900
Courtland Canal (Nebraska)	1,967	1,968	1,900
Total Bostwick Irrigation Dist. in Nebraska	22,935	22,935	22,700
Kansas-Bostwick Irrigation District			
Courtland Canal above Lovewell	13,378	12,248	12,700
Courtland Canal below Lovewell	29,122	26,925	28,300
Total Kansas-Bostwick Irrigation District	42,500	39,173	41,000
Kirwin Irrigation District			
Kirwin Canal	11,465	9,150	9,200
Webster Irrigation District			
Osborne Canal	8,537	5,287	5,500
Glen Elder Irrigation District	7,037	7,037	7,000
TOTAL PROJECT USES	327,587	308,682	312,400
Non-Project Uses			
Middle Loup Public Power & Irrig. Dist. Canals	15,000	14,100	14,100
Hale Ditch	700	700	700
TOTAL NON-PROJECT USES	15,700	14,800	14,800
TOTAL PROJECT AND NON-PROJECT	343,287	323,482	327,200

BOX BUTTE RESERVOIR OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	20	1.2	1.2	0.1	2	0.1	0.0	0.0	3992.6	12.7	1.0
FEB	25	1.4	1.5	0.1	2	0.1	0.0	0.0	3993.8	13.9	1.2
MAR	34	2.1	2.5	0.2	2	0.1	0.0	0.0	3995.5	15.7	1.8
APR	29	1.7	4.1	0.4	2	0.1	0.0	0.0	3996.6	16.9	1.2
MAY	23	1.4	4.9	0.5	5	0.3	0.0	0.0	3997.1	17.5	0.6
JUN	13	0.8	6.1	0.5	92	5.5	0.0	0.0	3992.2	12.3	-5.2
JUL	10	0.6	7.0	0.4	226	13.9	0.0	4.6	3978.9	3.2	-9.1
AUG	15	0.9	6.3	0.2	226	13.9	0.0	13.2	3978.9	3.2	0.0
SEP	17	1.0	4.6	0.2	39	2.3	0.0	1.5	3978.9	3.2	0.0
OCT	20	1.2	3.4	0.1	2	0.1	0.0	0.0	3981.0	4.2	1.0
NOV	25	1.5	1.8	0.1	2	0.1	0.0	0.0	3983.3	5.5	1.3
DEC	21	1.3	1.1	0.1	2	0.1	0.0	0.0	3985.2	6.6	1.1
TOTAL		15.1	44.4	2.9		36.6	0.0	19.3			-5.1
MOST PROBABLE INFLOW CONDITIONS											
JAN	24	1.5	1.1	0.1	2	0.1	0.0	0.0	3992.9	13.0	1.3
FEB	32	1.8	1.3	0.1	2	0.1	0.0	0.0	3994.5	14.6	1.6
MAR	41	2.5	2.3	0.2	2	0.1	0.0	0.0	3996.5	16.8	2.2
APR	37	2.2	3.8	0.4	2	0.1	0.0	0.0	3998.0	18.5	1.7
MAY	28	1.7	4.5	0.5	3	0.2	0.0	0.0	3998.8	19.5	1.0
JUN	17	1.0	5.6	0.6	67	4.0	0.0	0.0	3995.7	15.9	-3.6
JUL	11	0.7	6.4	0.4	200	12.3	0.0	0.0	3980.3	3.9	-12.0
AUG	20	1.2	5.7	0.2	156	9.6	0.0	7.9	3978.9	3.2	-0.7
SEP	20	1.2	4.2	0.1	29	1.7	0.0	0.6	3978.9	3.2	0.0
OCT	24	1.5	3.1	0.1	2	0.1	0.0	0.0	3981.5	4.5	1.3
NOV	30	1.8	1.7	0.1	2	0.1	0.0	0.0	3984.3	6.1	1.6
DEC	24	1.5	1.0	0.1	2	0.1	0.0	0.0	3986.3	7.4	1.3
TOTAL		18.6	40.6	2.9		28.5	0.0	8.5			-4.3
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	29	1.8	1.0	0.1	2	0.1	0.0	0.0	3993.2	13.3	1.6
FEB	40	2.2	1.2	0.1	2	0.1	0.0	0.0	3995.2	15.3	2.0
MAR	50	3.1	2.1	0.2	2	0.1	0.0	0.0	3997.6	18.1	2.8
APR	44	2.6	3.4	0.4	2	0.1	0.0	0.0	3999.4	20.2	2.1
MAY	34	2.1	4.1	0.4	3	0.2	0.0	0.0	4000.5	21.7	1.5
JUN	20	1.2	5.1	0.5	45	2.7	0.0	0.0	3999.0	19.7	-2.0
JUL	13	0.8	5.8	0.5	128	7.9	0.0	0.0	3992.0	12.1	-7.6
AUG	23	1.4	5.2	0.4	98	6.0	0.0	0.0	3985.9	7.1	-5.0
SEP	25	1.5	3.8	0.2	17	1.0	0.0	0.0	3986.3	7.4	0.3
OCT	29	1.8	2.8	0.2	2	0.1	0.0	0.0	3988.3	8.9	1.5
NOV	37	2.2	1.5	0.1	2	0.1	0.0	0.0	3990.7	10.9	2.0
DEC	31	1.9	0.9	0.1	2	0.1	0.0	0.0	3992.5	12.6	1.7
TOTAL		22.6	36.9	3.2		18.5	0.0	0.0			0.9

MERRITT RESERVOIR OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT CANAL 1000 AF	RELEASE REQUIREMENT RIVER 1000 AF	RELEASE REQUIREMENT TOTAL MEAN CFS	RELEASE REQUIREMENT TOTAL 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	216	13.3	1.2	0.3	0.0	1.0	16	1.0	11.5	0.0	2944.0	68.8	0.5
FEB	238	13.2	1.5	0.3	0.0	1.0	18	1.0	11.9	0.0	2944.0	68.8	0.0
MAR	244	15.0	2.1	0.5	0.0	4.6	75	4.6	7.1	0.0	2945.0	71.6	2.8
APR	249	14.8	3.4	0.8	0.0	4.5	76	4.5	6.6	0.0	2946.0	74.5	2.9
MAY	241	14.8	4.7	1.1	3.3	4.6	128	7.9	5.8	0.0	2946.0	74.5	0.0
JUN	229	13.6	5.9	1.4	7.5	3.0	176	10.5	1.7	0.0	2946.0	74.5	0.0
JUL	231	14.2	6.7	1.4	32.9	3.0	584	35.9	0.0	0.0	2937.0	51.4	-23.1
AUG	236	14.5	5.9	0.9	30.6	3.0	546	33.6	0.0	0.0	2925.7	31.4	-20.0
SEP	232	13.8	4.7	0.6	8.3	3.0	190	11.3	0.0	0.0	2927.0	33.3	1.9
OCT	236	14.5	3.9	0.6	0.0	1.0	16	1.0	0.0	0.0	2934.5	46.2	12.9
NOV	229	13.6	2.2	0.4	0.0	1.0	17	1.0	0.0	0.0	2940.0	58.4	12.2
DEC	215	13.2	1.5	0.3	0.0	1.0	16	1.0	1.5	0.0	2944.0	68.8	10.4
TOTAL		168.5	43.5	8.6	82.6	30.7		113.3	46.1	0.0			0.5
MOST PROBABLE INFLOW CONDITIONS													
JAN	236	14.5	1.1	0.2	0.0	1.0	16	1.0	12.8	0.0	2944.0	68.8	0.5
FEB	257	14.3	1.3	0.3	0.0	1.0	18	1.0	13.0	0.0	2944.0	68.8	0.0
MAR	265	16.3	1.9	0.4	0.0	4.6	75	4.6	8.5	0.0	2945.0	71.6	2.8
APR	272	16.2	3.1	0.7	0.0	4.5	76	4.5	8.1	0.0	2946.0	74.5	2.9
MAY	263	16.2	4.2	1.0	2.9	4.6	122	7.5	7.7	0.0	2946.0	74.5	0.0
JUN	250	14.9	5.3	1.3	6.4	3.0	158	9.4	4.2	0.0	2946.0	74.5	0.0
JUL	250	15.4	6.1	1.3	28.0	3.0	504	31.0	0.0	0.0	2939.7	57.6	-16.9
AUG	257	15.8	5.3	1.0	26.3	3.0	477	29.3	0.0	0.0	2932.9	43.1	-14.5
SEP	254	15.1	4.2	0.7	7.2	3.0	171	10.2	0.0	0.0	2935.0	47.3	4.2
OCT	257	15.8	3.5	0.7	0.0	1.0	16	1.0	0.0	0.0	2941.2	61.4	14.1
NOV	250	14.9	2.0	0.4	0.0	1.0	17	1.0	6.1	0.0	2944.0	68.8	7.4
DEC	233	14.3	1.4	0.3	0.0	1.0	16	1.0	13.0	0.0	2944.0	68.8	0.0
TOTAL		183.7	39.3	8.3	70.8	30.7		101.5	73.4	0.0			0.5
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	257	15.8	1.0	0.2	0.0	1.0	16	1.0	14.1	0.0	2944.0	68.8	0.5
FEB	281	15.6	1.2	0.3	0.0	1.0	18	1.0	14.3	0.0	2944.0	68.8	0.0
MAR	288	17.7	1.7	0.4	0.0	4.6	75	4.6	9.9	0.0	2945.0	71.6	2.8
APR	294	17.5	2.8	0.7	0.0	4.5	76	4.5	9.4	0.0	2946.0	74.5	2.9
MAY	286	17.6	3.8	0.9	2.3	4.6	112	6.9	9.8	0.0	2946.0	74.5	0.0
JUN	272	16.2	4.8	1.2	5.2	3.0	138	8.2	6.8	0.0	2946.0	74.5	0.0
JUL	273	16.8	5.4	1.2	23.0	3.0	423	26.0	0.0	0.0	2942.2	64.1	-10.4
AUG	280	17.2	4.8	1.0	21.5	3.0	398	24.5	0.0	0.0	2938.9	55.8	-8.3
SEP	276	16.4	3.8	0.8	5.8	3.0	148	8.8	0.0	0.0	2941.7	62.6	6.8
OCT	278	17.1	3.1	0.7	0.0	1.0	16	1.0	9.2	0.0	2944.0	68.8	6.2
NOV	271	16.1	1.8	0.4	0.0	1.0	17	1.0	14.7	0.0	2944.0	68.8	0.0
DEC	252	15.5	1.2	0.3	0.0	1.0	16	1.0	14.2	0.0	2944.0	68.8	0.0
TOTAL		199.5	35.2	8.1	57.8	30.7		88.5	102.4	0.0			0.5

SHERMAN RESERVOIR OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	5	0.3	1.4	0.3	21	1.3	0.0	0.0	2155.3	50.9	-1.3
FEB	7	0.4	1.8	0.3	23	1.3	0.0	0.0	2154.8	49.7	-1.2
MAR	11	0.7	3.1	0.6	21	1.3	0.0	0.0	2154.3	48.5	-1.2
APR	145	8.6	5.1	1.0	22	1.3	0.0	0.0	2156.9	54.8	6.3
MAY	281	17.3	4.7	1.0	33	2.0	0.0	0.0	2162.3	69.1	14.3
JUN	334	19.9	5.6	1.3	313	18.6	0.0	0.0	2162.3	69.1	0.0
JUL	153	9.4	6.4	1.3	683	42.0	0.0	0.0	2147.9	35.2	-33.9
AUG	246	15.1	5.5	0.7	525	32.3	0.0	0.0	2135.8	17.3	-17.9
SEP	501	29.8	4.2	0.6	118	7.0	0.0	0.0	2150.1	39.5	22.2
OCT	259	15.9	4.2	0.8	18	1.1	0.0	0.0	2156.4	53.5	14.0
NOV	5	0.3	2.3	0.5	22	1.3	0.0	0.0	2155.8	52.0	-1.5
DEC	3	0.2	1.3	0.3	21	1.3	0.0	0.0	2155.2	50.6	-1.4
TOTAL		117.9	45.5	8.7		110.8	0.0	0.0			-1.6
MOST PROBABLE INFLOW CONDITIONS											
JAN	5	0.3	1.3	0.3	21	1.3	0.0	0.0	2155.3	50.9	-1.3
FEB	9	0.5	1.6	0.3	23	1.3	0.0	0.0	2154.9	49.8	-1.1
MAR	15	0.9	2.8	0.5	21	1.3	0.0	0.0	2154.5	48.9	-0.9
APR	141	8.4	4.6	0.9	22	1.3	0.0	0.0	2157.1	55.1	6.2
MAY	273	16.8	4.2	0.9	31	1.9	0.0	0.0	2162.3	69.1	14.0
JUN	287	17.1	5.0	1.2	267	15.9	0.0	0.0	2162.3	69.1	0.0
JUL	376	23.1	5.7	1.3	572	35.2	0.0	0.0	2157.3	55.7	-13.4
AUG	283	17.4	4.9	1.0	442	27.2	0.0	0.0	2152.7	44.9	-10.8
SEP	292	17.4	3.8	0.7	99	5.9	0.0	0.0	2157.3	55.7	10.8
OCT	8	0.5	3.8	0.8	18	1.1	0.0	0.0	2156.7	54.3	-1.4
NOV	7	0.4	2.0	0.4	22	1.3	0.0	0.0	2156.2	53.0	-1.3
DEC	5	0.3	1.2	0.2	21	1.3	0.0	0.0	2155.7	51.8	-1.2
TOTAL		103.1	40.9	8.5		95.0	0.0	0.0			-0.4
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	7	0.4	1.2	0.2	21	1.3	0.0	0.0	2155.4	51.1	-1.1
FEB	11	0.6	1.5	0.3	23	1.3	0.0	0.0	2155.0	50.1	-1.0
MAR	18	1.1	2.6	0.5	21	1.3	0.0	0.0	2154.7	49.4	-0.7
APR	138	8.2	4.2	0.8	22	1.3	0.0	0.0	2157.2	55.5	6.1
MAY	265	16.3	3.8	0.9	29	1.8	0.0	0.0	2162.3	69.1	13.6
JUN	220	13.1	4.5	1.1	202	12.0	0.0	0.0	2162.3	69.1	0.0
JUL	218	13.4	5.2	1.2	423	26.0	0.0	0.0	2157.1	55.3	-13.8
AUG	216	13.3	4.5	0.9	327	20.1	0.0	0.0	2153.9	47.6	-7.7
SEP	224	13.3	3.4	0.7	76	4.5	0.0	0.0	2157.3	55.7	8.1
OCT	10	0.6	3.4	0.7	18	1.1	0.0	0.0	2156.8	54.5	-1.2
NOV	8	0.5	1.9	0.4	22	1.3	0.0	0.0	2156.3	53.3	-1.2
DEC	7	0.4	1.1	0.2	21	1.3	0.0	0.0	2155.9	52.2	-1.1
TOTAL		81.2	37.1	7.9		73.3	0.0	0.0			0.0

CALAMUS RESERVOIR OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT CANAL 1000 AF	RELEASE REQUIREMENT RIVER 1000 AF	RELEASE REQUIREMENT TOTAL MEAN CFS	RELEASE REQUIREMENT TOTAL 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	281	17.3	1.3	0.5	0.5	3.1	59	3.6	13.2	0.0	2240.2	108.7	0.0
FEB	299	16.6	1.6	0.6	0.5	2.8	59	3.3	12.7	0.0	2240.2	108.7	0.0
MAR	333	20.5	2.9	1.1	0.5	3.1	59	3.6	9.6	0.0	2241.5	114.9	6.2
APR	345	20.5	4.7	2.0	0.5	3.0	59	3.5	2.5	0.0	2244.0	127.4	12.5
MAY	382	23.5	4.9	2.1	2.6	3.1	93	5.7	15.7	0.0	2244.0	127.4	0.0
JUN	348	20.7	6.0	2.5	5.3	3.0	139	8.3	9.9	0.0	2244.0	127.4	0.0
JUL	325	20.0	6.8	2.6	33.9	20.0	877	53.9	0.0	0.0	2236.1	90.9	-36.5
AUG	307	18.9	7.0	2.2	23.4	18.9	688	42.3	0.0	0.0	2229.2	65.3	-25.6
SEP	291	17.3	5.3	1.4	6.3	17.3	397	23.6	0.0	0.0	2226.8	57.6	-7.7
OCT	288	17.7	3.9	1.1	0.5	3.1	59	3.6	0.0	0.0	2230.7	70.6	13.0
NOV	313	18.6	2.1	0.7	0.5	3.0	59	3.5	0.0	0.0	2234.6	85.0	14.4
DEC	303	18.6	1.2	0.4	0.5	3.1	59	3.6	0.0	0.0	2238.1	99.6	14.6
TOTAL		230.2	47.7	17.2	75.0	83.5		158.5	63.6	0.0			-9.1
MOST PROBABLE INFLOW CONDITIONS													
JAN	324	19.9	1.2	0.5	0.5	3.1	59	3.6	15.8	0.0	2240.2	108.7	0.0
FEB	344	19.1	1.4	0.5	0.5	2.8	59	3.3	15.3	0.0	2240.2	108.7	0.0
MAR	384	23.6	2.6	1.0	0.5	3.1	59	3.6	12.8	0.0	2241.5	114.9	6.2
APR	397	23.6	4.2	1.7	0.5	3.0	59	3.5	5.9	0.0	2244.0	127.4	12.5
MAY	439	27.0	4.3	1.8	2.2	3.1	86	5.3	19.9	0.0	2244.0	127.4	0.0
JUN	400	23.8	5.3	2.2	4.4	3.0	124	7.4	14.2	0.0	2244.0	127.4	0.0
JUL	376	23.1	6.0	2.4	23.9	23.1	764	47.0	0.0	0.0	2238.5	101.1	-26.3
AUG	353	21.7	6.2	2.1	16.6	21.7	623	38.3	0.0	0.0	2233.9	82.4	-18.7
SEP	334	19.9	4.7	1.5	5.5	19.9	427	25.4	0.0	0.0	2232.1	75.4	-7.0
OCT	332	20.4	3.4	1.1	0.5	3.1	59	3.6	0.0	0.0	2236.1	91.1	15.7
NOV	361	21.5	1.9	0.7	0.5	3.0	59	3.5	0.4	0.0	2240.0	108.0	16.9
DEC	350	21.5	1.1	0.4	0.5	3.1	59	3.6	17.5	0.0	2240.0	108.0	0.0
TOTAL		265.1	42.1	15.9	56.1	92.0		148.1	101.8	0.0			-0.7
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	374	23.0	1.0	0.4	0.5	3.1	59	3.6	19.0	0.0	2240.2	108.7	0.0
FEB	396	22.0	1.3	0.5	0.5	2.8	59	3.3	18.2	0.0	2240.2	108.7	0.0
MAR	444	27.3	2.3	0.9	0.5	3.1	59	3.6	16.6	0.0	2241.5	114.9	6.2
APR	459	27.3	3.7	1.5	0.5	3.0	59	3.5	9.8	0.0	2244.0	127.4	12.5
MAY	507	31.2	3.8	1.6	1.8	3.1	80	4.9	24.7	0.0	2244.0	127.4	0.0
JUN	464	27.6	4.6	2.0	3.7	3.0	113	6.7	18.9	0.0	2244.0	127.4	0.0
JUL	433	26.6	5.3	2.2	14.8	26.6	673	41.4	0.0	0.0	2240.5	110.4	-17.0
AUG	408	25.1	5.4	2.0	13.6	25.1	629	38.7	0.0	0.0	2237.0	94.8	-15.6
SEP	387	23.0	4.1	1.4	4.6	23.0	464	27.6	0.0	0.0	2235.5	88.8	-6.0
OCT	384	23.6	3.0	1.1	0.5	3.1	59	3.6	0.0	0.0	2239.9	107.7	18.9
NOV	417	24.8	1.6	0.6	0.5	3.0	59	3.5	20.4	0.0	2240.0	108.0	0.3
DEC	403	24.8	0.9	0.4	0.5	3.1	59	3.6	20.8	0.0	2240.0	108.0	0.0
TOTAL		306.3	37.0	14.6	42.0	102.0		144.0	148.4	0.0			-0.7

DAVIS CREEK RESERVOIR OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	0	0.0	1.2	0.1	10	0.6	0.0	0.0	2056.9	14.2	-0.7
FEB	0	0.0	1.5	0.1	11	0.6	0.0	0.0	2055.9	13.5	-0.7
MAR	0	0.0	2.8	0.1	10	0.6	0.0	0.0	2054.8	12.8	-0.7
APR	77	4.6	4.5	0.2	25	1.5	0.0	0.0	2059.2	15.7	2.9
MAY	239	14.7	4.8	0.3	76	4.7	0.0	0.0	2070.6	25.4	9.7
JUN	240	14.3	5.9	0.5	134	8.0	0.0	0.0	2076.0	31.2	5.8
JUL	197	12.1	6.4	0.6	278	17.1	0.0	0.0	2070.8	25.6	-5.6
AUG	73	4.5	4.9	0.3	259	15.9	0.0	0.0	2056.5	13.9	-11.7
SEP	10	0.6	4.2	0.2	126	7.5	0.0	0.0	2043.0	6.8	-7.1
OCT	0	0.0	3.7	0.1	5	0.3	0.0	0.0	2041.9	6.4	-0.4
NOV	0	0.0	2.0	0.1	5	0.3	0.0	0.0	2040.9	6.0	-0.4
DEC	0	0.0	1.2	0.0	5	0.3	0.0	0.0	2040.1	5.7	-0.3
TOTAL		50.8	42.9	2.6		57.4	0.0	0.0			-9.2
MOST PROBABLE INFLOW CONDITIONS											
JAN	0	0	1.2	0.1	10	0.6	0.0	0.0	2056.9	14.2	-0.7
FEB	0	0	1.4	0.1	11	0.6	0.0	0.0	2055.9	13.5	-0.7
MAR	0	0	2.6	0.1	10	0.6	0.0	0.0	2054.8	12.8	-0.7
APR	42	2.5	4.1	0.2	25	1.5	0.0	0.0	2056.0	13.6	0.8
MAY	239	14.7	4.4	0.3	65	4	0.0	0.0	2069.1	24.0	10.4
JUN	240	14.3	5.5	0.5	111	6.6	0.0	0.0	2076.0	31.2	7.2
JUL	99	6.1	6.0	0.5	215	13.2	0.0	0.0	2068.7	23.6	-7.6
AUG	20	1.2	4.5	0.3	200	12.3	0.0	0.0	2053.7	12.2	-11.4
SEP	10	0.6	3.9	0.2	97	5.8	0.0	0.0	2043.0	6.8	-5.4
OCT	0	0	3.4	0.1	5	0.3	0.0	0.0	2041.9	6.4	-0.4
NOV	0	0	1.8	0.1	5	0.3	0.0	0.0	2040.9	6.0	-0.4
DEC	0	0	1.1	0	5	0.3	0.0	0.0	2040.1	5.7	-0.3
TOTAL		39.4	39.9	2.5		46.1	0.0	0.0			-9.2
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	0	0.0	1.1	0.1	10	0.6	0.0	0.0	2056.9	14.2	-0.7
FEB	0	0.0	1.4	0.1	11	0.6	0.0	0.0	2055.9	13.5	-0.7
MAR	0	0.0	2.4	0.1	10	0.6	0.0	0.0	2054.8	12.8	-0.7
APR	10	0.6	3.9	0.2	25	1.5	0.0	0.0	2052.8	11.7	-1.1
MAY	239	14.7	4.2	0.3	57	3.5	0.0	0.0	2067.6	22.6	10.9
JUN	240	14.3	5.2	0.4	89	5.3	0.0	0.0	2076.0	31.2	8.6
JUL	20	1.2	5.6	0.5	158	9.7	0.0	0.0	2067.2	22.2	-9.0
AUG	20	1.2	4.3	0.3	148	9.1	0.0	0.0	2056.6	14.0	-8.2
SEP	10	0.6	3.7	0.2	72	4.3	0.0	0.0	2049.9	10.1	-3.9
OCT	0	0.0	3.2	0.1	5	0.3	0.0	0.0	2049.2	9.7	-0.4
NOV	0	0.0	1.7	0.1	5	0.3	0.0	0.0	2048.5	9.3	-0.4
DEC	0	0.0	1.0	0.0	5	0.3	0.0	0.0	2047.9	9.0	-0.3
TOTAL		32.6	37.6	2.4		36.1	0.0	0.0			-5.9

BONNY RESERVOIR OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT CANAL 1000 AF	RELEASE REQUIREMENT RIVER 1000 AF	TOTAL MEAN CFS	TOTAL 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	20	1.2	1.3	0.2	0.0	0.5	8	0.5	0.0	0.0	3662.1	23.8	0.5
FEB	22	1.2	1.4	0.2	0.0	0.4	7	0.4	0.0	0.0	3662.4	24.4	0.6
MAR	21	1.3	2.2	0.3	0.0	0.5	8	0.5	0.0	0.0	3662.8	24.9	0.5
APR	25	1.5	4.6	0.6	0.0	0.4	7	0.4	0.0	0.0	3663.1	25.4	0.5
MAY	28	1.7	5.9	0.8	0.4	0.5	15	0.9	0.0	0.0	3663.1	25.4	0.0
JUN	25	1.5	7.5	1.0	0.3	0.4	12	0.7	0.0	0.0	3663.0	25.2	-0.2
JUL	13	0.8	8.5	1.1	1.0	0.5	24	1.5	0.0	0.0	3661.8	23.4	-1.8
AUG	8	0.5	7.3	0.9	0.6	0.5	18	1.1	0.0	0.0	3660.8	21.9	-1.5
SEP	5	0.3	6.1	0.7	0.3	0.4	12	0.7	0.0	0.0	3660.0	20.8	-1.1
OCT	10	0.6	3.8	0.4	0.2	0.5	11	0.7	0.0	0.0	3659.6	20.3	-0.5
NOV	17	1.0	2.5	0.3	0.0	0.4	7	0.4	0.0	0.0	3659.8	20.6	0.3
DEC	18	1.1	1.5	0.2	0.0	0.5	8	0.5	0.0	0.0	3660.1	21.0	0.4
TOTAL		12.7	52.6	6.7	2.8	5.5		8.3	0.0	0.0			-2.3
MOST PROBABLE INFLOW CONDITIONS													
JAN	26	1.6	1.1	0.1	0.0	0.5	8	0.5	0.0	0.0	3662.4	24.3	1.0
FEB	27	1.5	1.3	0.2	0.0	0.4	7	0.4	0.0	0.0	3663.0	25.2	0.9
MAR	28	1.7	1.9	0.3	0.0	0.5	8	0.5	0.0	0.0	3663.5	26.1	0.9
APR	34	2.0	4.2	0.6	0.0	0.4	7	0.4	0.0	0.0	3664.2	27.1	1.0
MAY	37	2.3	5.3	0.7	0.1	0.5	10	0.6	0.0	0.0	3664.8	28.1	1.0
JUN	34	2.0	6.7	0.9	0.3	0.4	12	0.7	0.0	0.0	3665.0	28.5	0.4
JUL	18	1.1	7.6	1.0	0.7	0.5	20	1.2	0.0	0.0	3664.3	27.4	-1.1
AUG	11	0.7	6.6	0.9	0.6	0.5	18	1.1	0.0	0.0	3663.5	26.1	-1.3
SEP	7	0.4	5.5	0.7	0.3	0.4	12	0.7	0.0	0.0	3662.9	25.1	-1.0
OCT	13	0.8	3.4	0.4	0.1	0.5	10	0.6	0.0	0.0	3662.8	24.9	-0.2
NOV	22	1.3	2.2	0.3	0.0	0.4	7	0.4	0.0	0.0	3663.2	25.5	0.6
DEC	23	1.4	1.3	0.2	0.0	0.5	8	0.5	0.0	0.0	3663.6	26.2	0.7
TOTAL		16.8	47.2	6.3	2.1	5.5		7.6	0.0	0.0			2.9
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	34	2.1	1.0	0.1	0.0	0.5	8	0.5	0.0	0.0	3662.7	24.8	1.5
FEB	36	2.0	1.1	0.1	0.0	0.4	7	0.4	0.0	0.0	3663.7	26.3	1.5
MAR	37	2.3	1.7	0.2	0.0	0.5	8	0.5	0.0	0.0	3664.7	27.9	1.6
APR	45	2.7	3.7	0.5	0.0	0.4	7	0.4	0.0	0.0	3665.7	29.7	1.8
MAY	49	3.0	4.8	0.7	0.2	0.5	11	0.7	0.0	0.0	3666.7	31.3	1.6
JUN	45	2.7	6.0	0.9	0.2	0.4	10	0.6	0.0	0.0	3667.3	32.5	1.2
JUL	23	1.4	6.8	1.0	0.4	0.5	15	0.9	0.0	0.0	3667.1	32.0	-0.5
AUG	15	0.9	5.9	0.9	0.4	0.5	15	0.9	0.0	0.0	3666.5	31.1	-0.9
SEP	8	0.5	4.9	0.7	0.2	0.4	10	0.6	0.0	0.0	3666.1	30.3	-0.8
OCT	18	1.1	3.1	0.4	0.2	0.5	11	0.7	0.0	0.0	3666.1	30.3	0.0
NOV	30	1.8	2.0	0.3	0.0	0.4	7	0.4	0.0	0.0	3666.7	31.4	1.1
DEC	29	1.8	1.2	0.2	0.0	0.5	8	0.5	0.0	0.0	3667.3	32.5	1.1
TOTAL		22.3	42.2	6.0	1.6	5.5		7.1	0.0	0.0			9.2

ENDERS RESERVOIR OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	21	1.3	1.0	0.1	0	0.0	0.0	0.0	3088.3	13.1	1.2
FEB	22	1.2	1.1	0.1	0	0.0	0.0	0.0	3089.6	14.2	1.1
MAR	21	1.3	1.9	0.1	0	0.0	0.0	0.0	3091.0	15.4	1.2
APR	22	1.3	4.1	0.3	0	0.0	0.0	0.0	3092.1	16.4	1.0
MAY	23	1.4	5.3	0.4	0	0.0	0.0	0.0	3093.2	17.4	1.0
JUN	22	1.3	6.7	0.4	160	9.5	0.0	0.1	3082.3	8.9	-8.5
JUL	24	1.5	7.3	0.4	533	32.8	0.0	31.7	3082.3	8.9	0.0
AUG	23	1.4	6.1	0.3	529	32.5	0.0	31.4	3082.3	8.9	0.0
SEP	20	1.2	4.5	0.2	67	4.0	0.0	3.0	3082.3	8.9	0.0
OCT	21	1.3	2.9	0.2	0	0.0	0.0	0.0	3084.0	10.0	1.1
NOV	22	1.3	2.1	0.1	0	0.0	0.0	0.0	3085.7	11.2	1.2
DEC	21	1.3	1.2	0.1	0	0.0	0.0	0.0	3087.4	12.4	1.2
TOTAL		15.8	44.0	2.7		78.8	0.0	66.2			0.5
MOST PROBABLE INFLOW CONDITIONS											
JAN	29	1.8	0.9	0.1	0	0.0	0.0	0.0	3088.9	13.6	1.7
FEB	29	1.6	1.0	0.1	0	0.0	0.0	0.0	3090.7	15.1	1.5
MAR	29	1.8	1.7	0.1	0	0.0	0.0	0.0	3092.5	16.8	1.7
APR	30	1.8	3.9	0.3	0	0.0	0.0	0.0	3094.1	18.3	1.5
MAY	31	1.9	4.9	0.4	0	0.0	0.0	0.0	3095.5	19.8	1.5
JUN	30	1.8	6.2	0.5	104	6.2	0.0	0.0	3090.4	14.9	-4.9
JUL	34	2.1	6.8	0.4	450	27.7	0.0	20.0	3082.3	8.9	-6.0
AUG	31	1.9	5.7	0.3	359	22.1	0.0	20.5	3082.3	8.9	0.0
SEP	27	1.6	4.2	0.2	32	1.9	0.0	0.5	3082.3	8.9	0.0
OCT	28	1.7	2.7	0.1	0	0.0	0.0	0.0	3084.7	10.5	1.6
NOV	29	1.7	2.0	0.1	0	0.0	0.0	0.0	3087.0	12.1	1.6
DEC	28	1.7	1.1	0.1	0	0.0	0.0	0.0	3089.0	13.7	1.6
TOTAL		21.4	41.0	2.7		57.9	0.0	41.0			1.8
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	41	2.5	0.8	0.1	0	0.0	0.0	0.0	3089.7	14.3	2.4
FEB	40	2.2	0.9	0.1	0	0.0	0.0	0.0	3092.1	16.4	2.1
MAR	37	2.3	1.6	0.1	0	0.0	0.0	0.0	3094.4	18.6	2.2
APR	39	2.3	3.5	0.3	0	0.0	0.0	0.0	3096.2	20.6	2.0
MAY	41	2.5	4.4	0.4	0	0.0	0.0	0.0	3098.1	22.7	2.1
JUN	39	2.3	5.6	0.5	30	1.8	0.0	0.0	3098.1	22.7	0.0
JUL	46	2.8	6.1	0.5	272	16.7	0.0	0.6	3082.3	8.9	-13.8
AUG	41	2.5	5.1	0.3	208	12.8	0.0	10.6	3082.3	8.9	0.0
SEP	37	2.2	3.8	0.2	0	0.0	0.0	0.0	3085.3	10.9	2.0
OCT	37	2.3	2.4	0.1	0	0.0	0.0	0.0	3088.3	13.1	2.2
NOV	39	2.3	1.8	0.1	0	0.0	0.0	0.0	3090.9	15.3	2.2
DEC	37	2.3	1.0	0.1	0	0.0	0.0	0.0	3093.3	17.5	2.2
TOTAL		28.5	36.9	2.8		31.3	0.0	11.2			5.6

SWANSON LAKE OPERATION ESTIMATES- 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT CANAL 1000 AF	RELEASE REQUIREMENT RIVER 1000 AF	TOTAL MEAN CFS	TOTAL 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	57	3.5	1.0	0.2	0.0	0.1	2	0.1	0.0	0.0	2728.0	27.2	3.2
FEB	88	4.9	1.1	0.2	0.0	0.1	2	0.1	0.0	0.0	2730.0	31.8	4.6
MAR	101	6.2	1.9	0.4	0.0	0.1	2	0.1	0.0	0.0	2732.3	37.5	5.7
APR	109	6.5	4.3	1.0	0.0	0.1	2	0.1	0.0	0.0	2734.2	42.9	5.4
MAY	99	6.1	5.1	1.3	0.1	0.1	3	0.2	0.0	0.0	2735.7	47.5	4.6
JUN	79	4.7	6.6	1.7	3.7	1.5	87	5.2	0.0	0.0	2735.0	45.3	-2.2
JUL	42	2.6	7.6	1.6	13.7	7.5	345	21.2	0.0	0.0	2727.1	25.1	-20.2
AUG	23	1.4	6.6	1.1	11.5	3.2	239	14.7	0.0	10.2	2725.0	20.9	-4.2
SEP	12	0.7	5.1	0.8	1.7	0.1	30	1.8	0.0	1.8	2724.9	20.8	-0.1
OCT	16	1.0	3.1	0.5	0.0	0.1	2	0.1	0.0	0.0	2725.2	21.2	0.4
NOV	42	2.5	2.2	0.4	0.0	0.1	2	0.1	0.0	0.0	2726.2	23.2	2.0
DEC	46	2.8	1.2	0.2	0.0	0.1	2	0.1	0.0	0.0	2727.3	25.7	2.5
TOTAL		42.9	45.8	9.4	30.7	13.1		43.8	0.0	12.0			1.7
MOST PROBABLE INFLOW CONDITIONS													
JAN	83	5.1	0.9	0.2	0.0	0.1	2	0.1	0.0	0.0	2728.7	28.8	4.8
FEB	128	7.1	1.0	0.2	0.0	0.1	2	0.1	0.0	0.0	2731.6	35.6	6.8
MAR	143	8.8	1.7	0.4	0.0	0.1	2	0.1	0.0	0.0	2734.5	43.9	8.3
APR	158	9.4	4.0	1.0	0.0	0.1	2	0.1	0.0	0.0	2737.2	52.2	8.3
MAY	141	8.7	4.7	1.3	0.1	0.1	3	0.2	0.0	0.0	2739.4	59.4	7.2
JUN	113	6.7	6.1	1.8	3.2	0.1	55	3.3	0.0	0.0	2739.8	61.0	1.6
JUL	62	3.8	7.0	1.9	11.9	4.8	272	16.7	0.0	0.0	2735.3	46.2	-14.8
AUG	34	2.1	6.1	1.4	9.9	4.7	237	14.6	0.0	0.0	2730.2	32.3	-13.9
SEP	15	0.9	4.7	0.9	1.4	0.6	34	2.0	0.0	0.0	2729.4	30.3	-2.0
OCT	24	1.5	2.8	0.5	0.0	0.1	2	0.1	0.0	0.0	2729.8	31.2	0.9
NOV	61	3.6	2.0	0.4	0.0	0.1	2	0.1	0.0	0.0	2731.0	34.3	3.1
DEC	67	4.1	1.1	0.2	0.0	0.1	2	0.1	0.0	0.0	2732.5	38.1	3.8
TOTAL		61.8	42.1	10.2	26.5	11.0		37.5	0.0	0.0			14.1
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	115	7.1	0.8	0.1	0.0	0.1	2	0.1	0.0	0.0	2729.7	30.9	6.9
FEB	178	9.9	0.9	0.2	0.0	0.1	2	0.1	0.0	0.0	2733.4	40.5	9.6
MAR	200	12.3	1.6	0.4	0.0	0.1	2	0.1	0.0	0.0	2737.2	52.3	11.8
APR	220	13.1	3.7	1.1	0.0	0.1	2	0.1	0.0	0.0	2740.7	64.2	11.9
MAY	198	12.2	4.3	1.4	0.1	0.1	3	0.2	0.0	0.0	2743.5	74.8	10.6
JUN	158	9.4	5.6	1.9	2.6	0.1	45	2.7	0.0	0.0	2744.7	79.6	4.8
JUL	86	5.3	6.5	2.1	9.8	1.8	189	11.6	0.0	0.0	2742.6	71.2	-8.4
AUG	46	2.8	5.6	1.7	8.1	2.4	171	10.5	0.0	0.0	2740.1	61.8	-9.4
SEP	22	1.3	4.3	1.3	1.2	0.1	22	1.3	0.0	0.0	2739.7	60.5	-1.3
OCT	34	2.1	2.6	0.8	0.0	0.1	2	0.1	0.0	0.0	2740.0	61.7	1.2
NOV	84	5.0	1.9	0.6	0.0	0.1	2	0.1	0.0	0.0	2741.2	66.0	4.3
DEC	93	5.7	1.0	0.3	0.0	0.1	2	0.1	0.0	0.0	2742.6	71.3	5.3
TOTAL		86.2	38.7	11.9	21.8	5.2		27.0	0.0	0.0			47.3

HUGH BUTLER LAKE OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	16	1.0	0.9	0.1	5	0.3	0.0	0.0	2568.8	18.6	0.6
FEB	22	1.2	1.0	0.1	5	0.3	0.0	0.0	2569.5	19.4	0.8
MAR	26	1.6	1.8	0.2	5	0.3	0.0	0.0	2570.5	20.5	1.1
APR	25	1.5	4.9	0.5	5	0.3	0.0	0.0	2571.1	21.2	0.7
MAY	26	1.6	5.8	0.6	5	0.3	0.0	0.0	2571.7	21.9	0.7
JUN	27	1.6	7.2	0.7	29	1.7	0.0	0.0	2571.0	21.1	-0.8
JUL	21	1.3	8.0	0.7	70	4.3	0.0	0.0	2567.7	17.4	-3.7
AUG	21	1.3	7.1	0.5	133	8.2	0.0	1.2	2561.0	11.2	-6.2
SEP	15	0.9	5.4	0.4	29	1.7	0.0	1.2	2561.0	11.2	0.0
OCT	16	1.0	3.5	0.2	5	0.3	0.0	0.0	2561.6	11.7	0.5
NOV	17	1.0	2.1	0.2	5	0.3	0.0	0.0	2562.2	12.2	0.5
DEC	16	1.0	1.1	0.1	5	0.3	0.0	0.0	2562.9	12.8	0.6
TOTAL		15.0	48.7	4.3		18.3	0.0	2.4			-5.2
MOST PROBABLE INFLOW CONDITIONS											
JAN	21	1.3	0.8	0.1	5	0.3	0.0	0.0	2569.1	18.9	0.9
FEB	27	1.5	0.9	0.1	5	0.3	0.0	0.0	2570.1	20.0	1.1
MAR	31	1.9	1.6	0.2	5	0.3	0.0	0.0	2571.3	21.4	1.4
APR	32	1.9	4.4	0.4	5	0.3	0.0	0.0	2572.3	22.6	1.2
MAY	33	2.0	5.3	0.5	5	0.3	0.0	0.0	2573.2	23.8	1.2
JUN	34	2.0	6.5	0.7	24	1.4	0.0	0.0	2573.2	23.7	-0.1
JUL	26	1.6	7.2	0.7	59	3.6	0.0	0.0	2570.9	21.0	-2.7
AUG	26	1.6	6.4	0.6	50	3.1	0.0	0.0	2569.1	18.9	-2.1
SEP	17	1.0	4.9	0.4	15	0.9	0.0	0.0	2568.8	18.6	-0.3
OCT	18	1.1	3.1	0.3	5	0.3	0.0	0.0	2569.3	19.1	0.5
NOV	22	1.3	1.9	0.2	5	0.3	0.0	0.0	2570.0	19.9	0.8
DEC	20	1.2	1.0	0.1	5	0.3	0.0	0.0	2570.7	20.7	0.8
TOTAL		18.4	44.1	4.3		11.4	0.0	0.0			2.7
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	26	1.6	0.7	0.1	5	0.3	0.0	0.0	2569.4	19.2	1.2
FEB	34	1.9	0.8	0.1	5	0.3	0.0	0.0	2570.7	20.7	1.5
MAR	39	2.4	1.5	0.1	5	0.3	0.0	0.0	2572.4	22.7	2.0
APR	40	2.4	4.0	0.4	5	0.3	0.0	0.0	2573.7	24.4	1.7
MAY	41	2.5	4.8	0.5	5	0.3	0.0	0.0	2575.0	26.1	1.7
JUN	42	2.5	5.9	0.7	18	1.1	0.0	0.0	2575.5	26.8	0.7
JUL	33	2.0	6.6	0.7	44	2.7	0.0	0.0	2574.5	25.4	-1.4
AUG	34	2.1	5.8	0.6	37	2.3	0.0	0.0	2573.9	24.6	-0.8
SEP	22	1.3	4.5	0.5	10	0.6	0.0	0.0	2574.0	24.8	0.2
OCT	23	1.4	2.8	0.3	5	0.3	0.0	0.0	2574.6	25.6	0.8
NOV	27	1.6	1.8	0.2	5	0.3	0.0	0.0	2575.4	26.7	1.1
DEC	26	1.6	0.9	0.1	5	0.3	0.0	0.0	2576.3	27.9	1.2
TOTAL		23.3	40.1	4.3		9.1	0.0	0.0			9.9

HARRY STRUNK LAKE OPERATON ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	42	2.6	0.9	0.1	2	0.1	0.0	0.0	2361.3	27.8	2.4
FEB	54	3.0	1.0	0.1	2	0.1	0.0	0.0	2363.1	30.6	2.8
MAR	57	3.5	1.8	0.2	2	0.1	0.0	0.0	2365.1	33.8	3.2
APR	55	3.3	4.9	0.7	2	0.1	0.6	0.0	2366.1	35.7	1.9
MAY	60	3.7	5.7	0.9	2	0.1	2.7	0.0	2366.1	35.7	0.0
JUN	62	3.7	7.2	1.1	66	3.9	0.0	0.0	2365.4	34.4	-1.3
JUL	57	3.5	8.1	1.0	272	16.7	0.0	0.0	2355.5	20.2	-14.2
AUG	46	2.8	7.0	0.5	226	13.9	0.0	0.3	2343.0	8.9	-11.3
SEP	30	1.8	5.4	0.3	8	0.5	0.0	0.0	2344.4	9.9	1.0
OCT	37	2.3	3.5	0.2	2	0.1	0.0	0.0	2347.0	11.9	2.0
NOV	40	2.4	2.1	0.1	2	0.1	0.0	0.0	2349.6	14.1	2.2
DEC	39	2.4	1.1	0.1	2	0.1	0.0	0.0	2351.9	16.3	2.2
TOTAL		35.0	48.6	5.3		35.8	3.3	0.3			-9.1
MOST PROBABLE INFLOW CONDITIONS											
JAN	47	2.9	0.8	0.1	2	0.1	0.0	0.0	2361.5	28.1	2.7
FEB	59	3.3	0.9	0.1	2	0.1	0.0	0.0	2363.5	31.2	3.1
MAR	63	3.9	1.6	0.2	2	0.1	0.0	0.0	2365.6	34.8	3.6
APR	64	3.8	4.4	0.7	2	0.1	2.1	0.0	2366.1	35.7	0.9
MAY	68	4.2	5.2	0.8	2	0.1	3.3	0.0	2366.1	35.7	0.0
JUN	69	4.1	6.6	1.0	49	2.9	0.2	0.0	2366.1	35.7	0.0
JUL	65	4.0	7.4	1.0	223	13.7	0.0	0.0	2359.3	25.0	-10.7
AUG	52	3.2	6.4	0.6	184	11.3	0.0	0.0	2351.9	16.3	-8.7
SEP	34	2.0	4.9	0.4	2	0.1	0.0	0.0	2353.4	17.8	1.5
OCT	42	2.6	3.2	0.3	2	0.1	0.0	0.0	2355.3	20.0	2.2
NOV	47	2.8	1.9	0.2	2	0.1	0.0	0.0	2357.4	22.5	2.5
DEC	44	2.7	1.0	0.1	2	0.1	0.0	0.0	2359.3	25.0	2.5
TOTAL		39.5	44.4	5.5		28.8	5.6	0.0			-0.4
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	62	3.8	0.7	0.1	2	0.1	0.0	0.0	2362.1	29.0	3.6
FEB	77	4.3	0.8	0.1	2	0.1	0.0	0.0	2364.6	33.1	4.1
MAR	81	5.0	1.4	0.2	2	0.1	3.0	0.0	2365.6	34.8	1.7
APR	81	4.8	4.0	0.6	2	0.1	3.2	0.0	2366.1	35.7	0.9
MAY	88	5.4	4.7	0.7	2	0.1	4.6	0.0	2366.1	35.7	0.0
JUN	89	5.3	5.9	0.9	27	1.6	2.8	0.0	2366.1	35.7	0.0
JUL	83	5.1	6.7	1.0	148	9.1	0.0	0.0	2363.2	30.7	-5.0
AUG	67	4.1	5.8	0.7	124	7.6	0.0	0.0	2360.4	26.5	-4.2
SEP	44	2.6	4.4	0.5	2	0.1	0.0	0.0	2361.8	28.5	2.0
OCT	54	3.3	2.9	0.4	2	0.1	0.0	0.0	2363.5	31.3	2.8
NOV	61	3.6	1.7	0.2	2	0.1	0.0	0.0	2365.5	34.6	3.3
DEC	57	3.5	0.9	0.1	2	0.1	3.1	0.0	2365.6	34.8	0.2
TOTAL		50.8	40.0	5.5		19.2	16.7	0.0			9.4

