

SYNOPSIS

General

This year is the 56th 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 269,744 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 70 Hydromet stations that can be accessed. The McCook Field Office has installed and maintains 55 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 "Hydromet Data Center" under the Water Operations heading.

The Headlines 2008 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.

2008 Summary

Climatic Conditions

Precipitation at the project dams during 2008 ranged from 86 percent of normal near Box Butte Dam to 172 percent of normal at Kirwin Dam. Temperatures during the first two months of the year were generally well below normal throughout the projects area. Precipitation during the first three months of the year was below normal throughout most of the projects area. Precipitation totals varied from 27 to 122 percent. Temperatures were near normal during the spring. Precipitation during April, and May was generally above normal throughout the basin.

Average temperatures were near normal in June and July and above normal in August. Precipitation during June and July was only slightly below normal project wide. August precipitation was generally well above normal in the Kansas River Basin and well below normal in north central Nebraska. Eleven project dams recorded below normal precipitation in June, while ten project dams recorded below normal precipitation in July. Only five project dams had below normal precipitation in August.

September precipitation varied considerably throughout the projects while precipitation in October was well above normal with the exception of Box Butte Dam. Virginia Smith, Davis Creek, Medicine Creek, Harlan County, Norton, Kirwin, Webster, and Cedar Bluff Dams recorded the greatest October precipitation totals ever for the month at the respective sites. Temperatures in September and October were generally above normal throughout the projects area.

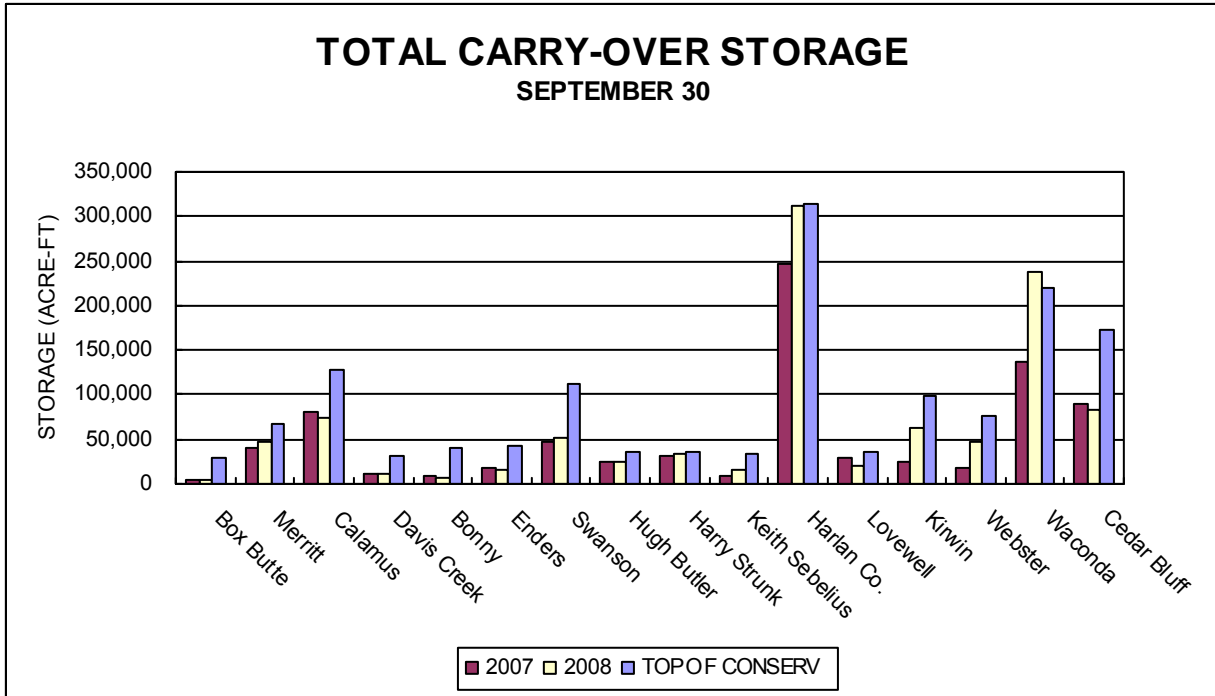
Precipitation during November and December averaged only 82 percent of normal over the projects with Box Butte Dam recording zero precipitation in December. Temperatures were above normal in November and below normal in December.

Storage Reservoirs

1. Conservation Operations. The 2008 inflow was above the dry-year forecast at project reservoirs with the exception of Box Butte and Enders Reservoirs. Merritt, Davis Creek and Cedar Bluff Reservoirs, and Hugh Butler and Swanson Lakes had inflows between the dry- and normal-year forecasts. Bonny, Calamus and Webster Reservoirs along with Keith Sebelius, Waconda, and Harlan County Lakes had inflows between the normal- and wet-year forecasts. Lovewell and Kirwin Reservoirs as well as Harry Strunk Lake had inflows above the wet-year forecast.

Twelve of the sixteen project reservoirs had below average carryover storage from the 2007 water year. Swanson Lake and Enders Reservoir in southwest Nebraska recorded below average inflows during all 12 months of 2008. Box Butte and Cedar Bluff Reservoirs recorded below average inflows during 11 months of 2008. Reservoir releases were made from Merritt, Virginia Smith, Medicine Creek, Harlan County and Lovewell Dams to maintain or reduce reservoir levels prior to the 2008 irrigation season. Just prior to the irrigation season, Enders, Webster and Box Butte Reservoirs, along with Keith Sebelius, Swanson, Hugh Butler and Harry Strunk Lakes, did not have sufficient storage to provide water users with a full water supply. Harry Strunk and Harlan County Lakes and Lovewell Reservoir had some flood storage occupied prior to the irrigation season. The irrigation demand months of July and August did little to reduce storage in those project reservoirs that had storage available for full irrigation as inflows maintained reservoir pools. Precipitation during July and August helped in reducing the demands on project reservoirs. Reservoir storage was below normal at ten project reservoirs at the end of 2008.

The following summarized graph shows a comparison of 2007 and 2008 carry-over storage conditions as compared to the top of conservation storage for all reservoirs in the Niobrara, Lower Platte, and Kansas River Basins as of September 30th.



2. Flood Control Operations. Harry Strunk, Harlan County and Waconda Lakes, and Lovewell Reservoir utilized flood pool storage and made flood releases in 2008. The fiscal year 2008 flood control benefits accrued by the operation of Reclamation’s Nebraska-Kansas Projects facilities was \$7,871,700 as determined by the Corps of Engineers. An additional benefit of \$9,103,300 was credited to Harlan County Lake. The accumulative total of flood control benefits for the years 1951 through 2008 by facilities in this report total \$1,931,373,900 (see Table 5). Box Butte, Merritt, Calamus, and Davis Creek Reservoirs do not have a designated flood pool and have not accrued any flood benefits to date.

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

Water Service There was 252,098 acre-feet (AF) of water diverted to irrigate approximately 186,380 acres of project lands in the 12 irrigation districts (see tables 3 and 6). The project water supply was either inadequate or limited for 75,175 acres of the total project lands. This includes lands in Mirage Flats, Frenchman Valley, H&RW, Frenchman-Cambridge, Almena, and Webster Irrigation Districts. The project water supplies for the other units mentioned in this report were more than adequate in 2008.

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 2008 crop yields on lands receiving project water in the Nebraska-Kansas Projects were higher than 2007. The average corn yield, the principal crop of all reporting districts, was 179 bushels per acre. This was approximately twelve bushels per acre more than in 2007.

The start of irrigation releases from project reservoirs varied considerably depending on May rainfall amounts and storage water available. Normal rainfall was experienced during much of the early growing season with near normal temperatures. August was generally much wetter and warmer than normal. Crop maturity progressed near normal during the growing season. Most irrigation districts had finished making irrigation releases by mid September. Five canals did not divert water in 2008 as a result of short water supplies. All irrigation districts had finished delivering water by the end of September with corn harvest delayed until early winter due to an extremely wet October.

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. 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 2008 season, normal reservoir operations were favorable for recreation and fish and wildlife uses at project reservoirs with full or nearly full conservation pool levels. Higher water levels in late 2008 were experienced at most reservoirs in the Kansas River Basin providing increased recreation benefits. Higher than normal inflows prevented summer drawdown from irrigation releases and thus did not allow for some late summer shoreline revegetation. Increased water levels did however submerge existing shoreline vegetation.

The Calamus Fish Hatchery is located below Virginia Smith Dam and Calamus Reservoir. 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 produces approximately 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.

HEADLINES 2008

What would flooding be if not for
Dams, conservation practices?

Two lakes on algae alert

Five departments fight fire at Enders Lake

Flood warnings posted

Republican River Riparian
Partnership meeting to
Address 'water balance'

Arbiter is named in States' water dispute

DNR director Ann Bleed resigns post

Pipeline proposal advances

Irrigators finally paid
For surface-water sale

Compact disagreements Between states likely headed for arbitration

Supreme
Court
To review
LB701

Authorities

Keep watch

Over rivers

Nine twisters sighted

**NRDs study
Pipeline
To Kansas**

Compact talks with Kansas
Moving into critical stage

New water Restrictions considered

**Judge rules property
Tax levy in LB 701 is
unconstitutional**

From Bonnie Reservoir in Colorado
Bureau ordered to release water

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 2008 and serves as a guideline for the 2009 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. As provided by the lease agreement between Reclamation and the states, the states are responsible for administering the water surface activities and the federal lands around the reservoirs. The U.S. Fish and Wildlife Service administer 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 32.

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 1989 through 2008 were used for the analysis of reservoirs in the Niobrara, Lower Platte and Kansas River Basins.

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.

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 Guide Rock Diversion Dam and the Courtland Canal between the headgates and the Nebraska-Kansas state line to Kansas Bostwick Irrigation District.

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

Municipal Water

Three municipalities in Kansas (Norton, Russell, and Beloit) and one rural water district in Kansas (Mitchell County Rural Water District No. 2) 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 Nebraska Game and Parks Commission 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. A Subordination Agreement also exists between Reclamation, the Ainsworth Irrigation District and the Nebraska Public Power District. Provisions of these agreements will be incorporated into the 2009 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 operational 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 can 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 (Compact) by using more than its share of the Republican River water supply. The three original parties to the Compact; Kansas, Nebraska and Colorado, became parties to the case. Because 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 *amicus curiae*. After seventeen months of negotiations the Final Settlement Stipulation (Stipulation) was signed by each respective governor and attorney general and was filed with the Special Master on December 16, 2002. The United States Supreme Court approved the settlement and dismissed the case on May 19, 2003.

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.

The Stipulation also required that the States, in cooperation with the United States, form a Conservation Committee to 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. The Study Plan supported by the three states, the Natural Resources Conservation Service, and Reclamation was completed and signed on April 28, 2004. Cooperative agreements for completing the five year study were developed between

Reclamation, the University of Nebraska-Lincoln (UNL), and Kansas State University. Installation of data loggers on 35 reservoirs throughout the basin was completed in 2004. Advanced monitoring equipment for terraces and additional reservoirs was installed by UNL in 2006. Data collection and model development continued in 2008. The study is expected to be completed in 2009 and will be presented to the Compact Commissioners at their 2009 annual meeting.

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 2008 that a “Water-Short Year Administration” was not in effect.

Lower Republican River Basin Appraisal Study / Feasibility Study

With the support of Kansas and Nebraska, Reclamation completed the Lower Republican River Basin Appraisal Report in January, 2005. This study analyzed system improvement alternatives in the lower portion of the Republican River basin that would provide for more efficient use of the water supply. The study met requirements of the Final Settlement Stipulation by investigating system improvements in the Basin, including measures to improve the ability to utilize the water supply below Hardy, Nebraska. This study also met the responsibilities of the Compact by investigating the most efficient use of the water of the Republican River Basin for multiple purposes.

Nine alternatives were formulated using the recommended proposals provided by the Compact Commissioners. Three other alternatives were investigated for supplying water in meeting Minimum Desirable Streamflow (MDS) related needs in Kansas. The appraisal report concluded that additional water can be made available for storage in Lovewell Reservoir. The appraisal report recommends further Federal participation in a feasibility study and that such a study be undertaken to investigate solutions. Specific congressional authorization is required for Reclamation to perform a feasibility study. The purpose of a feasibility study is to identify, evaluate, and recommend to decision makers an appropriate, viable solution to the identified problems and opportunities. The States have indicated they would provide in-kind support and/or funding for the feasibility study. Both states have expressed interest in pursuing legislation for the study.

Legislation authorizing a feasibility study was introduced in 2003 but was not advanced. Congressmen from both Nebraska and Kansas reintroduced legislation authorizing the feasibility study in 2007, but again it was not advanced. Language authorizing the feasibility study was included in Senate bill S2739, which was passed by the Senate and the House of Representatives in April of 2008. On May 8, 2008, the President signed the Consolidated Natural Resources Act of 2008 (P.L. 110-229). Section 510 of Title V of the Act authorizes the Secretary of the Interior, acting through the Bureau of Reclamation and in consultation and cooperation with the States of Nebraska, Kansas, and Colorado, to conduct a study to determine the feasibility of implementing a water supply and conservation project that will ; 1) improve water supply reliability in the Republican River Basin between Harlan County Lake in Nebraska and Milford Lake in Kansas; 2) increase the capacity of water storage through modification of existing projects or through new projects that serve areas in the Republican River Basin; and 3) improve water management efficiency in the Republican River Basin through conservation and other

available means and, where appropriate, evaluate integrated water resource management and supply needs in the Republican River Basin. Funds must be appropriated before Reclamation can begin the feasibility study.

