SYNOPSIS

General

This year is the 51st consecutive year that an Annual Operating Plans (AOP) has been prepared for the Federally-owned dams and reservoirs in the Niobrara, Lower Platte, and Kansas River Basins. The plan has been developed by the Water Operations Group in McCook, Nebraska for the 16 dams and reservoirs that are located in Colorado, Nebraska, and Kansas. These reservoirs, together with 9 diversion dams, 9 pumping plants, and 20 canal systems, serve approximately 264,050 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 106 Hydromet stations that can be accessed. The McCook Field Office has installed and maintains 48 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.usbr.gov/gp/. From the home page, select "Water Supply Management" followed by selecting Hydromet Data System.

The Headlines 2003 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.

2003 Summary

Climatic Conditions

Precipitation at the project dams during 2003 ranged from 68 percent of normal at Virginia Smith Dam to 119 percent of normal at Lovewell Dam. Temperatures during the first four months of the year varied considerably with well above normal temperatures during January and well below normal temperatures during February. January was generally drier than normal while February was wetter than normal. March and April brought some much needed precipitation to the project reservoirs in the basin. Red Willow and Trenton Dams located in southwest Nebraska recorded the greatest and second greatest April precipitation on record at the respective sites. Temperatures were near normal to slightly above normal for the two months.

Temperatures during May and June were below normal throughout the basin while temperatures during July averaged well above normal with daily highs exceeding the 100 degree mark on several occasions. Precipitation during May, June and July varied considerably across the projects. May precipitation was below normal at all projects dams with the exception of Merritt Dam. Project dams in the Upper Republican River Basin averaged only 53% of normal rainfall. June precipitation improved considerably with only four project dams recording below normal precipitation during the month. A few isolated thunderstorms produced some localized short term runoff. Lovewell Dam and areas northeast of the dam received over nine inches of rainfall on June 22nd. Storm runoff in the Republican River below Lovewell Dam reached nearly 20,000 cfs at Concordia, Kansas. The improvement turned out to be short lived as July precipitation was well below normal at all projects dams averaging only 29 percent of normal over the projects.

Temperatures continued above average in August while precipitation varied considerably with four project dams recording less than one inch of rain during the month and four others recording over four inches of rain. September brought some relief with temperatures averaging below normal. Precipitation remained varied with three project dams recording less than one inch of moisture while three others recorded over four inches of rain. Most irrigation districts had discontinued irrigation releases by the end of August as a result of short water supplies.

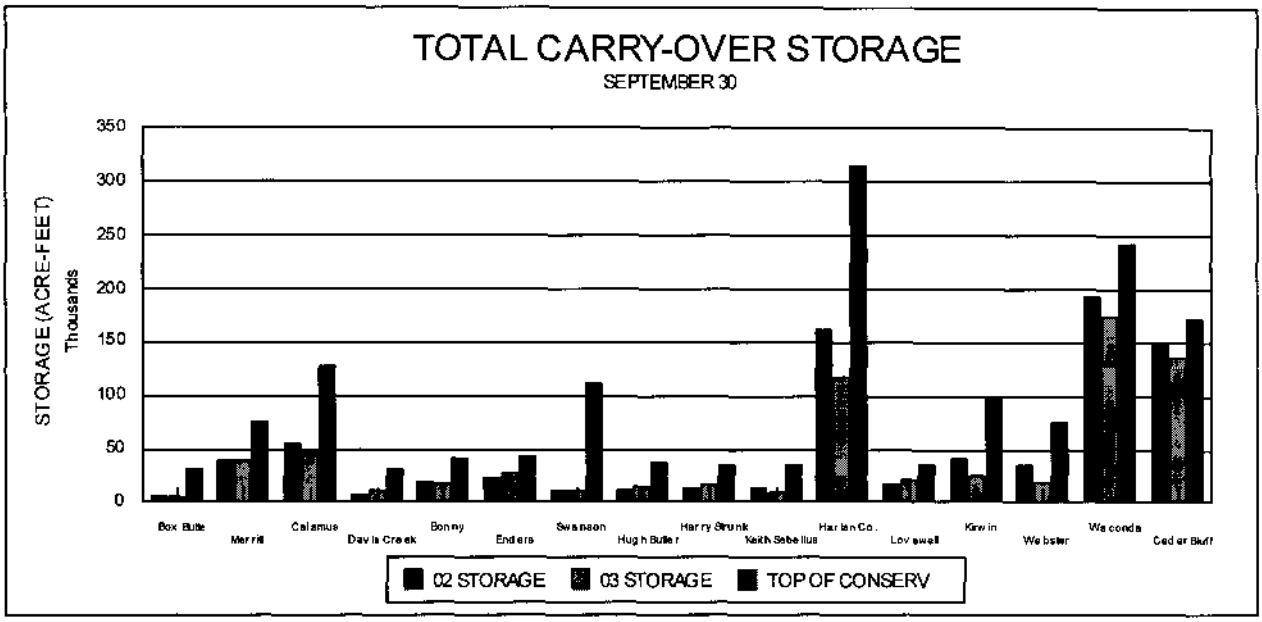
Total precipitation during October, November and December was generally well below normal throughout the projects. Precipitation during October was well below normal at all project dams averaging only 36 percent of average. Only four dams recorded above normal precipitation during November and only three during the month of December. Temperatures averaged well above normal during October and near normal during both November and December.

Storage Reservoirs

1. Conservation Operations. The 2003 inflow was below the dry-year forecast at Box Butte, Bonny, Enders, Kirwin and Webster Reservoirs, and Swanson, Hugh Butler, Harry Strunk, Harlan County and Waconda Lakes. Merritt, Calamus, Lovewell and Cedar Bluff Reservoirs along with Keith Sebelius Lake had inflows between the dry- and normal-year forecasts. None of the project reservoirs had inflows above the normal-year forecast.

Project reservoirs had below average carryover storage from the 2002 water year with the exception of Keith Sebelius Lake and Cedar Bluff Reservoir. Of the 12 project reservoirs in the Kansas River Basin, only Keith Sebelius and Waconda Lakes, and Lovewell Reservoir did not record below average inflows during all 12 months of 2003. Keith Sebelius and Waconda Lakes recorded below average inflows during 11 months of 2003. Reservoir releases were made from Merritt and Virginia Smith Dams to maintain reservoir levels prior to the 2003 irrigation season. Just prior to the irrigation season, Enders, Kirwin, Webster and Box Butte Reservoirs, along with Keith Sebelius, Swanson, Hugh Butler, Harry Strunk and Harlan County Lakes, did not have sufficient storage to provide water users with a full water supply. Only Lovewell Reservoir had some flood storage occupied prior to the irrigation season. The high irrigation demand months of July and August significantly reduced storage in those project reservoirs that had storage available for irrigation. Precipitation during July and early August was of little help in reducing the demands on project reservoirs. Storage in the Kansas River Basin project reservoirs was below normal at the end of the irrigation season with the exception of Cedar Bluff Reservoir.

The following summarized graph shows a comparison of 2002 and 2003 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. Lovewell Reservoir utilized flood pool storage in 2003. A small flood release was required from Lovewell Reservoir to reduce pool levels during the first week of July. The fiscal year 2003 flood control benefits accrued by the operation of Reclamation's Nebraska-Kansas Projects facilities was $504,000 as determined by the Corps of Engineers. An additional benefit of $21,000 was credited to Harlan County Lake. The accumulative total of flood control benefits for the years 1951 through 2003 by facilities in this report total $1,872,135,000 (see table 5). To date no benefits have been accrued by the operation of Box Butte, Merritt, 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 330,955 acre-feet (AF) of water diverted to irrigate approximately 197,929 acres of project lands in the 12 irrigation districts (see tables 3 and 6). The project water supply was either inadequate or limited for 169,024 acres of the total project lands. This includes lands in Mirage Flats, Frenchman Valley, H&RW, Frenchman-Cambridge, Almena, Bostwick in Nebraska, Kansas Bostwick, Kirwin and Webster Irrigation Districts. The project water supplies for the other units mentioned in this report were more than adequate in 2003.

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

Irrigation Production

The 2003 crop yields on lands receiving project water in the Nebraska-Kansas Projects were higher than 2002 for six of the eight reporting districts. The average corn yield, the principal crop of all reporting districts, was 167 bushels per acre. This was approximately 20 bushels per acre more than in 2002. The average unit price of corn when harvested was higher than the previous year at approximately $2.40/bu. The start of irrigation releases from project reservoirs varied considerably depending on storage water available. Much of the growing season was warmer and drier than normal. Most districts experienced some relief from the hot and dry conditions during mid to late August. Crop maturity progressed near normal during the growing season. Several irrigation districts had finished making irrigation releases by mid August. Four canals did not divert water in 2003 as a result of extremely short 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 2003 season, normal reservoir operations were favorable for recreation and fish and wildlife uses at most project reservoirs. Late in the season, irrigation operations substantially lowered the water levels of most reservoirs in the Kansas 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.

2004 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 16. 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, Lovewell, Kirwin and Webster. The irrigation districts affected are Mirage Flats; Frenchman Valley and H&RW; Frenchman Cambridge; Almena; Bostwick in Nebraska and Kansas Bostwick; Kirwin; and Webster; respectively. If 2004 is a dry year, 169,024 of the total 264,050 acres with service available to be irrigated (64 percent) will have an inadequate water supply.

Under most probable inflow conditions, it is also expected that Frenchman Valley, H&RW, Almena, Bostwick in Nebraska, Kansas Bostwick, Webster and Mirage Flats Irrigation Districts would experience some shortages to irrigation demands from Enders Reservoir, Keith Sebelius Lake, Harlan County Lake, Lovewell Reservoir, Webster Reservoir and Box Butte Reservoir. Most irrigators in these districts plan to use water from private wells to supplement the project water supply.

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

During 2004, 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, Calamus, Davis Creek and Lovewell Reservoirs are expected to fill during 2004.

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 2003

Farmers to feel pinch most in years of drought

Unreliable water

Cedar Bluff water plan falling apart with newfound state restrictions on availability

Hays-Russell water issue seems to have state thinking more constructively, regionally

Welcome rains falling in area

River settlement depended on well drilling moratium

■ *Don't expect the Republican River lawsuit to be the last conflict over water...*

BY CONNIE JO DISCOE
REGIONAL EDITOR

Reclamation plays vital role in our region

■ *An exhibit on the Bureau of Reclamation visits next week.*

Water 'is the name of the game'

BY CONNIE JO DISCOE
REGIONAL EDITOR

Local ownership sought for dam, reservoir

AKRON/ORTH, Neb. (AP)

Omaha World-Herald

Climatologist: Next 3 months determine if drought continues

Water saturates local 2003 news

BY BILL MCBRIDER
CNI EDITOR

Drought will be focus of ag conference

Kearney Hub

Overappropriated groundwater a task force sticking point

'Statewide' program to examine Swanson Reservoir

McCOOK DAILY GAZETTE

River settlement affects irrigators

Good news, bad news on drought

Republican River Basin tour is set for July 22-24

Dam celebration planned

50 years: Swanson Lake born

Hot, dry conditions lead to irrigation releases from Enders

BY RUSS PARSONS

Drought dips into groundwater levels

Joint Action Plan focus of Republican River Management District meeting

Water reserves at all-time low

Water policy task force presents recommendations to governor

THE IMPERIAL REPUBLICAN

Officials work on carrying out Republican River agreement

ALMA (AP)

Final piece of Republican River settlement in place

Officials work out Cedar Bluff water rights

Harlan County Lake faces record low

Students grasp importance of groundwater conservataion

GRAND ISLAND (AP)

Dry spells are normal, but this one isn't over

Judge dismisses important groundwater, surface water case

NRD orders new wells to be sealed

Kansas governor mad about river plans

Compact board deciding use of Republican River

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 2003 and serves as a guideline for the 2004 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, 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 35

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 1984 through 2003 were used for the analysis of reservoirs in the Niobrara, Lower Platte and Kansas River Basins, with the exception of Calamus and Davis Creek Reservoirs. The more recent available record of 1986 through 2003 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 16 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 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

Twelve irrigation districts and one reclamation district in the Niobrara, Lower Platte, and Kansas River Basins have contracted with Reclamation for water supply and irrigation facilities. 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 1 st through October 15th or such additional period from April 1 st through May 1 st 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 1 st 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 1 st 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 1 St 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 renewal of the long term water service contracts with Kirwin Irrigation District No. 1 and Webster Irrigation District No. 4 was completed in 2002. The districts negotiated the conversion of their water service contracts to repayment contracts with a 40 year repayment period. The repayment contracts were signed on June 20, 2002 and became effective January 1, 2003.

The long-term water service contract with the Ainsworth Irrigation District (AID) will expire in 2006. The AID has proposed to pursue title transfer in lieu of renewing their water service contract. Public meetings have been conducted in Valentine and Ainsworth to present information concerning the proposed title transfer process. Resource data collection within the Niobrara Basin has been collected and will be used in the preparation of the National Environmental Policy Act compliance document. The District will seek Congressional authority to transfer title of the Ainsworth Unit from the United States to the AID.

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 2004 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, Kansas filed a petition with the U. S. Supreme Court complaining that Nebraska had violated the Republican River Compact by using more than its share of the Republican River water supply. On November 15, 1999, the Supreme Court appointed Vincent L. McKusick as the Special Master for the case. The three original parties to the Compact; Kansas, Nebraska and Colorado, became parties to the case. Because all of the major water development structures in the Republican River Basin were constructed by the Bureau of Reclamation and the Corps of Engineers, the United States was allowed to participate as an *amicus curiae.* After negotiations were completed the final settlement agreement was signed by each respective governor and attorney general and was filed with the Special Master on December 16, 2002.

On May 19, 2003, the United States Supreme Court approved the settlement and dismissed the case. On June 30, 2003, the three States reached agreement on the Republican River Compact Administration groundwater model. The model will be used to quantify groundwater consumptive use as part of the compact's accounting process. The settlement provides for a moratorium on new groundwater wells, special rules for administration of water during water-short years, protection of storage releases, minimized flood flow effects on the accounting, recognition by Nebraska of a 1948 priority date for the Kansas-Bostwick Irrigation District, inclusion of the impacts of groundwater pumping from tableland wells in the accounting, and accounting for all reservoirs 15 acre-feet and larger within the river basin. In addition, Kansas, Nebraska and Reclamation have agreed to participate in an Appraisal Study to analyze system improvement alternatives in the lower portion of the basin that would provide for more efficient use of the water supply. This study will be completed in 2004.

The Stipulation also requires that the States, in cooperation with the United States, form a Conservation Committee and by April 30, 2004, develop a proposed study plan to determine the quantitative effects of non-federal reservoirs and land terracing practices on water supplies in the Republican River Basin above Hardy, Nebraska.

Water-Short Year Administration will be in effect in those years in which the projected or actual irrigation supply is less than 119,000 acre feet of storage available for use from Harlan County Lake as determined by Reclamation. It was determined in 2003 that a "Water-Short Year Administration" was in effect.

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. Two tabletop exercises were conducted during calendar year 2003 and orientation meetings were held for all of the NKAO dams. All facilities received credit for a functional exercise in 2002 for the activities following Sept 11, 2001. Tabletop exercises were held for the Glen Elder Dam Emergency Action Plan (EAP) and the Cedar Bluff Dam EAP. Emergency radios have been installed at all 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. Both the Nebraska-Kansas Area Office and the McCook Field Office have a satellite phone that can be used in an emergency. Management and the dam operators have been trained on the use of these phones.

There were three internal alerts declared at NKAO projects in 2003. At Virginia Smith Dam, a small depression was found near the river outlet works. After an investigation, repairs were made to the river outlet works drainage system and the internal alert was terminated. A second internal alert was declared, after discussion with the Technical Service Center and the Regional Office, since the spillway has a similar drainage system as the outlet works. An internal alert is still in effect until the investigation and repairs of the spillway drainage system is complete. An internal alert was declared at Lovewell Dam due to a small depression that was later terminated after the depression was found to be the result of a buried utility pole.

One functional exercise and five table top exercises are planned in 2004. EAP Orientation meetings will be held at all NKAO dams. A program of annual meetings with local law enforcement and the facility managers has been established. Risk assessments and site security plans are currently being developed for Trenton, Lovewell and Glen Elder Dams.

Public Safety Reviews

NKAO 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 resulted in several fencing projects to control public access to facilities, especially to spillway operating decks where there are gated spillways.

NKAO will be involved with emergency personnel at all NKAO facilities. A tour of our facilities has been initiated to familiarize local EMT's and rescue groups to the location and hazards involved with our daily work routines as well as our inspections. If an accident was to happen then the rescue team and EMT's could respond to the accident site informed of our location and the hazards involved.

Safety booms were installed around the morning-glory type spillway intake structures at Merritt and Virginia Smith Dams. The Safety booms will be maintained every year during the recreation season.

NKAO has aggressively pursued compliance of the Life Safety Code (Code). NKAO has conducted Code compliance reviews of its facilities over the last several years and has worked diligently to bring all of NKAO facilities into compliance. In October of 2003 the latest evaluation was completed based on the National Fire Protection Association (NFPA) 101 2003 Life Safety Code. Results of the evaluation revealed that NKAO is on the verge of completing our goal of 100% compliance. Code upgrades have been implemented over the years throughout NKAO. The remaining projects are scheduled for completion in 2004 which will bring the program into conformity.

Facility Reviews, Maintenance and Construction

Comprehensive Facility Reviews were conducted at Virginia Smith and Merritt Dams during 2003. Periodic Facility Reviews were conducted at Davis Creek, Red Willow and Medicine Creek Dams. Annual Site Inspections were conducted at the other 10 NKAO dams in 2003.

Technical surveys were completed at Norton and Enders Dams in 2003.

Construction of access platforms for the inspection and maintenance of spillway gate trunnion pins and bearings is scheduled for 2004 at Webster, Enders, Trenton and Lovewell Dams.

Construction of a new Reclamation office building in McCook, Nebraska is scheduled to begin in April of 2004. The new building will replace the existing structure built more than 70 years ago. Construction is expected to take approximately one year.

Security enhancements continue at NKAO dams.

Video inspections of the toe drain systems at Medicine Creek, Red Willow, Kirwin, Lovewell, Bonny and Enders Dams were attempted with varying degrees of success during 2003. A program to examine all of our toe drain systems was initiated in 2001.

Classroom dam operator training was conducted in February of 2003 for Reclamation dam operators. On site dam operator training was conducted at Bonny, Norton, Webster, Glen Elder and Cedar Bluff Dams in 2003.

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 1994 to 2003, the project water supply averaged 13,200 AF, which is about 1.13 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.

2003 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 16.99 inches, which is 99 percent of normal. Precipitation during July was the lowest ever recorded for the month. The 2003 total inflow of 12,456 AF was below the dry-year forecast and the lowest ever recorded at Box Butte Reservoir.

From early July through late August, diversions of 9,929 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 4,678 AF (0.40 acre-foot per irrigable acre), which is a delivery efficiency of 47 percent. Total reservoir storage was only 3,579 AF 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 2003 and the Annual Site Inspection of Box Butte Dam was conducted in August.

New embankment measurement points were installed and surveyed along the crest of Box Butte Dam in September 2001. Another survey of the points was completed in 2002 with future surveys to be conducted 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. The district continued to assist irrigators with delivery improvements that provide on-farm efficiency improvements, such as relocation of turnouts, burying pipe for better access, and on-farm efficiency incentives. The district continues to modify and update their computer software to improve system operations, scheduling, and accounting and continued development of their web page that allows irrigators to place water orders, review water accounts, and keep updated on district operations.

2004 Outlook

The project water supply is expected to be inadequate in 2004 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 being updated and is scheduled to be republished this year. A Comprehensive Facility Review of Box Butte Dam is scheduled for August 2004.

The district is currently pursuing the installation of an Automated Weather Data Network station that will assist district irrigators with irrigation scheduling. This station would provide real time weather data, soil moisture data and crop ET data.

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 filling process generally takes place in April. The reservoir level is maintained until irrigation releases begin to draw on the pool around mid May. A minimum release of 75 cubic feet per second (cfs) should be made to the river during spring filling operations if at all possible. This operation 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.

2003 Summary

Precipitation, as recorded near Merritt Dam, totaled 20.49 inches, which was 102 percent of normal. August precipitation was the third lowest on record for the month. The inflow for the year totaled 180,034 AF. This inflow was between the dry- and normal-year forecasts. The water supply was more than adequate to meet the project's irrigation requirement. There were 77,313 AF diverted from Merritt Reservoir into Ainsworth Canal, with 50,749 AF delivered to the farm headgates (delivery efficiency of 66 percent). There were 33,380 acres of land irrigated in 2003.

The district executed several temporary water service contracts which provided a total of 319 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 2003 and a Comprehensive Facility Review of Merritt Dam was conducted in April.

2004 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. 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 2004 for the irrigation of 34,500 acres.

The process of renewing the long term water service contract with Ainsworth Irrigation District is beginning. The existing contract will expire in 2006. The district has stated its intent to seek Congressional authority to transfer title of the Ainsworth Unit from the United States to the district.

The Standing Operating Procedures for Merritt Dam is scheduled to be updated and republished in 2004.

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 will be regulated near elevation 2048.0 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.

2003 Summary

Precipitation at Virginia Smith Dam was 16.12 inches which is 68 percent of normal and the second lowest on record at the site. Precipitation during August was the lowest ever recorded for the month at the dam. The inflow totaled 257,697 AF which was between the dry- and normal-year forecasts. Calamus Reservoir reached an historical high pool level on April 3"[l] at elevation 2245.36 feet (1.36 feet above top of conservation). The higher reservoir level was a result of repairs being made to the river outlet works that prevented use of the outlet until late April. Reservoir inflows passed through the uncontrolled spillway structure while repairs were made to the outlet works. There were 105,788 AF of water released into Mirdan Canal and 21,090 AF diverted through Kent Canal from the North Loup River. A total of 50,166 AF was diverted for district use above Davis Creek Reservoir. The farm headgate delivery was 26,945 AF which is a delivery efficiency of 54 percent. Land irrigated in 2003 totaled 32,571 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 2235.27 feet, the second lowest end of December storage since initial filling. The Calamus Fish Hatchery used bypassed natural flows and storage from Calamus Reservoir totaling 6,982 AF during 2003.

The precipitation of 22.27 inches near Davis Creek Dam was 94 percent of normal. Inflow to Davis Creek Reservoir totaled 68,053 AF during 2003. Beginning in mid April, Davis Creek Reservoir was filled from an elevation of approximately 2040.7 feet to a peak elevation of 2076.49 feet on June 28th using diversions from the North Loup River and Calamus Reservoir. A release of 48,399 AF was made from Davis Creek Dam into Fullerton Canal, with 30,377 AF delivered to the farm headgates (63 percent delivery efficiency). There were 20,916 acres irrigated below Davis Creek Reservoir. The reservoir elevation at the end of 2003 was near the normal wintering level at 2050.12 feet.

An orientation meeting to review the Virginia Smith Dam and Davis Creek Dam EAPs took place in November 2003. A Comprehensive Facility Review of Virginia Smith Dam was conducted in April and a Periodic Facility Review of Davis Creek Dam was conducted in August.

A video examination of the toe drain system for Davis Creek Dam was completed in November 2000. It revealed several locations where the drain had collapsed. Plans and specifications were completed for the toe drain repairs with a contract awarded early in 2003. It was anticipated that repairs would be completed early in 2003; however, an additional section of collapsed drain was discovered after video taping the completed work. Final repairs to the drain were completed late in 2003.

In December of 2002, the irrigation district reported a small depression along the right side of the river outlet works stilling basin wall at Virginia Smith Dam. Safety of Dams personnel in both Denver and Billings were notified and discussions were conducted with the Technical Service Center. Investigations determined that a problem existed with the under-drain system in the outlet works stilling basin. Gravel material beneath the outlet works chute structure and stilling basin was being transported creating a void. Reclamation personnel drilled holes into the floor of the structure and filled the voids and under-drain system with grout. Grouting was completed in late March. Investigations then began on the under-drain system at the spillway stilling basin because of the similarity to the outlet works system. A risk analysis of the spillway chute and stilling basin under-drain system was completed in September 2003. The risk analysis recommends that the drain system under the spillway basin be grouted. Grouting of the drains is expected to be completed late in 2004.

2004 Outlook

Filling of Calamus Reservoir will continue through late winter and 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 32,600 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 20,900 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.

The fish hatchery demand for 2004 is expected to be similar to that of the last few years with approximately 7,000 AF passing through the hatchery.

A functional exercise of the EAPs for both Virginia Smith and Davis Creek Dams is scheduled for 2004. The Standing Operating Procedures for Virginia Smith Dam is scheduled to be updated and republished this year.

The district has expressed an interest in pursuing some automatic water control devices along the Mirdan Canal system to improve operations. Remote monitoring equipment is scheduled to be installed in the spring of 2004 at key delivery system sites to improve operations, scheduling, and accounting. Planned remote monitoring sites include Kent Canal, Mirdan Canal below Virginia Smith Dam, Mirdan Canal at the Davis Creek inflow, and Fullerton Canal below Davis Creek Dam.

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.

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.

2003 Summary

The annual precipitation total of 18.51 inches at Bonny Dam was 107 percent of normal. The annual computed inflow of 7,348 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. February and November inflows were the lowest on record for the respective months since first filling. The reservoir level was 13.4 feet below the top of conservation at the first of the year. The reservoir level gradually increased 1.6 feet to a maximum reservoir level of 3660.28 feet on June 19th. Bonny Dam recorded a maximum one day precipitation total of 2.40 inches overnight on June 29th. Precipitation during June (7.41 inches) was the second greatest ever recorded for the month. Dry conditions persisted throughout the rest of the year with below normal precipitation being recorded for each of the last six months. A new historical low reservoir elevation of 3658.62 feet was recorded on August 27th. The reservoir level gradually decreased throughout the remainder of the year. The reservoir elevation at the end of the year was 15.1 feet below the top of conservation at 3656.92 feet (new historical low since initial filling). The Corps of Engineers determined that $3,000 in flood prevention benefits were realized from the operation of Bonny Reservoir during 2003.

The Colorado Water Commissioner did not direct reservoir inflows from the South Fork of the Republican River and Landsman Creek to be passed through Bonny Reservoir into Hale Ditch. Likewise, the Colorado Department of Natural Resources did not request storage releases for irrigation purposes into Hale Ditch.

An orientation meeting to review the Bonny Dam EAP took place in July 2003 and the Annual Site Inspection of Bonny Dam was conducted in June. On-site dam operator training was conducted in July.

2004 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 tabletop exercise of the Bonny Dam EAP is scheduled for 2004.

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. Irrigation releases are conveyed via Frenchman Creek from Enders Reservoir to Culbertson Diversion Dam. Reclamation maintains/clears this section of Frenchman Creek prior to the irrigation season each spring.

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.

Construction of a filtered drainage collection pipe and monitoring system in the existing open drain below Enders Dam was completed in the spring of 2002. 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, 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.

2003 Summary

The annual precipitation total of 15.40 inches at Enders Dam was below normal (81 percent). The 2003 inflow into Enders Reservoir of 5,940 AF was below the dry-year forecast. This inflow was the lowest ever recorded at the site. Eight of the twelve months recorded record low inflows during 2003. Due to extensive groundwater pumping above the reservoir, the inflow was only 10 percent of the average historical preconstruction runoff at the Enders Dam site (60,700 AF from 1929-1947). This year was the 36th consecutive year with below-normal inflows in which the conservation pool did not fill. A total of 1,198 AF of water was conserved between the 2002 and 2003 irrigation seasons by pumping seepage back into the reservoir. The reservoir level was 26.2

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 3089.09 feet (23.2 feet below the top of conservation) on May 19th. This was the lowest annual peak since initial filling of the reservoir. Reservoir releases for irrigation of Frenchman Valley Irrigation District lands began on July 11th and were discontinued on August 4th. Approximately 1,628 AF of water was released from Enders Reservoir for irrigation and by the end of the season the reservoir level had reached 3086.38 feet. The greatest 24-hour precipitation total recorded during the year at Enders Dam was only 1.33 inches overnight on March 18th. The end of the year reservoir level was 26.5 feet below the top of conservation, the lowest ever recorded for December 31St since initial reservoir filling. The Corps of Engineers determined that $2,000 in flood prevention benefits were realized from the operation of Enders Reservoir during 2003.

Farm delivery averaged about 0.34 foot per irrigable acre in the Frenchman Valley Irrigation District. Some farmers were able to supplement their project water supply from private irrigation wells. The Frenchman Valley Irrigation District reports that approximately 2,695 acres received water in 2003. Farm delivery efficiency was 40 percent for the district. The H&RW Irrigation District did not divert water into Culbertson Extension Canal in 2003 due to the extremely low water supply. This was the second consecutive year that the district did not deliver water. H&RW Irrigation District storage water in Enders Reservoir was carried over into 2004.

The Standing Operating Procedures for Enders Dam was republished in 2003.

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

In 2003, the district (along with Reclamation) provided support for a Limited Irrigation Demonstration Project with the University of Nebraska Extension Service. The demonstration site was located just east of Culbertson and demonstrated various irrigation strategies with a short water supply.

2004 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 76,200 AF. Most probable inflow conditions are expected to be inadequate by 47,900 AF and reasonable maximum inflow conditions by 16,400 AF, to irrigate the 9,295 acres in the Frenchman Valley Irrigation District and 11,695 acres in the H&RW Irrigation District. Approximately 2,000 AF can be conserved by pumping seepage water back into Enders Reservoir.

Repairs and resurfacing of the spillway bridge deck at Enders Dam is scheduled for 2004. Reclamation is cost sharing this work with the State of Nebraska as State Highway 61 crosses the dam.

A tabletop exercise of the Enders Dam EAP and a Comprehensive Facility Review of Enders Dam are scheduled for 2004.

The districts have expressed an interest in replacement of additional open ditch laterals with buried pipe that will be investigated in 2004.

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.

2003 Summary

The annual precipitation total of 17.51 inches at Trenton Dam was 88 percent of normal. The inflow of 14,393 AF to Swanson Lake was well below the dry-year forecast. This was the lowest annual computed inflow ever recorded at the lake exceeding the previous low by nearly 3,100 AF. The inflow was below normal for all twelve months. Computed inflows for 10 of the twelve months were either record low inflows or equaled record lows for the respective months. The reservoir level began the year approximately 26.5 feet below the top of conservation pool. Trenton Dam recorded the second greatest April precipitation total (4.72 inches) for the month. The reservoir level gradually increased during the spring and peaked at 2730.52 feet on June 2nd (approximately 21.5 feet below full). This was the lowest annual peak since first filling of the reservoir. Due to the extremely low water supply available, no water was released from Swanson Lake. Irrigation diversions were not made into Meeker-Driftwood or Bartley Canals. This was the first time since deliveries began in the early 50's that the district did not deliver water from the two canals. The reservoir level slowly declined throughout the remainder of the year. At the end of the year the reservoir level was 24.2 feet below the top of conservation at 2727.77 feet. This was the fourth lowest end of year storage ever recorded at Swanson Lake.

The annual precipitation total of 18.37 inches at Red Willow Dam was 93 percent of normal. The greatest precipitation event recorded at Red Willow Dam in 2003 was 2.64 inches overnight on April 15th. April precipitation totaled 5.25 inches, the greatest ever recorded at the site during the month. Precipitation during July totaled .74 inch, the third lowest ever recorded for the month. The annual inflow of 9,577 AF into Hugh Butler Lake was below the dry-year forecast and the lowest ever recorded at the site. The computed inflow was below normal during all twelve months. March, August, September, November and December computed inflows were the lowest ever recorded for the respective month. The reservoir level at the first of the year was 19.1 feet below the top of conservation. Inflows gradually increased the level of the reservoir to a peak of 2567.47 feet (14.3 feet below full) on June 30th. This was the lowest annual peak since first filling the reservoir. Releases were not made from Hugh Butler Lake in 2003 due to the extremely low water supply available. Irrigation diversions were not made into Red Willow Canal for the first time since deliveries began in 1963. The reservoir level continued to decline throughout the summer and early fall reaching a minimum level of 2565.30 feet on November 1st. The level of Hugh Butler Lake at the end of the year was 15.9 feet below the top of conservation, the second

lowest end of year storage ever recorded. The Corps of Engineers determined that $16,000 of flood damages were prevented by the operation of Hugh Butler Lake.

The annual precipitation total of 19.40 inches at Medicine Creek Dam was 94 percent of normal. The inflow of 30,606 AF was below the dry-year forecast and the third lowest annual total ever recorded. The computed inflow was below normal during all twelve months with record lows recorded during February, March, October and November. The reservoir level at the beginning of 2003 was 12.4 feet below the top of conservation. The reservoir pool gradually increased into late June peaking at 2365.28 feet on June 29th (.8 foot below full). Medicine Creek Dam recorded nearly 6 inches of precipitation in June. Irrigation releases began on June 29th and were shut off on August 22nd with nearly 21,700 AF of water released from the reservoir for irrigation. The Nebraska Department of Natural Resources directed that some reservoir inflow be bypassed into Medicine Creek for livestock watering following the irrigation season. Releases began on September 12th and ended on October 16th. The greatest 24-hour precipitation event recorded at Medicine Creek Dam was 1.34 inches overnight on September 10th. Harry Strunk Lake was 9.5 feet below the top of conservation at the end of the year. The Corps of Engineers determined that the reservoir prevented $43,000 in flood damages.

The water supply was limited with 18,332 AF of water diverted to irrigate 15,883 acres of land served by the Cambridge Canal (farm delivery efficiency was 55 percent).

Concrete repairs were made to the spillway notch located in the center of the spillway crest and to the river gage located immediately downstream of the dam this past spring.

An EAP orientation meeting took place in September of 2003 for Red Willow, Medicine Creek and Trenton Dams. Periodic Facility Reviews were conducted in June at Red Willow and Medicine Creek Dams, and the Annual Site Inspection of Trenton Dam was conducted in October.

The Standing Operating Procedures for Medicine Creek Dam were republished in 2003.

In 2003, the district (along with Reclamation) provided support for a Limited Irrigation Demonstration Project with the University of Nebraska Extension Service. The demonstration site was located just north of Holbrook and demonstrated various irrigation strategies with a short water supply. The project received water from the Cambridge Canal and a field day was well attended. The district continued working with Reclamation on a remote monitoring program. The program allows the district to remotely monitor wasteways and other key system measurement sites helping improve system operations and accounting.

2004 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 44,200 AF. Shortages are not expected under most probable inflow conditions.

The Standing Operating Procedures for Red Willow Dam are being updated and are expected to be republished in 2004.

A Comprehensive Facility Review of Trenton Dam is scheduled for May 2004.

The district plans to support the limited irrigation demonstration again in 2004. The district is also investigating the possibility of replacing the last four miles of Red Willow Canal with buried pipe to eliminate the high loss, high maintenance section of open ditch. The district is also investigating the installation of additional check structures on Cambridge Canal to improve operations.

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.

2003 Summary

The annual precipitation at Norton Dam totaled 20.63 inches, which is 83 percent of normal. Precipitation during July totaled .57 inch, the third lowest ever record for the month. The total inflow of 5,207 AF was between the dry- and normal-year forecasts. The reservoir level was 12.7 feet below the top of conservation on December 31, 2002. The greatest 24-hour precipitation event occurred overnight on April 24th with 1.73 inches recorded. Approximately 6.5 inches of rain was recorded at the dam during June. Late winter and spring inflows gradually increased the reservoir level to a peak elevation of 2292.78 feet on June 20th (11.5 feet below full pool). Irrigation releases began on July 7th with demands reducing the level of Keith Sebelius Lake to 2288.20 feet by the end of the season on August 14th. Only 3,880 AF was released from the reservoir for irrigation during 2003. Keith Sebelius Lake was 16.9 feet below the top of conservation (2287.46 feet) at the end of the year. The Corps of Engineers determined that the reservoir prevented $2,000 in flood damages.

The district delivered 1,759 AF to approximately 1,674 acres of farmland. Farm delivery efficiency averaged 52 percent from the project water supply. Water was also being supplied from privately-owned irrigation wells to conserve reservoir water storage for future use. The city of Norton used 590 AF of municipal water during 2003.

An Annual Site Inspection was conducted at Norton Dam in July and an orientation meeting to review the Norton Dam EAP took place in September 2003. On-site dam operator training was conducted in February. The Standing Operating Procedures for Norton Dam was republished in June.

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 ¡mprovement and additional instrumentation. A final issue evaluation report of findings (Technical Memorandum ND-8312-2) in 2003 concluded that the assessed risks for seepage and piping through the foundation in the left abutment falls in the range of "justification to take action to reduce risk." A Corrective Action Study is planned to be performed in 2004.

The district and Reclamation installed remote monitoring equipment in the spring of 2003 on one of the district's main wasteways which will improve system operations, scheduling, and accounting. The district also replaced .75 mile of high loss, high maintenance open ditch lateral with buried pipe in 2003.

2004 Outlook

Because of the limited storage available and the significantly reduced inflows, the Kansas Department of Wildlife and Parks has made an offer to the Almena Irrigation District to maintain a minimum pool elevation in the reservoir. This offer was approved by the irrigators within the district which provides that no water will be released for irrigation below elevation 2288.0 feet. Kansas Department of Wildlife and Parks and the Almena Irrigation District are in the process of finalizing the agreement. If 2004 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 21,300 AF. If normal inflow into the lake and normal rainfall over the irrigated area occur in 2004, a shortage of 14,700 AF may be experienced. Requirements for the city of Norton will be met in full in 2004.

The district will continue to solicit projects to replace open ditch laterals with buried pipe that will reduce seepage losses, lessen maintenance requirements, and provide improvements in on-farm efficiencies will continue.

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, and amended on November 21, 2002, 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.

2003 Summary - Bostwick Division - Harlan County Lake Operations

The annual precipitation at Harlan County Dam totaled 16.70 inches of rainfall, which is 73 percent of normal and the fifth lowest on record at the site. The 2003 inflow of 38,430 AF was below the dry-year forecast and the lowest ever recorded. The inflow was below normal for all twelve months with record lows recorded during January, February, March, August, November and December. A release was not required during January, February or December in accordance to the environmental assessment and the annual operating plan.

Harlan County Lake began 2003 approximately 13.6 feet below the top of conservation pool, at 1932.11 feet. Inflows during the first six months of the year slowly increased the reservoir pool to a peak of 1934.06 feet on June 17th (top of conservation pool is elevation 1945.73 feet). Harlan County Dam recorded 1.10 inches of rain overnight on April 23rd (the greatest one day total in 2003) and recorded above normal precipitation in only April and June of the year. Irrigation releases began on June 16th and continued through August 19th. Irrigation demands during the season reduced reservoir storage significantly lowering the pool level to a new historical low of 1927.65 feet. The previous historical low reservoir level was 1928.22 feet in 1991. The reservoir level continued to decline throughout the remainder of the year. The level of Harlan County Lake at the end of 2003 was at an historical low level of 1926.34 feet (19.4 feet below the top of conservation). Harlan County Lake prevented $21,000 of downstream flood damages during 2003 according to the Corps of Engineers.

Harlan County Lake storage, along with inflows and Republican River pickup flows were not adequate in furnishing a full water supply to each irrigable acre of the Bostwick District in Nebraska and the Kansas-Bostwick District above Lovewell Dam. A total of 26,596 AF (approximately 56 percent of total inflow) was delivered to Lovewell Reservoir through the Courtland Canal.

2003 Summary - Bostwick Division - Nebraska

The Bostwick Irrigation District in Nebraska diverted 28,776 AF for the irrigation of 22,935 acres. Farm delivery efficiency averaged 42 percent in the district.

The district continued to replace open ditch laterals with buried pipe to reduce losses and improve system operations. In 2003 the district again applied a canal sealant on the Franklin and Superior Canals to reduce seepage losses. Increased remote monitoring sites on the Republican River between Harlan County Dam and the Superior-Courtland Diversion Dam will assist in water scheduling for storage releases. Remote monitoring equipment was installed in the spring of 2003 on two of the operational wasteways on Franklin Canal to provide water scheduling improvements. The district has also implemented new, stricter water ordering policies as a water conservation measure.

2003 Summary - Bostwick Division - Kansas

The 2003 precipitation at Lovewell Dam totaled 32.42 inches, which was 119 percent of normal. June precipitation (10.84 inches) was the greatest ever recorded for the month at the dam.

Lovewell Reservoir began 2003 with a water surface elevation only 2.6 feet below the top of conservation. Inflows from White Rock Creek and diversion of Republican River flows via Courtland Canal slowly increased the reservoir level to within .4 foot of full pool by mid February. Diversion of Republican River flows into Lovewell Reservoir were discontinued on February 14th and resumed April 7th. The diversions combined with inflows from White Rock Creek to fill the reservoir conservation pool on April 13th (elevation 1582.6 feet), and in filling the reservoir to an elevation of 1584.60 feet on May 11 The canal inflow was shut down at this time. Releases were made into the lower Courtland Canal beginning on May 22nd to season the canal and maintain the reservoir level. A strong storm system stalled out over Lovewell Reservoir on the evening of June 22nd. Lovewell Dam recorded 9.39 inches of precipitation overnight, by far the greatest 24-hour total ever recorded at the site. The reservoir pool increased 2.3 feet (8,000 acre-feet) as a result of the storm, peaking at elevation 1586.52 feet (3.9 feet into the flood pool). A flood release of 220 cfs began on June 30th from Lovewell Dam. The flood release was gradually staged down and discontinued on July 7th. Irrigation demands reduced the pool level to 1574.95 feet on August 19th. On September 10th, a thunderstorm produced 3.27 inches of rain overnight at Lovewell Dam. Runoff from this event increased storage in Lovewell Reservoir approximately 3,400 acre-feet with a peak average daily inflow of 600 cfs. The reservoir level increased to 1577.30 feet from the storm runoff. The reservoir was credited with preventing $438,000 in flood damages as determined by the Corps of Engineers. Diversions of Republican River natural flows into Lovewell Reservoir continued after irrigation releases had ended and were maintained through December. The water surface elevation gradually increased to 1579.98 feet on December 31, 2003 (2.6 feet below the top of active conservation).

The Kansas-Bostwick Irrigation District diverted a total of 53,191 AF to serve 13,433 acres above Lovewell Dam and 23,027 acres below Lovewell Dam. Farm delivery efficiency averaged 54 percent in the district.

A new broad-crested weir (ramp flume) was constructed in the spring of 2003 on Courtland Canal just downstream of Lovewell Dam to improve water measurement accuracy, scheduling and accounting.

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

In 2003 the district continued to replace open ditch laterals with buried pipe. The district and Reclamation also provided assistance to Kansas State University (KSU) for a sprinkler irrigation demonstration located northeast of Courtland, Kansas. Courtland Canal supplies water for this demonstration and a field day was held at the site in the fall. The district is also providing support to KSU for the installation of a sub-surface drip irrigation project. In the fall of 2003, the district eliminated approximately 2.5 miles of an open ditch lateral by installing 1.75 miles of buried pipe. This project provided on-farm benefits by allowing land owners the opportunity to convert to sprinkler irrigation.

2004 Outlook - Bostwick Division

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 122,200 AF in meeting the full dry-year irrigation requirement for the Bostwick lands. Under most probable inflow conditions the water supply may be inadequate by up to 19,000 AF.

Diversions from the Republican River via Courtland Canal will continue through the winter and again in early spring to insure that Lovewell Reservoir is filled prior to the irrigation season. The Corps of Engineers has approved a deviation request that will allow Lovewell Reservoir to be filled to elevation 1584.2 feet (1.6 feet into flood pool) prior to June 30th of 2004. The additional storage is to be used for irrigation purposes due to persistent drought conditions.

Rehabilitation of the spillway and outlet works gates at Lovewell Dam is scheduled for this year. Construction is expected to begin in late May with completion in December. The construction schedule will be affected by reservoir levels and the irrigation season. The current schedule calls for the reservoir level to drop below the spillway crest (1575.3 feet) by early August and to reach 1573.0 feet by September 1st (estimated end of irrigation season). The reservoir level will be maintained below the spillway crest until construction is completed in mid December.

Both districts will continue to investigate remote monitoring site installation that will provide system operations improvements and pursue projects that will eliminate sections of open ditch laterals.

A tabletop exercise of the Lovewell Dam EAP and a Comprehensive Facility Review of Lovewell Dam are scheduled for 2004. The Standing Operating Procedures for Lovewell Dam are scheduled to be updated and republished this year as well.

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.

2003 Summary

The annual precipitation total of 18.19 inches at Kirwin Dam was 78 percent of normal. The inflow of 7,548 AF was below the dry-year forecast and the third lowest ever recorded at the site. Kirwin Reservoir was 14.0 feet below the top of conservation pool at the first of the year. The late winter and spring inflows increased the reservoir level to a peak elevation of 1715.96 feet (13.3 feet below full) on June 3rd. Irrigation releases began on June 30th and continued through August 19th reducing the pool level 6.6 feet. July precipitation (.54 inch) was the third lowest ever recorded for the month. Inflow during the month equaled the previous historical low. During 2003, 14,655 AF was released into Kirwin Canal. The reservoir level continued to gradually decrease after the irrigation season and at the end of the year was at 1708.46 feet (20.8 feet below the top of conservation). The greatest 24-hour precipitation event occurred overnight on September 10th with 2.75 inches recorded.

The water supply was inadequate to meet diversion requirements for Kirwin Canal. A total of 8,492 acres received project water during 2003 with 7,505 AF delivered to farms. Farm delivery efficiency was 51 percent.

An Annual Site Inspection of Kirwin Dam was conducted in October and an orientation meeting to review the Kirwin Dam EAP took place in September 2003.

The district continued to replace problem sections of open ditch laterals with buried pipe in 2003. The district also replaced a number of smaller laterals by relocating field delivery points which provided on-farm improvements, eliminated the need for lateral maintenance in the areas and improved water accounting with the use of flowmeters.

2004 Outlook

Carry-over storage along with most probable inflow forecast from the North Fork of the Solomon River will be adequate to irrigate district lands. However, under dry-year forecasted inflows, a shortage of about 17,900 AF may be experienced.

Concrete repairs to the dentates located in the Kirwin Dam spillway stilling basin are scheduled for 2004.

A tabletop exercise of the Kirwin Dam EAP is scheduled for 2004. On-site dam operator training is also scheduled for Kirwin Dam this year.

Kirwin Lateral S-8.0 buried pipe project is scheduled to be completed by the spring of 2004. This project will improve delivery service and allow one landowner to convert from furrow to sprinkler irrigation.

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.

2003 Summary

In 2003, the precipitation at Webster Dam was 78 percent of normal (18.35 inches). The inflow of 5,170 AF was below the dry-year forecast and the second lowest ever recorded at the site. Webster Reservoir began 2003, 13.3 feet (elevation 1879.15 feet) below the top of conservation pool. The reservoir pool gradually increased with late winter and early spring inflows to a peak of 1879.69 feet (12.8 feet below full) on May 24th. Irrigation releases began on June 28th and continued through August 17th reducing the pool level to 1871.74 feet. July precipitation (.18 inch) was the third lowest ever recorded for the month. Inflow equaled the historic low for the month. Approximately 13,473 AF was released for irrigation. Webster Dam received 3.22 inches of rainfall overnight on August 18th and another 1.63 inches prior to August 31st. The reservoir level continued to decline during the final four months of the year and was 21.3 feet below the top of conservation on December 31, 2003.

The district diverted 9,505 AF for irrigation of 5,190 acres. Farm deliveries totaled 5,053 AF for an efficiency of 53 percent. Project water demands were not met in full.

An Annual Site Inspection of Webster Dam was conducted in July and an orientation meeting to review the Webster Dam EAP took place in December. On-site dam operator training was completed in January at Webster Dam.

The district continued to explore opportunities to cost share with Reclamation and district irrigators for the replacement of open ditch laterals with buried pipe. In the spring and fall of 2003, the district replaced open ditch Osborne Laterals 19.8 and 29.1 with buried pipe. These projects eliminated approximately three miles of high loss, high maintenance sections of open ditch laterals.

2004 Outlook

The carry-over storage and the flows in the South Fork Solomon River are expected to be inadequate under the dry-year forecast to irrigate the district lands in 2004. Under dry-year inflows a shortage of 22,900 AF may be experienced. A shortage of 2,600 AF may be expected under normal-year inflows.

The Standing Operating Procedures (SOP) for Webster Dam is scheduled to be updated and republished early this year. A tabletop exercise of the Webster Dam EAP is scheduled for 2004.

The district will continue to pursue the replacement of open ditch laterals with buried pipe. The district is also investigating the possibility of installing some remote monitoring equipment to improve water scheduling and accounting.

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.

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, Waconda Lake will be allowed to fill during the late summer and early fall to flood exposed shoreline vegetation. This flooded aquatic vegetation is very beneficial to waterfowl management.

Waconda Lake will normally be regulated at one to two feet below the top of conservation capacity during the winter months. Maintaining the lake at this level will reduce shoreline erosion, provide a buffer for spring runoff and lessen ice damage to the upstream face of Glen Elder Dam. Releases from Waconda Lake will be regulated each year to maintain a constant water surface level while the lake is ice-covered.

2003 Summary

The annual precipitation total of 24.16 inches at Glen Elder Dam was 94 percent of normal. The inflow of 58,963 AF was below the dry-year forecast. Waconda Lake began the year only 3.9 feet below the top of conservation. Inflows gradually increased the level of the reservoir during the first five months of the year. The lake level peaked at elevation 1452.52 feet on June 1261(3.1 feet below the top of conservation). This was the lowest annual peak since first filling of the reservoir. Irrigation releases began on June 16th and continued through September 8th reducing the lake level to 1450.14 feet. Glen Elder Dam recorded 4.63 inches of precipitation during September including 3.95 inches of rainfall overnight on September 10th. Runoff from the mid September storm increased the storage in Waconda Lake nearly 19,000 AF (1.8 feet), with a peak average daily inflow of approximately 5,700 cfs. On December 31, 2003 the lake level was 1451.19 feet (4.4 feet below full). The end of December storage was the lowest ever recorded for the month since initial filling.

A total of 25,669 AF of water was released from Glen Elder Dam in 2003. Storage releases of 9,308 AF combined with natural flow releases of 4,653 AF for the irrigation of 6,641 acres in the Glen Elder Irrigation District. Four individual temporary water service contracts received storage water totaling 286 AF for the irrigation of approximately 150 acres. Storage releases totaling 572 AF were made for the City of Beloit, with an additional 10,110 AF bypassed for quality control as directed by the State Water Commissioner. Releases to the Mitchell County Rural Water District No. 2 totaled 740 AF.

A tabletop exercise of the Glen Elder Dam EAP took place in May 2003 and the Annual Site Inspection of Glen Elder Dam was conducted in July. On-site dam operator training took place in February.

New Area-Capacity Tables for Waconda Lake became effective on January 1, 2003. These revised tables resulted from a sedimentation survey conducted in July 2001.