KEITH SEBELIUS LAKE OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	2	0.1	0.9	0.1	2	0.1	0.0	0.0	2296.7	20.5	-0.1
FEB	2	0.1	1.1	0.1	2	0.1	0.0	0.0	2296.7	20.4	-0.1
MAR	5	0.3	1.9	0.2	2	0.1	0.0	0.0	2296.7	20.4	0.0
APR	5	0.3	5.3	0.7	2	0.1	0.0	0.0	2296.3	19.9	-0.5
MAY	7	0.4	6.0	0.8	3	0.2	0.0	0.0	2296.0	19.3	-0.6
JUN	8	0.5	7.5	0.9	45	2.7	0.0	0.0	2293.8	16.2	-3.1
JUL	7	0.4	8.6	0.8	132	8.1	0.0	1.7	2287.7	9.4	-6.8
AUG	7	0.4	7.6	0.6	107	6.6	0.0	6.4	2287.3	9.0	-0.4
SEP	3	0.2	5.9	0.4	20	1.2	0.0	1.1	2286.9	8.7	-0.3
OCT	2	0.1	4.0	0.3	2	0.1	0.0	0.0	2286.6	8.4	-0.3
NOV	2	0.1	2.2	0.2	2	0.1	0.0	0.0	2286.3	8.2	-0.2
DEC	2	0.1	1.1	0.1	2	0.1	0.0	0.0	2287.2	8.1	-0.1
TOTAL		3.0	52.1	5.2		19.5	0.0	9.2			-12.5
MOST PROBABLE INFLOW CONDITIONS											
JAN	5	0.3	0.8	0.1	2	0.1	0.0	0.0	2296.9	20.7	0.1
FEB	5	0.3	1.0	0.1	2	0.1	0.0	0.0	2296.9	20.8	0.1
MAR	10	0.6	1.7	0.2	2	0.1	0.0	0.0	2297.1	21.1	0.3
APR	12	0.7	4.7	0.6	2	0.1	0.0	0.0	2297.1	21.1	0.0
MAY	16	1.0	5.4	0.7	3	0.2	0.0	0.0	2297.2	21.2	0.1
JUN	22	1.3	6.7	0.9	35	2.1	0.0	0.0	2296.1	19.5	-1.7
JUL	15	0.9	7.7	0.9	106	6.5	0.0	0.0	2291.2	13.0	-6.5
AUG	13	0.8	6.7	0.6	85	5.2	0.0	1.4	2287.7	9.4	-3.6
SEP	7	0.4	5.3	0.4	15	0.9	0.0	0.8	2287.6	9.3	-0.1
OCT	3	0.2	3.5	0.3	2	0.1	0.0	0.0	2287.4	9.1	-0.2
NOV	3	0.2	2.0	0.1	2	0.1	0.0	0.0	2287.4	9.1	0.0
DEC	3	0.2	1.0	0.1	2	0.1	0.0	0.0	2287.4	9.1	0.0
TOTAL		6.9	46.5	5.0		15.6	0.0	2.2			-11.5
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	10	0.6	0.8	0.1	2	0.1	0.0	0.0	2297.0	21.0	0.4
FEB	13	0.7	0.9	0.1	2	0.1	0.0	0.0	2297.4	21.5	0.5
MAR	23	1.4	1.5	0.2	2	0.1	0.0	0.0	2298.1	22.6	1.1
APR	25	1.5	4.2	0.6	2	0.1	0.0	0.0	2298.5	23.4	0.8
MAY	36	2.2	4.8	0.7	3	0.2	0.0	0.0	2299.3	24.7	1.3
JUN	47	2.8	6.1	0.9	18	1.1	0.0	0.0	2299.7	25.5	0.8
JUL	34	2.1	6.9	1.0	50	3.1	0.0	0.0	2298.6	23.5	-2.0
AUG	31	1.9	6.1	0.8	50	3.1	0.0	0.0	2297.4	21.5	-2.0
SEP	15	0.9	4.8	0.6	12	0.7	0.0	0.0	2297.1	21.1	-0.4
OCT	7	0.4	3.2	0.4	2	0.1	0.0	0.0	2297.0	21.0	-0.1
NOV	8	0.5	1.8	0.2	2	0.1	0.0	0.0	2297.2	21.2	0.2
DEC	8	0.5	0.9	0.1	2	0.1	0.0	0.0	2297.4	21.5	0.3
TOTAL		15.5	41.8	5.7		8.9	0.0	0.0			0.9

HARLAN COUNTY LAKE OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	93	5.7	0.9	0.9	10	0.6	0.0	0.0	1940.4	247.1	4.2
FEB	144	8.0	0.9	0.9	11	0.6	0.0	0.0	1940.9	253.6	6.5
MAR	194	11.9	1.7	1.7	0	0.0	0.0	0.0	1941.8	263.8	10.2
APR	166	9.9	4.3	4.4	0	0.0	0.0	0.0	1942.2	269.3	5.5
MAY	211	13.0	5.3	5.4	83	5.1	0.0	0.0	1942.4	271.8	2.5
JUN	175	10.4	6.5	6.6	445	26.5	0.0	0.0	1940.5	249.1	-22.7
JUL	177	10.9	7.3	6.6	1059	65.1	0.0	0.0	1935.0	188.3	-60.8
AUG	143	8.8	6.3	5.1	714	43.9	0.0	16.0	1932.5	164.1	-24.2
SEP	69	4.1	5.0	3.9	92	5.5	0.0	5.3	1932.5	164.1	0.0
OCT	67	4.1	3.3	2.6	0	0.0	0.0	0.0	1932.7	165.6	1.5
NOV	89	5.3	2.0	1.5	0	0.0	0.0	0.0	1933.1	169.4	3.8
DEC	88	5.4	1.3	1.0	0	0.0	0.0	0.0	1933.5	173.8	4.4
TOTAL		97.5	44.7	40.6		147.3	0.0	21.3			-69.1
MOST PROBABLE INFLOW CONDITIONS											
JAN	151	9.3	0.8	0.8	10	0.6	0.0	0.0	1940.7	250.8	7.9
FEB	236	13.1	0.8	0.8	11	0.6	0.0	0.0	1941.7	262.5	11.7
MAR	317	19.5	1.5	1.5	0	0.0	0.0	0.0	1943.1	280.5	18.0
APR	274	16.3	3.9	4.1	0	0.0	0.0	0.0	1944.1	292.7	12.2
MAY	346	21.3	4.8	5.1	0	0.0	0.0	0.0	1945.3	308.9	16.2
JUN	287	17.1	5.8	6.4	119	7.1	0.0	0.0	1945.6	312.5	3.6
JUL	291	17.9	6.6	7.0	706	43.4	0.0	0.0	1943.1	280.0	-32.5
AUG	234	14.4	5.7	5.8	608	37.4	0.0	0.0	1940.7	251.2	-28.8
SEP	113	6.7	4.6	4.5	61	3.6	0.0	0.0	1940.6	249.8	-1.4
OCT	111	6.8	3.0	3.0	0	0.0	0.0	0.0	1940.9	253.6	3.8
NOV	146	8.7	1.8	1.8	0	0.0	0.0	0.0	1941.5	260.5	6.9
DEC	143	8.8	1.1	1.2	10	0.6	0.0	0.0	1942.1	267.5	7.0
TOTAL		159.9	40.2	42.0		93.3	0.0	0.0			24.6
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	260	16.0	0.7	0.7	10	0.6	0.0	0.0	1941.3	257.6	14.7
FEB	409	22.7	0.7	0.7	11	0.6	0.0	0.0	1943.0	279.0	21.4
MAR	548	33.7	1.3	1.4	0	0.0	0.0	0.0	1945.5	311.3	32.3
APR	474	28.2	3.5	3.8	0	0.0	18.0	0.0	1946.0	317.7	6.4
MAY	597	36.7	4.2	4.7	0	0.0	32.0	0.0	1946.0	317.7	0.0
JUN	497	29.6	5.2	5.7	39	2.3	21.6	0.0	1946.0	317.7	0.0
JUL	504	31.0	5.8	6.5	179	11.0	13.5	0.0	1946.0	317.7	0.0
AUG	405	24.9	5.0	5.6	184	11.3	8.0	0.0	1946.0	317.7	0.0
SEP	195	11.6	4.0	4.5	20	1.2	5.9	0.0	1946.0	317.7	0.0
OCT	189	11.6	2.6	2.9	0	0.0	8.7	0.0	1946.0	317.7	0.0
NOV	250	14.9	1.6	1.7	0	0.0	13.2	0.0	1946.0	317.7	0.0
DEC	247	15.2	1.0	1.1	10	0.6	13.5	0.0	1946.0	317.7	0.0
TOTAL		276.1	35.6	39.3		27.6	134.4	0.0			74.8

LOVEWELL RESERVOIR OPERATION ESTIMATES - 2002

MONTH	WHITE ROCK CREEK INFLOW 1000 AF	COURTLAND CANAL INFLOW 1000 AF	TOTAL INFLOW MEAN CFS	TOTAL INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RES SPILL 1000 AF	REQ SHORT 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	0.5	0.0	8	0.5	0.8	0.2	0	0.0	0.0	0.0	1580.7	30.4	0.3
FEB	0.7	0.0	13	0.7	1.0	0.2	0	0.0	0.0	0.0	1580.9	30.9	0.5
MAR	1.6	0.7	37	2.3	1.8	0.4	0	0.0	0.0	0.0	1581.6	32.8	1.9
APR	1.5	2.3	64	3.8	3.7	0.9	0	0.0	0.0	0.0	1582.6	35.7	2.9
MAY	1.9	6.5	137	8.4	4.7	1.2	16	1.0	0.0	0.0	1584.6	41.9	6.2
JUN	2.0	10.5	210	12.5	6.0	1.6	183	10.9	0.0	0.0	1584.6	41.9	0.0
JUL	1.4	18.0	316	19.4	6.7	1.6	550	33.8	0.0	0.0	1579.0	25.9	-16.0
AUG	0.2	5.4	91	5.6	5.4	0.9	377	23.2	0.0	4.2	1571.7	11.6	-14.3
SEP	1.1	0.0	18	1.1	4.1	0.5	50	3.0	0.0	2.4	1571.7	11.6	0.0
OCT	0.7	1.9	42	2.6	2.8	0.4	0	0.0	0.0	0.0	1573.1	13.8	2.2
NOV	0.6	2.5	52	3.1	2.1	0.3	0	0.0	0.0	0.0	1574.7	16.6	2.8
DEC	0.4	2.6	49	3.0	1.0	0.2	0	0.0	0.0	0.0	1576.1	19.4	2.8
TOTAL	12.6	50.4		63.0	40.2	8.4		71.9	0.0	6.6			-10.7
MOST PROBABLE INFLOW CONDITIONS													
JAN	1.1	0.0	18	1.1	0.7	0.2	0	0.0	0.0	0.0	1581.0	31.0	0.9
FEB	1.6	0.0	29	1.6	0.8	0.2	0	0.0	0.0	0.0	1581.5	32.4	1.4
MAR	3.8	0.0	62	3.8	1.5	0.4	0	0.0	0.1	0.0	1582.6	35.7	3.3
APR	3.4	0.0	57	3.4	3.1	0.8	0	0.0	2.6	0.0	1582.6	35.7	0.0
MAY	4.3	3.8	132	8.1	4.0	1.0	15	0.9	0.0	0.0	1584.6	41.9	6.2
JUN	4.6	5.8	175	10.4	5.0	1.4	151	9.0	0.0	0.0	1584.6	41.9	0.0
JUL	3.1	10.5	221	13.6	5.6	1.4	459	28.2	0.0	0.0	1579.0	25.9	-16.0
AUG	0.3	11.1	185	11.4	4.6	0.8	314	19.3	0.0	0.0	1575.0	17.2	-8.7
SEP	2.5	0.6	52	3.1	3.4	0.5	42	2.5	0.0	0.0	1575.1	17.3	0.1
OCT	1.7	4.7	104	6.4	2.3	0.4	0	0.0	0.0	0.0	1577.9	23.3	6.0
NOV	1.4	4.1	92	5.5	1.8	0.4	0	0.0	0.0	0.0	1580.0	28.4	5.1
DEC	1	0.8	29	1.8	0.8	0.2	0	0.0	0.0	0.0	1580.6	30.0	1.6
TOTAL	28.8	41.4		70.2	33.8	7.7		59.9	2.7	0.0			-0.1
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	3.1	0.0	50	3.1	0.6	0.1	0	0.0	0.0	0.0	1581.7	33.1	3.0
FEB	4.7	0.0	85	4.7	0.7	0.2	0	0.0	1.9	0.0	1582.6	35.7	2.6
MAR	10.7	0.0	174	10.7	1.3	0.3	0	0.0	10.4	0.0	1582.6	35.7	0.0
APR	9.7	0.0	163	9.7	2.7	0.7	0	0.0	9.0	0.0	1582.6	35.7	0.0
MAY	12.1	0.0	197	12.1	3.4	0.9	8	0.5	4.5	0.0	1584.6	41.9	6.2
JUN	13.2	1.2	242	14.4	4.3	1.2	84	5.0	8.2	0.0	1584.6	41.9	0.0
JUL	8.9	1.2	164	10.1	4.8	1.3	257	15.8	0.0	0.0	1582.3	34.9	-7.0
AUG	0.9	1.2	34	2.1	3.9	0.9	174	10.7	0.0	0.0	1578.8	25.4	-9.5
SEP	7.1	0.6	129	7.7	2.9	0.6	24	1.4	1.1	0.0	1580.6	30.0	4.6
OCT	4.8	0.0	78	4.8	2.0	0.4	0	0.0	4.4	0.0	1580.6	30.0	0.0
NOV	4.1	0.0	69	4.1	1.5	0.3	0	0.0	3.8	0.0	1580.6	30.0	0.0
DEC	2.8	0.0	46	2.8	0.7	0.2	0	0.0	2.6	0.0	1580.6	30.0	0.0
TOTAL	82.1	4.2		86.3	28.8	7.1		33.4	45.9	0.0			-0.1

KIRWIN RESERVOIR OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	5	0.3	0.9	0.3	0	0.0	0.0	0.0	1721.7	64.5	0.0
FEB	7	0.4	1.1	0.4	0	0.0	0.0	0.0	1721.7	64.5	0.0
MAR	11	0.7	1.9	0.6	0	0.0	0.0	0.0	1721.7	64.6	0.1
APR	13	0.8	4.3	1.4	0	0.0	0.0	0.0	1721.6	64.0	-0.6
MAY	21	1.3	5.3	1.7	7	0.4	0.0	0.0	1721.4	63.2	-0.8
JUN	18	1.1	6.6	2.1	69	4.1	0.0	0.0	1720.0	58.1	-5.1
JUL	16	1.0	7.5	2.2	192	11.8	0.0	0.0	1716.3	45.1	-13.0
AUG	11	0.7	6.6	1.7	150	9.2	0.0	0.0	1712.9	34.9	-10.2
SEP	7	0.4	5.0	1.1	7	0.4	0.0	0.0	1712.5	33.8	-1.1
OCT	3	0.2	3.4	0.7	0	0.0	0.0	0.0	1712.3	33.3	-0.5
NOV	5	0.3	2.1	0.5	0	0.0	0.0	0.0	1712.2	33.1	-0.2
DEC	5	0.3	1.1	0.2	0	0.0	0.0	0.0	1712.2	33.2	0.1
TOTAL		7.5	45.6	12.9		25.9	0.0	0.0			-31.3
MOST PROBABLE INFLOW CONDITIONS											
JAN	13	0.8	0.8	0.3	0	0.0	0.0	0.0	1721.9	65.0	0.5
FEB	22	1.2	1.0	0.3	0	0.0	0.0	0.0	1722.1	65.9	0.9
MAR	34	2.1	1.7	0.6	0	0.0	0.0	0.0	1722.5	67.4	1.5
APR	39	2.3	3.8	1.3	0	0.0	0.0	0.0	1722.7	68.4	1.0
MAY	60	3.7	4.7	1.6	5	0.3	0.0	0.0	1723.2	70.2	1.8
JUN	49	2.9	5.9	2.0	59	3.5	0.0	0.0	1722.5	67.6	-2.6
JUL	47	2.9	6.7	2.1	166	10.2	0.0	0.0	1720.1	58.2	-9.4
AUG	33	2.0	5.9	1.8	120	7.4	0.0	0.0	1718.0	51.0	-7.2
SEP	17	1.0	4.5	1.3	7	0.4	0.0	0.0	1717.8	50.3	-0.7
OCT	10	0.6	3.0	0.9	0	0.0	0.0	0.0	1717.8	50.0	-0.3
NOV	15	0.9	1.9	0.6	0	0.0	0.0	0.0	1717.8	50.3	0.3
DEC	11	0.7	1.0	0.3	0	0.0	0.0	0.0	1718.0	50.7	0.4
TOTAL		21.1	40.9	13.1		21.8	0.0	0.0			-13.8
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	37	2.3	0.7	0.2	0	0.0	0.0	0.0	1722.3	66.6	2.1
FEB	61	3.4	0.9	0.3	0	0.0	0.0	0.0	1723.0	69.7	3.1
MAR	98	6.0	1.5	0.5	0	0.0	0.0	0.0	1724.3	75.2	5.5
APR	109	6.5	3.5	1.3	0	0.0	0.0	0.0	1725.5	80.4	5.2
MAY	171	10.5	4.3	1.6	3	0.2	0.0	0.0	1727.4	89.1	8.7
JUN	141	8.4	5.3	2.1	47	2.8	0.0	0.0	1728.1	92.6	3.5
JUL	133	8.2	6.0	2.4	135	8.3	0.0	0.0	1727.6	90.1	-2.5
AUG	93	5.7	5.3	2.1	96	5.9	0.0	0.0	1727.1	87.8	-2.3
SEP	49	2.9	4.0	1.6	5	0.3	0.0	0.0	1727.3	88.8	1.0
OCT	31	1.9	2.7	1.1	0	0.0	0.0	0.0	1727.5	89.6	0.8
NOV	42	2.5	1.7	0.7	0	0.0	0.0	0.0	1727.9	91.4	1.8
DEC	33	2.0	0.9	0.4	0	0.0	0.0	0.0	1728.2	93.0	1.6
TOTAL		60.3	36.8	14.3		17.5	0.0	0.0			28.5

WEBSTER RESERVOIR OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	5	0.3	0.9	0.2	0	0.0	0.0	0.0	1886.7	56.4	0.1
FEB	7	0.4	1.1	0.3	0	0.0	0.0	0.0	1886.7	56.5	0.1
MAR	10	0.6	2.0	0.5	0	0.0	0.0	0.0	1886.8	56.6	0.1
APR	15	0.9	4.4	1.2	0	0.0	0.0	0.0	1886.7	56.3	-0.3
MAY	23	1.4	5.7	1.5	10	0.6	0.0	0.0	1886.5	55.6	-0.7
JUN	15	0.9	7.2	1.8	61	3.6	0.0	0.0	1885.0	51.1	-4.5
JUL	15	0.9	7.9	1.8	168	10.3	0.0	0.0	1880.9	39.9	-11.2
AUG	8	0.5	7.2	1.4	128	7.9	0.0	0.0	1877.2	31.1	-8.8
SEP	5	0.3	5.4	1.0	7	0.4	0.0	0.0	1876.7	30.0	-1.1
OCT	3	0.2	3.6	0.6	0	0.0	0.0	0.0	1876.5	29.6	-0.4
NOV	3	0.2	2.2	0.4	0	0.0	0.0	0.0	1876.4	29.4	-0.2
DEC	3	0.2	1.2	0.2	0	0.0	0.0	0.0	1876.4	29.4	0.0
TOTAL		6.8	48.7	10.9		22.8	0.0	0.0			-26.9
MOST PROBABLE INFLOW CONDITIONS											
JAN	11	0.7	0.8	0.2	0	0.0	0.0	0.0	1886.8	56.8	0.5
FEB	16	0.9	1.0	0.3	0	0.0	0.0	0.0	1887.0	57.4	0.6
MAR	26	1.6	1.7	0.5	0	0.0	0.0	0.0	1887.4	58.5	1.1
APR	37	2.2	4.0	1.1	0	0.0	0.0	0.0	1887.7	59.6	1.1
MAY	55	3.4	5.1	1.4	8	0.5	0.0	0.0	1888.2	61.1	1.5
JUN	39	2.3	6.4	1.7	45	2.7	0.0	0.0	1887.5	59.0	-2.1
JUL	37	2.3	7.1	1.8	125	7.7	0.0	0.0	1885.2	51.8	-7.2
AUG	21	1.3	6.4	1.5	96	5.9	0.0	0.0	1883.1	45.7	-6.1
SEP	13	0.8	4.8	1.1	3	0.2	0.0	0.0	1882.9	45.2	-0.5
OCT	7	0.4	3.2	0.7	0	0.0	0.0	0.0	1882.8	44.9	-0.3
NOV	10	0.6	2.0	0.4	0	0.0	0.0	0.0	1882.9	45.1	0.2
DEC	10	0.6	1.1	0.2	0	0.0	0.0	0.0	1883.0	45.5	0.4
TOTAL		17.1	43.6	10.9		17.0	0.0	0.0			-10.8
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	39	2.4	0.8	0.2	0	0.0	0.0	0.0	1887.4	58.5	2.2
FEB	59	3.3	0.9	0.2	0	0.0	0.0	0.0	1888.3	61.6	3.1
MAR	91	5.6	1.6	0.4	0	0.0	0.0	0.0	1889.9	66.8	5.2
APR	133	7.9	3.6	1.1	0	0.0	0.0	0.0	1891.8	73.6	6.8
MAY	198	12.2	4.6	1.5	5	0.3	0.0	0.0	1894.5	84.0	10.4
JUN	143	8.5	5.8	1.9	20	1.2	4.1	0.0	1894.8	85.3	1.3
JUL	133	8.2	6.5	2.1	65	4.0	11.2	0.0	1892.4	76.2	-9.1
AUG	78	4.8	5.8	1.8	55	3.4	0.0	0.0	1892.3	75.8	-0.4
SEP	47	2.8	4.4	1.4	0	0.0	1.0	0.0	1892.4	76.2	0.4
OCT	26	1.6	2.9	0.9	0	0.0	0.7	0.0	1892.4	76.2	0.0
NOV	35	2.1	1.8	0.6	0	0.0	1.5	0.0	1892.4	76.2	0.0
DEC	33	2.0	1.0	0.3	0	0.0	1.7	0.0	1892.4	76.2	0.0
TOTAL		61.4	39.6	12.4		8.9	20.2	0.0			19.9

WACONDA LAKE OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	39	2.4	0.8	0.8	10	0.6	12.1	0.0	1453.6	217.1	-11.1
FEB	58	3.2	1.0	1.0	9	0.5	1.7	0.0	1453.6	217.1	0.0
MAR	109	6.7	1.9	1.8	3	0.2	0.0	0.0	1454.0	221.8	4.7
APR	114	6.8	4.8	4.8	3	0.2	0.0	0.0	1454.1	223.6	1.8
MAY	132	8.1	5.9	5.9	7	0.4	0.0	0.0	1454.3	225.4	1.8
JUN	109	6.5	7.5	7.5	42	2.5	0.0	0.0	1454.0	221.9	-3.5
JUL	182	11.2	8.9	8.7	158	9.7	0.0	0.0	1453.4	214.7	-7.2
AUG	67	4.1	7.6	7.2	124	7.6	0.0	0.0	1452.4	204.0	-10.7
SEP	50	3.0	6.0	5.6	24	1.4	0.0	0.0	1452.1	200.0	-4.0
OCT	39	2.4	3.9	3.6	5	0.3	0.0	0.0	1452.0	198.5	-1.5
NOV	45	2.7	2.1	1.9	7	0.4	0.0	0.0	1452.0	198.9	0.4
DEC	36	2.2	1.0	0.9	10	0.6	0.0	0.0	1452.1	199.6	0.7
TOTAL		59.3	51.5	49.7		24.4	13.8	0.0			-28.6
MOST PROBABLE INFLOW CONDITIONS											
JAN	89	5.5	0.7	0.7	5	0.3	15.6	0.0	1453.6	217.1	-11.1
FEB	133	7.4	0.9	0.9	5	0.3	6.2	0.0	1453.6	217.1	0.0
MAR	252	15.5	1.7	1.6	2	0.1	0.0	0.0	1454.7	230.9	13.8
APR	262	15.6	4.3	4.5	2	0.1	0.4	0.0	1455.6	241.5	10.6
MAY	304	18.7	5.2	5.5	3	0.2	13.0	0.0	1455.6	241.5	0.0
JUN	254	15.1	6.7	7.0	32	1.9	6.2	0.0	1455.6	241.5	0.0
JUL	420	25.8	7.9	8.3	114	7.0	10.5	0.0	1455.6	241.5	0.0
AUG	155	9.5	6.7	7.0	89	5.5	0.0	0.0	1455.4	238.5	-3.0
SEP	118	7.0	5.4	5.6	17	1.0	0.0	0.0	1455.4	238.9	0.4
OCT	91	5.6	3.5	3.6	2	0.1	0.0	0.0	1455.5	240.8	1.9
NOV	104	6.2	1.9	1.9	3	0.2	27.8	0.0	1453.6	217.1	-23.7
DEC	83	5.1	0.9	0.9	5	0.3	3.9	0.0	1453.6	217.1	0.0
TOTAL		137.0	45.7	47.5		17.0	83.6	0.0			-11.1
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	293	18.0	0.7	0.6	2	0.1	28.4	0.0	1453.6	217.1	-11.1
FEB	436	24.2	0.8	0.8	2	0.1	23.3	0.0	1453.6	217.1	0.0
MAR	823	50.6	1.5	1.5	2	0.1	24.6	0.0	1455.6	241.5	24.4
APR	857	51.0	3.9	4.0	2	0.1	46.9	0.0	1455.6	241.5	0.0
MAY	990	60.9	4.7	4.9	3	0.2	55.8	0.0	1455.6	241.5	0.0
JUN	829	49.3	6.0	6.3	20	1.2	41.8	0.0	1455.6	241.5	0.0
JUL	1368	84.1	7.1	7.4	72	4.4	72.3	0.0	1455.6	241.5	0.0
AUG	503	30.9	6.0	6.3	57	3.5	21.1	0.0	1455.6	241.5	0.0
SEP	385	22.9	4.8	5.0	10	0.6	17.3	0.0	1455.6	241.5	0.0
OCT	299	18.4	3.1	3.3	2	0.1	15.0	0.0	1455.6	241.5	0.0
NOV	339	20.2	1.7	1.7	2	0.1	42.8	0.0	1453.6	217.1	-24.4
DEC	270	16.6	0.8	0.8	2	0.1	15.7	0.0	1453.6	217.1	0.0
TOTAL		447.1	40.9	42.6		10.6	405.0	0.0			-11.1

CEDAR BLUFF RESERVOIR OPERATION ESTIMATES - 2002

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	2	0.1	1.1	0.6	0	0.0	0.0	0.0	2143.6	169.4	-0.5
FEB	2	0.1	1.3	0.7	0	0.0	0.0	0.0	2143.5	168.8	-0.6
MAR	3	0.2	2.1	1.2	0	0.0	0.0	0.0	2143.3	167.8	-1.0
APR	5	0.3	5.4	3.0	0	0.0	0.0	0.0	2142.9	165.1	-2.7
MAY	7	0.4	6.4	3.5	5	0.3	0.0	0.0	2142.4	161.7	-3.4
JUN	8	0.5	7.9	4.3	5	0.3	0.0	0.0	2141.8	157.6	-4.1
JUL	10	0.6	9.6	5.1	13	0.8	0.0	0.0	2141.0	152.3	-5.3
AUG	7	0.4	8.2	4.3	11	0.7	0.0	0.0	2140.2	147.7	-4.6
SEP	3	0.2	7.0	3.6	5	0.3	0.0	0.0	2139.6	144.0	-3.7
OCT	2	0.1	4.9	2.5	2	0.1	0.0	0.0	2139.2	141.5	-2.5
NOV	2	0.1	2.3	1.1	2	0.1	0.0	0.0	2139.0	140.4	-1.1
DEC	2	0.1	1.3	0.6	2	0.1	0.0	0.0	2138.9	139.8	-0.6
TOTAL		3.1	57.3	30.5		2.7	0.0	0.0			-30.1
MOST PROBABLE INFLOW CONDITIONS											
JAN	7	0.4	1.0	0.6	0	0.0	0.0	0.0	2143.6	169.7	-0.2
FEB	7	0.4	1.1	0.6	0	0.0	0.0	0.0	2143.6	169.5	-0.2
MAR	15	0.9	1.9	1.1	0	0.0	0.0	0.0	2143.5	169.3	-0.2
APR	24	1.4	4.9	2.8	0	0.0	0.0	0.0	2143.3	167.9	-1.4
MAY	33	2.0	5.7	3.2	3	0.2	0.0	0.0	2143.1	166.5	-1.4
JUN	35	2.1	7.1	4.0	3	0.2	0.0	0.0	2142.8	164.4	-2.1
JUL	46	2.8	8.6	4.8	11	0.7	0.0	0.0	2142.4	161.7	-2.7
AUG	31	1.9	7.4	4.0	7	0.4	0.0	0.0	2142.0	159.2	-2.5
SEP	13	0.8	6.3	3.4	3	0.2	0.0	0.0	2141.6	156.4	-2.8
OCT	5	0.3	4.4	2.4	2	0.1	0.0	0.0	2141.2	154.2	-2.2
NOV	7	0.4	2.1	1.1	2	0.1	0.0	0.0	2141.1	153.4	-0.8
DEC	5	0.3	1.1	0.6	2	0.1	0.0	0.0	2141.1	153.0	-0.4
TOTAL		13.7	51.7	28.6		2.0	0.0	0.0			-16.9
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	24	1.5	0.9	0.5	0	0.0	0.0	0.0	2143.8	170.9	1.0
FEB	32	1.8	1.0	0.6	0	0.0	0.0	0.0	2143.9	172.1	1.2
MAR	55	3.4	1.7	1.0	0	0.0	2.0	0.0	2144.0	172.5	0.4
APR	92	5.5	4.4	2.5	0	0.0	3.0	0.0	2144.0	172.5	0.0
MAY	133	8.2	5.1	2.9	3	0.2	5.1	0.0	2144.0	172.5	0.0
JUN	143	8.5	6.4	3.6	3	0.2	4.7	0.0	2144.0	172.5	0.0
JUL	184	11.3	7.7	4.4	3	0.2	6.7	0.0	2144.0	172.5	0.0
AUG	128	7.9	6.6	3.8	0	0.0	4.1	0.0	2144.0	172.5	0.0
SEP	52	3.1	5.6	3.2	2	0.1	0.0	0.0	2144.0	172.3	-0.2
OCT	21	1.3	4.0	2.3	2	0.1	0.0	0.0	2143.8	171.2	-1.1
NOV	29	1.7	1.8	1.0	2	0.1	0.0	0.0	2143.9	171.8	0.6
DEC	20	1.2	1.0	0.6	2	0.1	0.0	0.0	2144.0	172.3	0.5
TOTAL		55.4	46.1	26.4		1.0	25.6	0.0			2.4

TABLE 5

FLOOD DAMAGES PREVENTED BY NEBRASKA-KANSAS PROJECTS RESERVOIRS

RESERVOIR	DURING FY 2001	PRIOR TO 2001	ACCUMULATED TOTAL
BONNY	$4,000	$2,678,000	$2,682,000
ENDERS	$6,000	$3,259,000	$3,265,000
SWANSON	$12,000	$19,051,000	$19,063,000
HUGH BUTLER	$7,000	$2,539,000	$2,546,000
HARRY STRUNK	$455,000	$4,390,000	$4,845,000
KEITH SEBELIUS	$13,000	$3,939,000	$3,952,000
HARLAN COUNTY	$1,943,000	$148,071,000	$150,014,000
LOVEWELL	$523,000	$145,534,000	$146,057,000
KIRWIN	$28,000	$86,813,000	$86,841,000
WEBSTER	$465,000	$109,833,000	$110,298,000
WACONDA	$1,006,000	$1,212,027,000	$1,213,033,000
CEDAR BLUFF	$445,000	$128,441,000	$128,886,000
TOTAL	$4,907,000	$1,866,575,000	$1,871,482,000

Estimates of damages prevented are received from the Army Corps of Engineer's Kansas City District Office. The Accumulated Totals date from 1951 through 2001. Cumulative totals are revised by the Corps of Engineers in some cases to reflect data not previously included in the reporting and may not match previous cumulative totals.

Construction Cost of storage dams was $208,954,130.
The reservoirs upstream of Harlan County Lake did not receive benefits for damages prevented from 1972 to 1993.

TABLE 6
WATER DIVERTED IN 2001 AND THE
ESTIMATED DIVERSION FOR 2002
(Units - Acre-Feet)

Irrigation District and Canal	2001 Irrigation Operations From	To	10-Year Average Diversion (1991-00)	2001 Diversion	Estimated Diversion in 2002
Mirage Flats Irrigation District					
Mirage Flats Canal	7/02	9/08	13,730	12,571	13,000
Ainsworth Irrigation District					
Ainsworth Canal	5/08	9/14	66,430	75,390	72,000
Sargent Irrigation District					
Sargent Canal	6/17	9/14	21,267	24,892	24,000
Farwell Irrigation District					
Farwell Canal	6/04	9/07	68,405	85,674	80,000
Twin Loups Irrigation District					
Above Davis Creek	6/22	9/10	37,157 *	46,874	45,000
Below Davis Creek	5/15	9/10	33,705 *	44,388	42,000
Total Twin Loups Irrigation District			70,862	91,262	87,000
Frenchman Valley Irrigation District					
Culbertson Canal	4/16	7/31	9,705	6,964	6,700
H & RW Irrigation District					
Culbertson Extension Canal	5/22	8/01	11,709	7,098	6,800
Frenchman-Cambridge Irrigation District					
Meeker-Driftwood Canal	6/19	8/15	28,208	17,816	17,000
Red Willow Canal	6/20	8/15	7,016	5,355	5,000
Bartley Canal	6/18	8/15	8,194	5,872	5,500
Cambridge Canal	6/18	8/28	24,295	19,629	20,000
Total Frenchman-Cambridge Irrigation District			67,713	48,672	47,500
Almena Irrigation District					
Almena Canal	3/22	8/27	3,706	5,321	5,000
Bostwick Irrigation District in Nebraska					
Franklin Canal	6/25	9/08	27,450	28,544	33,000
Naponee Canal	6/20	9/03	2,324	2,988	3,200
Franklin Pump Canal	6/22	9/06	2,739	3,409	3,500
Superior Canal	6/22	9/02	13,406	11,303	15,000
Courtland Canal (Nebraska)	6/13	9/04	1,822	1,982	2,400
Total Bostwick Irrigation District in Nebraska			47,741	48,226	57,100
Kansas-Bostwick Irrigation District					
Courtland Canal above Lovewell	6/18	9/30	24,685	25,456	27,000
Courtland Canal below Lovewell	6/04	9/10	41,594	47,244	49,000
Total Kansas-Bostwick Irrigation District			66,279	72,700	76,000
Kirwin Irrigation District					
Kirwin Canal	6/12	8/31	16,221	22,360	25,000
Webster Irrigation District					
Osborne Canal	6/25	8/31	10,791	14,986	15,500
Glen Elder Irrigation District	6/16	9/08	4,011 *	7,262	7,000
TOTAL			478,570	523,378	522,600

* Average diversion is from 1995 through 2001 for Twin Loups and Glen Elder Irrigation Districts.

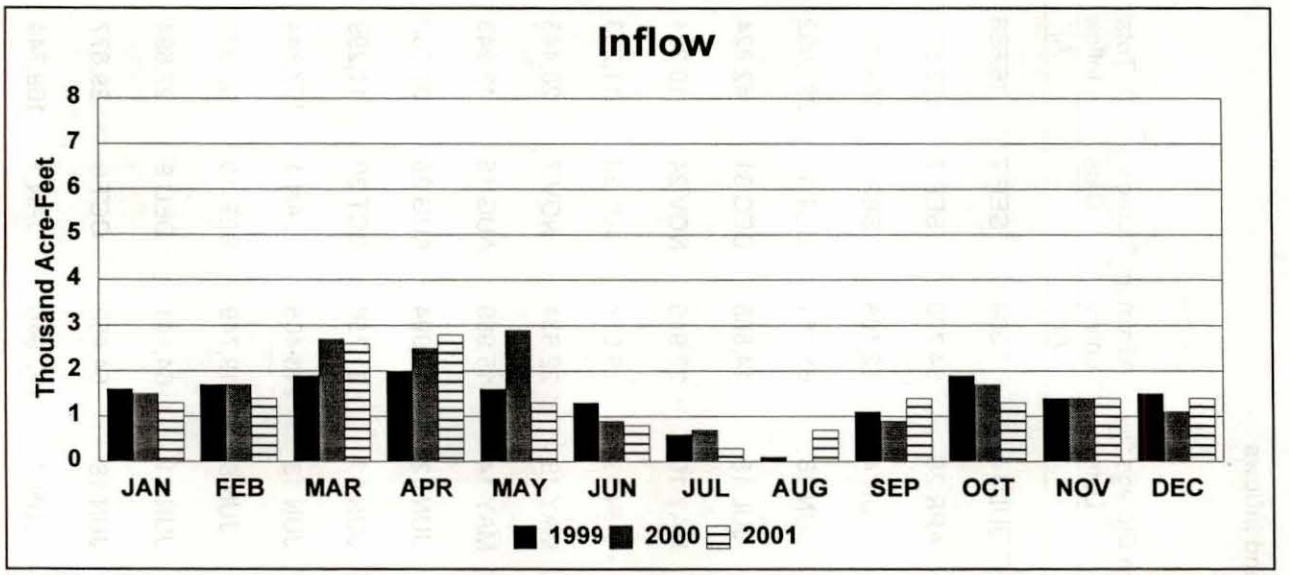
TABLE 7
NEBRASKA-KANSAS PROJECTS
Summary of Precipitation, Reservoir Storage and Inflows

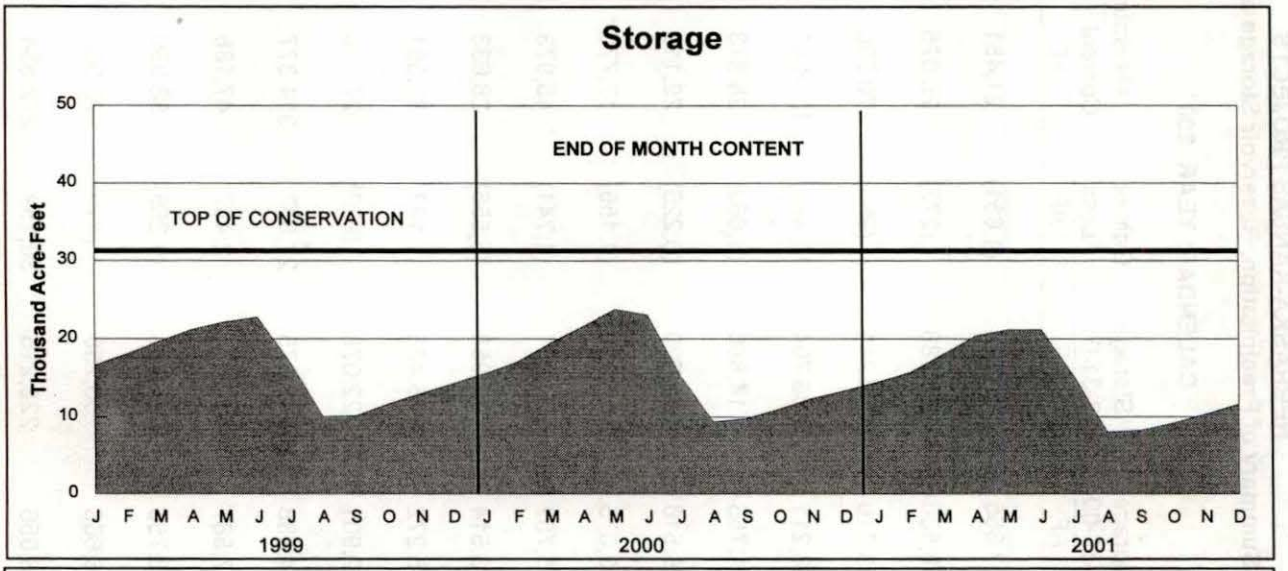
CALENDAR YEAR 2001

Reservoir	Total Precip. Inches	Percent Of Average %	Storage 12-31-00 AF	Storage 12-31-01 AF	Gain or Loss AF	Maximum Storage Content AF	Maximum Storage Date	Minimum Storage Content AF	Minimum Storage Date	Total Inflow AF	Percent Of Most Probable %
Box Butte	18.53	108	13,365	11,714	(1,651)	21,481	JUL 14	7,384	SEP 7	16,668	90
Merritt	22.57	112	68,560	68,288	(272)	75,075	APR 28	34,770	SEP 7	193,571	105
Sherman	20.93	92	53,210	52,241	(969)	70,230	JUN 4	33,105	SEP 1	108,751	110
Calamus	25.63	108	98,211	108,704	10,493	131,541	JUN 18	65,981	OCT 16	297,092	112
Davis Creek	27.04	114	21,755	14,886	(6,869)	28,373	JUL 18	14,886	DEC 31	42,824	89
Bonny	20.72	120	26,516	23,290	(3,226)	29,113	MAY 10	22,915	NOV 24	10,334	62
Enders	16.47	87	13,075	11,920	(1,155)	17,770	JUN 13	9,017	JUL 30	11,263	53
Swanson	19.57	98	25,752	24,011	(1,741)	45,973	MAY 16	22,631	NOV 7	28,443	46
Hugh Butler	20.86	106	23,514	17,958	(5,556)	28,633	MAY 14	15,989	AUG 15	13,943	76
Harry Strunk	21.74	105	25,272	25,435	163	37,661	JUN 12	16,994	AUG 28	37,783	96
Keith Sebelius	26.59	108	22,901	22,078	(823)	27,010	JUN 11	21,756	OCT 30	11,299	164
Harlan County	27.97	122	214,988	242,875	27,887	314,377	JUN 13	213,405	JAN 1	157,844	99
Lovewell	33.35	122	27,587	30,074	2,487	47,188	JUN 6	19,749	SEP 10	66,986	117
Kirwin	25.42	108	73,758	64,493	(9,265)	88,330	JUN 11	64,141	DEC 9	27,694	131
Webster	25.67	108	56,668	56,258	(410)	75,069	JUN 18	54,450	OCT 9	29,877	175
Waconda	26.52	103	198,056	228,215	30,159	272,554	JUN 7	197,948	JAN 1	169,744	124
Cedar Bluff	23.24	110	178,912	182,496	3,584	186,746	SEP 22	178,912	JAN 1	34,151	249

EXHIBIT 1A

BOX BUTTE RESERVOIR
ACTUAL OPERATION





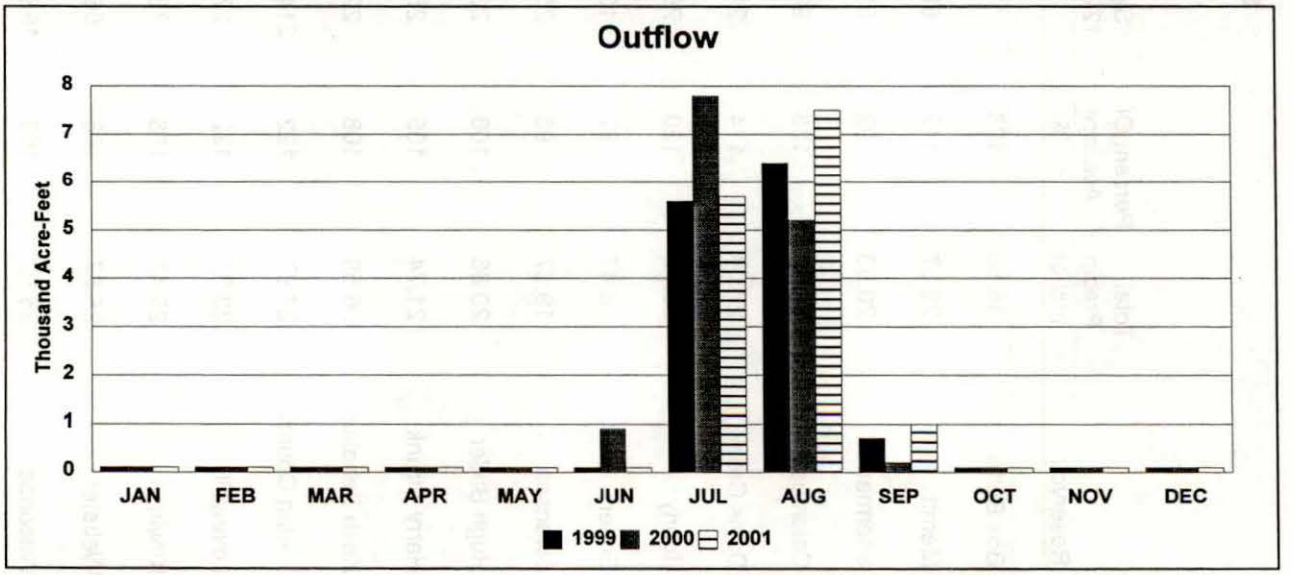
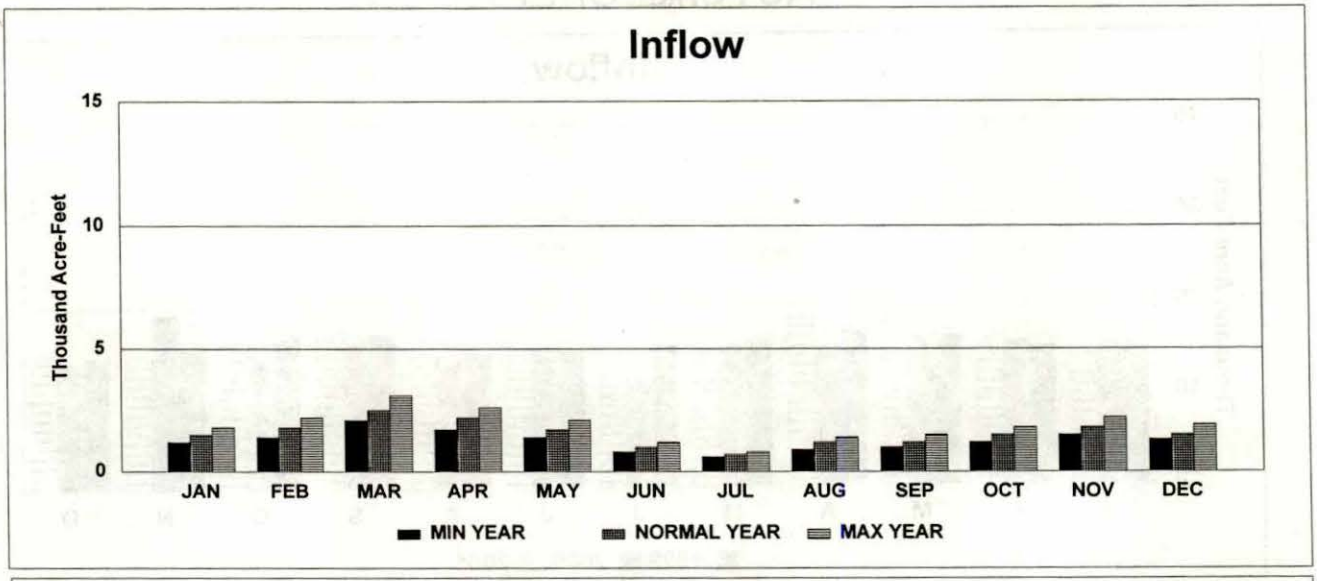
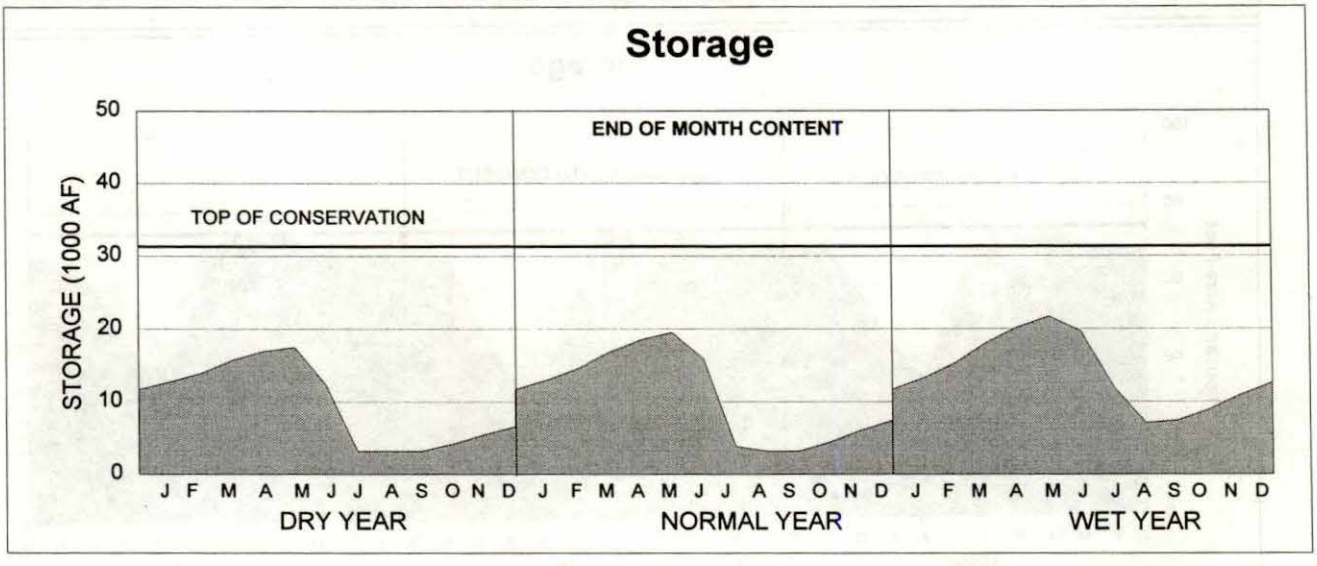