Frenchman Valley Appraisal Study

In 2004, the Nebraska Department of Natural Resources (DNR) requested Reclamation prepare an Appraisal Study (AS) to examine opportunities for more efficient management of water supplies in the Frenchman River Valley including Reclamation's Enders Reservoir, a feature of the Frenchman-Cambridge Division in Nebraska. The study focused on problems and opportunities in an area that has experienced dramatically reduced ground and surface water supplies, including reduced reservoir inflows. Agencies participating in the study include Reclamation, Nebraska DNR, Frenchman Valley, H&RW, and Riverside Irrigation Districts, Nebraska Game and Parks Commission, and the Upper and Middle Republican Natural Resources Districts. In September, 2008 a draft report was distributed to participating agencies for review. . Comments have been incorporated and following Reclamation's final review process, the report will be released in early 2009.

Emergency Management

The Nebraska-Kansas Area Office (NKAO) continues to coordinate with local jurisdictions that could potentially be impacted by flooding from large operational releases and/or dam failure. One tabletop exercise and three functional exercises were conducted during calendar year 2008. Functional exercises were held for Box Butte Dam and Lovewell Dam; while the third functional exercise included Medicine Creek Dam, Red Willow Dam and Trenton Dam which have common downstream counties. A tabletop exercise was conducted for Merritt Dam. Orientation Meetings were held for all of NKAO dams.

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 dam operators have been trained on the use of these phones.

Public Safety Reviews

The Annual Safety Training for field personnel was held at the McCook Field Office and at the Community College in McCook, NE in February 2008. This training provided maintenance personnel the opportunity to update their training in Hazardous Communications/HAZCOM, Confined Space Training, Severe Weather Recognition and Reporting, and Respirator Fit Tests and Training. First Aid and CPR training was provided by the McCook Fire Department, to all field personnel, as well as any other Reclamation employees interested in taking the class to become certified.

The ongoing safety reviews of project facilities continue to identify potential safety hazards to the public and operating personnel. NKAO combines elements of the Annual Safety Inspections of the major facilities with the Dam Safety Facility Reviews when possible, and conducts follow up inspections when deficiencies aren't on-the-spot correctible. This format provides for enhanced communication and coordination between both the Area Safety Manager and Staff, and teams of Dam Safety Specialists.

Formal training for the Automated External Defibrillators (AEDs) was provided, as part of the CPR Certification Training, in February 2008. AEDs are located at the McCook Field Office and the Grand Island Office, along with an additional field ready AED at each location for employees to take to the field when activities are being conducted. NKAO continues to involve Great Plains Region Occupational Health in Billings, Montana and the Federal Occupational and Health Services Center in Denver, Colorado when maintenance and operational items, such as replacing AED batteries and pads, and reprogramming CPR protocol, is required.

Attention continues with regards to issues concerning lock out/tag out, personal protective equipment (PPE), welding and coating safety procedures, pesticide and herbicide use (MSDS), fall protection/slips, trips, and falls, working alone, near-miss accident reporting, and completing job hazard analysis (JHAs). Employees were provided safety and health training, and given information related to these and several other issues throughout the year.

CHAPTER II - NIOBRARA AND LOWER PLATTE RIVER BASINS

Mirage Flats Project in Nebraska

General

Flows in the Niobrara River along with Box Butte Reservoir storage provide a water supply for the 11,662 acre Mirage Flats Project. From 1999 to 2008, the project water supply averaged 10,400 AF, which is about 0.89 AF 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 (2,026 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 increase the minimum reservoir level by one additional foot to elevation 3979.00 feet (2,392 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.

2008 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 14.56 inches, which is 86 percent of normal. The 2008 total inflow of 11,286 AF was below the dry-year forecast and the lowest annual computed inflow ever recorded at the reservoir.

From early July through mid August, diversions of 5,786 AF to the Mirage Flats Canal provided irrigation water for approximately 7,372 acres, 63 percent of the service available acreage. The farm deliveries from the project water supply totaled 1,203 AF (0.16 acre-foot per irrigated acre), which is a delivery efficiency of 21 percent. Total reservoir storage was only 3,608 AF at the end of the irrigation season. Privately owned irrigation wells supplemented the project water supply.

A Functional Exercise to review the Box Butte Dam EAP took place in April and an Annual Site Inspection of Box Butte Dam was conducted in August.

The District continued to implement water conservation measures as outlined in their Water Management Plan and their Long Range Plan. Assistance to project irrigators provided by the District include delivery system 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.

Ainsworth Unit, Sandhills Division in Nebraska

General

Within the Ainsworth Irrigation District, there are approximately 35,000 acres with available service. The project water supply is provided by storage of Snake River flows in Merritt Reservoir. The reservoir is filled to elevation 2944.0 feet each fall after the irrigation season. 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. Seepage, pickup and toe drain flow normally result in flows of up to 15 cfs below Merritt Dam.

Reclamation has executed a Memorandum of Agreement (MOA) between Reclamation, the Nebraska Game and Parks Commission and the Ainsworth Irrigation District for Snake River Releases below Merritt Dam. The purpose of this MOA is to establish the protocol that will be used to make future releases of water from Merritt Dam to the lower Snake River.

The development of the MOA was an environmental commitment outlined in the Ainsworth Irrigation District Final Environmental Assessment (FEA) for the Conversion of a Long-Term water Service Contract to a Repayment Contract (December 2006).

Release criteria will be based on the best available scientific data to determine when local conditions warrant releases to the Snake River. When it becomes necessary to release water from Merritt Reservoir, Reclamation will direct the Ainsworth Irrigation District to make the necessary releases to the river.

2008 Summary

Precipitation, as recorded near Merritt Dam, totaled 21.35 inches, which was 104 percent of normal. The inflow for the year totaled 182,099 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 62,616 AF diverted from Merritt Reservoir into Ainsworth Canal, with 35,298 AF delivered to the farm headgates (delivery efficiency of 56 percent). There were 34,577 acres of land irrigated in 2008.

The district provided a total of 349 AF of irrigation water from holding ponds located within the district's service area.

A tabletop exercise was conducted for the Merritt Dam EAP in 2008.

The Ainsworth Irrigation District, along with Reclamation and the local Natural Resource District, continued to provide support to the University of Nebraska Extension Service for an irrigation scheduling/nitrogen management demonstration that will educate and improve irrigation management in the area. The first demonstration site included a center pivot in the District and a field day was held in the fall of 2005. Field days were subsequently held in 2006, 2007, and 2008. This project is expected to continue in 2009.

Working with Reclamation's technical and financial assistance through a cooperative agreement, the District installed new ramp flumes on the Sand Draw Lateral and Airport Lateral. Efforts continue to fully automate these structures to improve district delivery operations and reduce operational waste. In addition to these existing flumes, the District also has plans to construct two additional flumes and continue automation efforts.

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 55,100 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 level will be maintained at an average elevation of 2048.0 feet from the end of the irrigation season through the winter months. Off season seepage and evaporation has historically resulted in a reservoir drawdown of 2.5 to 3.0 feet requiring an end of September reservoir level of 2050.0 feet or less. 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 continues to be managed by the Lower Loup Natural Resources District. The area includes a boat ramp, a handicapped accessible fishing pier, a day-use area, a primitive camping area, shelter and a hiking path. Public lands adjoining Kent Diversion Dam are managed by the Nebraska Game and Parks Commission and is also open to day-use fishing with handicapped accessibility provided.

2008 Summary

Precipitation at Virginia Smith Dam was 27.82 inches which is 115 percent of normal. The inflow totaled 266,651 AF which was between the normal- and wet-year forecasts. There were 85,220 AF of water released into Mirdan Canal and 6,045 AF diverted through Kent Canal from the North Loup River. A total of 38,460 AF was diverted for district use above Davis Creek Reservoir. The farm headgate delivery was 19,442 AF which is a delivery efficiency of 51 percent. Land irrigated in 2008 totaled 34,194 acres above Davis Creek Reservoir. Calamus Reservoir inflows were bypassed during July, August, and September as required. Virginia Smith Dam recorded 5.04 inches of precipitation during October, the most ever recorded for the month. The reservoir elevation at the end of the year was at 2240.23 feet. The Calamus Fish Hatchery used bypassed natural flows and storage from Calamus Reservoir totaling 5,842 AF during 2008.

The precipitation total of 35.85 inches near Davis Creek Dam was 145 percent of normal. The site recorded 9.04 inches of precipitation during May and 7.67 inches during October (both record highs for the respective months). Inflow to Davis Creek Reservoir totaled 46,785 AF during 2008. Beginning in late April, Davis Creek Reservoir was filled from an elevation of approximately 2048.0 feet to a peak elevation of 2075.13 feet on July 8th using diversions from the North Loup River and Calamus Reservoir. A release of 38,859 AF was made from Davis Creek Dam into Fullerton Canal, with 20,087 AF delivered to the farm headgates (52 percent delivery efficiency). There were 20,637 acres irrigated below Davis Creek Reservoir. The reservoir elevation at the end of 2008 was slightly higher than the normal wintering level at 2050.15 feet.

A review of the Virginia Smith and Davis Creek Dams EAPs took place in January 2008.

An Annual Site Inspection and COW Dive Exam of Davis Creek Dam were conducted in June 2008.

Through a cooperative agreement with Reclamation, the District began installing remote monitoring equipment at key canal sites to improve delivery system operations. In 2008 equipment was placed at the Parshall flume located below Virginia Smith Dam, at the 9.5 check structure, and at the 13.4 check structure. Further work is anticipated to equip each of the sites with remote control capabilities.

CHAPTER III - REPUBLICAN RIVER BASIN

Armel Unit, Upper Republican Division in Colorado

General

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

Bonny Reservoir inflows from the South Fork of the Republican River and Landsman Creek are released into Hale Ditch as requested by the Colorado State Engineer. The state will make Bonny Reservoir 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.

2008 Summary

The annual precipitation total of 22.20 inches at Bonny Dam was 130 percent of normal. The annual computed inflow of 12,159 AF to Bonny Reservoir was between the normal-year and the wet-year forecasts. The reservoir level began the year at elevation 3648.39 feet and gradually increased throughout the spring to elevation 3650.08 feet before summer evaporation slowly decreased the elevation to 3648.97 feet on August 4th. Above average rainfall during the month of August caused the reservoir level to increase to a peak elevation of 3651.25 feet on August 15th. Beginning on August 15th releases were made in accordance with orders of the State of Colorado for Republican River Compact compliance. A total of 4,087 AF of river outflow was recorded for this purpose from August 15th through October 2nd. The release caused the reservoir to reach a new historic low elevation of 3648.05 feet on October 9th. No flood release was required during 2008 as the reservoir elevation remained well within the conservation pool. The reservoir elevation at the end of the year was 22.0 feet below the top of conservation at 3649.96 feet (second lowest end of December storage on record). The Corps of Engineers determined that \$11,300 of flood prevention benefits was realized from the operation of Bonny Reservoir during 2008.

The Colorado State Water Commissioner directed inflows from the South Fork of the Republican River and Landsman Creek be passed through Bonny Reservoir into Hale Ditch from August 21st through September 3rd for a total of 193 AF.

An EAP Orientation Seminar was conducted in June and a Comprehensive Facility Review of Bonny Dam was performed in July.

Frenchman Unit, Frenchman-Cambridge Division in Nebraska

General

The Culbertson Canal and the Culbertson Extension Canal systems serve 9,292 acres in the Frenchman Valley Irrigation District and 11,915 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.

2008 Summary

The annual precipitation total of 22.45 inches at Enders Dam was above normal (118 percent). The 2008 inflow into Enders Reservoir of 4,770 AF was below the dry-year forecast 2008 was the 41st consecutive year with below-normal inflows in which the conservation pool did not fill. The reservoir level began the year at elevation 3092.64 feet (19.7 feet below top of conservation). The reservoir increased slightly during the spring to a peak elevation of 3092.90 feet on June 8th. The reservoir gradually decreased the remainder of the year. The minimum elevation (3090.54 ft) occurred October 11th. Due to the extremely low water supply available, no water was released from Enders Reservoir. The end of the year reservoir level was 21.3 feet below the top of conservation. The Corps of Engineers determined that the reservoir prevented \$6,300 in flood damages in 2008.

The Frenchman Valley Irrigation District did not divert water into Culbertson Canal in 2008. In the spring of 2008, the Nebraska Department of Natural Resources entered into a Memorandum of Agreement (MOA) with the Frenchman Valley Irrigation District to purchase the district's natural flow rights for calendar year 2008. The MOA, approved by the irrigators

within the district, provided that no water would be diverted into the Culbertson Canal during 2008. The H&RW Irrigation District did not divert water into Culbertson Extension Canal in 2008 due to the extremely low water supply. This was the sixth consecutive year that the district did not deliver water.

In August 2004, a small depression was discovered near the outlet works stilling basin at Enders Dam. An Internal Alert remains in effect until investigation of the stability of the outlet works stilling basin and risk assessment are complete. A Safety of Dams recommendation in 2006 recommend filling the stilling basin under drain system and potential voids with low-pressure grout and backfilling the existing sinkhole with compacted material after completion of the grouting program. The rapid increase in reservoir elevation in June 2007 prompted the addition of 50,000 pounds of concrete weights to be placed on the outlet works to counter any uplift on the structure.