2004 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 2004. 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. Uncontracted storage water from Waconda Lake will be available to private irrigators in the Solomon Valley below Glen Elder Dam during the 2004 irrigation season. With sufficient inflows 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.

Concrete repairs to the spillway floor at Glen Elder Dam are scheduled for 2004. Also, repairs to the subsurface drains at the Cawker City Lagoon are expected this year.

The Standing Operating Procedures (SOP) for Glen Elder Dam is scheduled to be updated and republished this year. A Comprehensive Facility Review of Glen Elder Dam will be conducted in 2004.

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 sub allocation pools: The City of Russell's existing water storage right which remained unchanged (2,700 AF); an artificial recharge pool under control of the Kansas Water Office (5,110 AF); and a fish, wildlife and recreation pool under control of the Kansas Department of Wildlife and Parks (21,061 AF). 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. A Contract Administration Memorandum between the United States of America, represented by Reclamation, the State of Kansas and the City of Russell was signed in November/December of 2003, establishing a continuous accounting procedure for water storage in Cedar Bluff Reservoir.

2003 Summary

The annual precipitation total at Cedar Bluff Dam was 19.87 inches which is 94 percent of normal. The inflow (11,284 AF) was between the dry- and normal-year forecasts. At the beginning of the year, the level of Cedar Bluff Reservoir was 2139.94 feet (top of active conservation is 2144.00 feet). Dry conditions prevailed during late winter with no precipitation recorded in January. The peak reservoir level recorded during the year was 2139.95 feet on March 27th. Above normal precipitation was recorded during the spring with the greatest 24-hour precipitation event occurring overnight on June 28th with 1.93 inches of rainfall. Dry conditions returned throughout the remaining six months of the year with the exception of late August when the dam recorded over 4.0 inches of rainfall in the final two weeks of the month. No measurable precipitation was recorded at the dam during July for the first time ever. By December 31, 2003 the reservoir level had decreased to 2137.31 feet (6.7 feet below the top of active conservation).

The State of Kansas used the fish hatchery facility located below Cedar Bluff Dam for waterfowl habitat with only 12 AF released to the facility. Water was not released from Cedar Bluff Reservoir during 2003 for the City of Russell.

An Annual Site Inspection of Cedar Bluff Dam was conducted in November and a tabletop exercise of the Cedar Bluff Dam EAP took place in October 2003. On-site dam operator training was given in January.

2004 Outlook

Storage in Cedar Bluff Reservoir on December 31, 2003 was within the joint use pool. The Kansas Department of Wildlife and Parks is expected to use up to 400 AF of water in the operations of the fish hatchery facility. The Kansas Water Office may request a minimal release to the river for recharge in 2004.

TABLE 1

RESERVOIR DATA - NIOBRARA, LOWER PLATTE AND KANSAS RIVER BASINS

CAPACITY ALLOCATIONS 1/

LIVE CONSERVATION

RESERVOIR		DEAD	Inactive	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	---
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	- 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	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	1,674	11,644	35,666	86,131
	Net Acre-feet	1,674	9,970	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	248	26,237	219,420	942,408
	Net Acre-feet	248	25,989	193,183	722,988
Cedar Bluff	- 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.)		37,729	276,478	1,482,967	3,909,611 2/
Total Net Acre-feet		37,729	238,749	1,206,489	2,357,568

1/ Includes space for sediment storage.

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

3/ Bottom of irrigation pool for Harlan County Lake is 1932.5 feet, 164,111 AF.

TABLE 2
SUMMARY OF 2003 OPERATIONS

MIRAGE FLATS PROJECT
BOX BUTTE RESERVOIR — MIRAGE FLATS 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.	1,513	61	67	0.21	9,102	0	0
Feb.	1,404	56	92	0.17	10,358	0	0
Mar.	1,696	61	175	2.10	11,818	0	0
Apr.	1,675	71	304	2.68	13,118	0	0
May	799	79	373	2.93	13,465	0	0
June	345	60	474	4.53	13,276	0	0
July	1,039	5,820	537	0.25	7,958	5,494	2,256
Aug.	178	4,050	307	0.74	3,779	4,435	2,422
Sep.	890	60	176	1.87	4,433	0	0
Oct.	942	61	139	0.47	5,175	0	0
Nov.	940	60	82	0.90	5,973	0	0
Dec.	1,035	61	52	0.14	6,895	0	0
TOTAL	12,456	10,500	2,778	16.99	--	9,929	4,678

NOTE -- Acres irrigated 2003: Mirage Flats Canal - 11,092 acres.

SANDHILLS DIVISION
AINSWORTH UNIT
MERRITT RESERVOIR — AINSWORTH 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.	14,108	13,597	240	0.62	68,831	0	0
Feb.	14,630	14,325	305	0.58	68,831	0	0
Mar.	17,503	16,800	424	1.95	69,110	0	0
Apr.	15,572	8,878	729	2.00	75,075	0	0
May	11,547	11,092	1,245	3.57	74,285	1,938	6
June	15,352	13,285	1,277	5.29	75,075	3,719	288
July	13,430	31,976	1,455	2.88	55,074	28,629	19,098
Aug.	14,061	34,354	1,221	0.66	33,560	31,981	23,586
Sep.	17,450	11,762	755	1.04	38,493	11,046	7,771
Oct.	16,749	750	581	0.69	53,911	0	0
Nov.	14,828	3,001	413	0.53	65,325	0	0
Dec.	14,804	10,984	314	0.68	68,831	0	0
TOTAL	180,034	170,804	8,959	20.49	--	77,313	50,749

NOTE -- Acres irrigated 2003: Ainsworth Canal - 33,380 acres.

NORTH LOUP DIVISION
CALAMUS RESERVOIR — ABOVE DAVIS CREEK MIRDAN CANAL

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release to Calamus Fish Hatch. (AF)	Release to Canal (AF)	Canal Use (AF)	Delivered To Farms (AF)
Jan.	19,902	4,332	456	0.52	118,686	603	0	0	0
Feb.	18,259	14,801	598	0.82	121,546	397	0	0	0
Mar.	21,752	8,342	1,101	0.60	133,855	112	0	0	0
Apr.	25,729	25,105	1,836	4.46	132,643	407	14,926	0	0
May	26,681	30,551	1,884	2.88	126,889	739	6,514	567	53
June	23,377	20,571	2,295	1.86	127,400	819	7,494	2,263	35
July	23,051	48,020	2,439	1.88	99,992	886	28,840	18,149	10,150
Aug	21,550	54,109	2,292	0.67	65,141	988	33,156	22,031	12,563
Sep.	18,594	34,229	1,184	1.00	48,322	764	14,858	7,156	4,144
Oct.	18,478	6,891	842	0.75	59,067	603	0	0	0
Nov.	19,751	6,014	517	0.68	72,287	322	0	0	0
Dec.	20,573	4,869	337	0.00	87,654	342	0	0	0
• '	,69	257,834	1 :1	16.12	--	6,982	105, 88	50,166	26,945

NOTE -- Acres irrigated 2003: Mirdan Canal - 32,571 acres.

NORTH LOUP DIVISION (Continued)
DAVIS CREEK RESERVOIR — BELOW DAVIS CREEK FULLERTON CANAL

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Mo. Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	16	109	37	0.51	6,209	0	0
Feb.	13	65	46	0.40	6,111	0	0
Mar.	6	83	80	0.19	5,954	0	0
Apr.	9,441	305	183	4.14	14,907	0	0
May	15,487	3,588	321	2.79	26,485	1,549	11
June	11,450	5,782	445	4.31	31,708	4,094	29
July	9,060	19,464	551	1.09	20,753	18,060	13,178
Aug.	9,466	19,480	363	1.59	10,376	18,680	13,760
Sep.	13,006	12,226	184	4.88	10,972	6,016	3,399
Oct.	57	171	156	1.24	10,702	0	0
Nov.	50	266	83	1.11	10,403	0	0
Dec.	1	246	47	0.02	10,111	0	0
TOTAL	68,053	61,785	2,496	22.27	--	48,399	30,377

NOTE - Acres irrigated 2003: Fullerton Canal - 20,916 acres.

TABLE 2
SUMMARY OF 2003 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.	762	369	129	0.32	19,216	0
Feb.	794	333	149	0.33	19,528	0
Mar.	1,132	369	220	1.61	20,071	0
Apr.	1,238	357	394	2.86	20,558	0
May	1,143	428	575	1.87	20,698	0
June	1,492	417	697	7.41	21,076	0
July	231	430	925	1.75	19,952	0
Aug.	39	327	890	0.69	18,774	0
Sep.	36	298	532	1.04	17,980	0
Oct.	86	307	453	0.15	17,306	0
Nov.	142	298	236	0.30	16,914	0
Dec.	253	307	134	0.18	16,726	0
TOTAL	7,348	4,240	5,334	18.51	--	0

TABLE 2
SUMMARY OF 2003 OPERATIONS

FRENCHMAN-CAMBRIDGE DIVISION
FRENCHMAN UNIT

	ENDERS RESERVOIR				End of CULBERTSON CANAL			CULBERTSON EXT.CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	599	61	58	0.18	11,965	0	0	0	0
Feb.	602	56	63	0.61	12,448	0	0	0	0
Mar.	784	61	112	1.90	13,059	1,061	0	0	0
Apr.	994	254	231	3.90	13,568	1,914	843	0	0
May	719	307	258	1.32	13,722	1,428	586	0	0
June	544	298	351	3.78	13,617	1,741	642	0	0
July	227	1,511	420	0.90	11,913	1,456	729	0	0
Aug.	154	434	366	1.37	11,267	402	388	0	0
Sep.	103	179	231	0.86	10,960	0	0	0	0
Oct.	273	184	181	0.27	10,868	0	0	0	0
Nov.	451	179	116	0.21	11,024	0	0	0	0
Dec.	490	184	63	0.10	11,267	0	0	0	0
TOTAL	5,940	3,708	2,450	15.40	--	8,002	3,188	0	0

NOTE: Acres irrigated 2003: Culbertson Canal - 2,695 acres; Culbertson Extension Canal - 0 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
MEEKER-DRIFTWOOD UNIT

	SWANSON LAKE				End of MEEKER-DRIFTWOOD			BARTLEY CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	1,057	61	148	0.07	22,712	0	0	0	0
Feb.	2,525	56	179	0.66	25,002	0	0	0	0
Mar.	3,150	61	319	1.45	27,772	0	0	0	0
Apr.	4,086	60	770	4.72	31,028	0	0	0	0
May	2,667	61	886	1.54	32,748	0	0	0	0
June	505	60	1,073	3.04	32,120	0	0	0	0
July	41	61	1,635	0.85	30,465	0	0	0	0
Aug.	95	61	1,486	2.22	29,013	0	0	0	0
Sep.	0	60	1,069	1.75	27,884	0	0	0	0
Oct.	0	61	806	0.17	27,017	0	0	0	0
Nov.	186	60	368	0.89	26,775	0	0	0	0
Dec.	81	61	196	0.15	26,599	0	0	0	0
TOTAL	14,393	723	8,935	17.51	--	0	0	0	0

NOTE: Acres irrigated 2003: Meeker-Driftwood Canal - 0 acres; Bartley Canal - 0 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
RED WILLOW UNIT

	HUGH BUTLER LAKE				End of	RED WILLOW CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	887	246	60	0.05	13,221	0	0
Feb.	981	222	72	0.67	13,908	0	0
Mar.	1,149	246	123	1.69	14,688	0	0
Apr.	1,825	238	286	5.25	15,989	0	0
May	1,136	246	392	1.53	16,487	0	0
June	1,372	238	461	4.29	17,160	0	0
July	249	246	696	0.74	16,467	0	0
Aug.	221	246	689	2.50	15,753	0	0
Sep.	79	238	392	0.73	15,202	0	0
Oct.	400	246	327	0.26	15,029	0	0
Nov.	622	238	154	0.60	15,259	0	0
Dec.	656	246	82	0.06	15,587	0	0
TOTAL	9,577	2,896	3,734	18.37	--	0	0

NOTE -- Acres irrigated 2003: Red Willow Canal - 0 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
CAMBRIDGE UNIT

	HARRY STRUNK LAKE				End of	CAMBRIDGE CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	2,226	61	78	0.11	20,242	0	0
Feb.	2,331	56	90	0.74	22,427	0	0
Mar.	2,735	61	165	0.63	24,936	0	0
Apr.	3,338	60	470	3.48	27,744	0	0
May	3,215	61	607	1.91	30,291	0	0
June	4,978	270	777	5.89	34,222	487	0
July	2,854	12,369	982	1.04	23,725	10,393	5,308
Aug.	2,448	9,134	738	2.42	16,301	7,452	4,715
Sep.	1,041	95	386	1.92	16,861	0	0
Oct.	1,440	61	311	0.37	17,929	0	0
Nov.	1,925	60	174	0.79	19,620	0	0
Dec.	2,075	61	94	0.10	21,540	0	0
TOTAL	30,606	22,349	4,872	19.40	--	18,332	10,023

NOTE -- Acres irrigated 2003: Cambridge Canal - 15,883 acres.

TABLE 2
SUMMARY OF 2003 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)	ALMENA CANAL Delivered To Farms (AF)
Jan.	240	62	83	0.12	13,605	31	0	0
Feb.	381	59	99	0.73	13,828	28	0	0
Mar.	639	60	170	2.01	14,237	29	0	0
Apr.	990	72	571	4.12	14,584	42	80	0
May	724	83	566	2.32	14,659	52	218	0
June	789	83	605	6.45	14,760	53	0	0
July	208	2,735	937	0.57	11,296	88	1,986	1,170
Aug.	448	1,352	725	2.31	9,667	81	1,095	589
Sep.	168	96	433	0.83	9,306	66	0	0
Oct.	215	89	322	0.64	9,110	58	0	0
Nov.	197	62	144	0.27	9,101	32	0	0
Dec.	208	61	76	0.26	9,172	30	0	0
TOTAL	5,207	4,814	4,731	20.63	--	590	3,379	1,759

NOTE: Acres irrigated 2003: Almena Canal - 1,674 acres.

BOSTWICK DIVISION
FRANKLIN UNIT
HARLAN COUNTY LAKE

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)
	Data from Corps of Engineers								
Jan.	280	0	652	0.21	160,085	0	0	0	0
Feb.	1,974	0	675	0.39	161,384	0	0	0	0
Mar.	3,729	0	944	0.30	164,168	0	0	0	0
Apr.	8,073	0	2,469	3.44	169,771	0	0	0	0
May	8,499	0	2,641	2.23	175,629	0	0	0	0
June	7,855	1,490	3,378	4.48	178,616	0	0	0	0
July	3,223	32,760	6,880	1.09	142,202	9,899	2,759	1,488	797
Aug.	1,184	16,987	5,126	1.83	121,273	5,363	2,385	674	376
Sep.	873	0	4,406	1.39	117,739	0	0	0	0
Oct.	2,221	0	4,384	0.89	115,579	0	0	0	0
Nov.	422	0	1,718	0.37	114,283	0	0	0	0
Dec.	97	0	1,034	0.08	113,346	0	0	0	0
TOTAL	38,430	51,237	34,307	16.70	--	15,262	5,144	2,162	1,173

NOTE: Acres irrigated 2003: Franklin Canal - 11,262 acres; Naponee Canal - 1,628 acres.

BOSTWICK DIVISION (Continued)
SUPERIOR-COURTLAND UNIT
COURTLAND CANAL - ABOVE LOVEWELL

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)	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	5,203	0	0	0	0
Feb.	0	0	0	0	2,548	0	0	0	0
Mar.	0	0	0	0	0	0	0	0	0
Apr.	0	0	0	0	5,313	0	0	0	0
May	0	0	0	0	7,233	0	0	0	0
June	0	0	501	0	5,453	0	0	0	0
July	1,184	544	5,194	2,290	15,543	1,054	879	11,715	5,363
Aug.	503	249	2,479	1,332	10,511	437	366	5,870	3,012
Sep.	0	0	0	0	3,365	0	0	0	0
Oct.	0	0	0	0	3,064	0	0	0	0
Nov.	0	0	0	0	3,880	0	0	0	0
Dec.	0	0	0	0	4,387	0	0	0	0
TOTAL	1,687	793	8,174	3,622	66,500	1,491	1,245	17,585	8,375

NOTE: Acres irrigated 2003: Franklin Pump Canal - 2,106 acres; Superior Canal - 5,972 acres.
Courtland Canal-Nebraska use - 1,967 acres.
Courtland Canal-Kansas use - 13,433 acres.

BOSTWICK DIVISION (Continued)
COURTLAND UNIT
LOVEWELL RESERVOIR

Month	Est. Flow from White Rock Creek (AF)	Inflow from Courtland 34.8 (AF)	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.	298	3,355	3,653	12	161	0.26	31,994	0	0
Feb.	1,225	1,740	2,965	11	201	0.77	34,747	0	0
Mar.	587	0	587	12	369	1.51	34,953	0	0
Apr.	1,130	3,167	4,297	17	660	2.52	38,573	0	0
May	1,546	4,232	5,778	588	927	3.70	42,836	472	0
June	9,250	1,426	10,676	4,163	1,382	10.84	47,967	3,647	0
July	1,130	2,061	3,191	20,887	2,016	0.26	28,255	19,015	12,118
Aug.	1,642	3,288	4,930	13,330	1,083	4.30	18,772	12,472	8,372
Sep.	2,458	1,582	4,040	19	701	4.78	22,092	0	0
Oct.	238	1,189	1,427	16	601	0.83	22,902	0	0
Nov.	882	2,006	2,888	12	357	1.92	25,421	0	0
Dec.	573	2,550	3,123	12	174	0.73	28,358	0	0
TOTAL	20,959	26,596	47,555	39,079	8,632	32.42	--	35,606	20,490

NOTE: Acres irrigated 2003: Courtland Canal below Lovewell - 26,991 acres.

TABLE 2
SUMMARY OF 2003 OPERATIONS

SOLOMON DIVISION
KIRWIN UNIT
KIRWIN RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	KIRWIN CANAL Release To Canal (AF)	KIRWIN CANAL Delivered To Farms (AF)
Jan.	177	0	208	0.15	41,606	0	0
Feb.	537	0	258	0.60	41,885	0	0
Mar.	1,054	0	427	1.39	42,512	0	0
Apr.	1,819	0	1,027	3.04	43,304	0	0
May	1,579	0	1,100	2.91	43,783	0	0
June	986	143	1,449	2.20	43,177	113	0
July	0	9,104	2,147	0.54	31,926	9,195	4,390
Aug.	977	5,554	1,356	3.33	25,993	5,347	3,115
Sep.	339	0	767	3.01	25,565	0	0
Oct.	0	0	598	0.38	24,967	0	0
Nov.	76	0	312	0.58	24,731	0	0
Dec.	4	0	160	0.06	24,575	0	0
TOTAL	7,548	14,801	9,809	18.19	--	14,655	7,505

NOTE: Acres irrigated 2003: Kirwin Canal - 8,492 acres.

SOLOMON DIVISION (Continued)
WEBSTER UNIT
WEBSTER RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	OSBORNE CANAL Diversions To Canal (AF)	OSBORNE CANAL Delivered To Farms (AF)
Jan.	8	0	175	0.46	35,330	0	0
Feb.	175	0	198	0.53	35,307	0	0
Mar.	892	0	344	1.60	35,855	0	0
Apr.	1,334	0	756	2.50	36,433	0	0
May	1,025	0	855	2.14	36,603	0	0
June	897	462	1,255	3.78	35,783	105	0
July	1	8,126	1,854	0.18	25,804	5,715	2,585
Aug.	731	4,885	1,002	5.24	20,648	3,685	2,468
Sep.	0	0	653	1.16	19,995	0	0
Oct.	0	0	524	0.27	19,471	0	0
Nov	93	0	283	0.44	19,281	0	0
Dec.	14	0	152	0.05	19,143	0	0
TOTAL	5,170	13,473	8,051	18.35	--	9,505	5,053

NOTE: Acres irrigated 2003: Osborne Canal - 5,190 acres.

SOLOMON DIVISION (Continued)
GLEN ELDER UNIT
WACONDA LAKE

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	OUTFLOW TO RIVER City of Beloit Storage Release (AF)	OUTFLOW TO RIVER City of Beloit Quality Bypass (AF)	OUTFLOW TO RIVER Irrig.District Storage Release (AF)	OUTFLOW TO RIVER Other Controlled Releases (AF)	Release To Mitchell Co. RWD No. 2 (AF)
Jan.	2,073	1,164	696	0.30	174,514	0	1,102	0	0	62
Feb.	3,377	1,049	830	0.76	176,012	0	1,000	0	0	49
Mar.	3,800	1,166	1,450	1.32	177,196	0	1,106	0	0	60
Apr.	7,300	1,131	3,891	3.59	179,474	0	1,071	0	0	60
May	7,494	1,165	3,697	2.84	182,106	0	1,107	0	0	58
June	5,146	2,217	5,015	3.45	180,020	0	572	614	970	61
July	2,605	6,985	7,946	0.72	167,694	0	0	4,499	2,398	88
Aug.	3,386	5,619	5,759	4.69	159,702	121	20	3,993	1,406	79
Sep.	18,981	1,354	4,091	4.63	173,238	304	629	202	165	54
Oct.	1,478	1,287	3,138	0.57	170,291	147	1,083	0	0	57
Nov.	1,321	1,243	1,640	0.55	168,729	0	1,190	0	0	53
Dec.	2,002	1,289	817	0.74	168,625	0	1,230	0	0	59
TOTAL	58,963	25,669	38,970	24.16	--	572	10,110	9,308	4,939	740

NOTE: Acres irrigated 2003: Glen Elder District - 6,641 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 City of Russell (AF)	Release To Fish Hatchery (AF)
Jan.	0	0	744	0.00	145,146	0	0
Feb.	221	0	592	0.27	144,775	0	0
Mar.	1,601	0	982	2.02	145,394	0	0
Apr.	2,079	0	2,079	3.05	145,394	0	0
May	2,366	0	2,799	2.91	144,961	0	0
June	3,304	9	2,738	4.71	145,518	0	9
July	3	0	5,144	0.00	140,377	0	0
Aug.	1,710	0	3,751	4.85	138,336	0	0
Sep.	0	3	2,899	1.65	135,434	0	3
Oct.	0	0	2,393	0.05	133,041	0	0
Nov.	0	0	1,385	0.22	131,656	0	0
Dec.	0	0	1,431	0.14	130,225	0	0
TOTAL	11,284	12	26,937	19.87	--	0	12

TABLE 3

ACRES IRRIGATED IN 2003 AND ESTIMATES FOR 2004

Irrigation District and Canal	Acres With Service Available	Acres Irrigated in 2003	Estimated Acres to be Irrigated in 2004
Mirage Flats Irrigation District			
Mirage Flats Canal	11,662	11,092	11,100
Ainsworth Irrigation District			
Ainsworth Canal	34,539	33,380	34,000
Twin Loups Irrigation District			
Above Davis Creek	32,571	32,571	32,600
Below Davis Creek	20,916	20,916	20,900
Total Twin Loups Irrigation District	53,487	53,487	53,500
Frenchman Valley Irrigation District			
Culbertson Canal	9,295	2,695	2,700
H & RW Irrigation District			
Culbertson Extension Canal	11,695	0	0
Frenchman-Cambridge Irrigation District			
Meeker-Driftwood Canal	16,562	0	0
Red Willow Canal	4,877	0	0
Bartley Canal	6,435	0	0
Cambridge Canal	17,297	15,883	16,000
Total Frenchman-Cambridge Irrigation District	45,171	15,883	16,000
Almena Irrigation District			
Almena Canal	5,764	1,674	0
Bostwick Irrigation District in Nebraska			
Franklin Canal	11,262	11,262	0
Naponee Canal	1,628	1,628	0
Franklin Pump Canal	2,106	2,106	0
Superior Canal	5,972	5,972	5,900
Courtland Canal (Nebraska)	1,967	1,967	1,900
Total Bostwick Irrigation Dist. in Nebraska	22,935	22,935	7,800
Kansas-Bostwick Irrigation District			
Courtland Canal above Lovewell	13,378	13,433	0
Courtland Canal below Lovewell	29,122	23,027	14,500
Total Kansas-Bostwick Irrigation District	42,500	36,460	14,500
Kirwin Irrigation District			
Kirwin Canal	11,465	8,492	5,000
Webster Irrigation District			
Osborne Canal	8,537	5,190	3,000
Glen Elder Irrigation District	7,000	6,641	7,000
TOTAL PROJECT USES	264,050	197,929	154,600
Non-Project Uses			
Hale Ditch	700	0	700
TOTAL PROJECT AND NON-PROJECT	264,750	197,929	155,300

BOX BUTTE RESERVOIR OPERATION ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	RESERVOIR SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	18	1.1	1.2	0.1	2	0.1	0.0	0.0	3986.9	7.8	0.9
FEB	23	1.3	1.5	0.1	2	0.1	0.0	0.0	3988.3	8.9	1.1
MAR	31	1.9	2.5	0.2	2	0.1	0.0	0.0	3990.2	10.5	1.6
APR	27	1.6	4.1	0.3	2	0.1	0.0	0.0	3991.6	11.7	1.2
MAY	21	1.3	4.9	0.4	5	0.3	0.0	0.0	3992.2	12.3	0.6
JUN	12	0.7	6.1	0.4	119	7.1	0.0	0.0	3983.3	5.5	-6.8
JUL	5	0.3	7.0	0.3	226	13.9	0.0	11.6	3978.9	3.2	-2.3
AUG	15	0.9	6.3	0.2	226	13.9	0.0	13.2	3978.9	3.2	0.0
SEP	15	0.9	4.6	0.2	40	2.4	0.0	1.7	3978.9	3.2	0.0
OCT	18	1.1	3.4	0.1	2	0.1	0.0	0.0	3980.8	4.1	0.9
NOV	24	1.4	1.8	0.1	2	0.1	0.0	0.0	3983.0	5.3	1.2
DEC	20	1.2	1.1	0.1	2	0.1	0.0	0.0	3984.7	6.3	1.0
TOTAL		13.7	44.4	2.5		38.3	0.0	26.5			-0.6
MOST PROBABLE INFLOW CONDITIONS											
JAN	23	1.4	1.1	0.1	2	0.1	0.0	0.0	3987.3	8.1	1.2
FEB	31	1.7	1.3	0.1	2	0.1	0.0	0.0	3989.2	9.6	1.5
MAR	39	2.4	2.3	0.2	2	0.1	0.0	0.0	3991.6	11.7	2.1
APR	34	2.0	3.8	0.3	2	0.1	0.0	0.0	3993.2	13.3	1.6
MAY	26	1.6	4.5	0.4	3	0.2	0.0	0.0	3994.2	14.3	1.0
JUN	13	0.8	5.6	0.4	71	4.2	0.0	0.0	3990.2	10.5	-3.8
JUL	7	0.4	6.4	0.4	210	12.9	0.0	5.6	3978.9	3.2	-7.3
AUG	18	1.1	5.7	0.2	164	10.1	0.0	9.2	3978.9	3.2	0.0
SEP	20	1.2	4.2	0.1	29	1.7	0.0	0.6	3978.9	3.2	0.0
OCT	23	1.4	3.1	0.1	2	0.1	0.0	0.0	3981.3	4.4	1.2
NOV	29	1.7	1.7	0.1	2	0.1	0.0	0.0	3984.0	5.9	1.5
DEC	24	1.5	1.0	0.1	2	0.1	0.0	0.0	3986.0	7.2	1.3
TOTAL		17.2	40.6	2.5		29.8	0.0	15.4			0.3
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	28	1.7	1.0	0.1	2	0.1	0.0	0.0	3987.7	8.4	1.5
FEB	38	2.1	1.2	0.1	2	0.1	0.0	0.0	3990.0	10.3	1.9
MAR	49	3.0	2.1	0.2	2	0.1	0.0	0.0	3992.9	13.0	2.7
APR	44	2.6	3.4	0.3	2	0.1	0.0	0.0	3995.1	15.2	2.2
MAY	33	2.0	4.1	0.4	3	0.2	0.0	0.0	3996.3	16.6	1.4
JUN	18	1.1	5.1	0.5	47	2.8	0.0	0.0	3994.3	14.4	-2.2
JUL	8	0.5	5.8	0.4	135	8.3	0.0	0.0	3984.5	6.2	-8.2
AUG	23	1.4	5.2	0.2	104	6.4	0.0	2.2	3978.9	3.2	-3.0
SEP	25	1.5	3.8	0.1	18	1.1	0.0	0.0	3979.5	3.5	0.3
OCT	29	1.8	2.8	0.1	2	0.1	0.0	0.0	3982.6	5.1	1.6
NOV	37	2.2	1.5	0.1	2	0.1	0.0	0.0	3985.9	7.1	2.0
DEC	31	1.9	0.9	0.1	2	0.1	0.0	0.0	3988.2	8.8	1.7
TOTAL		21.8	36.9	2.6		19.5	0.0	2.2			1.9

MERRITT RESERVOIR OPERATION ESTIMATES - 2004

	INFLOW		EVAPORATION		RELEASE REQUIREMENT CANAL	RIVER	TOTAL		RESERVOIR REQUIREMENT SPILL	SHORTAGE	END OF MONTH RESERVOIR ELEV	CONT	CHANGE
	MEAN	1000		1000	1000	1000	MEAN	1000	1000	1000		1000	1000
MONTH	CFS	AF	INCHES	AF	AF	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	226	13.9	1.2	0.3	0.0	1.0	16	1.0	12.6	0.0	2944.0	68.8	0.0
FEB	247	13.7	1.5	0.3	0.0	1.0	18	1.0	12.4	0.0	2944.0	68.8	0.0
MAR	255	15.7	2.1	0.5	0.0	4.6	75	4.6	7.8	0.0	2945.0	71.6	2.8
APR	260	15.5	3.4	0.8	0.0	4.5	76	4.5	7.3	0.0	2946.0	74.5	2.9
MAY	252	15.5	4.7	1.1	3.3	4.6	128	7.9	6.5	0.0	2946.0	74.5	0.0
JUN	239	14.2	5.9	1.4	7.5	3.0	176	10.5	2.3	0.0	2946.0	74.5	0.0
JUL	241	14.8	6.7	1.4	32.9	3.0	584	35.9	0.0	0.0	2937.2	52.0	-22.5
AUG	249	15.3	5.9	0.9	30.6	3.0	546	33.6	0.0	0.0	2926.7	32.8	-19.2
SEP	242	14.4	4.7	0.6	8.4	3.0	192	11.4	0.0	0.0	2928.3	35.2	2.4
OCT	246	15.1	3.9	0.6	0.0	1.0	16	1.0	0.0	0.0	2935.7	48.7	13.5
NOV	237	14.1	2.2	0.4	0.0	1.0	17	1.0	0.0	0.0	2941.2	61.4	12.7
DEC	223	13.7	1.5	0.3	0.0	1.0	16	1.0	5.0	0.0	2944.0	68.8	7.4
TOTAL		175.9	43.5	8.6	82.7	30.7		113.4	53.9	0.0			0.0
MOST PROBABLE INFLOW CONDITIONS													
JAN	244	15.0	1.1	0.2	0.0	1.0	16	1.0	13.8	0.0	2944.0	68.8	0.0
FEB	266	14.8	1.3	0.3	0.0	1.0	18	1.0	13.5	0.0	2944.0	68.8	0.0
MAR	275	16.9	1.9	0.4	0.0	4.6	75	4.6	9.1	0.0	2945.0	71.6	2.8
APR	281	16.7	3.1	0.7	0.0	4.5	76	4.5	8.6	0.0	2946.0	74.5	2.9
MAY	272	16.7	4.2	1.0	2.9	4.6	122	7.5	8.2	0.0	2946.0	74.5	0.0
JUN	259	15.4	5.3	1.3	6.4	3.0	158	9.4	4.7	0.0	2946.0	74.5	0.0
JUL	260	16.0	6.1	1.4	28.1	3.0	506	31.1	0.0	0.0	2939.8	58.0	-16.5
AUG	268	16.5	5.3	1.0	26.3	3.0	477	29.3	0.0	0.0	2933.5	44.2	-13.8
SEP	262	15.6	4.2	0.7	7.2	3.0	171	10.2	0.0	0.0	2935.8	48.9	4.7
OCT	267	16.4	3.5	0.7	0.0	1.0	16	1.0	0.0	0.0	2942.0	63.6	14.7
NOV	255	15.2	2.0	0.4	0.0	1.0	17	1.0	8.6	0.0	2944.0	68.8	5.2
DEC	241	14.8	1.4	0.3	0.0	1.0	16	1.0	13.5	0.0	2944.0	68.8	0.0
TOTAL		190.0	39.3	8.4	70.9	30.7		101.6	80.0	0.0			0.0
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	259	15.9	1.0	0.2	0.0	1.0	16	1.0	14.7	0.0	2944.0	68.8	0.0
FEB	284	15.8	1.2	0.3	0.0	1.0	18	1.0	14.5	0.0	2944.0	68.8	0.0
MAR	291	17.9	1.7	0.4	0.0	4.6	75	4.6	10.1	0.0	2945.0	71.6	2.8
APR	297	17.7	2.8	0.7	0.0	4.5	76	4.5	9.6	0.0	2946.0	74.5	2.9
MAY	288	17.7	3.8	0.9	2.3	4.6	112	6.9	9.9	0.0	2946.0	74.5	0.0
JUN	274	16.3	4.8	1.2	5.2	3.0	138	8.2	6.9	0.0	2946.0	74.5	0.0
JUL	275	16.9	5.4	1.2	23.0	3.0	423	26.0	0.0	0.0	2942.3	64.2	-10.3
AUG	285	17.5	4.8	1.0	21.6	3.0	400	24.6	0.0	0.0	2939.0	56.1	-8.1
SEP	277	16.5	3.8	0.8	5.8	3.0	148	8.8	0.0	0.0	2941.8	63.0	6.9
OCT	281	17.3	3.1	0.7	0.0	1.0	16	1.0	9.8	0.0	2944.0	68.8	5.8
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	255	15.7	1.2	0.3	0.0	1.0	16	1.0	14.4	0.0	2944.0	68.8	0.0
TOTAL		201.3	35.2	8.1	57.9	30.7		88.6	104.6	0.0			0.0

CALAMUS RESERVOIR OPERATION ESTIMATES - 2004

	INFLOW		EVAPORATION		RELEASE REQUIREMENT CANAL	RIVER	TOTAL		RESERVOIR SPILL	REQUIREMENT SHORTAGE	END OF MONTH ELEV	CONT	RESERVOIR CHANGE
	MEAN	1000		1000	1000	1000	MEAN	1000	1000	1000		1000	1000
MONTH	CFS	AF	INCHES	AF	AF	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	283	17.4	1.3	0.5	0.5	3.1	59	3.6	0.0	0.0	2238.4	101.0	13.3
FEB	303	16.8	1.6	0.6	0.5	2.8	59	3.3	0.0	0.0	2241.3	113.9	12.9
MAR	337	20.7	2.9	1.2	0.5	3.1	59	3.6	12.4	0.0	2242.0	117.4	3.5
APR	348	20.7	4.7	2.0	0.5	3.0	59	3.5	5.2	0.0	2244.0	127.4	10.0
MAY	385	23.7	4.9	2.1	2.6	3.1	93	5.7	15.9	0.0	2244.0	127.4	0.0
JUN	351	20.9	6.0	2.5	5.4	3.0	141	8.4	10.0	0.0	2244.0	127.4	0.0
JUL	329	20.2	6.8	2.6	34.8	20.2	894	55.0	0.0	0.0	2235.8	90.0	-37.4
AUG	311	19.1	7.0	2.1	28.1	19.1	768	47.2	0.0	0.0	2227.5	59.8	-30.2
SEP	294	17.5	5.3	1.3	6.4	17.5	402	23.9	0.0	0.0	2224.9	52.1	-7.7
OCT	291	17.9	3.9	1.0	0.5	3.1	59	3.6	0.0	0.0	2229.2	65.4	13.3
NOV	316	18.8	2.1	0.6	0.5	3.0	59	3.5	0.0	0.0	2233.3	80.1	14.7
DEC	307	18.9	1.2	0.4	0.5	3.1	59	3.6	0.0	0.0	2237.0	95.0	14.9
TOTAL		232.6	47.7	16.9	80.8	84.1		164.9	43.5	0.0			7.3
MOST PROBABLE INFLOW CONDITIONS													
JAN	314	19.3	1.2	0.4	0.5	3.1	59	3.6	0.0	0.0	2238.9	103.0	15.3
FEB	344	19.1	1.4	0.6	0.5	2.8	59	3.3	0.8	0.0	2242.0	117.4	14.4
MAR	385	23.7	2.6	1.0	0.5	3.1	59	3.6	19.1	0.0	2242.0	117.4	0.0
APR	398	23.7	4.2	1.7	0.5	3.0	59	3.5	8.5	0.0	2244.0	127.4	10.0
MAY	441	27.1	4.3	1.8	2.3	3.1	88	5.4	19.9	0.0	2244.0	127.4	0.0
JUN	402	23.9	5.3	2.2	4.5	3.0	126	7.5	14.2	0.0	2244.0	127.4	0.0
JUL	376	23.1	6.0	2.4	26.8	23.1	812	49.9	0.0	0.0	2237.8	98.2	-29.2
AUG	355	21.8	6.2	2.1	18.8	21.8	660	40.6	0.0	0.0	2232.6	77.3	-20.9
SEP	336	20.0	4.7	1.4	5.5	20.0	429	25.5	0.0	0.0	2230.7	70.4	-6.9
OCT	333	20.5	3.4	1.1	0.5	3.1	59	3.6	0.0	0.0	2234.9	86.2	15.8
NOV	361	21.5	1.9	0.7	0.5	3.0	59	3.5	0.0	0.0	2239.0	103.5	17.3
DEC	350	21.5	1.1	0.4	0.5	3.1	59	3.6	13.0	0.0	2240.0	108.0	4.5
TOTAL		265.2	42.1	15.8	61.4	92.2		153.6	75.5	0.0			20.3
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	371	22.8	1.0	0.4	0.5	3.1	59	3.6	0.0	0.0	2239.7	106.5	18.8
FEB	394	21.9	1.3	0.5	0.5	2.8	59	3.3	7.2	0.0	2242.0	117.4	10.9
MAR	441	27.1	2.3	0.9	0.5	3.1	59	3.6	22.6	0.0	2242.0	117.4	0.0
APR	455	27.1	3.7	1.5	0.5	3.0	59	3.5	12.1	0.0	2244.0	127.4	10.0
MAY	506	31.1	3.8	1.6	1.8	3.1	80	4.9	24.6	0.0	2244.0	127.4	0.0
JUN	460	27.4	4.6	2.0	3.7	3.0	113	6.7	18.7	0.0	2244.0	127.4	0.0
JUL	431	26.5	5.3	2.2	15.7	26.5	686	42.2	0.0	0.0	2240.3	109.5	-17.9
AUG	407	25.0	5.4	2.0	13.7	25.0	629	38.7	0.0	0.0	2236.8	93.8	-15.7
SEP	383	22.8	4.1	1.4	4.6	22.8	460	27.4	0.0	0.0	2235.3	87.8	-6.0
OCT	382	23.5	3.0	1.1	0.5	3.1	59	3.6	0.0	0.0	2239.7	106.6	18.8
NOV	415	24.7	1.6	0.6	0.5	3.0	59	3.5	19.2	0.0	2240.0	108.0	1.4
DEC	402	24.7	0.9	0.4	0.5	3.1	59	3.6	20.7	0.0	2240.0	108.0	0.0
TOTAL		304.6	37.0	14.6	43.0	101.6		144.6	125.1	0.0			20.3

DAVIS CREEK RESERVOIR OPERATION ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	RESERVOIR 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	5	0.3	0.0	0.0	2049.2	9.7	-0.4
FEB	0	0.0	1.5	0.1	5	0.3	0.0	0.0	2048.5	9.3	-0.4
MAR	0	0.0	2.8	0.1	10	0.6	0.0	0.0	2047.0	8.6	-0.7
APR	153	9.1	4.5	0.2	25	1.5	0.0	0.0	2059.6	16.0	7.4
MAY	239	14.7	4.8	0.3	78	4.8	0.0	0.0	2070.8	25.6	9.6
JUN	240	14.3	5.9	0.5	138	8.2	0.0	0.0	2076.0	31.2	5.6
JUL	207	12.7	6.4	0.6	288	17.7	0.0	0.0	2070.8	25.6	-5.6
AUG	140	8.6	4.9	0.4	268	16.5	0.0	0.0	2061.3	17.3	-8.3
SEP	10	0.6	4.2	0.2	129	7.7	0.0	0.0	2049.8	10.0	-7.3
OCT	0	0.0	3.7	0.2	5	0.3	0.0	0.0	2048.8	9.5	-0.5
NOV	0	0.0	2.0	0.1	5	0.3	0.0	0.0	2048.1	9.1	-0.4
DEC	0	0.0	1.2	0.0	5	0.3	0.0	0.0	2047.5	8.8	-0.3
TOTAL		60.0	42.9	2.8		58.5	0.0	0.0			-1.3
MOST PROBABLE INFLOW CONDITIONS											
JAN	0	0	1.2	0.1	5	0.3	0.0	0.0	2049.2	9.7	-0.4
FEB	0	0	1.4	0.1	5	0.3	0.0	0.0	2048.5	9.3	-0.4
MAR	0	0	2.6	0.1	10	0.6	0.0	0.0	2047.0	8.6	-0.7
APR	118	7	4.1	0.2	25	1.5	0.0	0.0	2056.5	13.9	5.3
MAY	239	14.7	4.4	0.3	67	4.1	0.0	0.0	2069.4	24.2	10.3
JUN	240	14.3	5.5	0.5	114	6.8	0.0	0.0	2076.0	31.2	7
JUL	140	8.6	6.0	0.5	223	13.7	0.0	0.0	2070.8	25.6	-5.6
AUG	49	3	4.5	0.3	207	12.7	0.0	0.0	2059.0	15.6	-10
SEP	10	0.6	3.9	0.2	101	6	0.0	0.0	2049.8	10.0	-5.6
OCT	0	0	3.4	0.1	5	0.3	0.0	0.0	2049.0	9.6	-0.4
NOV	0	0	1.8	0.1	5	0.3	0.0	0.0	2048.3	9.2	-0.4
DEC	0	0	1.1	0	5	0.3	0.0	0.0	2047.7	8.9	-0.3
TOTAL		48.2	39.9	2.5		46.9	0.0	0.0			-1.2
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	0	0.0	1.1	0.0	5	0.3	0.0	0.0	2049.4	9.8	-0.3
FEB	0	0.0	1.4	0.1	5	0.3	0.0	0.0	2048.7	9.4	-0.4
MAR	0	0.0	2.4	0.1	10	0.6	0.0	0.0	2047.3	8.7	-0.7
APR	81	4.8	3.9	0.2	25	1.5	0.0	0.0	2053.0	11.8	3.1
MAY	239	14.7	4.2	0.3	57	3.5	0.0	0.0	2067.7	22.7	10.9
JUN	240	14.3	5.2	0.4	91	5.4	0.0	0.0	2076.0	31.2	8.5
JUL	29	1.8	5.6	0.5	163	10.0	0.0	0.0	2067.5	22.5	-8.7
AUG	20	1.2	4.3	0.3	153	9.4	0.0	0.0	2056.6	14.0	-8.5
SEP	10	0.6	3.7	0.2	74	4.4	0.0	0.0	2049.8	10.0	-4.0
OCT	0	0.0	3.2	0.1	5	0.3	0.0	0.0	2049.0	9.6	-0.4
NOV	0	0.0	1.7	0.1	5	0.3	0.0	0.0	2048.3	9.2	-0.4
DEC	0	0.0	1.0	0.0	5	0.3	0.0	0.0	2047.7	8.9	-0.3
TOTAL		37.4	37.6	2.3		36.3	0.0	0.0			-1.2

BONNY RESERVOIR OPERATION ESTIMATES - 2004

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 REQUIREMENT SPILL 1000 AF	RESERVOIR REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	15	0.9	1.3	0.1	0.0	0.5	8	0.5	0.0	0.0	3657.1	17.0	0.3
FEB	14	0.8	1.4	0.1	0.0	0.4	7	0.4	0.0	0.0	3657.4	17.3	0.3
MAR	16	1.0	2.2	0.2	0.0	0.5	8	0.5	0.0	0.0	3657.6	17.6	0.3
APR	18	1.1	4.6	0.5	0.0	0.4	7	0.4	0.0	0.0	3657.8	17.8	0.2
MAY	20	1.2	5.9	0.6	0.4	0.5	15	0.9	0.0	0.0	3657.5	17.5	-0.3
JUN	18	1.1	7.5	0.8	0.3	0.4	12	0.7	0.0	0.0	3657.2	17.1	-0.4
JUL	10	0.6	8.5	0.9	1.0	0.5	24	1.5	0.0	0.0	3655.7	15.3	-1.8
AUG	7	0.4	7.3	0.7	0.6	0.5	18	1.1	0.0	0.0	3654.5	13.9	-1.4
SEP	3	0.2	6.1	0.6	0.3	0.4	12	0.7	0.0	0.0	3653.5	12.8	-1.1
OCT	7	0.4	3.8	0.3	0.2	0.5	11	0.7	0.0	0.0	3653.0	12.2	-0.6
NOV	12	0.7	2.5	0.2	0.0	0.4	7	0.4	0.0	0.0	3653.1	12.3	0.1
DEC	13	0.8	1.5	0.1	0.0	0.5	8	0.5	0.0	0.0	3653.2	12.5	0.2
TOTAL		9.2	52.6	5.1	2.8	5.5		8.3	0.0	0.0			-4.2
MOST PROBABLE INFLOW CONDITIONS													
JAN	23	1.4	1.1	0.1	0.0	0.5	8	0.5	0.0	0.0	3657.5	17.5	0.8
FEB	23	1.3	1.3	0.1	0.0	0.4	7	0.4	0.0	0.0	3658.1	18.3	0.8
MAR	24	1.5	1.9	0.2	0.0	0.5	8	0.5	0.0	0.0	3658.7	19.1	0.8
APR	29	1.7	4.2	0.5	0.0	0.4	7	0.4	0.0	0.0	3659.3	19.9	0.8
MAY	33	2.0	5.3	0.6	0.1	0.5	10	0.6	0.0	0.0	3659.9	20.7	0.8
JUN	29	1.7	6.7	0.8	0.3	0.4	12	0.7	0.0	0.0	3660.1	20.9	0.2
JUL	15	0.9	7.6	0.9	0.7	0.5	20	1.2	0.0	0.0	3659.2	19.7	-1.2
AUG	10	0.6	6.6	0.7	0.6	0.5	18	1.1	0.0	0.0	3658.3	18.5	-1.2
SEP	5	0.3	5.5	0.6	0.3	0.4	12	0.7	0.0	0.0	3657.5	17.5	-1.0
OCT	11	0.7	3.4	0.4	0.1	0.5	10	0.6	0.0	0.0	3657.3	17.2	-0.3
NOV	18	1.1	2.2	0.2	0.0	0.4	7	0.4	0.0	0.0	3657.7	17.7	0.5
DEC	20	1.2	1.3	0.1	0.0	0.5	8	0.5	0.0	0.0	3658.1	18.3	0.6
TOTAL		14.4	47.2	5.2	2.1	5.5		7.6	0.0	0.0			1.6
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	31	1.9	1.0	0.1	0.0	0.5	8	0.5	0.0	0.0	3657.9	18.0	1.3
FEB	32	1.8	1.1	0.1	0.0	0.4	7	0.4	0.0	0.0	3658.9	19.3	1.3
MAR	34	2.1	1.7	0.2	0.0	0.5	8	0.5	0.0	0.0	3659.9	20.7	1.4
APR	40	2.4	3.7	0.4	0.0	0.4	7	0.4	0.0	0.0	3661.0	22.3	1.6
MAY	44	2.7	4.8	0.6	0.2	0.5	11	0.7	0.0	0.0	3662.0	23.7	1.4
JUN	40	2.4	6.0	0.8	0.2	0.4	10	0.6	0.0	0.0	3662.6	24.7	1.0
JUL	21	1.3	6.8	0.9	0.4	0.5	15	0.9	0.0	0.0	3662.3	24.2	-0.5
AUG	13	0.8	5.9	0.7	0.4	0.5	15	0.9	0.0	0.0	3661.8	23.4	-0.8
SEP	8	0.5	4.9	0.6	0.2	0.4	10	0.6	0.0	0.0	3661.3	22.7	-0.7
OCT	16	1.0	3.1	0.4	0.2	0.5	11	0.7	0.0	0.0	3661.2	22.6	-0.1
NOV	27	1.6	2.0	0.2	0.0	0.4	7	0.4	0.0	0.0	3661.9	23.6	1.0
DEC	28	1.7	1.2	0.1	0.0	0.5	8	0.5	0.0	0.0	3662.6	24.7	1.1
TOTAL		20.2	42.2	5.1	1.6	5.5		7.1	0.0	0.0			8.0