EXHIBIT 1B

BOX BUTTE RESERVOIR
2002 OPERATION PLAN





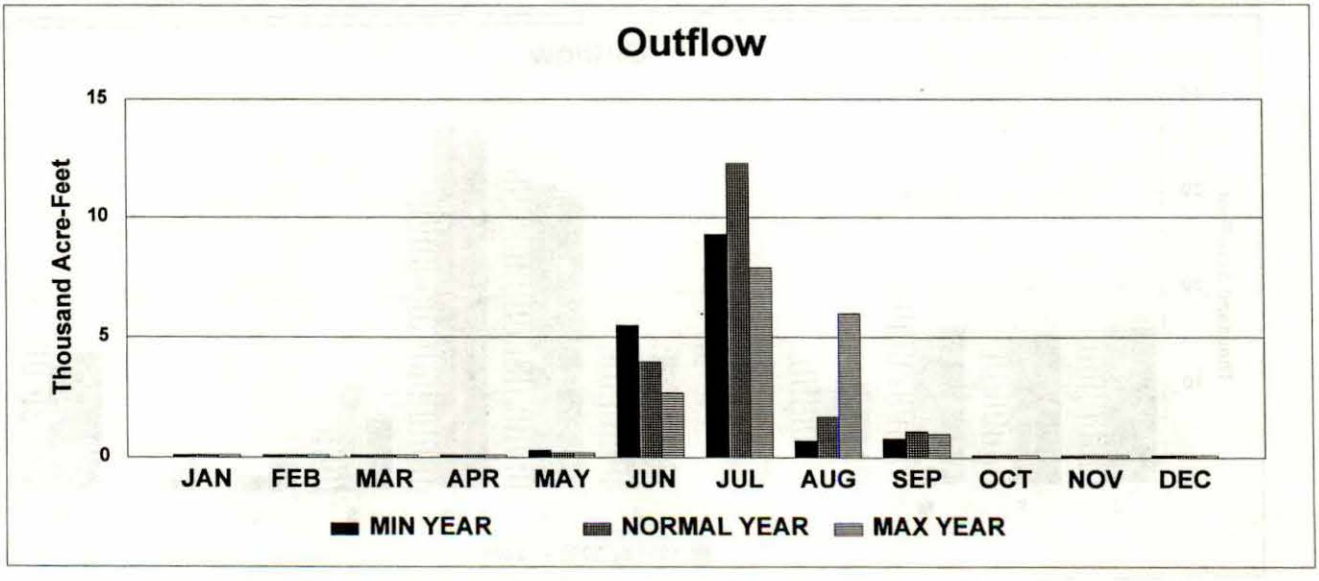
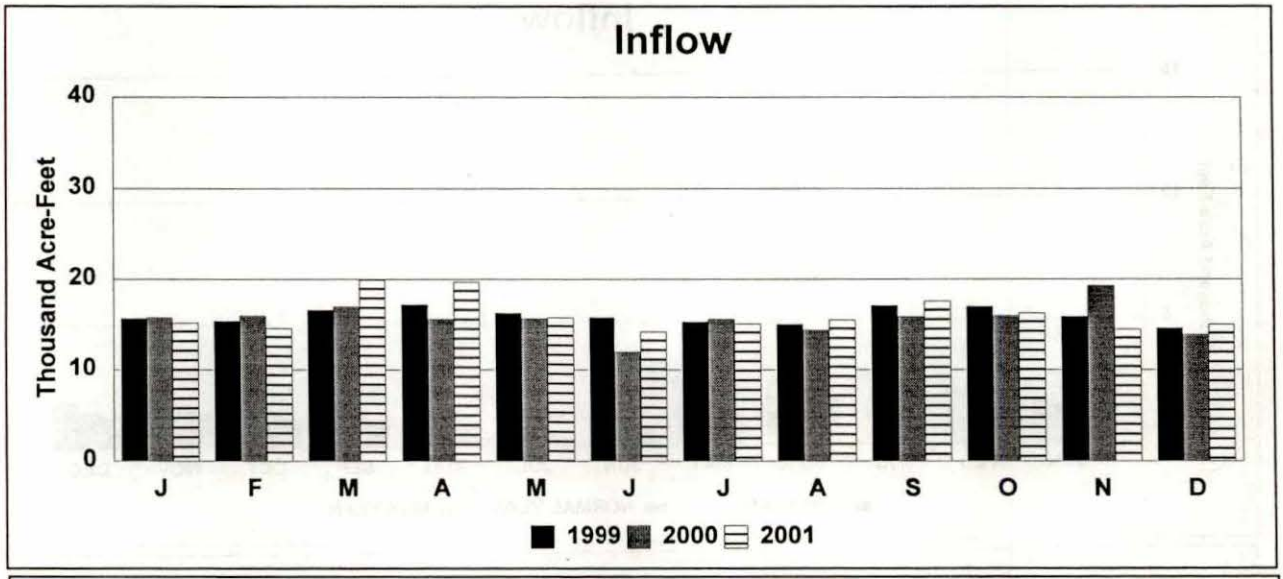
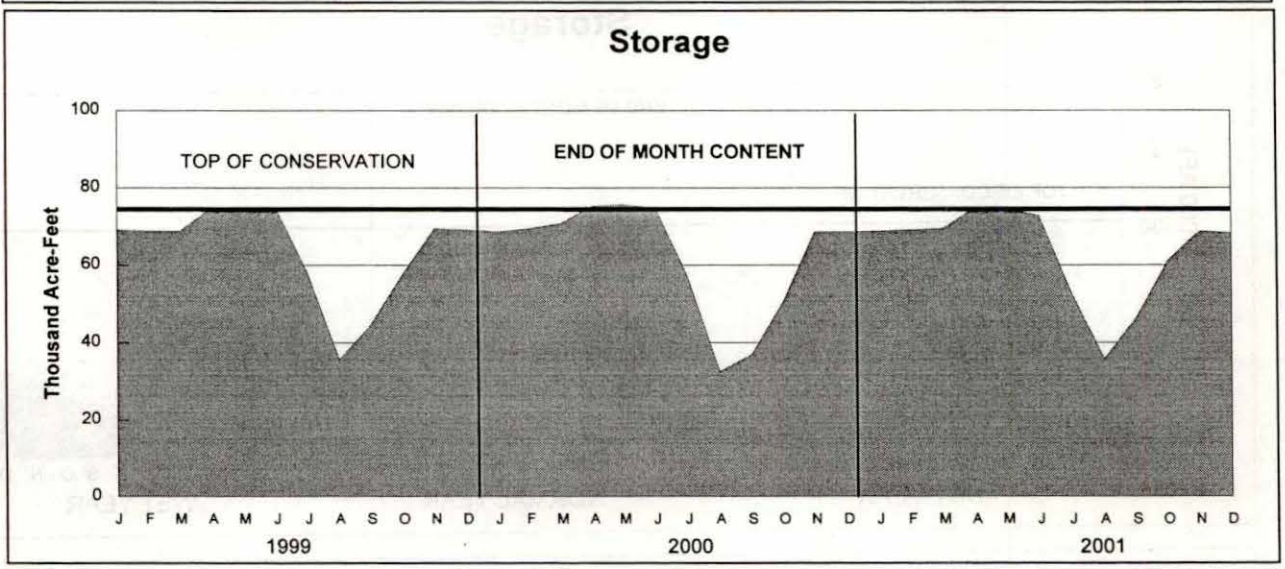


EXHIBIT 2A

MERRITT RESERVOIR
ACTUAL OPERATION





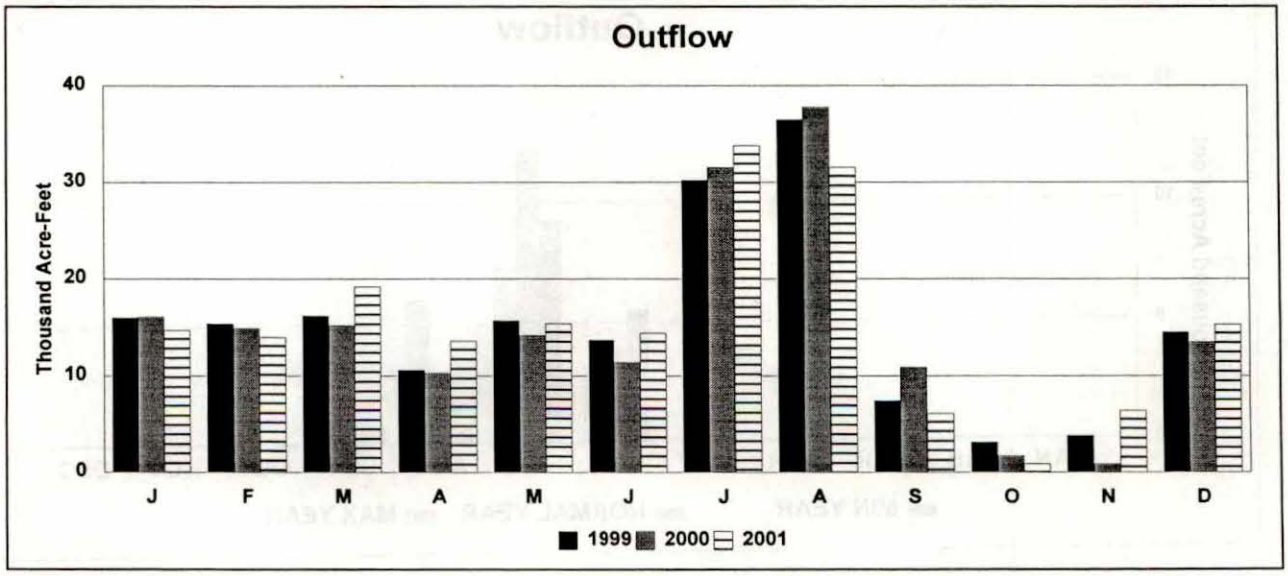
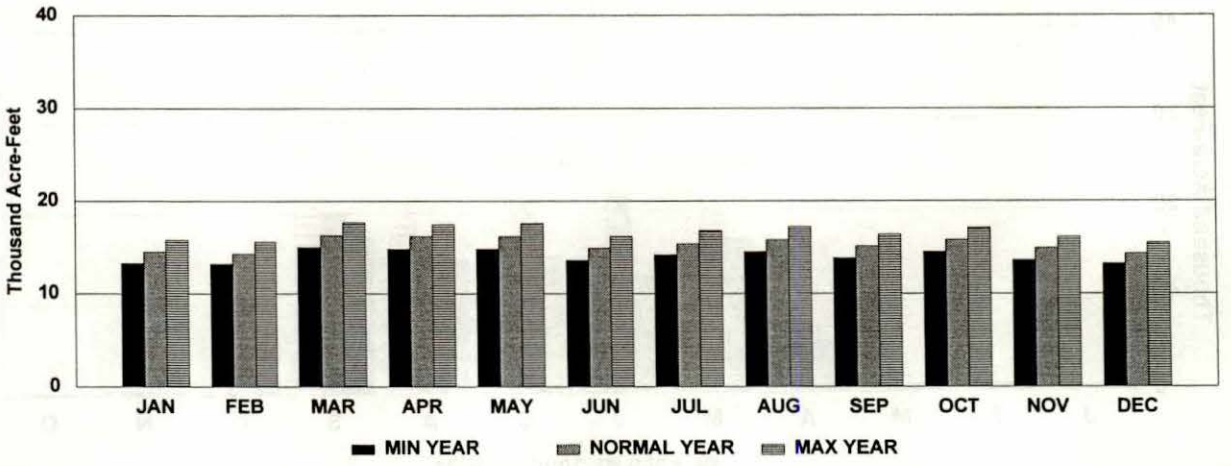


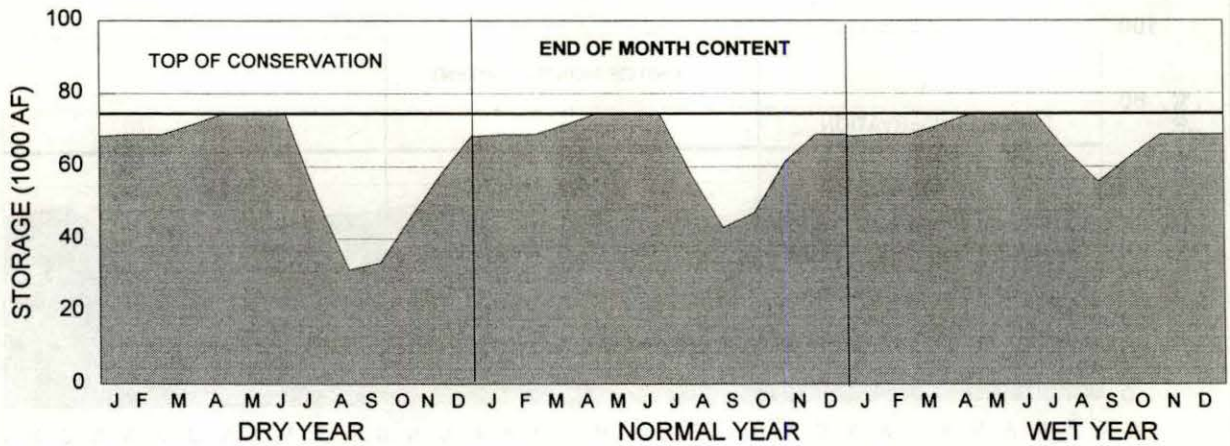
EXHIBIT 2B

MERRITT RESERVOIR
2002 OPERATION PLAN

Inflow



Storage



Outflow

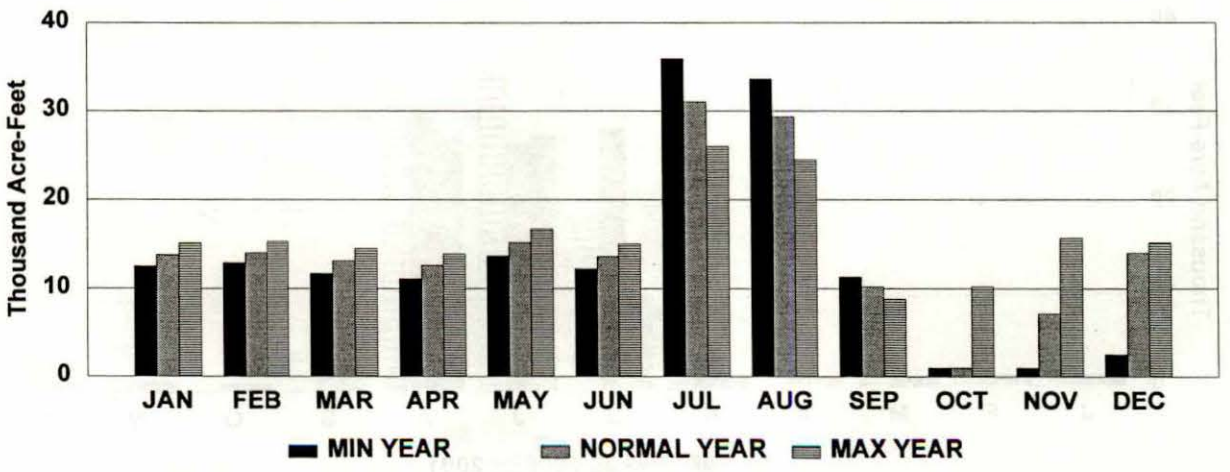
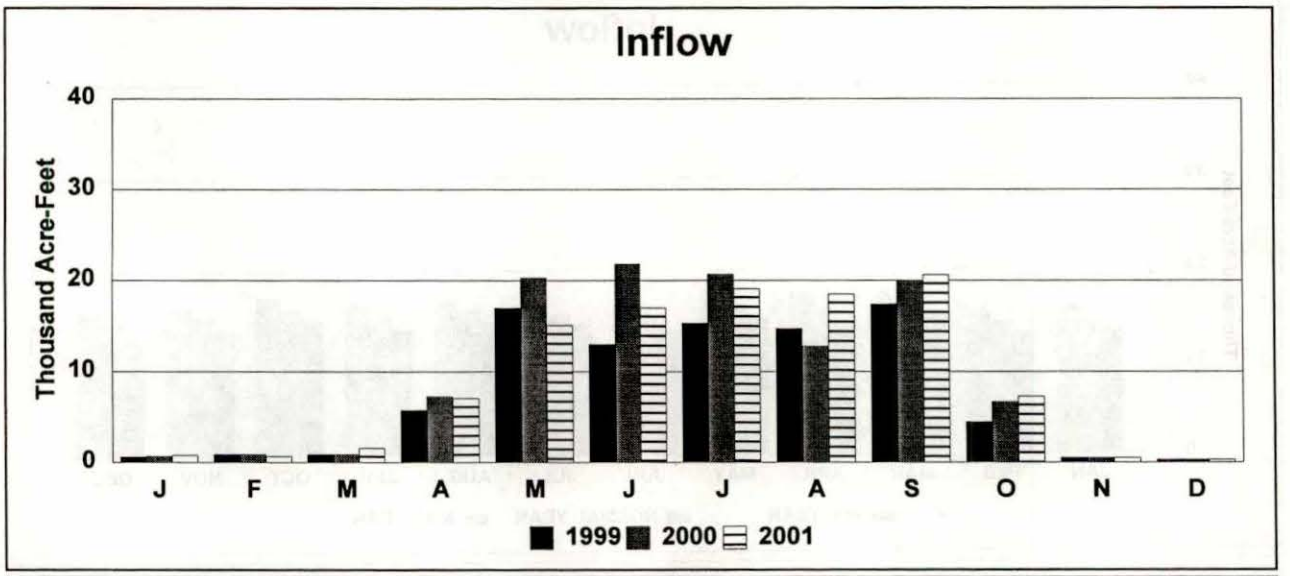
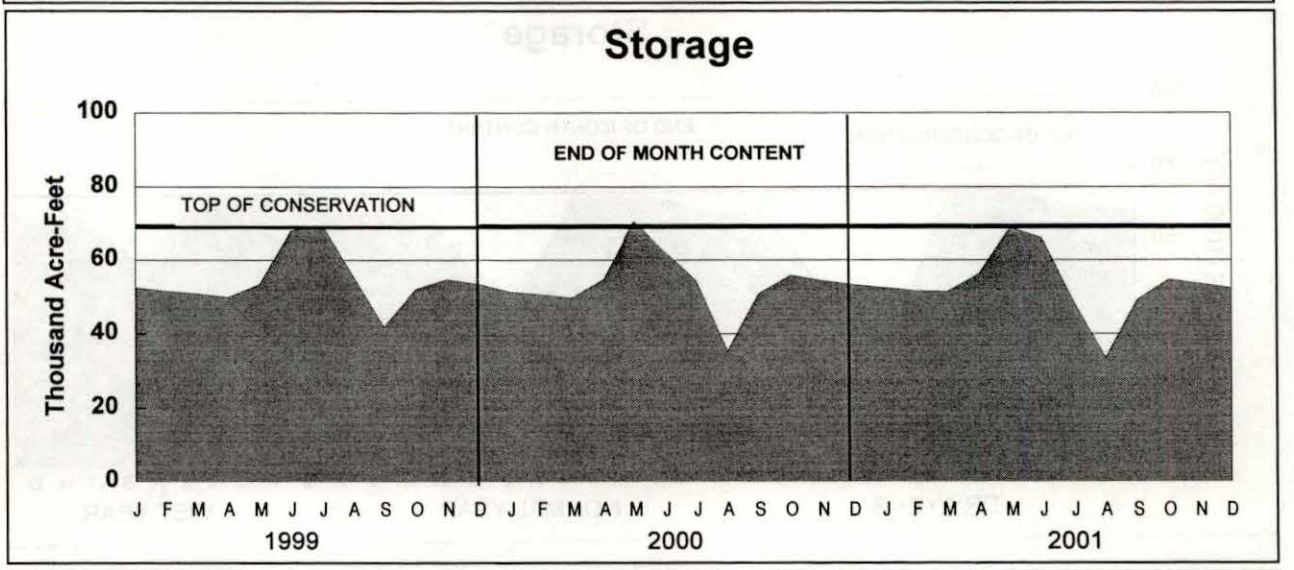


EXHIBIT 3A

SHERMAN RESERVOIR
ACTUAL OPERATION





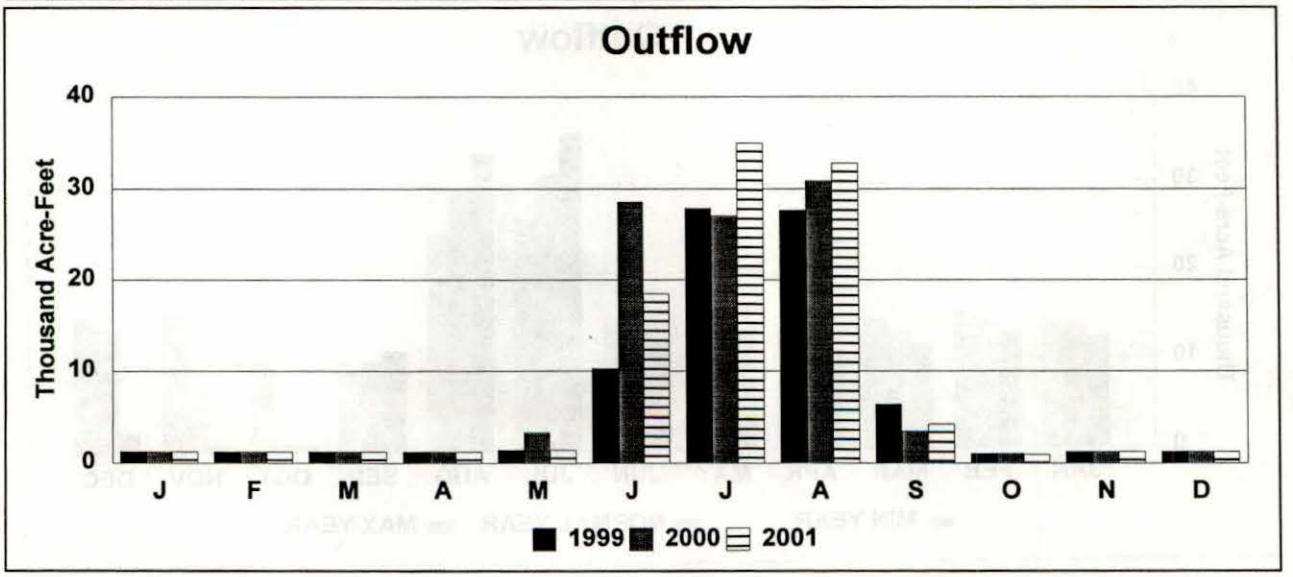
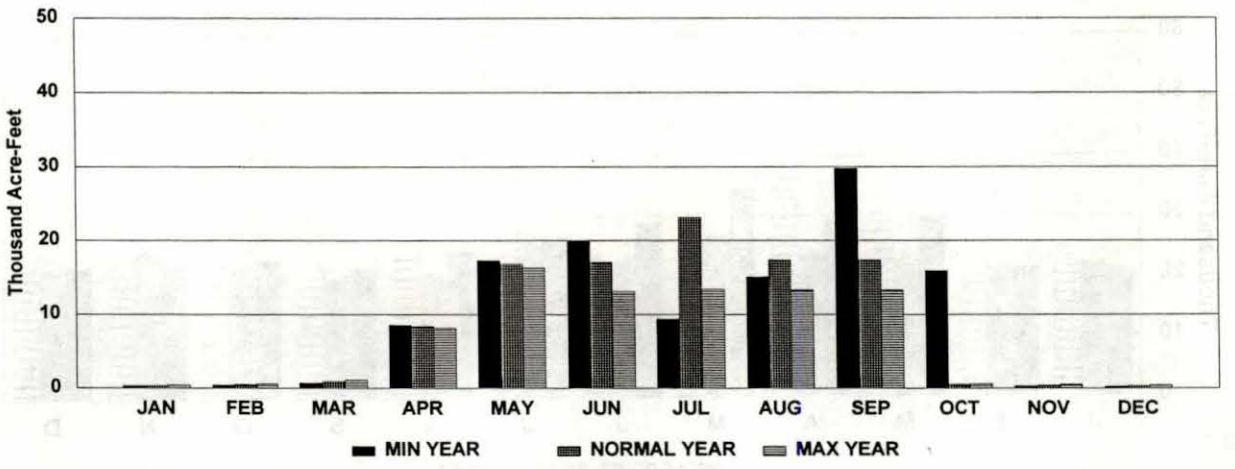


EXHIBIT 3B

SHERMAN RESERVOIR
2002 OPERATION PLAN

Inflow



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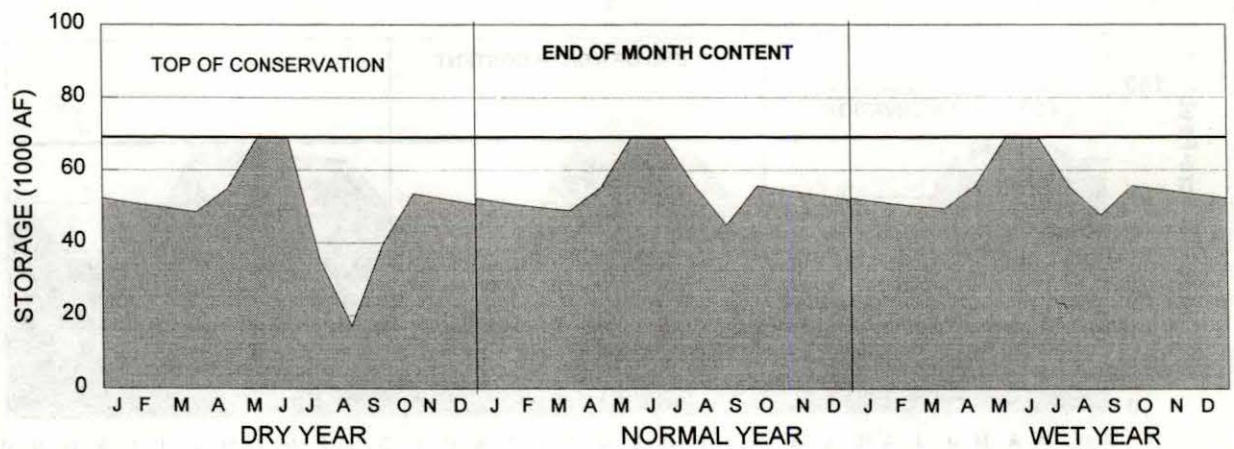


Outflow

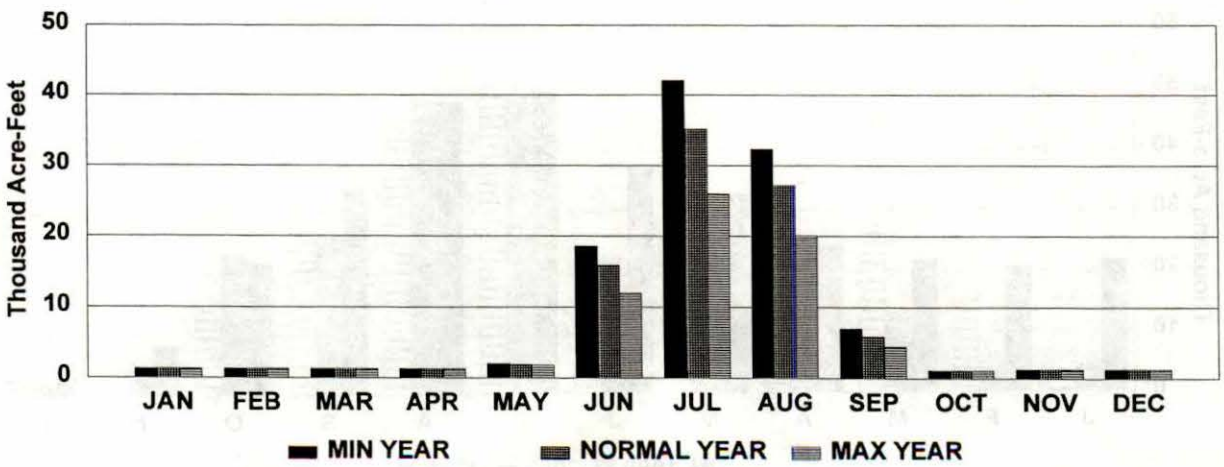
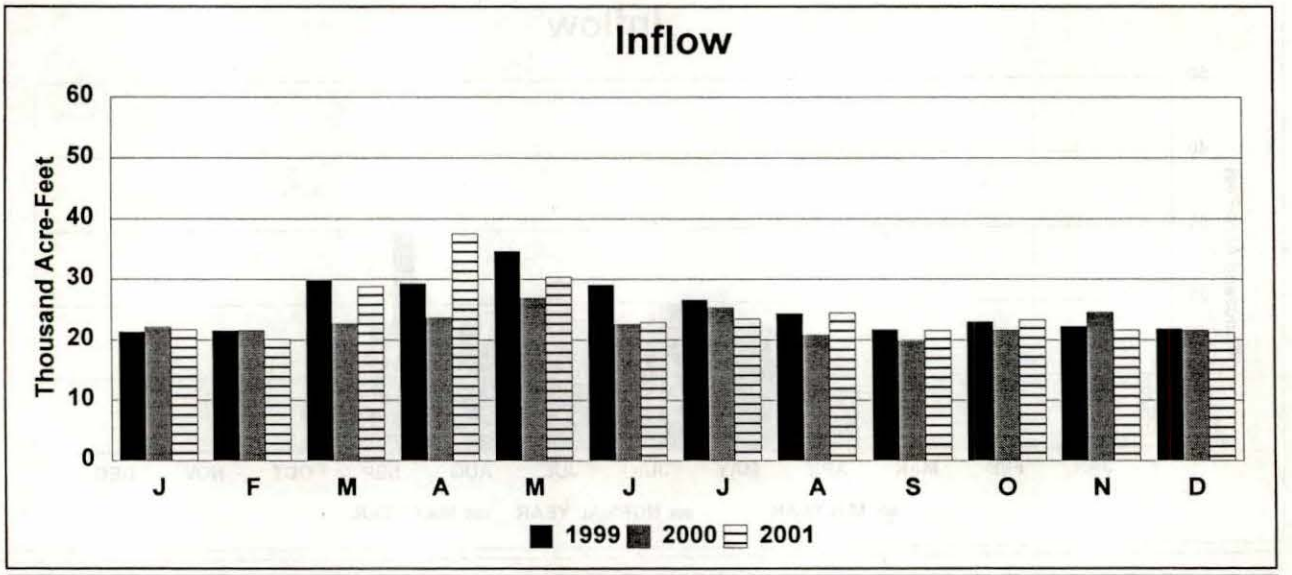
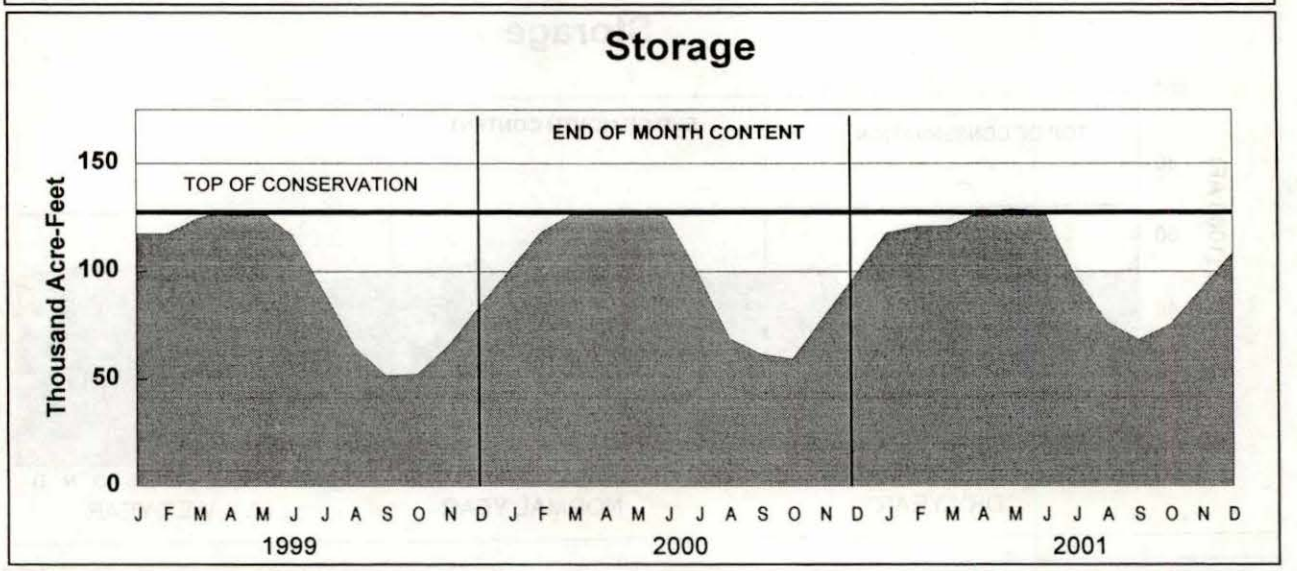


EXHIBIT 4A

CALAMUS RESERVOIR
ACTUAL OPERATION





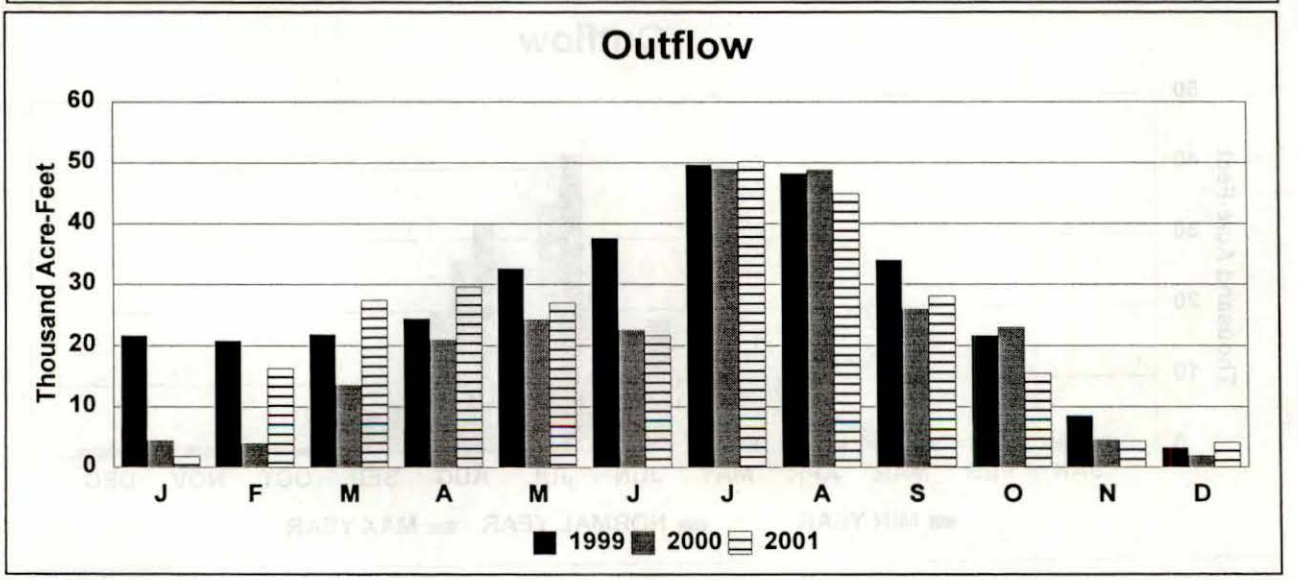
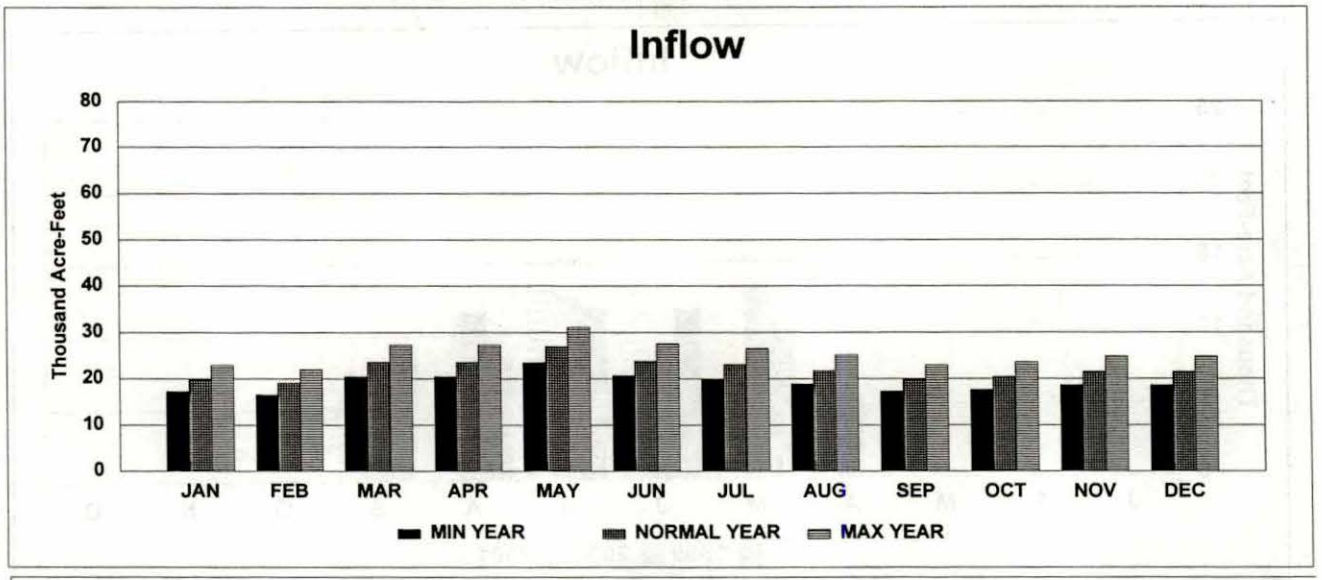
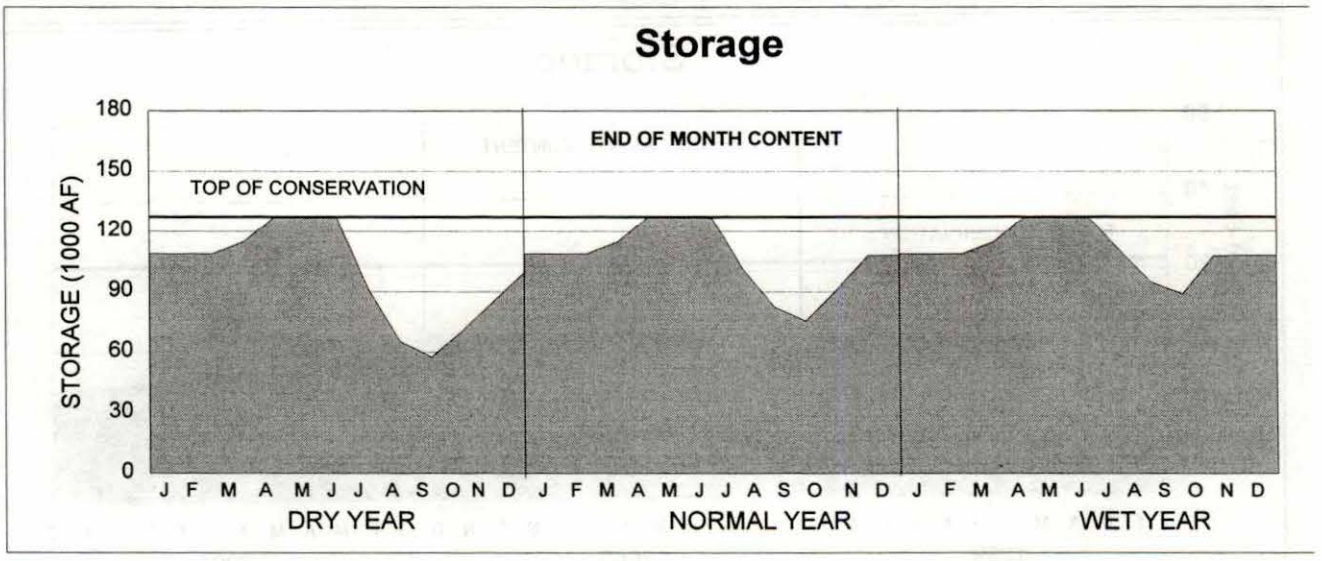


EXHIBIT 4B

CALAMUS RESERVOIR
2002 OPERATION PLAN





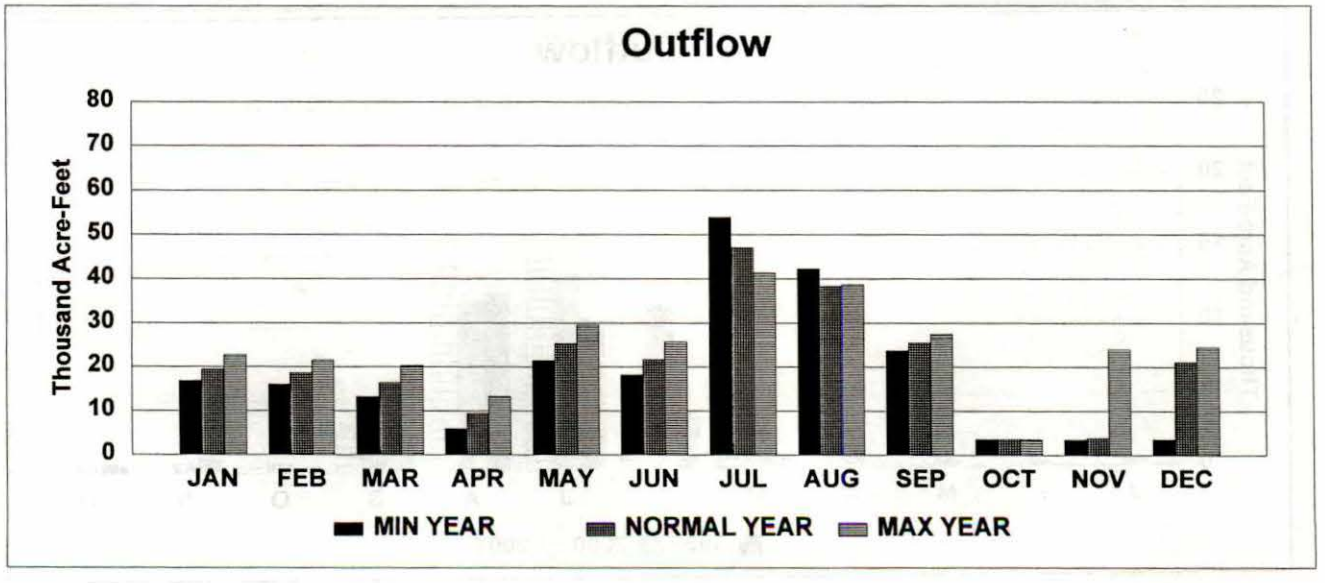
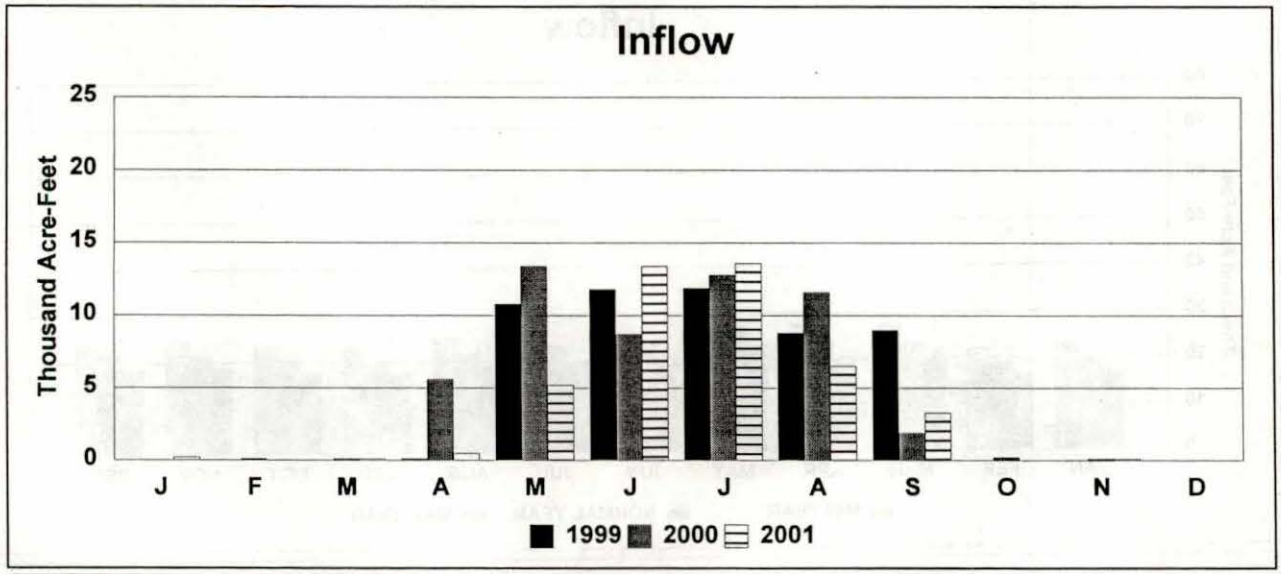
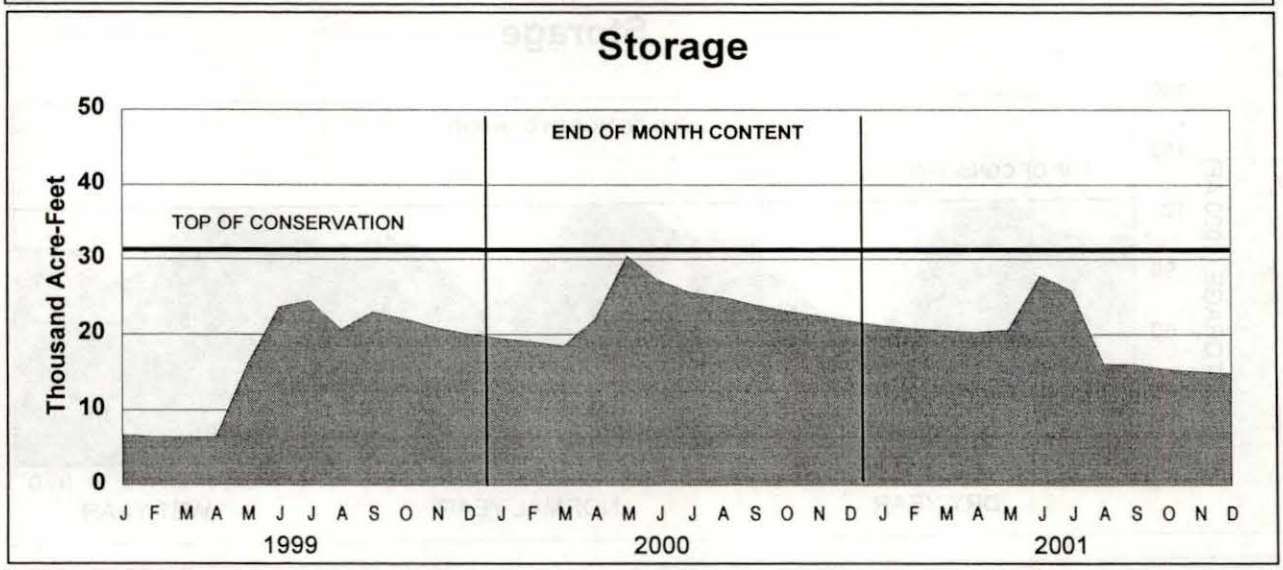