An Annual Site Inspection and an Orientation Seminar of the Enders Dam EAP was conducted in June 2008.

In 2008, the Frenchman Valley Irrigation District (along with Reclamation) again provided support for a Limited Irrigation Demonstration project with the University of Nebraska Extension Service.

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

General

Service is provided for Frenchman-Cambridge Irrigation District by Meeker-Driftwood Canal to 16,855 acres; Red Willow Canal to 4,797 acres; Bartley Canal to 6,353 acres; and Cambridge Canal to 17,664 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 ditch laterals which were economically feasible with buried pipe which has significantly increased both system and on-farm efficiencies.

2008 Summary

The annual precipitation total of 22.93 inches at Trenton Dam was 115 percent of normal. The inflow of 19,296 AF to Swanson Lake was between the dry-year and normal-year forecast. The lake level began the year at elevation 2735.00 feet and peaked at 2738.49 feet (13.5 feet below the top of conservation) on June 7th. The reservoir level gradually decreased to an elevation of 2736.58 feet on October 13th. Due to the extremely low water supply available, no water was released from Swanson Lake. Irrigation diversions were not made into Meeker-Driftwood Canal. This was the sixth consecutive year that the district did not deliver water from the Meeker-Driftwood Canal. At the end of the year the reservoir level was 14.8 feet below the top of conservation at 2737.16 feet. The Corps of Engineers determined that Swanson Lake prevented \$61,900 in flood damages.

The annual precipitation total of 29.38 inches at Red Willow Dam was 150 percent of normal and the second highest ever recorded at the dam. The annual inflow of 13,743 AF into Hugh Butler Lake was between the dry-year and normal-year forecast. The reservoir level at the first of the year was 2574.18 ft, 7.6 feet below the top of conservation. May precipitation totaled 8.32 inches at the dam, the most ever recorded for the month. The reservoir level gradually filled to a peak of 2577.44 feet (4.4 feet below full) on June 27th. Irrigation releases began on June 22nd and ended on September 4th dropping the pool level 2.4 feet. Flood releases were not required in 2008. The level of Hugh Butler Lake at the end of the year was 6.5 feet below the top of conservation. The Corps of Engineers determined that Hugh Butler Lake prevented \$65,500 of flood damages during 2008.

The annual precipitation total of 28.89 inches at Medicine Creek Dam was 140 percent of normal and the second highest ever recorded at the dam. The inflow of 69,752 AF was above the wet-year forecast. The reservoir level at the beginning of 2008 was only .3 foot below the top of conservation. Releases were made during early 2008 to regulate the reservoir elevation approximately .5 foot below the flood pool in cooperation with the Nebraska Game and Parks Commission. The reservoir was allowed to fill on April 29th. The dam received 10.40 inches of precipitation during May, the greatest ever for the month. The reservoir level increased to elevation 2373.83 feet (7.7 feet into flood pool) on May 25th as a result of runoff from storms that occurred above the lake during May 23rd and 24th.

These storms increased the storage in Harry Strunk Lake approximately 9,900 AF with a peak average daily inflow of approximately 4,500 cfs. Lake inflows exceeded historic highs for the month of May. Uncontrolled releases through the spillway reached over 1000 cfs. The reservoir level dropped from the flood pool on August 2nd. Scheduled releases during July, August and early September reduced the reservoir elevation to 2364.31 feet on September 6th. Medicine Creek Dam recorded 4.35 inches of precipitation during October, the most ever recorded for the month. Harry Strunk Lake was only 0.8 foot below the top of conservation at the end of the year. The Corps of Engineers determined that Harry Strunk Lake prevented \$758,400 in flood damages.

A Functional Exercise to review the Trenton, Red Willow, and the Medicine Creek Dams' EAPs took place in August 2008. Annual Site Inspections were conducted in September at Red Willow Dam and July at Medicine Creek Dam and Trenton Dam. The Standing Operating Procedures for Trenton Dam was updated in 2008

In July 2005, a small quantity of fine sand was discovered near the river outlet works stilling basin drain outlet during an inspection at Red Willow Dam. Five piezometers were installed in April 2006 adjacent to the outlet works and spillway stilling basins, and temporary plugs were placed in the underdrain outlets in May. An Internal Alert remains in effect. Grouting of the underdrain system is scheduled for the fall of 2009.

In 2008, the District began making water measurement improvement upgrades on Meeker, Red Willow, and Cambridge canals, including improving farm turnouts, lateral turnouts, and canal measurement structures. Reclamation provided financial assistance for this project through a cooperative agreement with the District.

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.

2008 Summary

The annual precipitation at Norton Dam totaled 33.74 inches, which is 138 percent of normal. The total inflow of 14,265 AF was slightly below the wet-year forecast. The reservoir was 16.2 feet below the top of conservation pool at the first of the year. The reservoir level gradually increased 1.0 foot by mid-May. A storm system on May 22nd and 23rd produced significant rainfall across the region. Norton Dam recorded 5.05 inches over the two day period. Storage in the lake increased nearly 8,500 AF (6.8 feet in lake level), as a result of the runoff. The lake level peaked at elevation 2295.87 feet on June 4th. Irrigation releases were made during July and August reducing the lake level by 2.5 feet. Norton Dam recorded 8.94 inches of precipitation during October, the greatest ever recorded for the month. The lake level ended the year at elevation 2293.86 feet (10.4 feet below the top of conservation). The Corps of Engineers determined that Keith Sebelius Lake prevented \$700 in flood damages.

The city of Norton used 228 AF of municipal water during 2008.

A Comprehensive Facility Review of Norton Dam was conducted in May and an orientation exercise of the Norton Dam EAP took place in August 2008.

A Safety of Dams recommendation was made in 2000 concerning the seepage through the left abutment and around the outlet works house at Norton Dam. Technical Service Center personnel inspected the seepage areas in June 2001 and recommended consideration of monitoring improvement and additional instrumentation. 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." Topographic surveys and additional instrumentation were installed near the outlet works in 2004. In December 2005, a Corrective Action Study Technical Memorandum evaluated various alternatives for risk reduction and produced two new recommendations. Design of a weighted filter drain system and a seepage stability berm was completed in 2006. Construction of the drain was completed in 2007.

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 22,454 acres in the Bostwick Irrigation District in Nebraska, and 13,378 acres in the Kansas-Bostwick Irrigation District No. 2 above Lovewell Reservoir. This storage and natural 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.

2008 Summary - Bostwick Division - Harlan County Lake Operations

The annual precipitation at Harlan County Dam totaled 30.31 inches of rainfall, which is 133 percent of normal. The 2008 inflow of 224,841 AF was between the normal- and wet-year forecasts. The COE's Water Management Section in Kansas City, Missouri, determined that a release was not required during January and February, but was required during December in accordance to the environmental assessment and the annual operating plan.

Harlan County Lake began 2008 approximately 4.7 feet below the top of conservation pool, at 1941.08 feet. The reservoir increased rapidly during the spring. On May 22nd and again on May 23rd storms produced rainfall totals of 4 to 8 inches across the basin. The reservoir level increased 4.2 feet as a result of the runoff. The reservoir content gained 56,100 AF attributed directly to these storms. The peak average daily inflow was approximately 7,600 cfs. Flood releases began on May 28th and continued through June 25th at which time irrigation demands exceeded inflows and the lake level reached 1948.0 feet. Irrigation releases continued through September 5th reducing the lake level to elevation 1945.64 feet. Harlan County Dam recorded 8.60 inches of precipitation during October, the greatest ever recorded for the month. Runoff from the October storms increased the lake level to 1947.31 feet on November 3rd. Flood releases began on November 3rd and were made throughout the remainder of the year to reduce lake levels back to the top of conservation. The reservoir elevation was 1946.12 ft (0.4 foot in the flood pool) on December 31, 2008. Harlan County Lake prevented \$9,103,300 of downstream flood damages during 2008 according to the Corps of Engineers.

A total of 7,657 AF (approximately 8 percent of total inflow) was delivered to Lovewell Reservoir through the Courtland Canal.

2008 Summary - Bostwick Division - Nebraska

Irrigation diversions were made into Franklin, Naponee, Franklin Pump, Superior, and Courtland Canals in Nebraska in 2008. Water was supplied to 22,454 acres with an average of 2.64 inches delivered to the farm.

The district continued to replace open ditch laterals with buried pipe to reduce losses and improve system operations. In 2005 and 2006, the District was selected for a Water 2025 Challenge Grant Projects that will replace approximately 10 miles of open ditch laterals with buried pipe. Identified laterals to be placed in pipe include all or portions of Superior Laterals 9.5, 17.5, 21.2, and 27.3. These pipe projects provide delivery system improvements by eliminating seepage losses, eliminating operational wasteways, improve water measurement and accounting by utilizing water meters, and provide on-farm benefits by allowing land owners the opportunity to convert to sprinkler irrigation. The District completed the pipe installation on Superior Lateral 27.3 in the fall of 2007.

2008 Summary - Bostwick Division - Kansas

The 2008 precipitation at Lovewell Dam totaled 34.10 inches, which was 124 percent of normal. The reservoir elevation at the beginning of 2008 was 1.5 feet (elevation 1581.07 feet) below the top of conservation pool. The pool level gradually increased, filling the conservation capacity on April 26th (1582.6 feet). Storms in late May produced significant runoff that raised the elevation 3.3 feet and increased the content 11,000 AF. The reservoir level peaked at 1587.31 feet on June 4th (4.7 feet into the flood pool). A flood release of 200 cfs to the creek began on May 28th and was increased to 500 cfs on June 3rd. The flood release was discontinued on June 25th. Irrigation releases to the canal began on May 27th and continued throughout the irrigation season. Flood releases resumed from July 21st through July 31st dropping the reservoir level from the flood pool. Releases were made to the creek from August 14th through September 15th to lower the reservoir pool to elevation 1576.50 feet for maintenance activities. The reservoir had refilled to elevation 1582.38 feet by late October when a release resumed to the creek. The release continued into late December. The reservoir level at the end of the year was 1581.13 feet (1.5 feet below the top of conservation). Lovewell Reservoir prevented \$2,919,800 of downstream flood damages during 2008 according to the Corps of Engineers

The Kansas-Bostwick Irrigation District diverted a total of 47,449 AF to serve 9,791 acres above Lovewell Dam and 25,561 acres below Lovewell Dam. Farm delivery efficiency averaged 38 percent in the district.

A contractor excavated approximately 3,000 cubic yards of sediment from the spillway and outlet works inlet channel at Lovewell Dam following the 2008 irrigation season.

A functional exercise of the Lovewell Dam EAP took place in 2008.

In 2007, the Kansas Bostwick Irrigation District No. 2 was awarded a Water 2025 Challenge Grant that will allow the District to replace approximately 9 miles of open ditch lateral with buried pipe. The District began placing pipe in the fall of 2007, and this project will continue for the next 2 years.

CHAPTER IV - SMOKY HILL RIVER BASIN

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.

The U.S. Fish and Wildlife Service (Service) has completed the Kirwin National Wildlife Refuge Comprehensive Conservation Plan (CCP). The 1997 National Refuge System Improvement Act required the Service to develop a CCP for each of its refuges. The Kirwin Refuge CCP will guide the refuge management activities through 2025.

2008 Summary

The annual precipitation total of 40.49 inches at Kirwin Dam (172 percent of normal) was the greatest ever recorded at the dam. The inflow of 85,559 AF was above the wet-year forecast. The reservoir level was 21.0 feet below the top of conservation pool at the first of the year. Runoff from storms increased the reservoir level approximately 10.3 feet in late May. Storage in the reservoir increased nearly 30,200 AF as a result of the runoff. May total precipitation was 10.37 inches, the second greatest total ever for the month. Irrigation releases began on July 7th and continued through August 19th, reducing the pool level to 1719.58 feet. The reservoir level continued to increase after irrigation releases ended peaking at elevation 1727.27 feet on December 31st (2.0 feet below the top of conservation pool). Kirwin Dam recorded 8.56 inches of precipitation in October, the most ever recorded for the month. The reservoir level increased 4.2 feet during the month. Reservoir inflows were near record highs from May through December. No flood release was required during 2008 as the lake elevation remained within the conservation pool. The Corps of Engineers determined that Kirwin Reservoir prevented \$79,900 in flood damages.

A total of 6,037 acres received project water during 2008 with 3,518 AF delivered to farms. Farm Delivery efficiency was 37 percent.

An Orientation Seminar of the Kirwin Dam EAP took place in July and a Comprehensive Facility Review of Kirwin Dam was conducted in May.

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.

2008 Summary

In 2008, the precipitation at Webster Dam was 154 percent of normal (36.39 inches). This was the second greatest annual precipitation ever recorded at the dam. The inflow of 59,868 AF was well above the normal-year forecast. The reservoir level was approximately 22.2 feet (elevation 1870.28 feet) below the top of conservation pool at the first of the year. A storm on May 23rd produced the greatest 24-hour precipitation event for the year with 5.79 inches of rainfall. Storage in the reservoir increased approximately 13,200 AF, an increase of about 6.4 feet in pool level. The reservoir level increased another 2.8 feet during August and 3.6 feet during October. Precipitation in October totaled 7.59 inches at Webster Dam, the greatest ever recorded for the month. The pool level steadily increased throughout the rest of the year and peaked at elevation 1890.46 feet on December 31st (2 feet below the top of conservation). Reservoir inflows were near record highs from August through December. No flood release was required during 2008 as the reservoir elevation remained within the conservation pool. The Corps of Engineers determined that Webster Reservoir prevented \$27,900 in flood damages.