ENDERS RESERVOIR OPERATION ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR REQUIREMENT SPILL 1000 AF	RESERVOIR REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	15	0.9	1.0	0.1	0	0.0	0.0	0.0	3087.0	12.1	0.8
FEB	14	0.8	1.1	0.1	0	0.0	0.0	0.0	3087.9	12.8	0.7
MAR	13	0.8	1.9	0.1	0	0.0	0.0	0.0	3088.8	13.5	0.7
APR	15	0.9	4.1	0.3	0	0.0	0.0	0.0	3089.5	14.1	0.6
MAY	15	0.9	5.3	0.4	0	0.0	0.0	0.0	3090.1	14.6	0.5
JUN	15	0.9	6.7	0.4	234	13.9	0.0	7.7	3082.3	8.9	-5.7
JUL	16	1.0	7.3	0.4	533	32.8	0.0	32.2	3082.3	8.9	0.0
AUG	15	0.9	6.1	0.3	540	33.2	0.0	32.6	3082.3	8.9	0.0
SEP	13	0.8	4.5	0.2	72	4.3	0.0	3.7	3082.3	8.9	0.0
OCT	13	0.8	2.9	0.2	0	0.0	0.0	0.0	3083.2	9.5	0.6
NOV	13	0.8	2.1	0.1	0	0.0	0.0	0.0	3084.3	10.2	0.7
DEC	13	0.8	1.2	0.1	0	0.0	0.0	0.0	3085.3	10.9	0.7
TOTAL		10.3	44.0	2.7		84.2	0.0	76.2			-0.4
MOST PROBABLE INFLOW CONDITIONS											
JAN	26	1.6	0.9	0.1	0	0.0	0.0	0.0	3087.9	12.8	1.5
FEB	25	1.4	1.0	0.1	0	0.0	0.0	0.0	3089.5	14.1	1.3
MAR	26	1.6	1.7	0.1	0	0.0	0.0	0.0	3091.2	15.6	1.5
APR	25	1.5	3.9	0.3	0	0.0	0.0	0.0	3092.5	16.8	1.2
MAY	28	1.7	4.9	0.4	0	0.0	0.0	0.0	3093.9	18.1	1.3
JUN	27	1.6	6.2	0.5	116	6.9	0.0	0.0	3087.2	12.3	-5.8
JUL	31	1.9	6.8	0.4	483	29.7	0.0	24.8	3082.3	8.9	-3.4
AUG	28	1.7	5.7	0.3	384	23.6	0.0	22.2	3082.3	8.9	0.0
SEP	25	1.5	4.2	0.2	37	2.2	0.0	0.9	3082.3	8.9	0.0
OCT	24	1.5	2.7	0.1	0	0.0	0.0	0.0	3084.4	10.3	1.4
NOV	25	1.5	2.0	0.1	0	0.0	0.0	0.0	3086.4	11.7	1.4
DEC	24	1.5	1.1	0.1	0	0.0	0.0	0.0	3088.3	13.1	1.4
TOTAL		19.0	41.0	2.7		62.4	0.0	47.9			1.8
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	36	2.2	0.8	0.1	0	0.0	0.0	0.0	3088.6	13.4	2.1
FEB	36	2.0	0.9	0.1	0	0.0	0.0	0.0	3090.9	15.3	1.9
MAR	34	2.1	1.6	0.1	0	0.0	0.0	0.0	3093.1	17.3	2.0
APR	35	2.1	3.5	0.3	0	0.0	0.0	0.0	3094.8	19.1	1.8
MAY	37	2.3	4.4	0.4	0	0.0	0.0	0.0	3096.6	21.0	1.9
JUN	35	2.1	5.6	0.5	37	2.2	0.0	0.0	3096.1	20.4	-0.6
JUL	42	2.6	6.1	0.4	296	18.2	0.0	4.5	3082.3	8.9	-11.5
AUG	37	2.3	5.1	0.3	226	13.9	0.0	11.9	3082.3	8.9	0.0
SEP	34	2.0	3.8	0.2	0	0.0	0.0	0.0	3085.0	10.7	1.8
OCT	34	2.1	2.4	0.1	0	0.0	0.0	0.0	3087.8	12.7	2.0
NOV	35	2.1	1.8	0.1	0	0.0	0.0	0.0	3090.2	14.7	2.0
DEC	34	2.1	1.0	0.1	0	0.0	0.0	0.0	3092.4	16.7	2.0
TOTAL		26.0	36.9	2.7		34.3	0.0	16.4			5.4

SWANSON LAKE OPERATION ESTIMATES- 2004

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 REQUIREMENT SPILL 1000 AF	RESERVOIR REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	34	2.1	1.0	0.2	0.0	0.1	2	0.1	0.0	0.0	2728.6	28.4	1.8
FEB	52	2.9	1.1	0.2	0.0	0.1	2	0.1	0.0	0.0	2729.7	31.0	2.6
MAR	59	3.6	1.9	0.4	0.0	0.1	2	0.1	0.0	0.0	2731.0	34.1	3.1
APR	66	3.9	4.3	0.9	0.0	0.1	2	0.1	0.0	0.0	2732.1	37.0	2.9
MAY	59	3.6	5.1	1.2	0.1	0.1	3	0.2	0.0	0.0	2732.9	39.2	2.2
JUN	47	2.8	6.6	1.5	4.3	1.0	89	5.3	0.0	0.0	2731.4	35.2	-4.0
JUL	26	1.6	7.6	1.4	16.0	4.4	332	20.4	0.0	5.9	2725.0	20.9	-14.3
AUG	13	0.8	6.6	1.1	13.4	6.3	320	19.7	0.0	19.6	2724.8	20.5	-0.4
SEP	7	0.4	5.1	0.8	2.0	2.1	69	4.1	0.0	4.0	2724.6	20.0	-0.5
OCT	10	0.6	3.1	0.5	0.0	0.1	2	0.1	0.0	0.0	2724.6	20.0	0.0
NOV	25	1.5	2.2	0.4	0.0	0.1	2	0.1	0.0	0.0	2725.1	21.0	1.0
DEC	28	1.7	1.2	0.2	0.0	0.1	2	0.1	0.0	0.0	2725.8	22.4	1.4
TOTAL		25.5	45.8	8.8	35.8	14.6		50.4	0.0	29.5			-4.2
MOST PROBABLE INFLOW CONDITIONS													
JAN	70	4.3	0.9	0.2	0.0	0.1	2	0.1	0.0	0.0	2729.5	30.6	4.0
FEB	108	6.0	1.0	0.2	0.0	0.1	2	0.1	0.0	0.0	2731.8	36.3	5.7
MAR	122	7.5	1.7	0.4	0.0	0.1	2	0.1	0.0	0.0	2734.4	43.3	7.0
APR	133	7.9	4.0	1.0	0.0	0.1	2	0.1	0.0	0.0	2736.6	50.1	6.8
MAY	120	7.4	4.7	1.3	0.1	0.1	3	0.2	0.0	0.0	2738.4	56.0	5.9
JUN	96	5.7	6.1	1.7	3.8	0.1	66	3.9	0.0	0.0	2738.4	56.1	0.1
JUL	52	3.2	7.0	1.8	13.9	4.2	294	18.1	0.0	0.0	2733.0	39.4	-16.7
AUG	28	1.7	6.1	1.2	11.5	4.1	254	15.6	0.0	0.0	2726.7	24.3	-15.1
SEP	13	0.8	4.7	0.8	1.7	0.1	30	1.8	0.0	0.0	2725.8	22.5	-1.8
OCT	21	1.3	2.8	0.5	0.0	0.1	2	0.1	0.0	0.0	2726.2	23.2	0.7
NOV	50	3.0	2.0	0.4	0.0	0.1	2	0.1	0.0	0.0	2727.3	25.7	2.5
DEC	55	3.4	1.1	0.2	0.0	0.1	2	0.1	0.0	0.0	2728.7	28.8	3.1
TOTAL		52.2	42.1	9.7	31.0	9.3		40.3	0.0	0.0			2.2
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	102	6.3	0.8	0.2	0.0	0.1	2	0.1	0.0	0.0	2730.4	32.6	6.0
FEB	160	8.9	0.9	0.2	0.0	0.1	2	0.1	0.0	0.0	2733.6	41.2	8.6
MAR	179	11.0	1.6	0.4	0.0	0.1	2	0.1	0.0	0.0	2737.1	51.7	10.5
APR	197	11.7	3.7	1.0	0.0	0.1	2	0.1	0.0	0.0	2740.2	62.3	10.6
MAY	177	10.9	4.3	1.3	0.1	0.1	3	0.2	0.0	0.0	2742.7	71.7	9.4
JUN	141	8.4	5.6	1.8	3.0	0.1	52	3.1	0.0	0.0	2743.6	75.2	3.5
JUL	76	4.7	6.5	2.0	11.4	1.2	205	12.6	0.0	0.0	2741.0	65.3	-9.9
AUG	42	2.6	5.6	1.6	9.4	1.8	182	11.2	0.0	0.0	2738.1	55.1	-10.2
SEP	20	1.2	4.3	1.2	1.4	0.1	25	1.5	0.0	0.0	2737.6	53.6	-1.5
OCT	31	1.9	2.6	0.7	0.0	0.1	2	0.1	0.0	0.0	2738.0	**54.7**	1.1
NOV	76	4.5	1.9	0.5	0.0	0.1	2	0.1	0.0	0.0	2739.1	58.6	3.9
DEC	83	5.1	1.0	0.3	0.0	0.1	2	0.1	0.0	0.0	2740.5	63.3	4.7
TOTAL		77.2	38.7	11.2	25.3	4.0		29.3	0.0	0.0			36.7

HUGH BUTLER LAKE OPERATION ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	RESERVOIR SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	13	0.8	0.9	0.1	5	0.3	0.0	0.0	2566.3	16.0	0.4
FEB	18	1.0	1.0	0.1	5	0.3	0.0	0.0	2566.9	16.6	0.6
MAR	21	1.3	1.8	0.2	5	0.3	0.0	0.0	2567.7	17.4	0.8
APR	20	1.2	4.9	0.4	5	0.3	0.0	0.0	2568.2	17.9	0.5
MAY	21	1.3	5.8	0.5	5	0.3	0.0	0.0	2568.6	18.4	0.5
JUN	22	1.3	7.2	0.6	32	1.9	0.0	0.0	2567.5	17.2	-1.2
JUL	16	1.0	8.0	0.6	127	7.8	0.0	1.4	2561.0	11.2	-6.0
AUG	18	1.1	7.1	0.5	67	4.1	0.0	3.5	2561.0	11.2	0.0
SEP	12	0.7	5.4	0.4	17	1.0	0.0	0.7	2561.0	11.2	0.0
OCT	13	0.8	3.5	0.2	5	0.3	0.0	0.0	2561.3	11.5	0.3
NOV	13	0.8	2.1	0.1	5	0.3	0.0	0.0	2561.8	11.9	0.4
DEC	13	0.8	1.1	0.1	5	0.3	0.0	0.0	2562.3	12.3	0.4
TOTAL		12.1	48.7	3.8		17.2	0.0	5.6			-3.3
MOST PROBABLE INFLOW CONDITIONS											
JAN	18	1.1	0.8	0.1	5	0.3	0.0	0.0	2566.6	16.3	0.7
FEB	23	1.3	0.9	0.1	5	0.3	0.0	0.0	2567.5	17.2	0.9
MAR	28	1.7	1.6	0.1	5	0.3	0.0	0.0	2568.7	18.5	1.3
APR	27	1.6	4.4	0.4	5	03	0.0	0.0	2569.5	19.4	0.9
MAY	29	1.8	5.3	0.5	5	0.3	0.0	0.0	2570.4	20.4	1.0
JUN	30	1.8	6.5	0.6	25	1.5	0.0	0.0	2570.2	20.1	-0.3
JUL	23	1.4	7.2	0.7	67	4.1	0.0	0.0	2567.0	16.7	-3.4
AUG	24	1.5	6.4	0.5	55	3.4	0.0	0.0	2564.5	14.3	-2.4
SEP	15	0.9	4.9	0.4	15	0.9	0.0	0.0	2564.1	13.9	-0.4
OCT	16	1.0	3.1	0.2	5	0.3	0.0	0.0	2564.6	14.4	0.5
NOV	18	1.1	1.9	0.2	5	0.3	0.0	0.0	2565.3	15.0	0.6
DEC	18	1.1	1.0	0.1	5	0.3	0.0	0.0	2566.0	15.7	0.7
TOTAL		16.3	44.1	3.9		12.3	0.0	0.0			0.1
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	23	1.4	0.7	0.1	5	0.3	0.0	0.0	2566.9	16.6	1.0
FEB	29	1.6	0.8	0.1	5	0.3	0.0	0.0	2568.1	17.8	1.2
MAR	34	2.1	1.5	0.1	5	0.3	0.0	0.0	2569.6	19.5	1.7
APR	34	2.0	4.0	0.4	5	0.3	0.0	0.0	2570.8	20.8	1.3
MAY	36	2.2	4.8	0.5	5	0.3	0.0	0.0	2572.0	22.2	1.4
JUN	37	2.2	5.9	0.6	20	1.2	0.0	0.0	2572.3	22.6	0.4
JUL	29	1.8	6.6	0.7	50	3.1	0.0	0.0	2570.6	20.6	-2.0
AUG	29	1.8	5.8	0.5	41	2.5	0.0	0.0	2569.5	19.4	-1.2
SEP	18	1.1	4.5	0.4	10	0.6	0.0	0.0	2569.6	19.5	0.1
OCT	21	1.3	2.8	0.3	5	0.3	0.0	0.0	2570.3	20.2	0.7
NOV	24	1.4	1.8	0.2	5	0.3	0.0	0.0	2571.0	21.1	0.9
DEC	23	1.4	0.9	0.1	5	0.3	0.0	0.0	2571.9	22.1	1.0
TOTAL		20.3	40.1	4.0		9.8	0.0	0.0			6.5

HARRY STRUNK LAKE OPERATON ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	RESERVOIR 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	0.9	0.1	2	0.1	0.0	0.0	2358.3	23.7	2.2
FEB	49	2.7	1.0	0.1	2	0.1	0.0	0.0	2360.2	26.2	2.5
MAR	50	3.1	1.8	0.2	2	0.1	0.0	0.0	2362.1	29.0	2.8
APR	50	3.0	4.9	0.6	2	0.1	0.0	0.0	2363.5	31.3	2.3
MAY	55	3.4	5.7	0.8	2	0.1	0.0	0.0	2365.1	33.8	2.5
JUN	55	3.3	7.2	1.0	87	5.2	0.0	0.0	2363.3	30.9	-2.9
JUL	52	3.2	8.1	0.8	311	19.1	0.0	0.0	2349.7	14.2	-16.7
AUG	41	2.5	7.0	0.5	262	16.1	0.0	8.8	2343.0	8.9	-5.3
SEP	27	1.6	5.4	0.3	27	1.6	0.0	0.3	2343.0	8.9	0.0
OCT	34	2.1	3.5	0.2	2	0.1	0.0	0.0	2345.5	10.7	1.8
NOV	37	2.2	2.1	0.1	2	0.1	0.0	0.0	2347.9	12.7	2.0
DEC	36	2.2	1.1	0.1	2	0.1	0.0	0.0	2350.2	14.7	2.0
TOTAL		31.7	48.6	4.8		42.8	0.0	9.1			-6.8
MOST PROBABLE INFLOW CONDITIONS											
JAN	44	2.7	0.8	0.1	2	0.1	0.0	0.0	2358.5	24.0	2.5
FEB	56	3.1	0.9	0.1	2	0.1	0.0	0.0	2360.7	26.9	2.9
MAR	59	3.6	1.6	0.2	2	0.1	0.0	0.0	2362.9	30.2	3.3
APR	59	3.5	4.4	0.6	2	0.1	0.0	0.0	2364.6	33.0	2.8
MAY	63	3.9	5.2	0.8	2	0.1	0.3	0.0	2366.1	35.7	2.7
JUN	64	3.8	6.6	1.0	72	4.3	0.0	0.0	2365.3	34.2	-1.5
JUL	60	3.7	7.4	0.9	259	15.9	0.0	0.0	2356.3	**21.1**	-13.1
AUG	47	2.9	6.4	0.5	215	13.2	0.0	0.0	2345.0	10.3	-10.8
SEP	32	1.9	4.9	0.3	20	1.2	0.0	0.0	2345.5	10.7	0.4
OCT	39	2.4	3.2	0.2	2	0.1	0.0	0.0	2348.1	12.8	2.1
NOV	42	2.5	1.9	0.1	2	0.1	0.0	0.0	2350.7	15.1	2.3
DEC	41	2.5	1.0	0.1	2	0.1	0.0	0.0	2353.0	17.4	2.3
TOTAL		36.5	44.4	4.9		35.4	0.3	0.0			-4.1
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	60	3.7	0.7	0.1	2	0.1	0.0	0.0	2359.3	25.0	3.5
FEB	77	4.3	0.8	0.1	2	0.1	0.0	0.0	2362.2	29.1	4.1
MAR	81	5.0	1.4	0.2	2	0.1	0.0	0.0	2365.1	33.8	4.7
APR	81	4.8	4.0	0.6	2	0.1	2.2	0.0	2366.1	35.7	1.9
MAY	86	5.3	4.7	0.7	2	0.1	4.5	0.0	2366.1	35.7	0.0
JUN	89	5.3	5.9	0.9	45	2.7	1.7	0.0	2366.1	35.7	0.0
JUL	83	5,1	6.7	0.9	177	10.9	0.0	0.0	2362.1	29.0	-6.7
AUG	65	4.0	5.8	0.7	150	9.2	0.0	0.0	2357.8	23.1	-5.9
SEP	42	2.5	4.4	0.5	2	0.1	0.0	0.0	2359.3	25.0	1.9
OCT	54	33	2.9	0.3	2	0.1	0.0	0.0	2361.4	27.9	2.9
NOV	59	3.5	1.7	0.2	2	0.1	0.0	0.0	2363.4	31.1	3.2
DEC	57	3.5	0.9	0.1	2	0.1	0.0	0.0	2365.4	34.4	3.3
TOTAL		50.3	40.0	5.3		23.7	8.4	0.0			12.9

TABLE 4

KEITH SEBELIUS LAKE OPERATION ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	RESERVOIR 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	2287.4	9.1	-0.1
FEB	4	0.2	1.1	0.1	2	0.1	0.0	0.0	2287.4	9.1	0.0
MAR	5	0.3	1.9	0.1	2	0.1	0.0	0.0	2287.5	9.2	0.1
APR	5	0.3	5.3	0.4	2	0.1	0.0	0.0	2287.2	9.0	-0.2
MAY	8	0.5	6.0	0.4	5	0.3	0.0	0.2	2287.2	9.0	0.0
JUN	12	0.7	7.5	0.5	69	4.1	0.0	4.0	2287.4	9.1	0.1
JUL	8	0.5	8.6	0.6	130	8.0	0.0	7.9	2287.2	8.9	-0.2
AUG	7	0.4	7.6	0.5	130	8.0	0.0	7.9	2286.9	8.7	-0.2
SEP	3	0.2	5.9	0.4	24	1.4	0.0	1.3	2286.6	8.4	-0.3
OCT	2	0.1	4.0	0.3	2	0.1	0.0	0.0	2286.2	8.1	-0.3
NOV	2	0.1	2.2	0.1	2	0.1	0.0	0.0	2286.1	8.0	-0.1
DEC	2	0.1	1.1	0.1	2	0.1	0.0	0.0	2286.0	7.9	-0.1
TOTAL		3.5	52.1	3.6		22.5	0.0	21.3			-1.3
MOST PROBABLE INFLOW CONDITIONS											
JAN	5	0.3	0.8	0.1	2	0.1	0.0	0.0	2287.6	9.3	0.1
FEB	7	0.4	1.0	0.1	2	0.1	0.0	0.0	2287.8	9.5	0.2
MAR	10	0.6	1.7	0.1	2	0.1	0.0	0.0	2288.2	9.9	0.4
APR	12	0.7	4.7	0.4	2	0.1	0.0	0.0	2288.4	10.1	0.2
MAY	18	1.1	5.4	0.4	3	0.2	0.0	0.1	2289.1	10.7	0.6
JUN	24	1.4	6.7	0.6	42	2.5	0.0	2.4	2289.8	11.4	0.7
JUL	16	1.0	7.7	0.6	122	7.5	0.0	5.4	2288.0	9.7	-1.7
AUG	15	0.9	6.7	0.5	99	6.1	0.0	5.7	2288.0	9.7	0.0
SEP	7	0.4	5.3	0.4	20	1.2	0.0	1.1	2287.9	9.6	-0.1
OCT	3	0.2	3.5	0.3	2	0.1	0.0	0.0	2287.7	9.4	-0.2
NOV	5	0.3	2.0	0.1	2	0.1	0.0	0.0	2287.8	9.5	0.1
DEC	3	0.2	1.0	0.1	2	0.1	0.0	0.0	2287.8	9.5	0.0
TOTAL		7.5	46.5	3.7		18.2	0.0	14.7			0.3
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	10	0.6	0.8	0.1	2	0.1	0.0	0.0	2287.9	9.6	0.4
FEB	14	0.8	0.9	0.1	2	0.1	0.0	0.0	2288.5	10.2	0.6
MAR	23	1.4	1.5	0.1	2	0.1	0.0	0.0	2289.8	11.4	1.2
APR	27	1.6	4.2	0.4	2	0.1	0.0	0.0	2290.7	12.5	1.1
MAY	39	2.4	4.8	0.5	3	0.2	0.0	0.0	2292.2	14.2	1.7
JUN	50	3.0	6.1	0.6	22	1.3	0.0	0.0	2293.1	15.3	1.1
JUL	36	2.2	6.9	0.7	62	3.8	0.0	0.0	2291.2	13.0	-2.3
AUG	33	2.0	6.1	0.5	60	3.7	0.0	0.0	2289.2	10.8	-2.2
SEP	15	0.9	4.8	0.4	13	0.8	0.0	0.0	2288.8	10.5	-0.3
OCT	7	0.4	3.2	0.3	2	0.1	0.0	0.0	2288.8	10.5	0.0
NOV	10	0.6	1.8	0.1	2	0.1	0.0	0.0	2289.3	10.9	0.4
DEC	8	0.5	0.9	0.1	2	0.1	0.0	0.0	2289.6	11.2	0.3
TOTAL		16.4	41.8	3.9		10.5	0.0	0.0			2.0

HARLAN COUNTY LAKE OPERATION ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	RESERVOIR SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	65	4.0	0.9	0.6	0	0.0	0.0	0.0	1926.8	116.7	3.4
FEB	101	5.6	0.9	0.6	0	0.0	0.0	0.0	1927.5	121.7	5.0
MAR	135	8.3	1.7	1.1	0	0.0	0.0	0.0	1928.4	128.9	7.2
APR	118	7.0	4.3	2.9	0	0.0	0.0	0.0	1928.9	133.0	4.1
MAY	148	9.1	5.3	3.6	0	0.0	0.0	0.0	1929.6	138.5	5.5
JUN	123	7.3	6.5	4.3	250	14.9	0.0	0.0	1928.1	126.6	-11.9
JUL	124	7.6	7.3	4.7	758	46.6	0.0	39.8	1927.6	122.7	-3.9
AUG	99	6.1	6.3	4.0	610	37.5	0.0	35.4	1927.6	122.7	0.0
SEP	49	2.9	5.0	3.2	61	3.6	0.0	3.6	1927.6	122.4	-0.3
OCT	47	2.9	3.3	2.1	0	0.0	0.0	0.0	1927.7	123.2	0.8
NOV	62	3.7	2.0	1.3	0	0.0	0.0	0.0	1928.0	125.6	2.4
DEC	60	3.7	1.3	0.8	0	0.0	0.0	0.0	1928.4	128.5	2.9
TOTAL		68.2	44.7	29.2		102.6	0.0	78.8			15.2
MOST PROBABLE INFLOW CONDITIONS											
JAN	138	8.5	0.8	0.5	0	0.0	0.0	0.0	1927.4	121.3	8.0
FEB	216	12.0	0.8	0.5	0	0.0	0.0	0.0	1928.9	132.8	11.5
MAR	291	17.9	1.5	1.0	0	0.0	0.0	0.0	1930.9	149.7	16.9
APR	250	14.9	3.9	2.9	0	0.0	0.0	0.0	1932.2	161.7	12.0
MAY	317	19.5	4.8	3.8	0	0.0	0.0	0.0	1933.9	177.4	15.7
JUN	264	15.7	5.8	4.8	97	5.7	0.0	0.0	1934.4	182.6	5.2
JUL	267	16.4	6.6	5.2	569	36.2	0.0	0.0	1931.8	157.6	-25.0
AUG	215	13.2	5.7	4.2	542	33.3	0.0	12.9	1930.5	146.2	-11.4
SEP	103	6.1	4.6	3.3	37	2.2	0.0	0.0	1930.6	146.8	0.6
OCT	99	6.1	3.0	2.2	0	0.0	0.0	0.0	1931.0	150.7	3.9
NOV	133	7.9	1.8	1.3	0	0.0	0.0	0.0	1931.8	157.3	6.6
DEC	132	8.1	1.1	0.9	0	0.0	0.0	0.0	1932.5	164.5	7.2
TOTAL		146.3	40.2	30.6		77.4	0.0	12.9			51.2
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	259	15.9	0.7	0.5	0	0.0	0.0	0.0	1928.4	128.7	15.4
FEB	405	22.5	0.7	0.5	0	0.0	0.0	0.0	1931.0	150.7	22.0
MAR	545	33.5	1.3	1.0	0	0.0	0.0	0.0	1934.5	183.2	32.5
APR	471	28.0	3.5	3.0	0	0.0	0.0	0.0	1936.9	208.2	25.0
MAY	594	36.5	4.2	3.9	0	0.0	0.0	0.0	1939.8	240.8	32.6
JUN	494	29.4	5.2	5.1	39	2.3	0.0	0.0	1941.7	262.8	22.0
JUL	499	30.7	5.8	6.0	161	9.9	0.0	0.0	1942.9	277.6	14.8
AUG	402	24.7	5.0	5.2	249	15.3	0.0	0.0	1943.2	281.8	4.2
SEP	195	11.6	4.0	4.2	20	1.2	0.0	0.0	1943.7	288.0	6.2
OCT	187	11.5	2.6	2.8	0	0.0	0.0	0.0	1944.4	296.7	8.7
NOV	249	14.8	1.6	1.7	0	0.0	0.0	0.0	1945.4	309.8	13.1
DEC	246	15.1	1.0	1.1	0	0.0	6.1	0.0	1946.0	317.7	7.9
TOTAL		274.2	35.6	35.0		28.7	6.1	0.0			204.4

LOVEWELL RESERVOIR OPERATION ESTIMATES - 2004

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	2.2	44	2.7	0.8	0.2	0	0.0	0.0	0.0	1580.9	30.9	2.5
FEB	0.7	2.5	58	3.2	1.0	0.2	0	0.0	0.0	0.0	1582.0	33.9	3.0
MAR	1.6	1.0	42	2.6	1.8	0.4	0	0.0	0.0	0.0	1582.7	36.1	2.2
APR	1.5	2.3	64	3.8	3.7	1.0	0	0.0	0.0	0.0	1583.7	38.9	2.8
MAY	1.8	2.2	65	4.0	4.7	1.3	16	1.0	0.0	0.0	1584.2	40.6	1.7
JUN	2.0	0.0	34	2.0	6.0	1.5	188	11.2	0.0	0.0	1580.6	29.9	-10.7
JUL	1.3	0.0	21	1.3	6.7	1.2	566	34.8	0.0	16.4	1571.7	11.6	-18.3
AUG	0.1	0.0	2	0.1	5.4	0.7	389	23.9	0.0	23.9	1571.3	11.0	-0.6
SEP	1.1	0.0	18	1.1	4.1	0.5	52	3.1	0.0	3.1	1571.7	11.6	0.6
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	12.3	17.2		29.5	40.2	7.9		74.0	0.0	43.4			-9.0
MOST PROBABLE INFLOW CONDITIONS													
JAN	1.2	0.0	20	1.2	0.7	0.1	0	0.0	0.0	0.0	1580.4	29.5	1.1
FEB	1.8	0.0	32	1.8	0.8	0.2	0	0.0	0.0	0.0	1581.0	31.1	1.6
MAR	4	0.0	65	4.0	1.5	0.4	0	0.0	0.0	0.0	1582.3	34.7	3.6
APR	3.6	0.0	61	3.6	3.1	0.8	0	0.0	0.0	0.0	1583.2	37.5	2.8
MAY	4.5	0.5	81	5.0	4.0	1.0	15	0.9	0.0	0.0	1584.2	40.6	3.1
JUN	4.9	5.6	176	10.5	5.0	1.3	155	9.2	0.0	0.0	1584.2	40.6	0.0
JUL	3.3	4.1	120	7.4	5.6	1.2	472	29.0	0.0	0.0	1575.3	17.8	-22.8
AUG	0.3	7.9	133	8.2	4.6	0.6	324	19.9	0.0	6.1	1571.7	11.6	-6.2
SEP	2.6	0.6	54	3.2	3.4	0.4	44	2.6	0.0	0.0	1571.8	11.8	0.2
OCT	1.8	2.1	63	3.9	2.3	0.3	0	0.0	0.0	0.0	1574.0	15.4	3.6
NOV	1.5	1.2	45	2.7	1.8	0.3	0	0.0	0.0	0.0	1575.3	17.8	2.4
DEC	1.1	4.6	93	5.7	0.8	0.1	0	0.0	0.0	0.0	1578.0	23.4	5.6
TOTAL	30.6	26.6		57.2	33.8	6.7		61.6	0.0	6.1			-5.0
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	3.2	0.0	52	3.2	0.6	0.1	0	0.0	0.0	0.0	1581.1	31.5	3.1
FEB	4.8	0.0	86	4.8	0.7	0.2	0	0.0	0.4	0.0	1582.6	35.7	4.2
MAR	11	0.0	179	11.0	1.3	0.3	0	0.0	8.2	0.0	1583.4	38.2	2.5
APR	10	0.0	168	10.0	2.7	0.7	0	0.0	6.9	0.0	1584.2	40.6	2.4
MAY	12.6	0.0	205	12.6	3.4	0.9	8	0.5	11.2	0.0	1584.2	40.6	0.0
JUN	13.7	1.2	250	14.9	4.3	1.1	87	5.2	8.6	0.0	1584.2	40.6	0.0
JUL	9.3	1.2	171	10.5	4.8	1.1	265	16.3	15.9	0.0	1575.3	17.8	-22.8
AUG	0.9	6.6	122	7.5	3.9	0.6	179	11.0	0.0	0.0	1573.0	13.7	-4.1
SEP	7.3	0.6	133	7.9	2.9	0.4	24	1.4	4.4	0.0	1574.0	15.4	1.7
OCT	4.9	0.0	80	4.9	2.0	0.3	0	0.0	4.6	0.0	1574.0	15.4	0.0
NOV	4.3	0.0	72	4.3	1.5	0.2	0	0.0	1.7	0.0	1575.3	17.8	2.4
DEC	2.9	0.0	47	2.9	0.7	0.1	0	0.0	0.0	0.0	1576.7	20.6	2.8
TOTAL	84.9	9.6		94.5	28.8	6.0		34.4	61.9	0.0			-7.8

KIRWIN RESERVOIR OPERATION ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	RESERVOIR 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	0.1	0	0.0	0.0	0.0	1708.5	24.8	0.2
FEB	7	0.4	1.1	0.2	0	0.0	0.0	0.0	1708.7	25.0	0.2
MAR	13	0.8	1.9	0.3	0	0.0	0.0	0.0	1708.9	25.5	0.5
APR	13	0.8	4.3	0.7	0	0.0	0.0	0.0	1709.0	25.6	0.1
MAY	21	1.3	5.3	0.9	8	0.5	0.0	0.0	1708.9	25.5	-0.1
JUN	18	1.1	6.6	1.0	87	5.2	0.0	0.0	1706.1	20.4	-5.1
JUL	18	1.1	7.5	0.9	192	11.8	0.0	3.0	1700.0	11.8	-8.6
AUG	11	0.7	6.6	0.7	192	11.8	0.0	11.8	1700.0	11.8	0.0
SEP	7	0.4	5.0	0.5	52	3.1	0.0	3.1	1699.9	11.7	-0.1
OCT	3	0.2	3.4	0.3	0	0.0	0.0	0.0	1699.8	11.6	-0.1
NOV	5	0.3	2.1	0.2	0	0.0	0.0	0.0	1699.9	11.7	0.1
DEC	5	0.3	1.1	0.1	0	0.0	0.0	0.0	1700.0	11.9	0.2
TOTAL		7.7	45.6	5.9		32.4	0.0	17.9			-12.7
MOST PROBABLE INFLOW CONDITIONS											
JAN	15	0.9	0.8	0.1	0	0.0	0.0	0.0	1708.9	25.4	0.8
FEB	23	1.3	1.0	0.2	0	0.0	0.0	0.0	1709.4	26.5	1.1
MAR	39	2.4	1.7	0.3	0	0.0	0.0	0.0	1710.3	28.6	2.1
APR	42	2.5	3.8	0.7	0	0.0	0.0	0.0	1711.1	30.4	1.8
MAY	67	4.1	4.7	1.0	7	0.4	0.0	0.0	1712.2	33.1	2.7
JUN	55	3.3	5.9	1.2	74	4.4	0.0	0.0	1711.3	30.8	-2.3
JUL	52	3.2	6.7	1.1	192	11.8	0.0	0.0	1706.5	21.1	-9.7
AUG	37	2.3	5.9	0.7	166	10.2	0.0	0.0	1700.5	12.5	-8.6
SEP	18	1.1	4.5	0.5	8	0.5	0.0	0.0	1700.6	12.6	0.1
OCT	11	0.7	3.0	0.3	0	0.0	0.0	0.0	1701.0	13.0	0.4
NOV	17	1.0	1.9	0.2	0	0.0	0.0	0.0	1701.6	13.8	0.8
DEC	13	0.8	1.0	0.1	0	0.0	0.0	0.0	1702.1	14.5	0.7
TOTAL		23.6	40.9	6.4		27.3	0.0	0.0			-10.1
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	46	2.8	0.7	0.1	0	0.0	0.0	0.0	1709.8	27.3	2.7
FEB	74	4.1	0.9	0.2	0	0.0	0.0	0.0	1711.5	31.2	3.9
MAR	117	7.2	1.5	0.3	0	0.0	0.0	0.0	1714.0	38.1	6.9
APR	131	7.8	3.5	0.9	0	0.0	0.0	0.0	1716.3	45.0	6.9
MAY	207	12.7	4.3	1.2	5	0.3	0.0	0.0	1719.5	56.2	11.2
JUN	170	10.1	5.3	1.6	59	3.5	0.0	0.0	1720.9	61.2	5.0
JUL	161	9.9	6.0	1.9	168	10.3	0.0	0.0	1720.3	58.9	-2.3
AUG	112	6.9	5.3	1.6	119	7.3	0.0	0.0	1719.7	56.9	-2.0
SEP	59	3.5	4.0	1.2	7	0.4	0.0	0.0	1720.2	58.8	1.9
OCT	37	2.3	2.7	0.8	0	0.0	0.0	0.0	1720.6	60.3	1.5
NOV	52	3.1	1.7	0.5	0	0.0	0.0	0.0	1721.3	62.9	2.6
DEC	41	2.5	0.9	0.3	0	0.0	0.0	0.0	1721.9	65.1	2.2
TOTAL		72.9	36.8	10.6		21.8	0.0	0.0			40.5

WEBSTER RESERVOIR OPERATION ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	RESERVOIR SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	3	0.2	0.9	0.1	0	0.0	0.0	0.0	1871.1	19.2	0.1
FEB	5	0.3	1.1	0.2	0	0.0	0.0	0.0	1871.2	19.3	0.1
MAR	8	0.5	2.0	0.3	0	0.0	0.0	0.0	1871.3	19.5	0.2
APR	12	0.7	4.4	0.6	0	0.0	0.0	0.0	1871.4	19.6	0.1
MAY	18	1.1	5.7	0.8	15	0.9	0.0	0.0	1871.0	19.0	-0.6
JUN	13	0.8	7.2	1.0	94	5.6	0.0	0.0	1867.4	13.2	-5.8
JUL	13	0.8	7.9	0.9	221	13.6	0.0	7.9	1863.0	7.4	-5.8
AUG	8	0.5	7.2	0.7	221	13.6	0.0	13.6	1862.9	7.2	-0.2
SEP	5	0.3	5.4	0.5	24	1.4	0.0	1.4	1862.7	7.0	-0.2
OCT	2	0.1	3.6	0.3	0	0.0	0.0	0.0	1862.5	6.8	-0.2
NOV	3	0.2	2.2	0.2	0	0.0	0.0	0.0	1862.5	6.8	0.0
DEC	3	0.2	1.2	0.1	0	0.0	0.0	0.0	1862.6	6.9	0.1
TOTAL		5.7	48.7	5.7		35.1	0.0	22.9			-12.2
MOST PROBABLE INFLOW CONDITIONS											
JAN	11	0.7	0.8	0.1	0	0.0	0.0	0.0	1871.4	19.7	0.6
FEB	18	1.0	1.0	0.1	0	0.0	0.0	0.0	1871.9	20.6	0.9
MAR	29	1.8	1.7	0.3	0	0.0	0.0	0.0	1872.8	22.1	1.5
APR	42	2.5	4.0	0.6	0	0.0	0.0	0.0	1873.8	24.0	1.9
MAY	62	3.8	5.1	0.8	13	0.8	0.0	0.0	1874.9	26.2	2.2
JUN	45	2.7	6.4	1.0	71	4.2	0.0	0.0	1873.6	23.7	-2.5
JUL	42	2.6	7.1	1.0	195	12.0	0.0	0.0	1867.5	13.3	-10.4
AUG	24	1.5	6.4	0.7	151	9.3	0.0	2.6	1863.0	7.4	-5.9
SEP	15	0.9	4.8	0.5	5	0.3	0.0	0.0	1863.1	7.5	0.1
OCT	8	0.5	32	0.3	0	0.0	0.0	0.0	1863.3	7.7	0.2
NOV	12	0.7	2.0	0.2	0	0.0	0.0	0.0	1863.7	8.2	0.5
DEC	10	0.6	1.1	0.1	0	0.0	0.0	0.0	1864.1	8.7	0.5
TOTAL		19.3	43.6	5.7		26.6	0.0	2.6			-10.4
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	52	3.2	0.8	0.1	0	0.0	0.0	0.0	1872.8	22.2	3.1
FEB	77	4.3	0.9	0.1	0	0.0	0.0	0.0	1875.0	26.4	4.2
MAR	122	7.5	1.6	0.3	0	0.0	0.0	0.0	1878.3	33.6	7.2
APR	175	10.4	3.6	0.7	0	0.0	0.0	0.0	1882.2	43.3	9.7
MAY	263	16.2	4.6	1.1	7	0.4	0.0	0.0	1887.2	58.0	14.7
JUN	190	11.3	5.8	1.6	39	2.3	0.0	0.0	1889.5	65.4	7.4
JUL	177	10.9	6.5	1.9	117	7.2	0.0	0.0	1890.0	67.2	1.8
AUG	104	6.4	5.8	1.7	93	5.7	0.0	0.0	1889.7	66.2	-1.0
SEP	64	3.8	4.4	1.3	2	0.1	0.0	0.0	1890.4	68.6	2.4
OCT	34	2.1	2.9	0.9	0	0.0	0.0	0.0	1890.7	69.8	1.2
NOV	47	2.8	1.8	0.5	0	0.0	0.0	0.0	1891.3	72.1	2.3
DEC	44	2.7	1.0	0.3	0	0.0	0.0	0.0	1892.0	74.5	2.4
TOTAL		81.6	39.6	10.5		15.7	0.0	0.0			55.4

WACONDA LAKE OPERATION ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	RESERVOIR REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	41	2.5	0.8	0.7	10	0.6	0.0	0.0	1451.3	169.8	1.2
FEB	59	3.3	1.0	0.9	9	0.5	0.0	0.0	1451.5	171.7	1.9
MAR	114	7.0	1.9	1.6	3	0.2	0.0	0.0	1451.9	176.9	5.2
APR	119	7.1	4.8	4.4	3	0.2	0.0	0.0	1452.2	179.4	2.5
MAY	137	8.4	5.9	5.4	7	0.4	0.0	0.0	1452.4	182.0	2.6
JUN	114	6.8	7.5	6.9	42	2.5	0.0	0.0	1452.2	179.4	-2.6
JUL	189	11.6	8.9	8.0	158	9.7	0.0	0.0	1451.6	173.3	-6.1
AUG	70	4.3	7.6	6.5	124	7.6	0.0	0.0	1450.7	163.5	-9.8
SEP	54	3.2	6.0	5.0	24	1.4	0.0	0.0	1450.3	160.3	-3.2
OCT	42	2.6	3.9	3.2	5	0.3	0.0	0.0	1450.3	159.4	-0.9
NOV	47	2.8	2.1	1.7	7	0.4	0.0	0.0	1450.3	160.1	0.7
DEC	37	2.3	1.0	0.9	10	0.6	0.0	0.0	1450.4	160.9	0.8
TOTAL		61.9	51.5	45.2		24.4	0.0	0.0			-7.7
MOST PROBABLE INFLOW CONDITIONS											
JAN	102	6.3	0.7	0.6	5	0.3	0.0	0.0	1451.7	174.0	5.4
FEB	153	8.5	0.9	0.8	5	0.3	0.0	0.0	1452.4	181.4	7.4
MAR	288	17.7	1.7	1.6	2	0.1	0.0	0.0	1453.8	197.4	16.0
APR	299	17.8	4.3	4.3	2	0.1	0.0	0.0	1454.9	210.8	13.4
MAY	346	21.3	5.2	5.4	3	0.2	7.1	0.0	1455.6	219.4	8.6
JUN	289	17.2	6.7	7.0	32	1.9	8.3	0.0	1455.6	219.4	0.0
JUL	478	29.4	7.9	8.3	114	7.0	14.1	0.0	1455.6	219.4	0.0
AUG	176	10.8	6.7	7.0	89	5.5	0.0	0.0	1455.5	217.7	-1.7
SEP	134	8.0	5.4	5.6	17	1.0	0.0	0.0	1455.6	219.1	1.4
OCT	104	6.4	3.5	3.6	2	0.1	2.4	0.0	1455.6	219.4	0.3
NOV	119	7.1	1.9	1.9	3	0.2	29.3	0.0	1453.6	195.1	-24.3
DEC	94	5.8	0.9	0.9	5	0.3	4.6	0.0	1453.6	195.1	0.0
TOTAL		156.3	45.7	47.0		17.0	65.8	0.0			26.5
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	356	21.9	0.7	0.6	2	0.1	0.0	0.0	1453.1	189.8	21.2
FEB	531	29.5	0.8	0.8	2	0.1	23.3	0.0	1453.6	195.1	5.3
MAR	1005	61.8	1.5	1.5	2	0.1	35.9	0.0	1455.6	219.4	24.3
APR	1049	62.4	3.9	4.0	2	0.1	58.3	0.0	1455.6	219.4	0.0
MAY	1210	74.4	4.7	4.9	3	0.2	69.3	0.0	1455.6	219.4	0.0
JUN	1028	61.2	6.0	6.3	20	1.2	53.7	0.0	1455.6	219.4	0.0
JUL	1673	102.9	7.1	7.4	72	4.4	91.1	0.0	1455.6	219.4	0.0
AUG	615	37.8	6.0	6.3	57	3.5	28.0	0.0	1455.6	219.4	0.0
SEP	469	27.9	4.8	5.0	10	0.6	22.3	0.0	1455.6	219.4	0.0
OCT	364	22.4	3.1	3.3	2	0.1	19.0	0.0	1455.6	219.4	0.0
NOV	413	24.6	1.7	1.7	2	0.1	47.1	0.0	1453.6	195.1	-24.3
DEC	330	20.3	0.8	0.8	2	0.1	19.4	0.0	1453.6	195.1	0.0
TOTAL		547.1	40.9	42.6		10.6	467.4	0.0			26.5

CEDAR BLUFF RESERVOIR OPERATION ESTIMATES - 2004

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	EVAPORATION INCHES	EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	RESERVOIR 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	0.5	0	0.0	0.0	0.0	2137.2	129.8	-0.4
FEB	2	0.1	1.3	0.6	0	0.0	0.0	0.0	2137.1	129.3	-0.5
MAR	2	0.1	2.1	1.0	0	0.0	0.0	0.0	2137.0	128.4	-0.9
APR	3	0.2	5.4	2.5	0	0.0	0.0	0.0	2136.6	126.1	-2.3
MAY	5	0.3	6.4	2.9	5	0.3	0.0	0.0	2136.0	123.2	-2.9
JUN	5	0.3	7.9	3.5	5	0.3	0.0	0.0	2135.4	119.7	-3.5
JUL	8	0.5	9.6	4.2	13	0.8	0.0	0.0	2134.5	115.2	-4.5
AUG	5	0.3	8.2	3.5	11	0.7	0.0	0.0	2133.8	111.3	-3.9
SEP	2	0.1	7.0	2.9	5	0.3	0.0	0.0	2133.1	108.2	-3.1
OCT	2	0.1	4.9	2.0	2	0.1	0.0	0.0	2132.7	106.2	-2.0
NOV	2	0.1	2.3	0.9	2	0.1	0.0	0.0	2132.5	105.3	-0.9
DEC	2	0.1	1.3	0.5	2	0.1	0.0	0.0	2132.4	104.8	-0.5
TOTAL		2.3	57.3	25.0		2.7	0.0	0.0			-25.4
MOST PROBABLE INFLOW CONDITIONS											
JAN	5	0.3	1.0	0.5	0	0.0	0.0	0.0	2137.3	130.0	-0.2
FEB	7	0.4	1.1	0.5	0	0.0	0.0	0.0	2137.2	129.9	-0.1
MAR	13	0.8	1.9	0.9	0	0.0	0.0	0.0	2137.2	129.8	-0.1
APR	20	1.2	4.9	2.3	0	0.0	0.0	0.0	2137.0	128.7	-1.1
MAY	31	1.9	5.7	2.7	3	0.2	0.0	0.0	2136.9	127.7	-1.0
JUN	32	1.9	7.1	3.3	3	0.2	0.0	0.0	2136.6	126.1	-1.6
JUL	42	2.6	8.6	4.0	11	0.7	0.0	0.0	2136.2	124.0	-2.1
AUG	29	1.8	7.4	3.3	7	0.4	0.0	0.0	2135.8	122.1	-1.9
SEP	12	0.7	6.3	2.8	3	0.2	0.0	0.0	2135.4	119.8	-2.3
OCT	5	0.3	4.4	2.0	2	0.1	0.0	0.0	2135.1	118.0	-1.8
NOV	7	0.4	2.1	0.9	2	0.1	0.0	0.0	2135.0	117.4	-0.6
DEC	5	0.3	1.1	0.5	2	0.1	0.0	0.0	2134.9	117.1	-0.3
TOTAL		12.6	51.7	23.7		2.0	0.0	0.0			-13.1
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	28	1.7	0.9	0.4	0	0.0	0.0	0.0	2137.5	131.5	1.3
FEB	36	2.0	1.0	0.5	0	0.0	0.0	0.0	2137.8	133.0	1.5
MAR	65	4.0	1.7	0.8	0	0.0	0.0	0.0	2138.3	136.2	3.2
APR	106	6.3	4.4	2.2	0	0.0	0.0	0.0	2139.0	140.3	4.1
MAY	155	9.5	5.1	2.6	3	0.2	0.0	0.0	2140.1	147.0	6.7
JUN	166	9.9	6.4	3.3	3	0.2	0.0	0.0	2141.1	153.4	6.4
JUL	213	13.1	7.7	4.2	3	0.2	0.0	0.0	2142.5	162.1	8.7
AUG	148	9.1	6.6	3.7	0	0.0	0.0	0.0	2143.3	167.5	5.4
SEP	61	3.6	5.6	3.2	2	0.1	0.0	0.0	2143.3	167.8	0.3
OCT	24	1.5	4.0	2.2	2	0.1	0.0	0.0	2143.2	167.0	-0.8
NOV	34	2.0	1.8	1.0	2	0.1	0.0	0.0	2143.3	167.9	0.9
DEC	23	1.4	1.0	0.6	2	0.1	0.0	0.0	2143.4	168.6	0.7
TOTAL		64.1	46.1	24.7		1.0	0.0	0.0			38.4

TABLE 5

FLOOD DAMAGES PREVENTED BY NEBRASKA-KANSAS PROJECTS RESERVOIRS

RESERVOIR	DURING FY 2003	PRIOR TO 2003	ACCUMULATED TOTAL
BONNY	$3,000	$2,682,000	$2,685,000
ENDERS	$2,000	$3,274,000	$3,276,000
SWANSON	$0	$19,063,000	$19,063,000
HUGH BUTLER	$16,000	$2,555,000	$2,571,000
HARRY STRUNK	$43,000	$4,865,000	$4,908,000
KEITH SEBELIUS	$2,000	$3,952,000	$3,954,000
HARLAN COUNTY	$21,000	$150,064,000	$150,085,000
LOVEWELL	$438,000	$146,057,000	$146,495,000
KIRWIN	$0	$86,850,000	$86,850,000
WEBSTER	$0	$110,308,000	$110,308,000
WACONDA	$0	$1,213,053,000	$1,213,053,000
CEDAR BLUFF	$0	$128,887,000	$128,887,000
TOTAL	$525,000	$1,871,610,000	$1,872,135,000

Estimates of damages prevented are received from the Army Corps of Engineer's Kansas City District Office. The Accumulated Totals date from 1951 through 2003. 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 2003 AND THE
ESTIMATED DIVERSION FOR 2004
(Units - Acre-Feet)

Irrigation District and Canal	2003 Irrigation Operations From	To	10-Year Average Diversion (1993-2002)		2003 Diversion	Estimated Diversion in 2004
Mirage Flats Irrigation District						
Mirage Flats Canal	7/08	8/24	13,705		9,929	8,000
Ainsworth Irrigation District						
Ainsworth Canal	5/18	9/24	69,449		77,313	73,000
Twin Loups Irrigation District						
Above Davis Creek	4/02	9/18	39,337	*	50,166	47,000
Below Davis Creek	5/19	9/18	36,918	*	48,399	47,000
Total Twin Loups Irrigation District			76,255		98,565	94,000
Frenchman Valley Irrigation District						
Culbertson Canal	3/04	8/14	9,308		8,002	7,000
H & RW Irrigation District						
Culbertson Extension Canal	Did not run.		10,337		0	0
Frenchman-Cambridge Irrigation District						
Meeker-Driftwood Canal	Did not run.		26,370		0	0
Red Willow Canal	Did not run.		6,642		0	0
Bartley Canal	Did not run.		7,594		0	0
Cambridge Canal	6/25	8/22	23,537		18,332	18,000
Total Frenchman-Cambridge Irrigation District			64,143		18,332	18,000
Almena Irrigation District						
Almena Canal	4/10	8/17	4,645		3,379	0
Bostwick Irrigation District in Nebraska						
Franklin Canal	7/07	8/15	29,225		15,262	0
Naponee Canal	7/04	8/14	2,544		2,162	0
Franklin Pump Canal	7/08	8/14	2,950		1,687	0
Superior Canal	6/16	8/15	13,727		8,174	5,500
Courtland Canal (Nebraska)	7/01	8/13	1,957		1,491	1,000
Total Bostwick Irrigation District in Nebraska			50,403		28,776	6,500
Kansas-Bostwick Irrigation District						
Courtland Canal above Lovewell	6/30	8/19	26,929		17,585	0
Courtland Canal below Lovewell	5/22	8/19	45,441		35,606	28,000
Total Kansas-Bostwick Irrigation District			72,370		53,191	28,000
Kirwin Irrigation District						
Kirwin Canal	6/30	8/19	20,403		14,655	8,500
Webster Irrigation District						
Osborne Canal	6/29	8/18	13,767		9,505	6,500
Glen Elder Irrigation District	6/23	9/09	5,611		9,308	8,000
TOTAL			410,396		330,955	257,500

* Average diversion is from 1995 through 2003 for Twin Loups and Glen Elder Irrigation Districts.