EXHIBIT 5A

DAVIS CREEK RESERVOIR
ACTUAL OPERATION





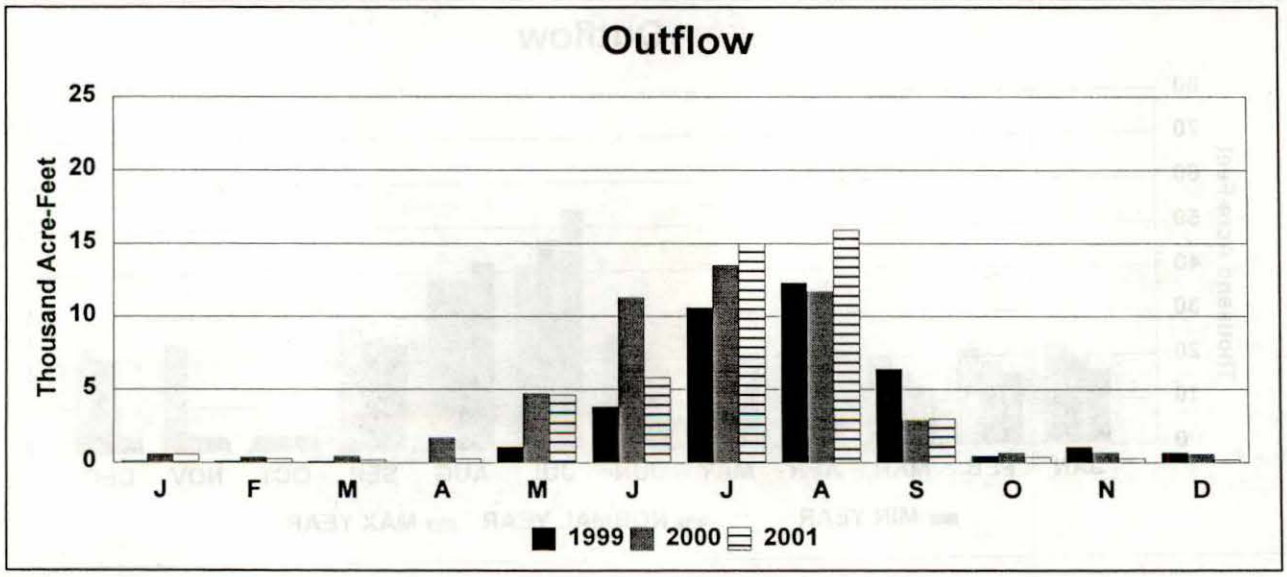
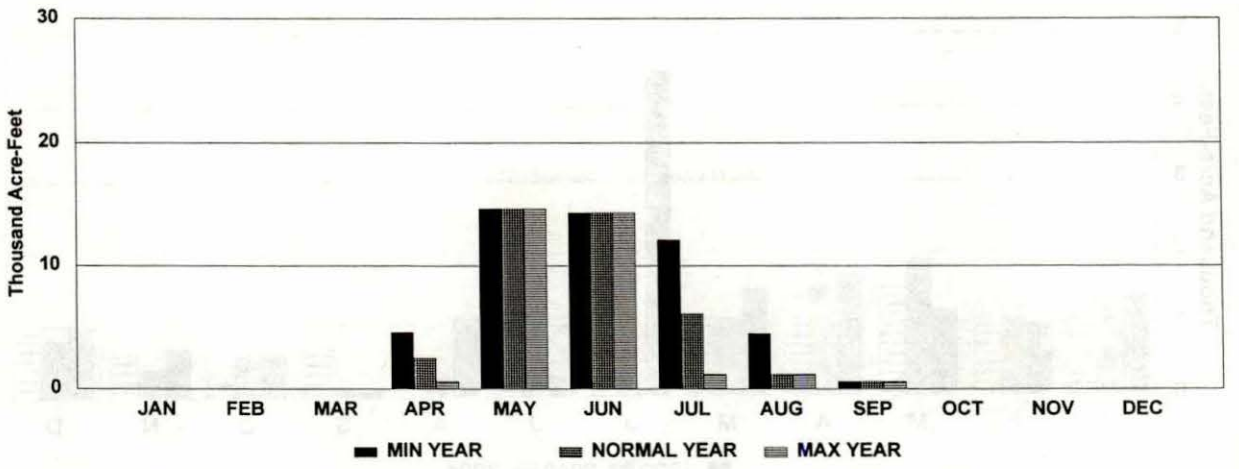


EXHIBIT 5B

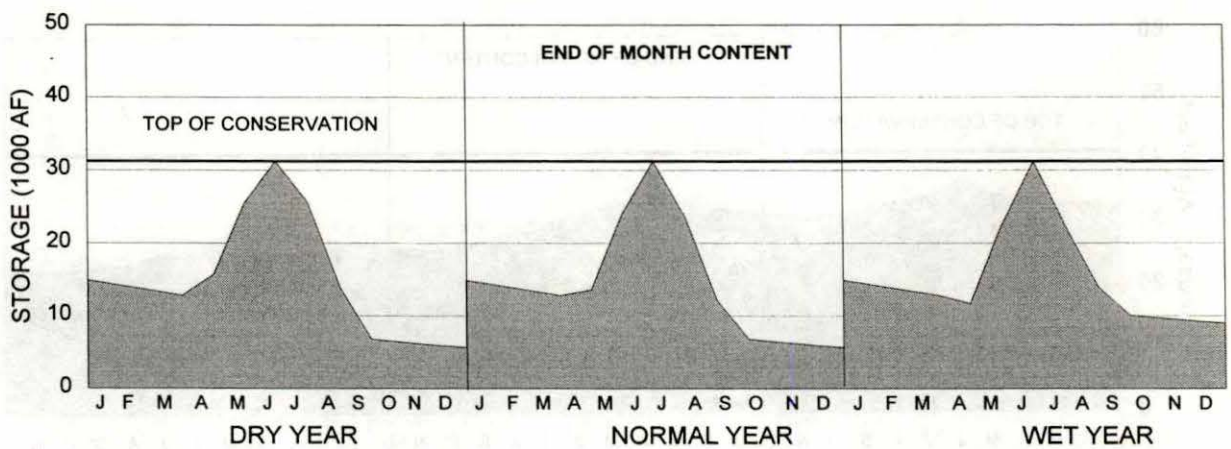
DAVIS CREEK RESERVOIR

2002 OPERATION PLAN

Inflow



Storage



Outflow

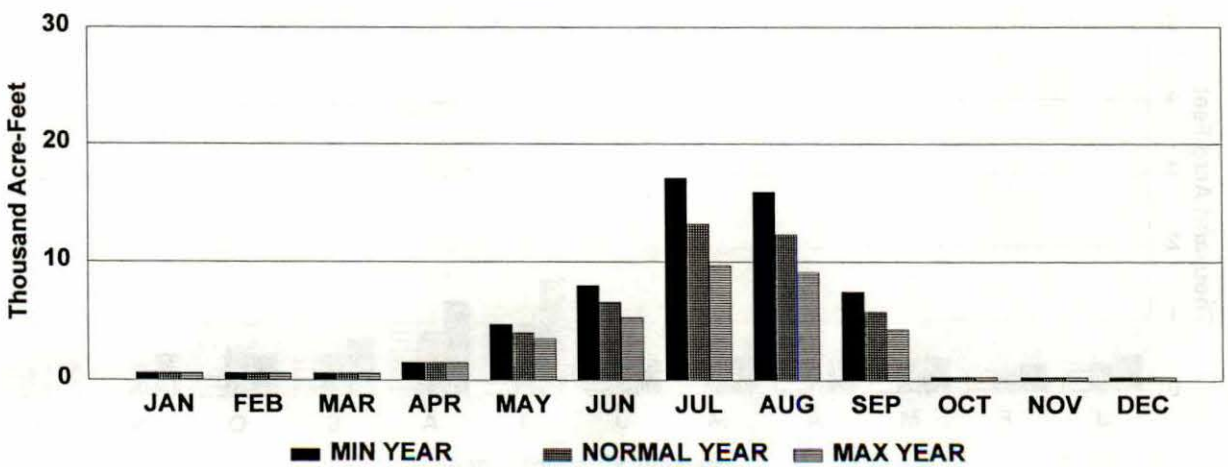
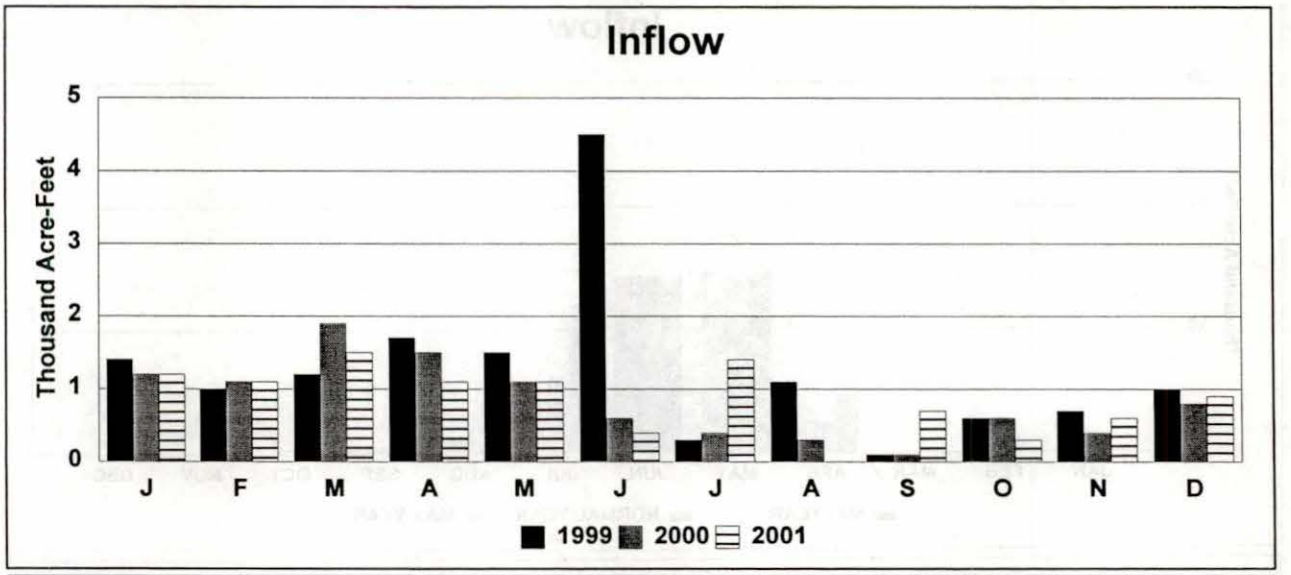
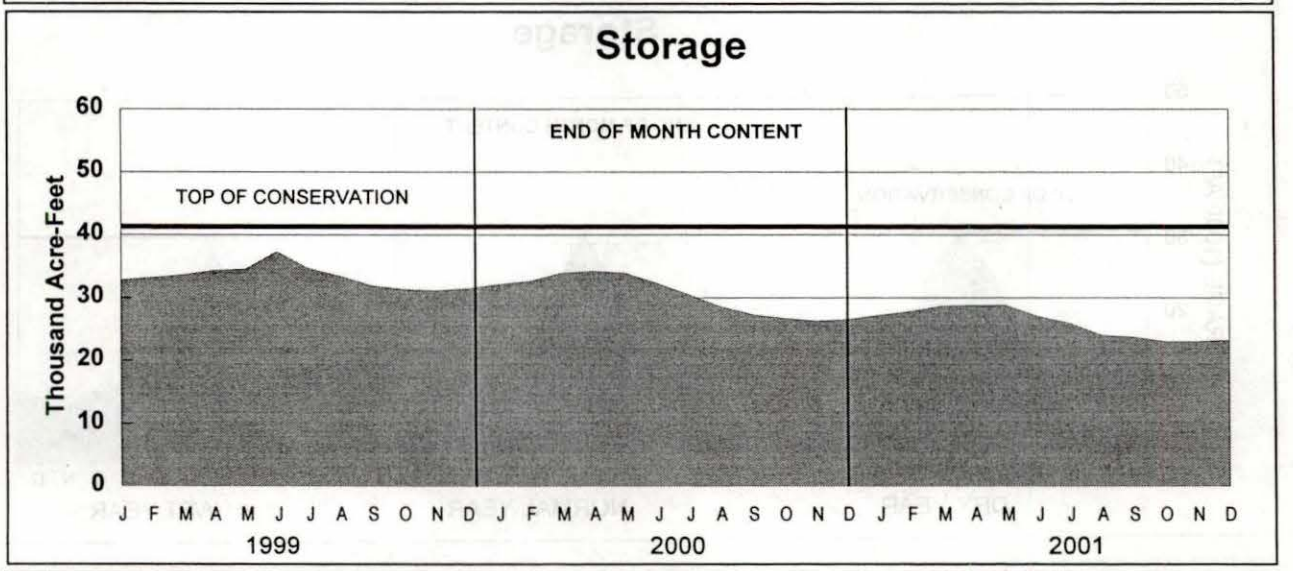


EXHIBIT 6A

BONNY RESERVOIR
ACTUAL OPERATION





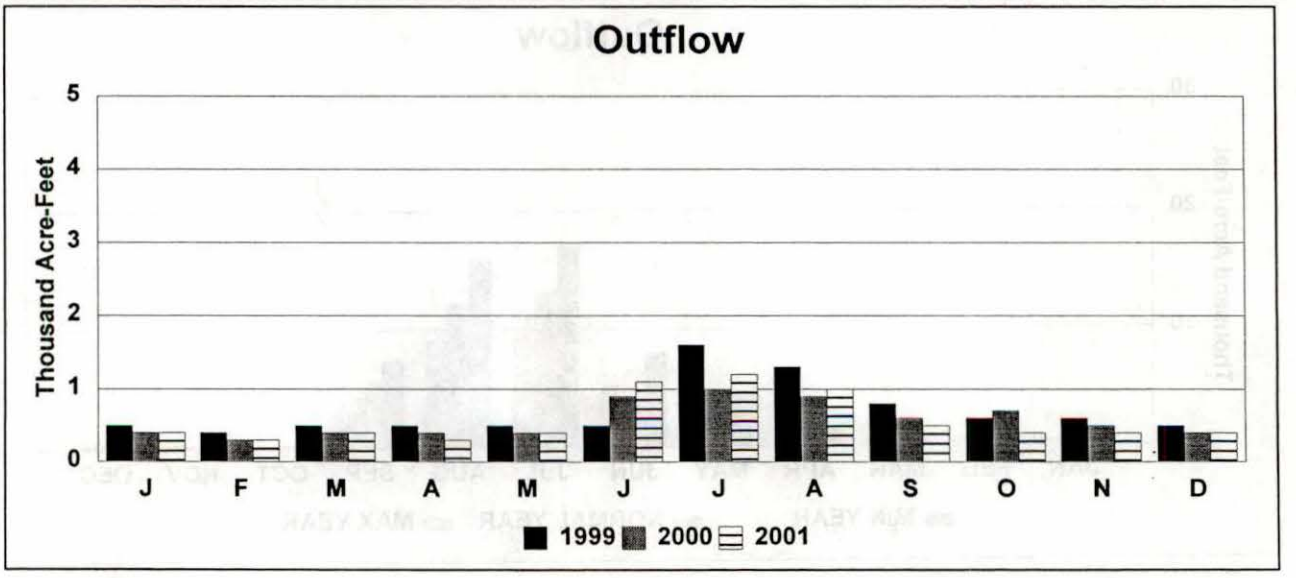
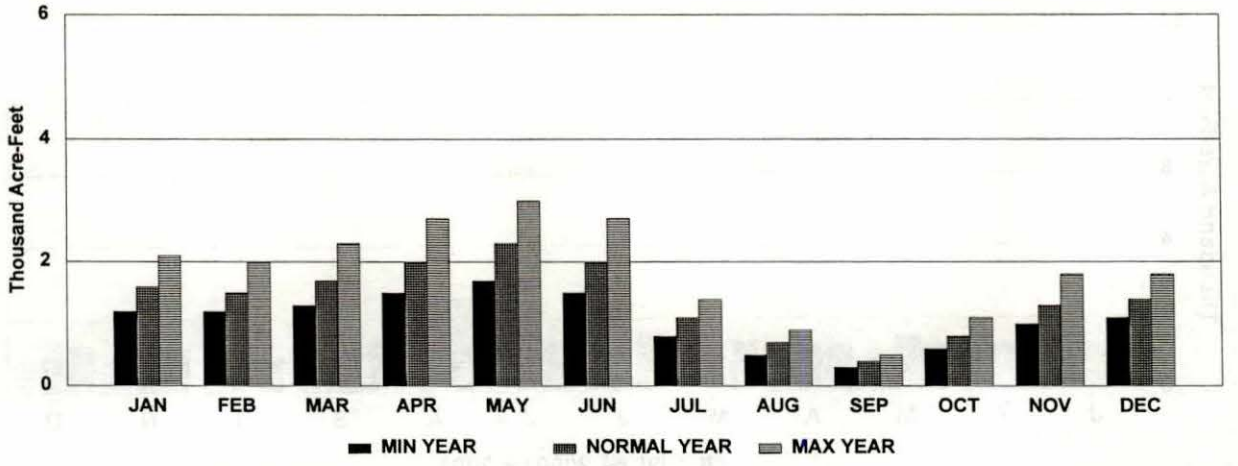


EXHIBIT 6B

BONNY RESERVOIR
2002 OPERATION PLAN

Inflow



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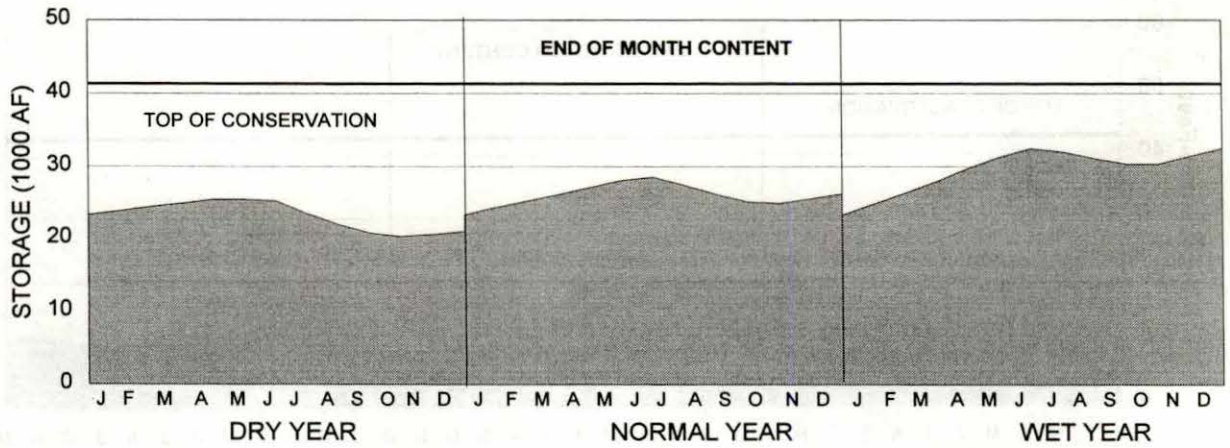


Outflow

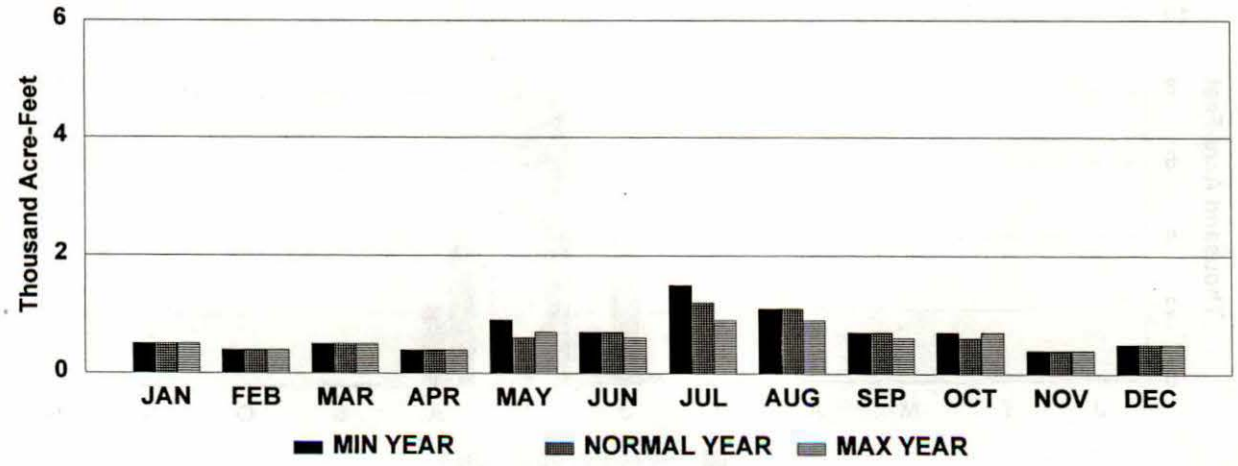
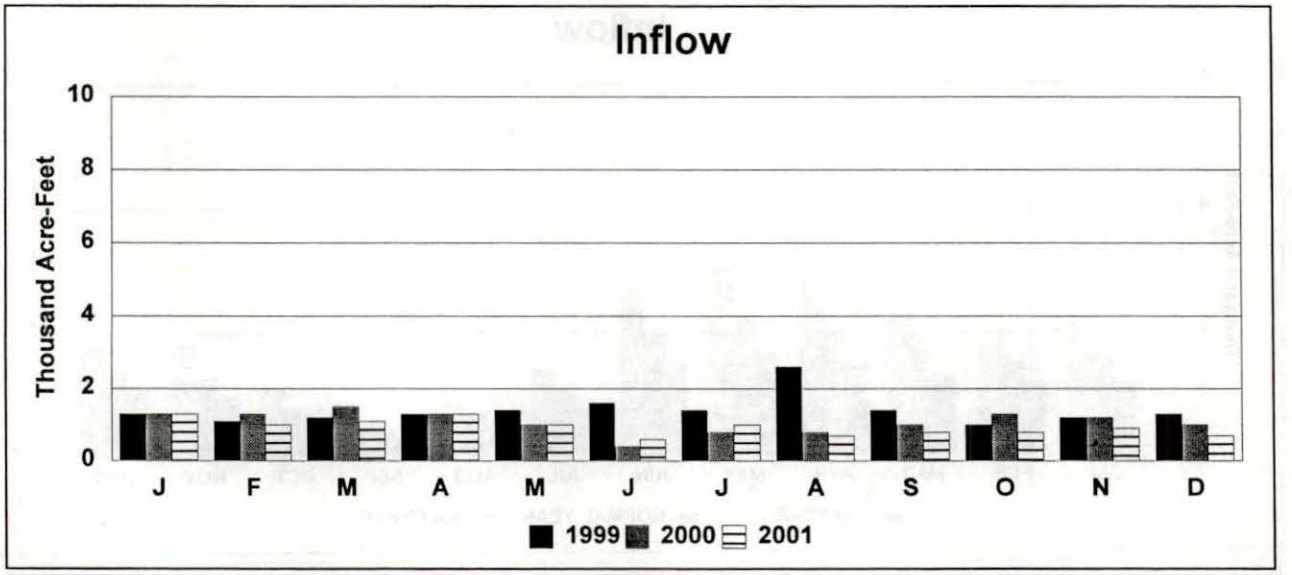
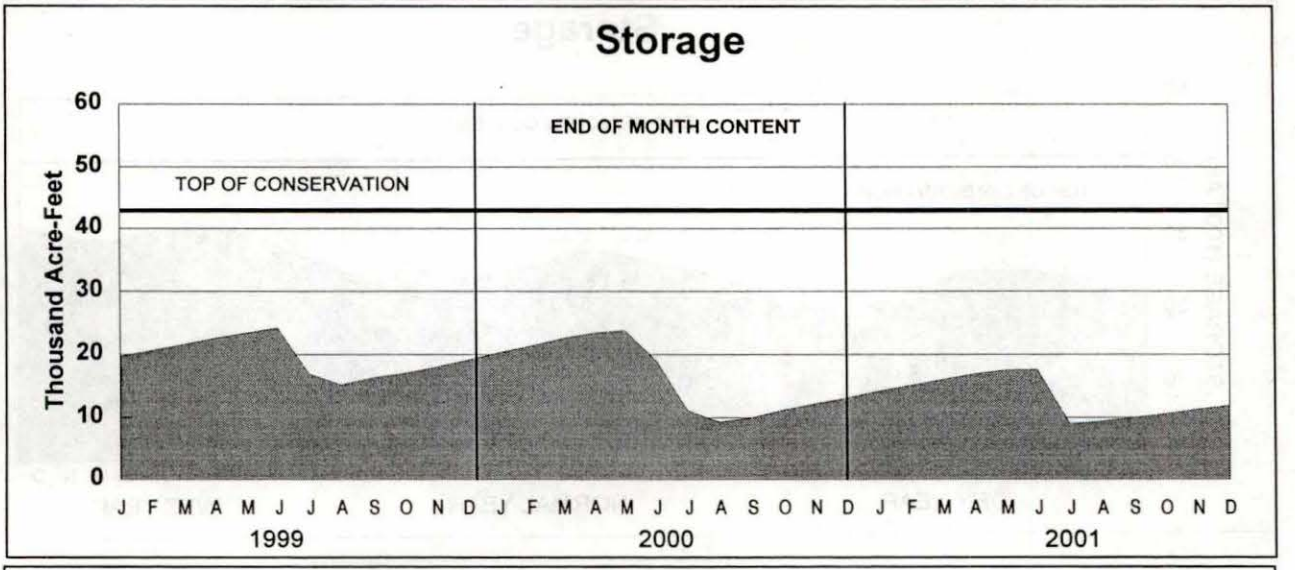


EXHIBIT 7A

ENDERS RESERVOIR
ACTUAL OPERATION





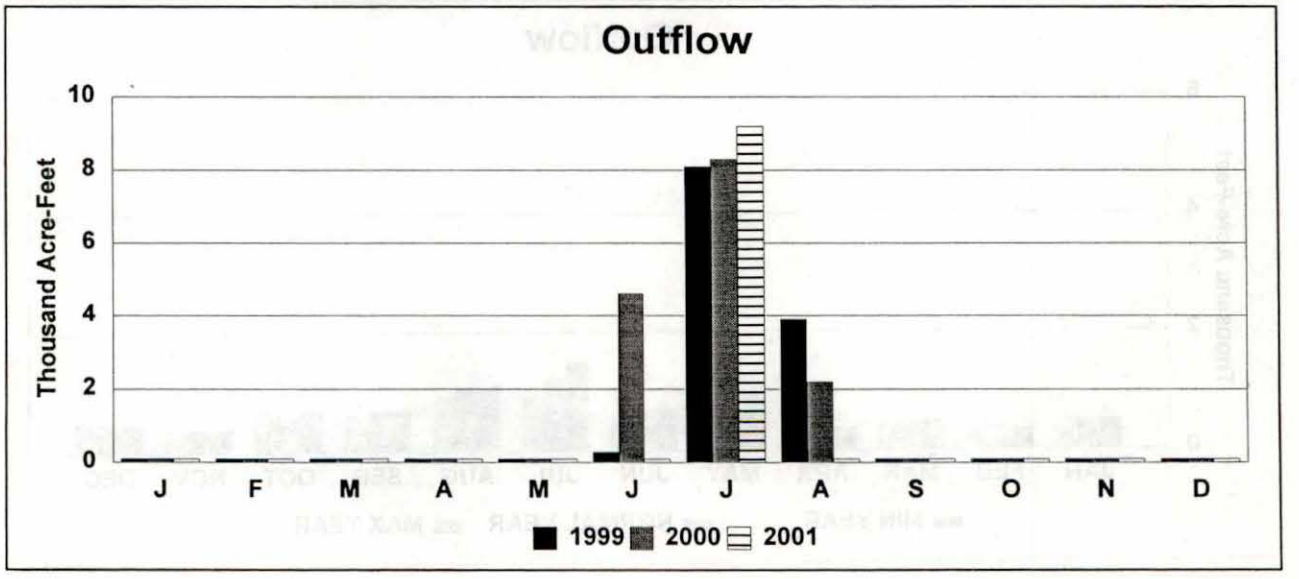
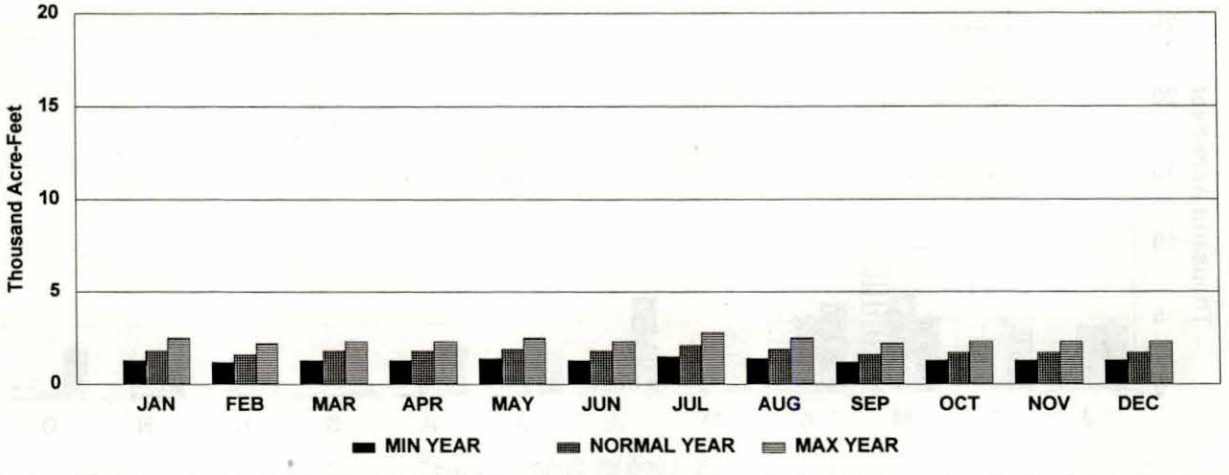


EXHIBIT 7B

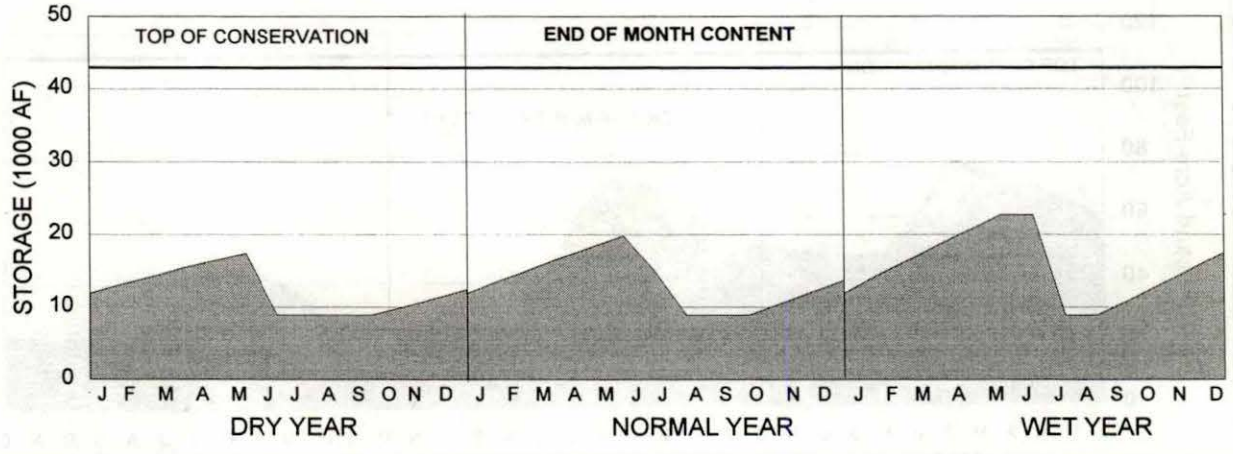
ENDERS RESERVOIR

2002 OPERATION PLAN

Inflow



Storage



Outflow

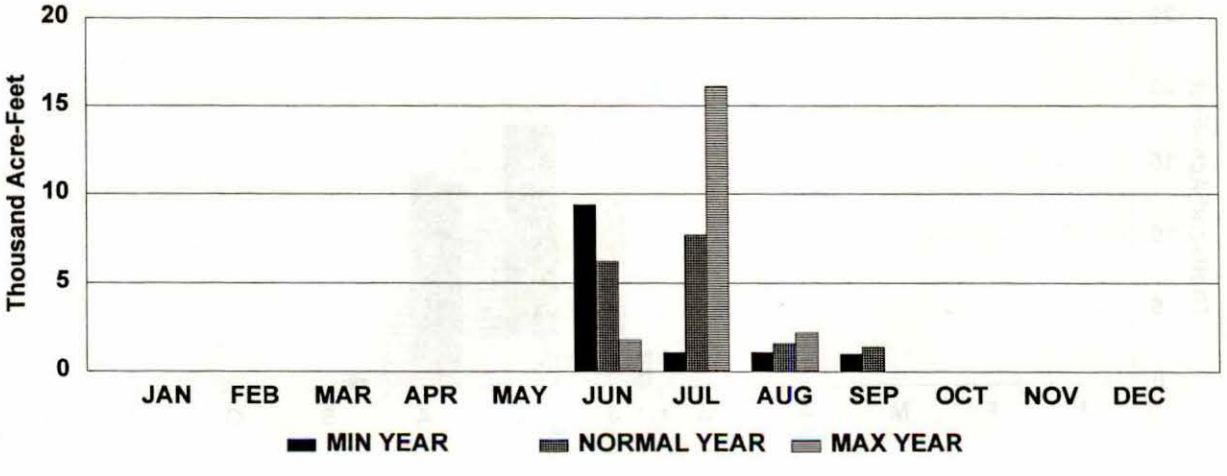
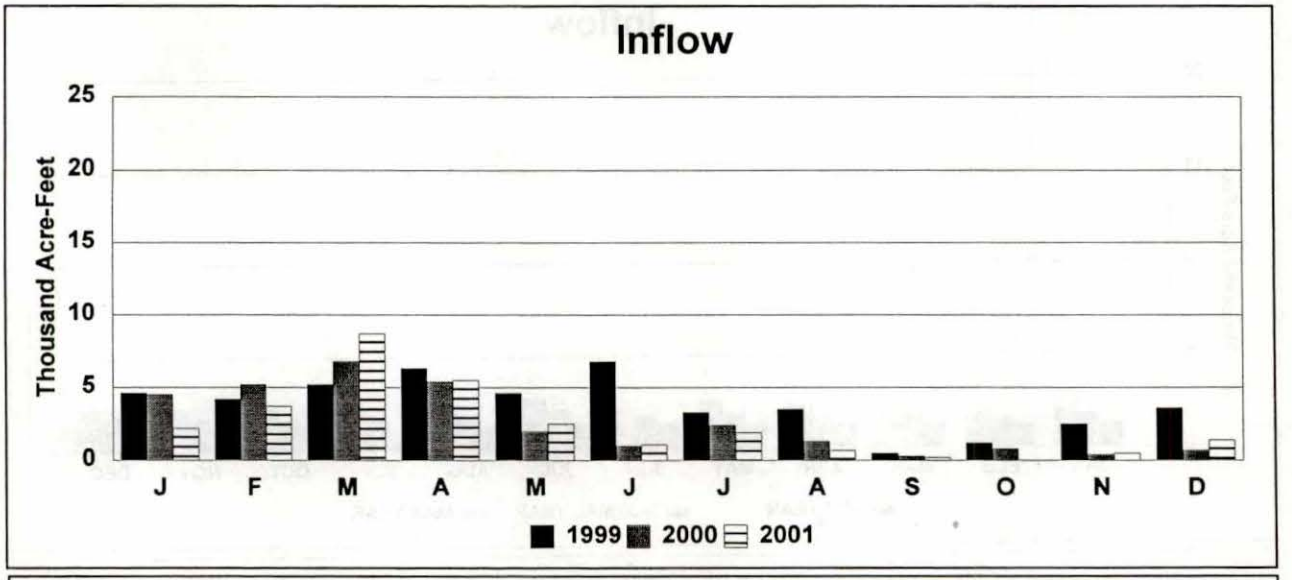
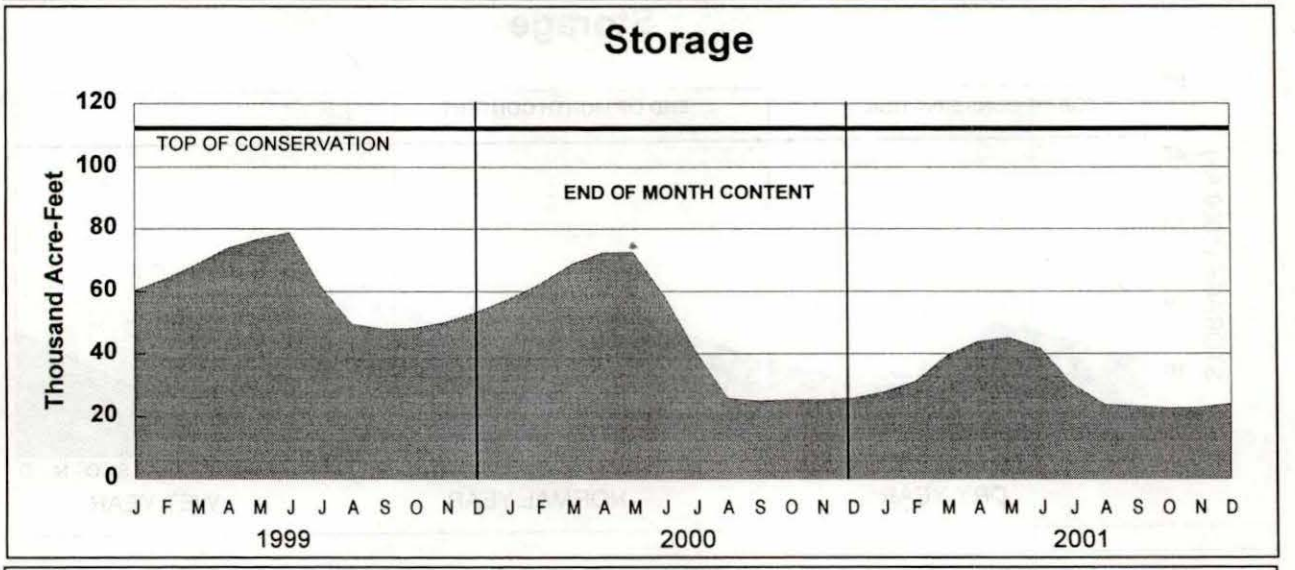


EXHIBIT 8A

SWANSON LAKE
ACTUAL OPERATION





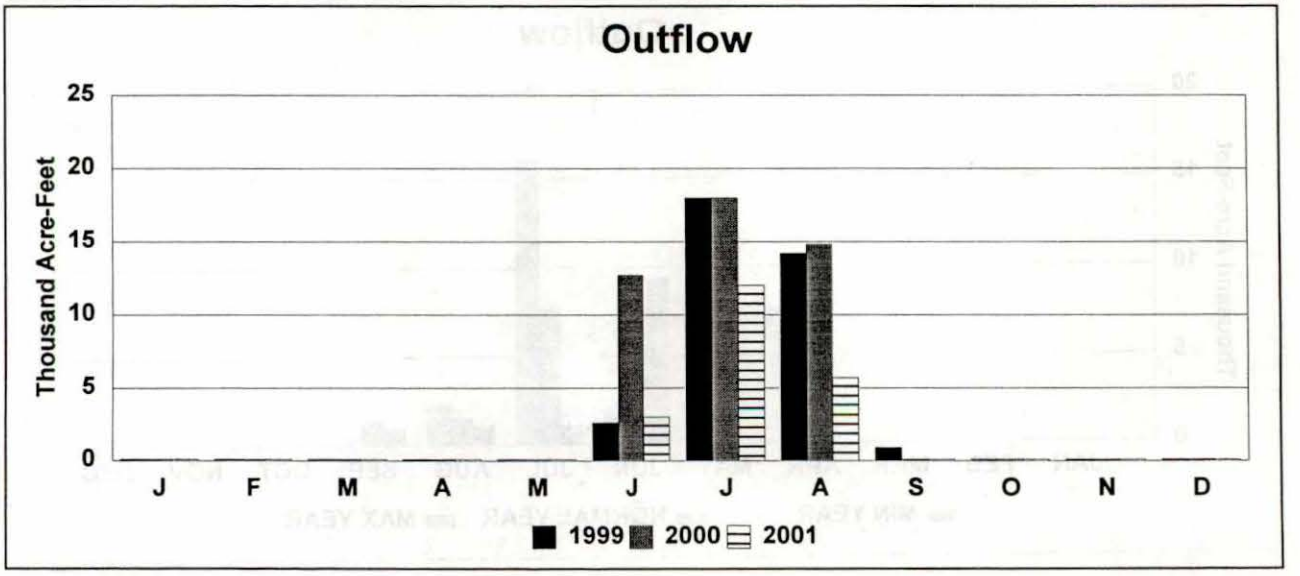
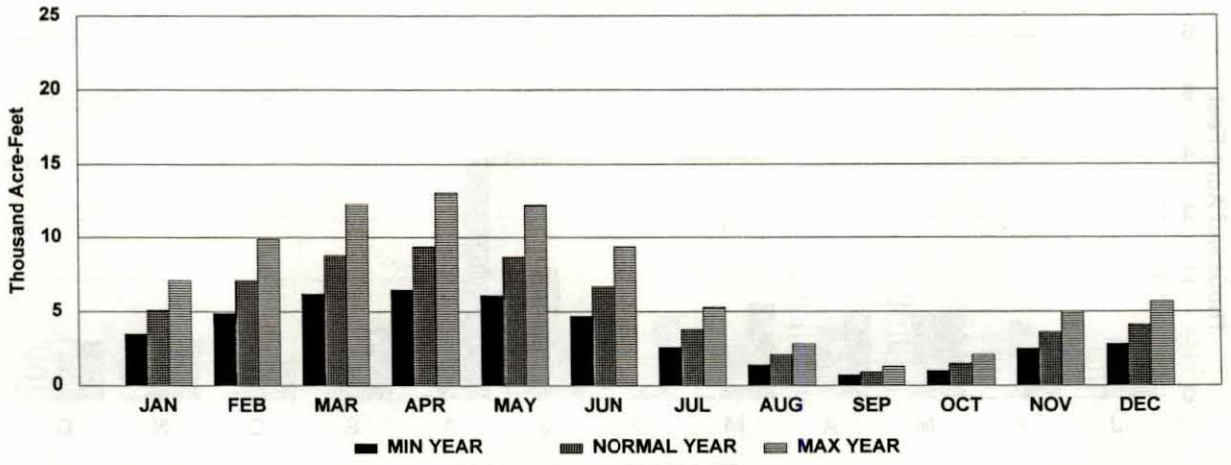