Due to the extremely low water supply prior to the irrigation season beginning, a decision was made by the Webster Irrigation District not to deliver water in 2008.

A Comprehensive Facility Review of Webster Dam was conducted in May and an orientation meeting to review the Webster Dam EAP took place in July.

Concrete repairs in the spillway chute continued in 2008. Approximately 2,500 ft² of concrete was repaired in the flat portion of the spillway by NKAO personnel in 2008. Repairs to the other areas of the spillway were contracted to Vieco Development and Construction Company, Inc. Vieco repaired approximately 15,000 ft² of spillway.

The district continued to explore opportunities to cost share with Reclamation and district irrigators for the replacement of open ditch laterals with buried pipe. Future conservation projects include the possibility of installing remote monitoring equipment at the key canal measurement sites on Osborne Canal. Future conservation projects may be delayed due to the declining water supply and availability of cost-share funding.

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.

Renewal of the long term water service contract with the City of Beloit, Kansas was completed in 2008. The new repayment contract became effective on January 1, 2009. The repayment 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.

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.

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.

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.

2008 Summary

The annual precipitation total of 31.11 inches at Glen Elder Dam was 122 percent of normal. The inflow of 407,850 AF was well above the normal-year forecast. The lake level at the beginning of the year was 7.1 feet below the top of conservation. A storm system stalled out over north central Kansas on May 22nd and 23rd. Runoff from this storm system increased Waconda Lake storage approximately 55,000 AF and 5 feet in elevation (peak daily average inflow of 9,600 cfs). Waconda Lake filled on June 1st. The lake level continued to increase and a flood release was started on June 3rd. Flood releases varied from 150 to 1000 cfs throughout the summer as inflows increased the lake level to approximately 3 feet into the flood pool.

Flood releases were adjusted throughout the fall to maintain an elevation of one to two feet above conservation in cooperation with the Kansas Wildlife and Parks. Glen Elder Dam recorded 5.61 inches of precipitation in October (second highest on record) with greater amounts recorded upstream. The peak reservoir level recorded during the year was 1462.66 feet on October 27th (7.1 feet and 100,000 AF in the flood pool). A release of 2,000 cfs was made throughout the month of November and the flood pool was finally evacuated on December 20th. Lake inflows were near record highs from August through December. The level of Waconda Lake at the end of the year was 1.1 feet (elevation 1454.55 feet) below the top of conservation. Waconda Lake prevented \$3,247,600 of downstream flood damages during 2008 according to the Corps of Engineers.

A total of 300,951 AF of water was released from Glen Elder Dam in 2008. Storage releases of 863 AF combined with natural flow releases of 5,032 AF for the irrigation of 5,601 acres in the Glen Elder Irrigation District. The district delivered 2,857 AF to the farms resulting in a delivery efficiency of 49 percent. No storage releases were made for the City of Beloit, however, 2,398 AF was bypassed for water quality as directed by the State Water Commissioner. Releases to the Mitchell County Rural Water District No. 2 totaled 691 AF.

An Orientation Seminar of the Glen Elder Dam EAP took place in March 2008.

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. Reformulation of the Cedar Bluff Unit in October of 1992 resulted in the dissolution of the Cedar Bluff Irrigation District with the Kansas Water Office and Kansas Department of Wildlife and Parks acquiring the use and control of portions of the reservoir conservation capacity. A "designated operating pool" was 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 an accounting procedure for water storage in Cedar Bluff Reservoir. In January, 2006 a Memorandum of Understanding was signed by the State of Kansas agencies, Kansas Water Office, and Kansas Department of Wildlife and Parks. Kansas Department of Wildlife and Parks will be responsible for the joint pool releases and for the water rights.

2008 Summary

The annual precipitation total at Cedar Bluff Dam was 26.84 inches which is 128 percent of normal. The inflow (12,383 AF) was below the normal-year forecast. The reservoir level at the beginning of the year was 2128.25 feet (15.8 feet below top of conservation). Cedar Bluff Reservoir received above normal inflows in late May and June that increased the reservoir slightly. The peak reservoir level recorded during the year was 2128.91 feet on June 3rd. The reservoir level gradually decreased throughout the remainder of the year. No flood release was made from the dam in 2008. The reservoir level at the end of the year was 2127.50 feet (16.5 feet below the top of conservation). The Corps of Engineers determined that Cedar Bluff Reservoir prevented \$692,300 in flood damages in 2008.

The State of Kansas utilized the fish hatchery facility located below Cedar Bluff Dam with 1 AF released to the facility. No water was released from Cedar Bluff Reservoir during 2008 for the City of Russell.

A Comprehensive Facility Review of Cedar Bluff Dam was conducted in May

TABLE 1
RESERVOIR DATA - NIOBRARA, LOWER PLATTE AND KANSAS RIVER BASINS

RESERVOIR		CAPACITY ALLOCATIONS ^{1/}			FLOOD CONTROL
		DEAD	LIVE CONSERVATION		
			Inactive	Active	
Box Butte	- Elevation Ft.	3969.0	3979.0	4007.0	---
	Total Acre-feet	188	2,392	29,161	---
	Net Acre-feet	188	2,204	26,769	---
Merritt	- Elevation Ft.	2875.0	2896.0	2946.0	---
	Total Acre-feet	774	4,662	66,726	---
	Net Acre-feet	774	3,888	62,064	---
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	3,408	7,897	34,647	87,361
	Net Acre-feet	3,408	4,489	26,750	52,714
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 ^{3/}	- 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.)		35,685	273,495	1,472,250	3,909,611 ^{2/}
Total Net Acre-feet		35,685	237,810	1,198,755	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 2008 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.	594	33	50	0.22	5,275	0	0
Feb.	1,244	29	65	0.69	5,914	0	0
Mar.	1,514	37	120	0.80	7,271	0	0
Apr.	1,276	41	145	0.50	8,361	0	0
May	1,207	47	300	2.00	9,221	0	0
June	743	39	396	3.38	9,529	0	0
July	878	4,645	387	2.28	5,375	4,128	697
Aug.	875	1,974	263	2.12	4,013	1,658	506
Sep.	739	30	186	1.05	4,536	0	0
Oct.	699	31	142	0.50	5,062	0	0
Nov.	853	35	83	1.02	5,797	0	0
Dec.	665	36	51	0.00	6,375	0	0
TOTAL	11,286	6,976	2,188	14.56	--	5,786	1,203

NOTE -- Acres irrigated 2008: Mirage Flats Canal 7,372 acres.

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.	13,397	12,893	235	0.15	61,100	0	0
Feb.	13,885	13,587	298	0.73	61,100	0	0
Mar.	15,467	15,323	413	0.98	60,831	0	0
Apr.	15,743	9,422	716	2.72	66,436	0	0
May	15,441	13,845	1,015	3.90	67,017	2,743	89
June	20,458	18,486	1,387	5.17	67,602	3,800	267
July	13,391	23,247	1,518	1.23	56,228	22,179	12,646
Aug.	15,330	26,143	1,152	0.72	44,263	24,401	15,660
Sep.	15,626	13,210	654	2.66	46,025	9,493	6,636
Oct.	15,494	1,075	673	2.43	59,771	0	0
Nov.	14,593	13,091	442	0.26	60,831	0	0
Dec.	13,275	12,694	312	0.40	61,100	0	0
TOTAL	182,099	173,015	8,815	21.35	--	62,616	35,298

NOTE -- Acres irrigated 2008: Ainsworth Canal 34,577 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.	17,559	16,114	458	0.38	112,202	319	0	0	0
Feb.	18,845	19,356	570	0.05	111,121	291	0	0	0
Mar.	21,572	10,011	1,036	0.62	121,646	483	0	0	0
Apr.	23,172	15,950	1,211	3.09	127,657	723	1,956	0	0
May	28,715	26,359	1,843	6.95	128,170	384	12,904	2,019	733
June	26,117	29,239	2,255	2.56	122,793	583	17,058	2,237	229
July	23,002	40,291	2,245	4.30	103,259	966	20,598	11,020	5,741
Aug.	20,511	42,453	1,509	0.95	79,808	797	25,448	20,191	11,414
Sep.	19,480	24,736	940	2.44	73,612	891	7,256	2,993	1,325
Oct.	26,133	9,479	1,084	5.04	89,182	209	0	0	0
Nov.	21,527	7,375	654	0.89	102,680	60	0	0	0
Dec.	20,020	13,268	405	0.55	109,027	136	0	0	0
TOTAL	266,651	254,629	14,210	27.82	--	5,842	85,220	38,460	19,442

NOTE -- Acres irrigated 2008: Mirdan Canal 34,194 acres.

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.	27	185	50	0.04	9,476	0	0
Feb.	39	164	61	0.17	9,290	0	0
Mar.	15	166	106	0.74	9,033	0	0
Apr.	1,768	224	179	3.63	10,398	0	0
May	13,737	2,953	254	9.04	20,928	2,400	0
June	12,802	4,689	507	6.75	28,534	3,394	17
July	8,682	11,968	480	1.82	24,768	10,856	6,928
Aug.	4,560	17,939	317	1.21	11,072	17,502	10,909
Sep.	4,530	4,935	167	2.83	10,500	4,707	2,233
Oct.	454	240	154	7.67	10,560	0	0
Nov.	82	220	83	1.04	10,339	0	0
Dec.	90	256	47	0.91	10,126	0	0
TOTAL	46,785	43,938	2,405	35.85	--	38,859	20,087

NOTE - Acres irrigated 2008: Fullerton Canal 20,637 acres.

TABLE 2
SUMMARY OF 2008 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.	437	307	73	0.15	8,004	0
Feb.	778	288	87	0.25	8,407	0
Mar.	834	307	137	0.59	8,797	0
Apr.	899	298	342	1.71	9,056	0
May	823	307	455	2.04	9,117	0
June	683	298	490	2.63	9,012	0
July	578	307	725	3.51	8,558	0
Aug.	2,654	1,961	411	5.21	8,840	145
Sep.	1,558	2,255	357	2.22	7,786	48
Oct.	1,117	387	226	3.23	8,290	0
Nov.	1,006	298	158	0.37	8,840	0
Dec.	793	266	91	0.29	9,276	0
TOTAL	12,159	7,278	3,552	22.20	--	193

TABLE 2
SUMMARY OF 2008 OPERATIONS

FRENCHMAN-CAMBRIDGE DIVISION
FRENCHMAN UNIT

Month	ENDERS RESERVOIR				End of Month Content (AF)	CULBERTSON CANAL		CULBERTSON EXT. CANAL	
	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)		Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	346	307	68	0.07	16,856	0	0	0	0
Feb.	358	288	79	0.25	16,847	0	0	0	0
Mar.	370	307	139	0.59	16,771	0	0	0	0
Apr.	650	298	295	2.58	16,828	0	0	0	0
May	742	307	340	4.97	16,923	0	0	0	0
June	638	298	407	3.13	16,856	0	0	0	0
July	146	307	504	2.18	16,191	0	0	0	0
Aug.	84	307	377	2.52	15,591	0	0	0	0
Sep.	182	298	310	1.64	15,165	0	0	0	0
Oct.	470	181	210	3.27	15,244	0	0	0	0
Nov.	399	131	144	1.12	15,368	0	0	0	0
Dec.	385	307	78	0.13	15,368	0	0	0	0
TOTAL	4,770	3,336	2,951	22.45	--	0	0	0	0

NOTE: Acres irrigated 2008: Culbertson Canal - 0 acres; Culbertson Extension Canal - 0 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
MEEKER-DRIFTWOOD UNIT

Month	SWANSON LAKE				End of Month Content (AF)	MEEKER-DRIFTWOOD	
	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)		Release To Canal (AF)	Delivered To Farms (AF)
Jan.	1,195	61	219	0.04	46,126	0	0
Feb.	2,701	58	257	0.25	48,512	0	0
Mar.	3,099	61	465	0.48	51,085	0	0
Apr.	3,777	60	1,014	2.71	53,788	0	0
May	3,386	61	1,263	5.27	55,850	0	0
June	1,642	60	1,716	3.66	55,716	0	0
July	409	62	2,077	2.14	53,986	0	0
Aug.	2	62	1,839	1.69	52,087	0	0
Sep.	0	60	1,327	1.56	50,700	0	0
Oct.	881	62	787	4.38	50,732	0	0
Nov.	951	60	538	0.67	51,085	0	0
Dec.	1,256	62	290	0.08	51,989	0	0
TOTAL	19,296	726	11,792	22.93	--	0	0

NOTE: Acres irrigated 2008: Meeker-Driftwood Canal - 0 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
RED WILLOW UNIT

Month	HUGH BUTLER LAKE				End of Month Content (AF)	RED WILLOW CANAL		BARTLEY CANAL	
	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)		Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	554	246	85	0.01	25,216	0	0	0	0
Feb.	663	230	101	0.25	25,548	0	0	0	0
Mar.	712	246	185	0.29	25,829	0	0	0	0
Apr.	1,084	238	414	1.46	26,261	0	0	0	0
May	2,723	246	589	8.32	28,149	0	0	0	0
June	2,569	720	688	4.45	29,310	230	0	0	0
July	639	2,559	884	3.53	26,506	2,269	728	0	0
Aug.	2,417	1,932	513	5.76	26,478	1,391	405	0	0
Sep.	302	476	569	0.93	25,735	199	82	0	0
Oct.	912	246	303	3.68	26,098	0	0	0	0
Nov.	687	238	218	0.58	26,329	0	0	0	0
Dec.	481	246	113	0.12	26,451	0	0	0	0
TOTAL	13,743	7,623	4,662	29.38	--	4,089	1,215	0	0

NOTE -- Acres irrigated 2008: Red Willow Canal - 2,688 acres; Bartley Canal 0 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
CAMBRIDGE UNIT

Month	HARRY STRUNK LAKE				End of Month Content (AF)	CAMBRIDGE CANAL	
	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)		Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	2,983	2,829	118	0.02	34,189	0	0
Feb.	3,093	3,035	130	0.43	34,117	0	0
Mar.	3,362	3,426	243	0.34	33,810	0	0
Apr.	3,861	2,386	509	2.30	34,776	0	0
May	26,515	14,006	789	10.40	46,496	0	0
June	11,158	16,298	1,092	3.55	40,264	1,556	84
July	3,737	7,930	1,129	2.78	34,942	9,396	4,835
Aug.	3,293	5,085	783	2.93	32,367	7,098	3,311
Sep.	2,214	1,206	679	0.86	32,696	1,337	529
Oct.	3,566	1,744	401	4.35	34,117	0	0
Nov.	3,063	3,551	283	0.67	33,346	0	0
Dec.	2,909	2,965	139	0.26	33,151	0	0
TOTAL	69,752	64,459	6,295	28.89	--	19,387	8,759

NOTE -- Acres irrigated 2008: Cambridge Canal 15,768 acres.