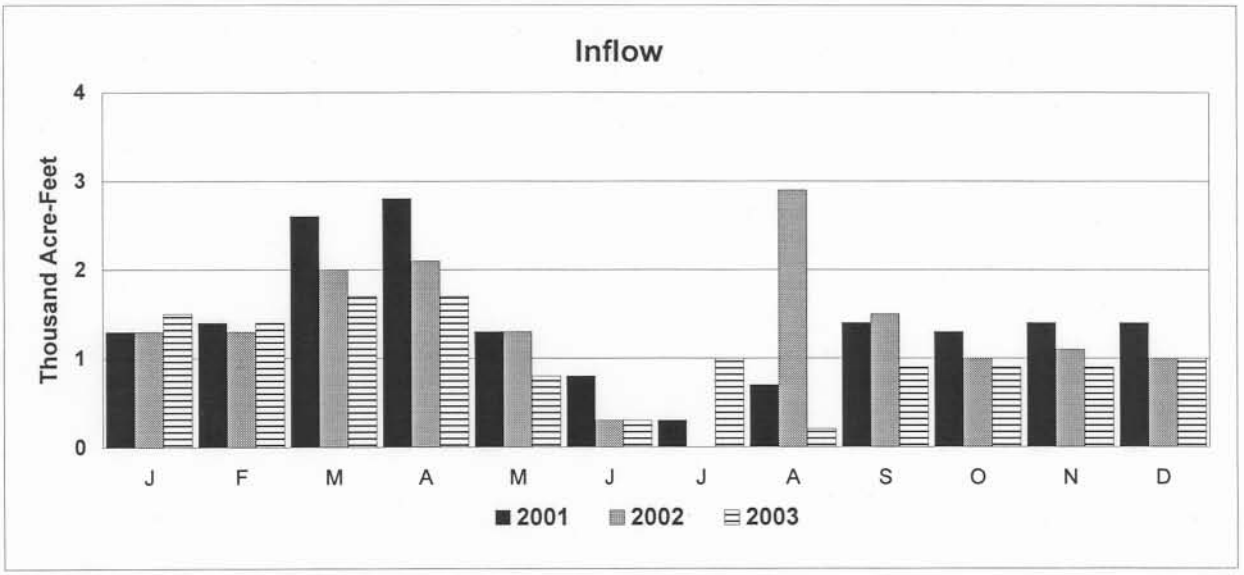
TABLE 7
NEBRASKA-KANSAS PROJECTS
Summary of Precipitation, Reservoir Storage and Inflows
CALENDAR YEAR 2003

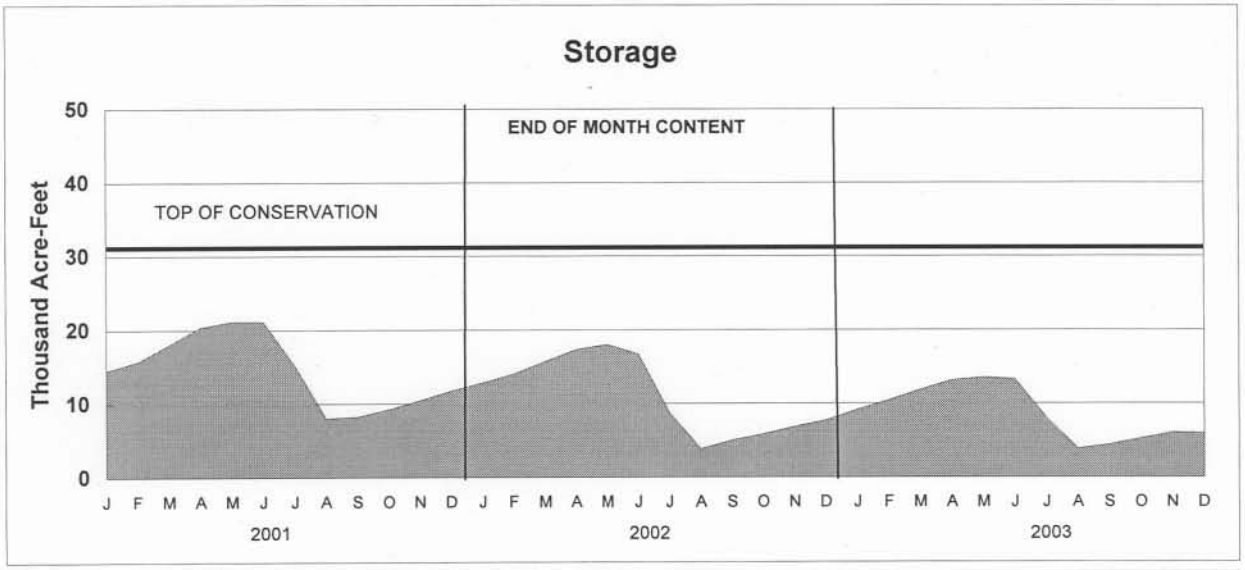
Reservoir	Total Precip. Inches	Percent Of Average %	Storage 12-31-02 AF	Storage 12-31-03 AF	Gain or Loss AF	Maximum Content AF	Storage Date	Minimum Content AF	Storage Date	Total Inflow AF	Percent Of Most Probable %
Box Butte	16.99	99	7,717	6,895	-822	14,195	JUL 8	3,579	AUG 24	12,456	72
Merritt	20.49	102	68,560	68,831	271	75,665	MAY 4	31,104	SEP 7	180,034	95
Calamus	16.12	68	103,572	87,654	-15,918	134,490	APR 3	48,044	OCT 3	257,697	97
Davis Creek	22.27	94	6,339	10,111	3,772	31,719	JUN 28	5,910	APR 10	68,053	143
Bonny	18.51	107	18,952	16,726	-2,226	21,202	JUN 19	16,726	DEC 31	7,348	51
Enders	15.40	81	11,485	11,267	-218	13,755	MAY 19	10,861	NOV 1	5,940	31
Swanson	17.51	88	21,864	26,599	4,735	32,943	JUN 2	21,844	JAN 1	14,393	28
Hugh Butler	18.37	93	12,640	15,587	2,947	17,160	JUN 30	12,657	JAN 1	9,577	59
Harry Strunk	19.40	94	18,155	21,540	3,385	34,222	JUN 29	16,087	AUG 23	30,606	84
Keith Sebelius	20.63	83	13,510	9,172	-4,338	14,900	JUN 20	9,093	DEC 2	5,207	69
Harlan County	16.70	73	160,456	113,346	-47,110	178,914	JUN 17	113,346	DEC 31	38,430	26
Lovewell	32.42	119	28,514	28,358	-156	48,538	JUN 24	17,100	AUG 19	47,555	67
Kirwin	18.19	78	41,637	24,575	-17,062	43,944	JUN 3	24,575	DEC 30	7,548	32
Webster	18.35	78	35,497	19,143	-16,354	36,773	MAY 24	19,143	DEC 30	5,170	27
Waconda	24.16	94	174,301	168,625	-5,676	182,879	JUN 12	157,927	SEP 10	58,963	38
Cedar Bluff	19.87	94	145,890	130,225	-15,665	145,953	MAR 27	130,225	DEC 30	11,284	90

EXHIBIT 1A

BOX BUTTE RESERVOIR

ACTUAL OPERATION





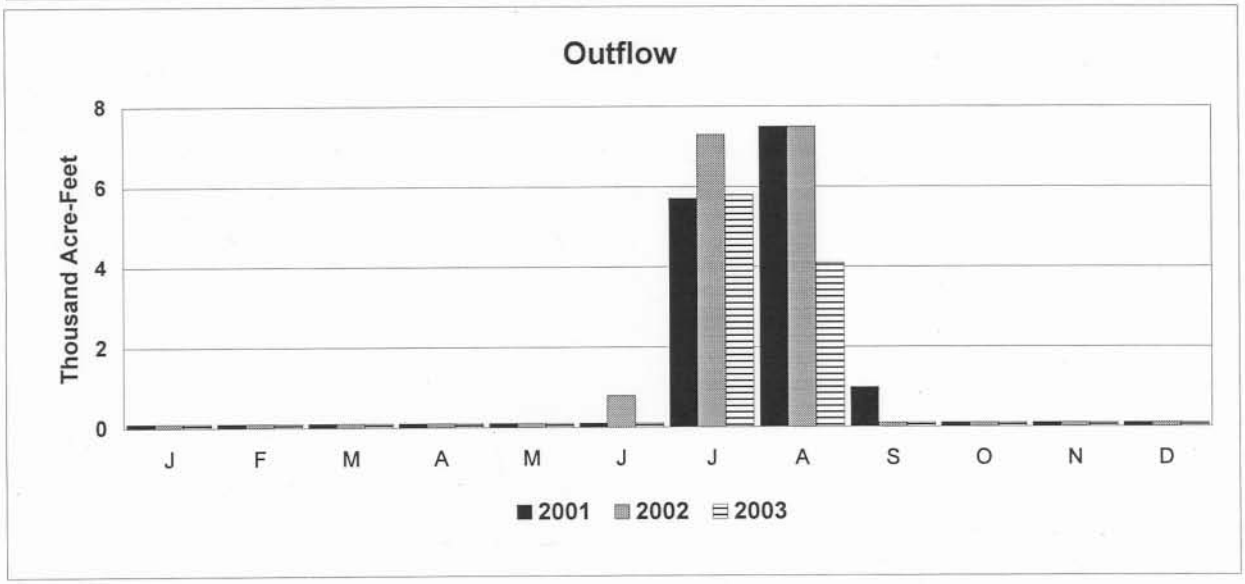
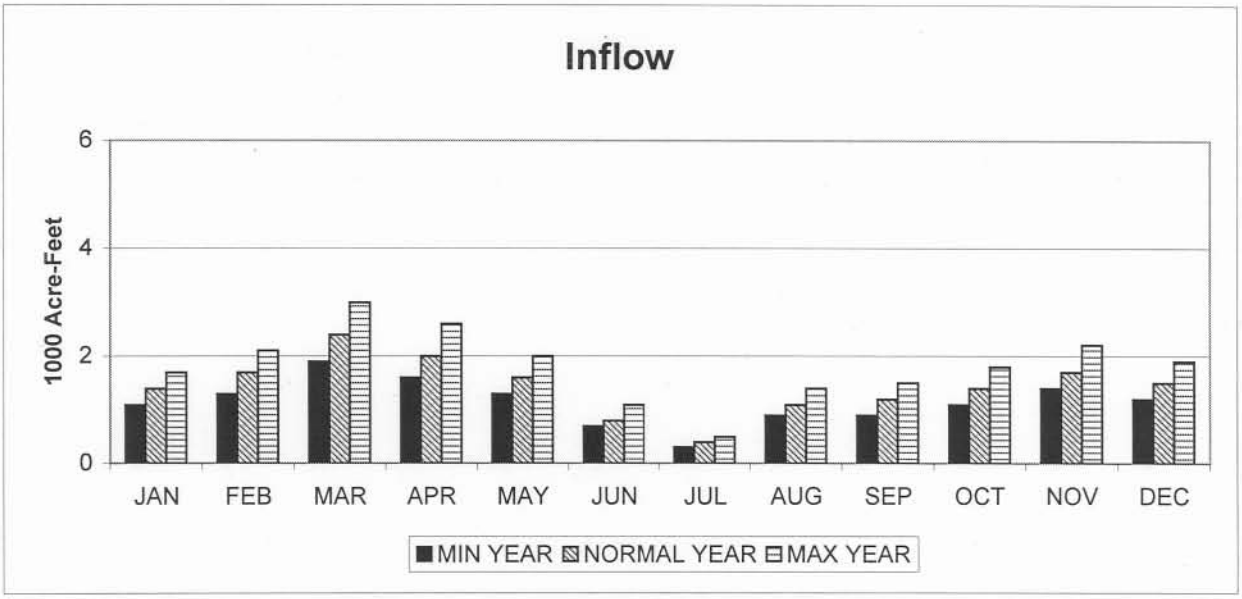
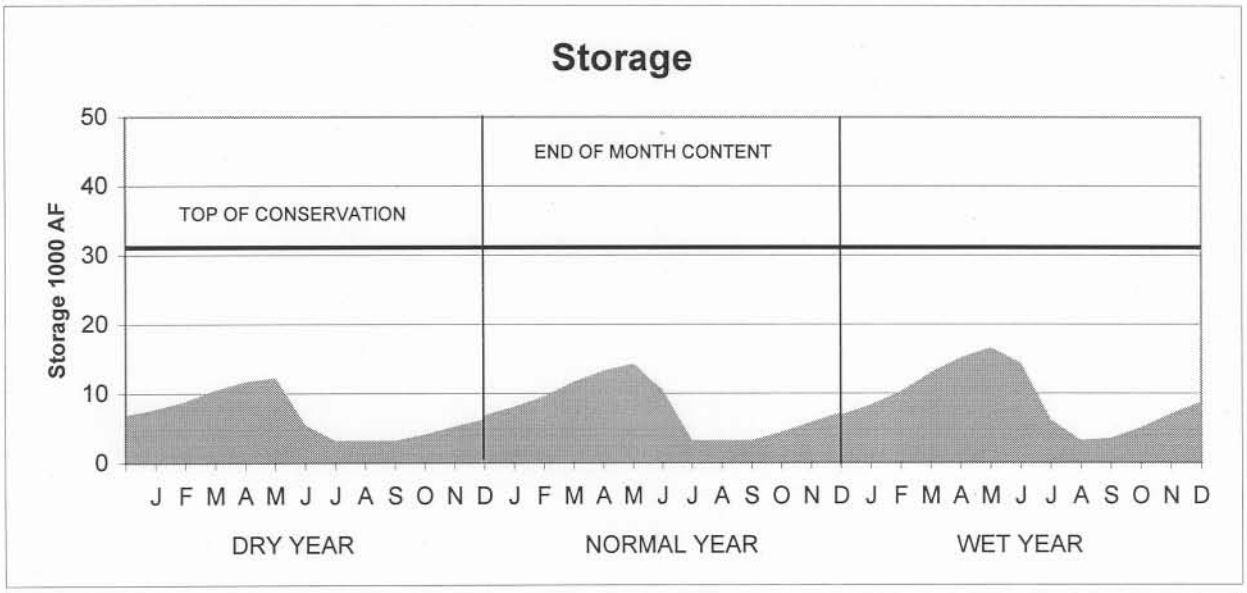


EXHIBIT 1B

BOX BUTTE RESERVOIR

2004 OPERATION PLAN





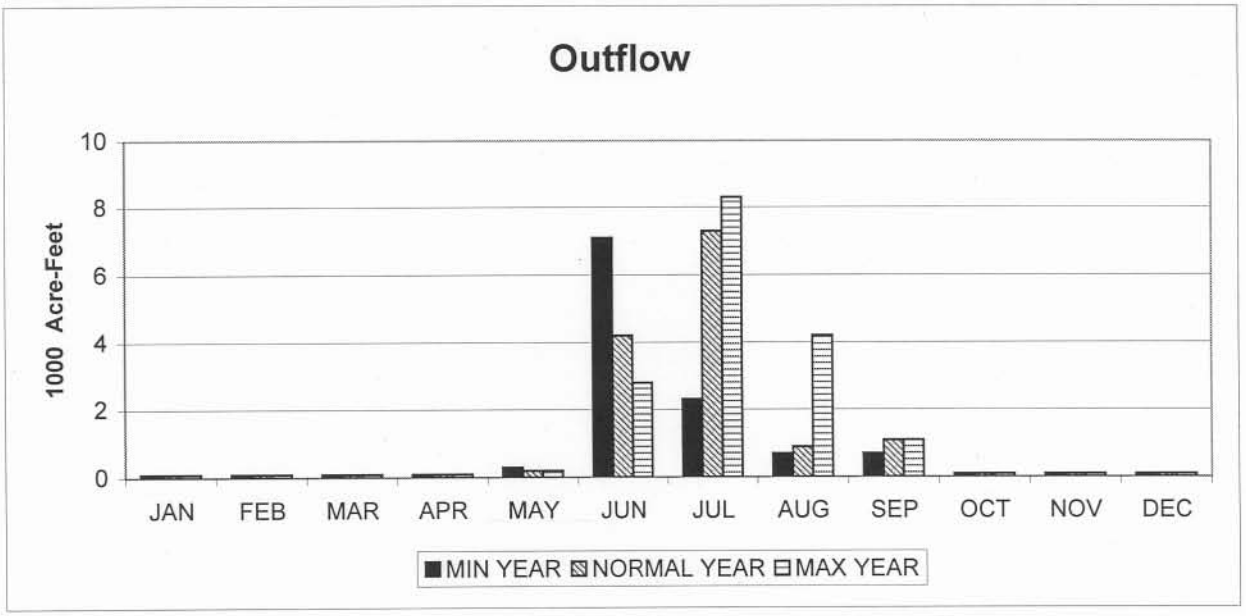
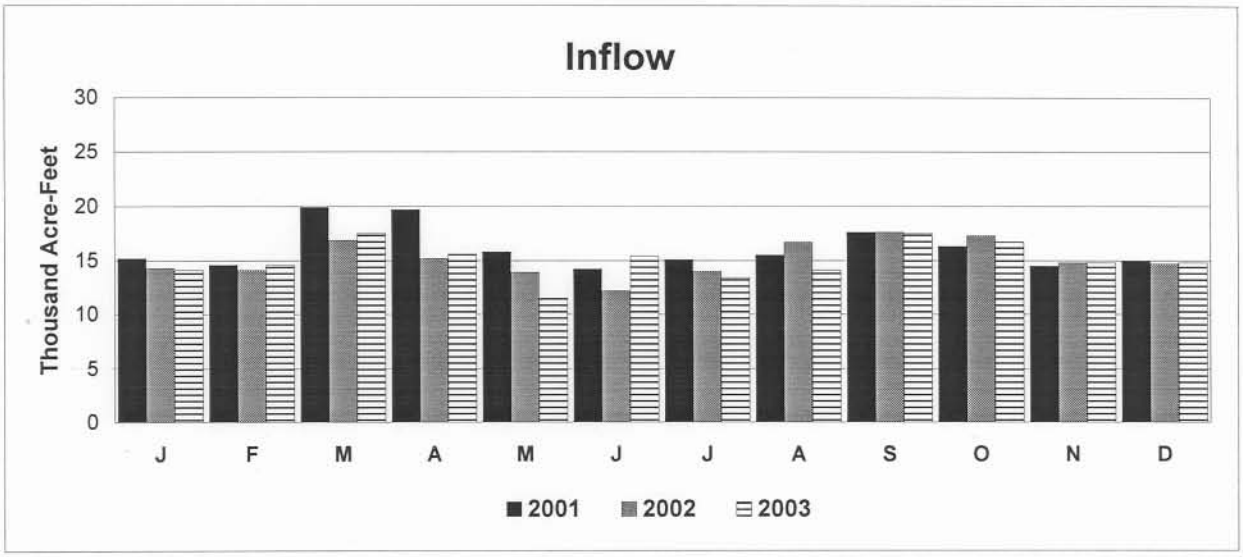
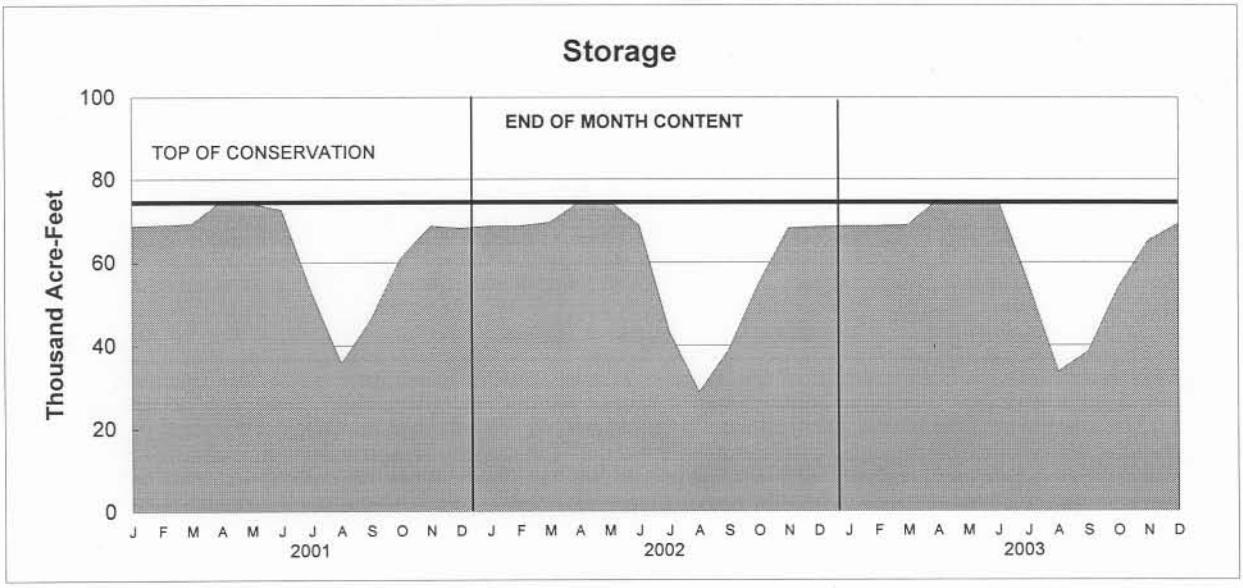


EXHIBIT 2A

MERRITT RESERVOIR
ACTUAL OPERATION





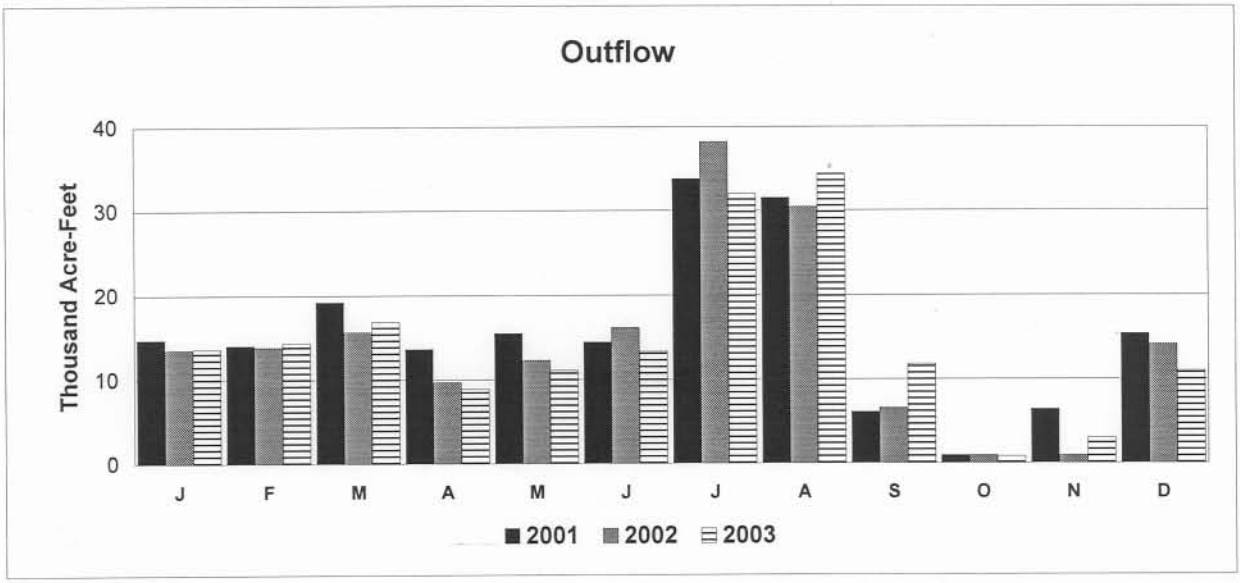
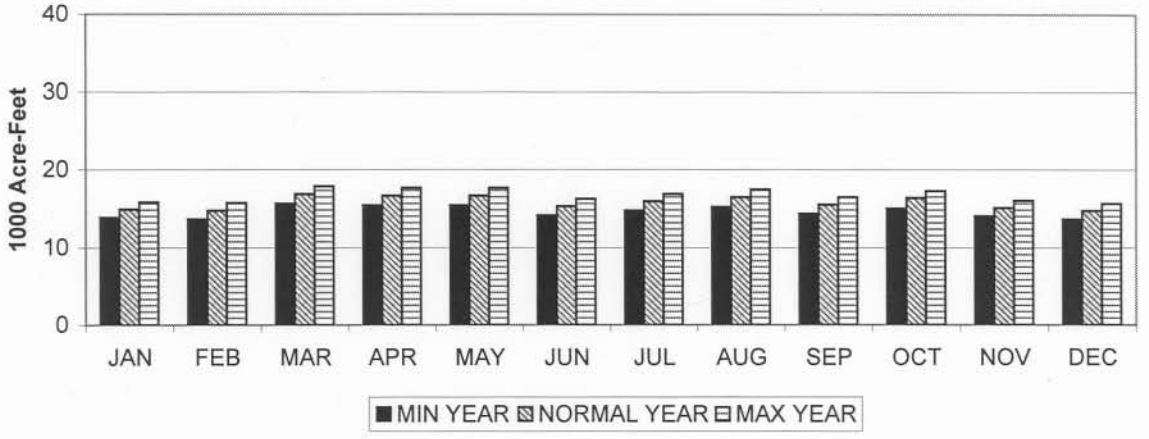


EXHIBIT 2B

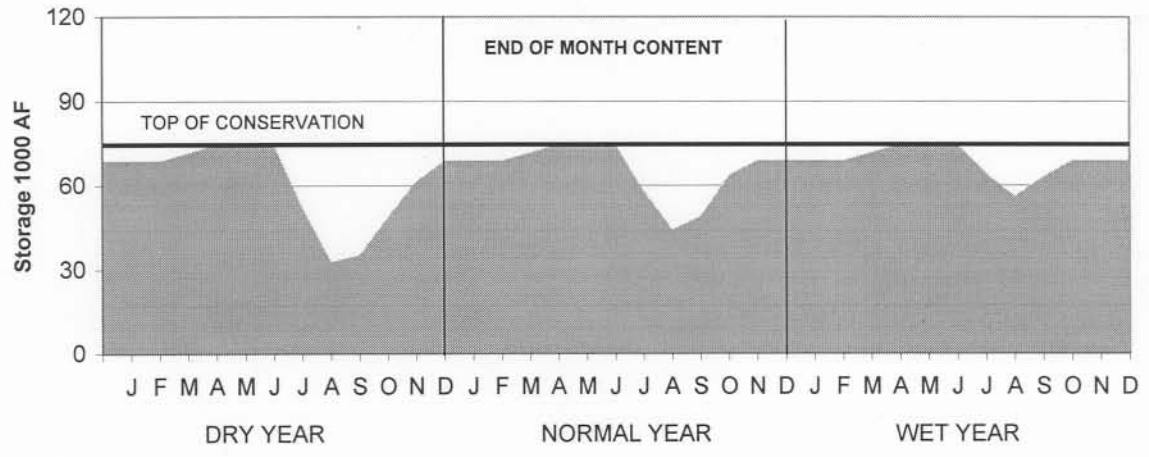
MERRITT RESERVOIR

2004 OPERATION PLAN

Inflow



Storage



Outflow

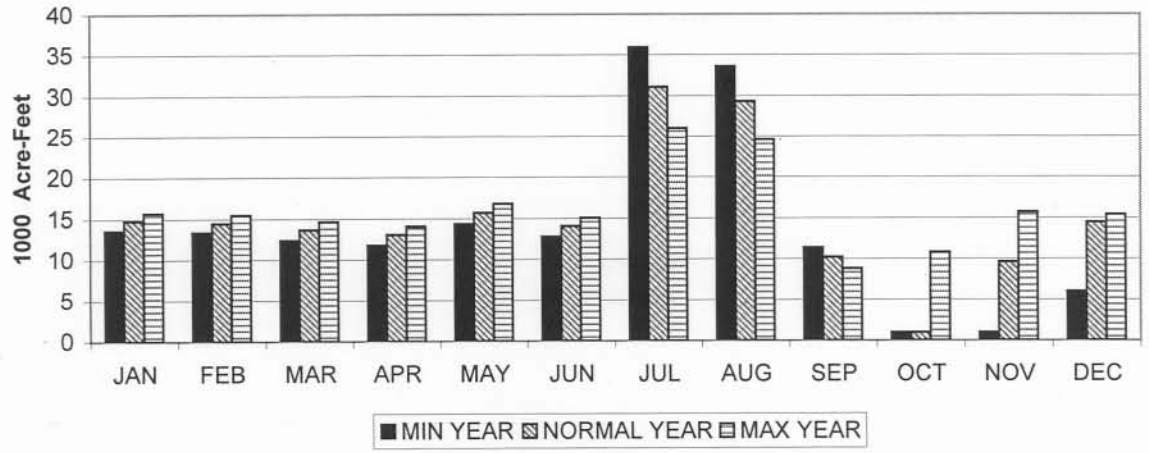
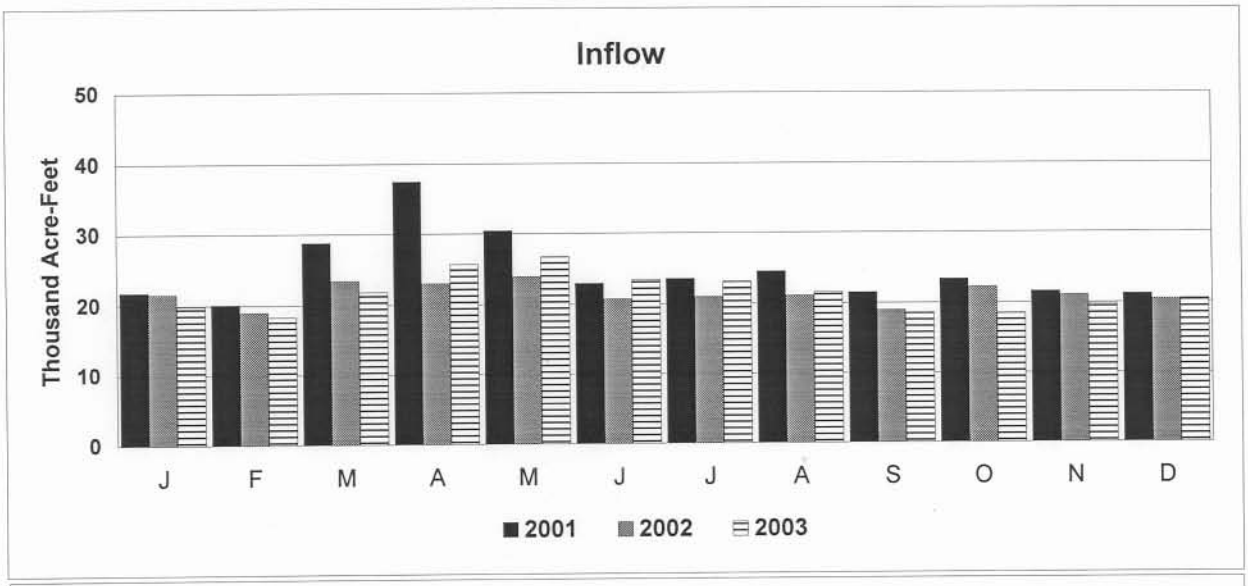
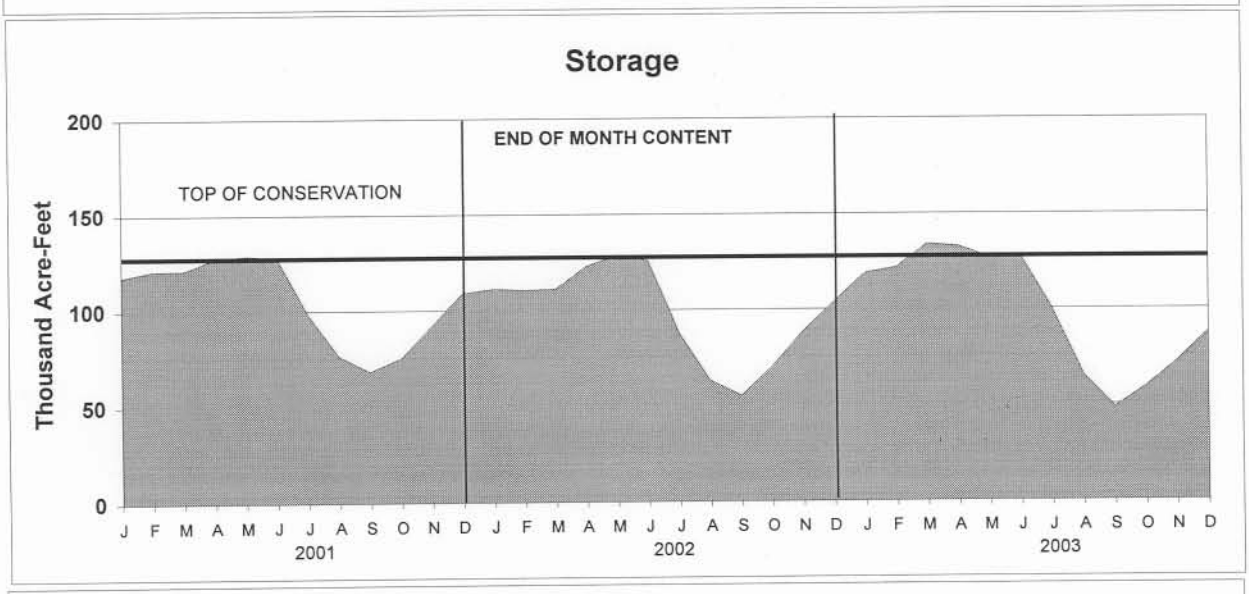


EXHIBIT 3A

CALAMUS RESERVOIR

ACTUAL OPERATION





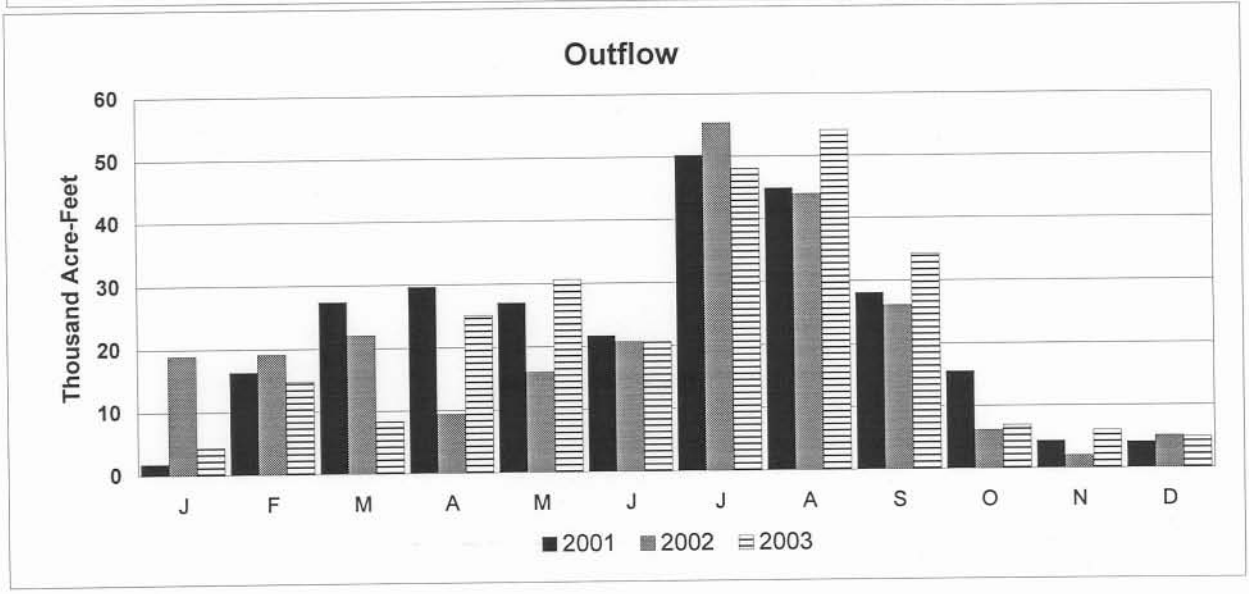
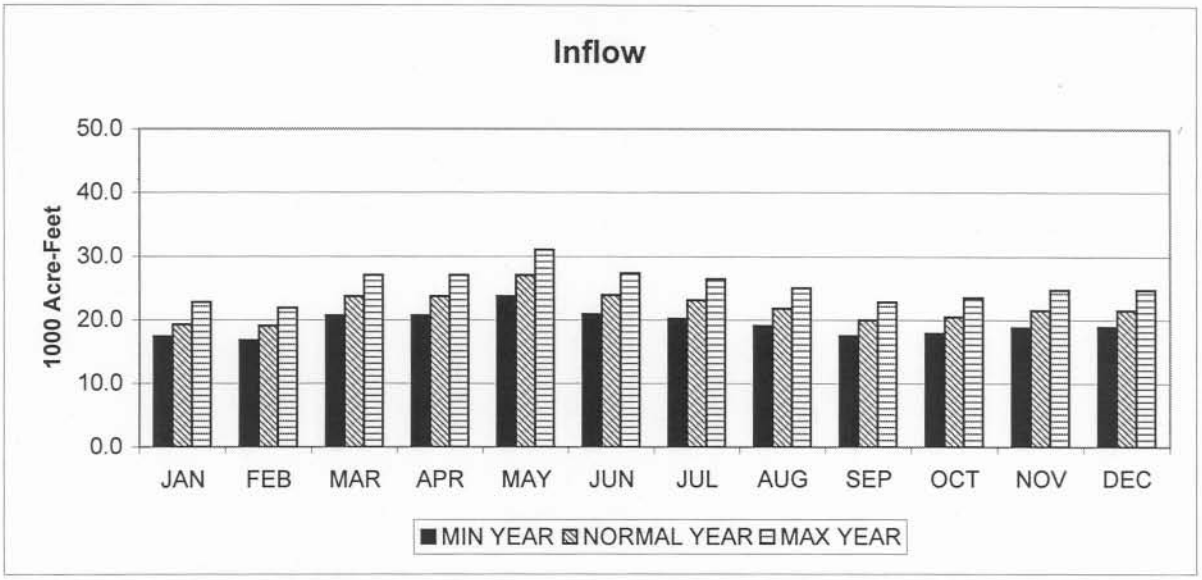
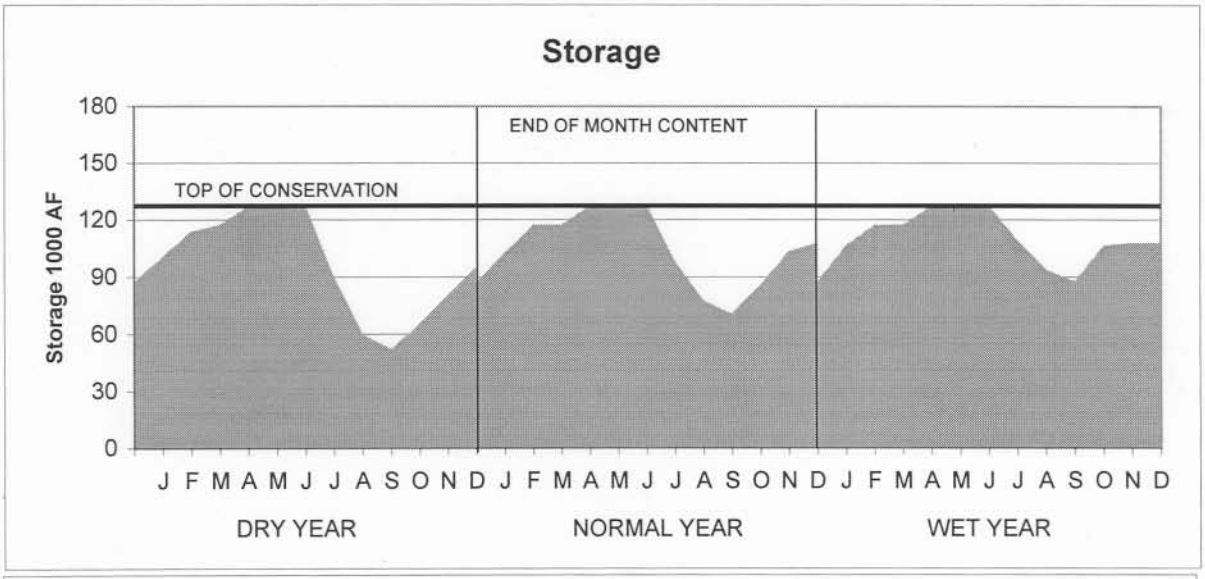


EXHIBIT 3B

CALAMUS RESERVOIR

2004 OPERATION PLAN





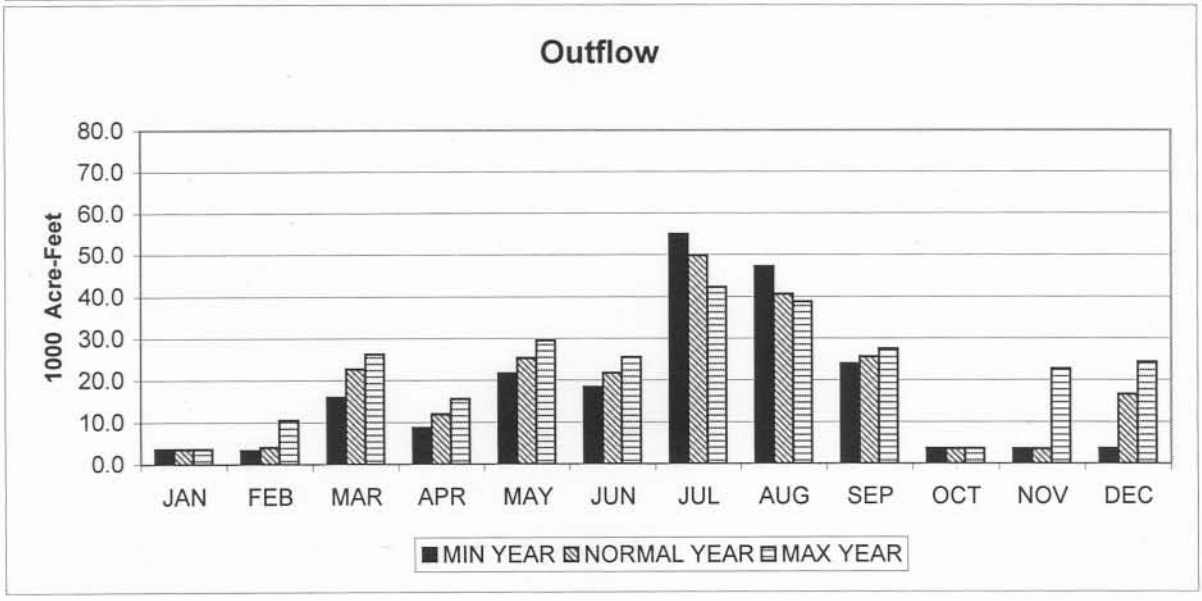
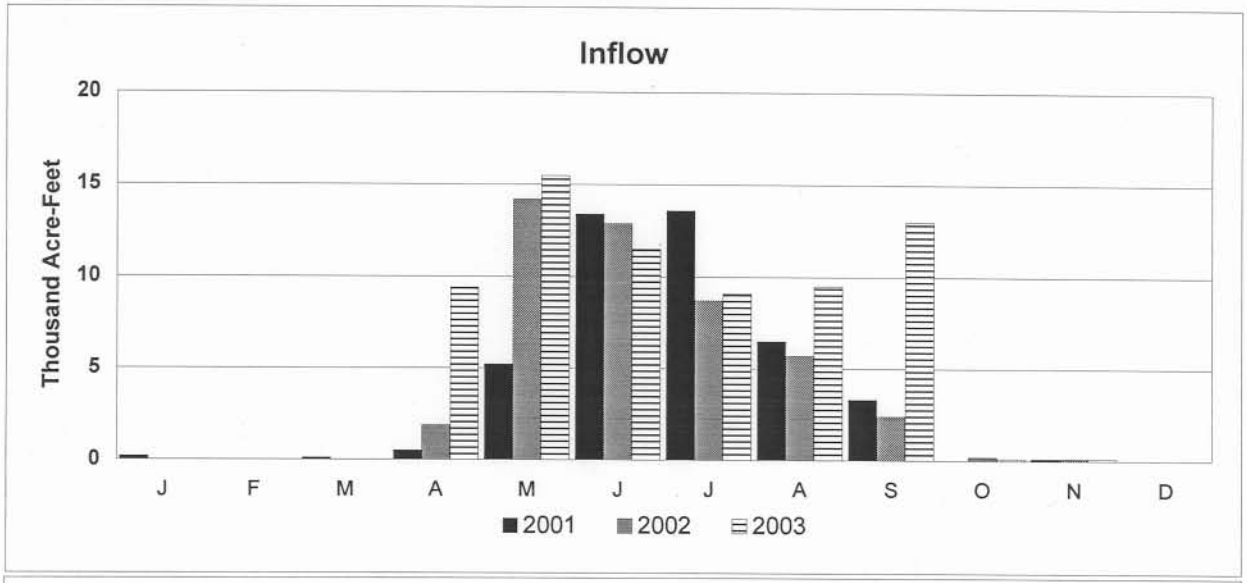
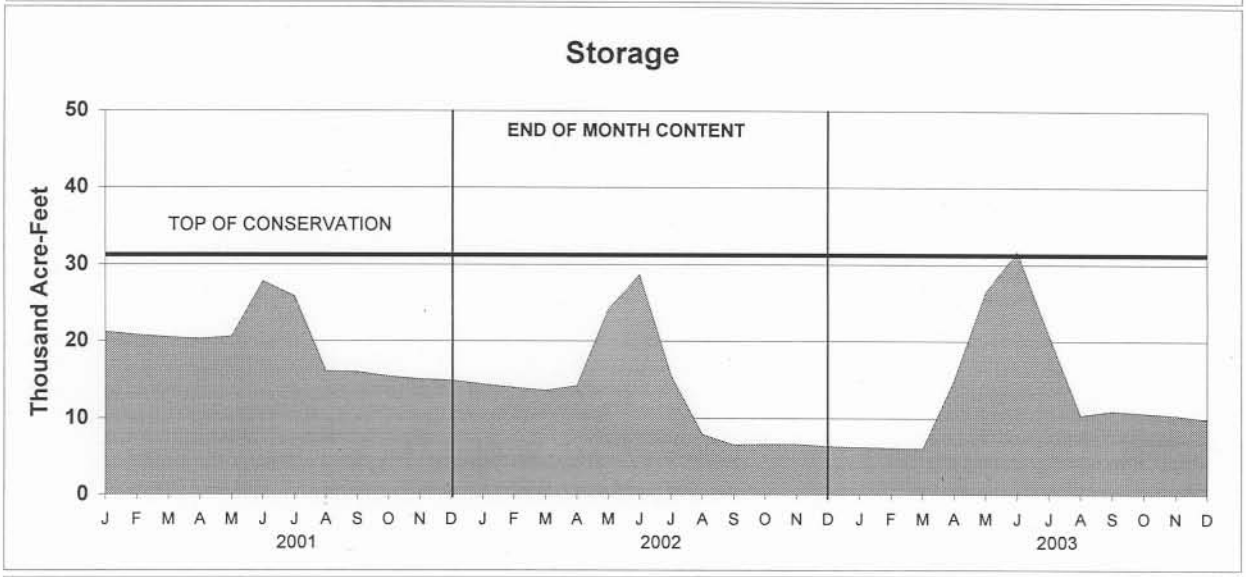


EXHIBIT 4A

DAVIS CREEK RESERVOIR

ACTUAL OPERATION





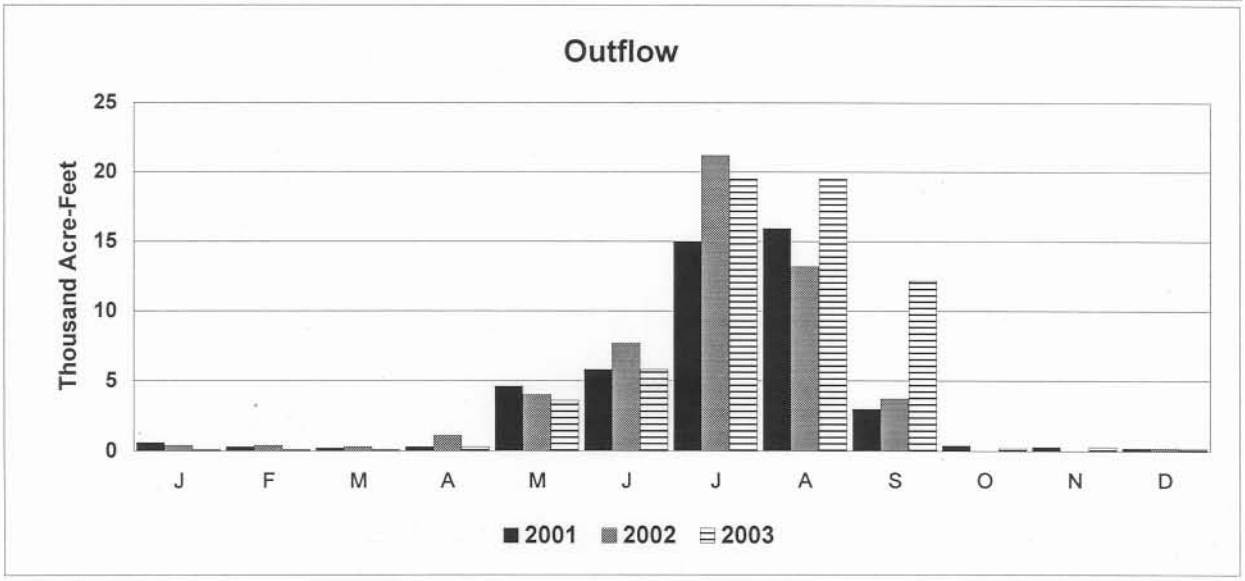
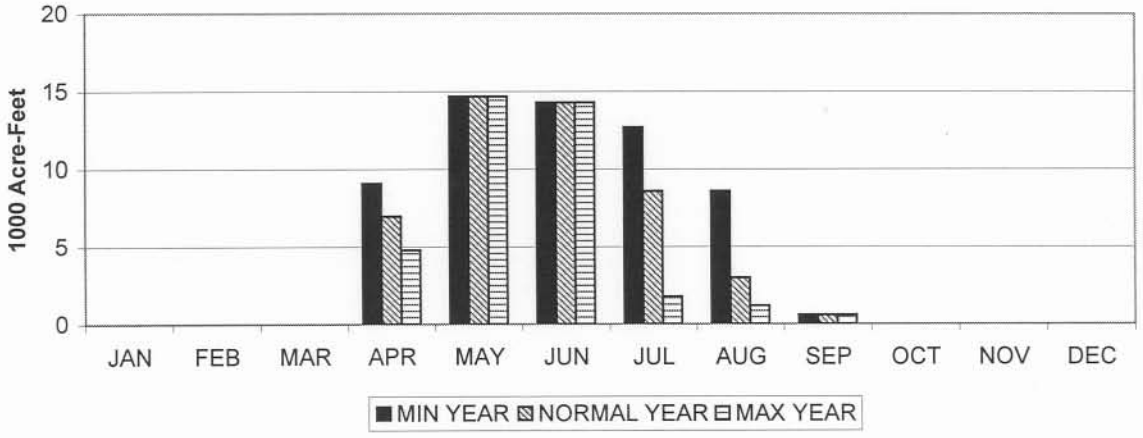