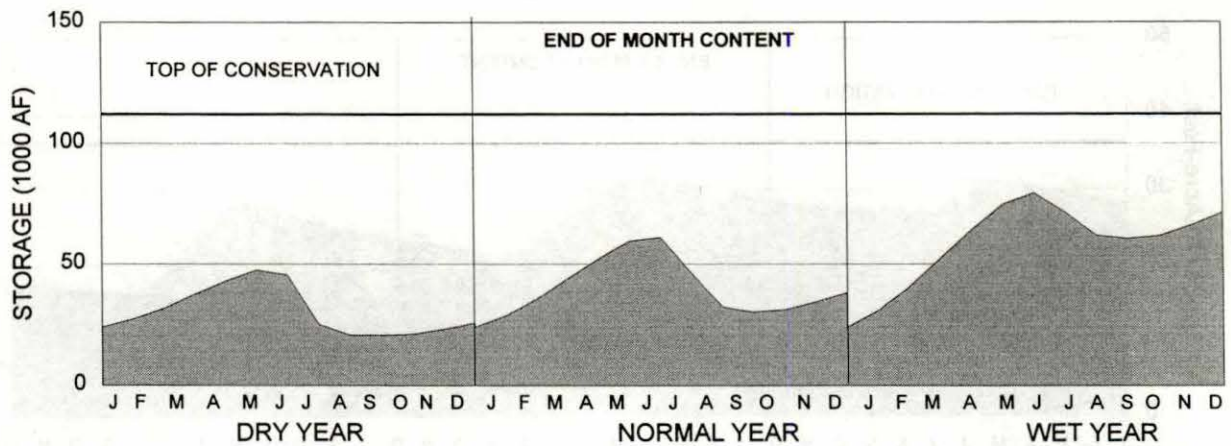
EXHIBIT 8B

SWANSON LAKE
2002 OPERATION PLAN

Inflow



Storage



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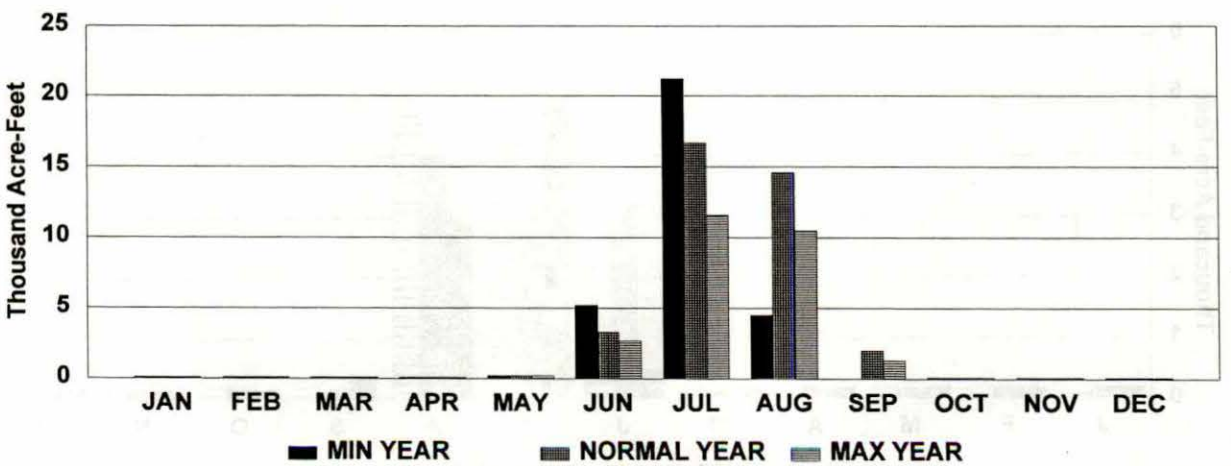
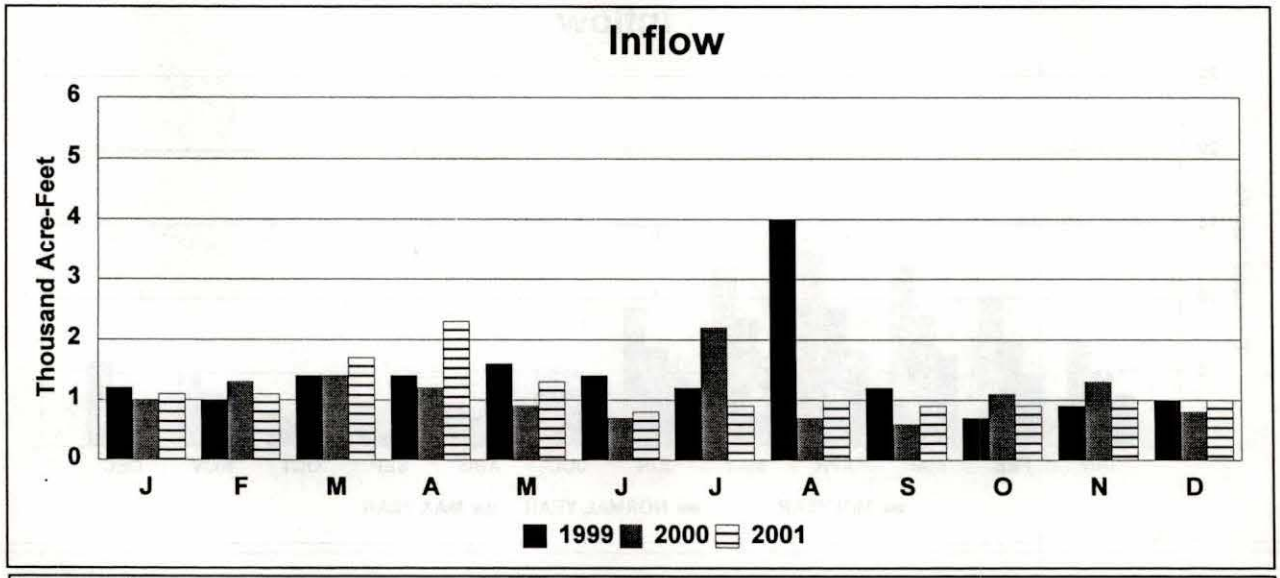
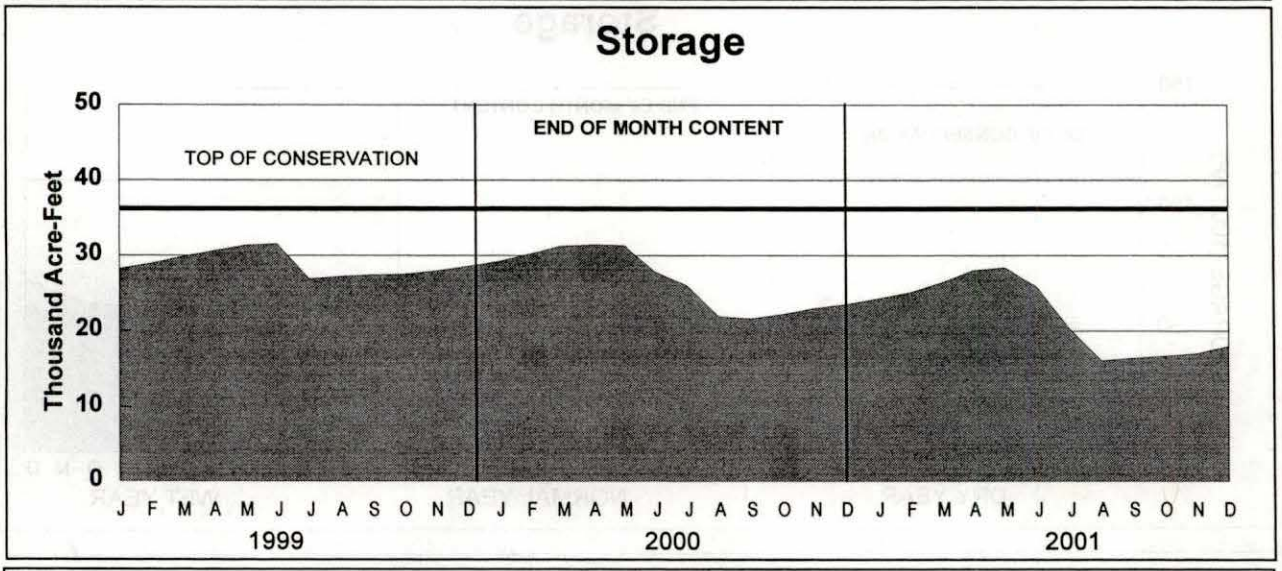
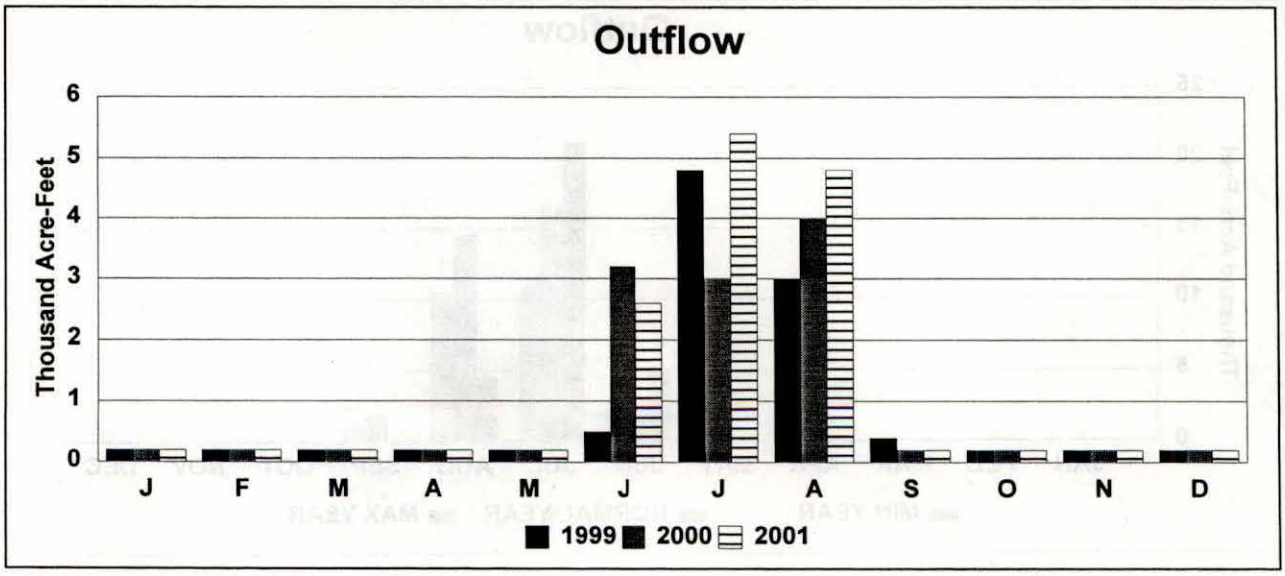


EXHIBIT 9A

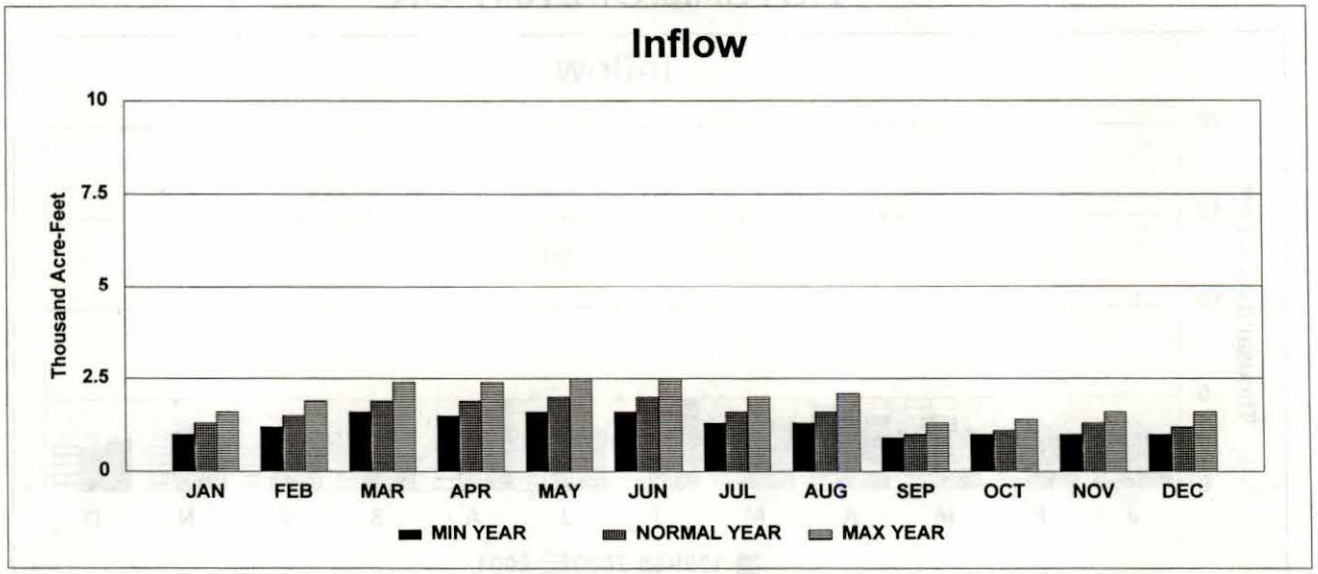
HUGH BUTLER LAKE
ACTUAL OPERATION

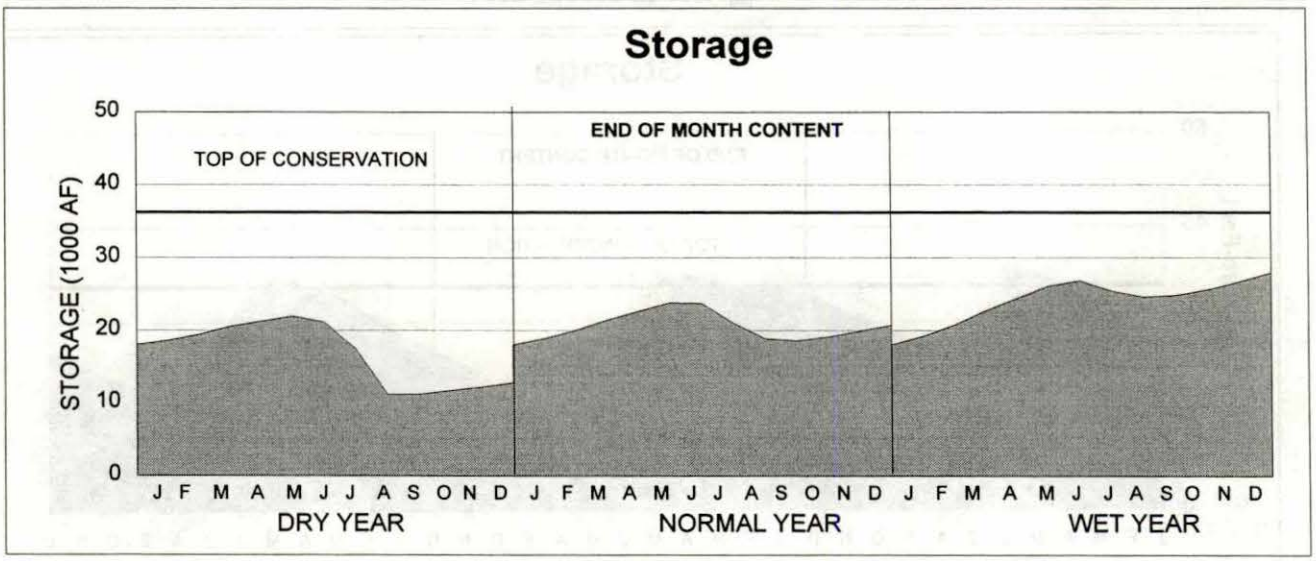






HUGH BUTLER LAKE
2002 OPERATION PLAN





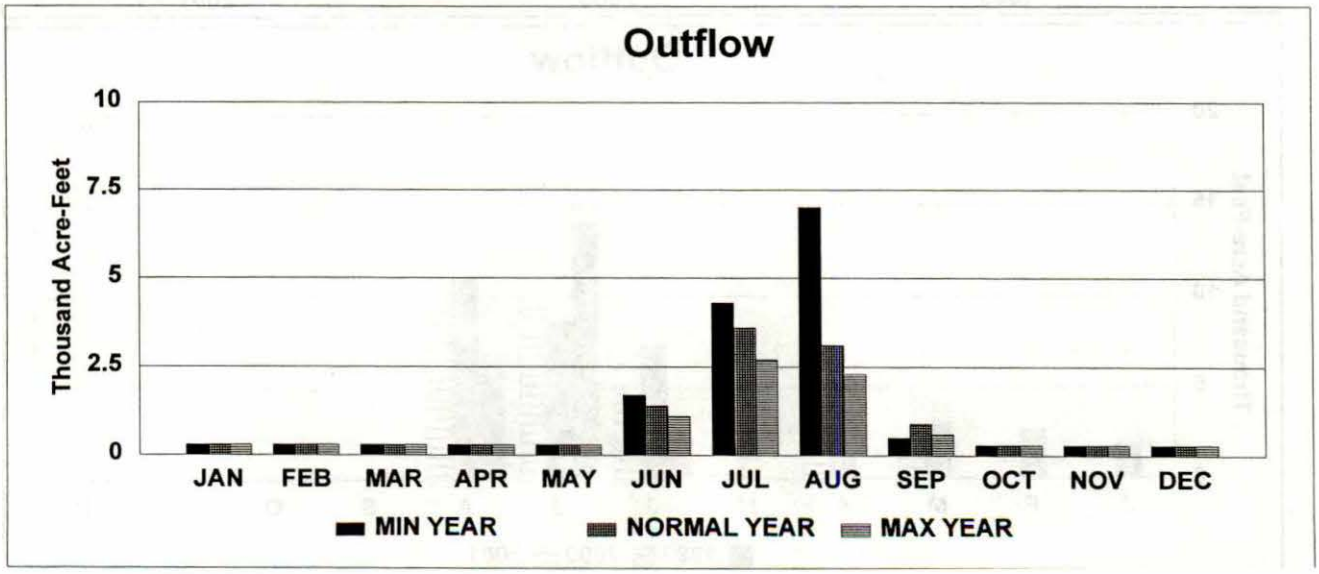
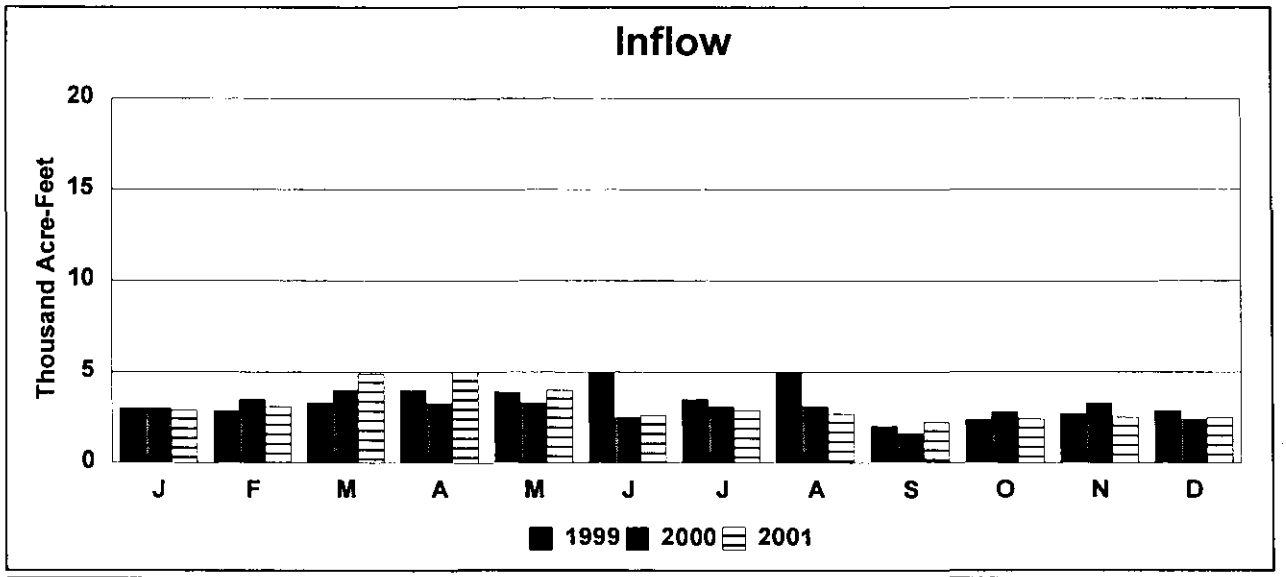
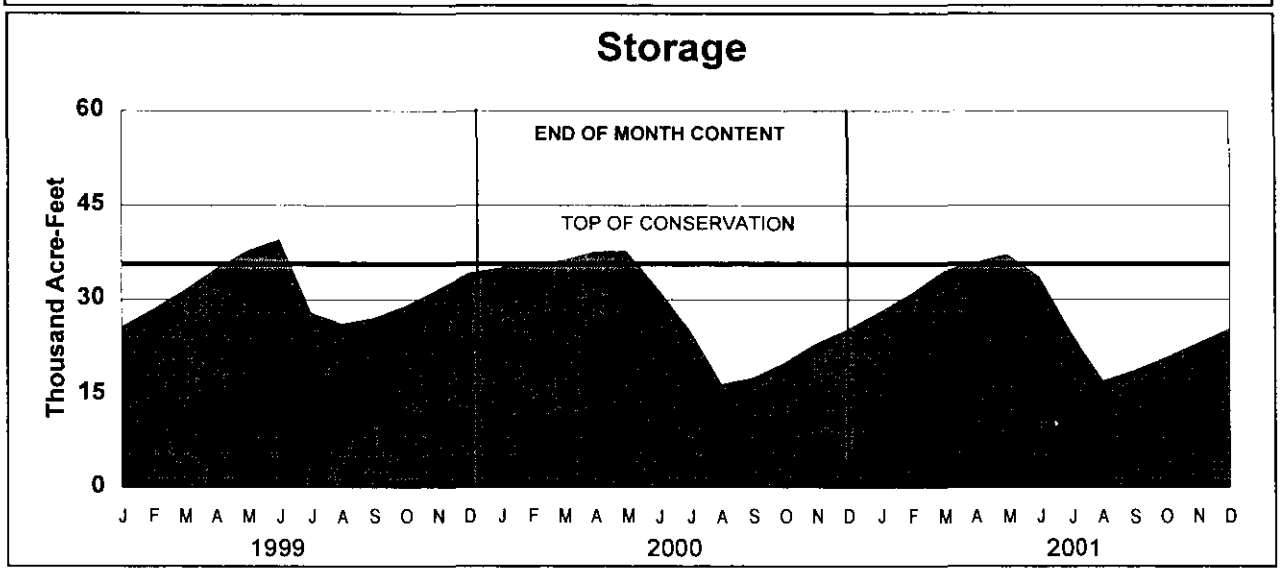


EXHIBIT 10A

HARRY STRUNK LAKE
ACTUAL OPERATION





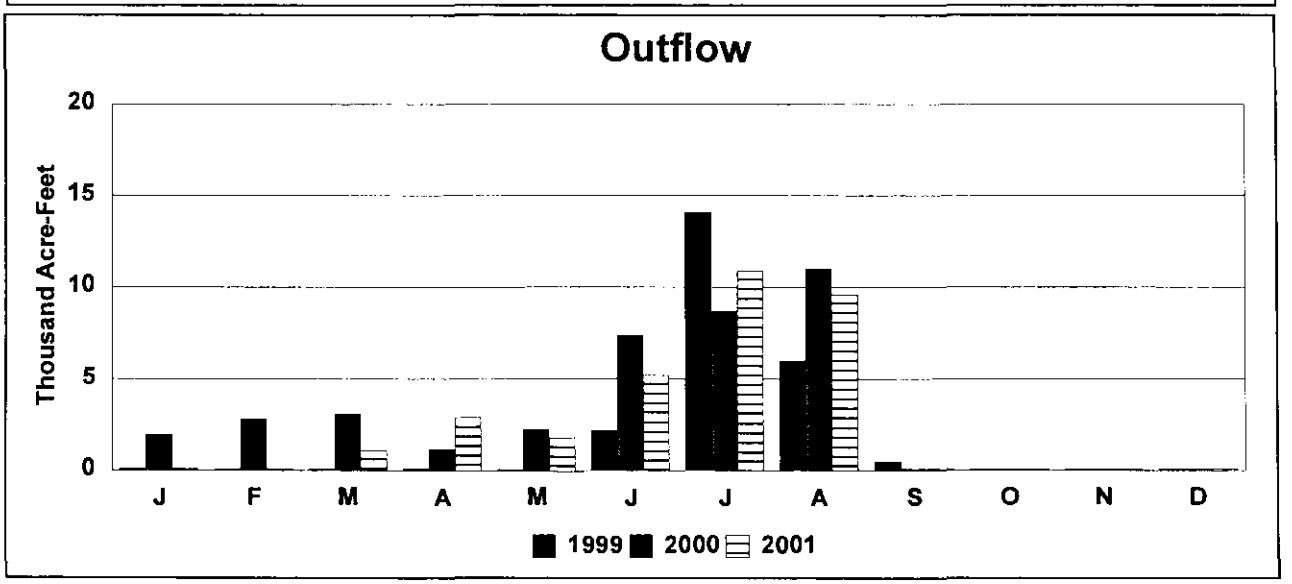
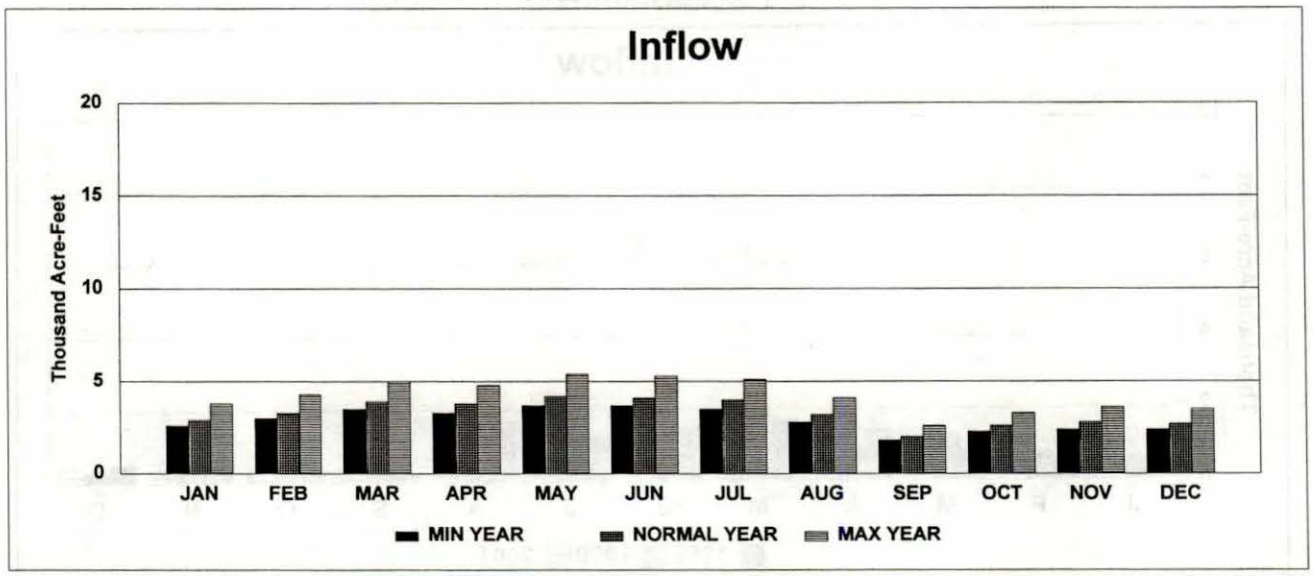
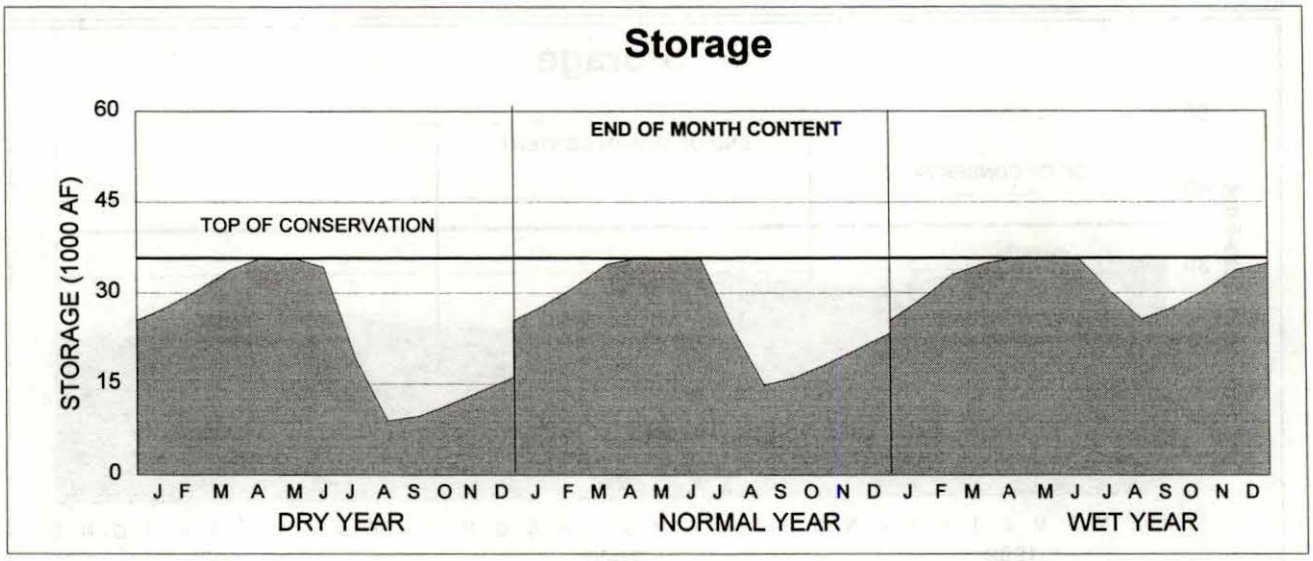


EXHIBIT 10B

HARRY STRUNK LAKE
2002 OPERATION PLAN





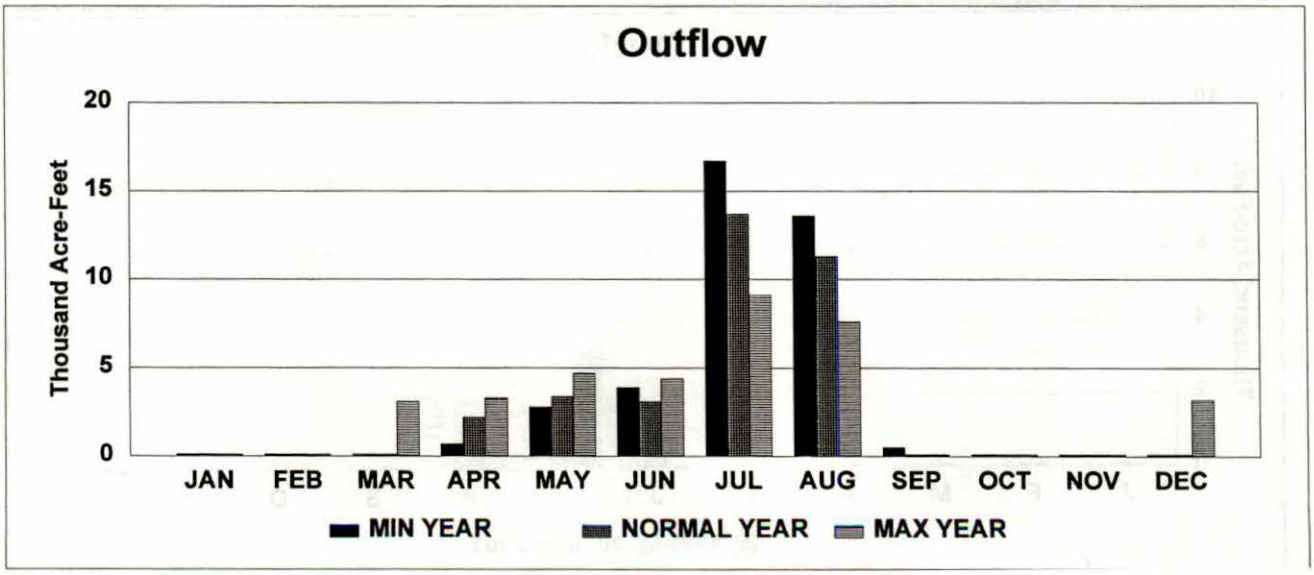
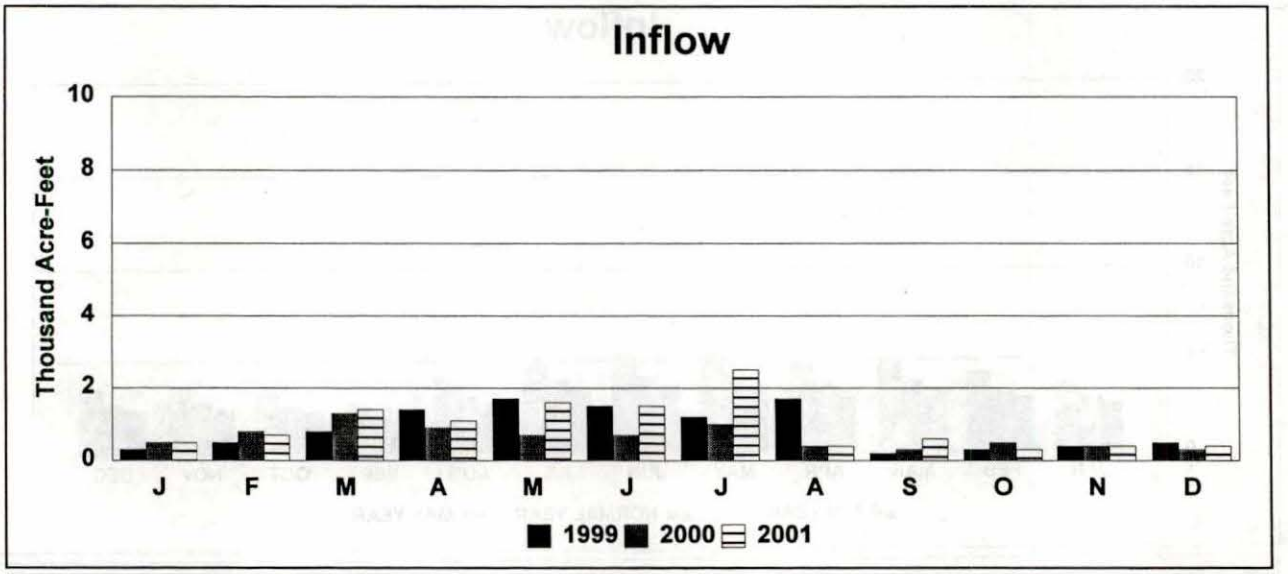
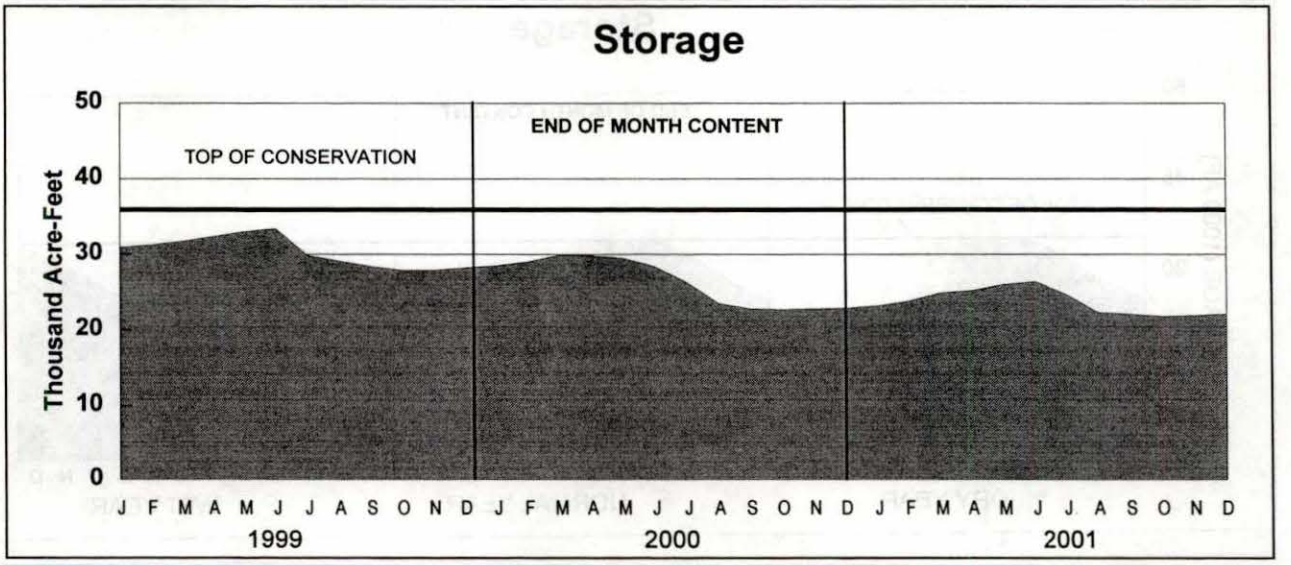


EXHIBIT 11A

KEITH SEBELIUS LAKE
ACTUAL OPERATION





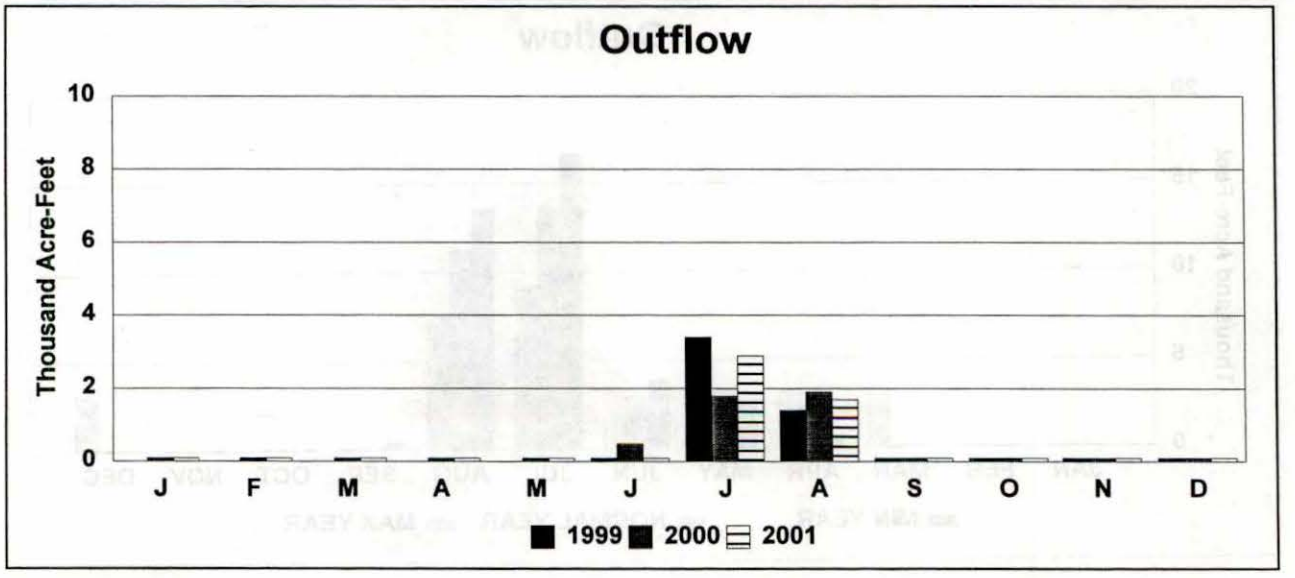
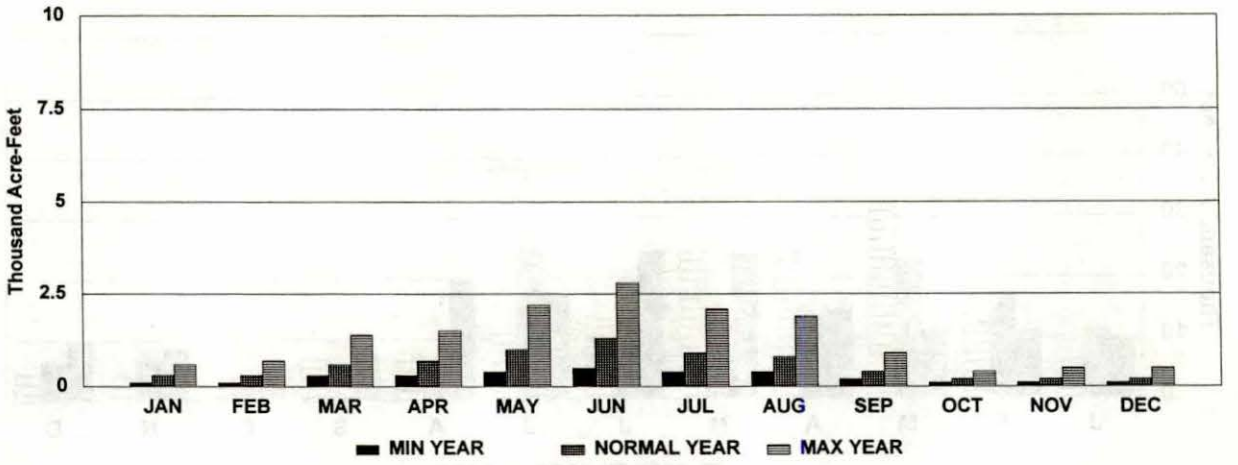


EXHIBIT 11B

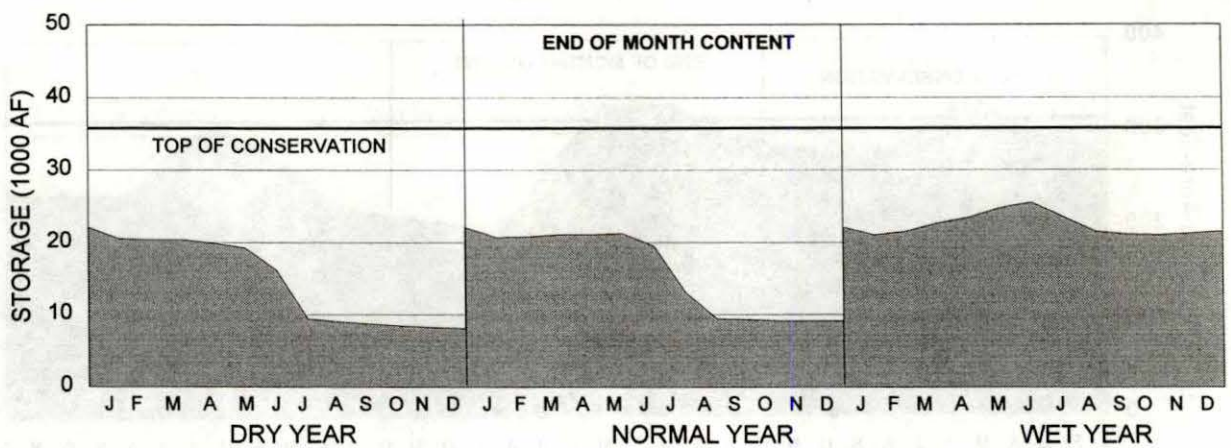
KEITH SEBELIUS LAKE

2002 OPERATION PLAN

Inflow



Storage



Outflow

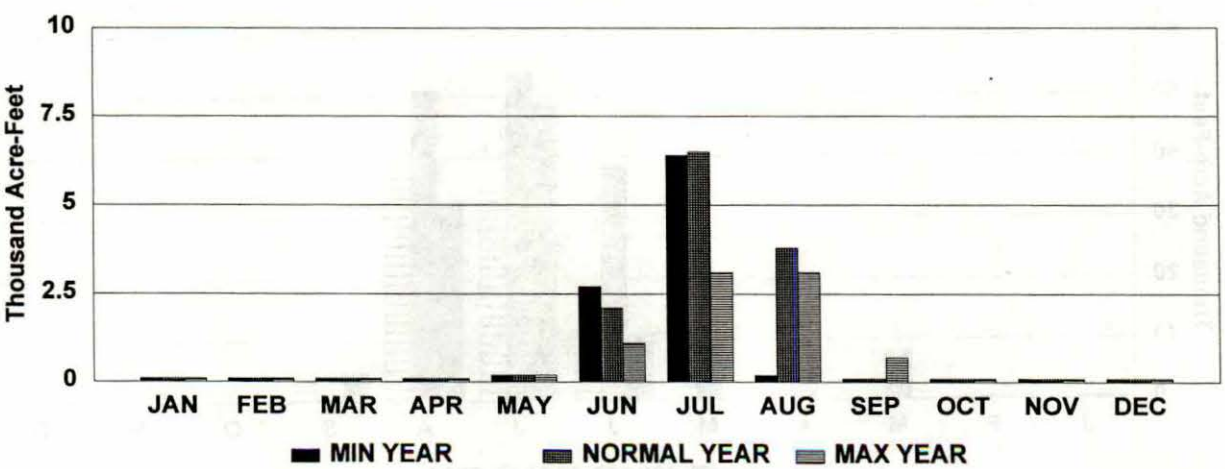
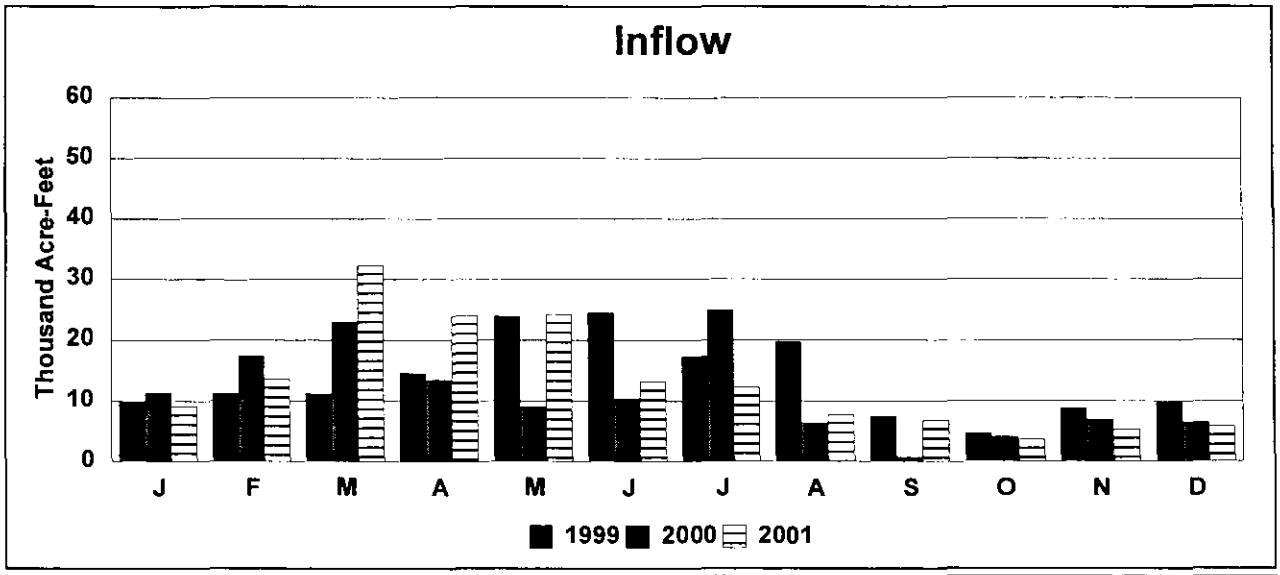
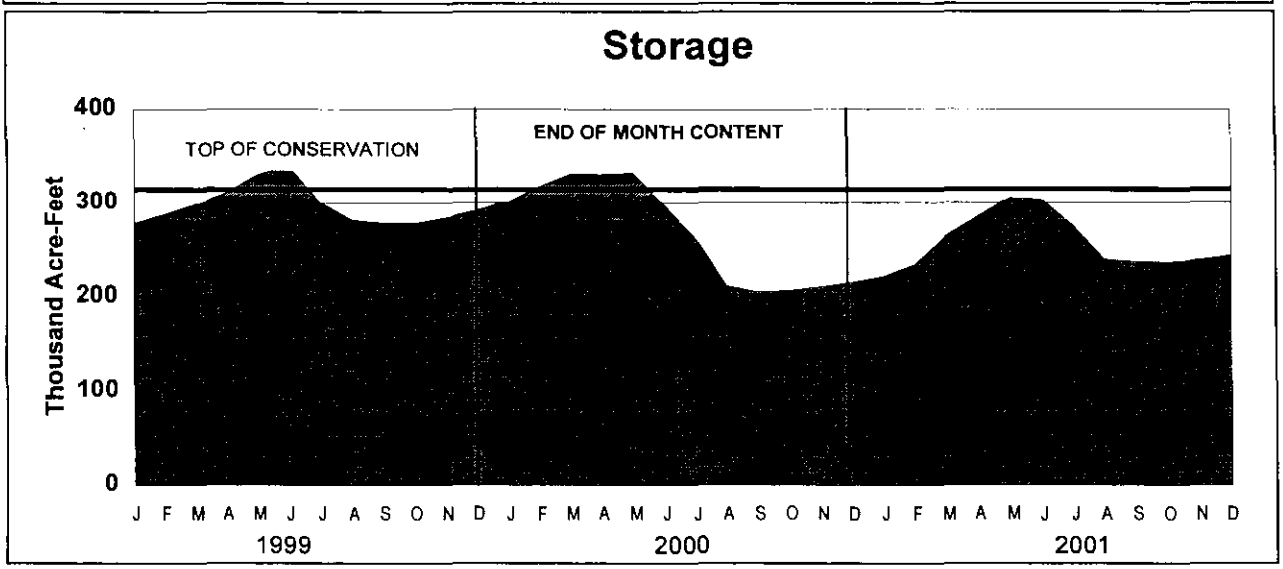