TABLE 2
SUMMARY OF 2008 OPERATIONS

SOLOMON DIVISION
KIRWIN UNIT

Month	KIRWIN RESERVOIR				End of Month Content (AF)	KIRWIN CANAL	
	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)		Release To Canal (AF)	Delivered To Farms (AF)
Jan.	463	0	119	0.23	24,440	0	0
Feb.	686	0	159	0.48	24,967	0	0
Mar.	919	0	280	1.04	25,606	0	0
Apr.	1,248	0	634	2.50	26,220	0	0
May	31,407	0	921	10.37	56,706	0	0
June	7,519	0	2,015	2.57	62,210	0	0
July	3,597	5,512	2,387	4.89	57,908	5,695	1,904
Aug.	8,736	3,888	1,574	6.44	61,182	3,723	1,614
Sep.	2,282	0	1,598	1.97	61,866	0	0
Oct.	18,499	0	1,047	8.56	79,318	0	0
Nov.	6,307	0	723	1.21	84,902	0	0
Dec.	3,896	0	373	0.23	88,425	0	0
TOTAL	85,559	9,400	11,830	40.49	--	9,418	3,518

NOTE: Acres irrigated 2008: Kirwin Canal - 6,037 acres.

SOLOMON DIVISION (Continued)
WEBSTER UNIT

Month	WEBSTER RESERVOIR				End of Month Content (AF)	OSBORNE CANAL	
	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)		Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	380	0	113	0.33	17,987	0	0
Feb.	884	0	140	0.54	18,731	0	0
Mar.	1,114	0	253	1.21	19,592	0	0
Apr.	1,654	0	544	2.93	20,702	0	0
May	14,302	0	804	9.10	34,200	0	0
June	6,744	0	1,412	2.88	39,532	0	0
July	1,845	0	1,768	3.99	39,609	0	0
Aug.	8,589	0	1,059	4.94	47,139	0	0
Sep.	1,898	0	1,100	2.00	47,937	0	0
Oct.	11,730	0	665	7.59	59,002	0	0
Nov.	6,462	0	543	0.46	64,921	0	0
Dec.	4,266	0	302	0.42	68,885	0	0
TOTAL	59,868	0	8,703	36.39	--	0	0

NOTE: Acres irrigated 2008: Osborne Canal - 0 acres.

SOLOMON DIVISION (Continued)
GLEN ELDER UNIT

Month	WACONDA LAKE				End of Month Content (AF)	OUTFLOW TO RIVER				Release To Mitchell Co. RWD No. 2 (AF)
	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)		City of Beloit Storage Release (AF)	Quality Bypass (AF)	Irrig. District Storage Release (AF)	Other Controlled Releases (AF)	
Jan.	4,712	547	530	0.40	146,618	0	492	0	0	55
Feb.	5,673	516	685	0.37	151,090	0	460	0	0	56
Mar.	4,251	558	1,315	1.05	153,468	0	492	0	0	66
Apr.	7,343	535	3,132	2.92	157,144	0	476	0	0	59
May	60,440	839	4,566	3.88	212,179	0	428	274	81	56
June	39,990	16,896	6,928	3.36	228,345	0	50	97	16,693	56
July	20,562	14,941	8,448	3.28	225,518	0	171	171	14,702	68
Aug.	65,524	29,578	5,657	6.08	255,807	0	0	321	29,198	59
Sep.	20,895	33,301	5,264	2.85	238,137	0	0	0	33,251	50
Oct.	115,399	33,012	3,719	5.61	316,805	0	0	0	32,960	52
Nov.	40,575	118,807	2,282	0.93	236,291	0	0	0	118,754	53
Dec.	22,486	51,421	936	0.38	206,420	0	0	0	51,360	61
TOTAL	407,850	300,951	43,462	31.11	--	0	2,398	863	296,999	691

NOTE: Acres irrigated 2008: Glen Elder District 5,601 acres.

SMOKY HILL DIVISION
ELLIS UNIT

Month	CEDAR BLUFF RESERVOIR				End of Month Content (AF)	Release to City of Russell (AF)	Release To Fish Hatchery (AF)	Release to Kansas Water Office (AF)
	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)				
Jan.	153	0	314	0.31	86,356	0	0	0
Feb.	408	0	368	0.63	86,396	0	0	0
Mar.	155	0	636	0.48	85,915	0	0	0
Apr.	964	0	1,323	2.04	85,556	0	0	0
May	5,205	0	1,642	7.72	89,119	0	0	0
June	1,778	1	2,433	2.25	88,463	0	1	0
July	886	0	2,913	3.04	86,436	0	0	0
Aug.	914	0	2,112	2.60	85,238	0	0	0
Sep.	0	0	1,657	1.38	83,581	0	0	0
Oct.	1,833	0	810	5.62	84,604	0	0	0
Nov.	87	0	678	0.62	84,013	0	0	0
Dec.	0	0	471	0.15	83,542	0	0	0
TOTAL	12,383	1	15,357	26.84	--	0	1	0

TABLE 3
ACRES IRRIGATED IN 2008

Irrigation District and Canal	Acres With Service Available	Acres Irrigated in 2008
Mirage Flats Irrigation District		
Mirage Flats Canal	11,662	7,372
Ainsworth Irrigation District		
Ainsworth Canal	35,000	34,577
Twin Loups Irrigation District		
Above Davis Creek	34,053	34,194
Below Davis Creek	21,063	20,637
Total Twin Loups Irrigation District	55,116	54,831
Frenchman Valley Irrigation District		
Culbertson Canal	9,292	0
H & RW Irrigation District		
Culbertson Extension Canal	11,915	0
Frenchman-Cambridge Irrigation District		
Meeker-Driftwood Canal	16,855	0
Red Willow Canal	4,797	2,688
Bartley Canal	6,353	0
Cambridge Canal	17,664	15,768
Total Frenchman-Cambridge Irrigation District	45,669	18,456
Almena Irrigation District		
Almena Canal	5,764	1,700
Bostwick Irrigation District in Nebraska		
Franklin Canal	10,920	10,920
Naponee Canal	1,650	1,650
Franklin Pump Canal	2,090	2,090
Superior Canal	5,848	5,848
Courtland Canal (Nebraska)	1,946	1,946
Total Bostwick Irrigation Dist. in Nebraska	22,454	22,454
Kansas-Bostwick Irrigation District		
Courtland Canal above Lovewell	13,378	9,791
Courtland Canal below Lovewell	29,122	25,561
Total Kansas-Bostwick Irrigation District	42,500	35,352
Kirwin Irrigation District		
Kirwin Canal	11,465	6,037
Webster Irrigation District		
Osborne Canal	8,537	0
Glen Elder Irrigation District	10,370	5,601
TOTAL PROJECT USES	269,744	186,380
Non-Project Uses		
Hale Ditch	700	0
TOTAL PROJECT AND NON-PROJECT	270,444	186,380

TABLE 5**FLOOD DAMAGES PREVENTED BY NEBRASKA-KANSAS PROJECTS RESERVOIRS**

RESERVOIR	DURING FY 2008	PRIOR TO 2008	ACCUMULATED TOTAL
BONNY	\$11,300	\$2,791,000	\$2,802,300
ENDERS	\$6,300	\$3,558,000	\$3,564,300
SWANSON	\$61,900	\$22,985,000	\$23,046,900
HUGH BUTLER	\$65,500	\$2,951,000	\$3,016,500
HARRY STRUNK	\$758,400	\$9,343,000	\$10,101,400
KEITH SEBELIUS	\$700	\$3,989,000	\$3,989,700
HARLAN COUNTY	\$9,103,300	\$177,563,000	\$186,666,300
LOVEWELL	\$2,919,800	\$146,619,000	\$149,538,800
KIRWIN	\$79,900	\$86,888,000	\$86,967,900
WEBSTER	\$27,900	\$110,340,000	\$110,367,900
WACONDA	\$3,247,600	\$1,217,334,000	\$1,220,581,600
CEDAR BLUFF	\$692,300	\$130,038,000	\$130,730,300
TOTAL	\$16,974,900	\$1,914,399,000	\$1,931,373,900

Estimates of damages prevented are received from the Army Corps of Engineer's Kansas City District Office. The Accumulated Totals date from 1951 through 2008. 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 2008
(Units - Acre-Feet)