EXHIBIT 4B

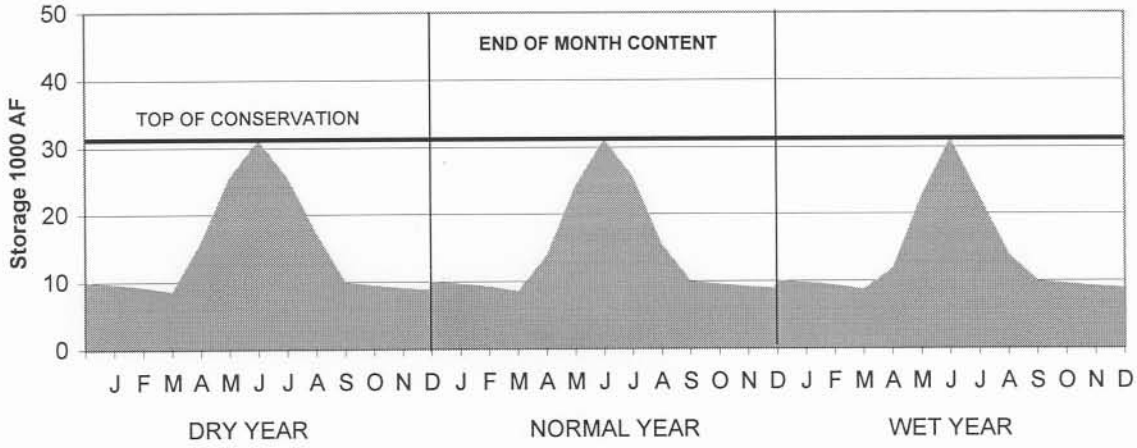
DAVIS CREEK RESERVOIR

2004 OPERATION PLAN

Inflow



Storage



Outflow

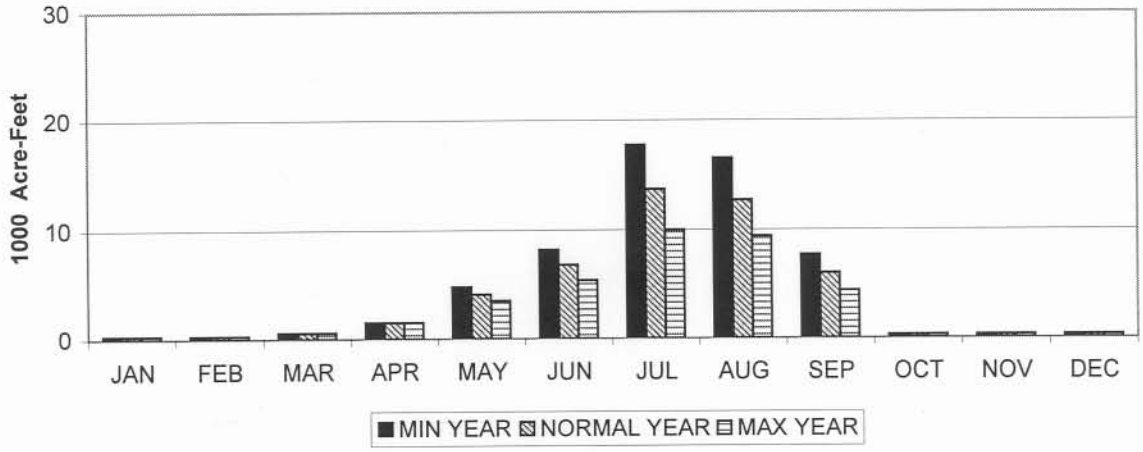
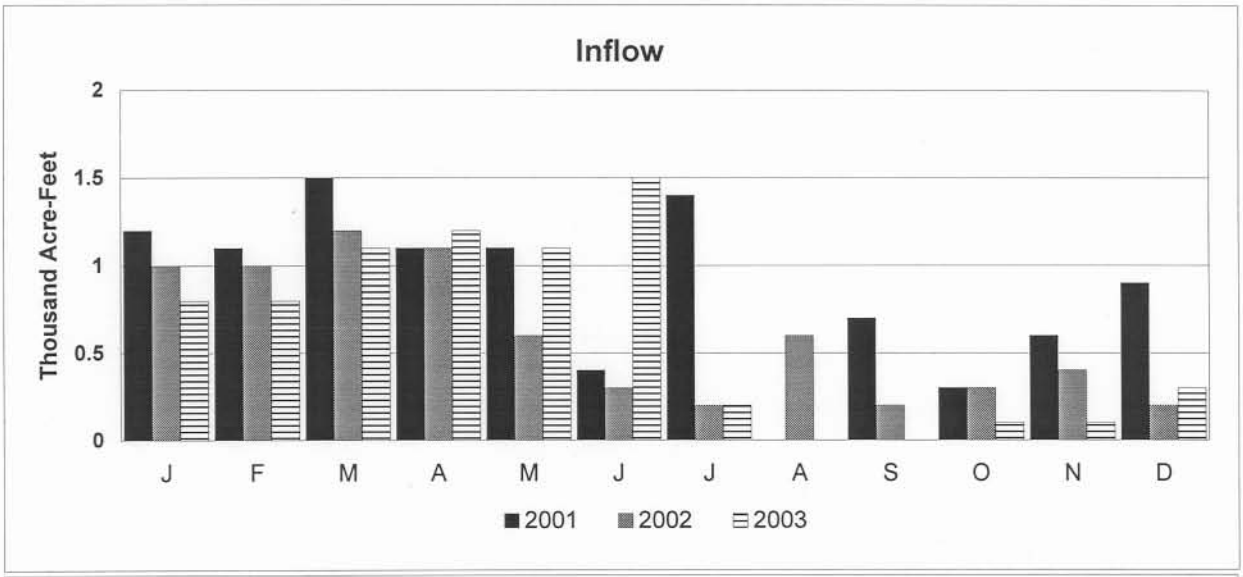
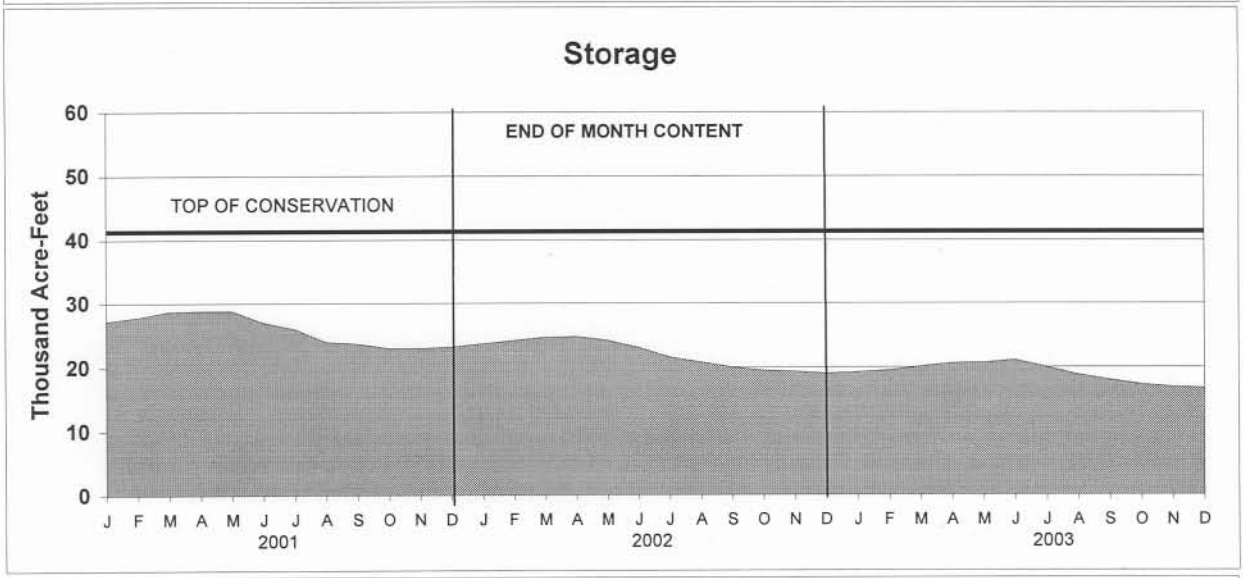


EXHIBIT 5A

BONNY RESERVOIR
ACTUAL OPERATION





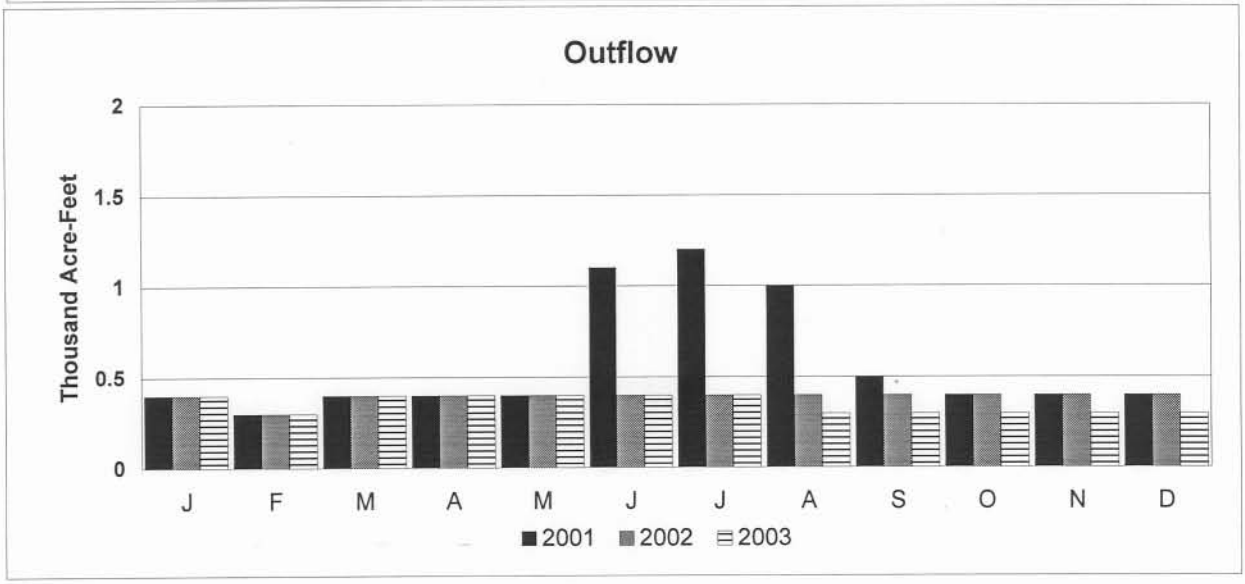
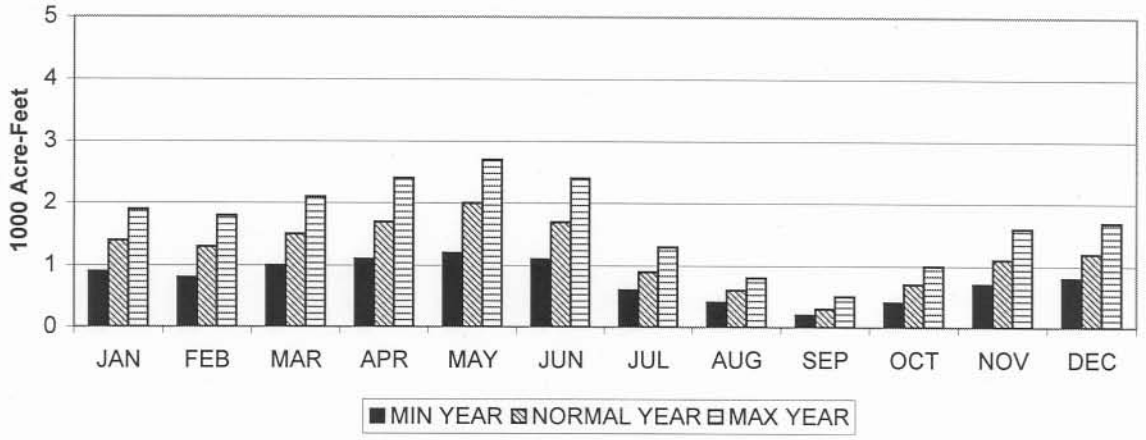


EXHIBIT 5B

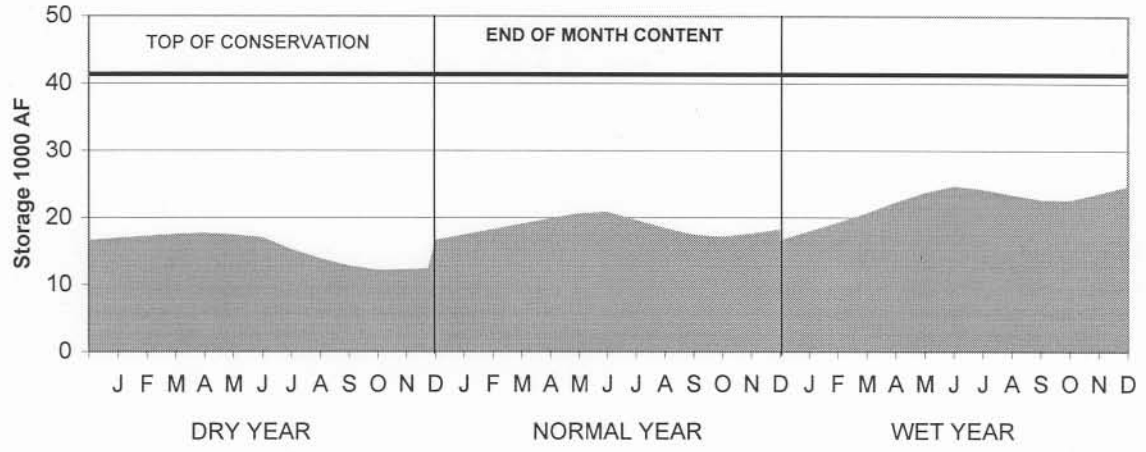
BONNY RESERVOIR

2004 OPERATION PLAN

Inflow



Storage



Outflow

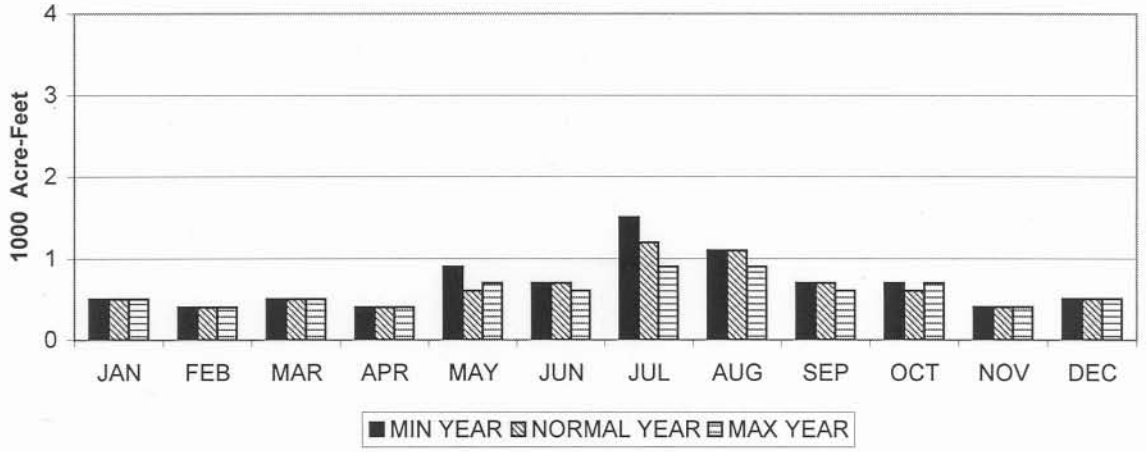
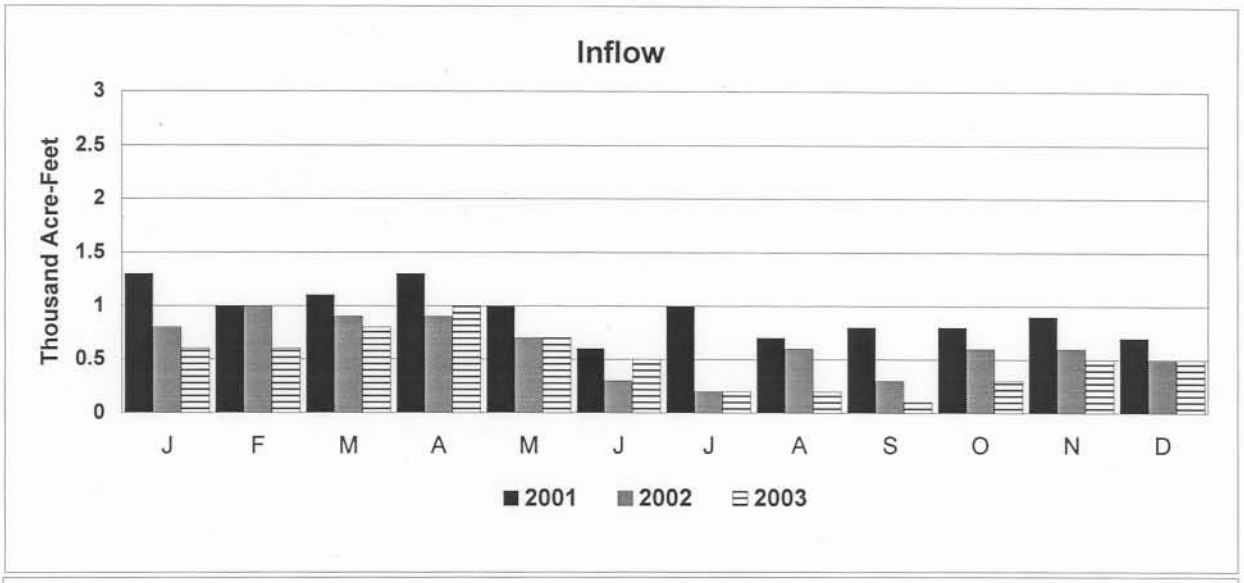
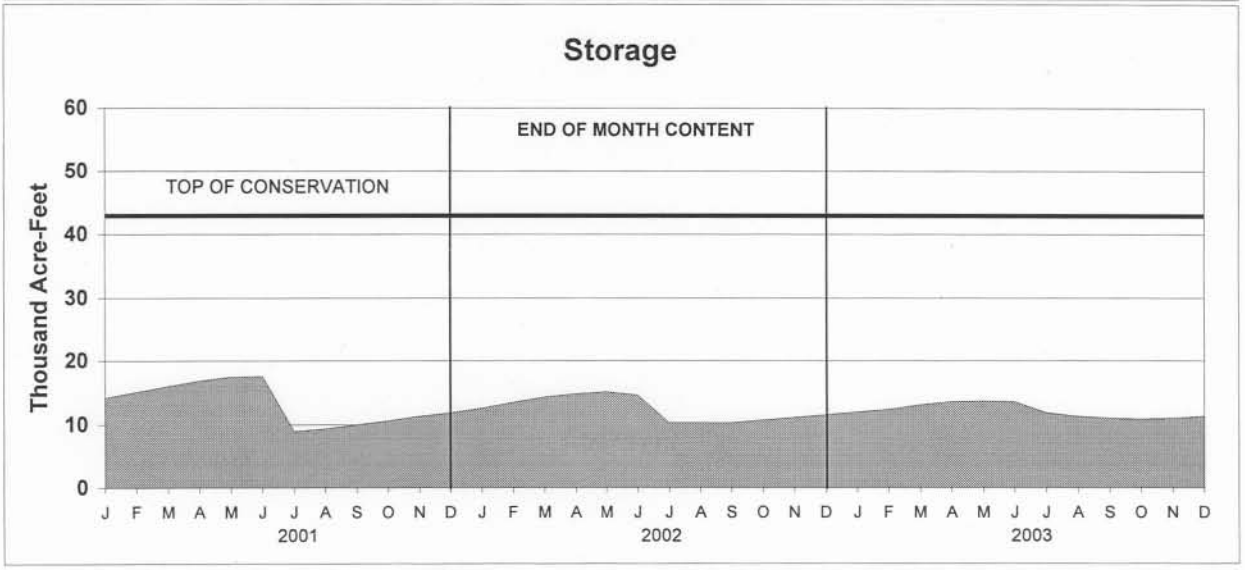


EXHIBIT 6A

ENDERS RESERVOIR

ACTUAL OPERATION





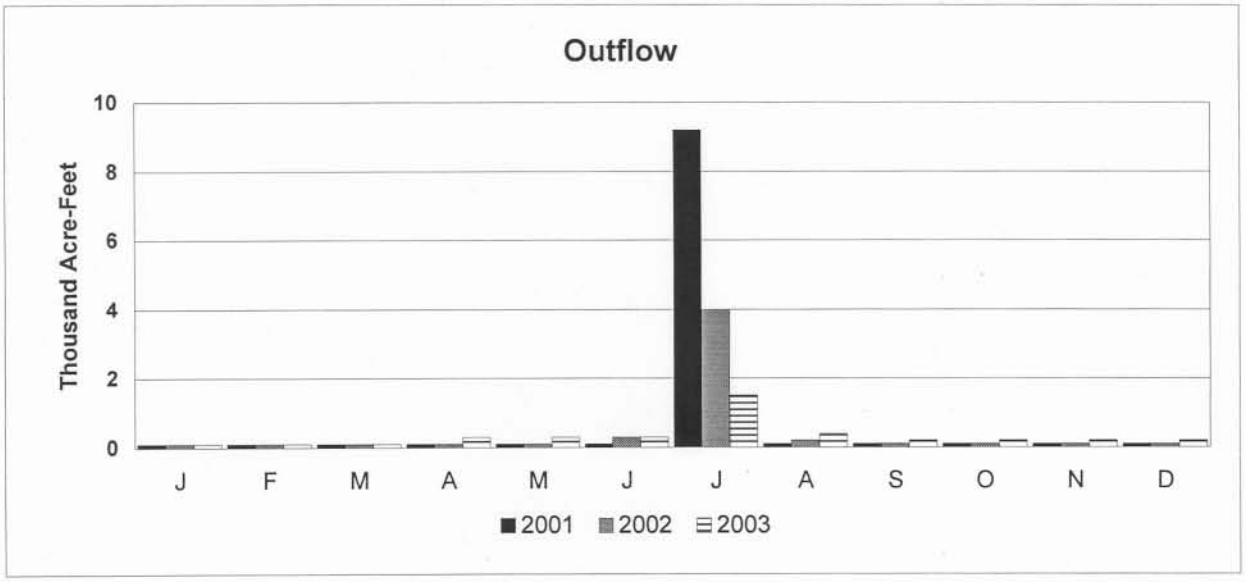
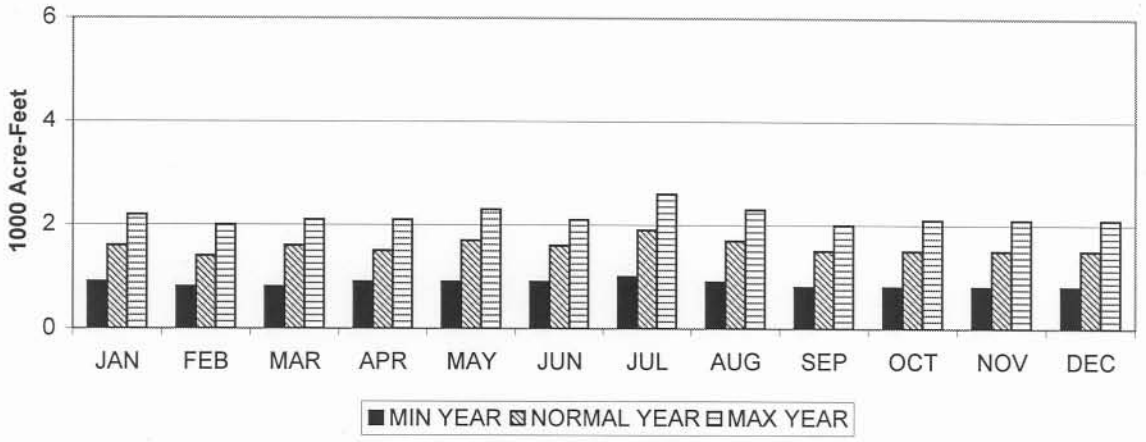


EXHIBIT 6B

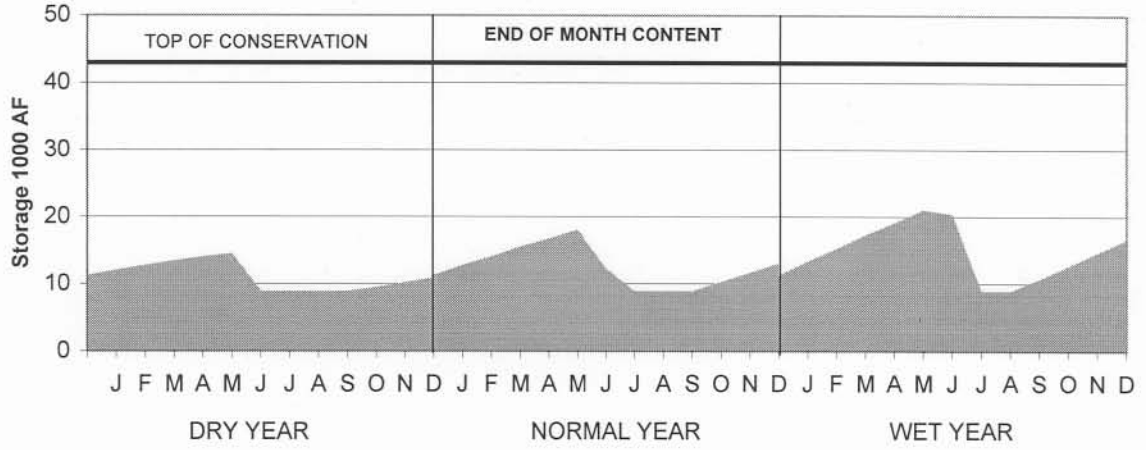
ENDERS RESERVOIR

2004 OPERATION PLAN

Inflow



Storage



Outflow

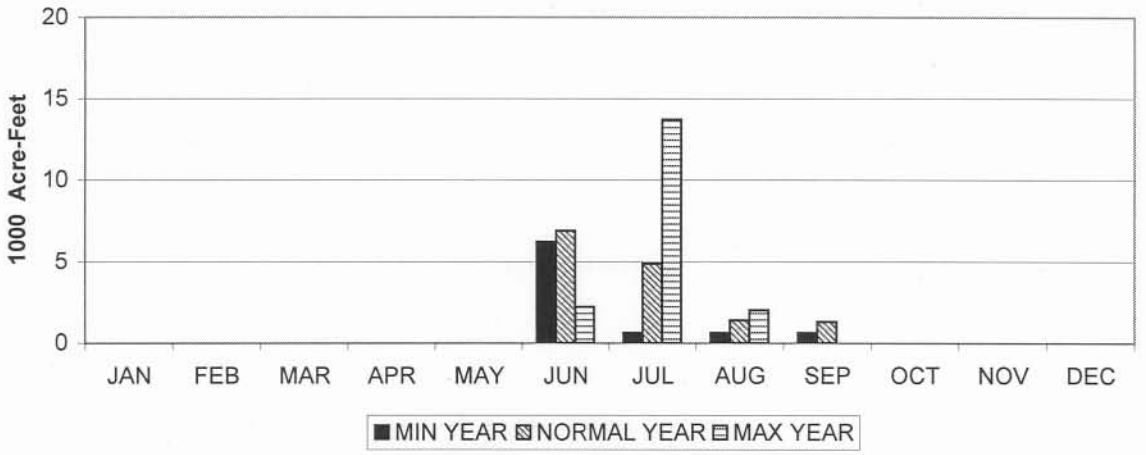
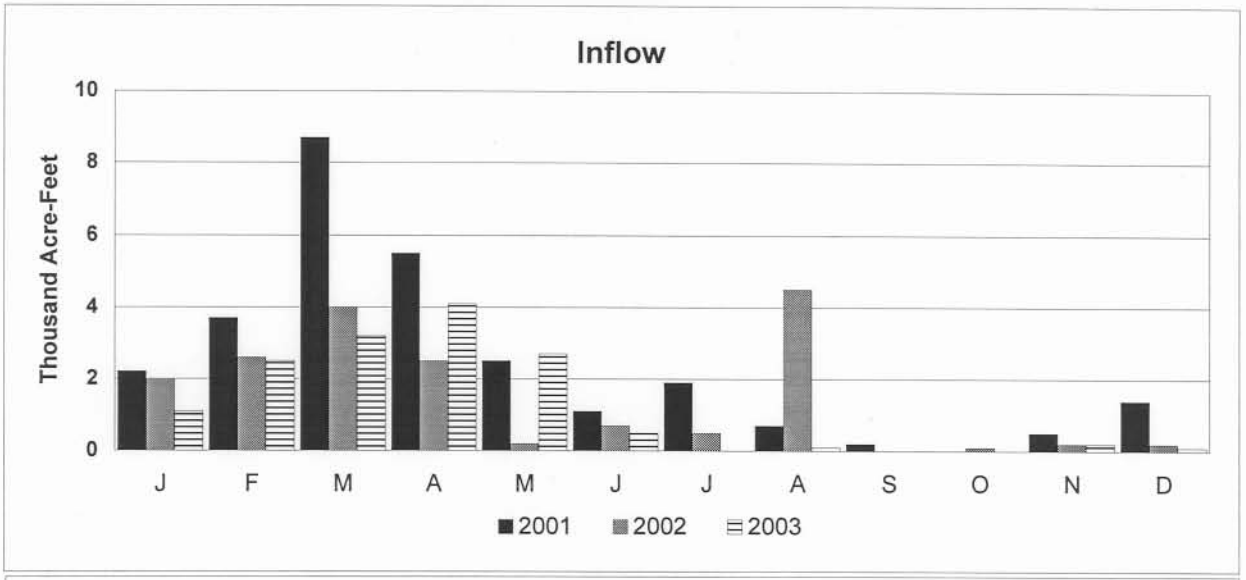
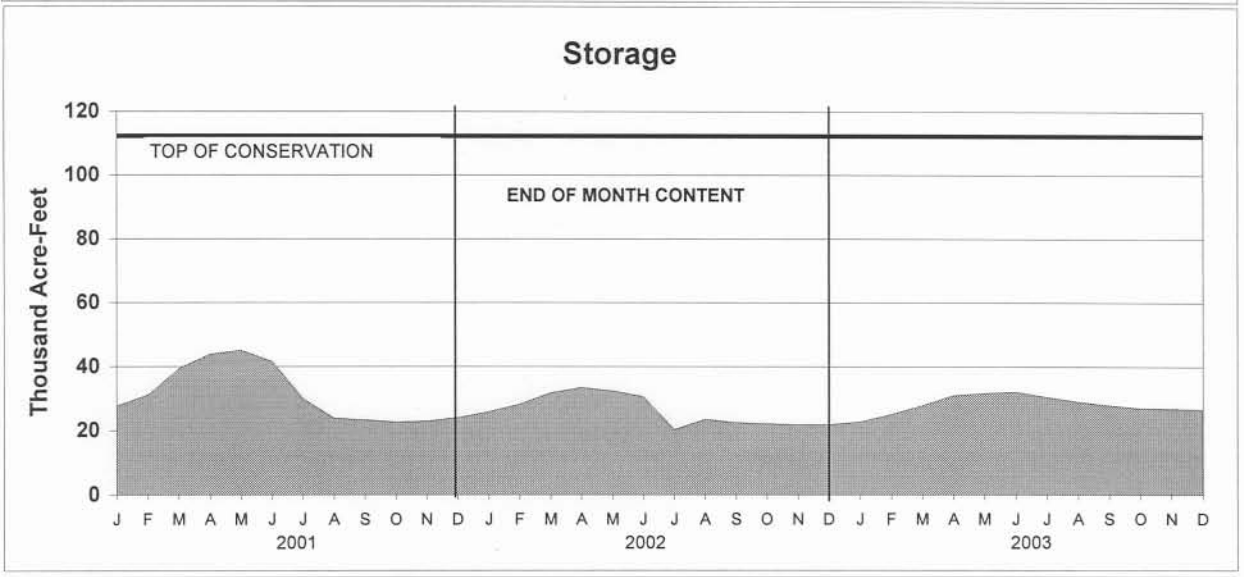


EXHIBIT 7A

SWANSON LAKE
ACTUAL OPERATION





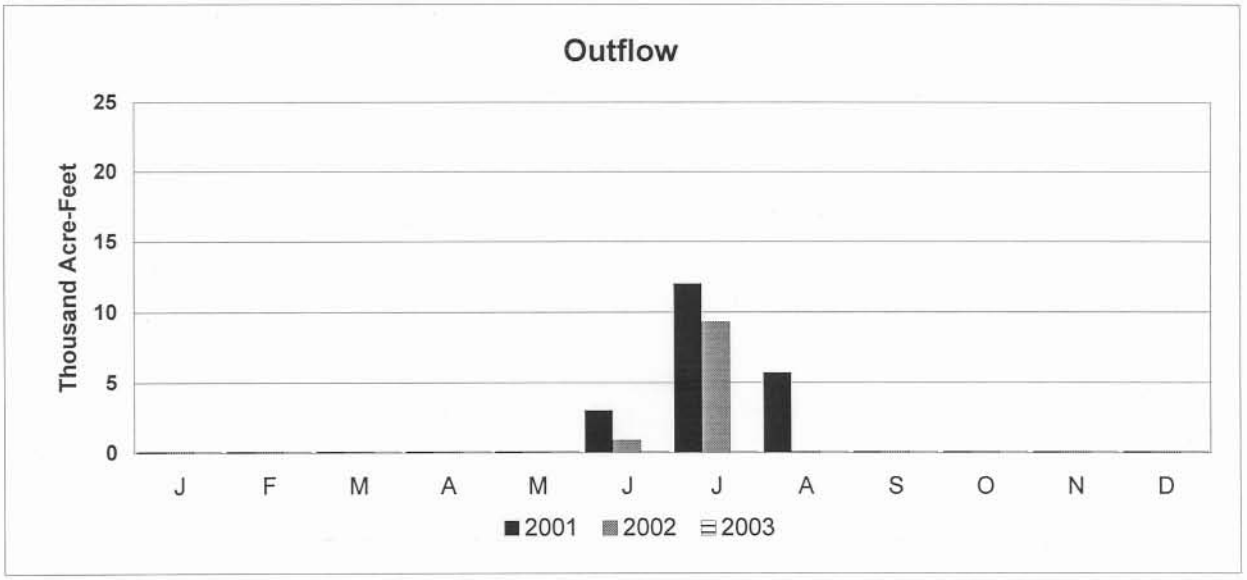
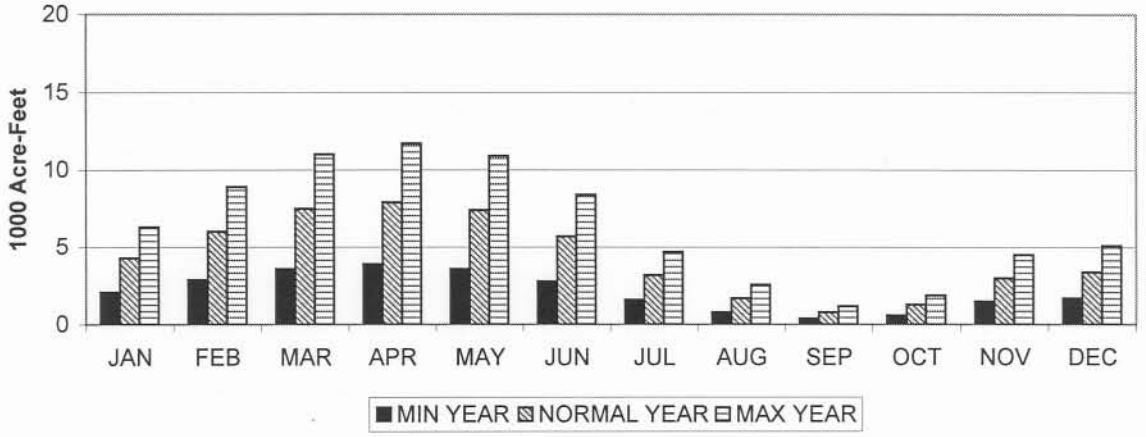


EXHIBIT 7B

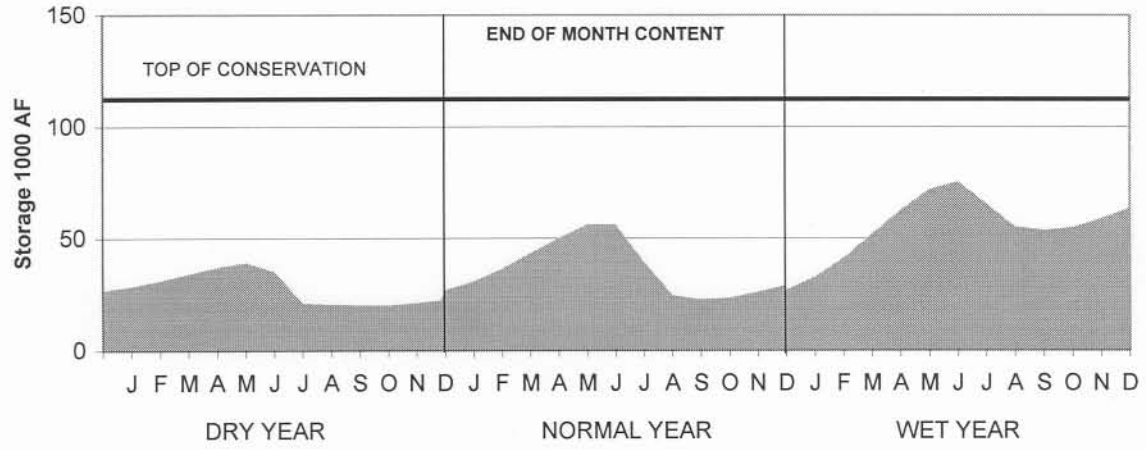
SWANSON LAKE

2004 OPERATION PLAN

Inflow



Storage



Outflow

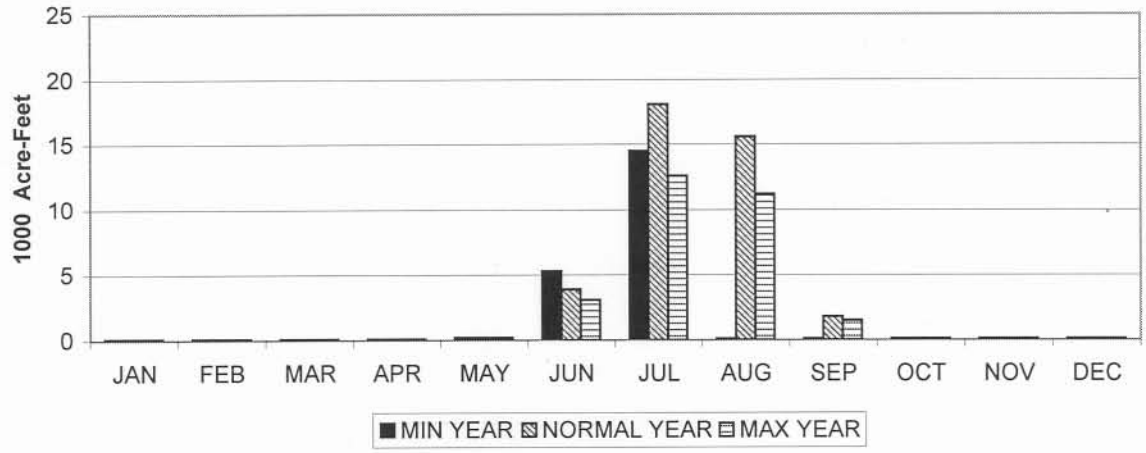
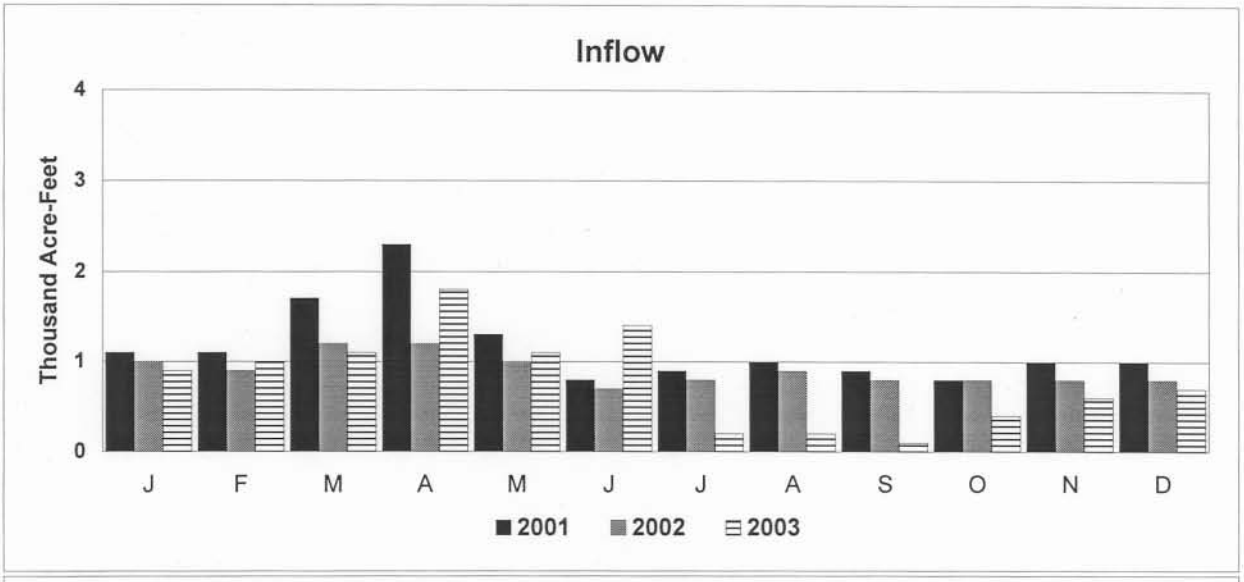
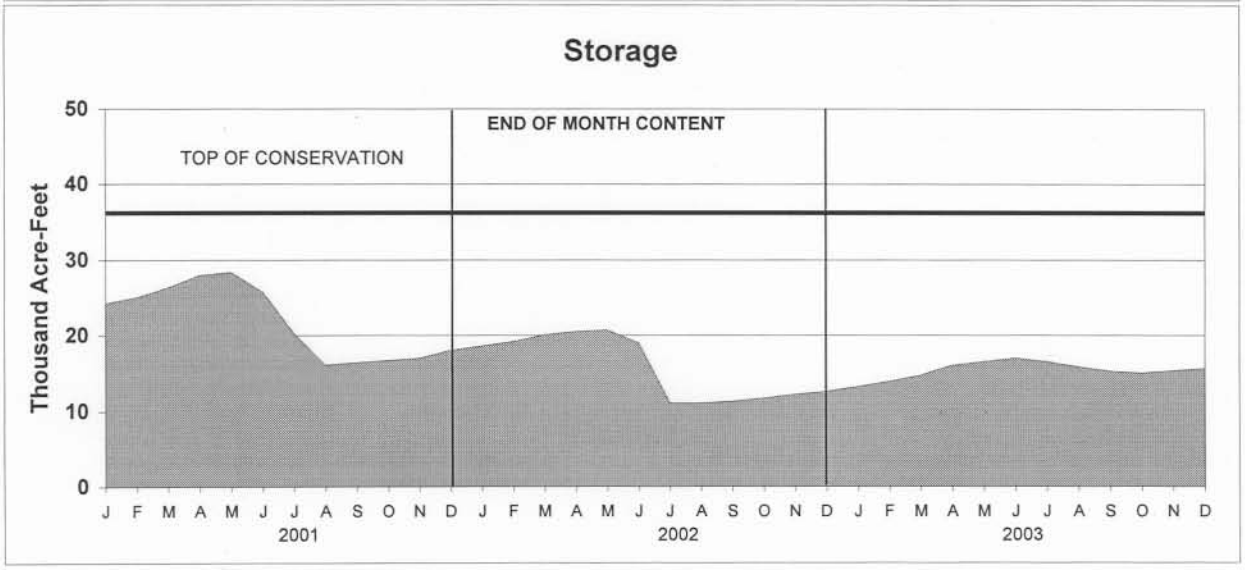


EXHIBIT 8A

HUGH BUTLER LAKE

ACTUAL OPERATION





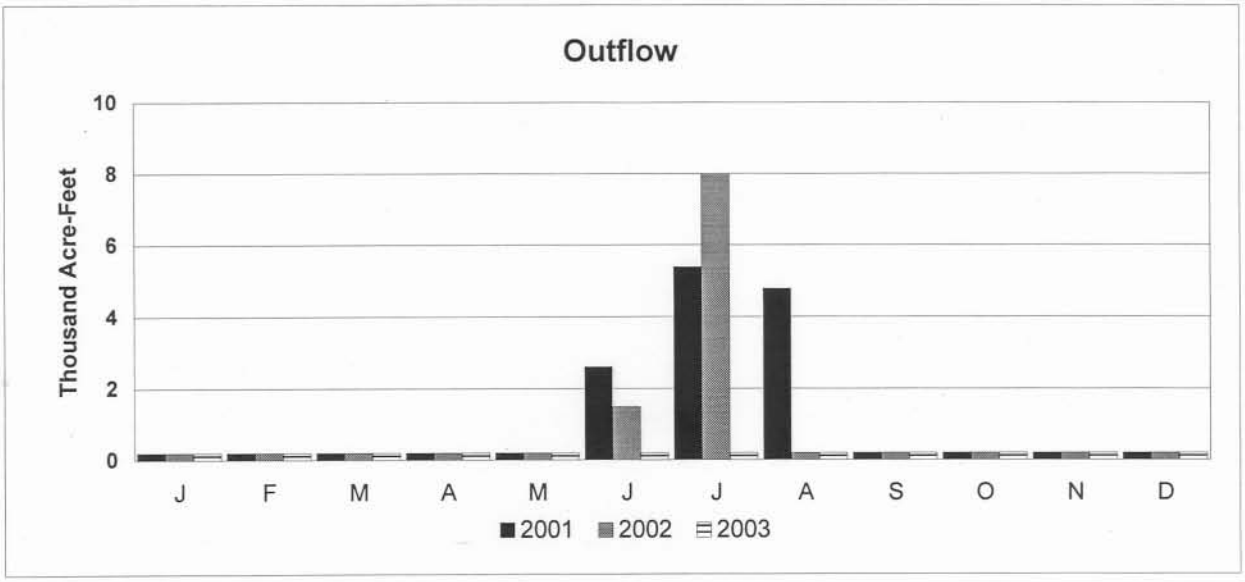
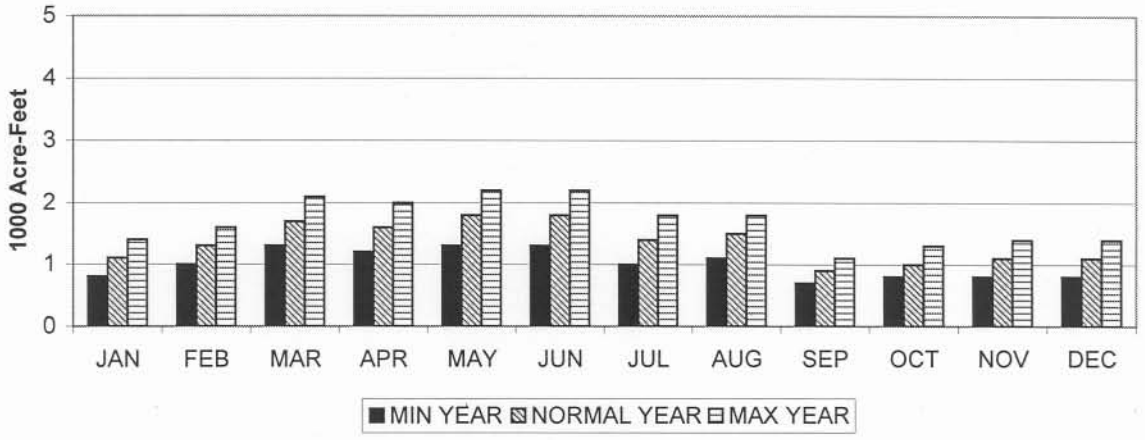