EXHIBIT 12A

HARLAN COUNTY LAKE
ACTUAL OPERATION





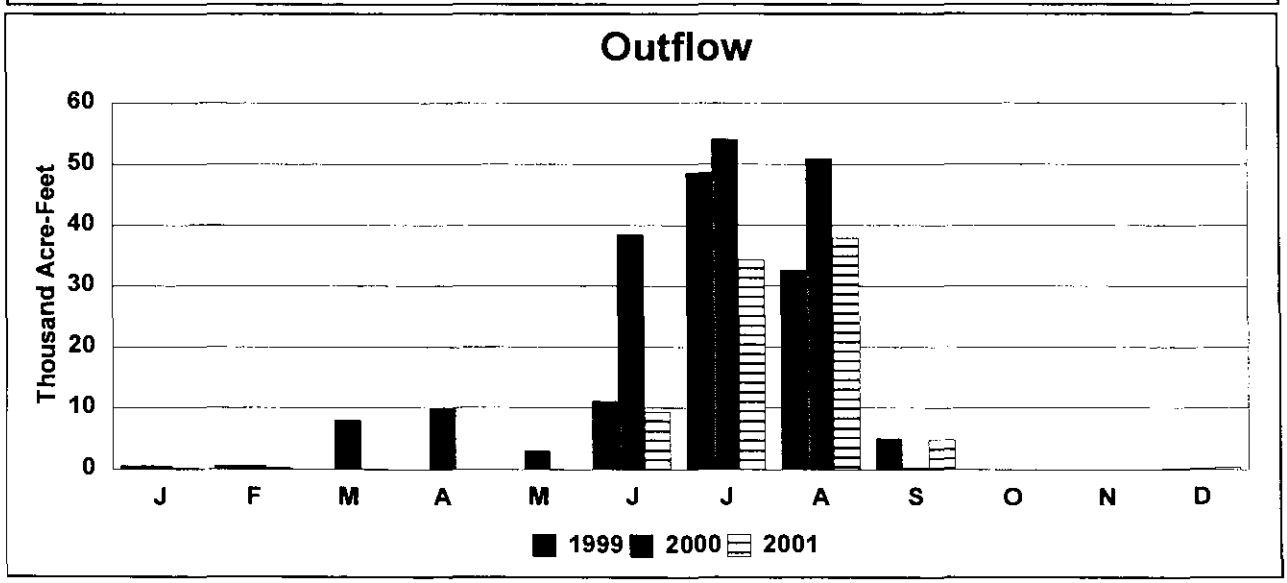
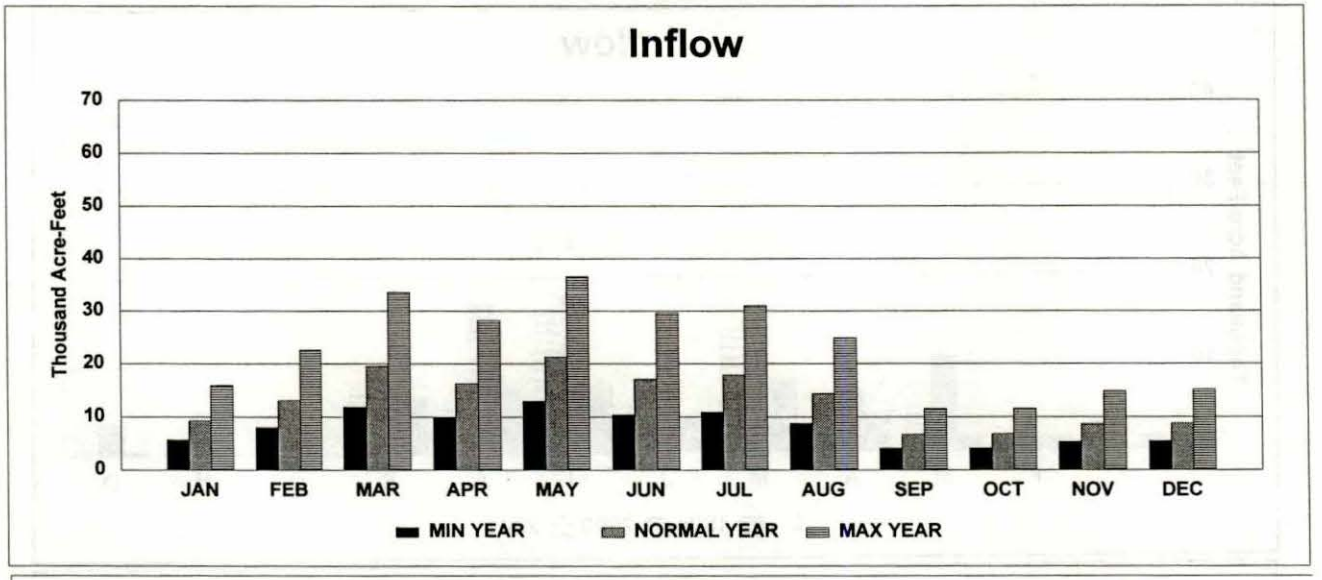
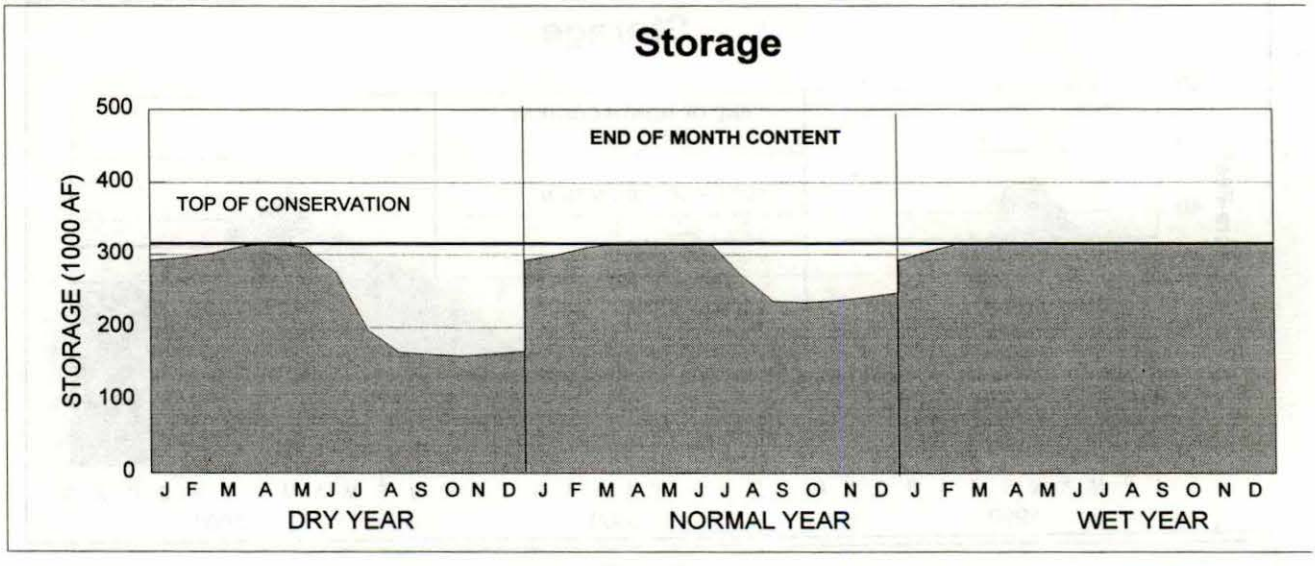


EXHIBIT 12B

HARLAN COUNTY LAKE
2002 OPERATION PLAN





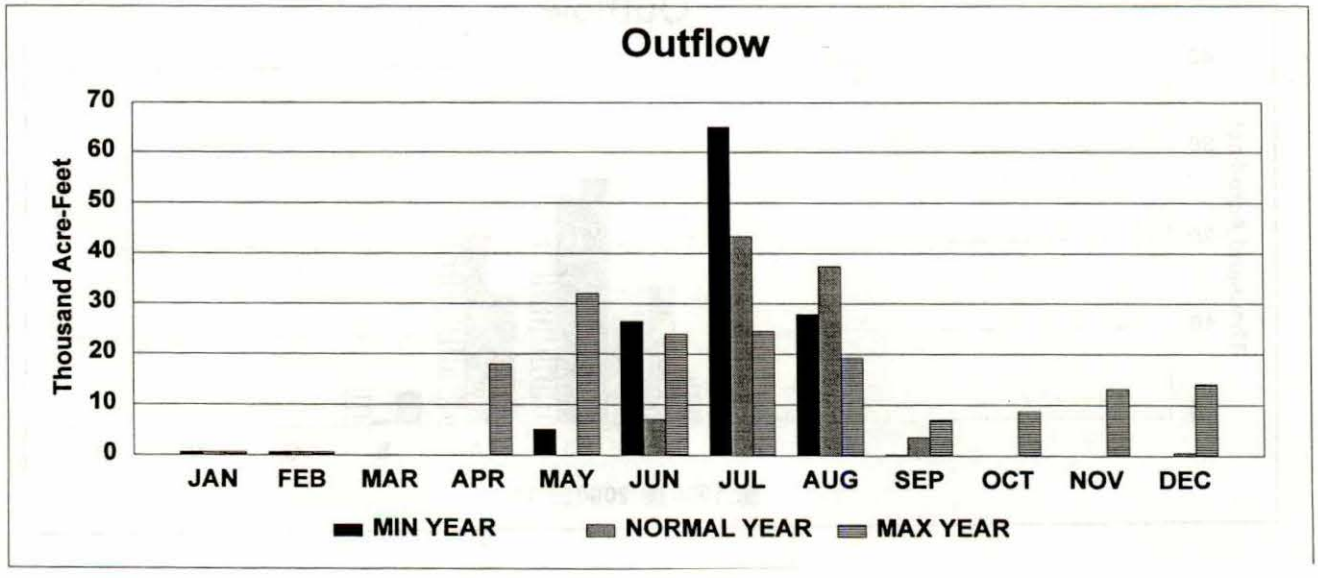
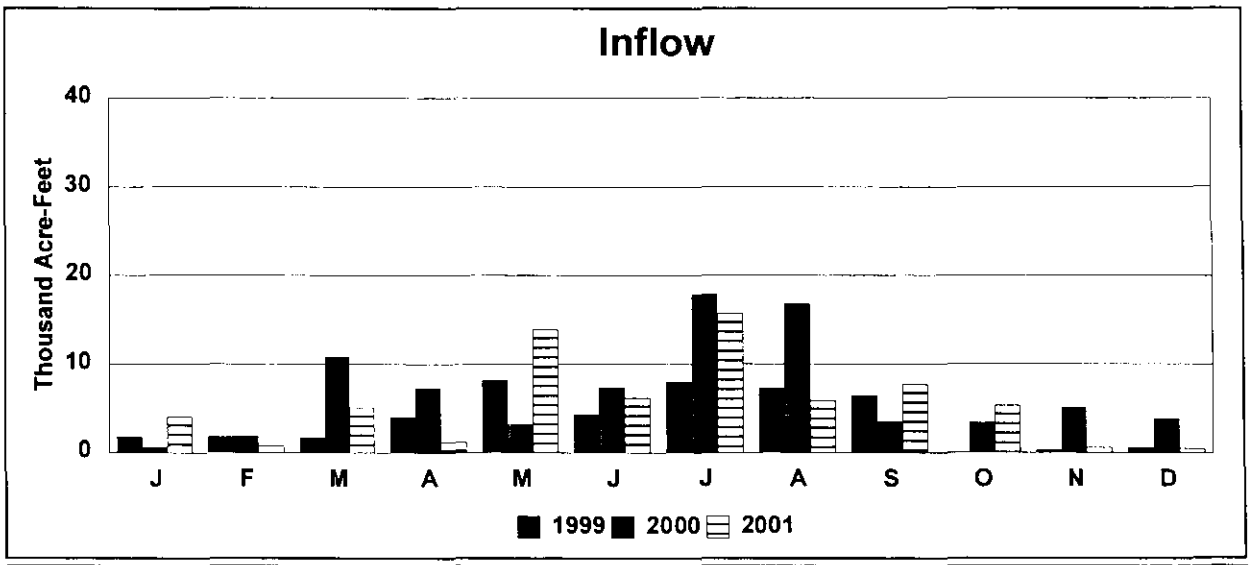
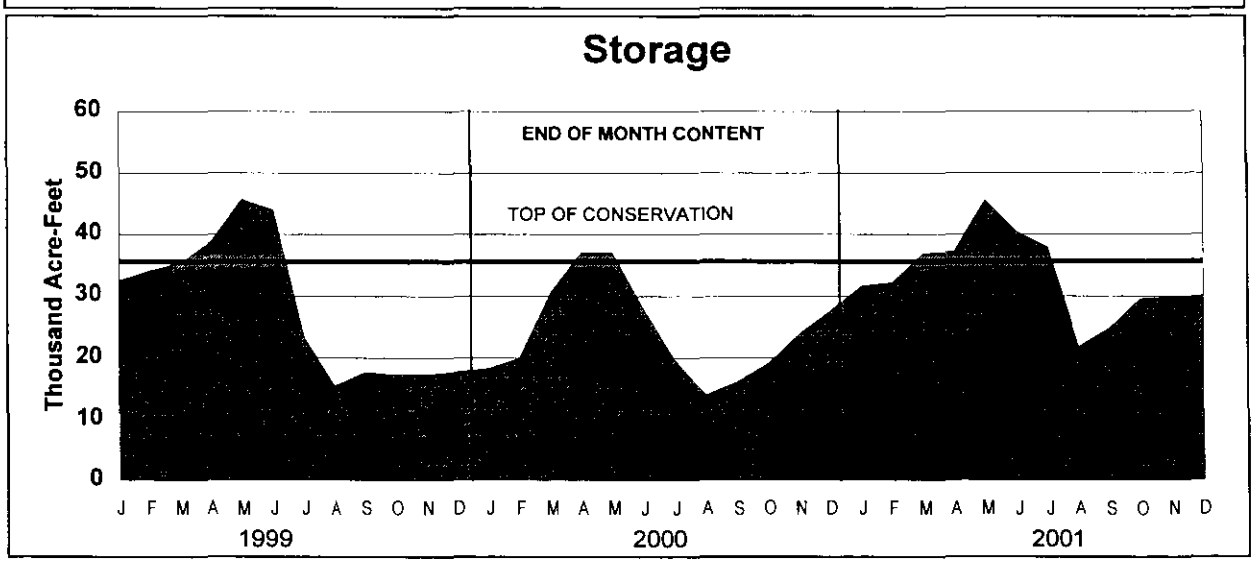


EXHIBIT 13A

LOVEWELL RESERVOIR
ACTUAL OPERATION





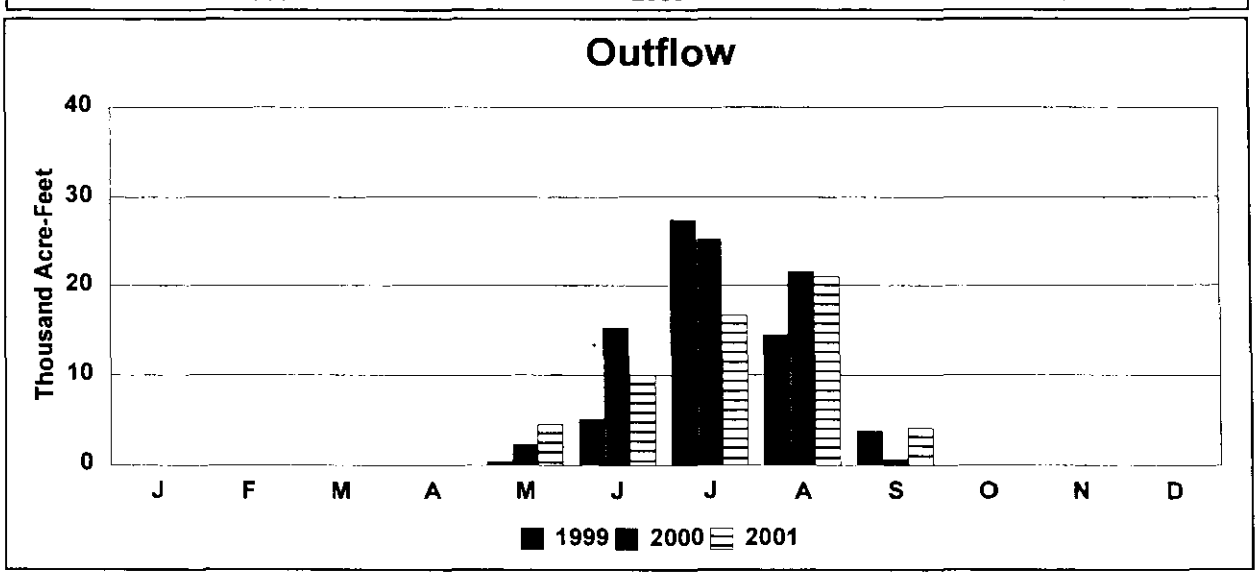
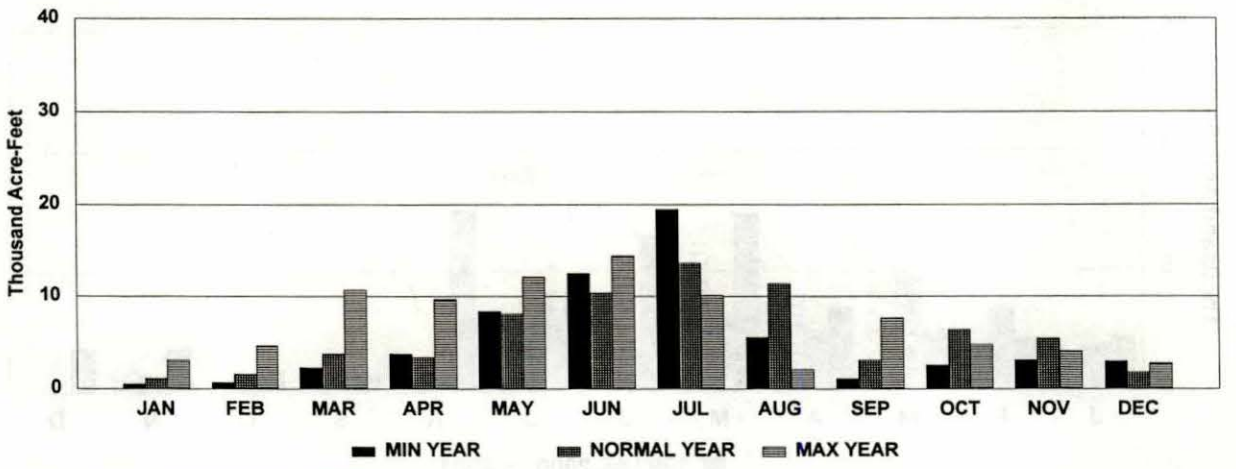


EXHIBIT 13B

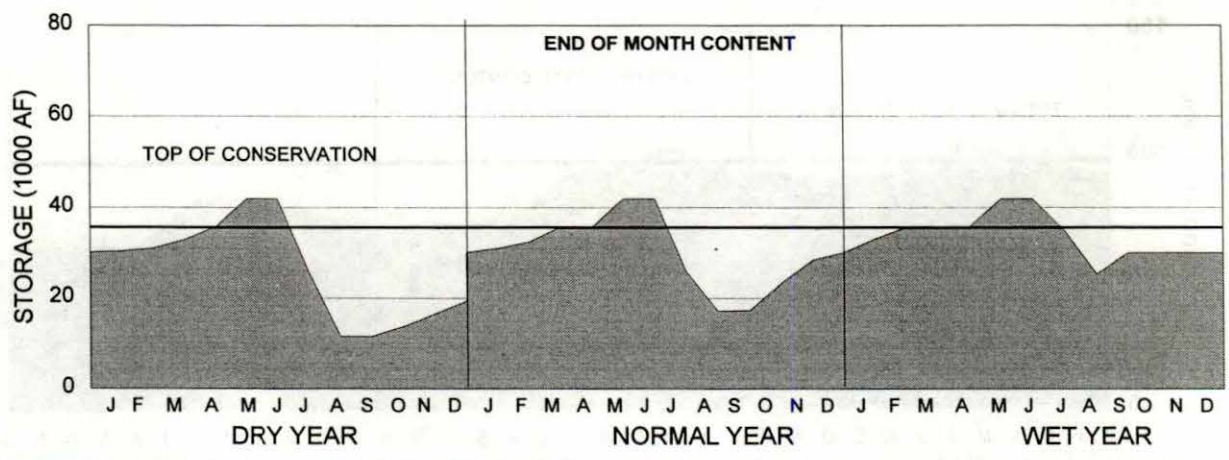
LOVEWELL RESERVOIR

2002 OPERATION PLAN

Inflow



Storage



Outflow

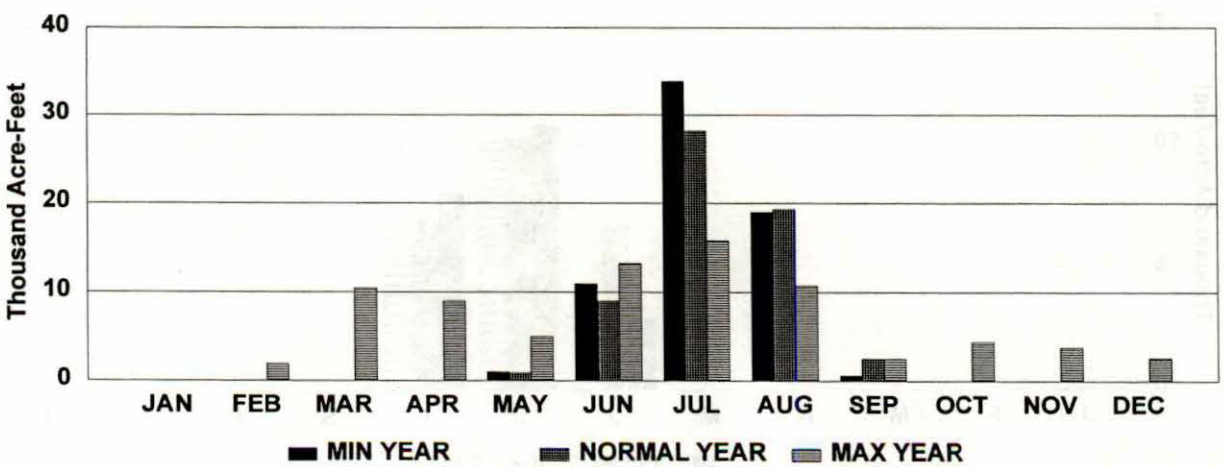
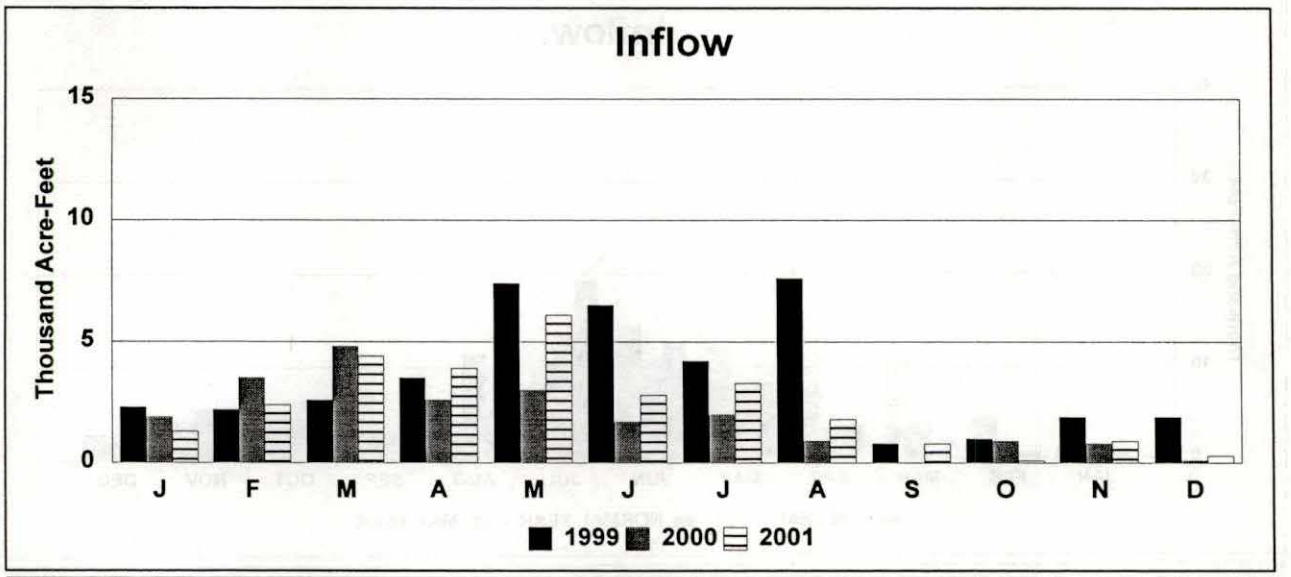
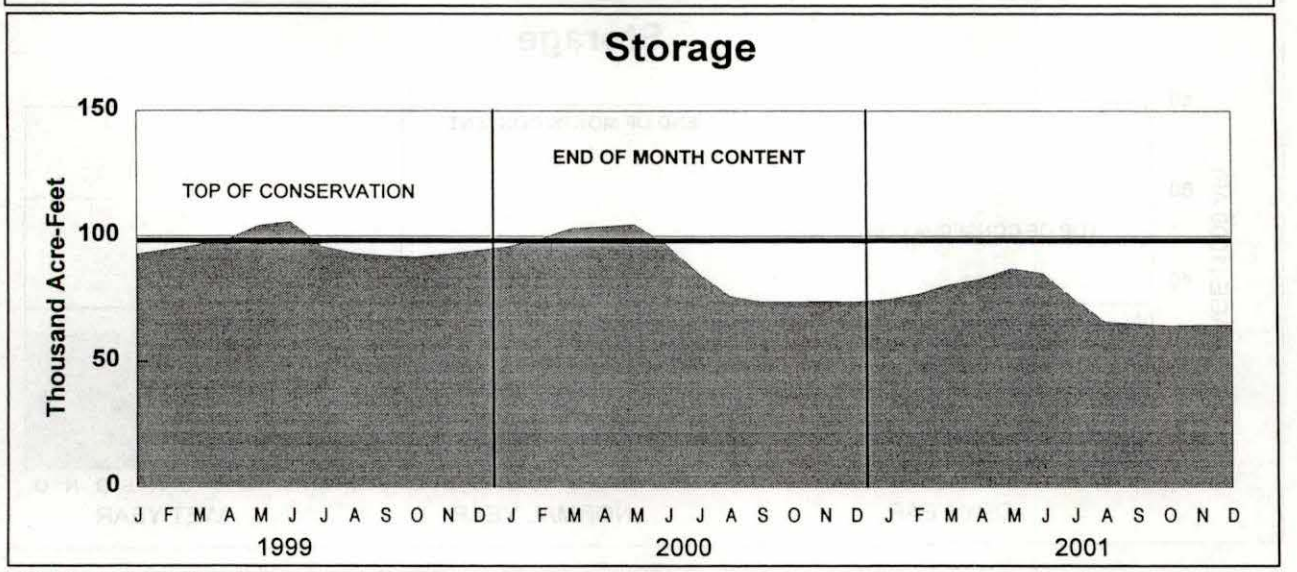
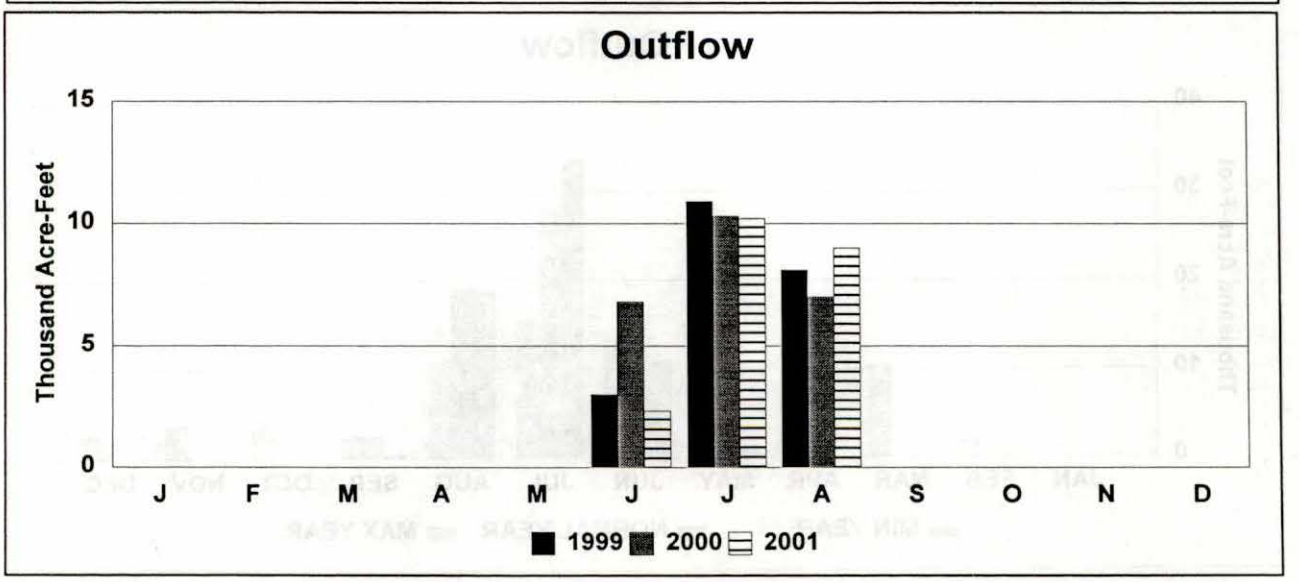


EXHIBIT 14A

KIRWIN RESERVOIR
ACTUAL OPERATION

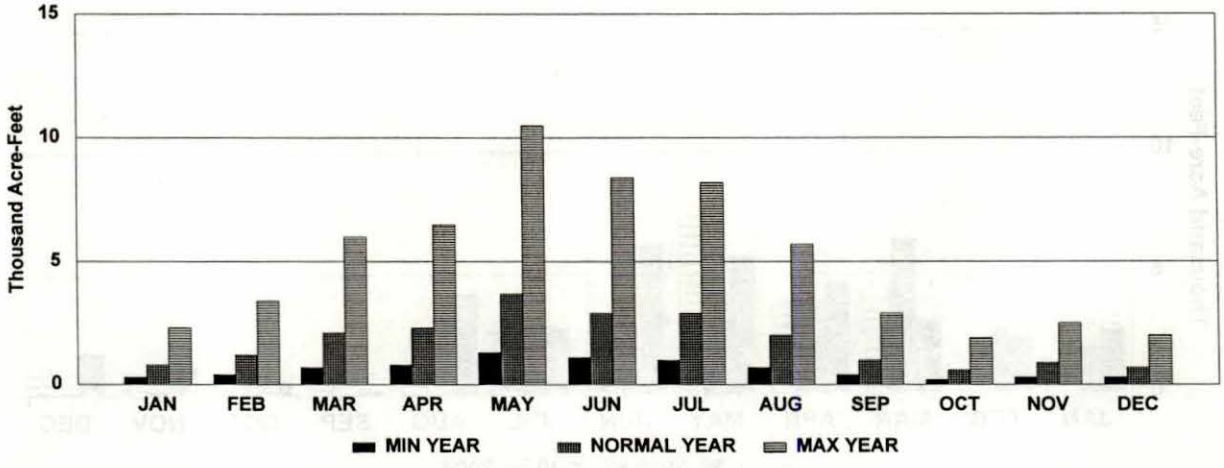






KIRWIN RESERVOIR
2002 OPERATION PLAN

Inflow



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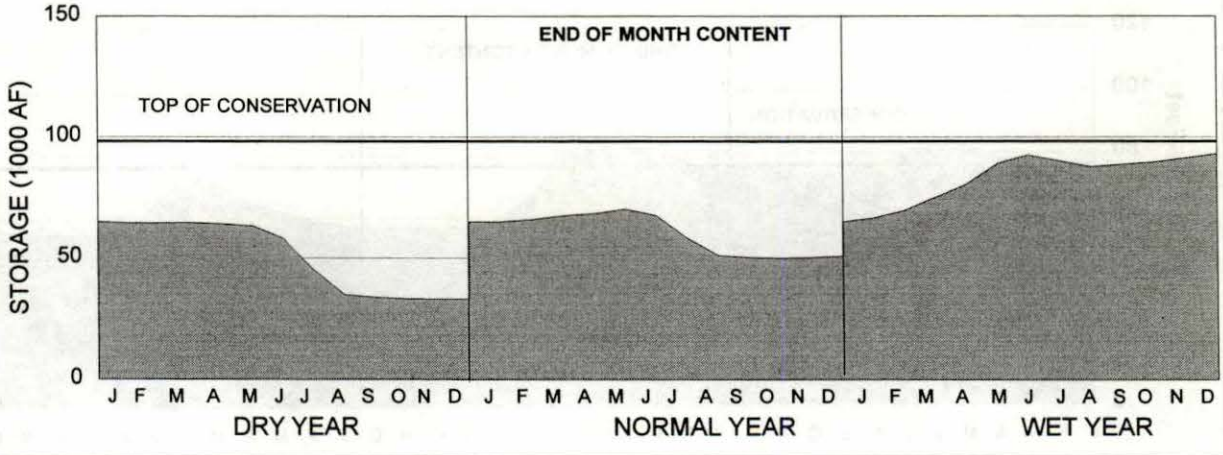


Outflow

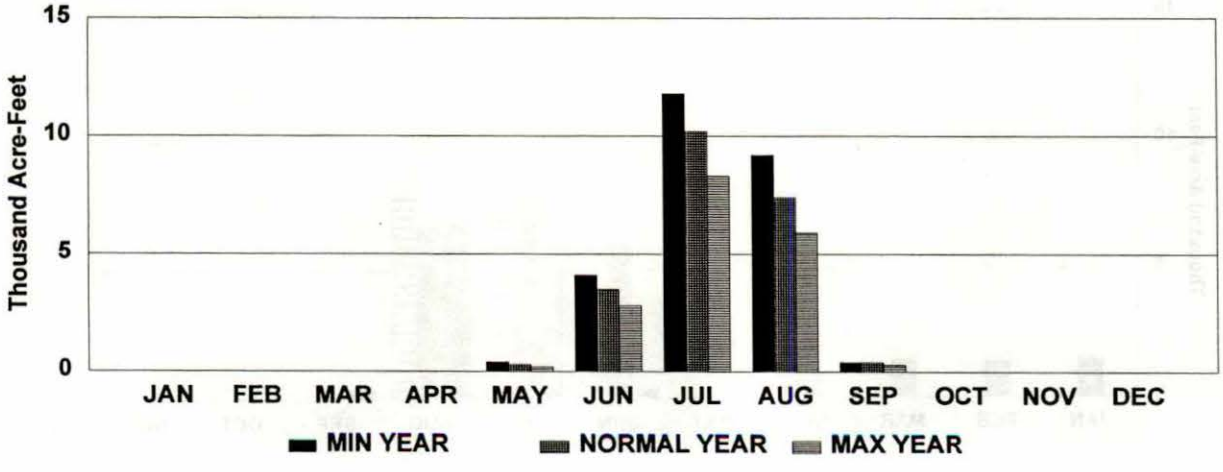
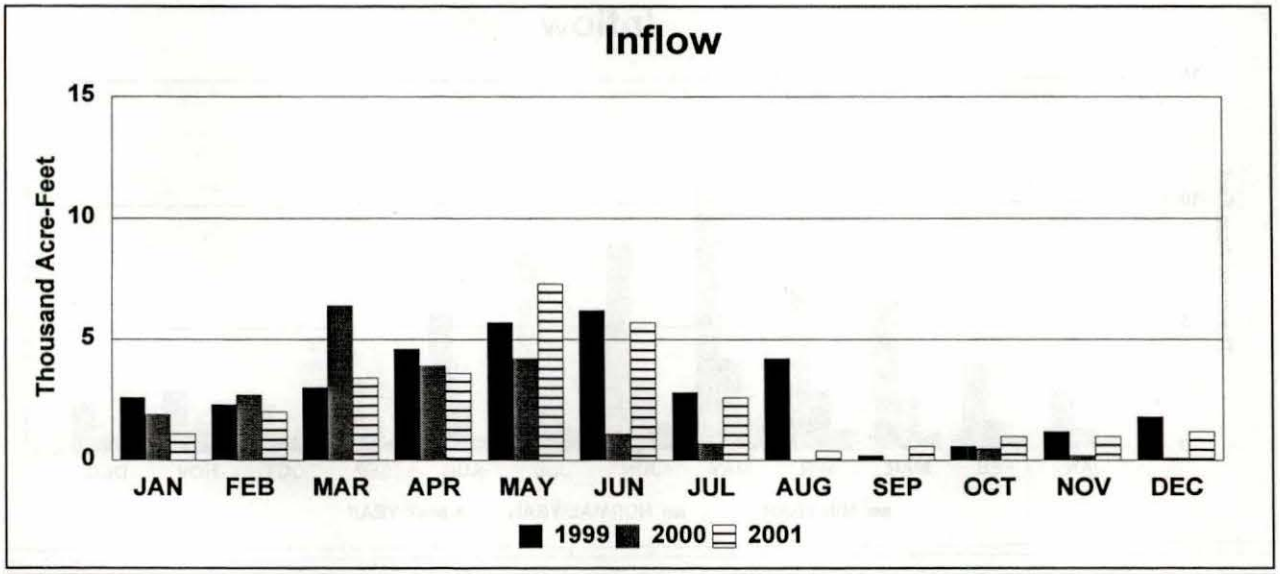
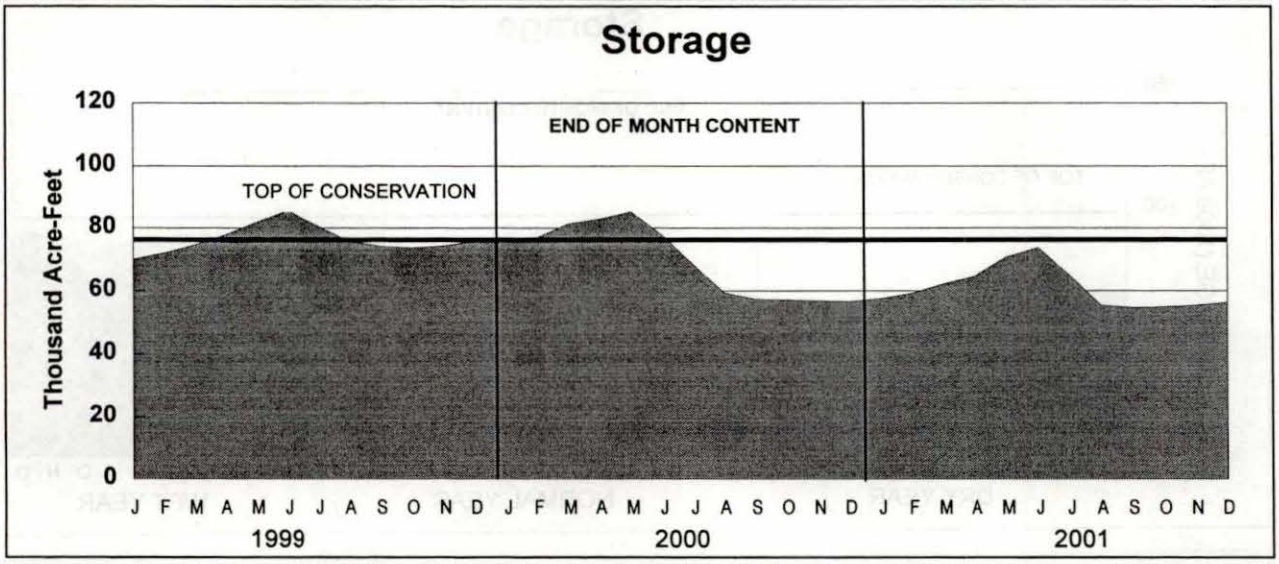


EXHIBIT 15A

WEBSTER RESERVOIR
ACTUAL OPERATION





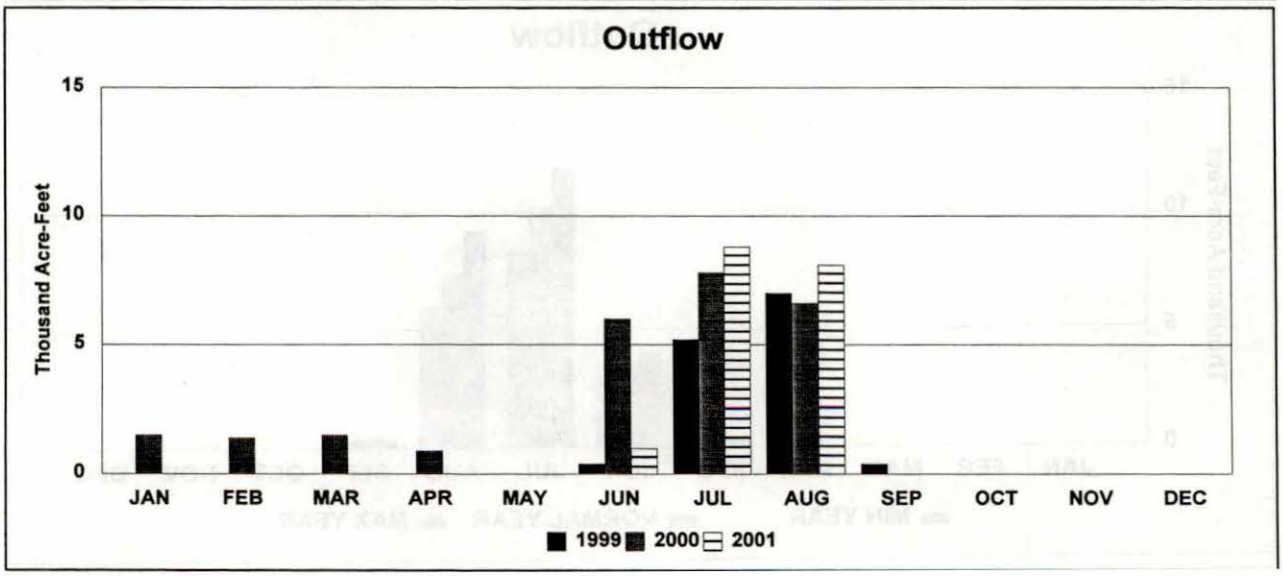
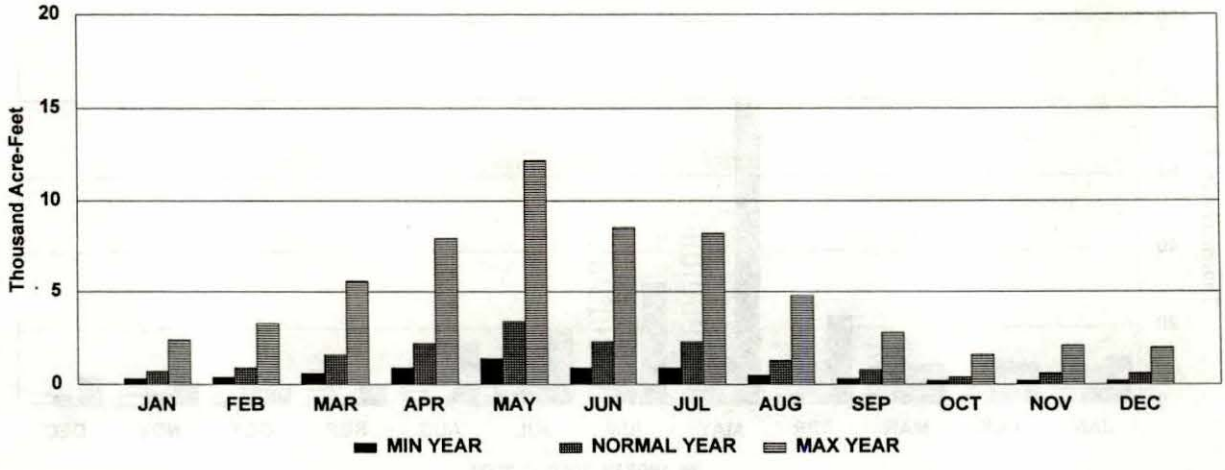


EXHIBIT 15B

WEBSTER RESERVOIR

2002 OPERATION PLAN

Inflow



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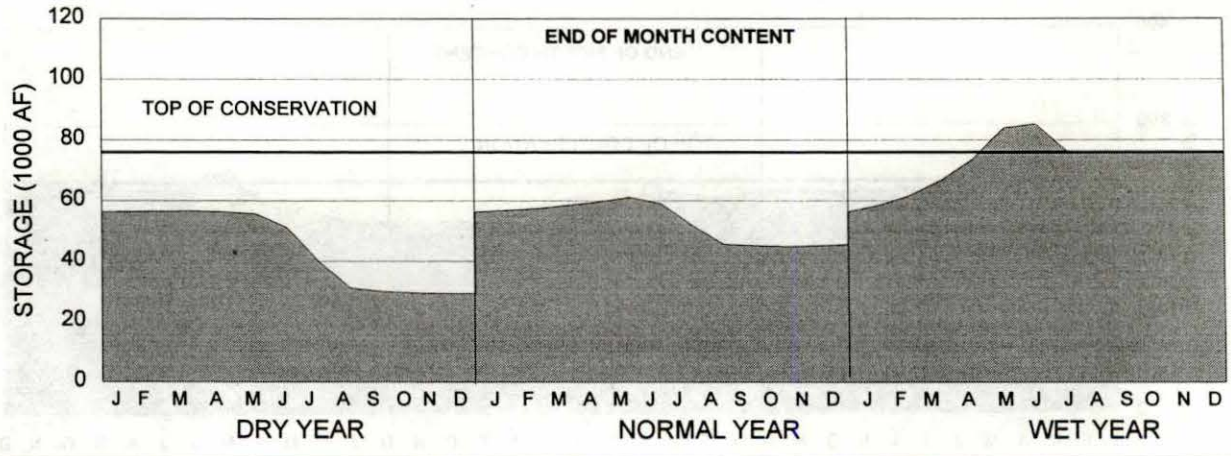

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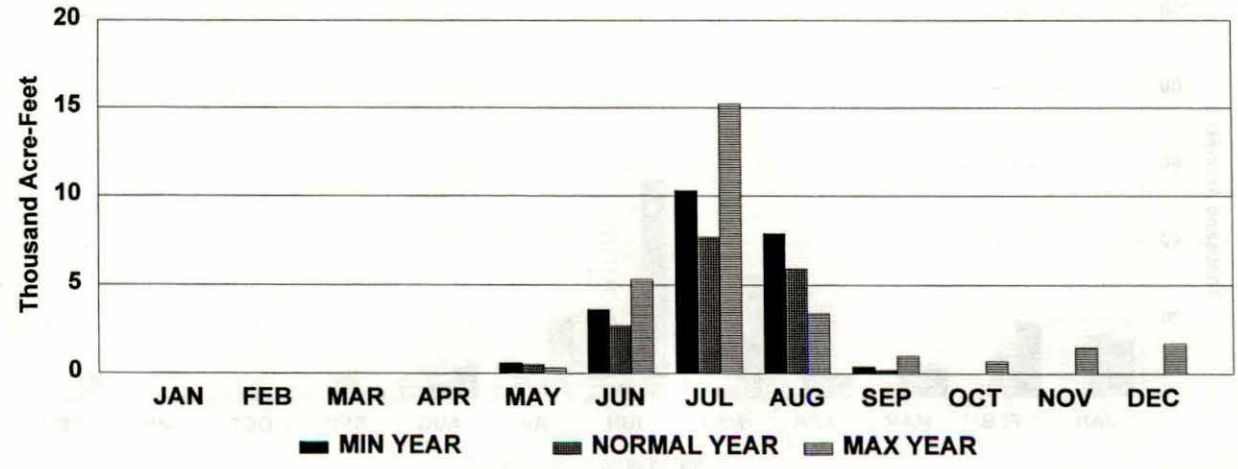
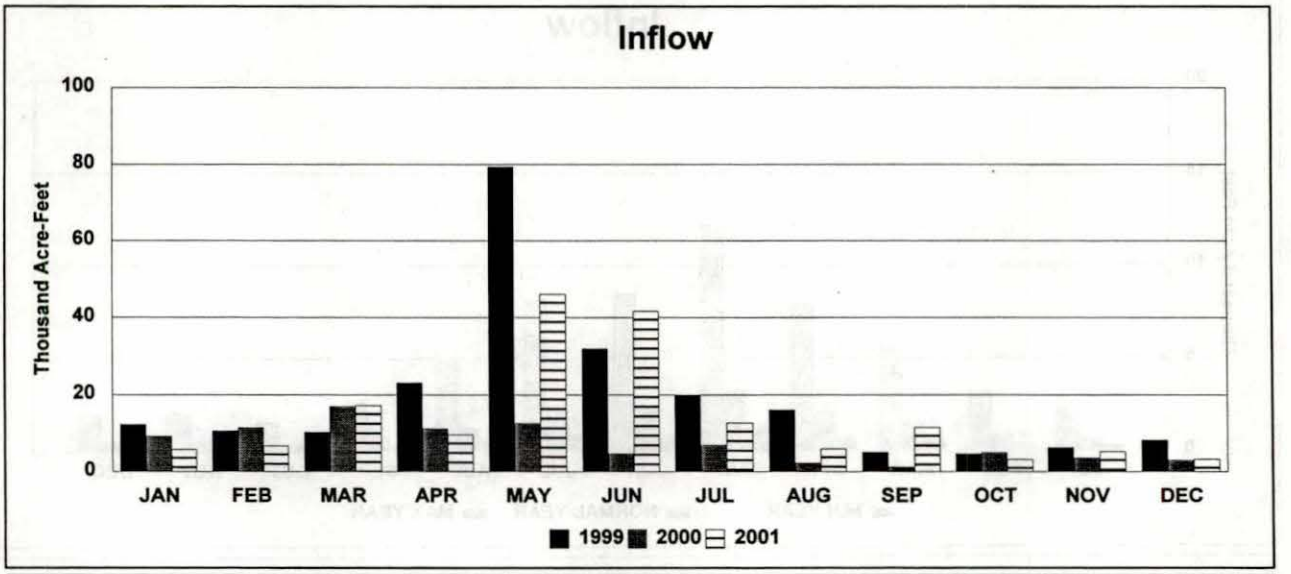
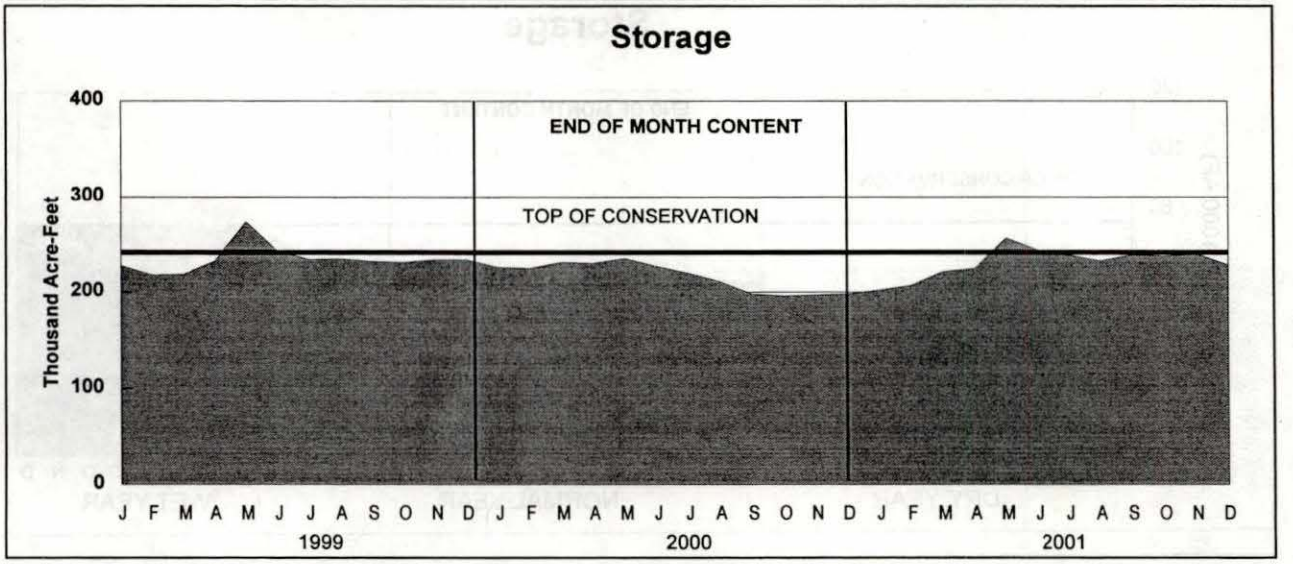
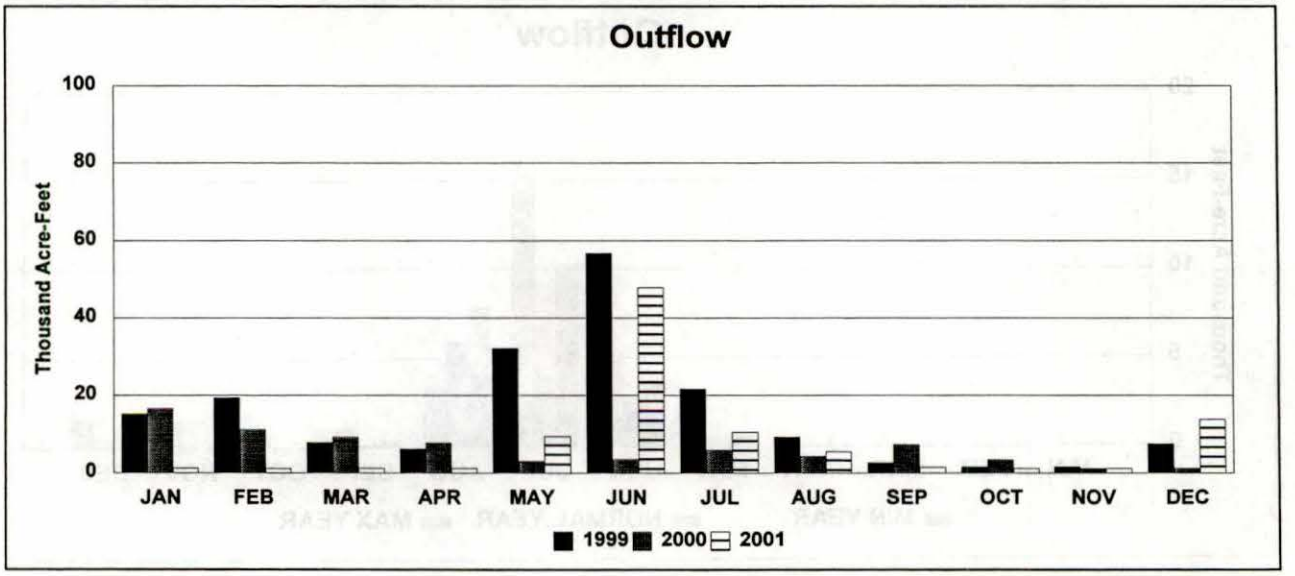