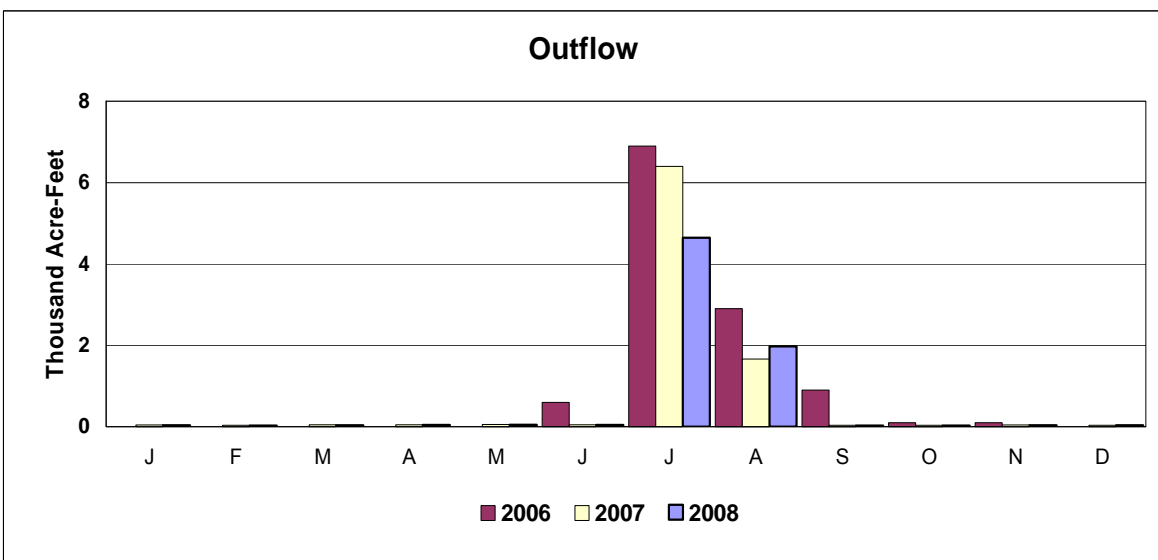
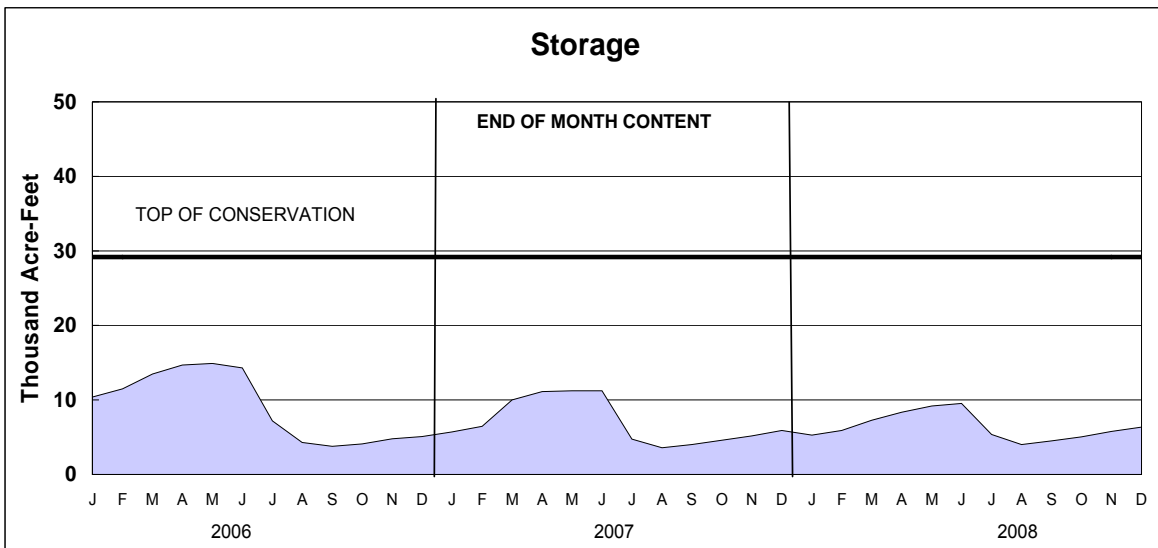
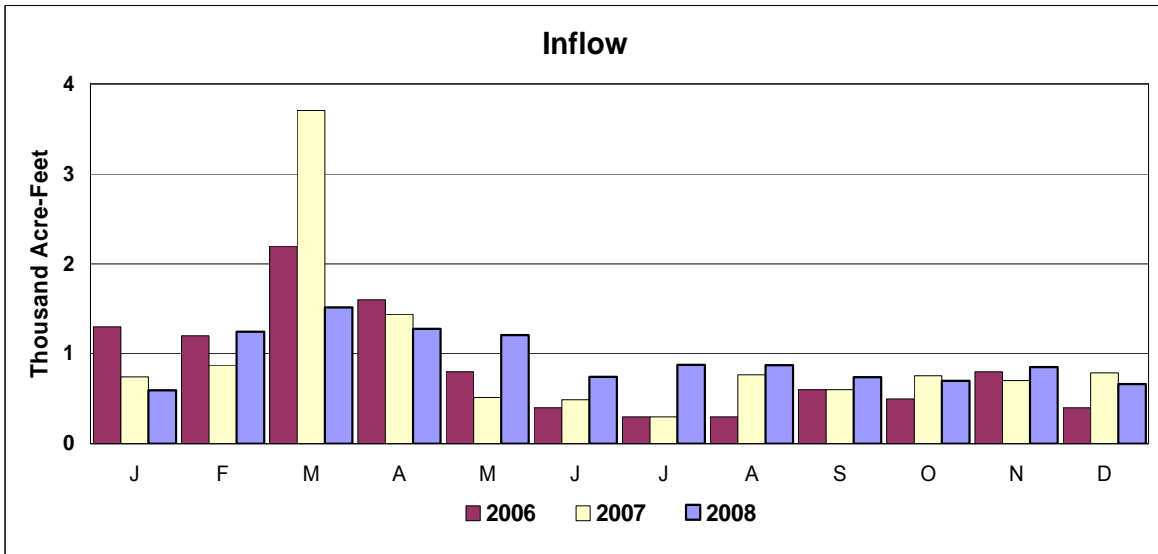
Irrigation District and Canal	2008 Irrigation Operations		10-Year Average Diversion (1998-2007)	2008 Diversion
	From	To		
Mirage Flats Irrigation District				
Mirage Flats Canal	7/10	8/16	11,128	5,786
Ainsworth Irrigation District				
Ainsworth Canal	5/11	9/22	77,605	62,616
Twin Loups Irrigation District				
Above Davis Creek	4/25	9/26	44,228	38,460
Below Davis Creek	5/12	9/15	40,370	38,859
Total Twin Loups Irrigation District			84,598	77,319
Frenchman Valley Irrigation District				
Culbertson Canal	Did not run.		6,638	0
H & RW Irrigation District				
Culbertson Extension Canal	Did not run.		4,166	0
Frenchman-Cambridge Irrigation District				
Meeker-Driftwood Canal	Did not run.		10,859	0
Red Willow Canal	6/24	9/5	3,094	4,089
Bartley Canal	Did not run.		4,033	0
Cambridge Canal	6/19	9/20	19,563	19,387
Total Frenchman-Cambridge Irrigation District			37,549	23,476
Almena Irrigation District				
Almena Canal	7/14	8/11	2,853	2,217
Bostwick Irrigation District in Nebraska				
Franklin Canal	6/26	8/17	17,089	16,085
Naponee Canal	7/9	8/22	1,638	316
Franklin Pump Canal	7/1	8/29	1,791	576
Superior Canal	6/26	8/25	8,919	5,666
Courtland Canal (Nebraska)	6/17	9/10	1,394	311
Total Bostwick Irrigation District in Nebraska			30,831	22,954
Kansas-Bostwick Irrigation District				
Courtland Canal above Lovewell	6/18	9/24	18,656	17,433
Courtland Canal below Lovewell	5/27	9/8	40,978	30,016
Total Kansas-Bostwick Irrigation District			59,634	47,449
Kirwin Irrigation District				
Kirwin Canal	7/7	8/19	14,089	9,418
Webster Irrigation District				
Osborne Canal	Did not run.		8,649	0
Glen Elder Irrigation District				
Glen Elder Canal	5/20	8/20	7,514	863
TOTAL			345,254	252,098

TABLE 7
NEBRASKA-KANSAS PROJECTS
Summary of Precipitation, Reservoir Storage and Inflows
CALENDAR YEAR 2008

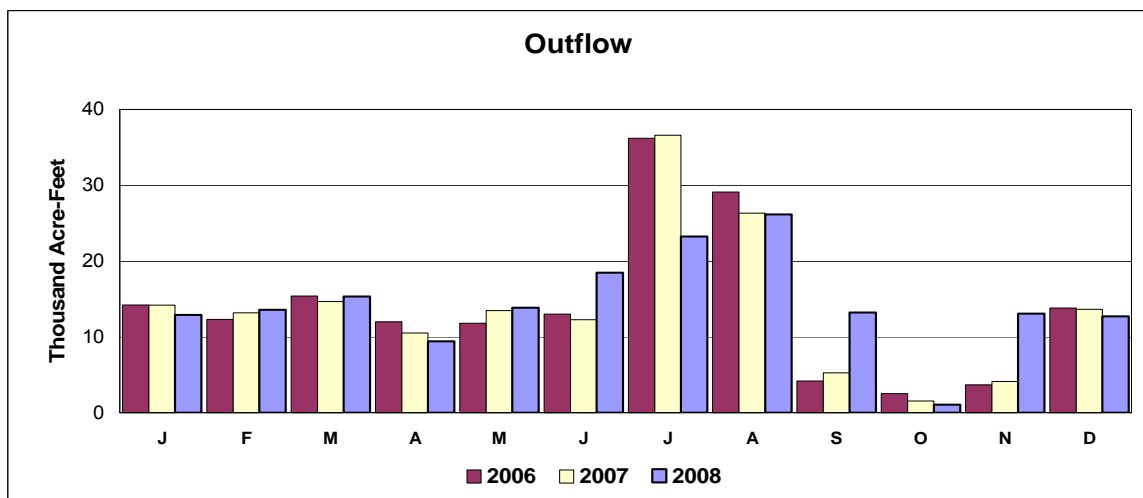
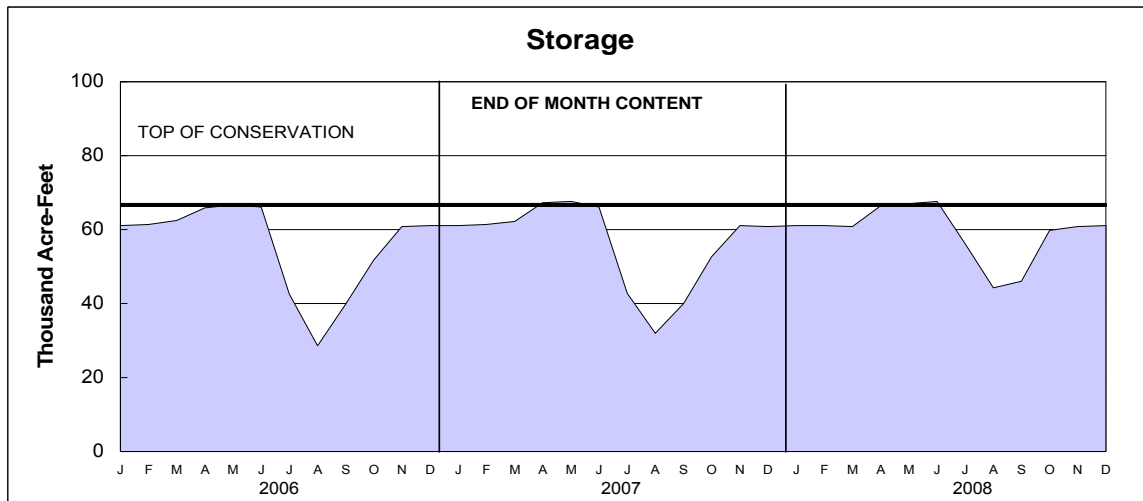
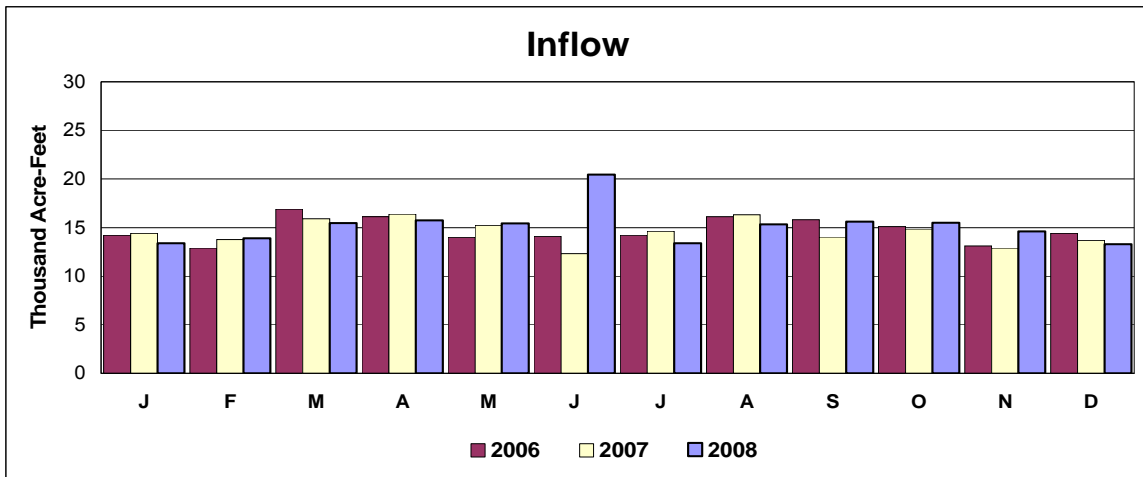
Reservoir	Total Precip. Inches	Percent Of Average %	Storage 12-31-07 AF	Storage 12-31-08 AF	Gain or Loss AF	Maximum Content AF	Storage Date	Minimum Content AF	Storage Date	Total Inflow AF
Box Butte	14.56	86	5,895	6,375	480	9,572	JUN 25	3,608	AUG 14	11,286
Merritt	21.35	104	60,831	61,100	269	66,959	JUN 1	41,554	SEP 7	182,099
Calamus	27.82	115	111,215	109,027	-2,188	128,582	MAY 27	73,324	SEP 16	266,651
Davis Creek	35.85	145	9,684	10,126	442	30,177	JUL 8	8,791	APR 23	46,785
Bonny	22.20	130	7,947	9,276	1,329	10,460	AUG 15	7,675	OCT 9	12,159
Enders	22.45	118	16,885	15,368	-1,517	17,134	JUN 8	14,973	OCT 11	4,770
Swanson	22.93	115	45,211	51,989	6,778	56,388	JUN 7	44,427	JAN 1	19,296
Hugh Butler	29.38	150	24,993	26,451	1,458	29,513	JUN 27	24,993	JAN 1	13,743
Harry Strunk	28.89	140	34,153	33,151	-1,002	51,158	MAY 25	31,502	SEP 5	69,752
Keith Sebelius	33.74	138	9,732	16,313	6,581	19,166	JUN 4	9,722	JAN 1	14,265
Harlan County	30.31	133	255,393	319,311	63,918	357,333	JUN 6	255,637	JAN 1	224,841
Lovewell	34.10	124	31,273	31,438	165	51,414	JUN 4	20,187	SEP 17	90,852
Kirwin	40.49	172	24,096	88,425	64,329	88,615	DEC 31	24,077	JAN 2	85,559
Webster	36.39	154	17,720	68,885	51,165	68,885	DEC 31	17,686	JAN 2	59,868
Waconda	31.11	122	142,983	206,420	63,437	319,346	OCT 27	142,713	JAN 3	407,850
Cedar Bluff	26.84	128	86,517	83,542	-2,975	89,201	JUN 3	83,035	DEC 27	12,383