EXHIBIT 8B

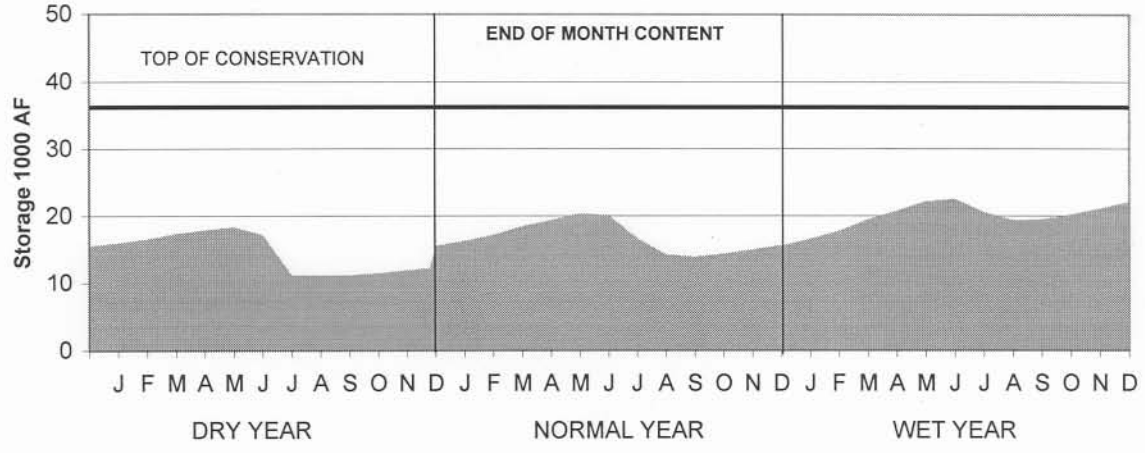
HUGH BUTLER LAKE

2004 OPERATION PLAN

Inflow



Storage



Outflow

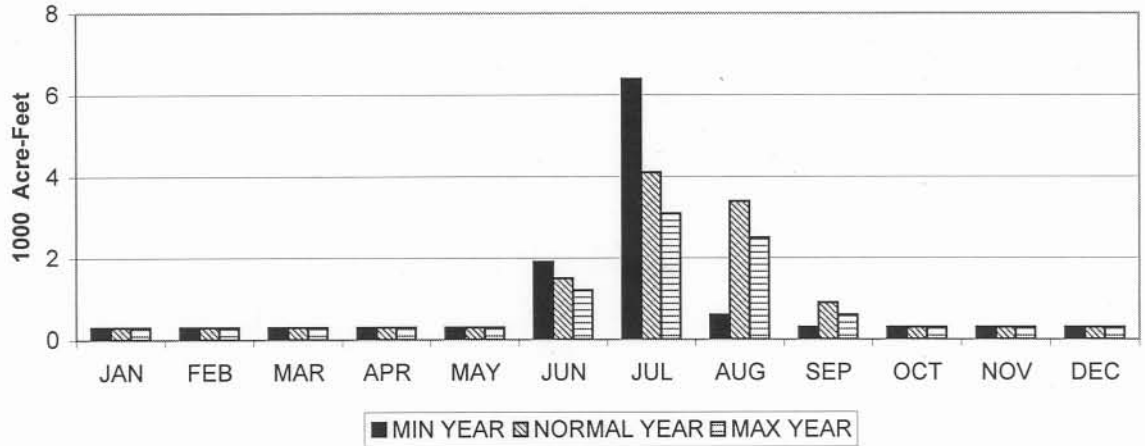
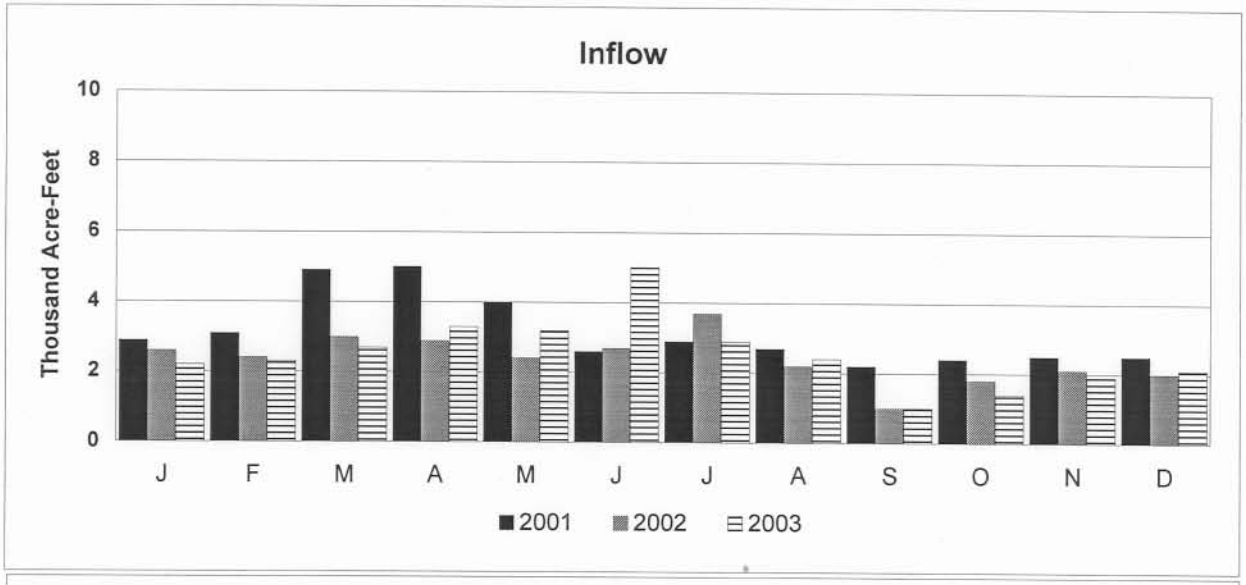
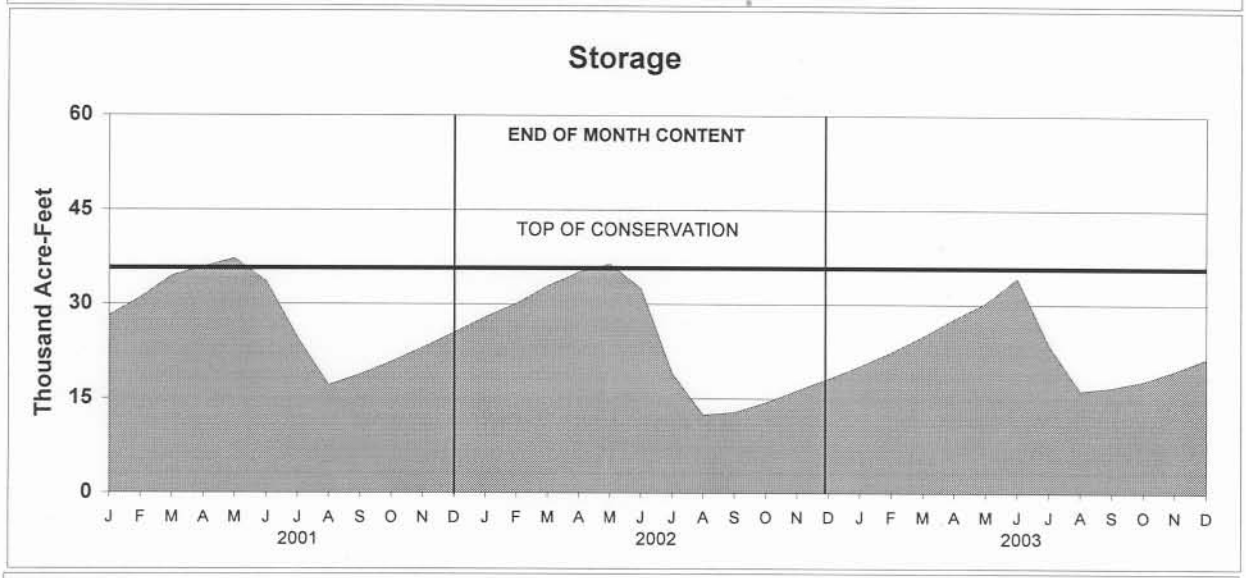


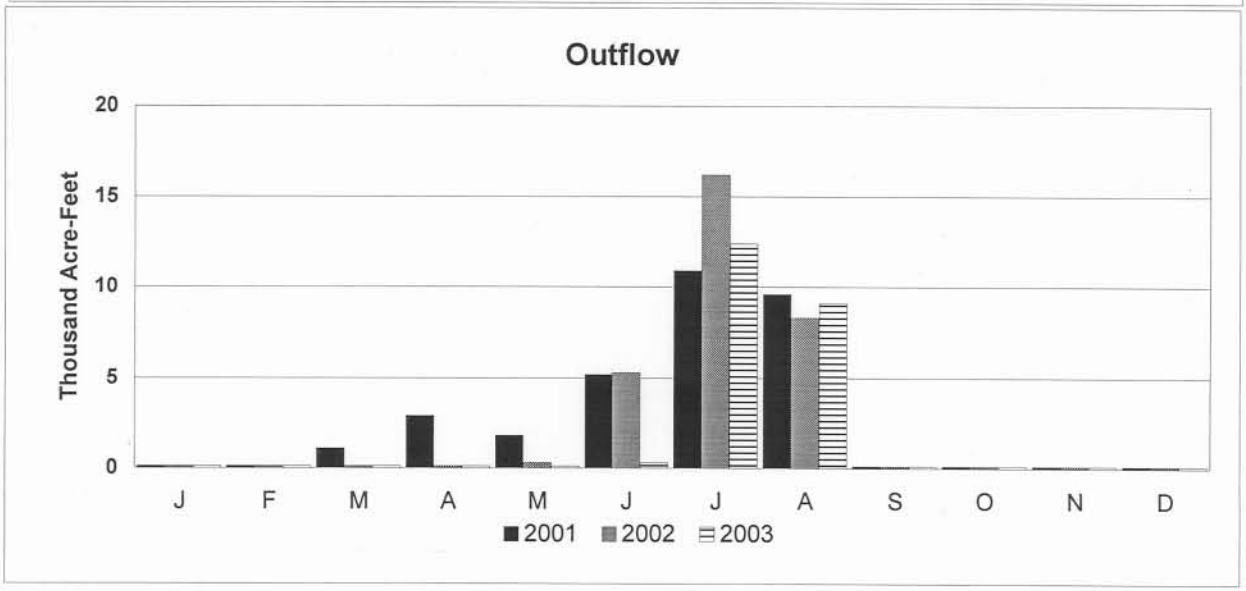
EXHIBIT 9A

HARRY STRUNK LAKE

ACTUAL OPERATION



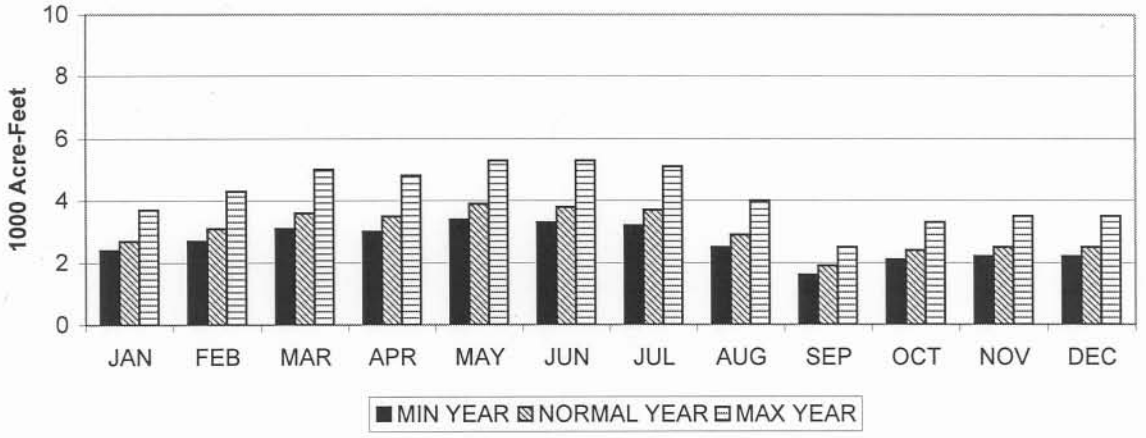




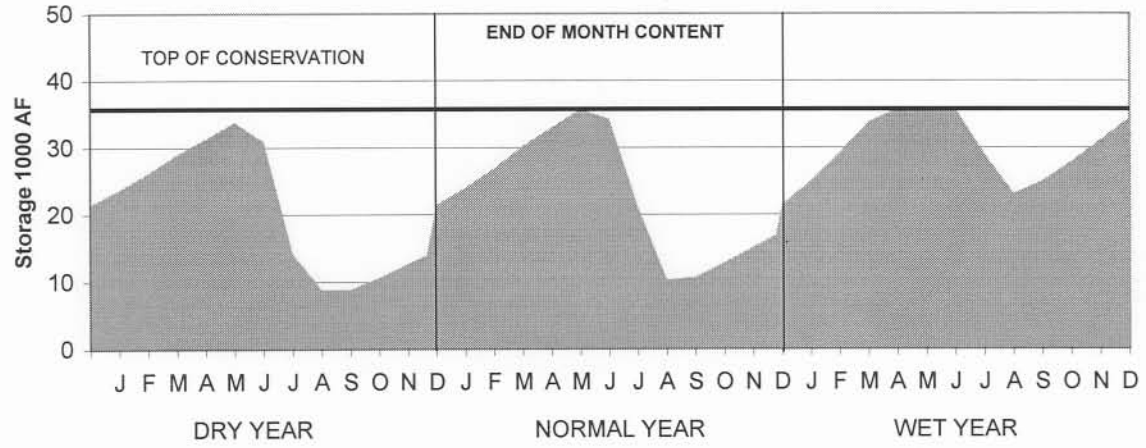
HARRY STRUNK LAKE

2004 OPERATION PLAN

Inflow



Storage



Outflow

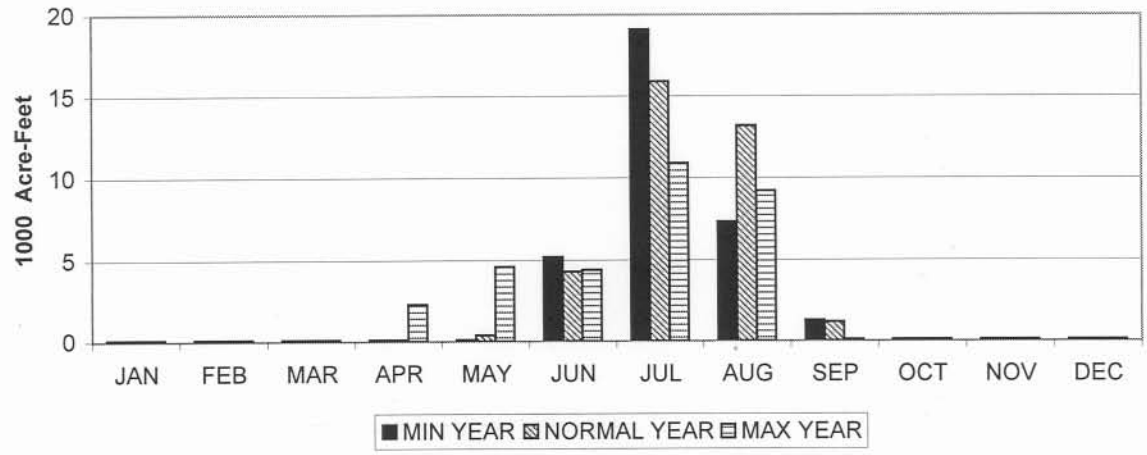
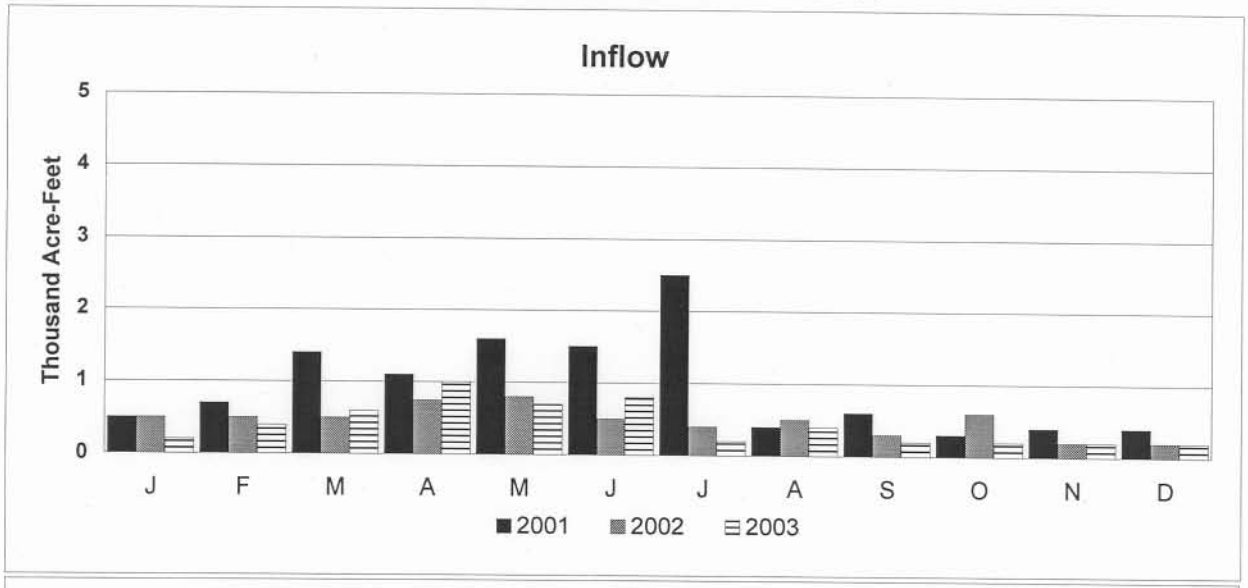
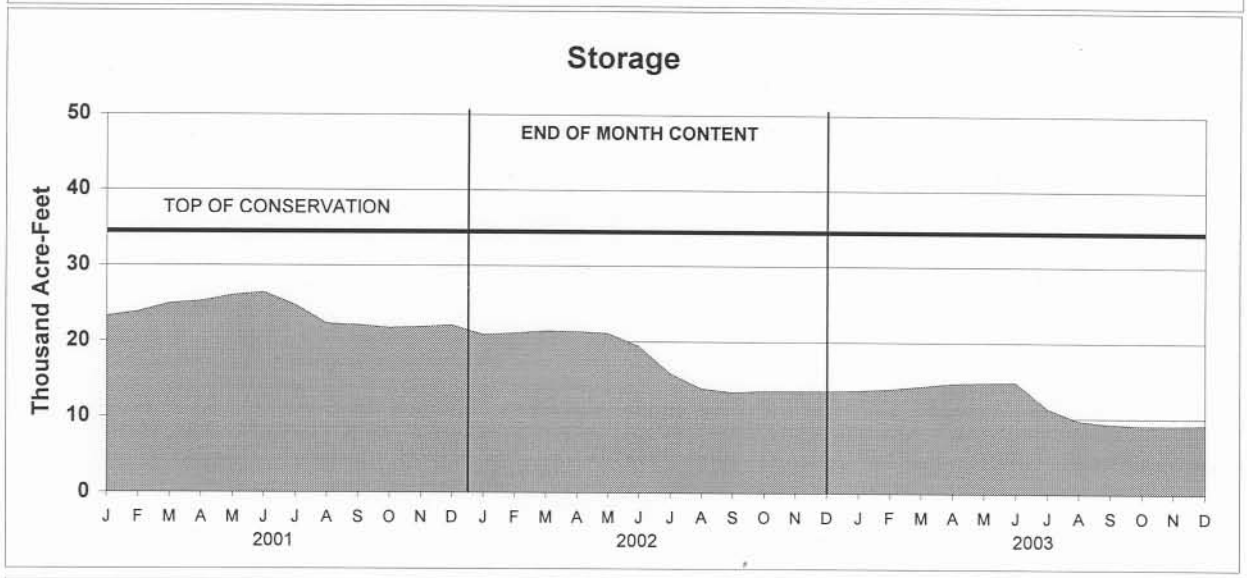


EXHIBIT 10A

KEITH SEBELIUS LAKE

ACTUAL OPERATION





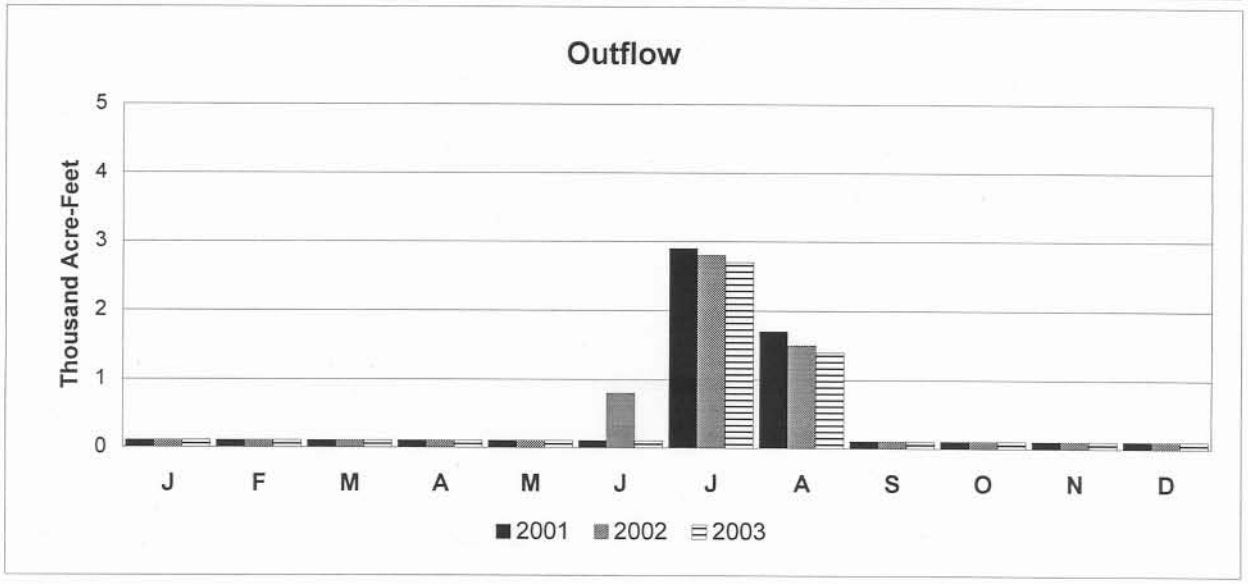
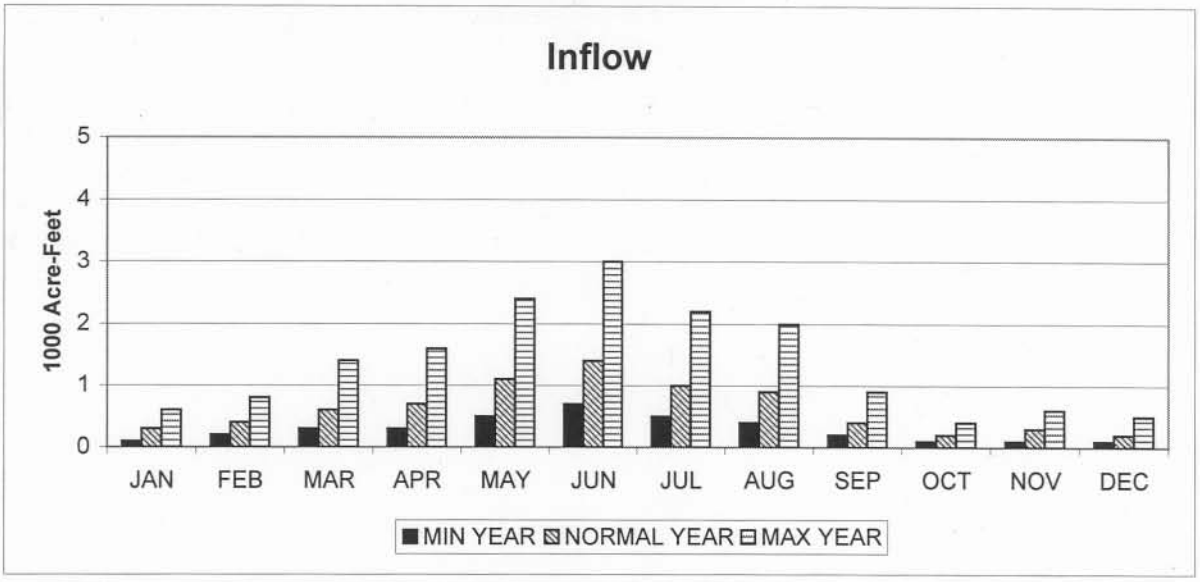
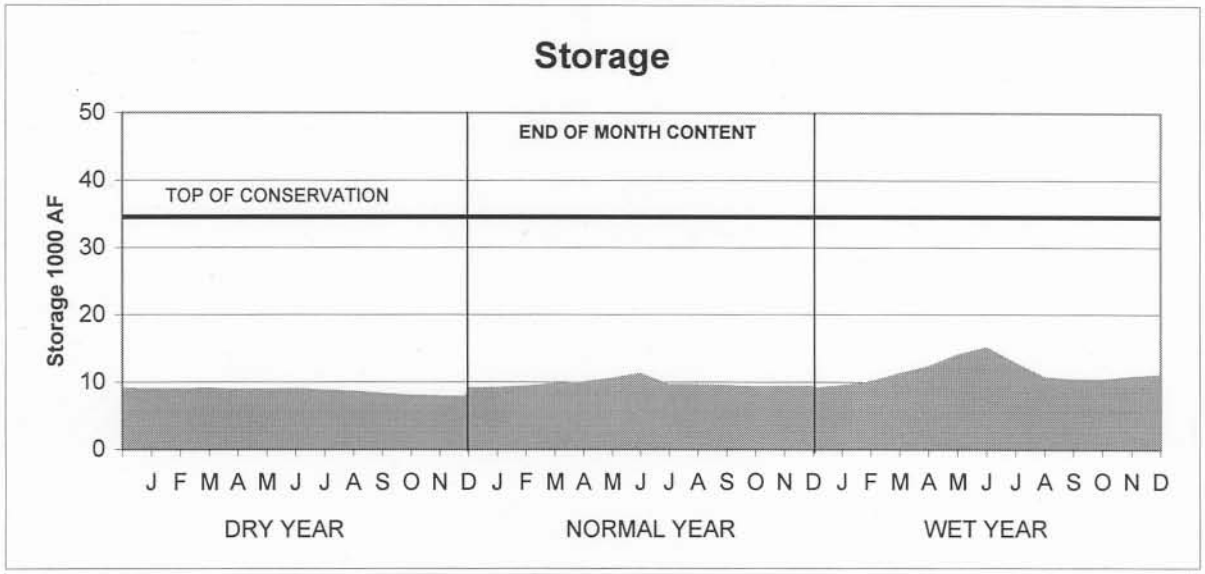


EXHIBIT 10B

KEITH SEBELIUS LAKE

2004 OPERATION PLAN





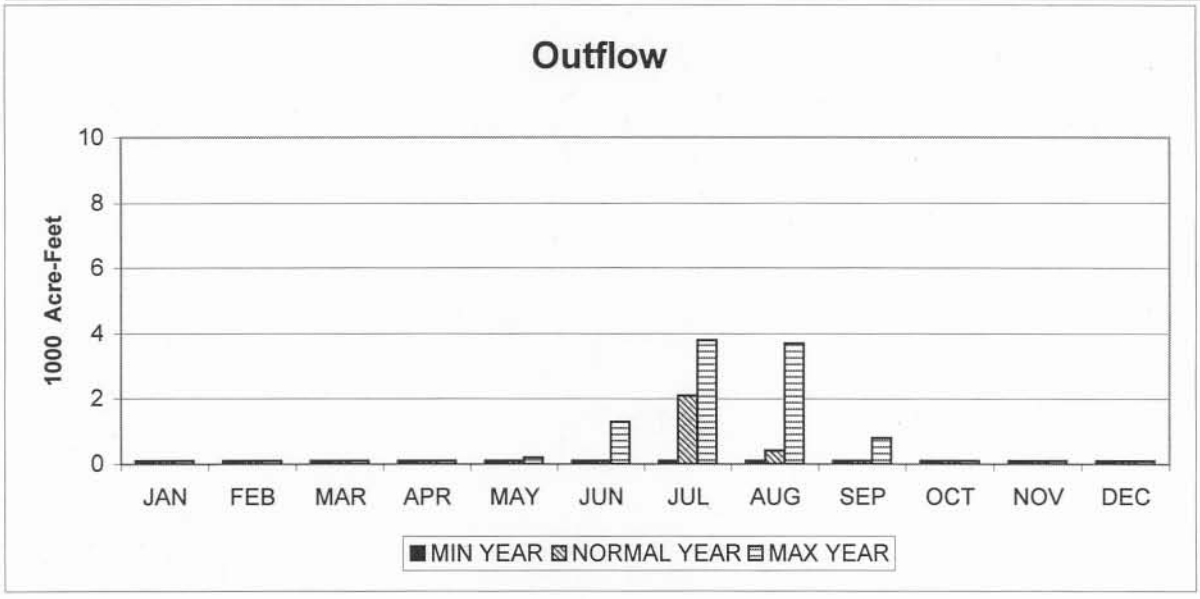
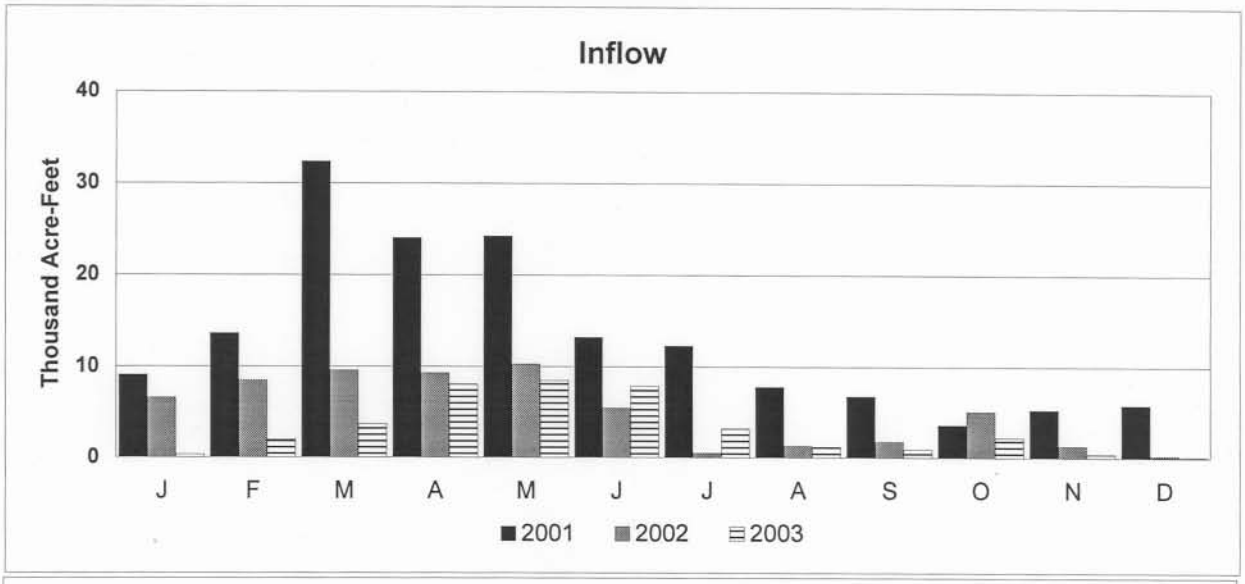
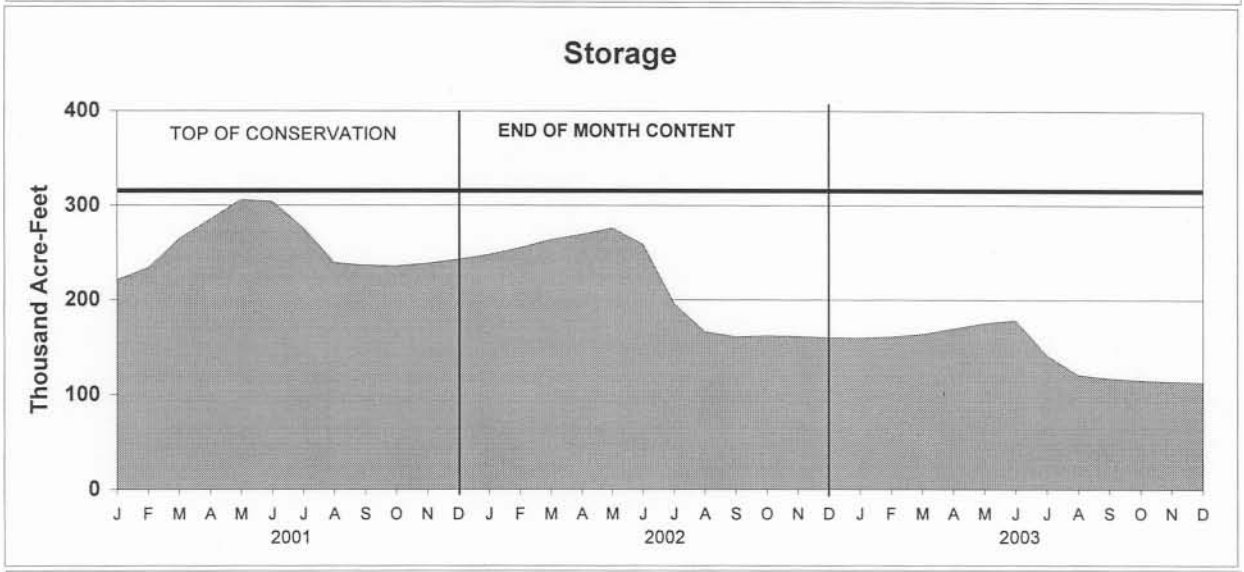


EXHIBIT 11A

HARLAN COUNTY LAKE

ACTUAL OPERATION





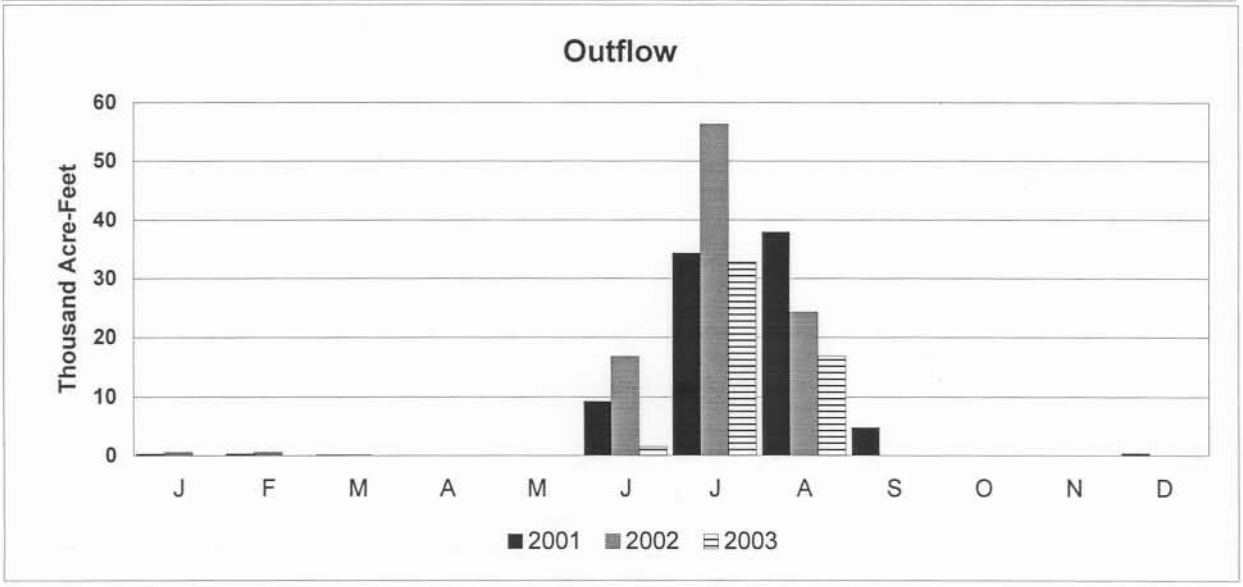
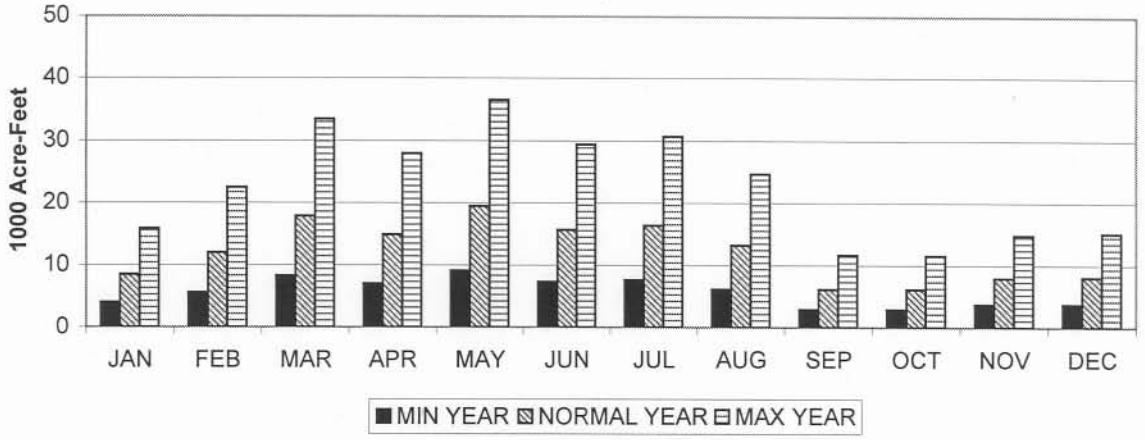


EXHIBIT 11B

HARLAN COUNTY LAKE

2004 OPERATION PLAN

Inflow



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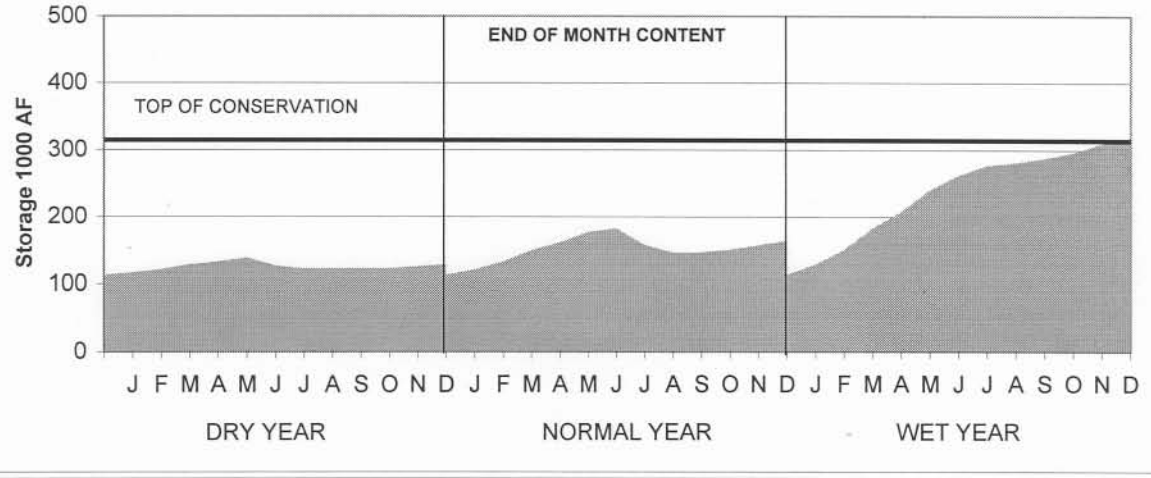


Outflow

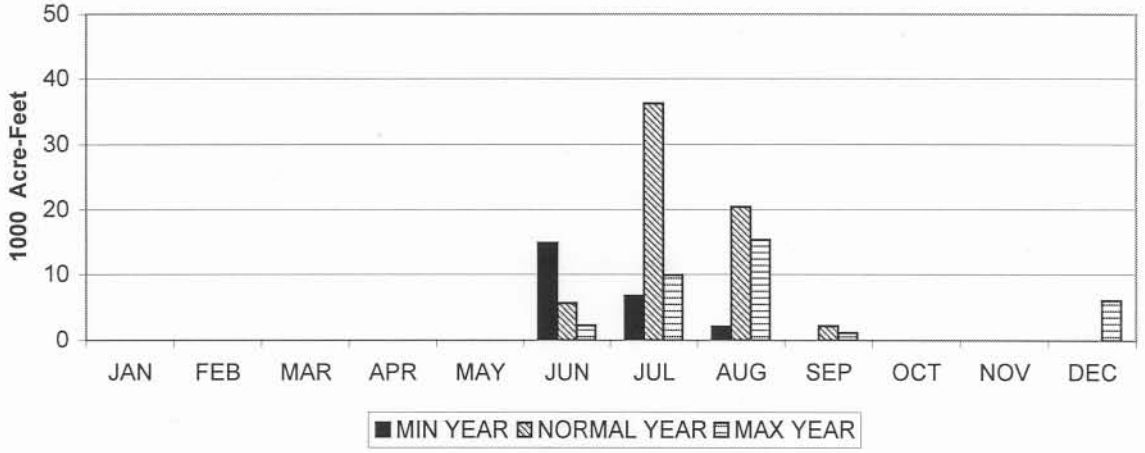
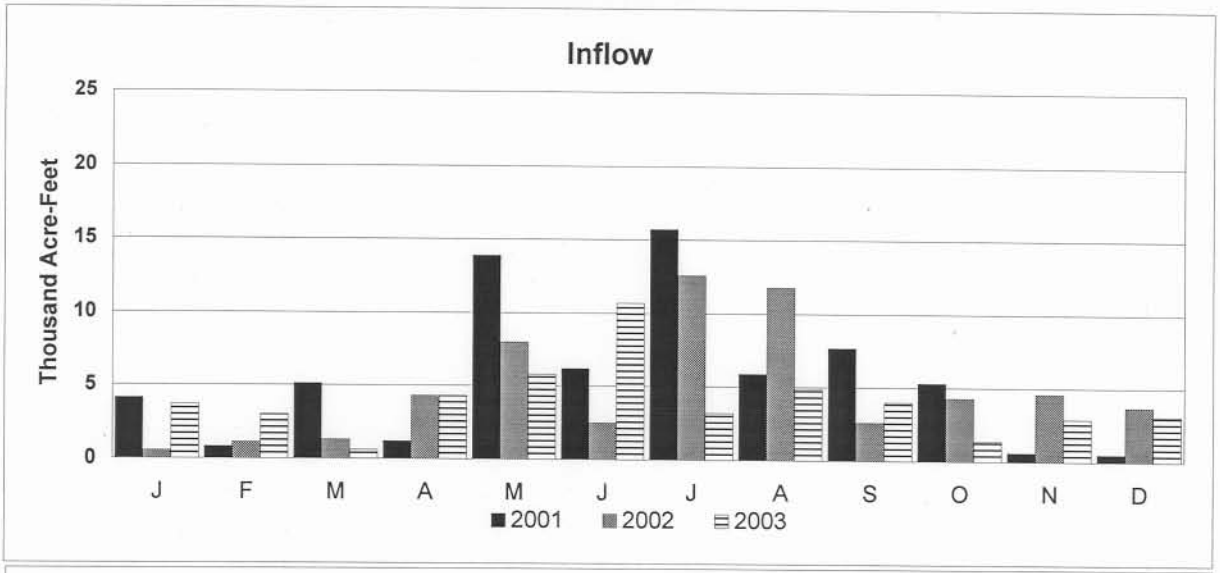
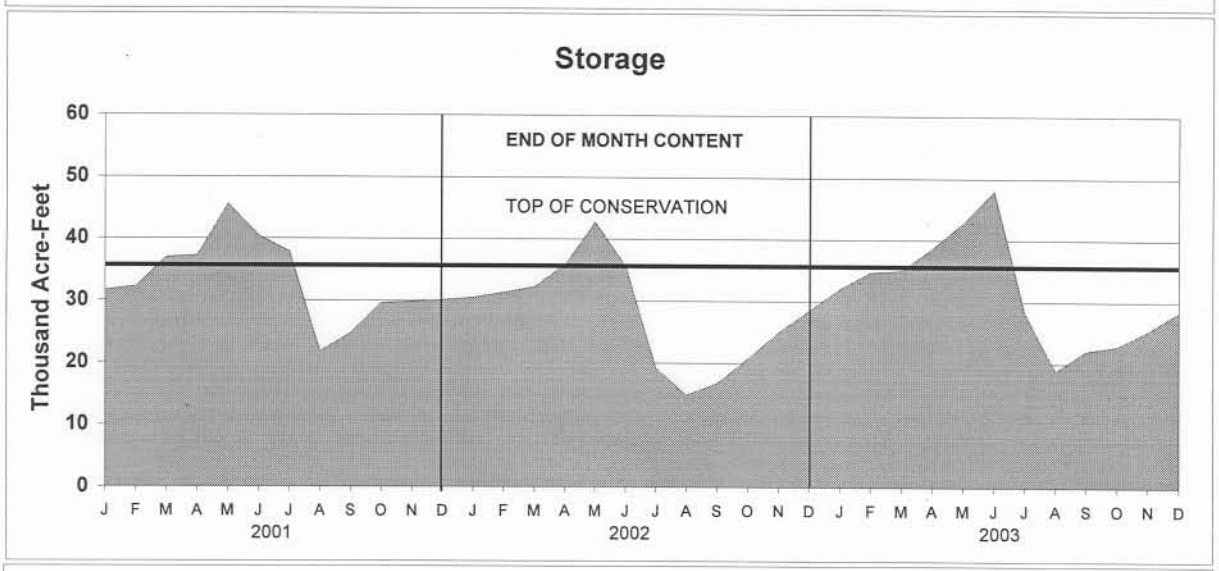


EXHIBIT 12A

LOVEWELL RESERVOIR

ACTUAL OPERATION





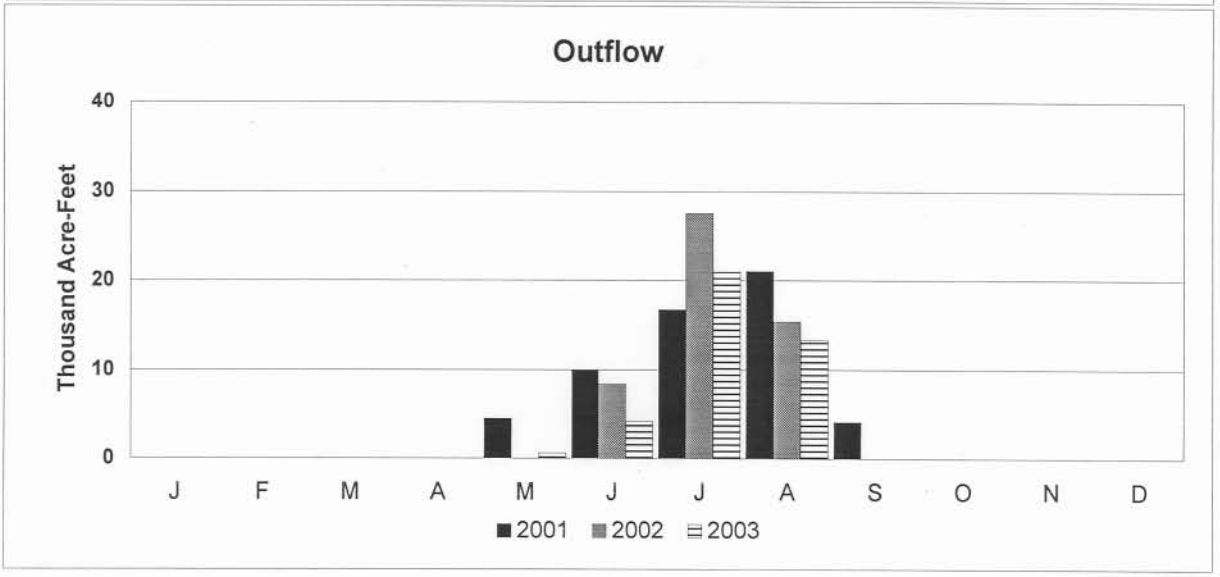
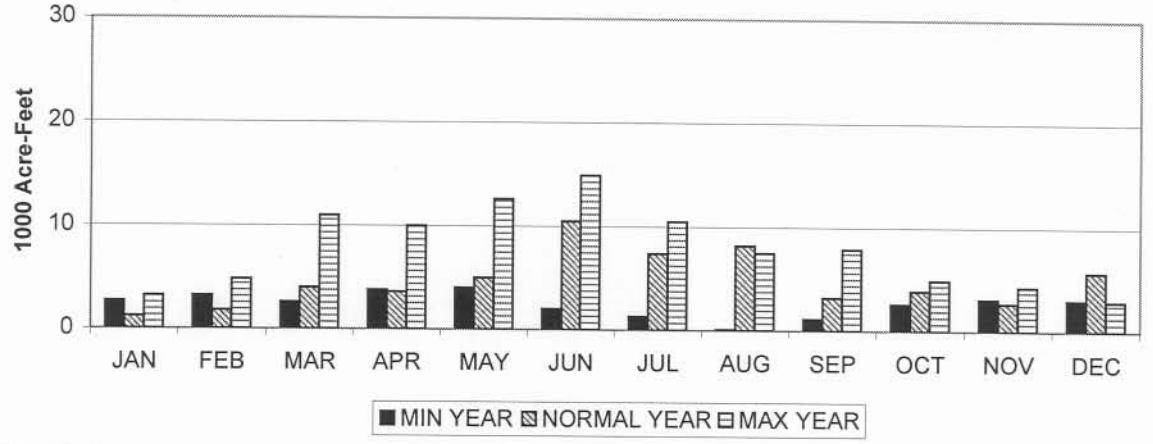


EXHIBIT 12B

LOVEWELL RESERVOIR

2004 OPERATION PLAN

Inflow



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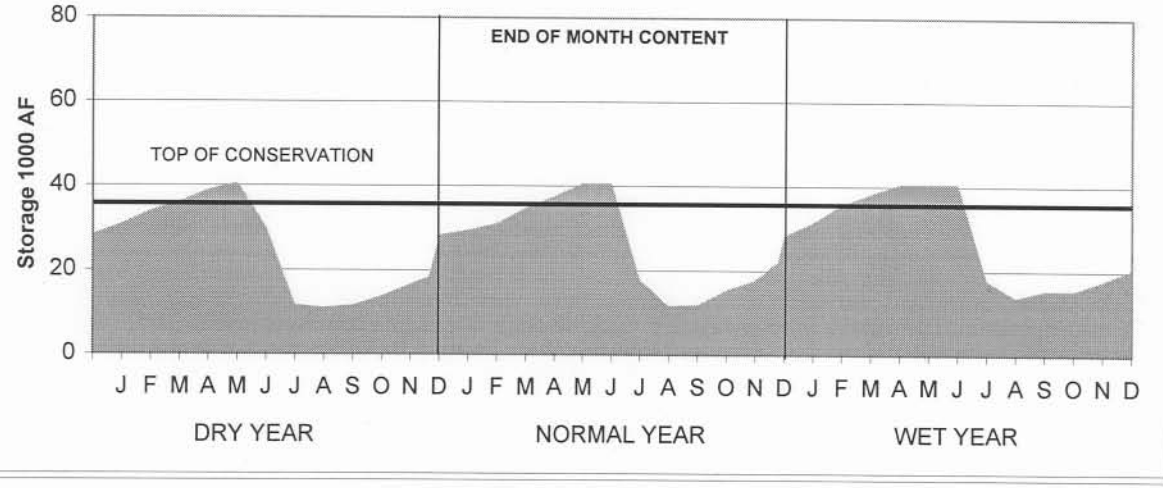