EXHIBIT 16A

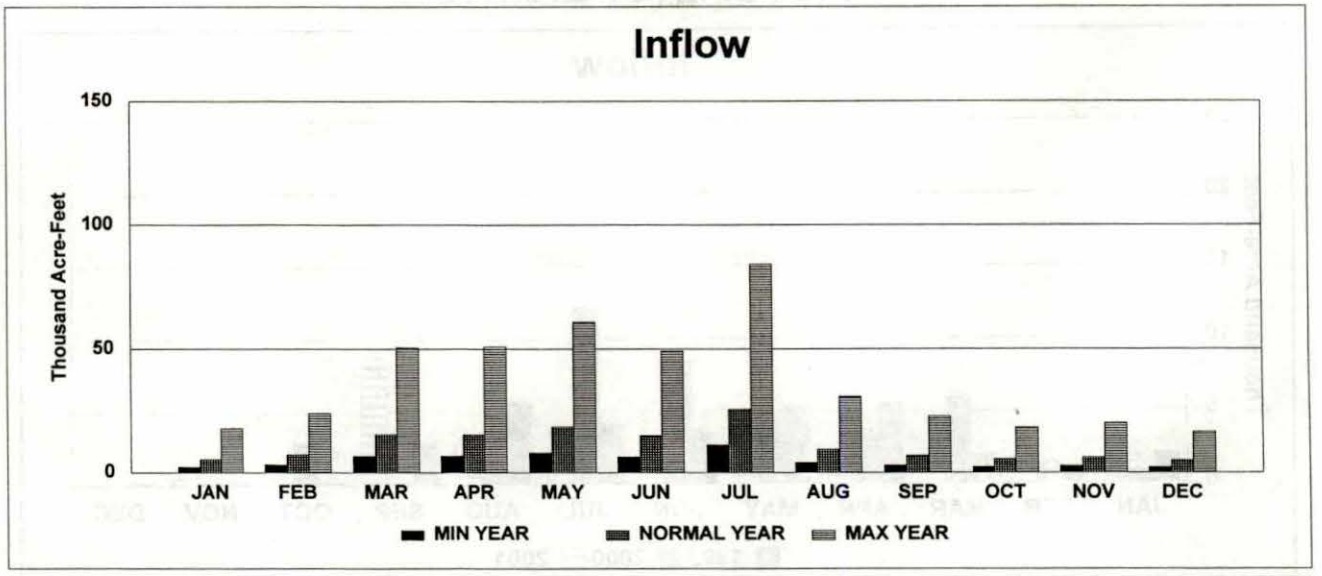
WACONDA LAKE
.ACTUAL OPERATION

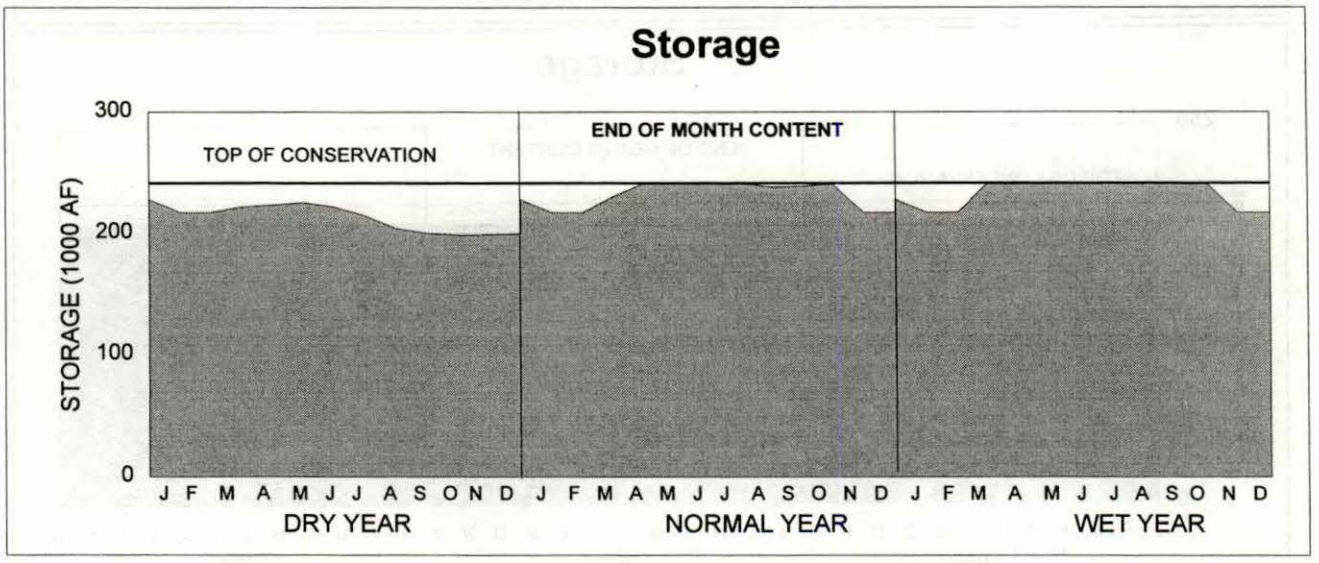






WACONDA LAKE
2002 OPERATION PLAN





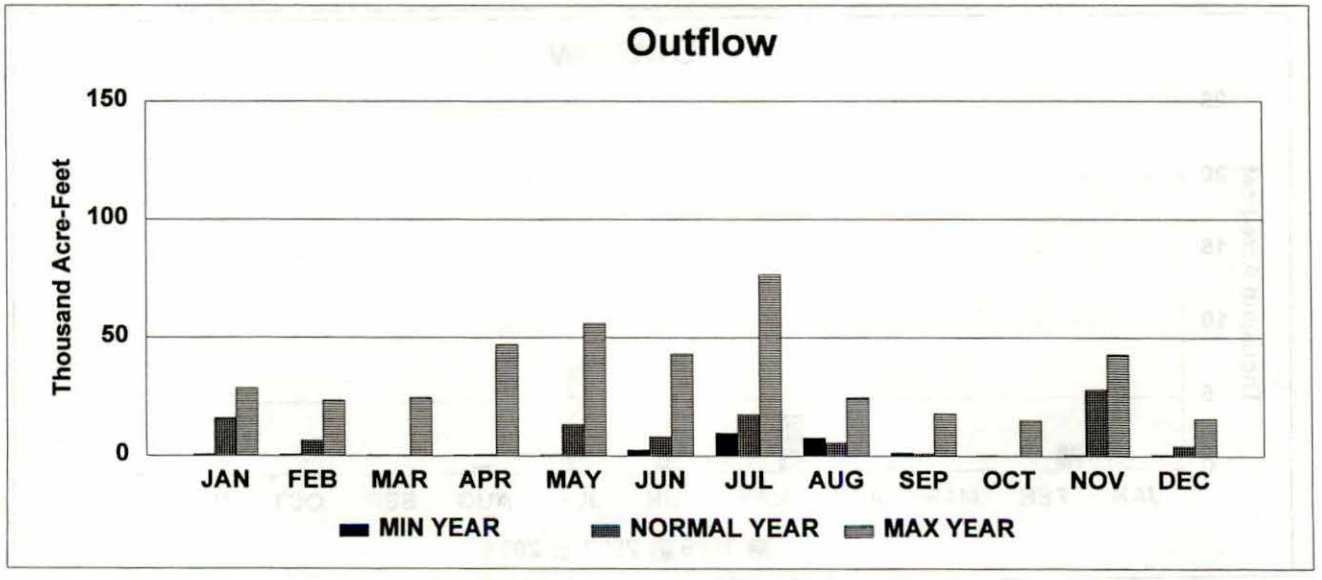
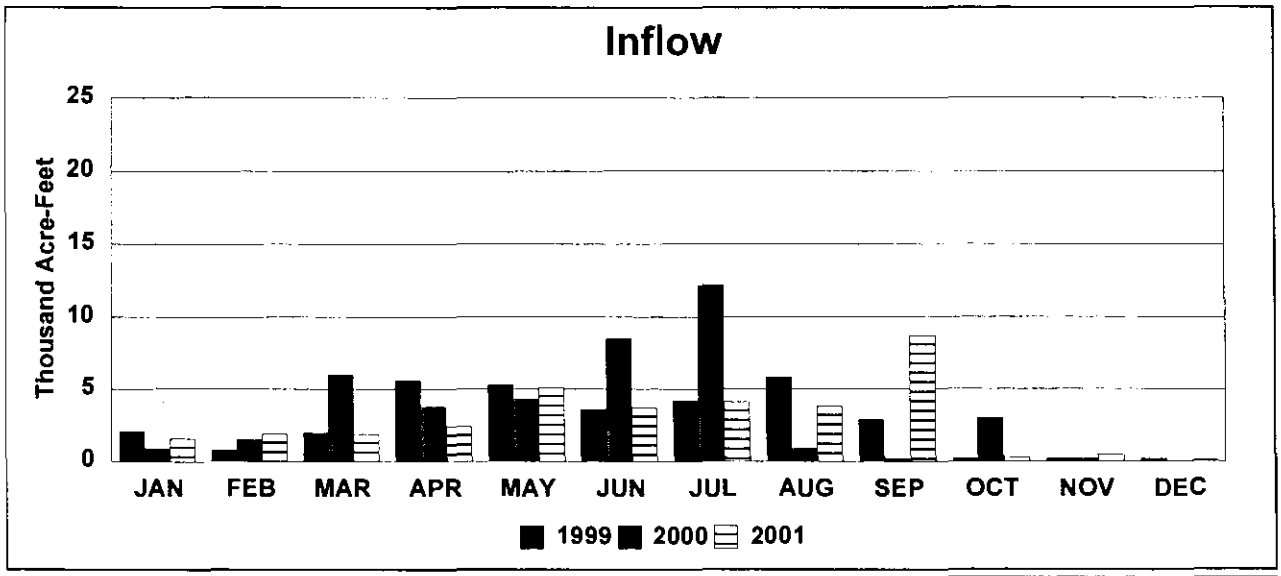
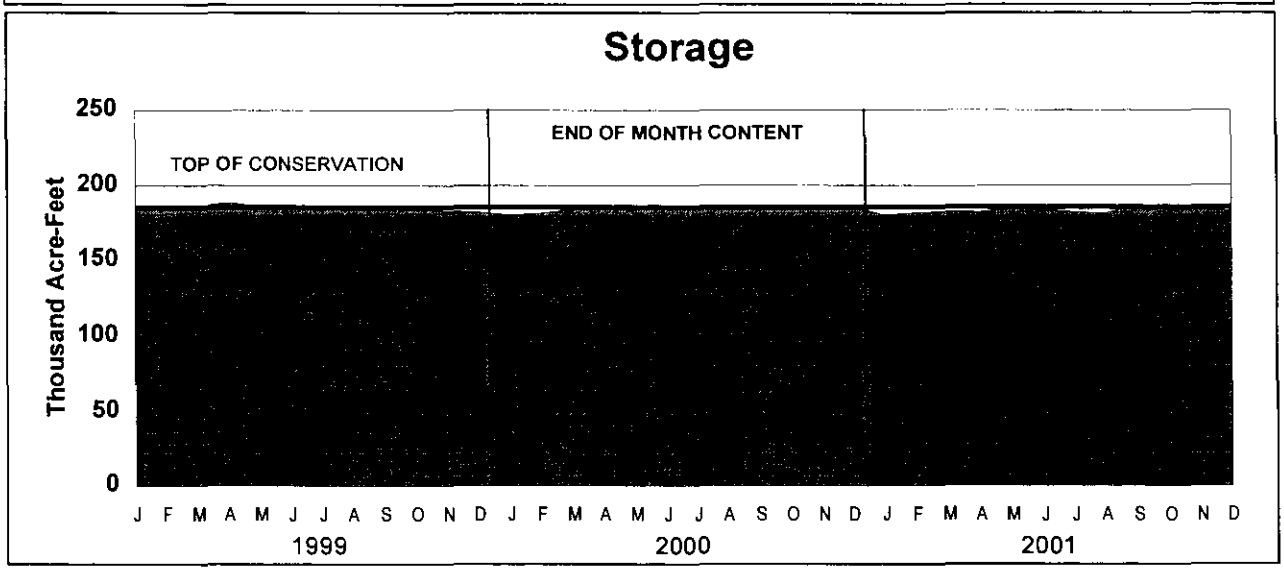


EXHIBIT 17A

CEDAR BLUFF RESERVOIR
ACTUAL OPERATION





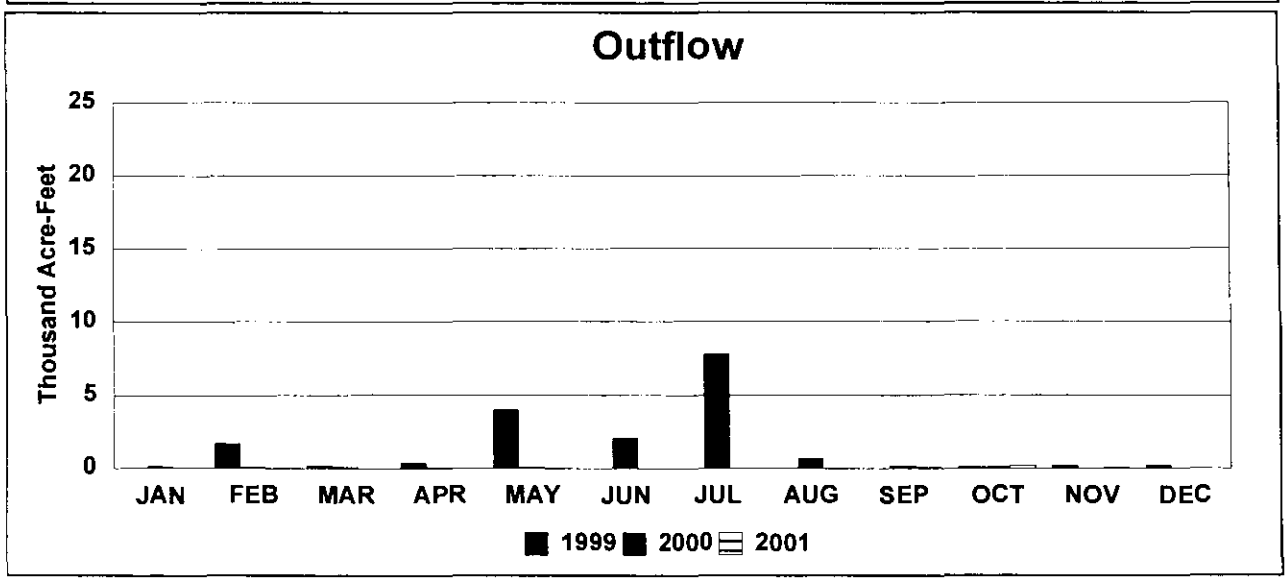
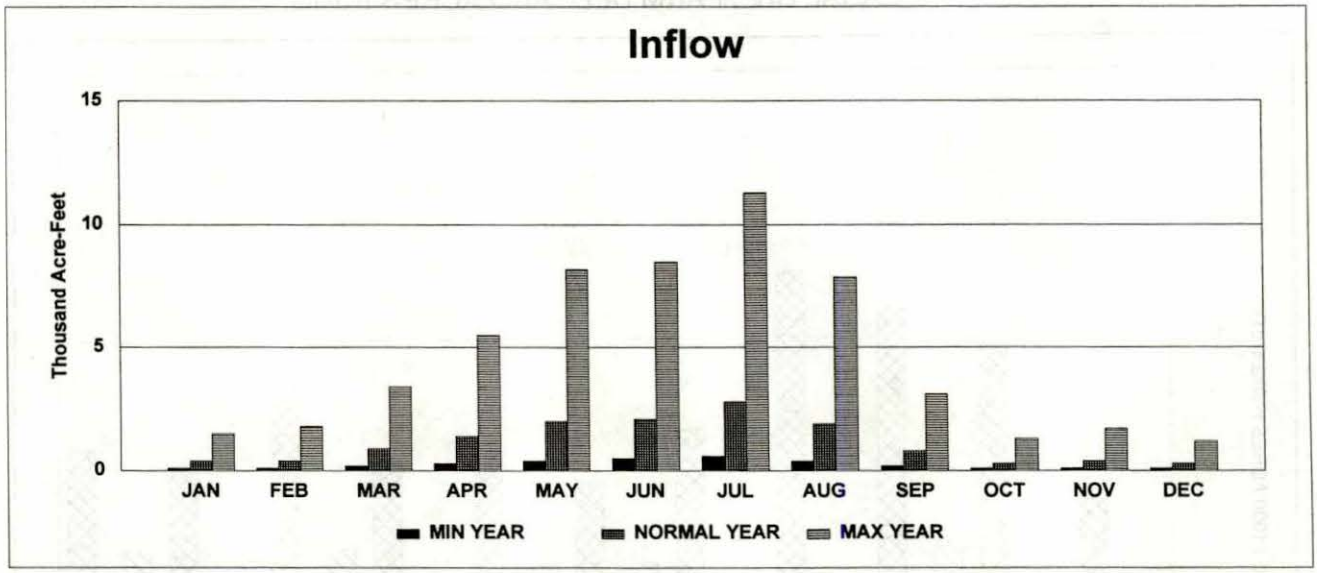
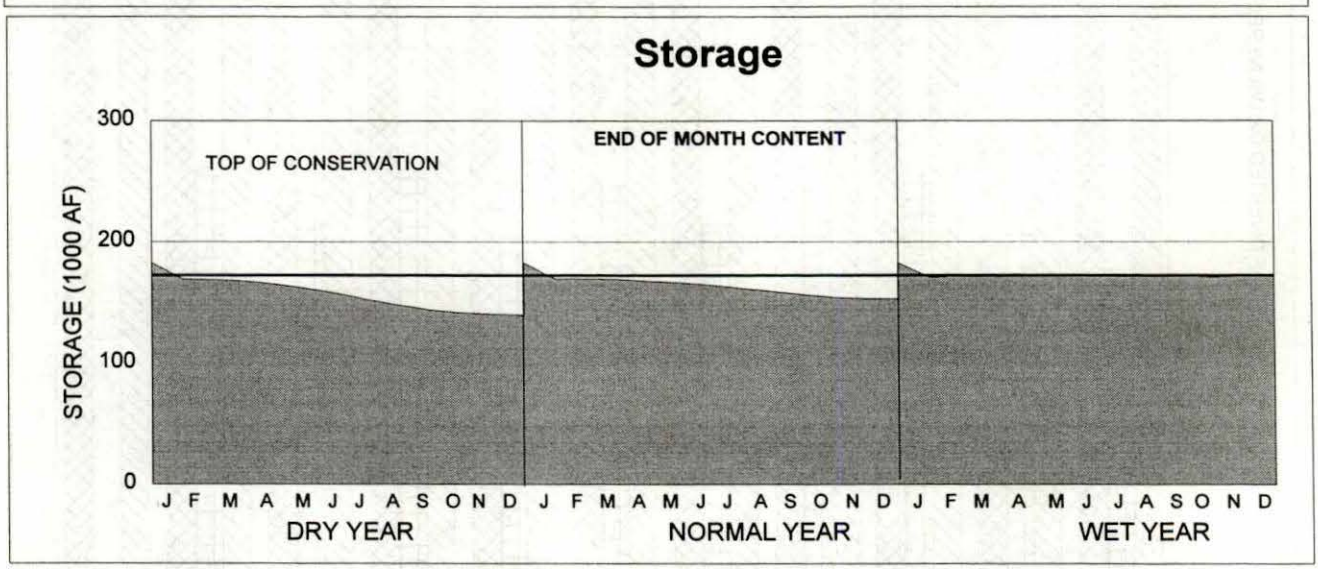


EXHIBIT 17B

CEDAR BLUFF RESERVOIR

2002 OPERATION PLAN





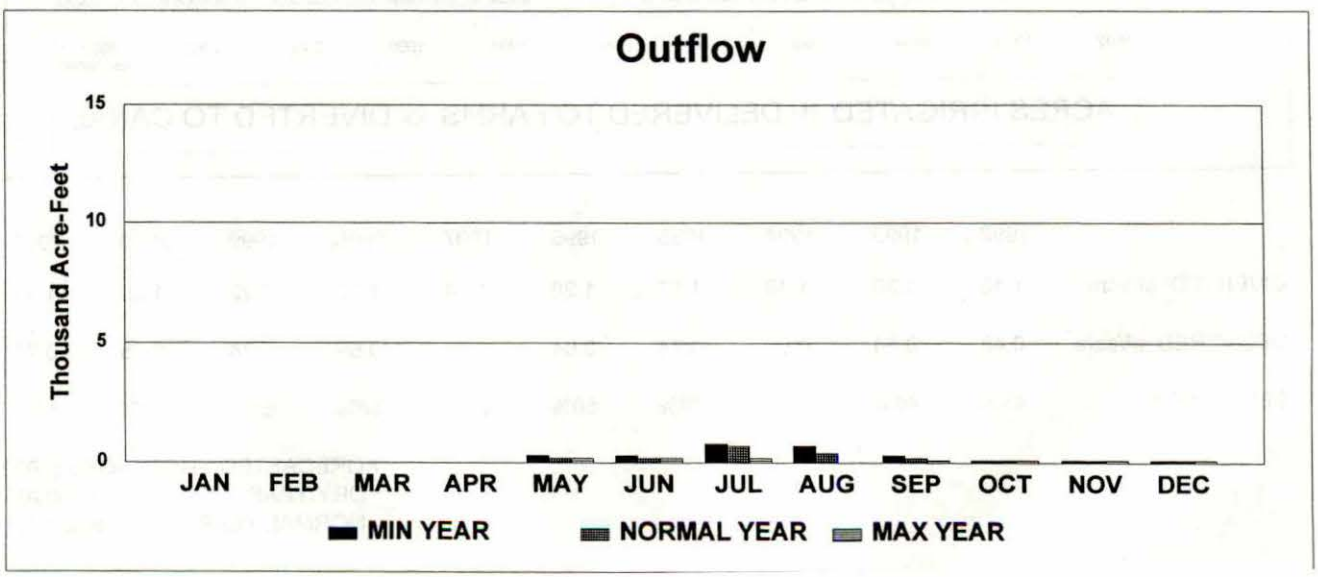
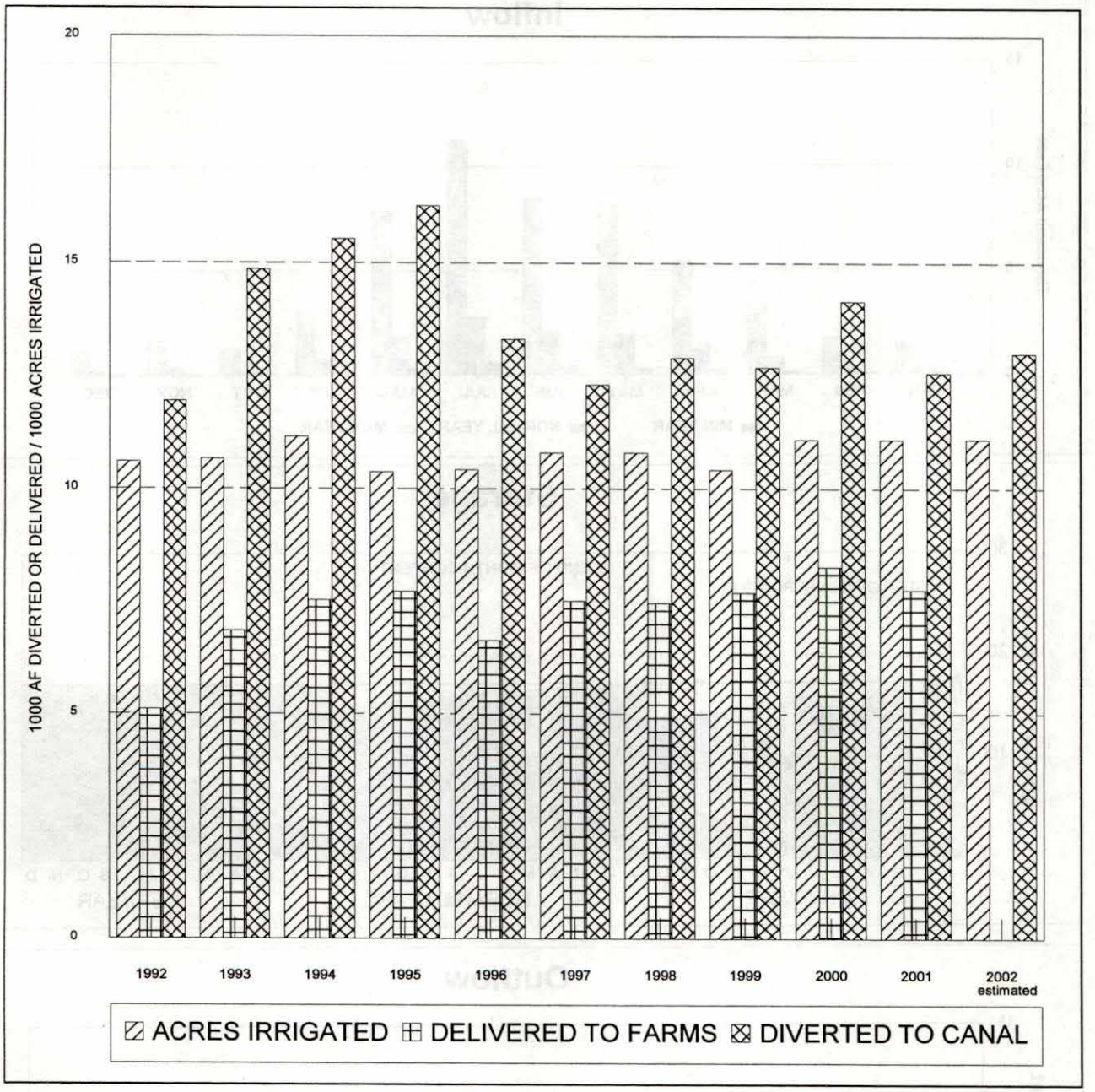


EXHIBIT 18

MIRAGE FLATS IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	1.13	1.39	1.39	1.57	1.28	1.14	1.20	1.22	1.28	1.13
DELIVERED af/acre	0.48	0.64	0.68	0.74	0.64	0.70	0.69	0.74	0.75	0.70
EFFICIENCY	43%	46%	49%	48%	50%	61%	58%	61%	58%	62%

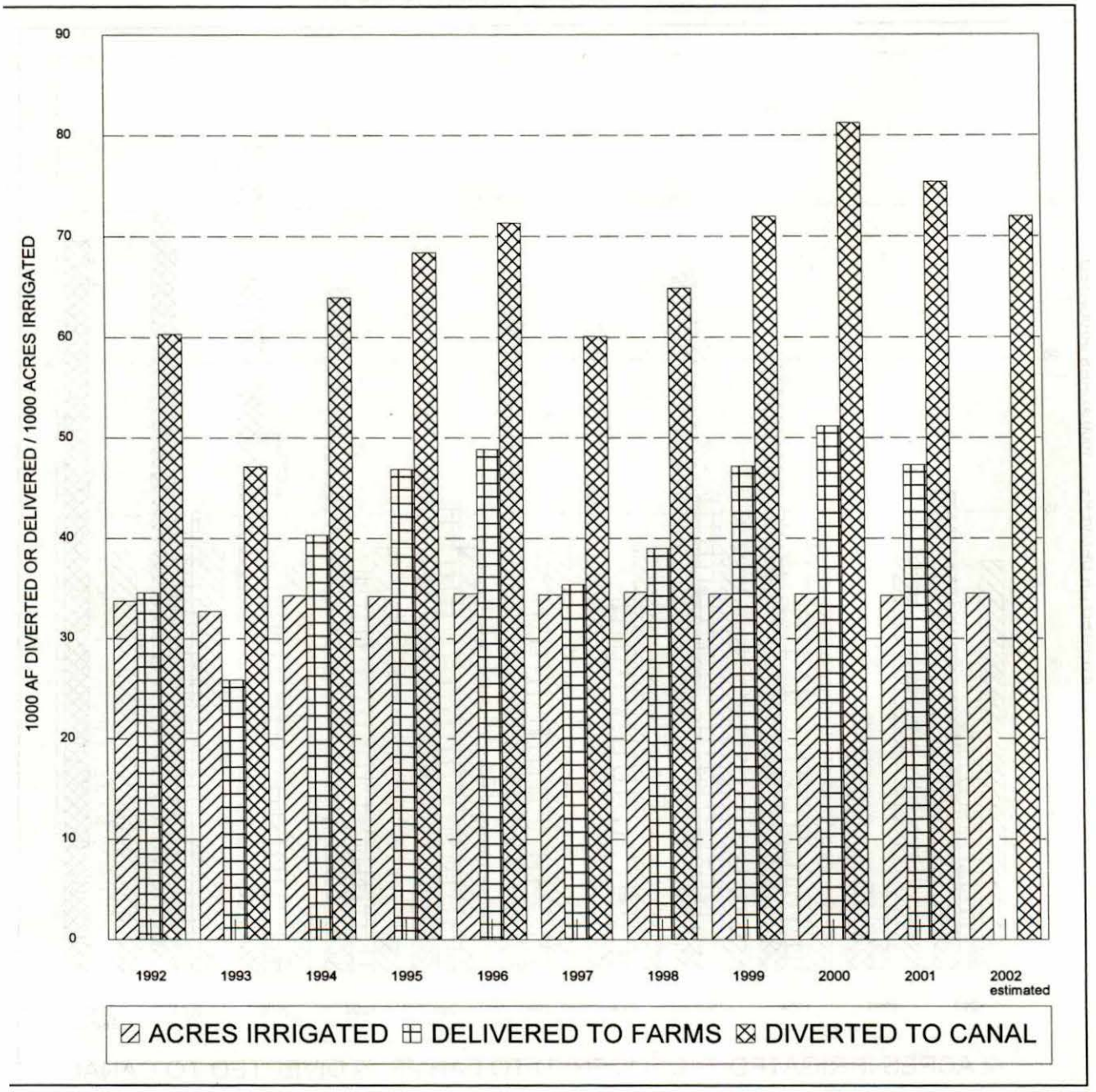
FORECASTED SHORTAGES (2002)

DRY YEAR	19,300 AF
NORMAL YEAR	8,500 AF

EXHIBIT 19

AINSWORTH IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	1.79	1.44	1.87	2.00	2.07	1.75	1.87	2.09	2.36	2.20
DELIVERED af/acre	1.02	0.79	1.18	1.37	1.42	1.03	1.13	1.37	1.49	1.38
EFFICIENCY	57%	55%	63%	68%	68%	59%	60%	66%	63%	63%

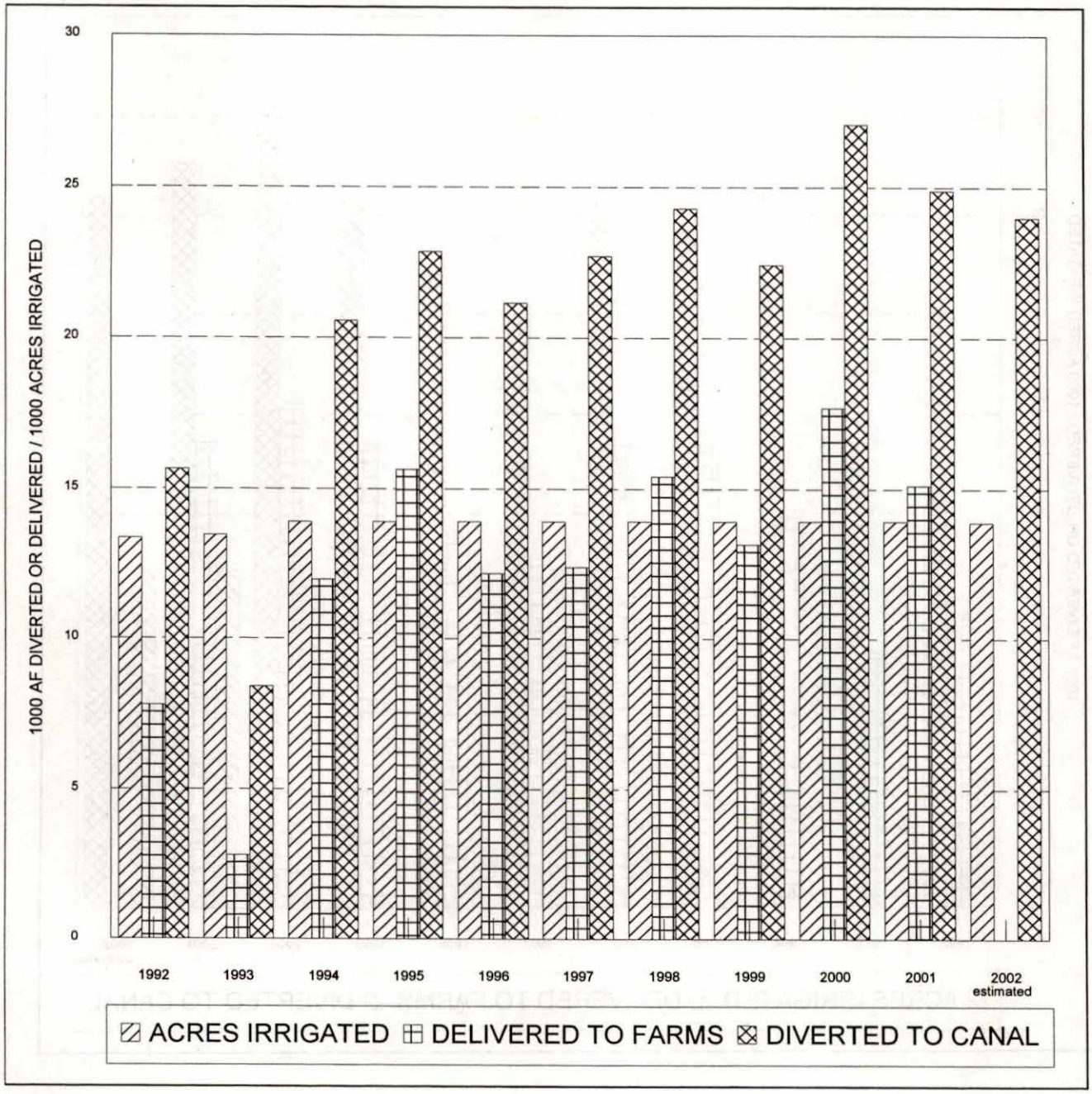
FORECASTED SHORTAGES (2002)

DRY YEAR	0 AF
NORMAL YEAR	0 AF

EXHIBIT 20

SARGENT IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	1.17	0.62	1.48	1.64	1.52	1.63	1.74	1.61	1.94	1.79
DELIVERED af/acre	0.58	0.21	0.86	1.13	0.88	0.89	1.11	0.95	1.27	1.09
EFFICIENCY	50%	33%	58%	68%	58%	55%	63%	59%	65%	61%

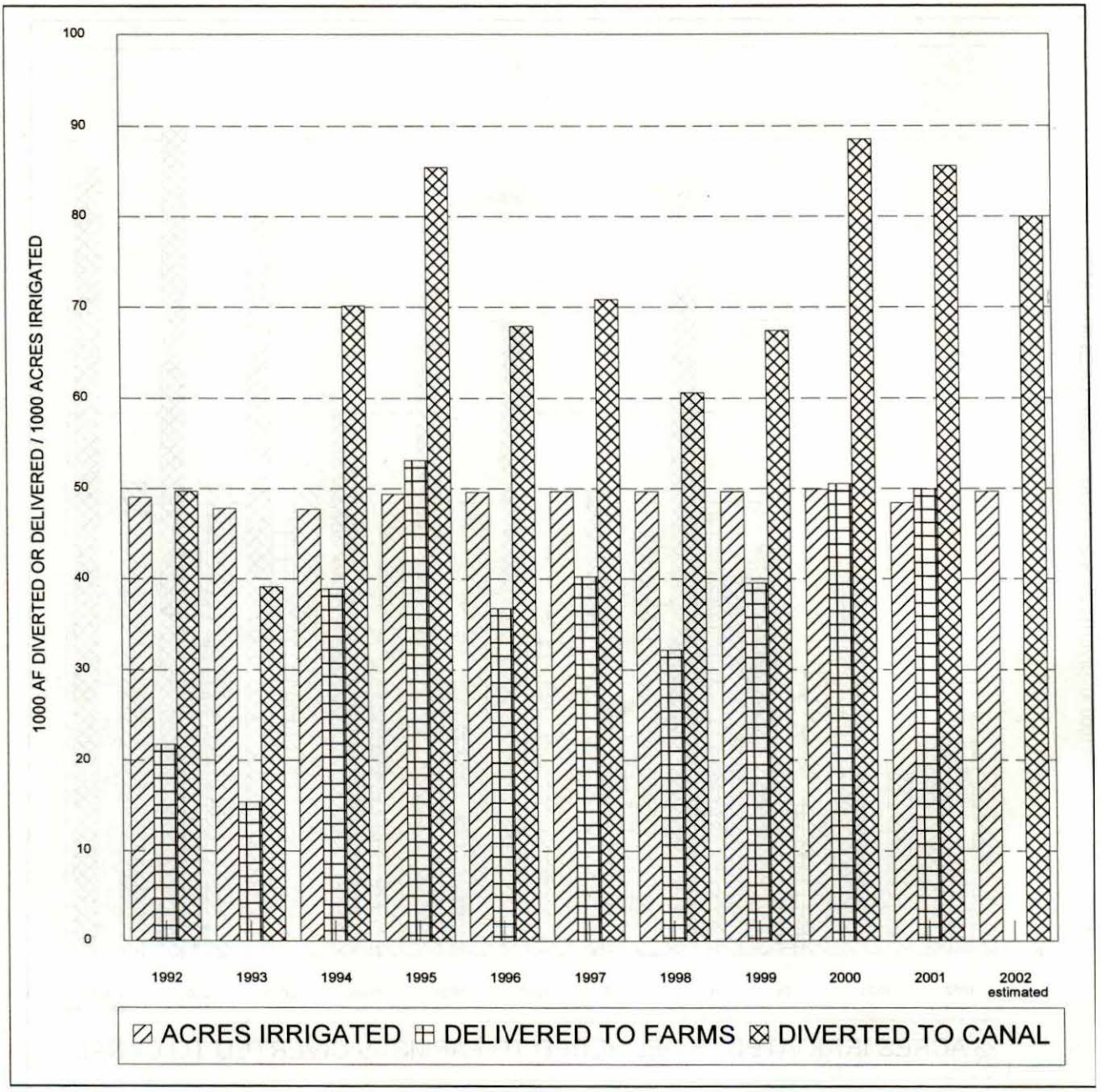
FORECASTED SHORTAGES (2002)

DRY YEAR	0 AF
NORMAL YEAR	0 AF

EXHIBIT 21

FARWELL IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	1.01	0.82	1.47	1.73	1.37	1.43	1.22	1.36	1.77	1.77
DELIVERED af/acre	0.44	0.32	0.82	1.08	0.74	0.81	0.65	0.80	1.01	1.03
EFFICIENCY	44%	39%	55%	62%	54%	57%	53%	59%	57%	58%

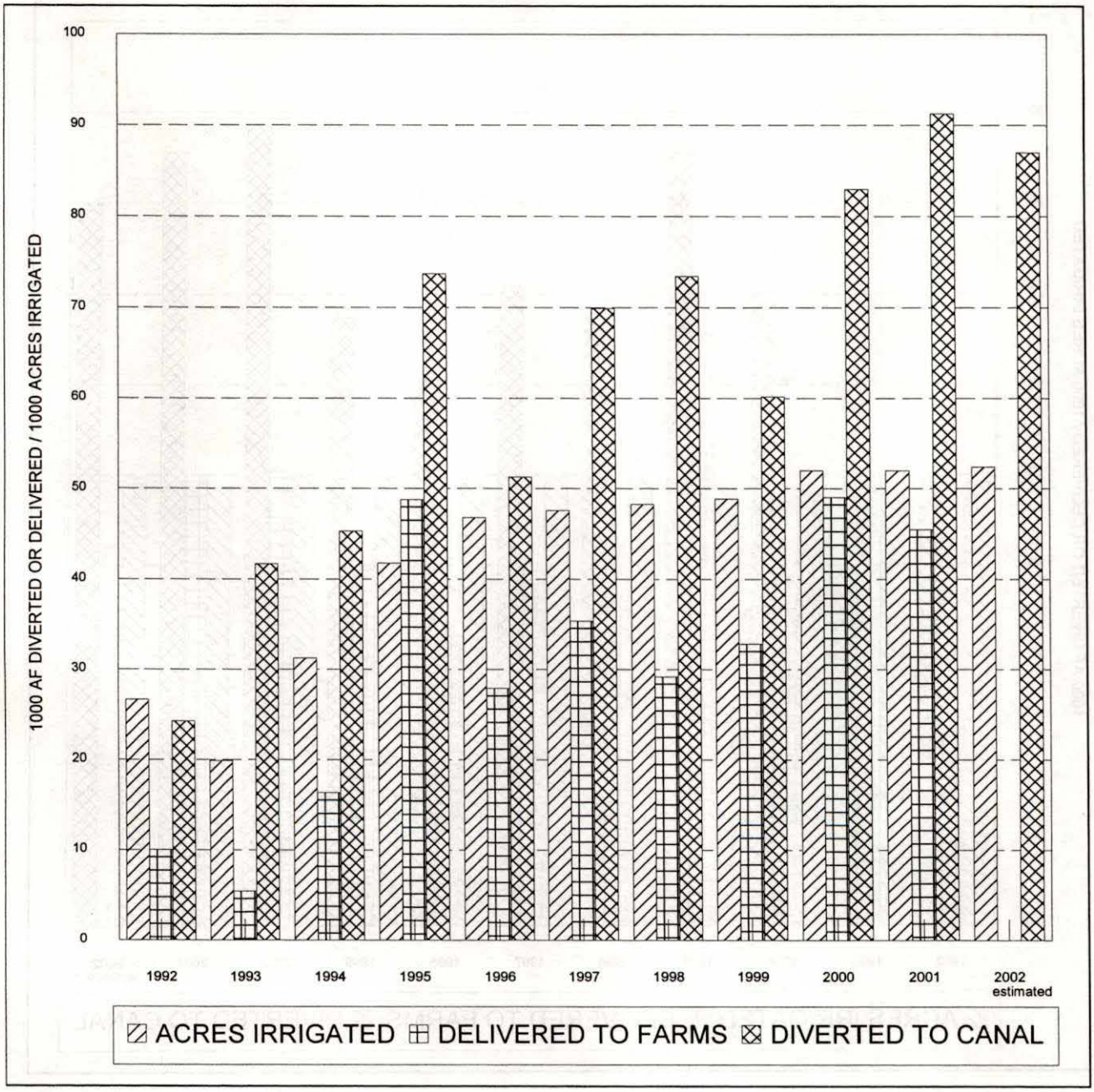
FORECASTED SHORTAGES (2002)

DRY YEAR	0 AF
NORMAL YEAR	0 AF

EXHIBIT 22

TWIN LOUPS IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	0.91	2.10	1.45	1.76	1.10	1.47	1.52	1.23	1.60	1.76
DELIVERED af/acre	0.38	0.27	0.52	1.17	0.60	0.74	0.60	0.67	0.94	0.88
EFFICIENCY	41%	13%	36%	66%	54%	51%	40%	55%	59%	50%