BOX BUTTE RESERVOIR

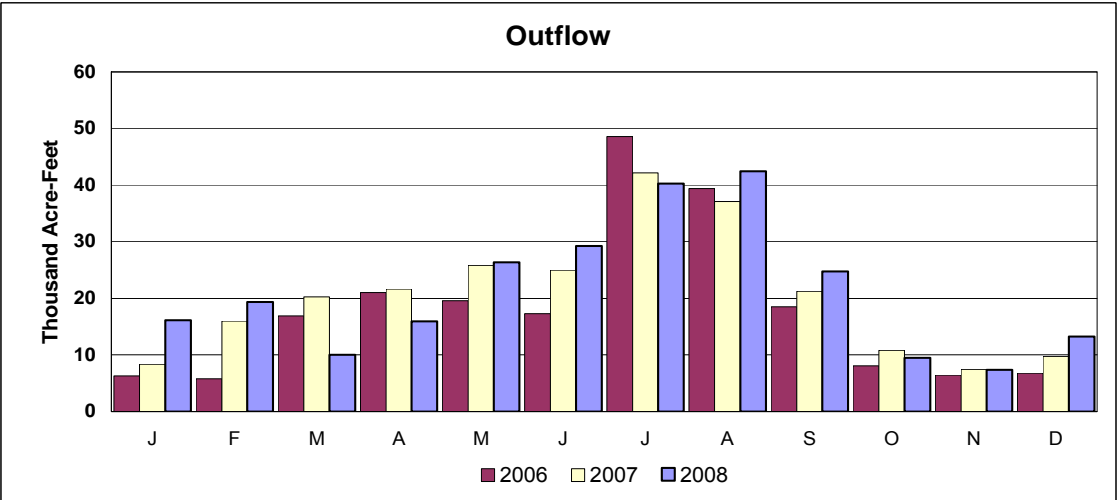
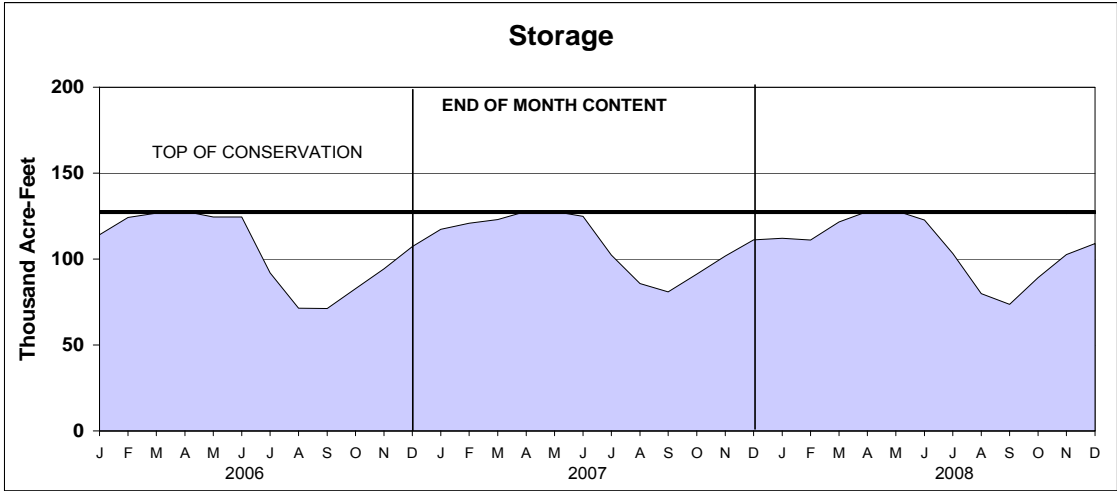
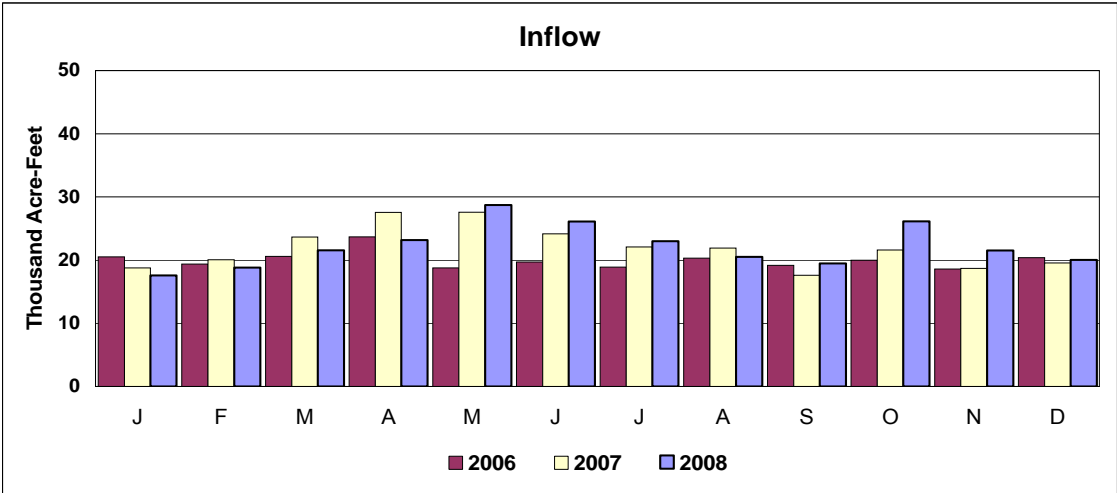
ACTUAL OPERATION



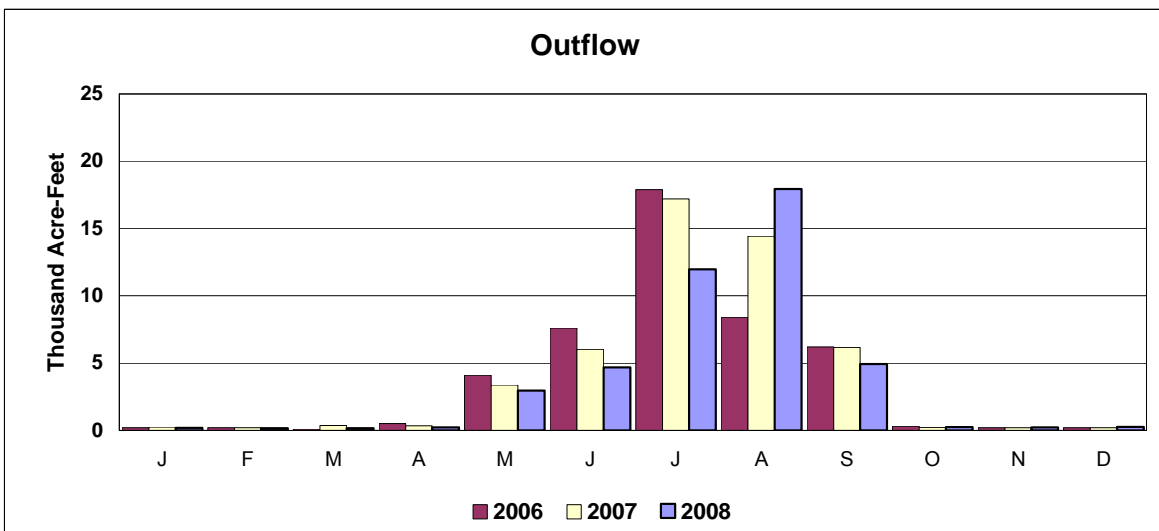
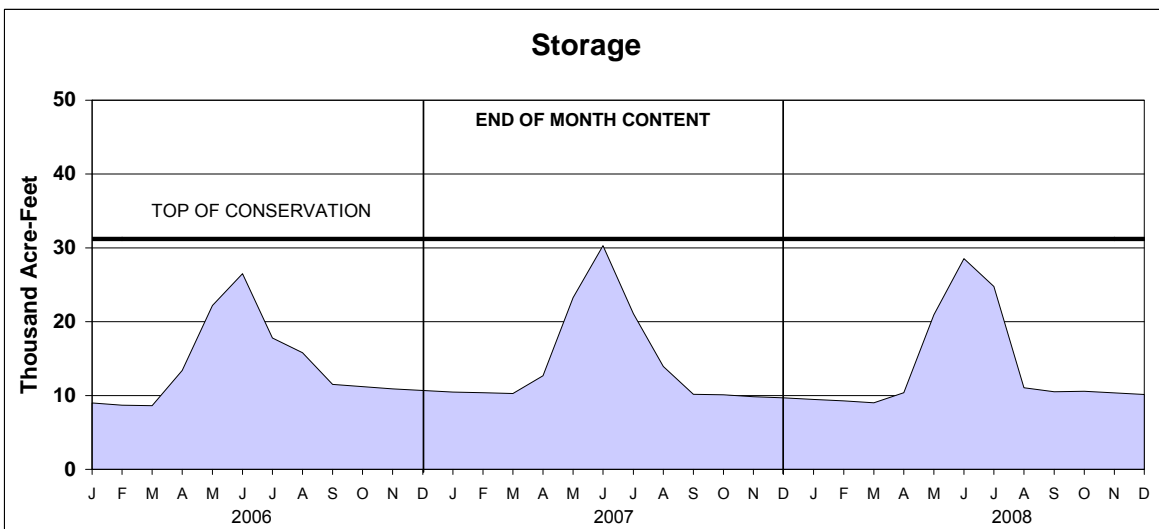
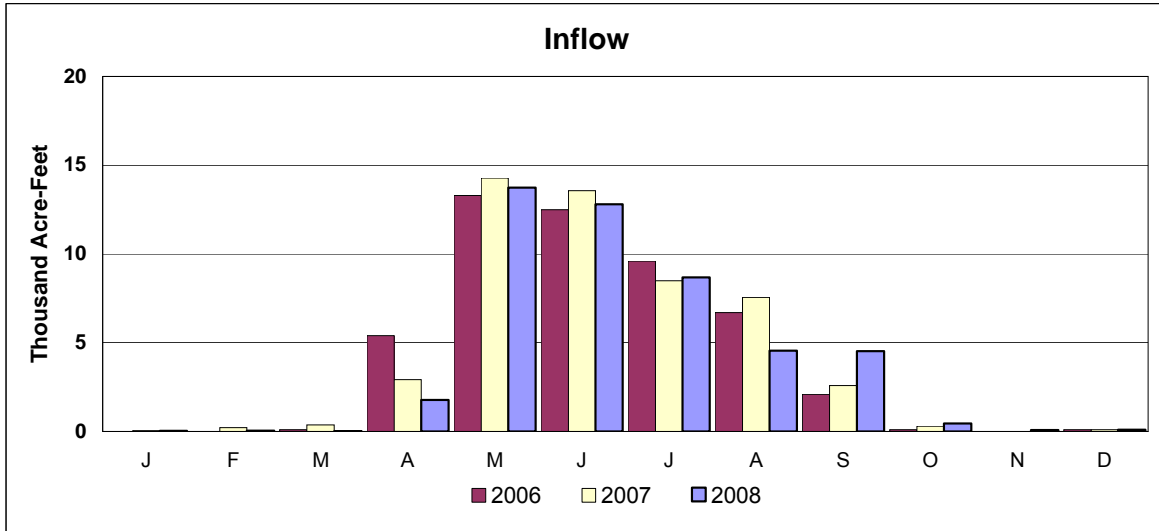
MERRITT RESERVOIR ACTUAL OPERATION