Outflow

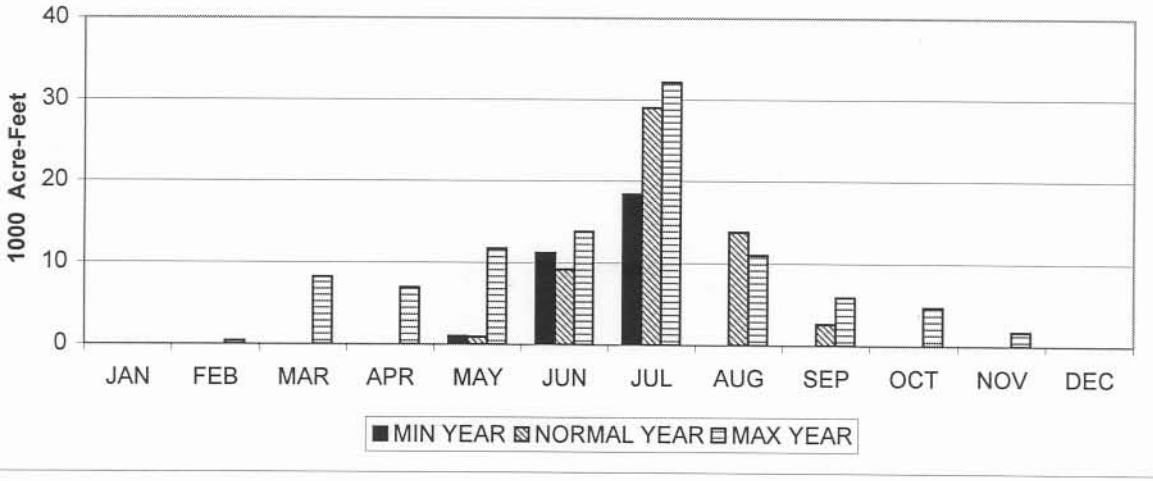
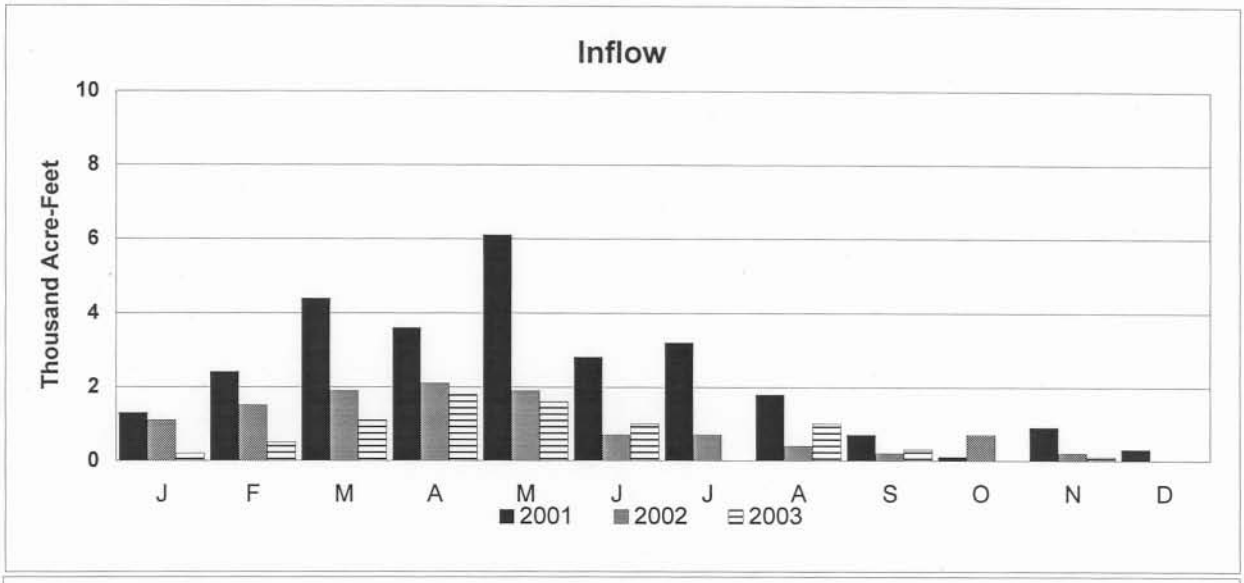
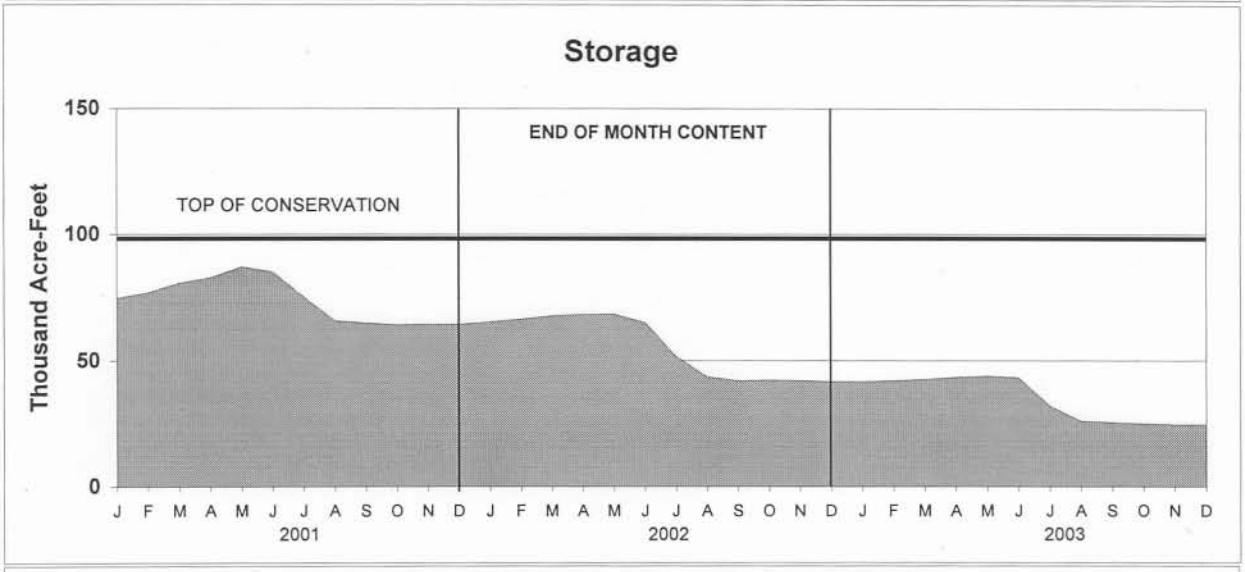


EXHIBIT 13A

KIRWIN RESERVOIR

ACTUAL OPERATION





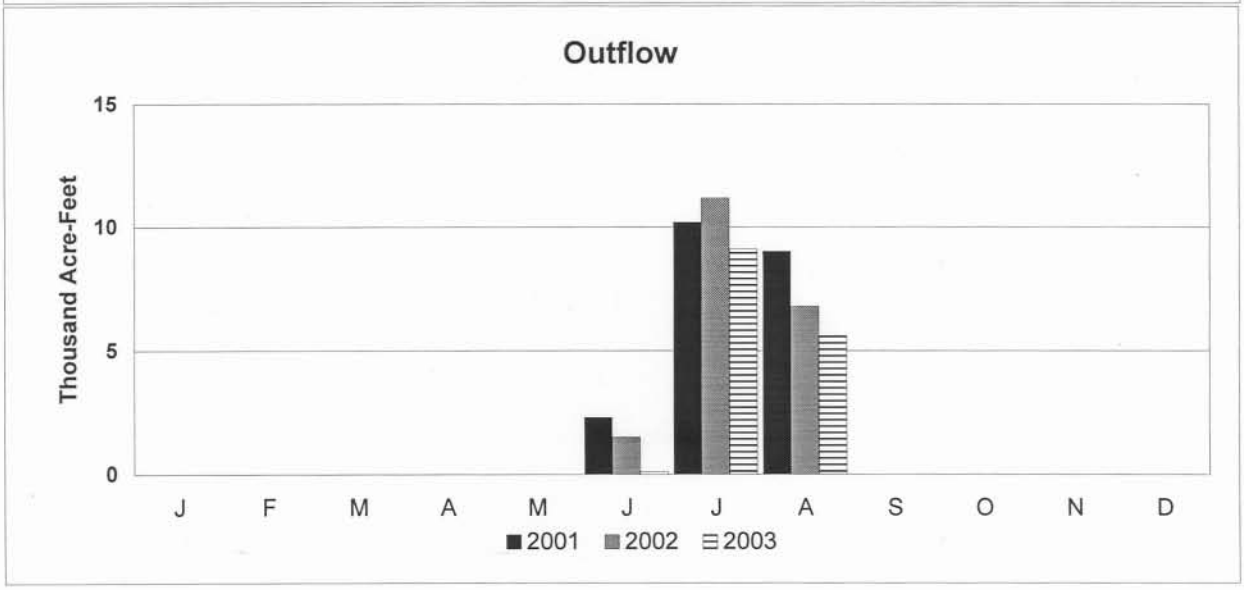
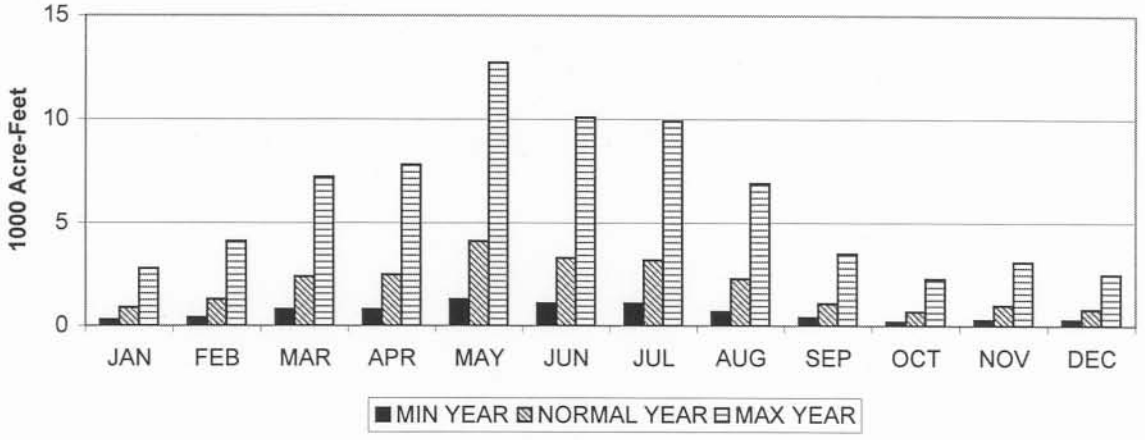


EXHIBIT 13B

KIRWIN RESERVOIR

2004 OPERATION PLAN

Inflow



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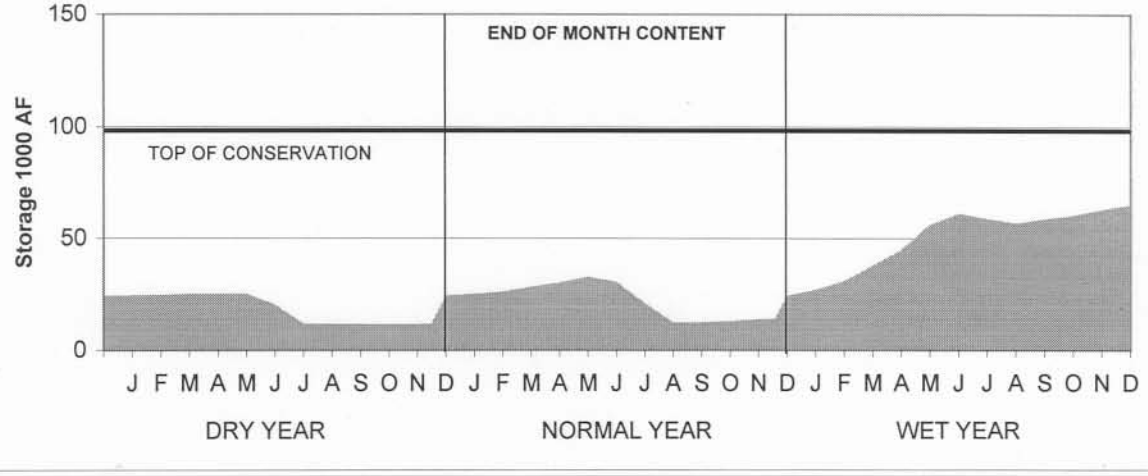


Outflow

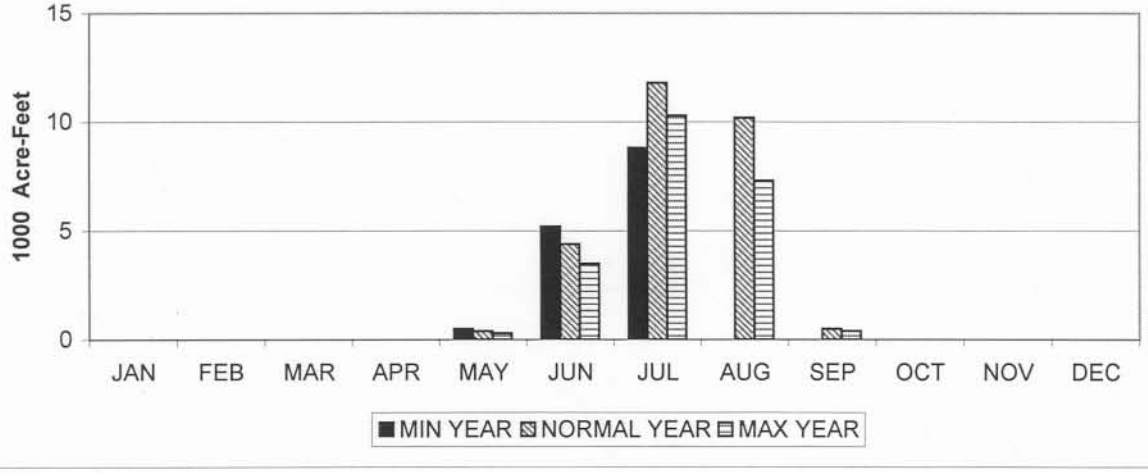
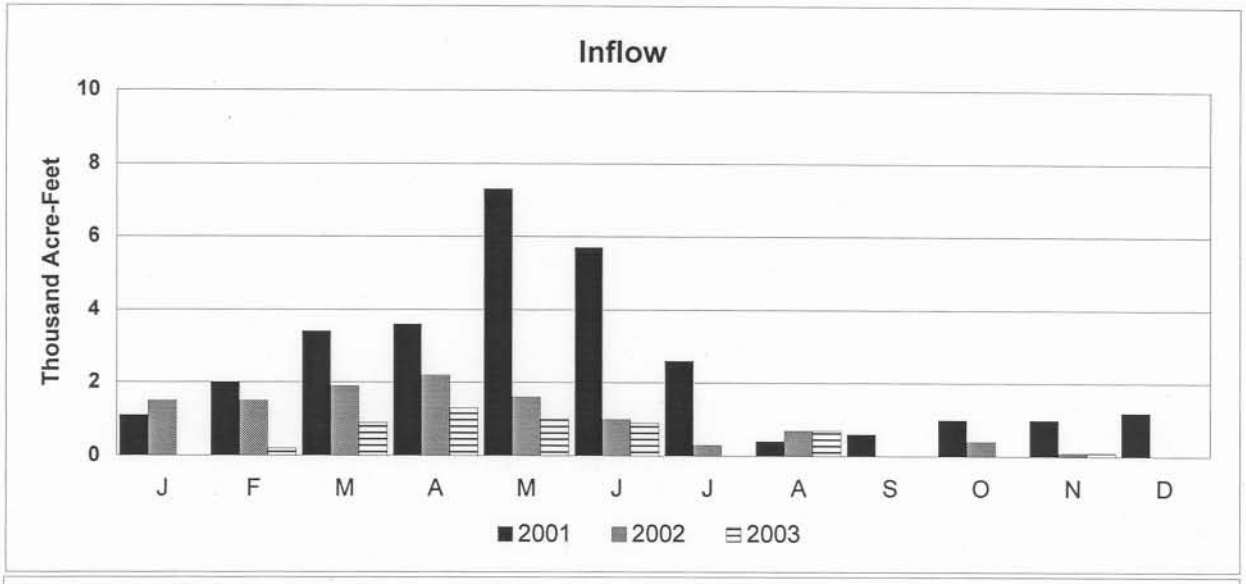
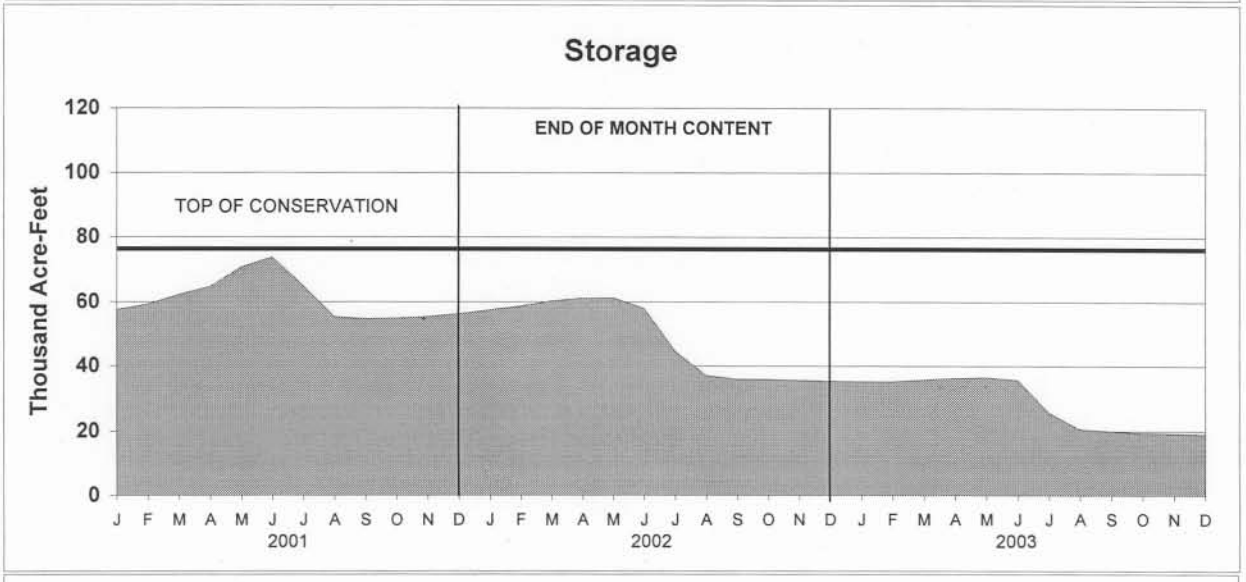


EXHIBIT 14A

WEBSTER RESERVOIR

ACTUAL OPERATION





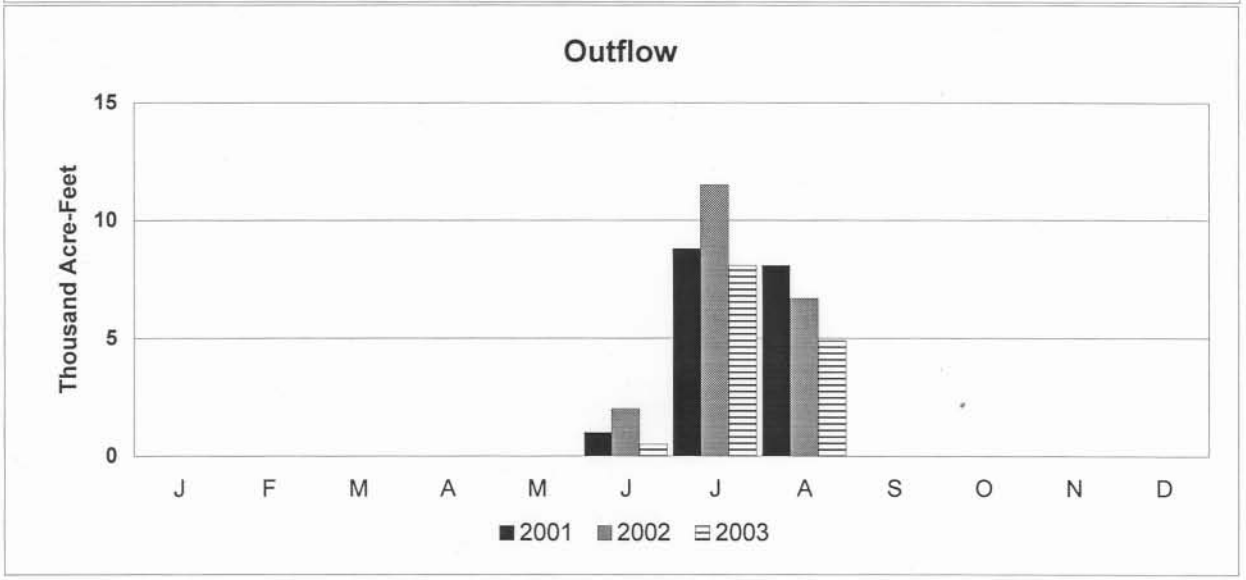
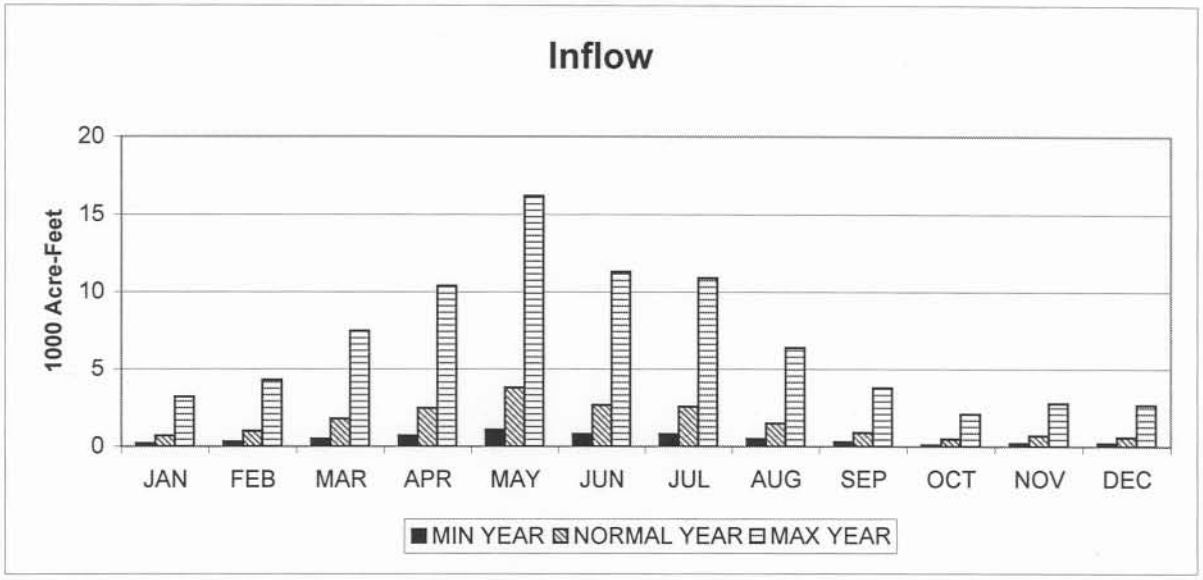
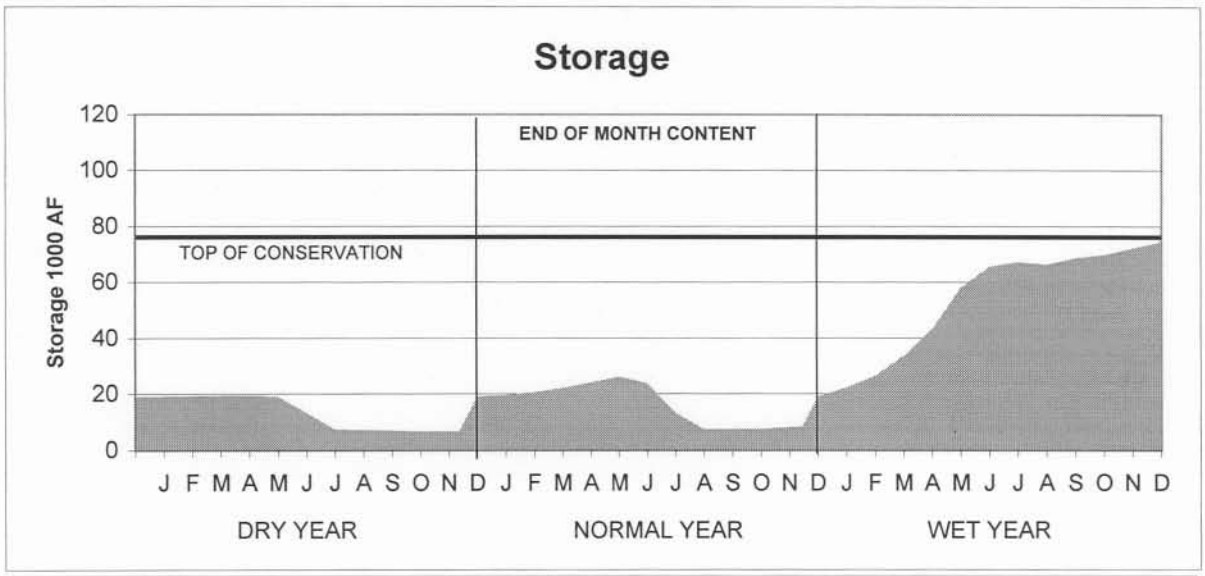


EXHIBIT 14B

WEBSTER RESERVOIR

2004 OPERATION PLAN





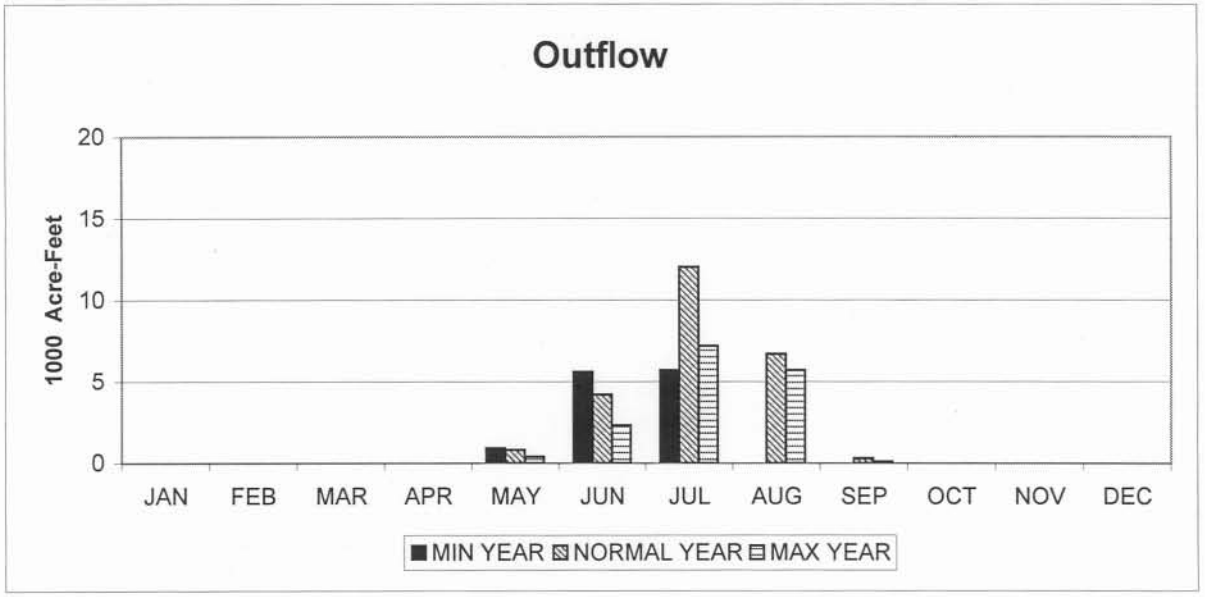
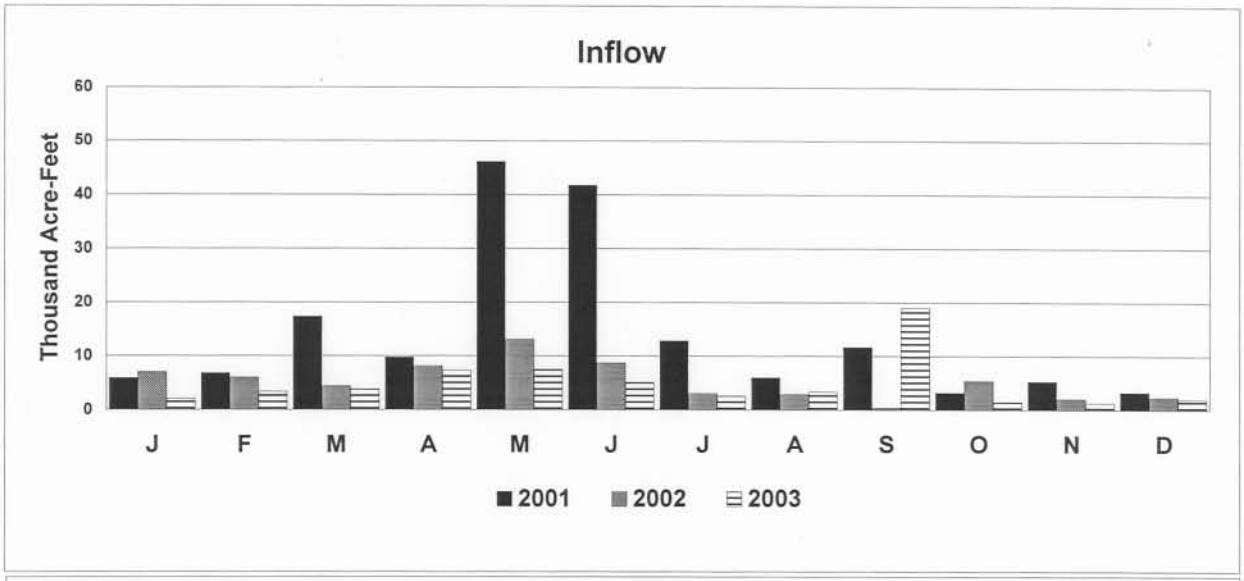
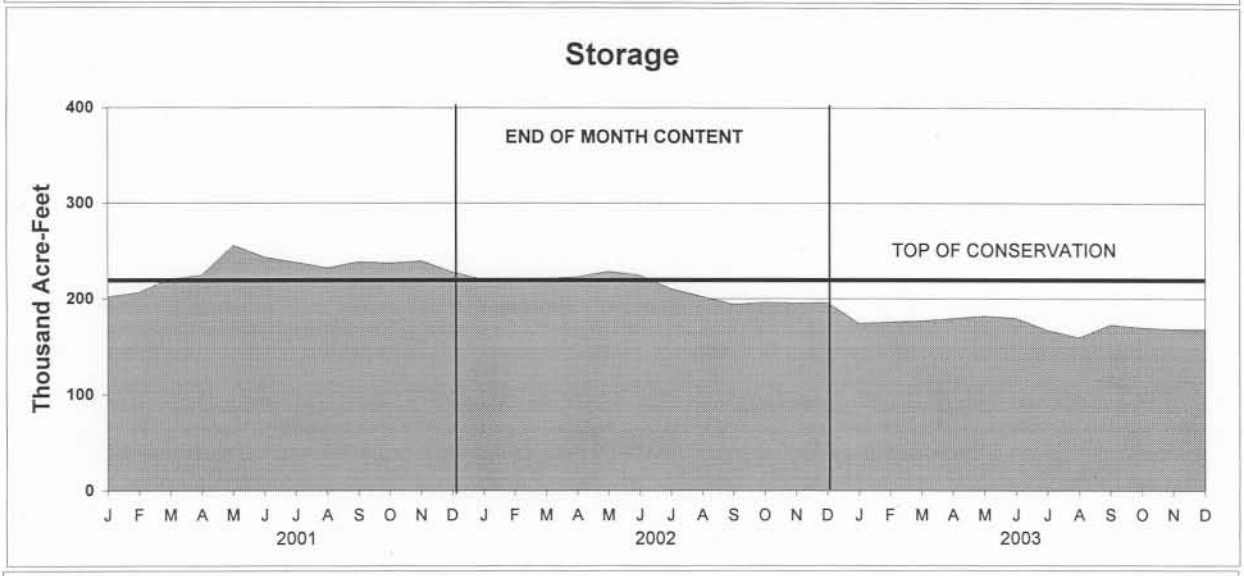


EXHIBIT 15A

WACONDA LAKE
ACTUAL OPERATION





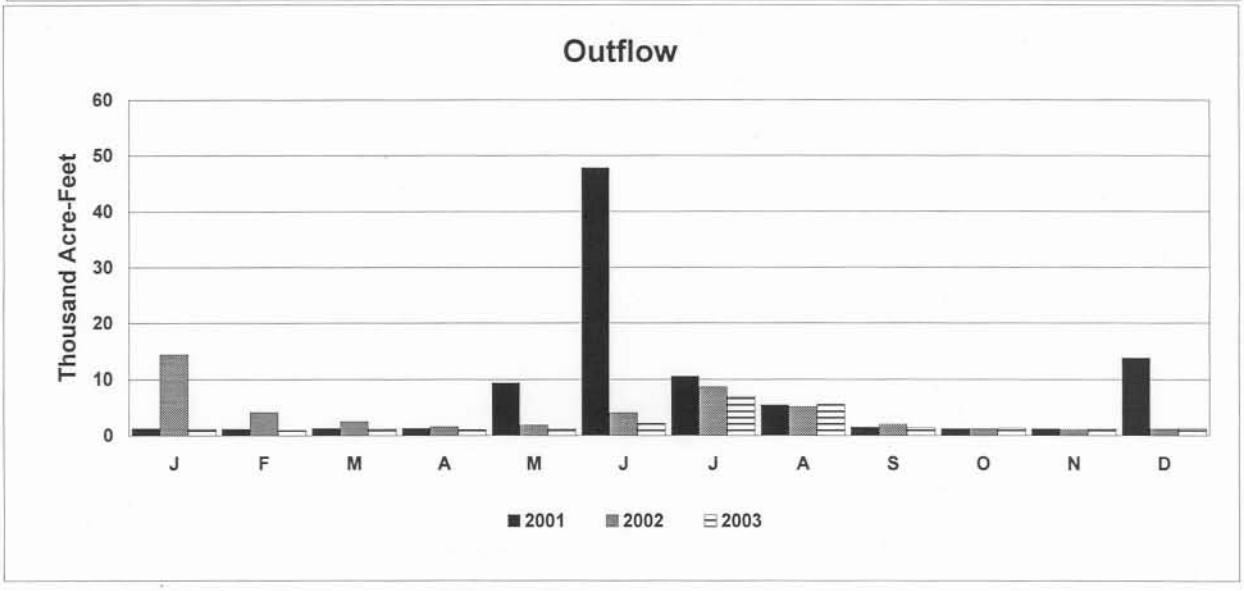
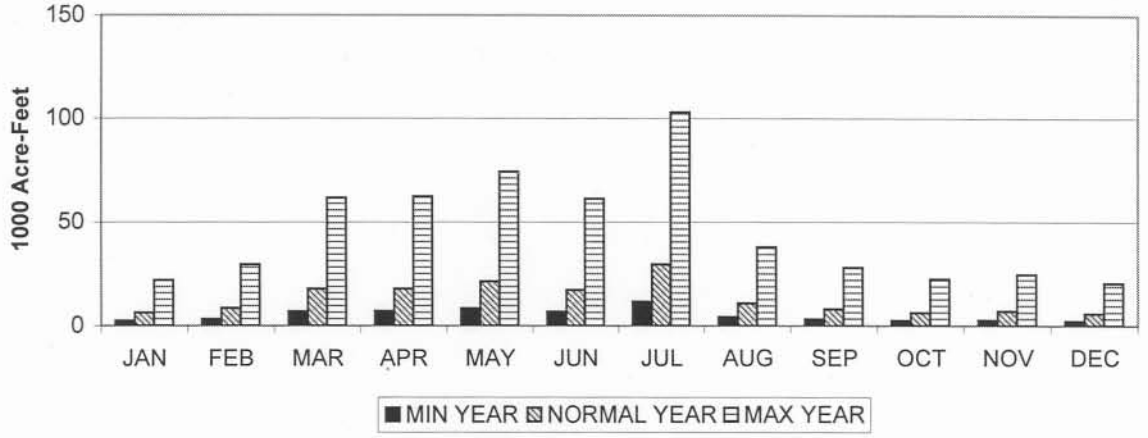


EXHIBIT 15B

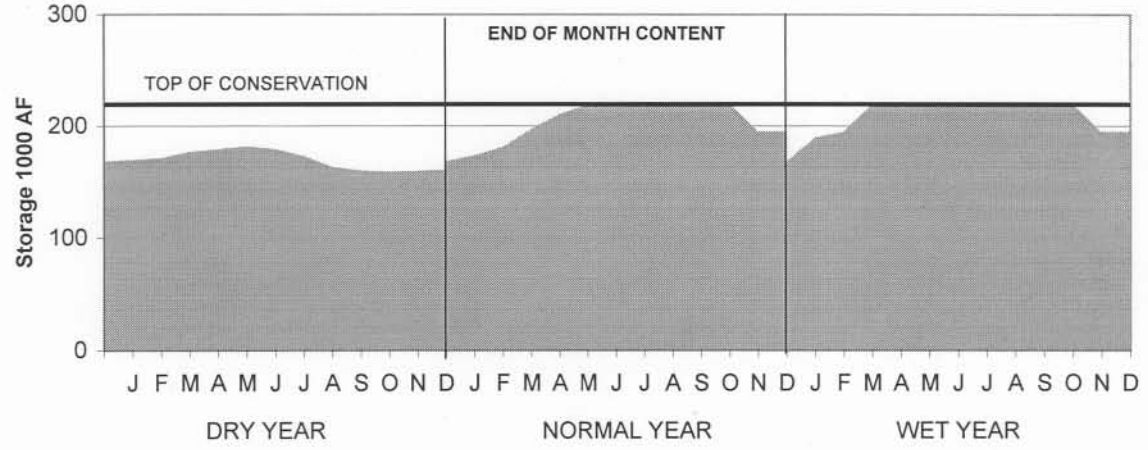
WACONDA LAKE

2004 OPERATION PLAN

Inflow



Storage



Outflow

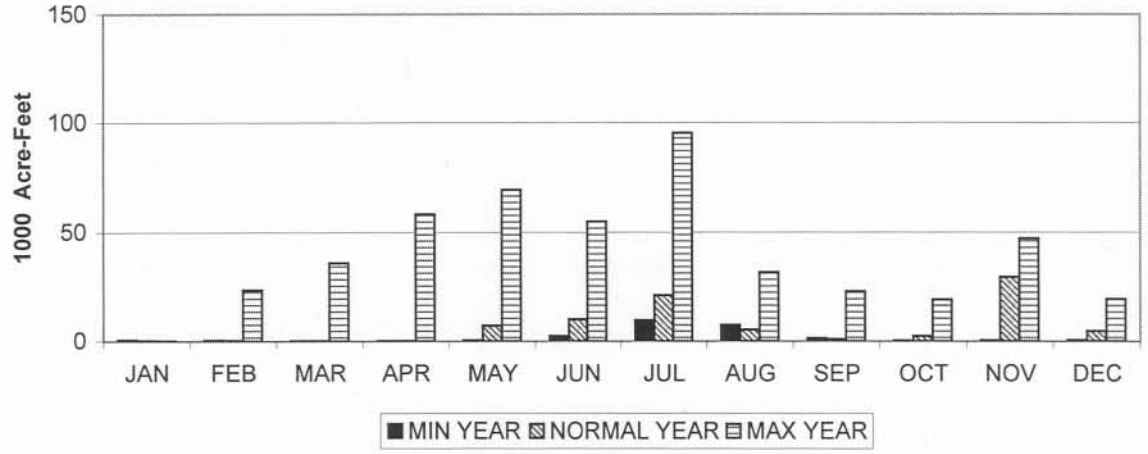
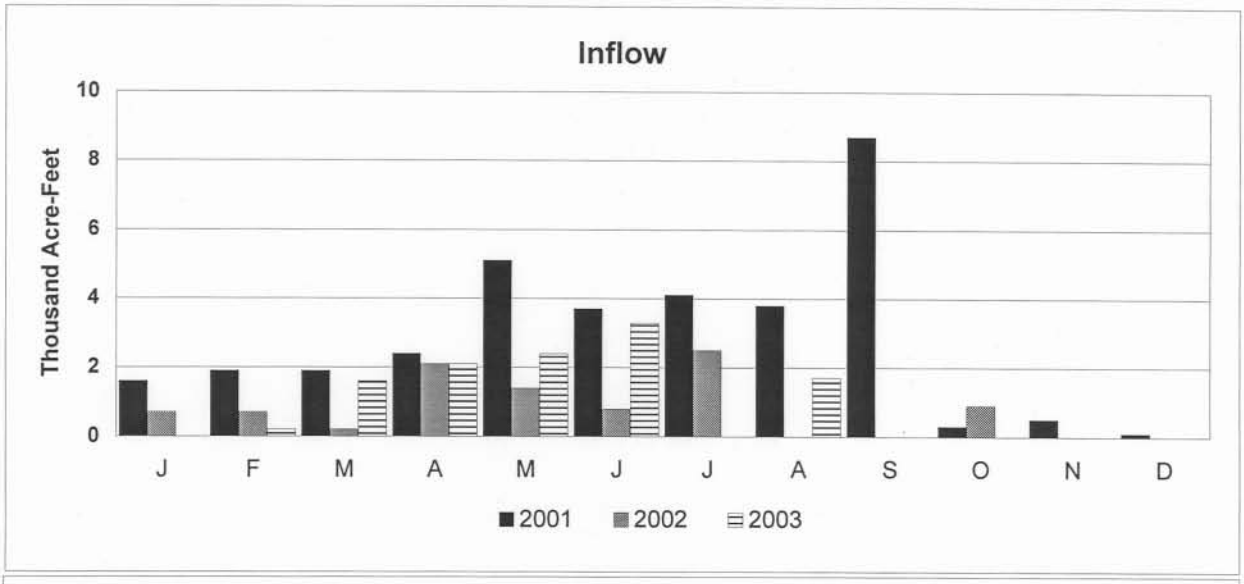
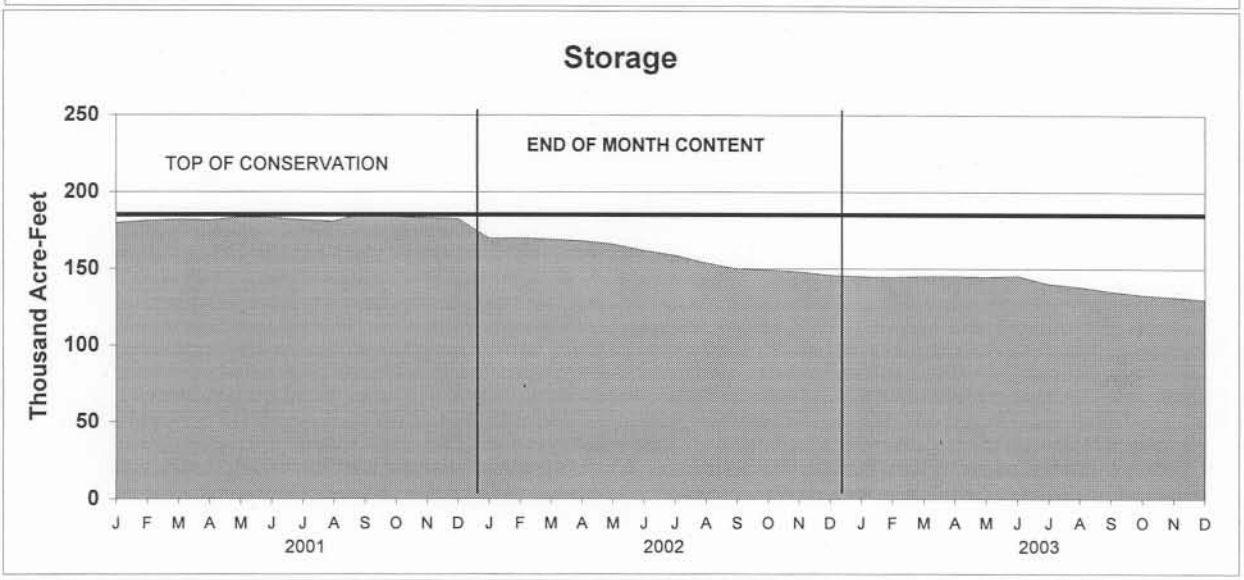


EXHIBIT 16A

CEDAR BLUFF RESERVOIR

ACTUAL OPERATION





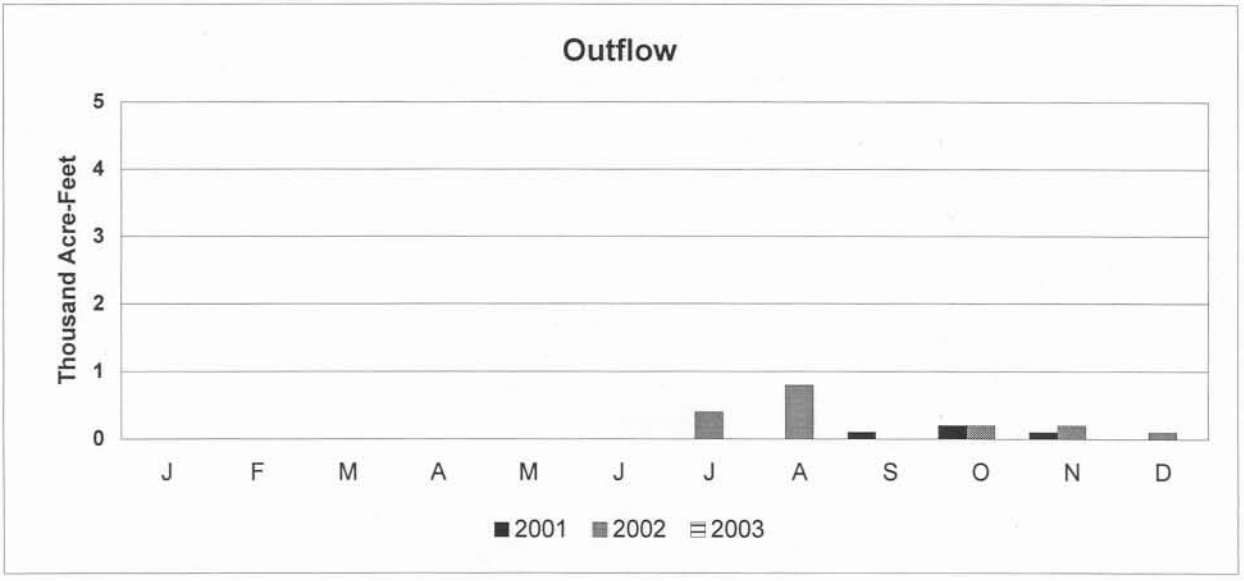
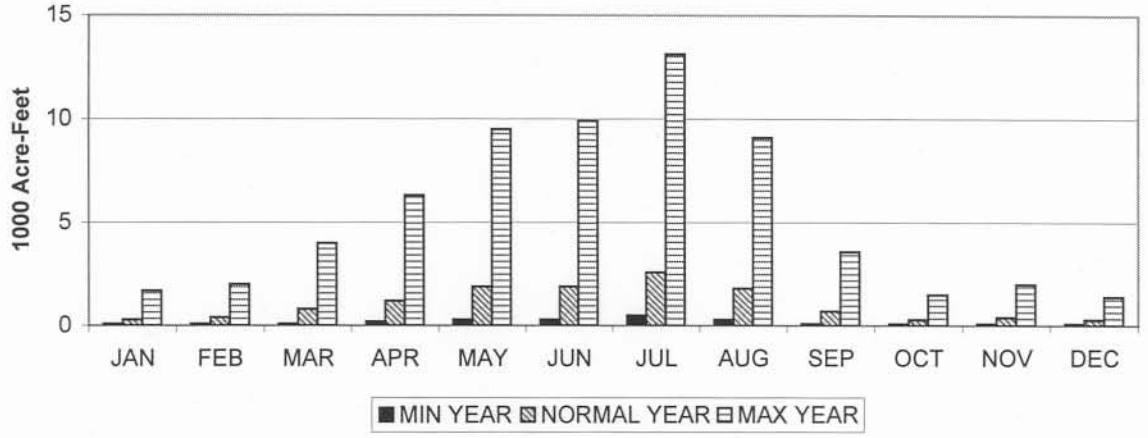


EXHIBIT 16B

CEDAR BLUFF RESERVOIR

2004 OPERATION PLAN

Inflow



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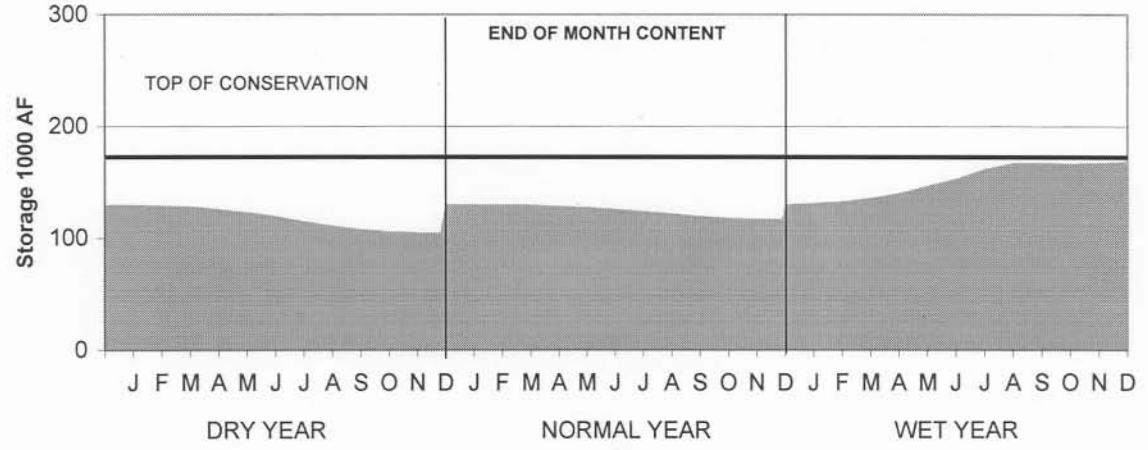