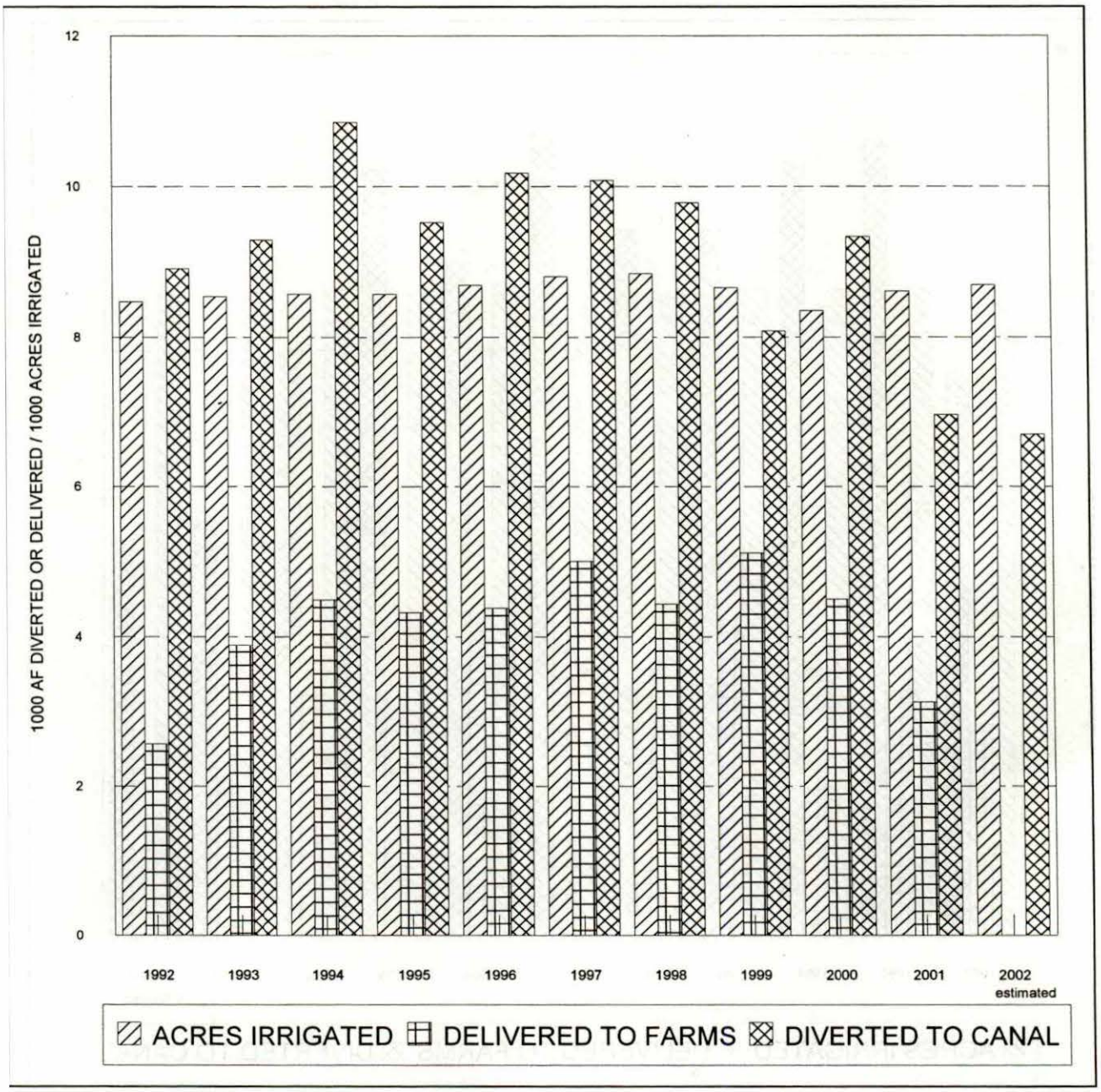
FORECASTED SHORTAGES (2002)

DRY YEAR	0 AF
NORMAL YEAR	0 AF

EXHIBIT 23

FRENCHMAN VALLEY IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	1.05	1.09	1.26	1.11	1.17	1.14	1.11	0.93	1.12	0.81
DELIVERED af/acre	0.30	0.45	0.52	0.50	0.50	0.57	0.50	0.59	0.54	0.36
EFFICIENCY	29%	42%	41%	45%	43%	50%	45%	63%	48%	45%

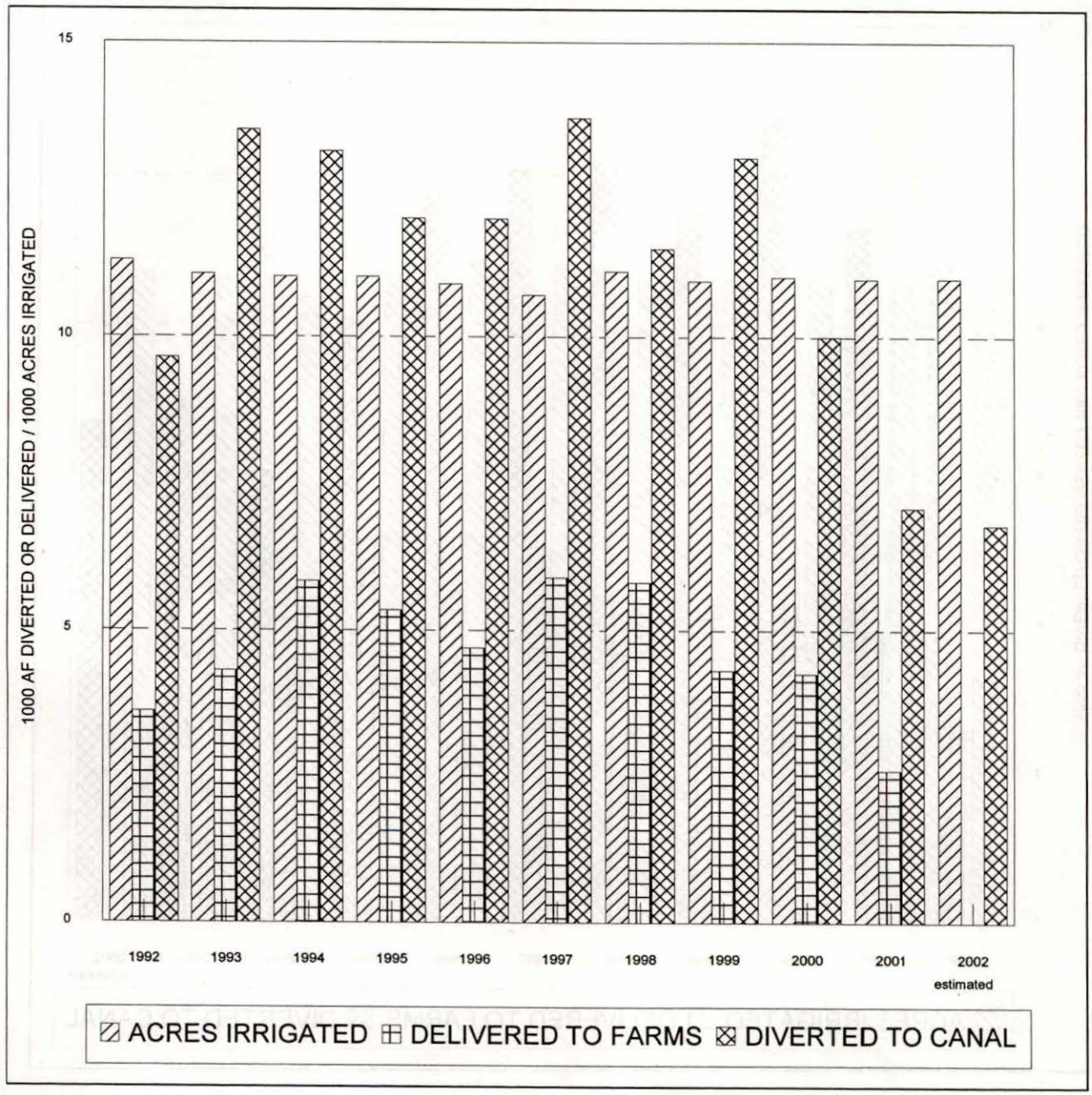
FORECASTED SHORTAGES (2002)

DRY YEAR	29,100 AF
NORMAL YEAR	18,000 AF
WET YEAR	4,900 AF

EXHIBIT 24

H AND RW IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



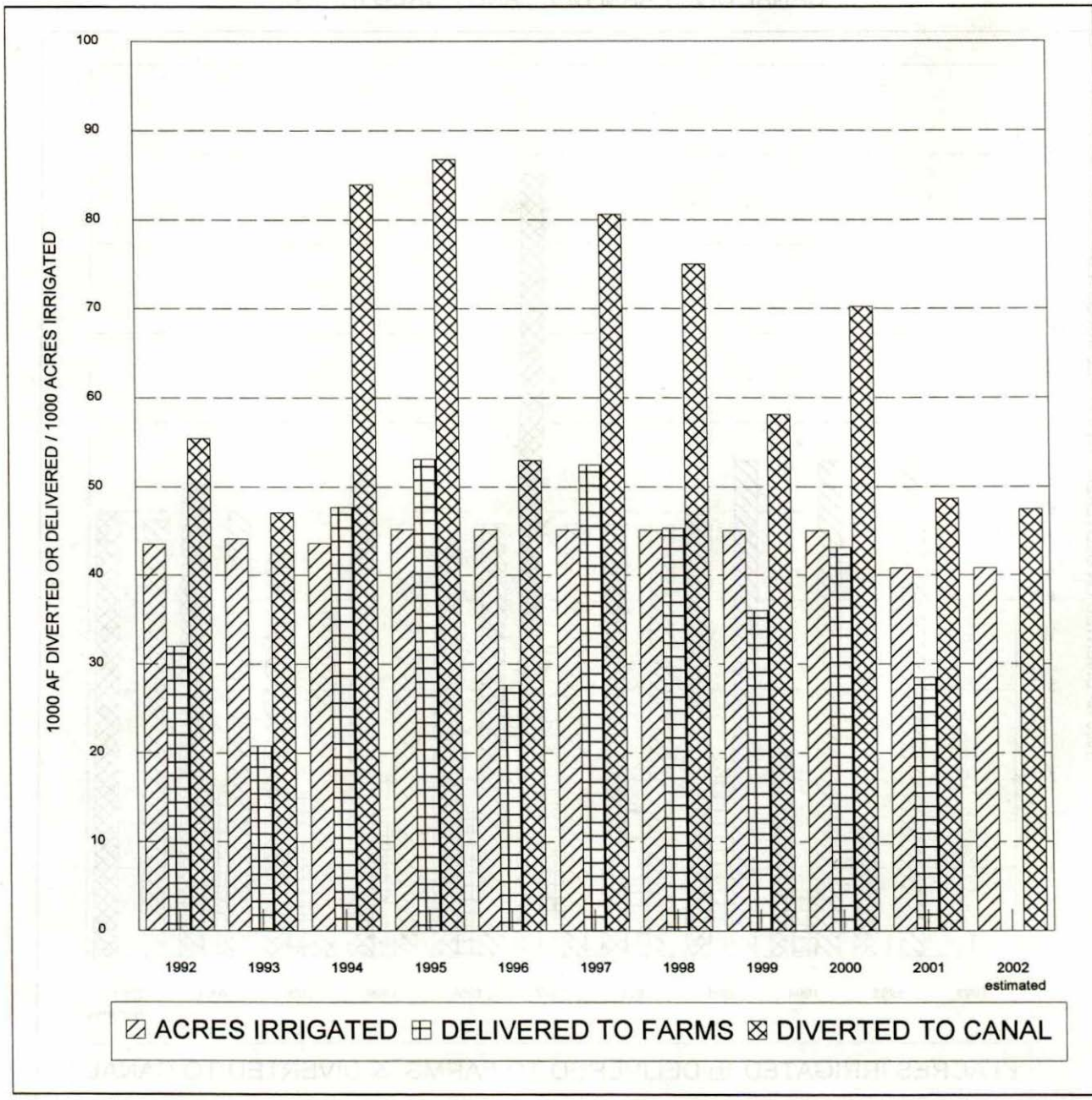
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	0.85	1.22	1.19	1.09	1.10	1.28	1.03	1.19	0.91	0.65
DELIVERED af/acre	0.32	0.39	0.53	0.48	0.43	0.55	0.52	0.39	0.39	0.24
EFFICIENCY	37%	32%	44%	44%	39%	43%	51%	33%	43%	37%

FORECASTED SHORTAGES (2002)

DRY YEAR	37,100 AF
NORMAL YEAR	23,000 AF
WET YEAR	6,300 AF

FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	1.27	1.07	1.93	1.92	1.17	1.79	1.66	1.29	1.56	1.19
DELIVERED af/acre	0.73	0.47	1.09	1.17	0.61	1.16	1.00	0.80	0.96	0.70
EFFICIENCY	58%	44%	57%	61%	52%	65%	60%	62%	61%	58%

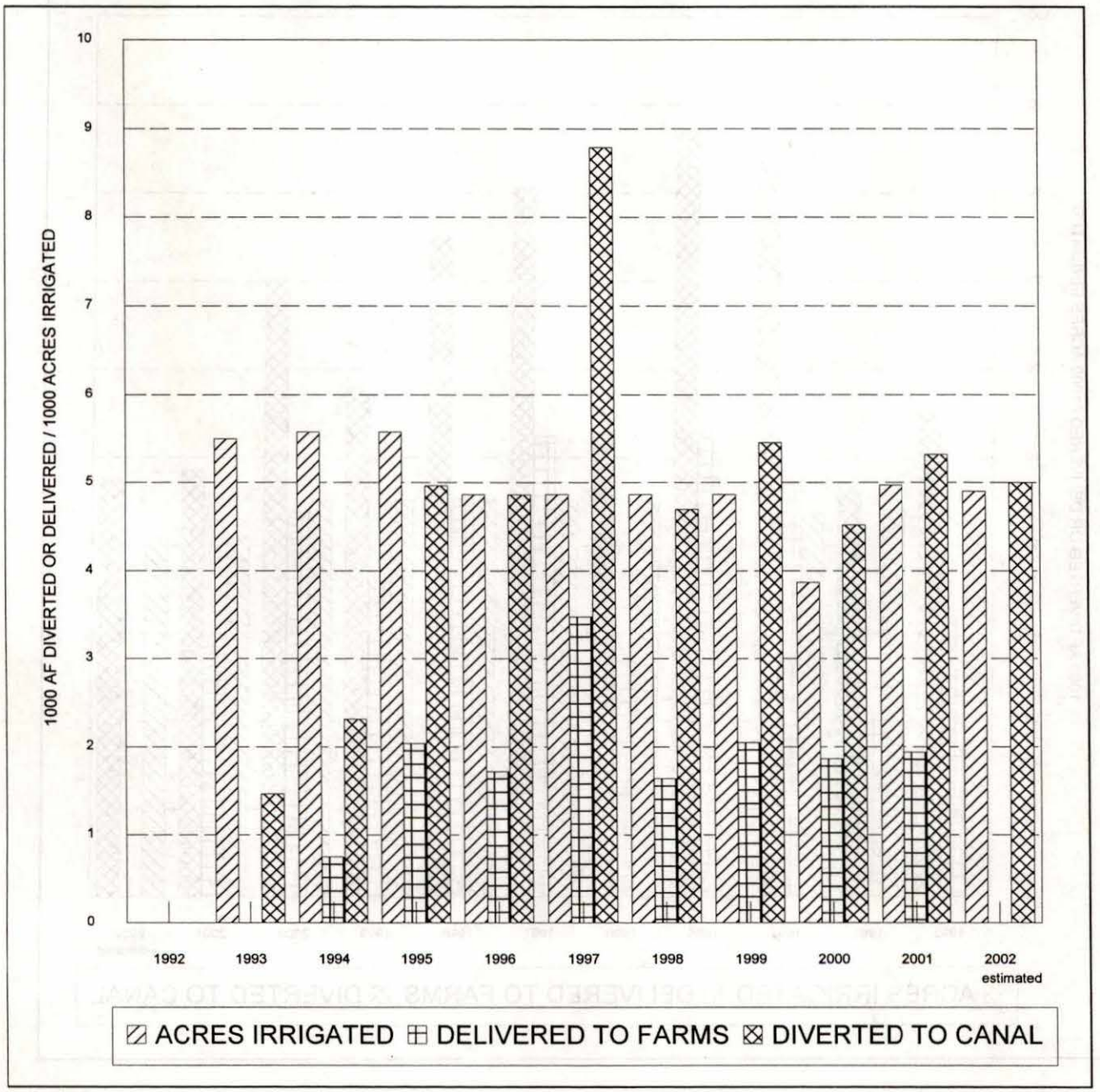
FORECASTED SHORTAGES (2002)

DRY YEAR	14,700 AF
NORMAL YEAR	0 AF

EXHIBIT 26

ALMENA IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	0.00	0.27	0.41	0.89	1.00	1.81	0.97	1.12	1.17	1.07
DELIVERED af/acre	0.00	0.00	0.13	0.37	0.35	0.72	0.34	0.42	0.48	0.39
EFFICIENCY	0%	0%	32%	41%	35%	40%	35%	38%	41%	36%

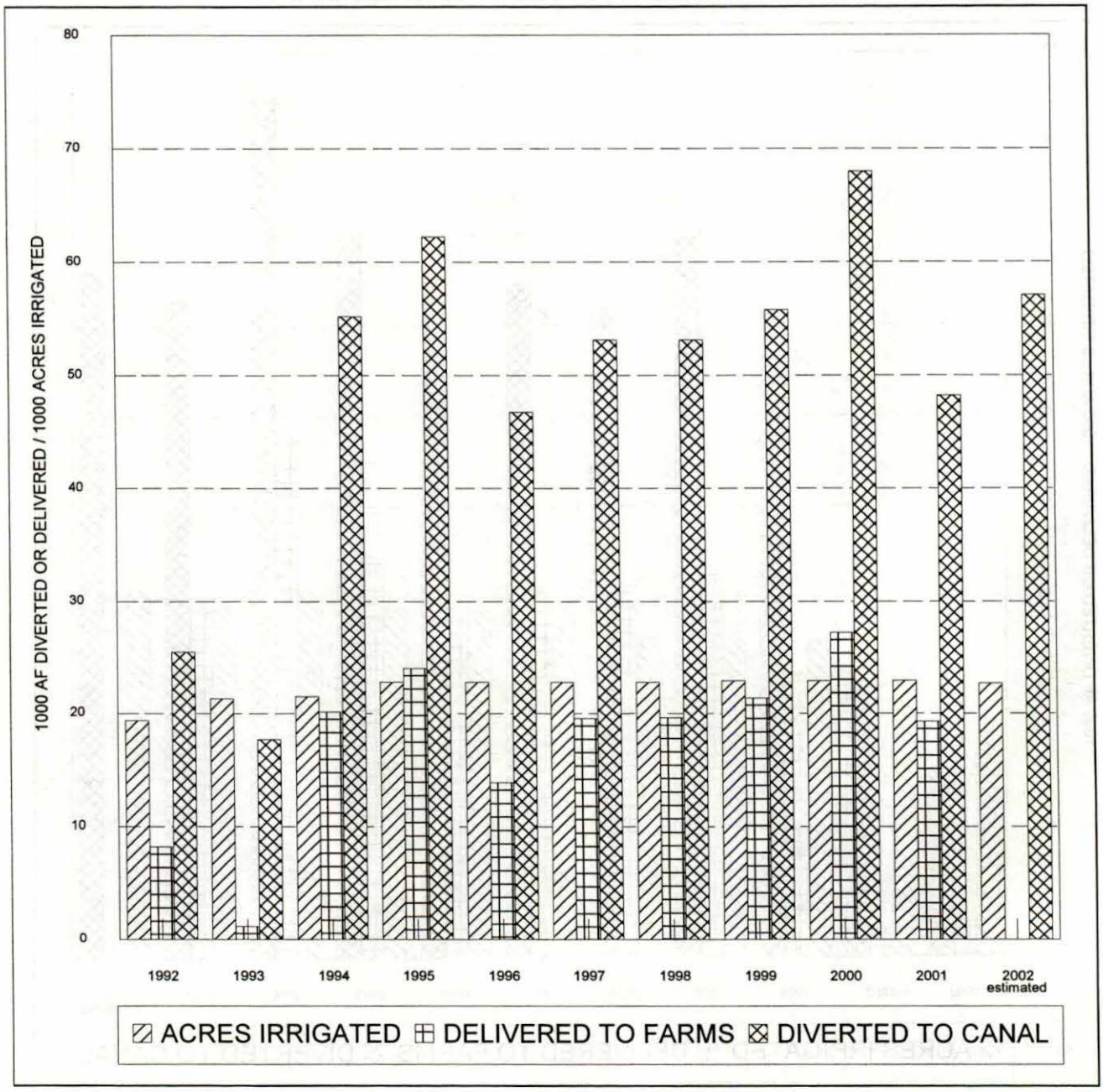
FORECASTED SHORTAGES (2002)

DRY YEAR	9,200 AF
NORMAL YEAR	2,200 AF

EXHIBIT 27

BOSTWICK IRRIGATION DISTRICT - NEBRASKA

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	1.32	0.83	2.57	2.73	2.05	2.33	2.33	2.44	2.97	2.10
DELIVERED af/acre	0.43	0.06	0.94	1.05	0.61	0.86	0.86	0.93	1.19	0.84
EFFICIENCY	32%	7%	36%	39%	30%	37%	37%	38%	40%	40%

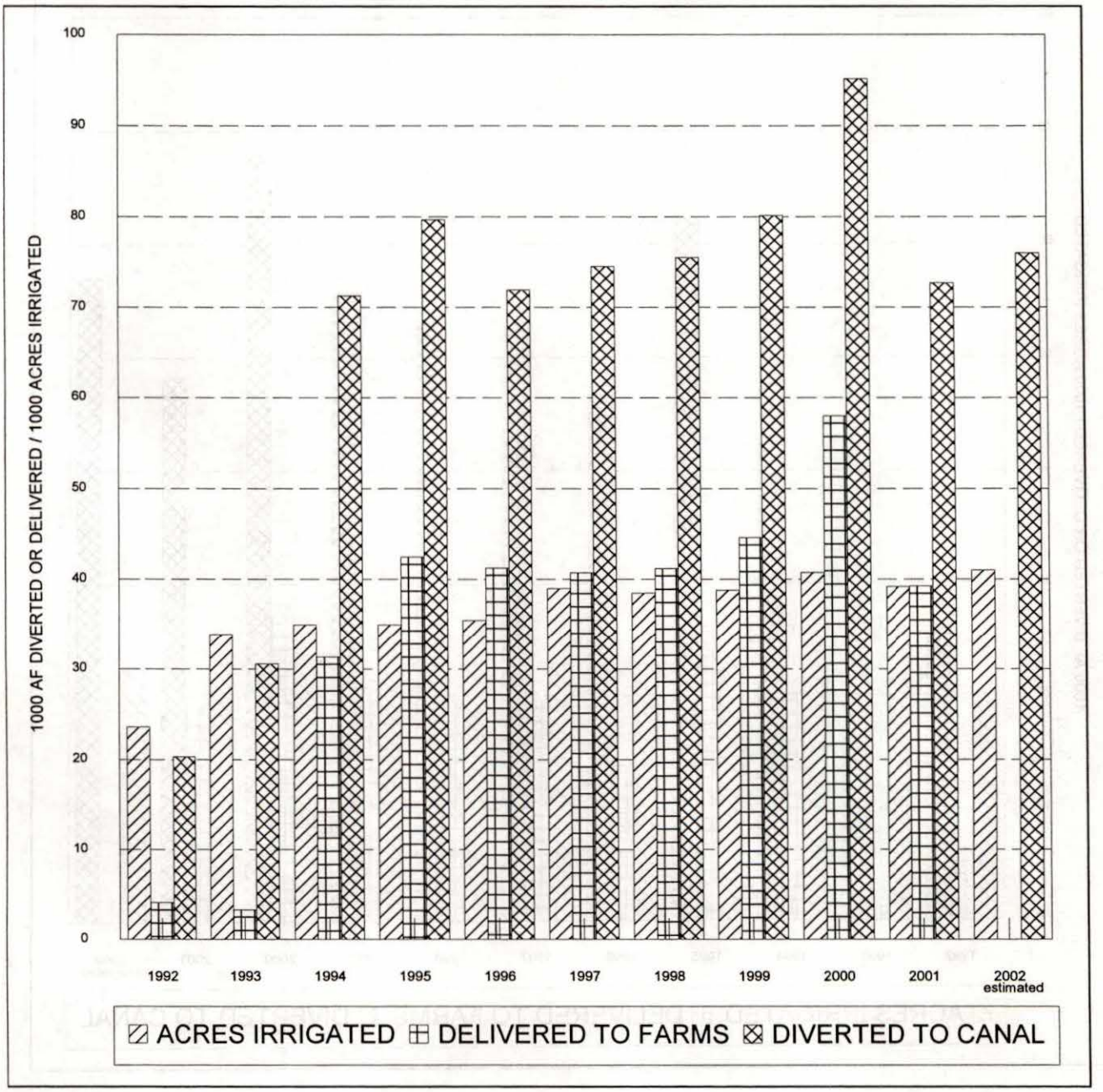
FORECASTED SHORTAGES (2002)

DRY YEAR	14,200 AF
NORMAL YEAR	0 AF

EXHIBIT 28

KANSAS-BOSTWICK IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	0.86	0.90	2.04	2.28	2.03	1.91	1.96	2.07	2.33	1.86
DELIVERED af/acre	0.17	0.10	0.90	1.22	1.16	1.04	1.07	1.15	1.42	1.00
EFFICIENCY	20%	11%	44%	53%	57%	55%	55%	56%	61%	54%

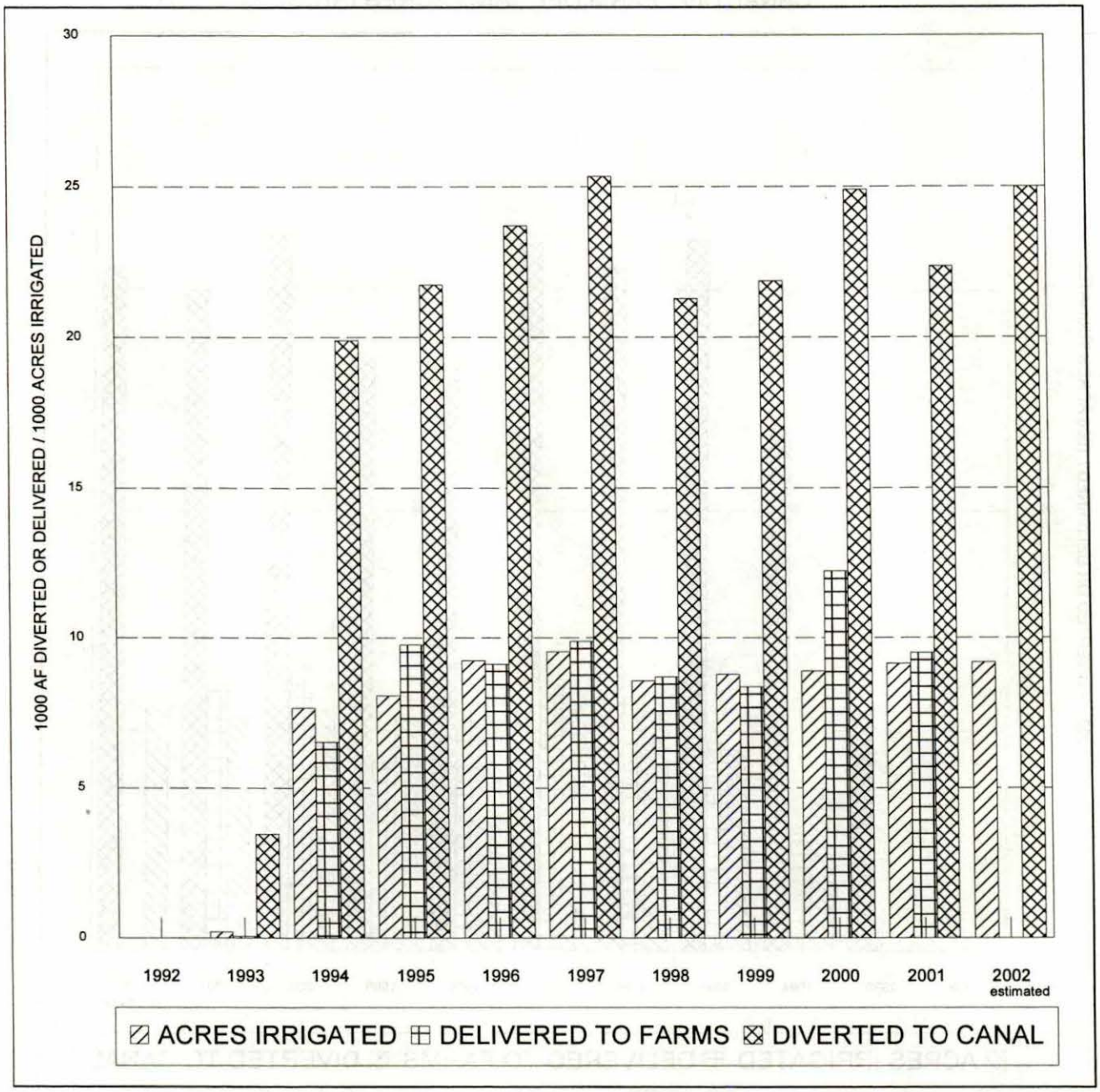
FORECASTED SHORTAGES (2002)

DRY YEAR	13,700 AF
NORMAL YEAR	0 AF

EXHIBIT 29

KIRWIN IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	0.00	0.00	0.00	2.69	2.56	2.65	2.48	2.49	2.80	2.44
DELIVERED af/acre	0.00	0.26	0.85	1.21	0.99	1.04	1.01	0.95	1.37	1.04
EFFICIENCY	0%	0%	0%	45%	39%	39%	41%	38%	49%	43%

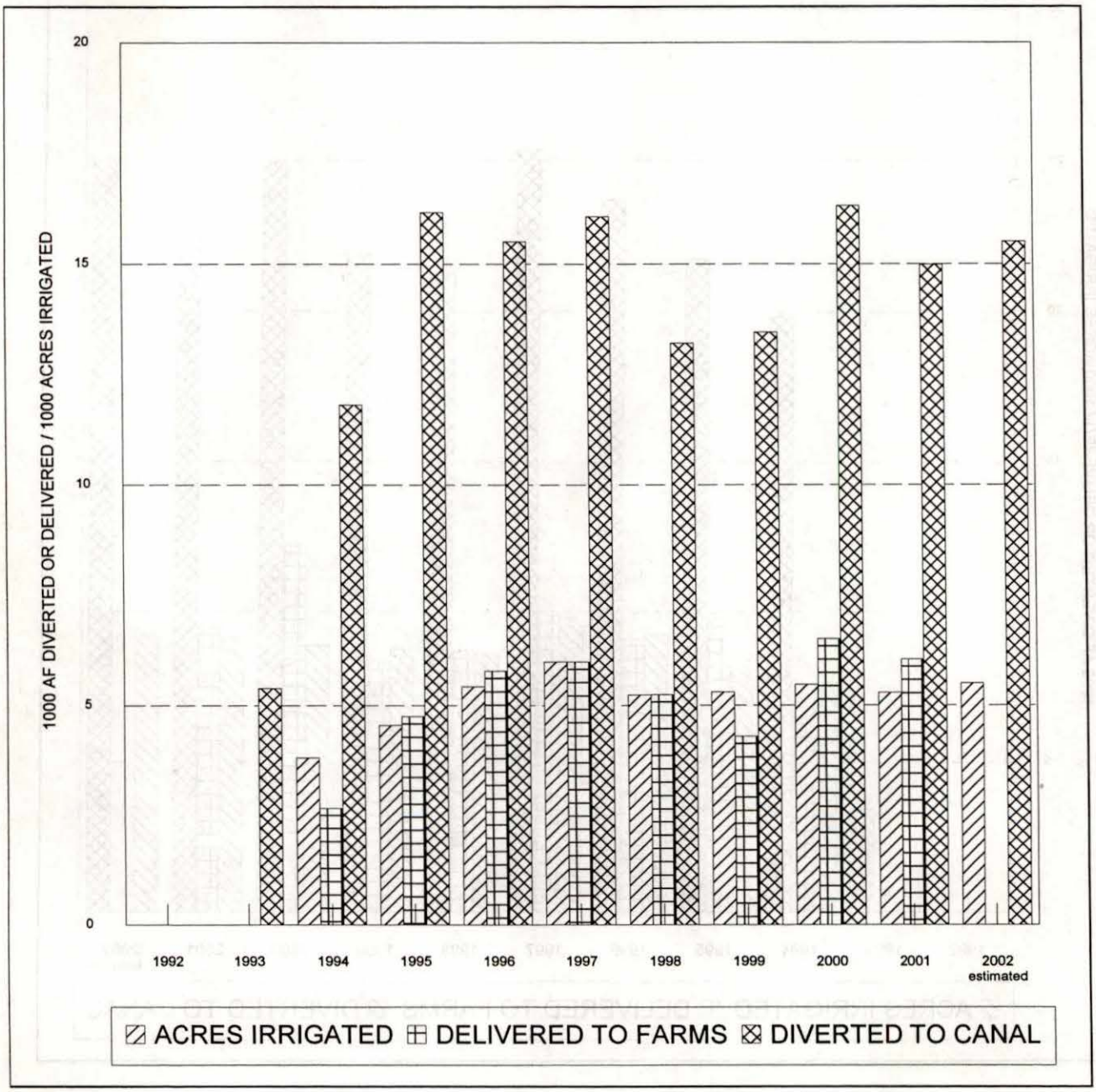
FORECASTED SHORTAGES (2002)

DRY YEAR	0 AF
NORMAL YEAR	0 AF

EXHIBIT 30

WEBSTER IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	0.00	0.00	3.09	3.55	2.86	2.68	2.52	2.54	2.98	2.83
DELIVERED af/acre	0.00	0.00	0.70	1.04	1.07	1.00	1.00	0.81	1.19	1.14
EFFICIENCY	0%	0%	23%	29%	37%	37%	40%	32%	40%	40%

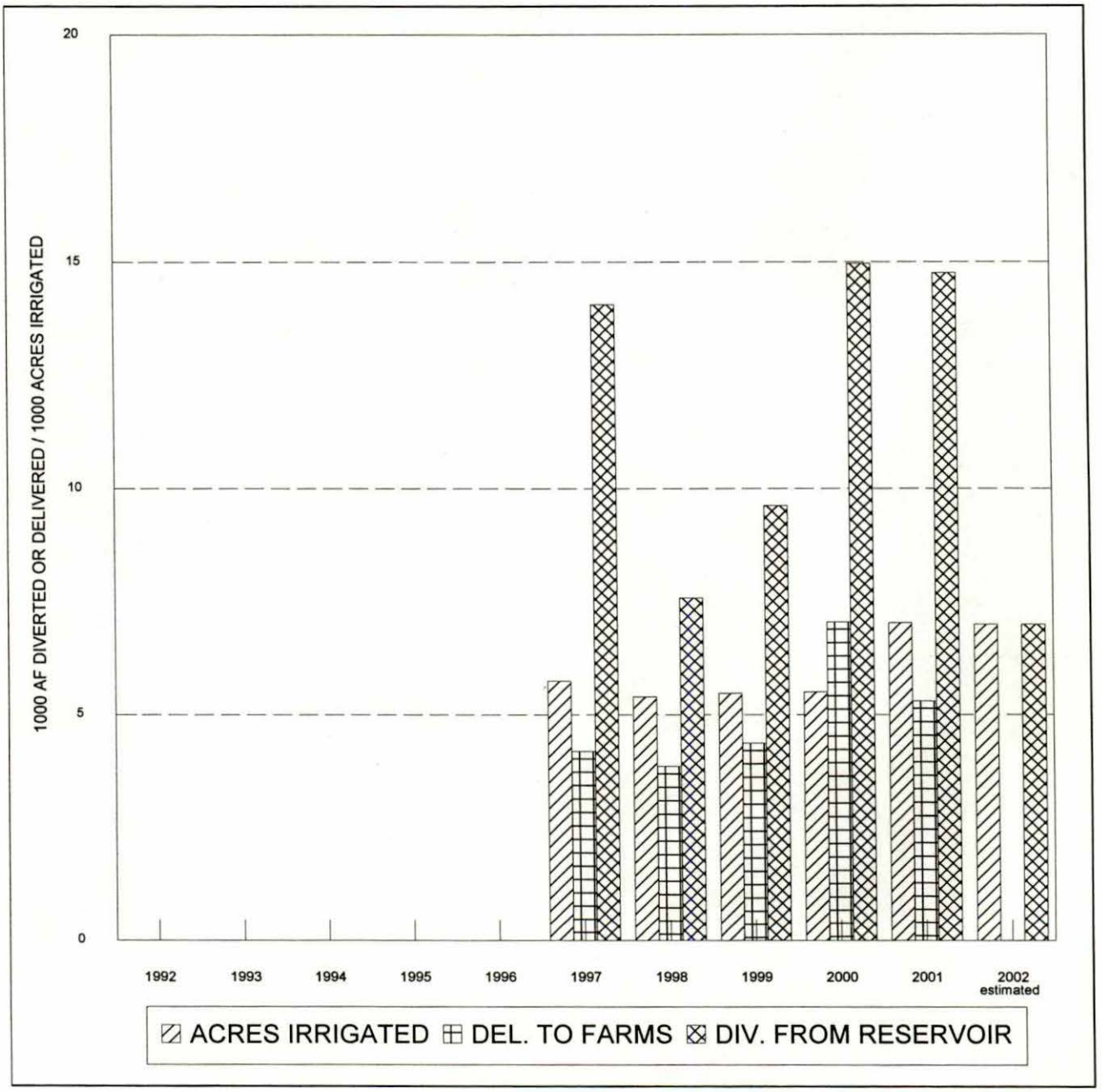
FORECASTED SHORTAGES (2002)

DRY YEAR	0 AF
NORMAL YEAR	0 AF

EXHIBIT 31

GLEN ELDER IRRIGATION DISTRICT

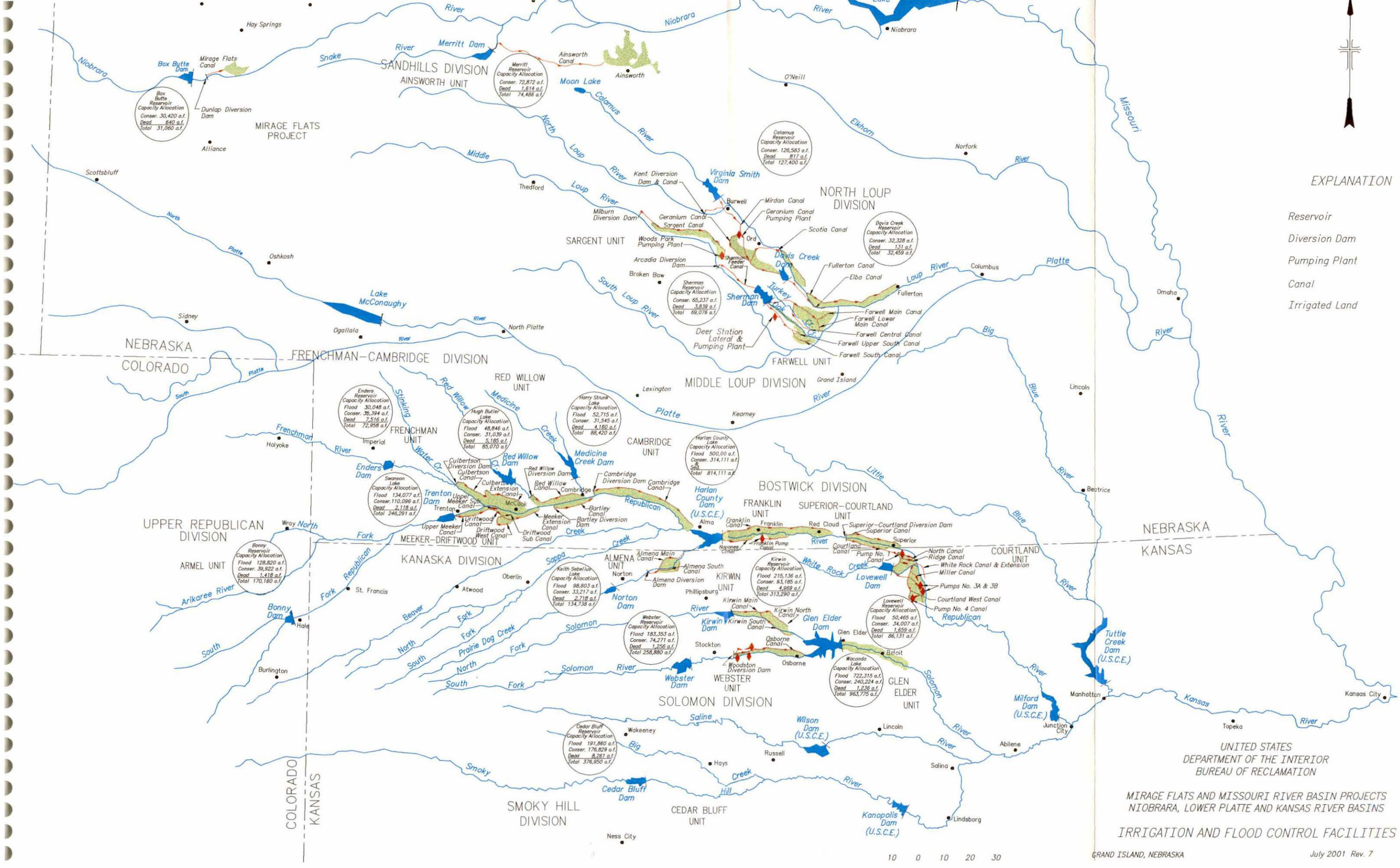
CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DIVERTED af/acre	0.00	0.00	0.00	0.00	0.00	0.73	1.41	1.76	2.72	2.10
DELIVERED af/acre	0.00	0.00	0.00	0.00	0.00	0.73	0.71	0.80	1.28	0.75
EFFICIENCY	0%	0%	0%	0%	0%	30%	51%	45%	47%	36%

FORECASTED SHORTAGES (2002)

DRY YEAR	0 AF
NORMAL YEAR	0 AF


Niobrara River
Hay Springs
Box Butte Dam
Mirage Flats Canal
Box Butte Reservoir Capacity Allocation
Conser. 30,420 a.f.
Dead 640 a.f.
Total 31,060 a.f.
Dunlap Diversion Dam
Alliance
MIRAGE FLATS PROJECT
Snake River
Merritt Dam
Merritt Reservoir Capacity Allocation
Conser. 72,872 a.f.
Dead 1,614 a.f.
Total 74,486 a.f.
Ainsworth Canal
Ainsworth
SANDHILLS DIVISION
AINSWORTH UNIT
Moon Lake
Calamus River
Calamus Reservoir Capacity Allocation
Conser. 126,583 a.f.
Dead 817 a.f.
Total 127,400 a.f.
Niobrara River
Niobrara
O'Neill
Elkhorn River
Norfork
Missouri River
Middle Loup River
North Loup River
Thedford
Kent Diversion Dam & Canal
Virginia Smith Dam
Burwell
Mirdan Canal
Geranium Canal Pumping Plant
Milburn Diversion Dam
Geranium Canal
Sargent Canal
Scotia Canal
NORTH LOUP DIVISION
SARGENT UNIT
Woods Park Pumping Plant
Ord
Davis Creek Reservoir Capacity Allocation
Conser. 32,328 a.f.
Dead 131 a.f.
Total 32,459 a.f.
Arcadia Diversion Dam
Sherman Feeder Canal
Davis Creek Dam
Fullerton Canal
Elba Canal
Fullerton
Columbus
Platte River
Omaha
Scottsbluff
North Platte River
Oshkosh
Broken Bow
Sherman Reservoir Capacity Allocation
Conser. 65,237 a.f.
Dead 3,839 a.f.
Total 69,076 a.f.
Sherman Dam
Turkey Creek
South Loup River
Loup River
Deer Station Lateral & Pumping Plant
Farwell Main Canal
Farwell Lower Main Canal
Farwell Central Canal
Farwell Upper South Canal
Farwell South Canal
FARWELL UNIT
Lake McConaughy
Sidney
Ogallala
North Platte River
NEBRASKA
COLORADO
FRENCHMAN–CAMBRIDGE DIVISION
MIDDLE LOUP DIVISION
Grand Island
Big Blue River
Lincoln
Lexington
Platte River
Kearney
Enders Reservoir Capacity Allocation
Flood 30,048 a.f.
Conser. 35,394 a.f.
Dead 7,516 a.f.
Total 72,958 a.f.
Stinking Water Cr.
Red Willow Creek
Medicine Creek
RED WILLOW UNIT
Hugh Butler Lake Capacity Allocation
Flood 48,846 a.f.
Conser. 31,039 a.f.
Dead 5,185 a.f.
Total 85,070 a.f.
Harry Strunk Lake Capacity Allocation
Flood 52,715 a.f.
Conser. 31,545 a.f.
Dead 4,160 a.f.
Total 88,420 a.f.
Frenchman River
Holyoke
Imperial
FRENCHMAN UNIT
CAMBRIDGE UNIT
Harlan County Lake Capacity Allocation
Flood 500,00 a.f.
Conser. 314,111 a.f.
& Seq.
Total 814,111 a.f.
Enders Dam
Swanson Lake Capacity Allocation
Flood 134,077 a.f.
Conser. 110,096 a.f.
Dead 2,118 a.f.
Total 246,291 a.f.
Trenton Dam
Culbertson Diversion Dam
Culbertson Canal
Culbertson Extension Canal
Red Willow Dam
Red Willow Diversion Dam
Red Willow Canal
Cambridge
Cambridge Diversion Dam
Cambridge Canal
Medicine Creek Dam
Harlan County Dam (U.S.C.E.)
BOSTWICK DIVISION
Little Blue River
Beatrice
Trenton
Upper Meeker Canal
Meeker Sub Canal
McCook
Meeker Extension Canal
Bartley Canal
Bartley Diversion Canal
Driftwood Canal
Driftwood West Canal
Driftwood Sub Canal
Republican River
FRANKLIN UNIT
SUPERIOR–COURTLAND UNIT
Franklin Canal
Franklin
Red Cloud
Superior–Courtland Diversion Dam
Superior Canal
Superior
Courtland Canal
Pump No. 1 Canal
North Canal
Ridge Canal
White Rock Canal & Extension
Miller Canal
Pumps No. 3A & 3B
Courtland West Canal
Pump No. 4 Canal
COURTLAND UNIT
NEBRASKA
KANSAS
UPPER REPUBLICAN DIVISION
Wray
North Fork Republican River
MEEKER–DRIFTWOOD UNIT
KANASKA DIVISION
Bonny Reservoir Capacity Allocation
Flood 128,820 a.f.
Conser. 39,922 a.f.
Dead 1,418 a.f.
Total 170,160 a.f.
ARMEL UNIT
Arikaree River
St. Francis
Atwood
Oberlin
Sappa Creek
Almena Main Canal
Almena South Canal
Almena Diversion Dam
ALMENA UNIT
Norton
Keith Sebelius Lake Capacity Allocation
Flood 98,803 a.f.
Conser. 33,217 a.f.
Dead 2,718 a.f.
Total 134,738 a.f.
Norton Dam
KIRWIN UNIT
Phillipsburg
Kirwin Reservoir Capacity Allocation
Flood 215,136 a.f.
Conser. 93,185 a.f.
Dead 4,989 a.f.
Total 313,290 a.f.
White Rock Creek
Lovewell Dam
Lovewell Reservoir Capacity Allocation
Flood 50,465 a.f.
Conser. 34,007 a.f.
Dead 1,659 a.f.
Total 86,131 a.f.
Bonny Dam
Hale
Burlington
Beaver Creek
South Fork Republican River
Prairie Dog Creek
North Fork Solomon River
South Fork Solomon River
Solomon River
Kirwin Main Canal
Kirwin North Canal
Kirwin South Canal
Kirwin Dam
Glen Elder Dam
Glen Elder
Osborne Canal
Stockton
Osborne
Beloit
Webster Reservoir Capacity Allocation
Flood 183,353 a.f.
Conser. 74,271 a.f.
Dead 1,256 a.f.
Total 258,880 a.f.
Woodston Diversion Dam
Webster Dam
WEBSTER UNIT
GLEN ELDER UNIT
SOLOMON DIVISION
Waconda Lake Capacity Allocation
Flood 722,315 a.f.
Conser. 240,224 a.f.
Dead 1,736 a.f.
Total 963,775 a.f.
Tuttle Creek Dam (U.S.C.E.)
Milford Dam (U.S.C.E.)
Manhattan
Junction City
Kansas River
Kansas City
Topeka
Saline River
Wakeeney
Cedar Bluff Reservoir Capacity Allocation
Flood 191,860 a.f.
Conser. 176,829 a.f.
Dead 8,261 a.f.
Total 376,950 a.f.
Wilson Dam (U.S.C.E.)
Lincoln
Russell
Abilene
Big Creek
Hays
Smoky Hill River
Salina
Cedar Bluff Dam
SMOKY HILL DIVISION
CEDAR BLUFF UNIT
Kanopolis Dam (U.S.C.E.)
Lindsborg
Ness City
COLORADO
KANSAS
10 0 10 20 30
EXPLANATION
Reservoir
Diversion Dam
Pumping Plant
Canal
Irrigated Land
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MIRAGE FLATS AND MISSOURI RIVER BASIN PROJECTS
NIOBRARA, LOWER PLATTE AND KANSAS RIVER BASINS
IRRIGATION AND FLOOD CONTROL FACILITIES
GRAND ISLAND, NEBRASKA
July 2001 Rev. 7