Outflow

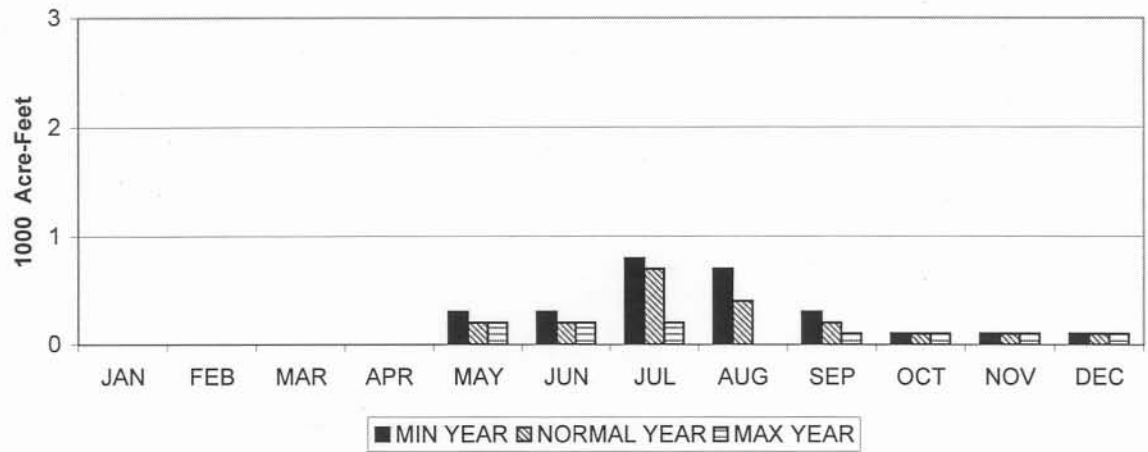
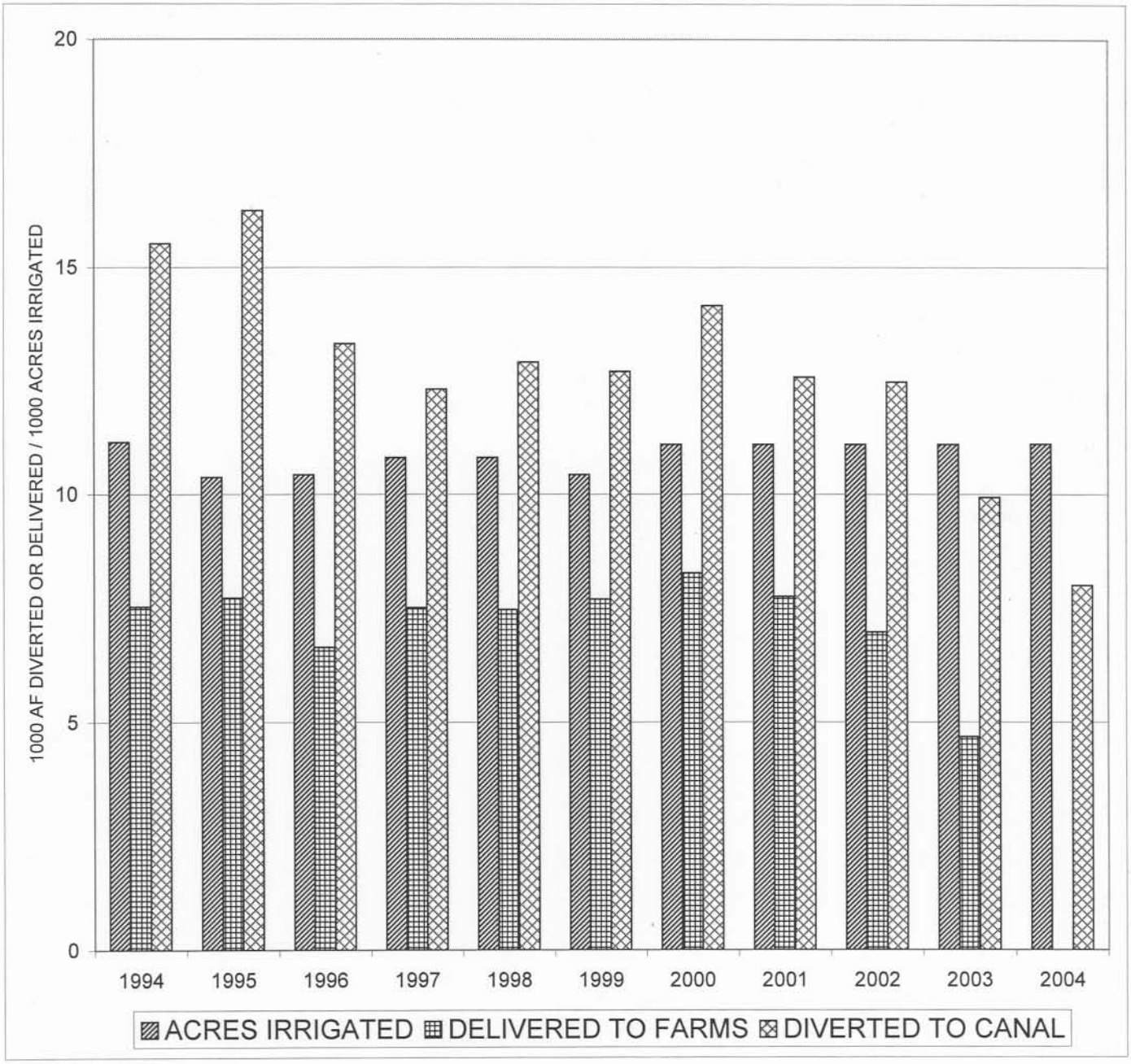


EXHIBIT 17

MIRAGE FLATS IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	1.39	1.57	1.28	1.14	1.20	1.22	1.28	1.13	1.12	0.90
DELIVERED af/acre	0.68	0.74	0.64	0.70	0.69	0.74	0.75	0.70	0.63	0.42
EFFICIENCY	49%	48%	50%	61%	58%	61%	58%	62%	56%	47%

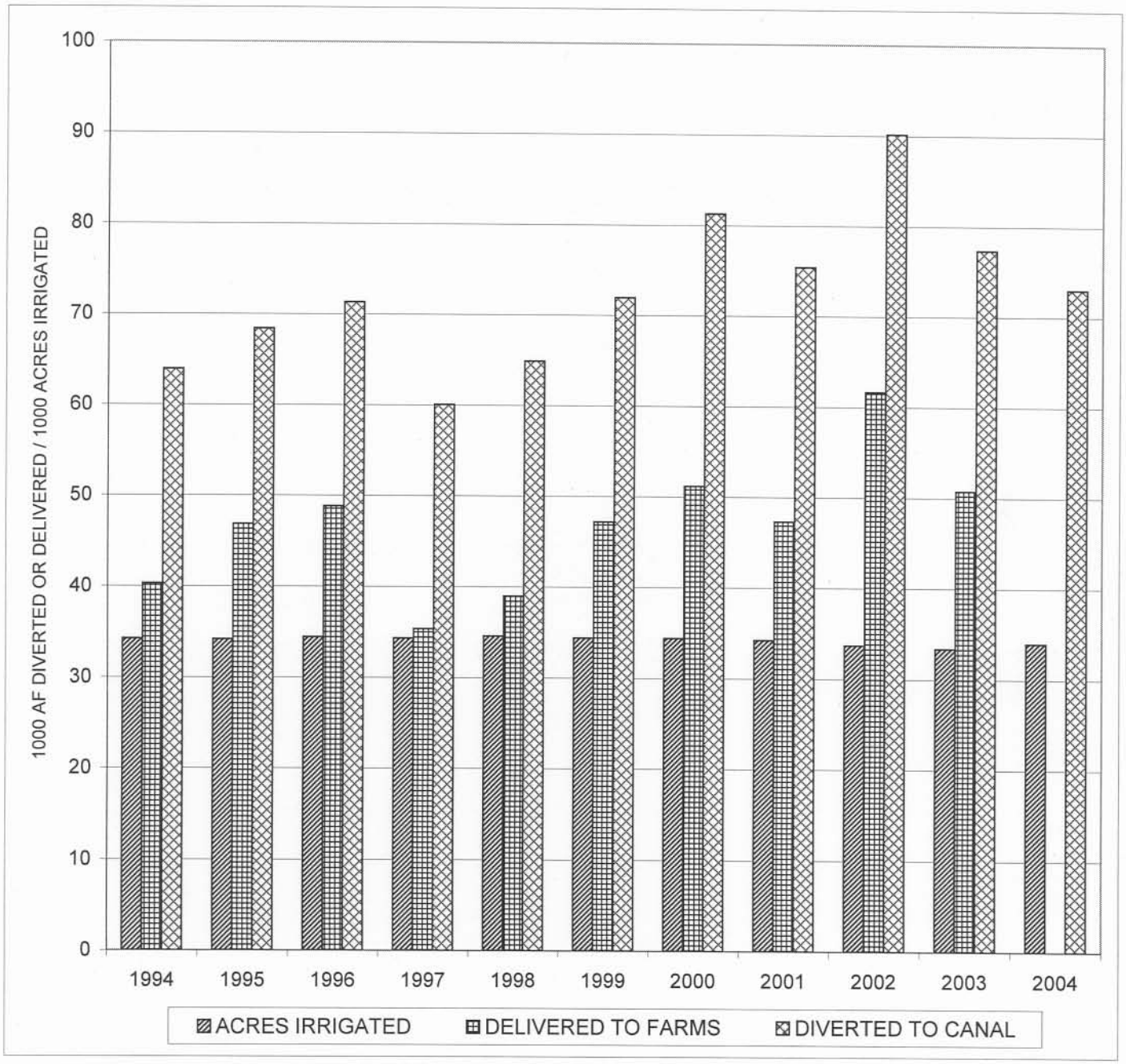
FORECASTED SHORTAGES (2004)

DRY YEAR	26,500 AF
NORMAL YEAR	15,400 AF
WET YEAR	2,200 AF

EXHIBIT 18

AINSWORTH IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	1.87	2.00	2.07	1.75	1.87	2.09	2.36	2.20	2.67	2.31
DELIVERED af/acre	1.18	1.37	1.42	1.03	1.13	1.37	1.49	1.38	1.83	1.52
EFFICIENCY	63%	68%	68%	59%	60%	66%	63%	63%	68%	66%

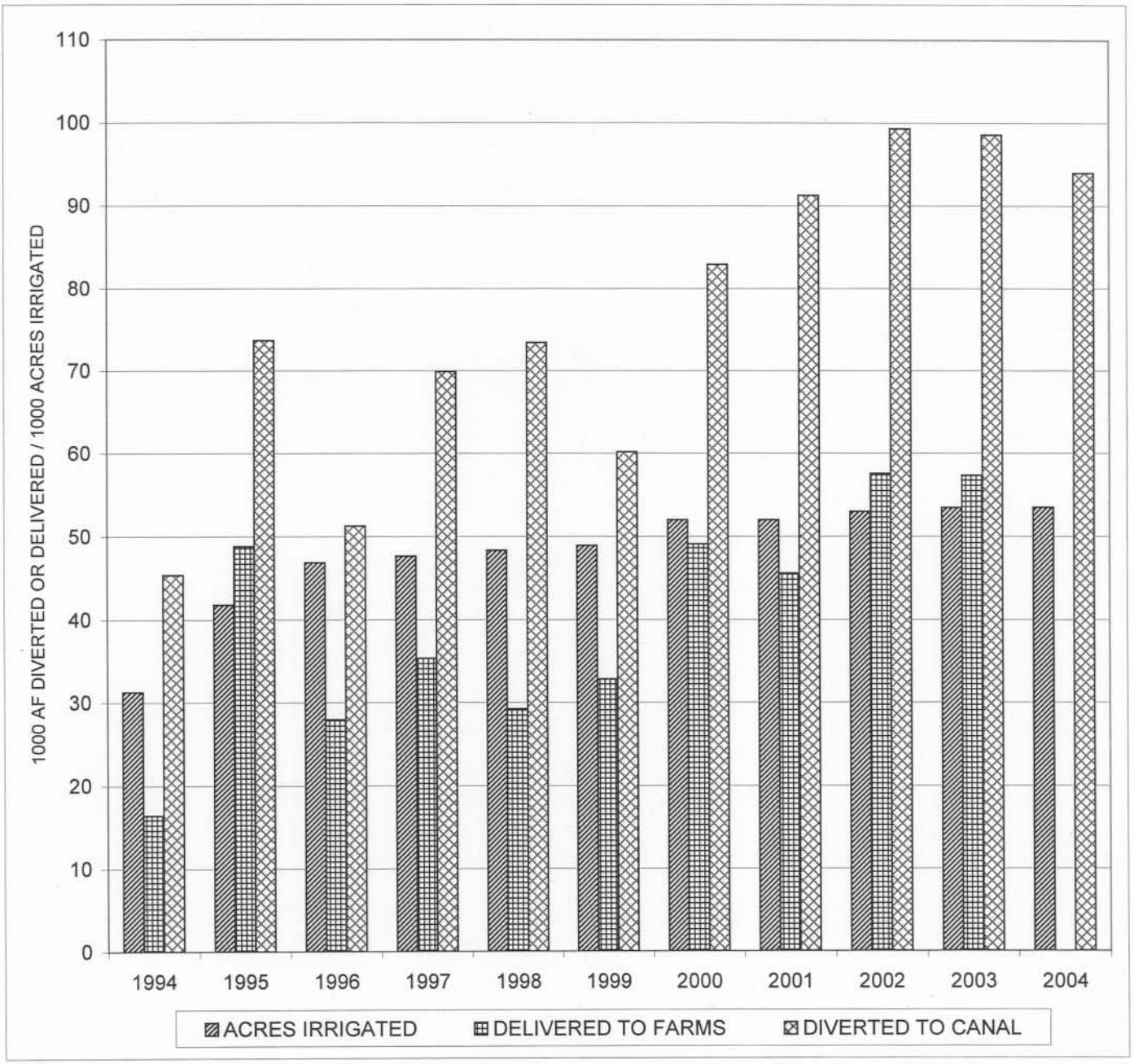
FORECASTED SHORTAGES (2004)

DRY YEAR	0 AF
NORMAL YEAR	0 AF

EXHIBIT 19

TWIN LOUPS IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	1.45	1.76	1.10	1.47	1.52	1.23	1.60	1.76	1.87	1.84
DELIVERED af/acre	0.52	1.17	0.60	0.74	0.60	0.67	0.94	0.88	1.09	1.07
EFFICIENCY	36%	66%	54%	51%	40%	55%	59%	50%	58%	58%

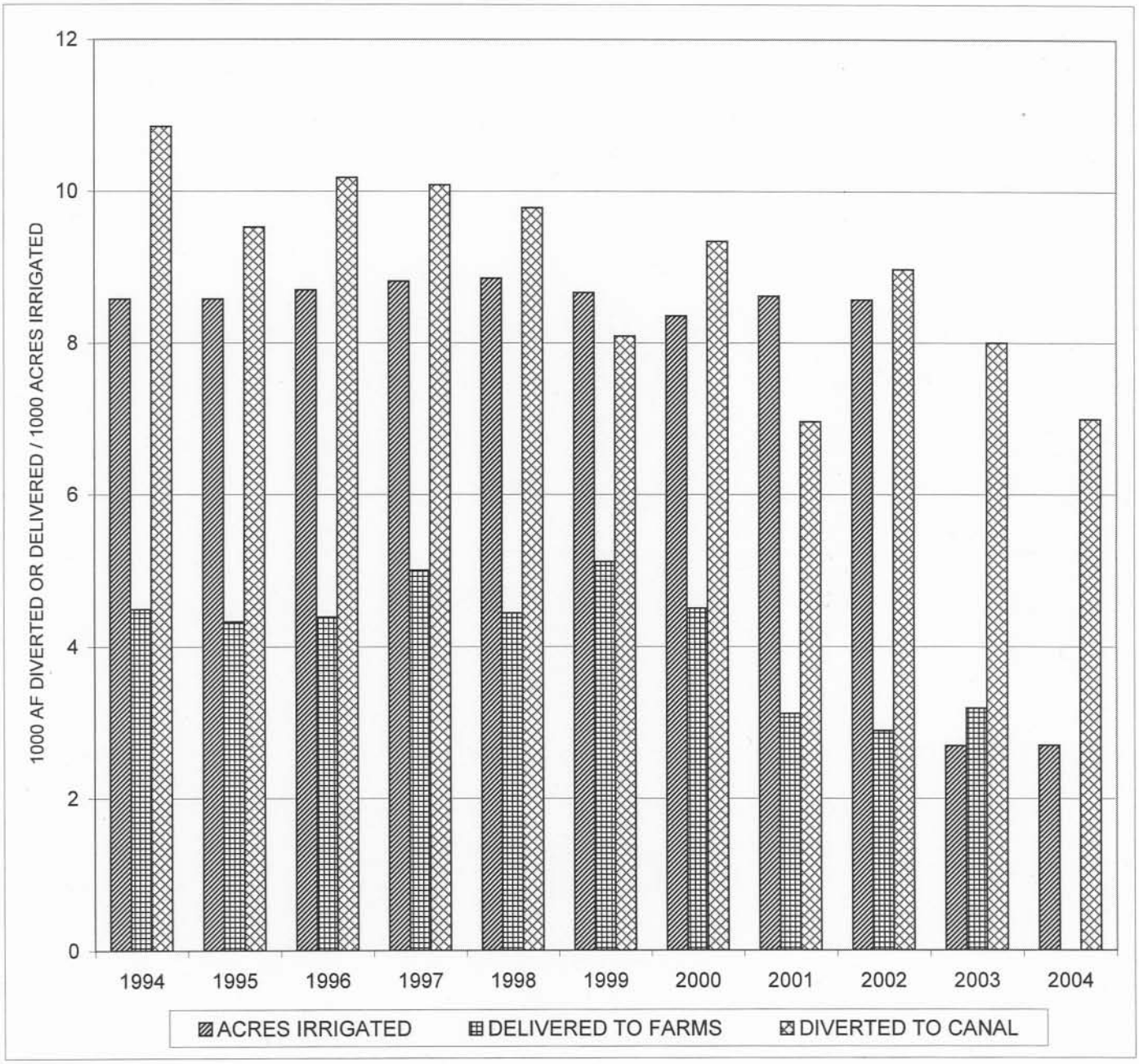
FORECASTED SHORTAGES (2004)

DRY YEAR	0 AF
NORMAL YEAR	0 AF

EXHIBIT 20

FRENCHMAN VALLEY IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	1.26	1.11	1.17	1.14	1.11	0.93	1.12	0.81	1.05	2.97
DELIVERED af/acre	0.52	0.50	0.50	0.57	0.50	0.59	0.54	0.36	0.34	1.18
EFFICIENCY	41%	45%	43%	50%	45%	63%	48%	45%	32%	40%

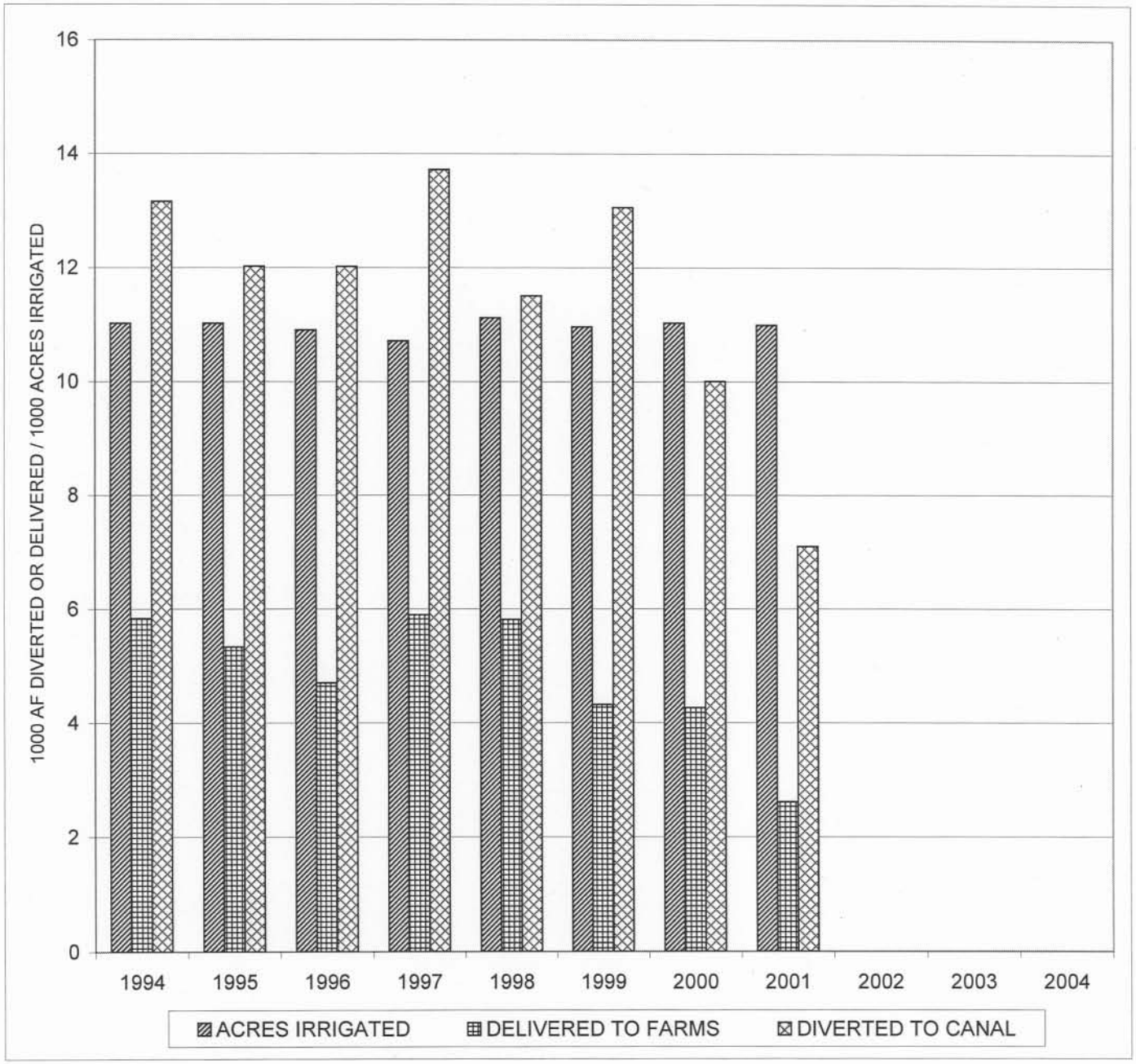
FORECASTED SHORTAGES (2004)

DRY YEAR	33,500 AF
NORMAL YEAR	21,100 AF
WET YEAR	7,200 AF

EXHIBIT 21

H AND RW IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	1.19	1.09	1.10	1.28	1.03	1.19	0.91	0.65	0.00	0.00
DELIVERED af/acre	0.53	0.48	0.43	0.55	0.52	0.39	0.39	0.24	0.00	0.00
EFFICIENCY	44%	44%	39%	43%	51%	33%	43%	37%	0%	0%

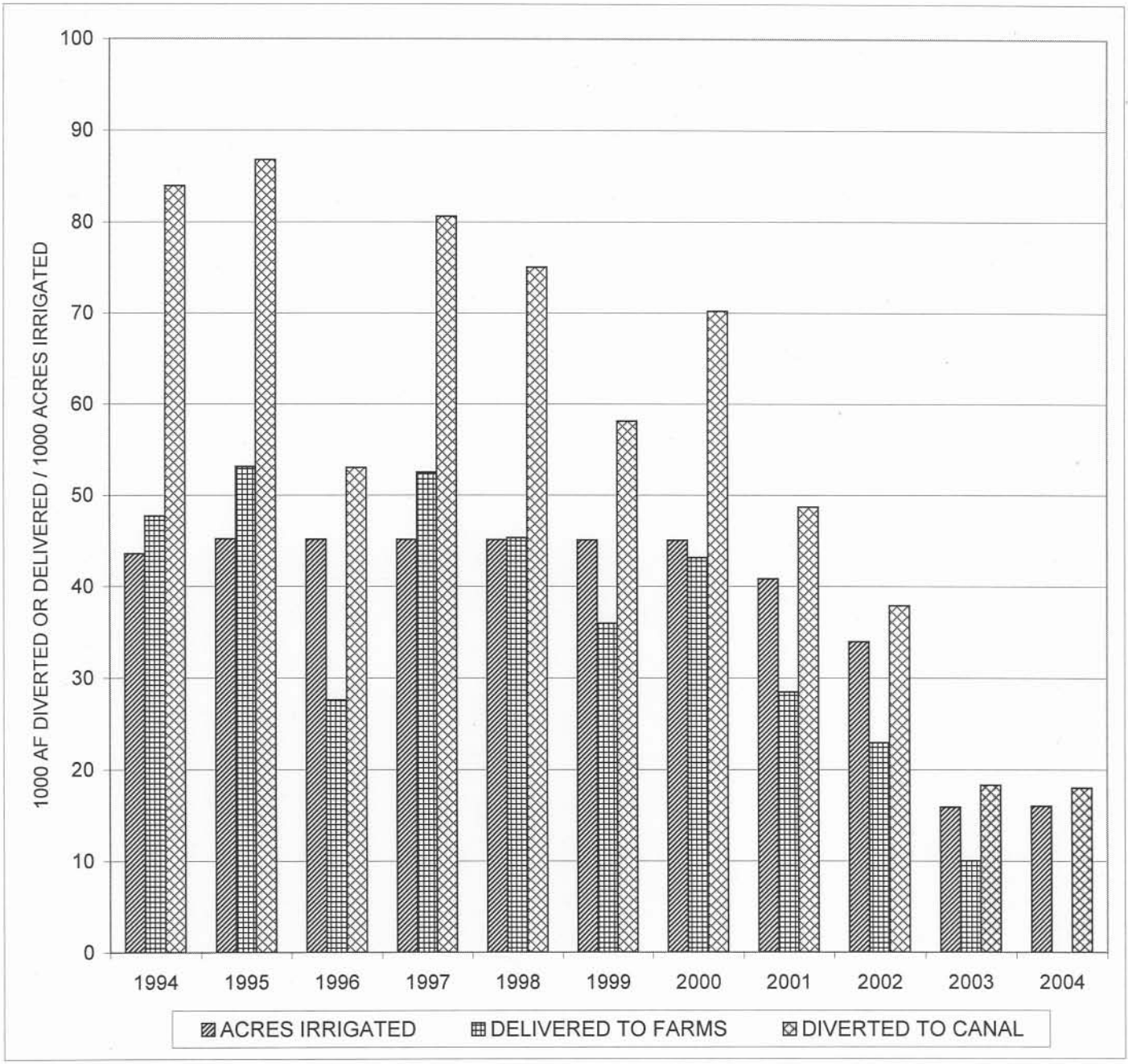
FORECASTED SHORTAGES (2004)

DRY YEAR	42,700 AF
NORMAL YEAR	26,800 AF
WET YEAR	9,200 AF

EXHIBIT 22

FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	1.93	1.92	1.17	1.79	1.66	1.29	1.56	1.19	1.12	1.15
DELIVERED af/acre	1.09	1.17	0.61	1.16	1.00	0.80	0.96	0.70	0.67	0.63
EFFICIENCY	57%	61%	52%	65%	60%	62%	61%	58%	61%	55%

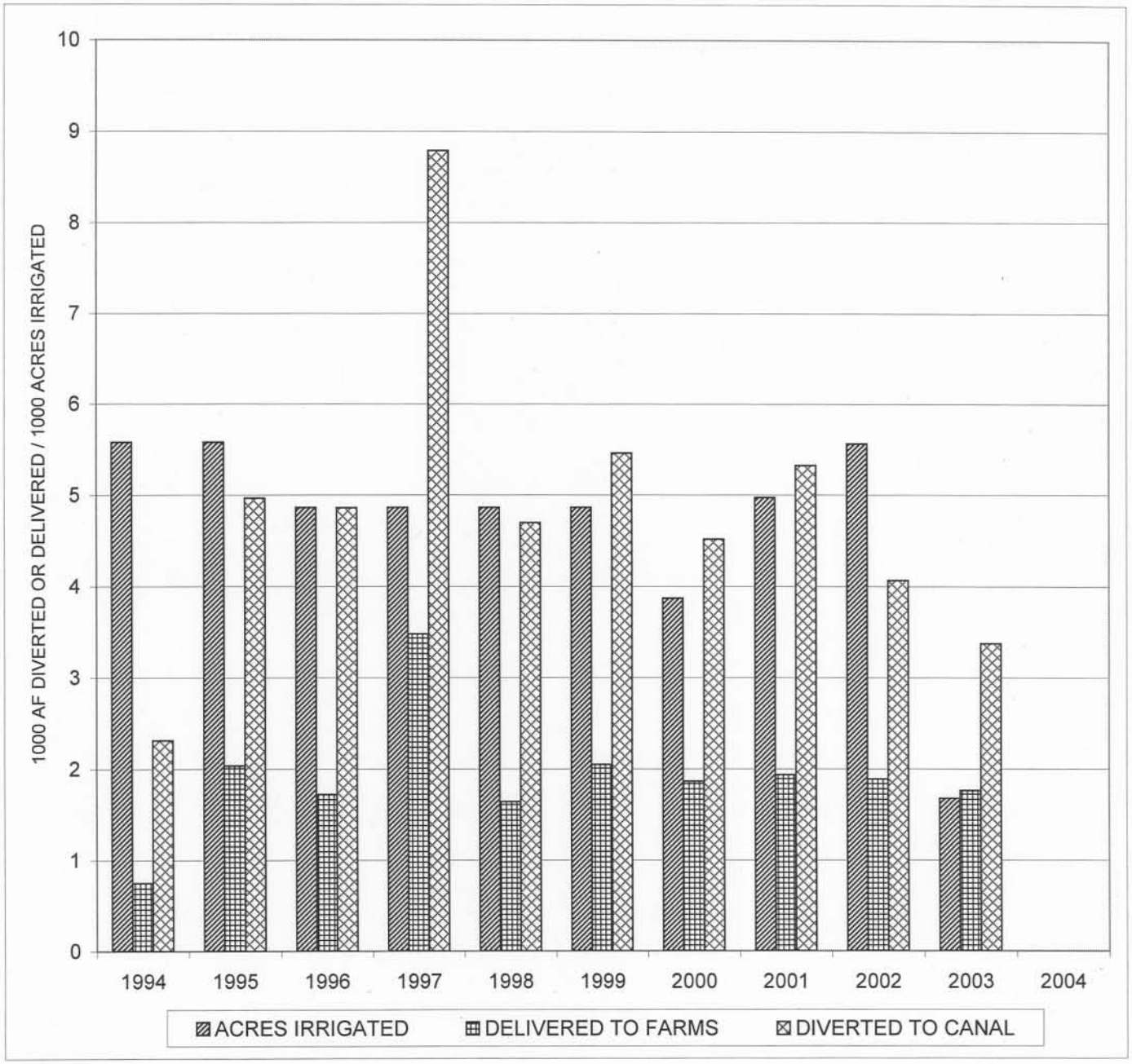
FORECASTED SHORTAGES (2004)

DRY YEAR	44,200 AF
NORMAL YEAR	0 AF

EXHIBIT 23

ALMENA IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	0.41	0.89	1.00	1.81	0.97	1.12	1.17	1.07	0.73	2.02
DELIVERED af/acre	0.13	0.37	0.35	0.72	0.34	0.42	0.48	0.39	0.34	1.05
EFFICIENCY	32%	41%	35%	40%	35%	38%	41%	36%	46%	52%

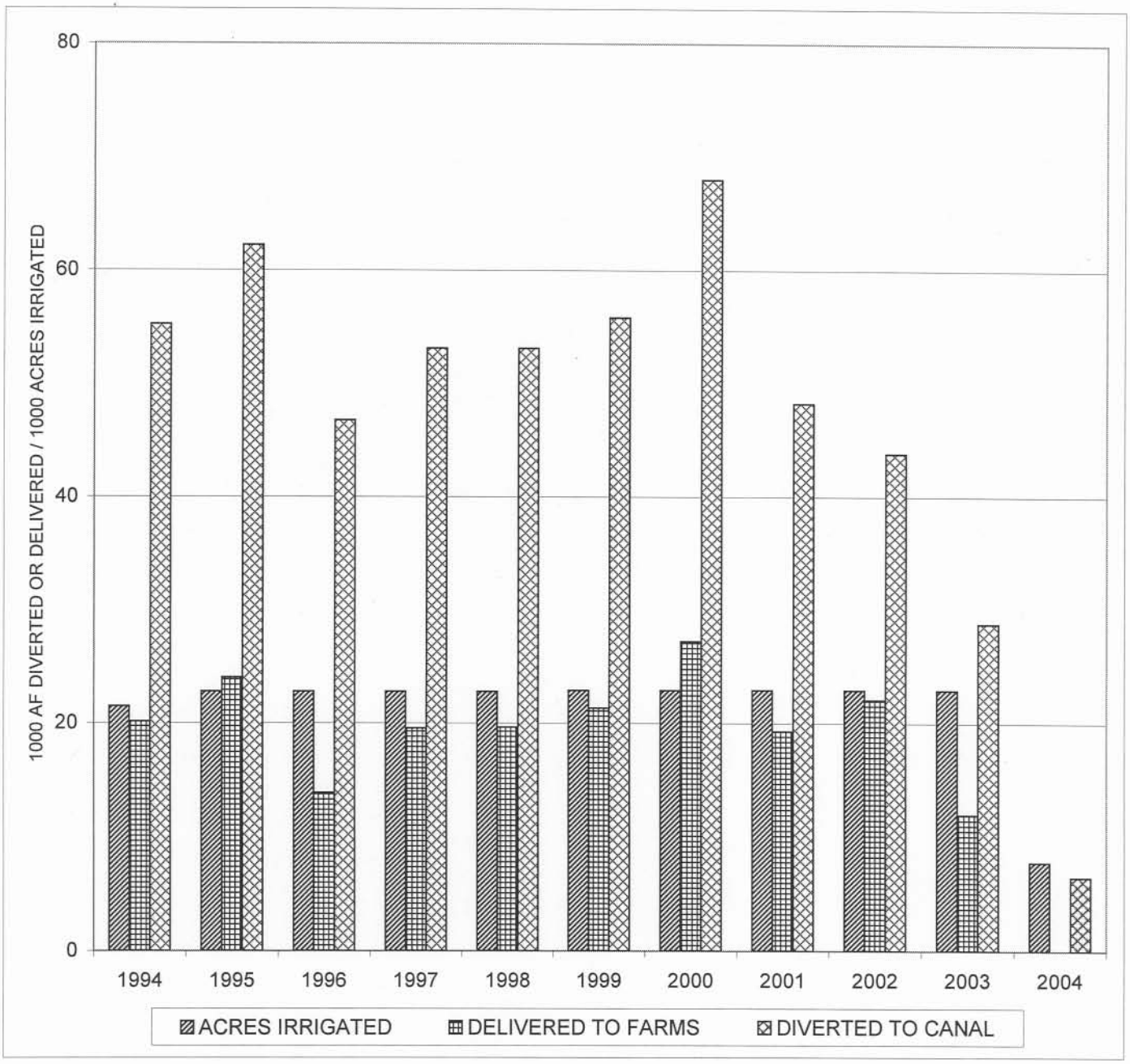
FORECASTED SHORTAGES (2004)

DRY YEAR	21,300 AF
NORMAL YEAR	14,700 AF

EXHIBIT 24

BOSTWICK IRRIGATION DISTRICT - NEBRASKA

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	2.57	2.73	2.05	2.33	2.33	2.44	2.97	2.10	1.91	1.25
DELIVERED af/acre	0.94	1.05	0.61	0.86	0.86	0.93	1.19	0.84	0.96	0.52
EFFICIENCY	36%	39%	30%	37%	37%	38%	40%	40%	50%	42%

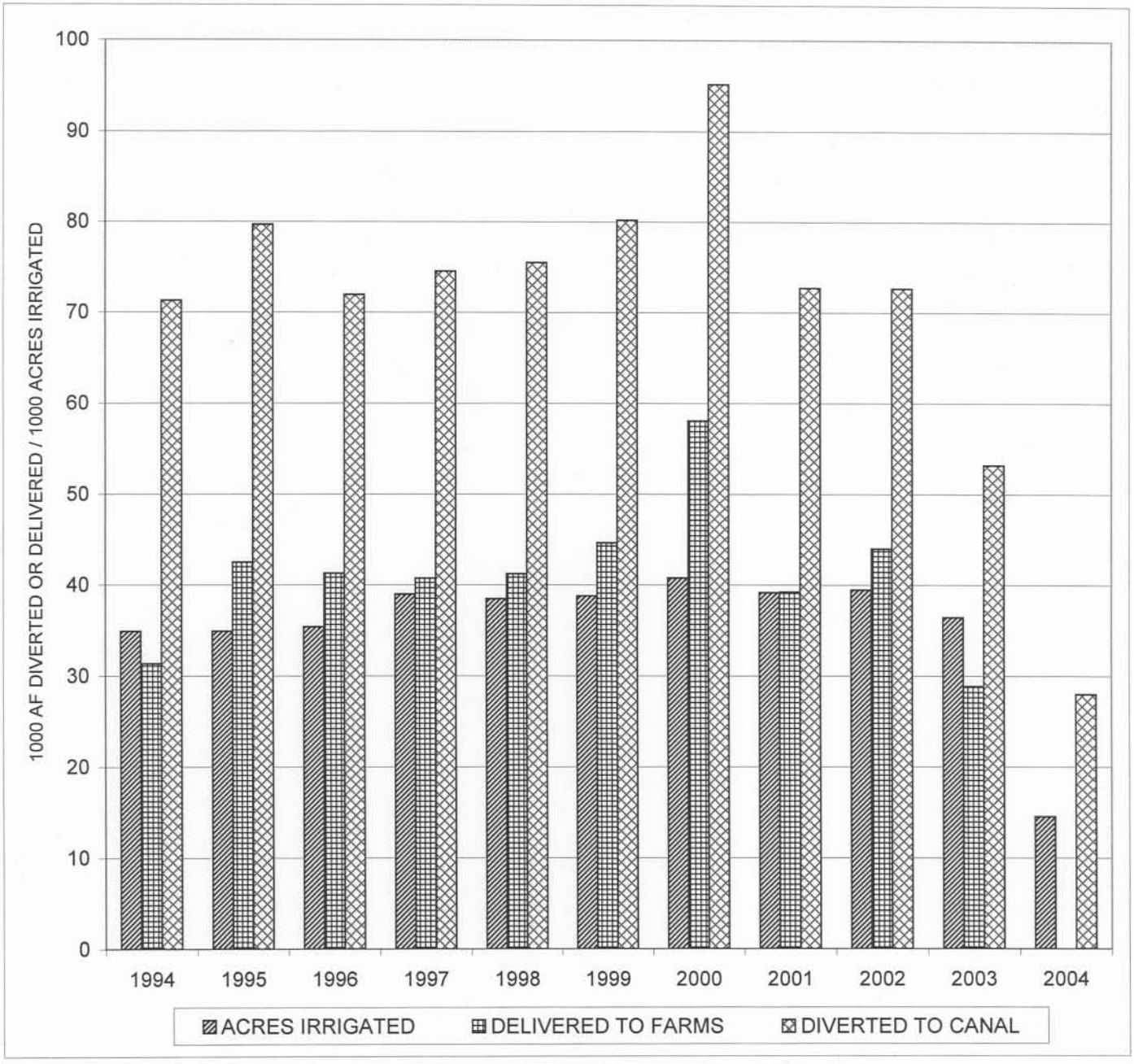
FORECASTED SHORTAGES (2004)

DRY YEAR	52,500 AF
NORMAL YEAR	8,600 AF

EXHIBIT 25

KANSAS-BOSTWICK IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	2.04	2.28	2.03	1.91	1.96	2.07	2.33	1.86	1.84	1.46
DELIVERED af/acre	0.90	1.22	1.16	1.04	1.07	1.15	1.42	1.00	1.11	0.79
EFFICIENCY	44%	53%	57%	55%	55%	56%	61%	54%	61%	54%

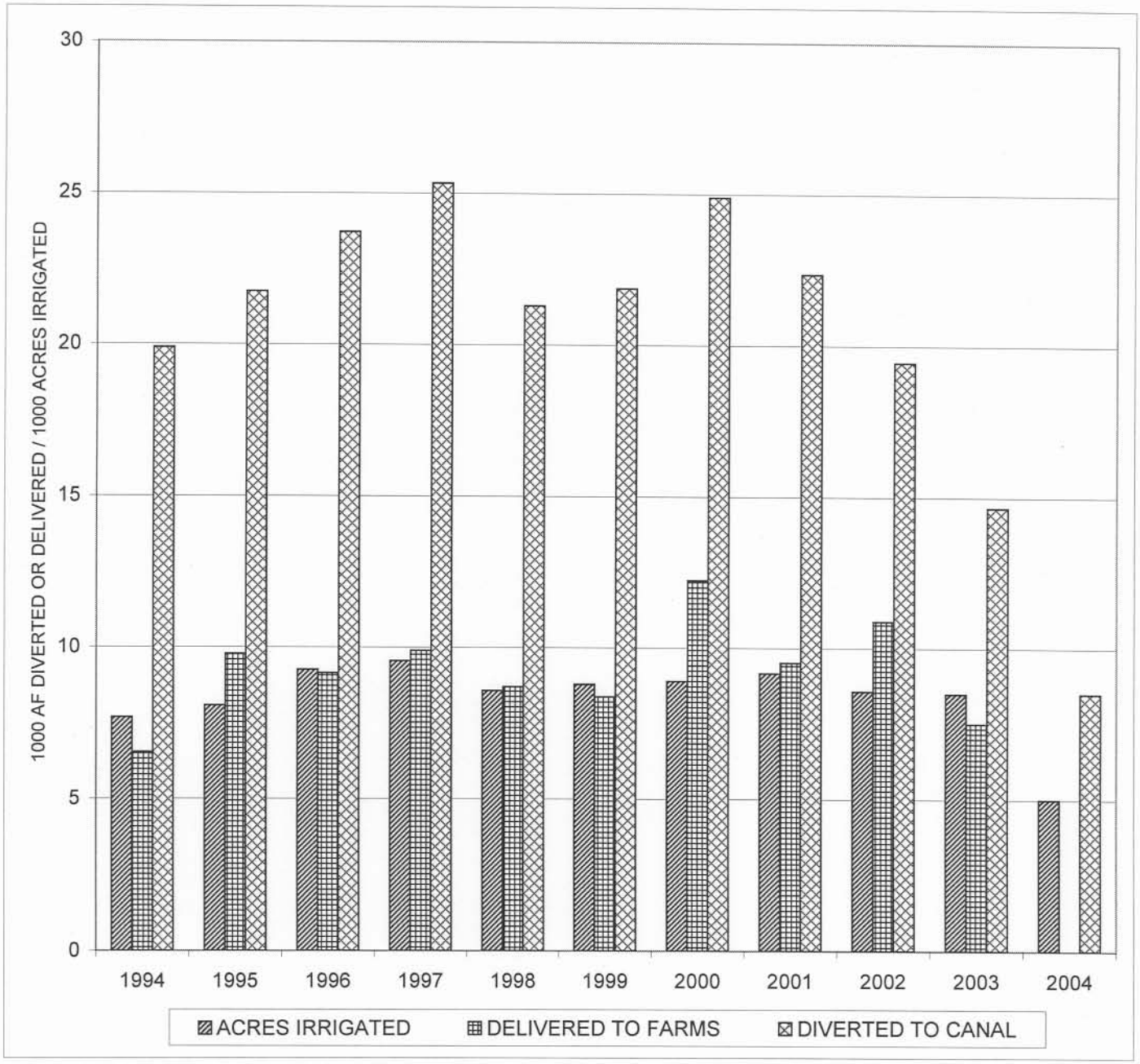
FORECASTED SHORTAGES (2004)

DRY YEAR	69,700 AF
NORMAL YEAR	10,400 AF

EXHIBIT 26

KIRWIN IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	2.59	2.69	2.56	2.65	2.48	2.49	2.80	2.44	2.27	1.73
DELIVERED af/acre	0.85	1.21	0.99	1.04	1.01	0.95	1.37	1.04	1.27	0.88
EFFICIENCY	33%	45%	39%	39%	41%	38%	49%	43%	56%	51%

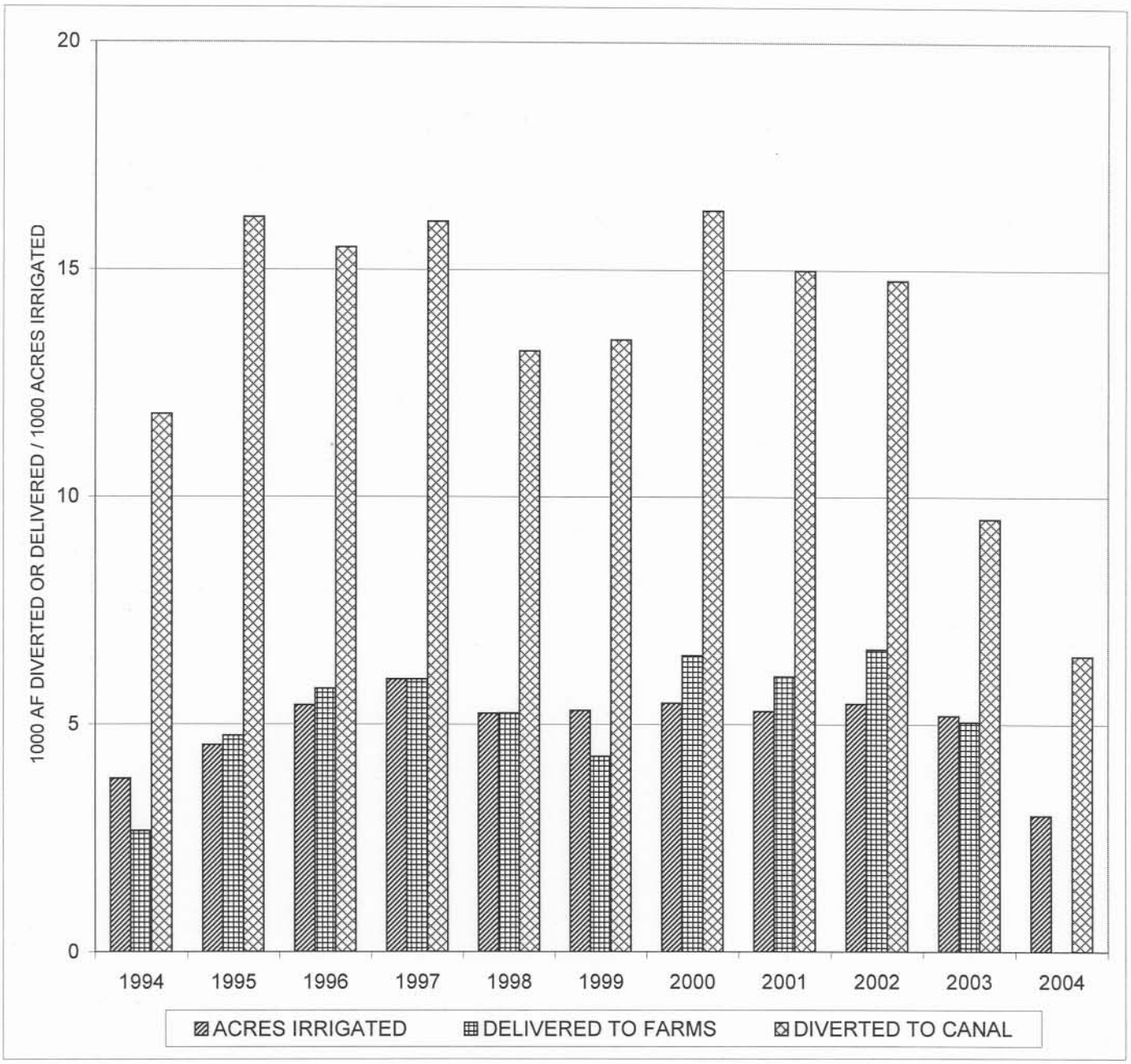
FORECASTED SHORTAGES (2004)

DRY YEAR	17,900 AF
NORMAL YEAR	0 AF

EXHIBIT 27

WEBSTER IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	3.09	3.55	2.86	2.68	2.52	2.54	2.98	2.83	2.71	1.83
DELIVERED af/acre	0.70	1.04	1.07	1.00	1.00	0.81	1.19	1.14	1.22	0.97
EFFICIENCY	23%	29%	37%	37%	40%	32%	40%	40%	45%	53%

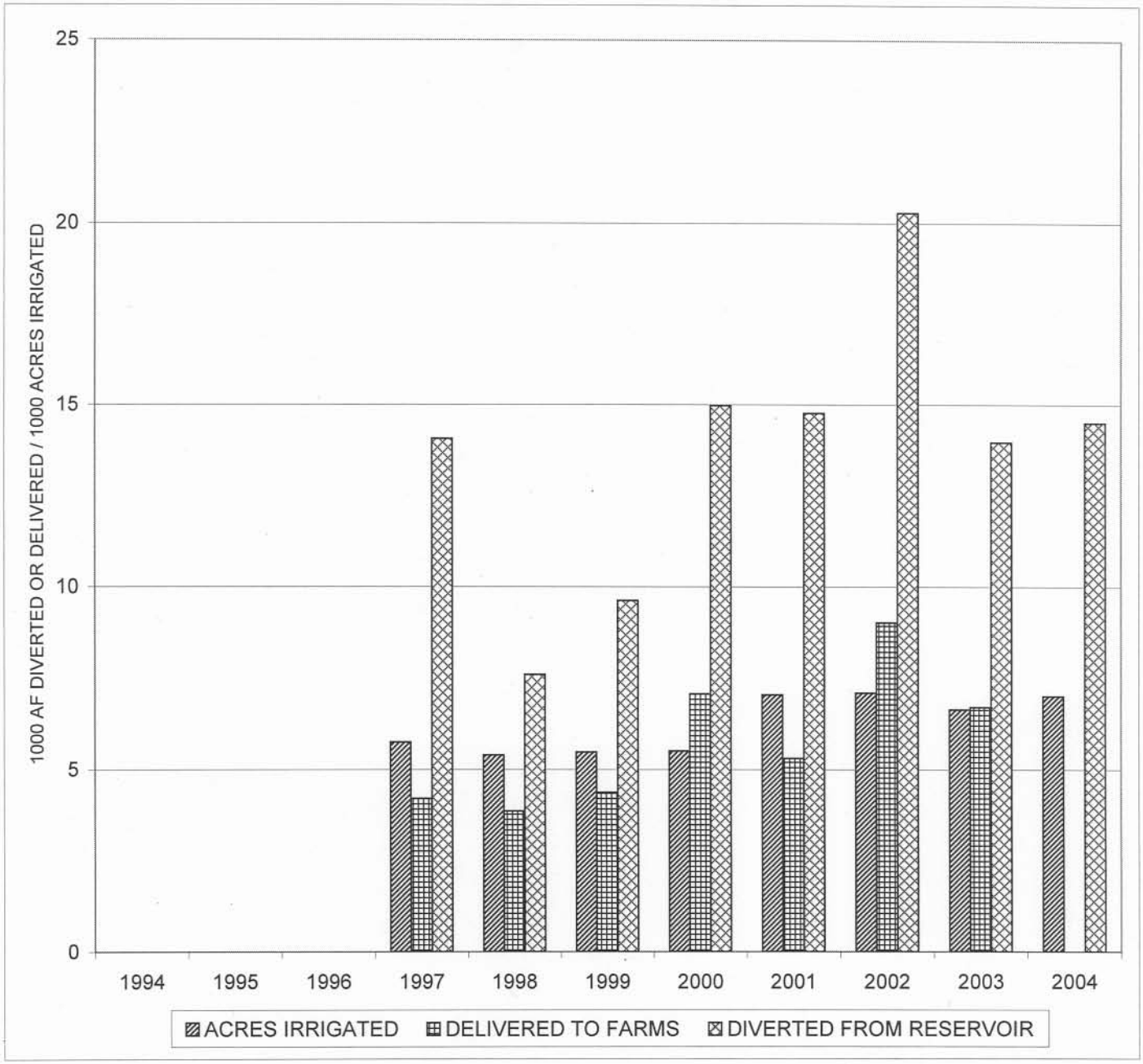
FORECASTED SHORTAGES (2004)

DRY YEAR	22,900 AF
NORMAL YEAR	2,600 AF

EXHIBIT 28

GLEN ELDER IRRIGATION DISTRICT

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



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
DIVERTED af/acre	0.00	0.00	0.00	2.45	1.41	1.76	2.72	2.10	2.86	2.10
DELIVERED af/acre	0.00	0.00	0.00	0.73	0.71	0.80	1.28	0.75	1.27	1.01
EFFICIENCY	0%	0%	0%	30%	51%	45%	47%	36%	44%	48%

FORECASTED SHORTAGES (2004)

DRY YEAR	0 AF
NORMAL YEAR	0 AF