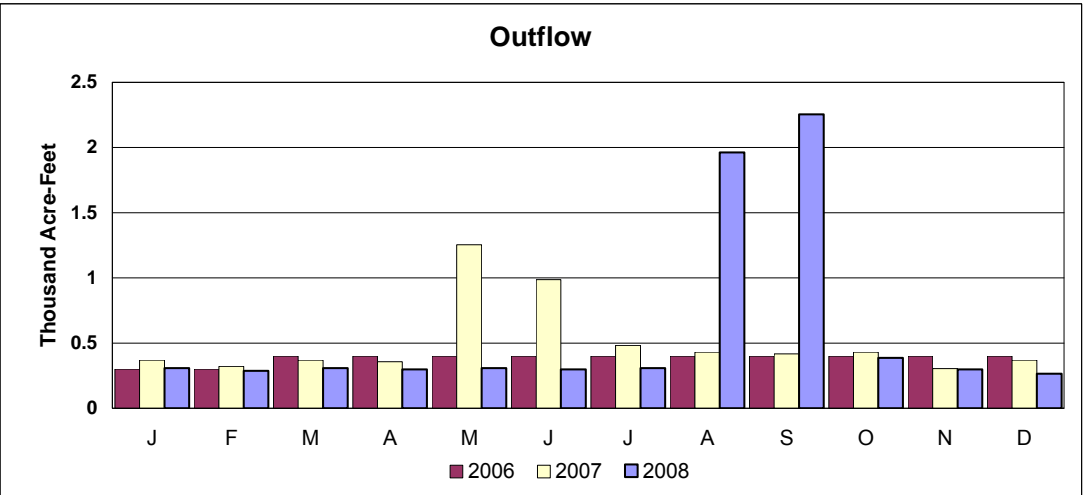
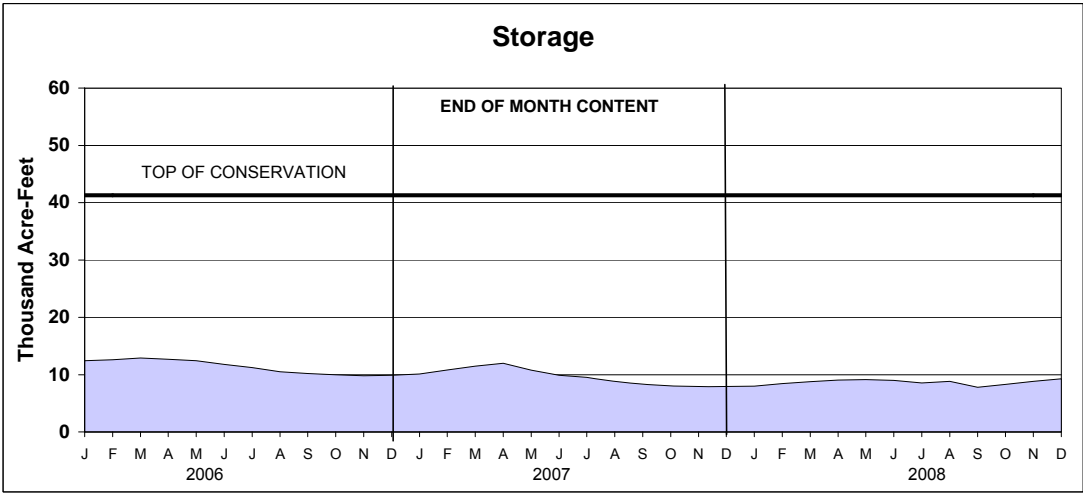
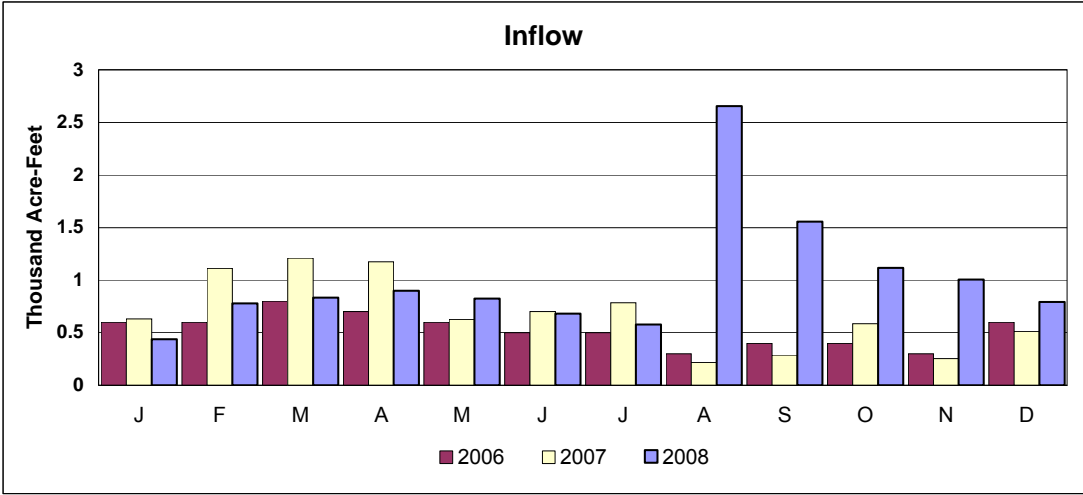
CALAMUS RESERVOIR ACTUAL OPERATION



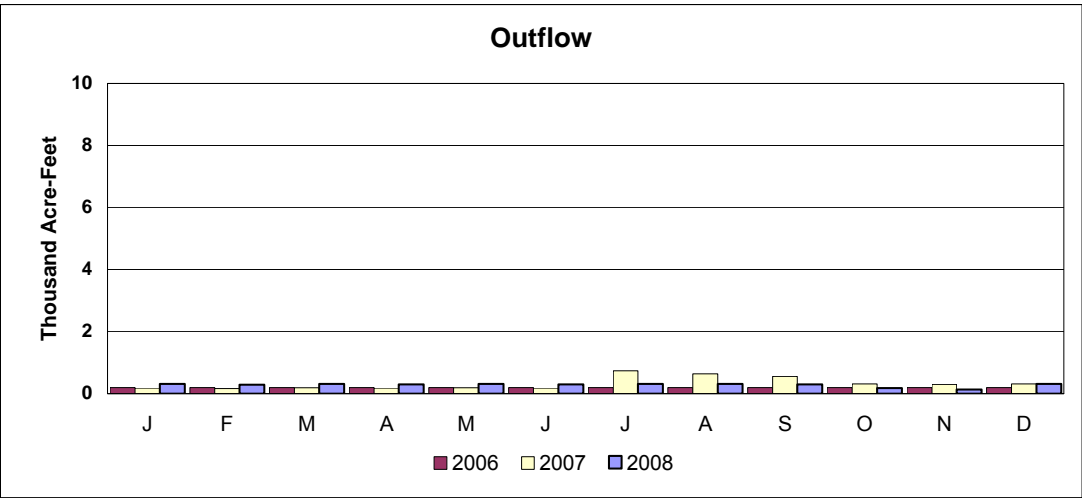
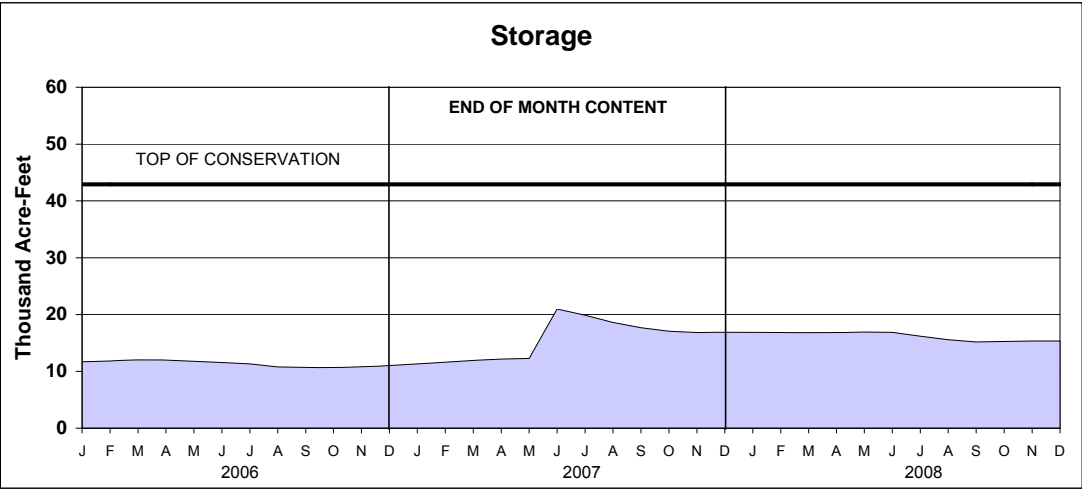
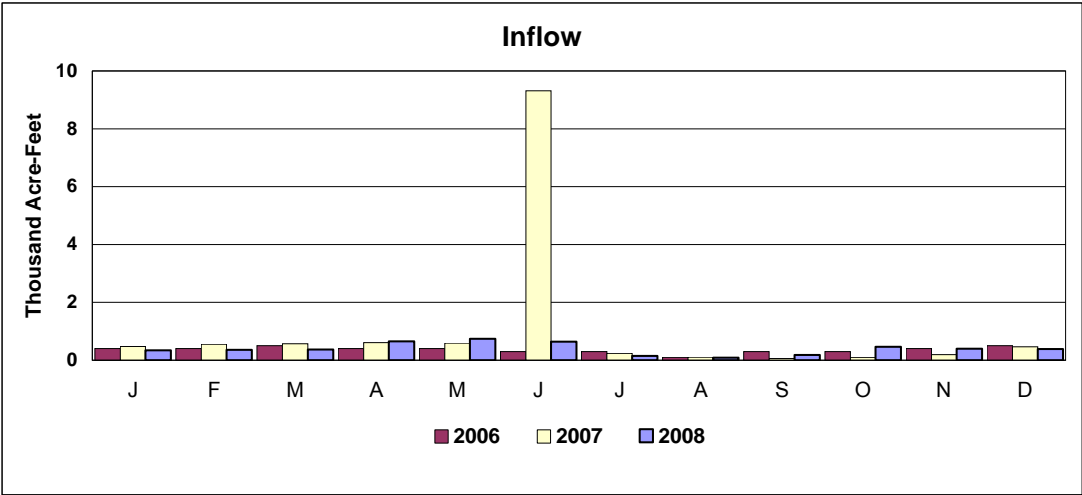
DAVIS CREEK RESERVOIR ACTUAL OPERATION



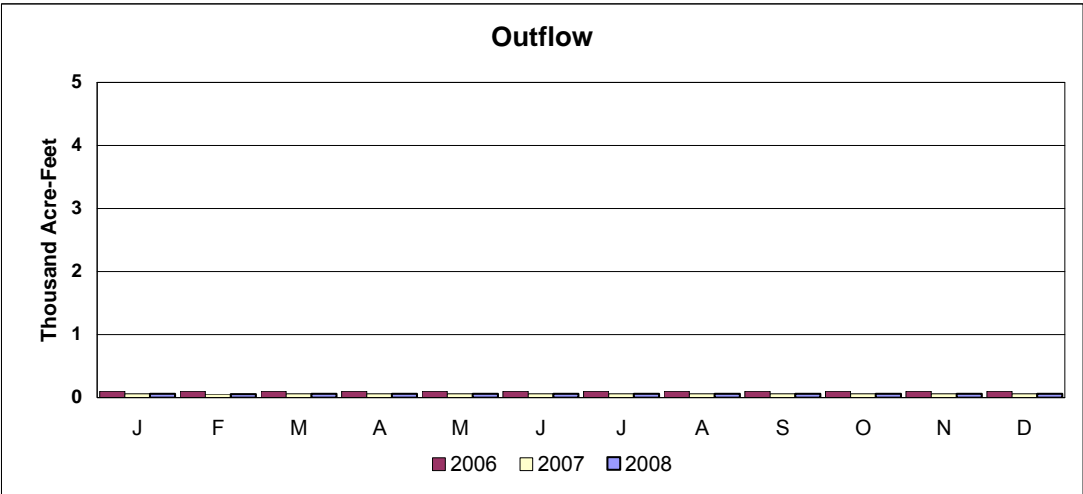
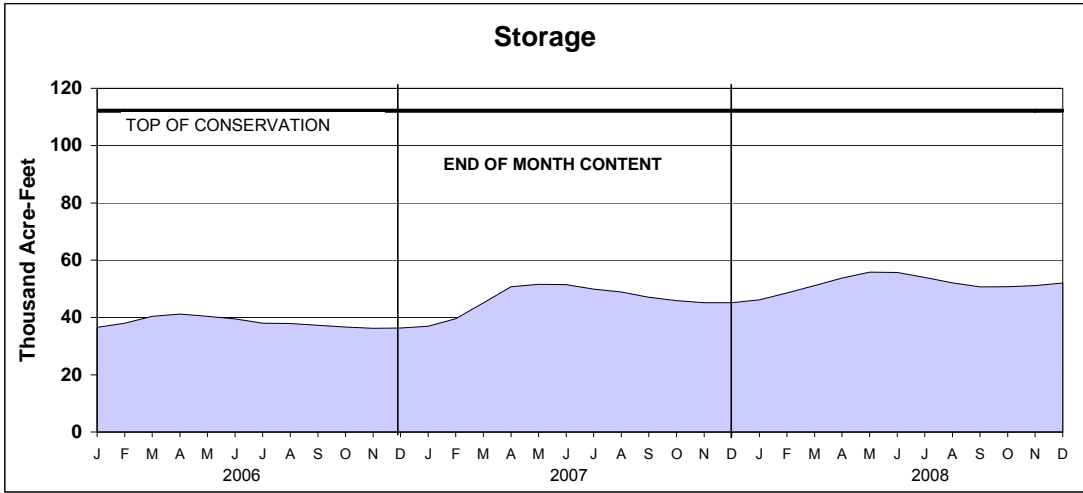
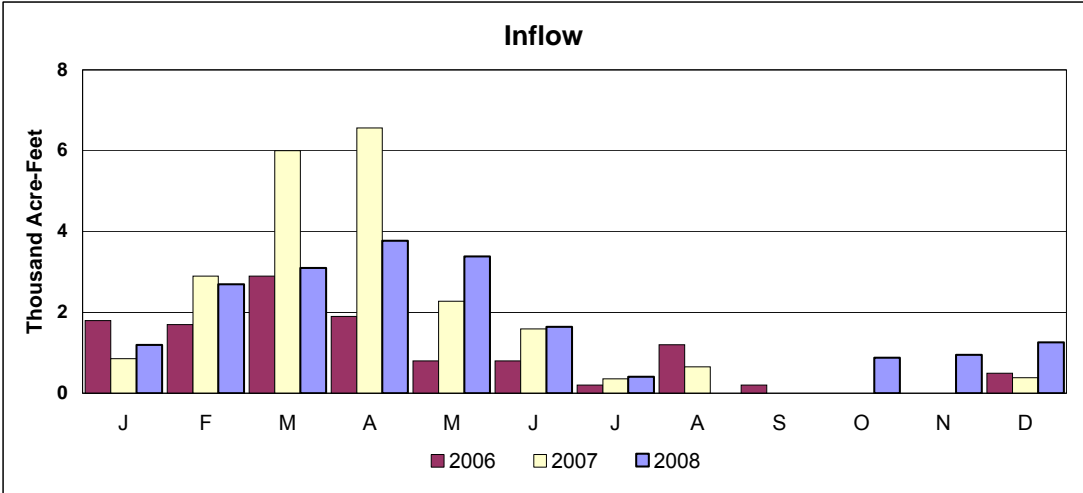
BONNY RESERVOIR ACTUAL OPERATION



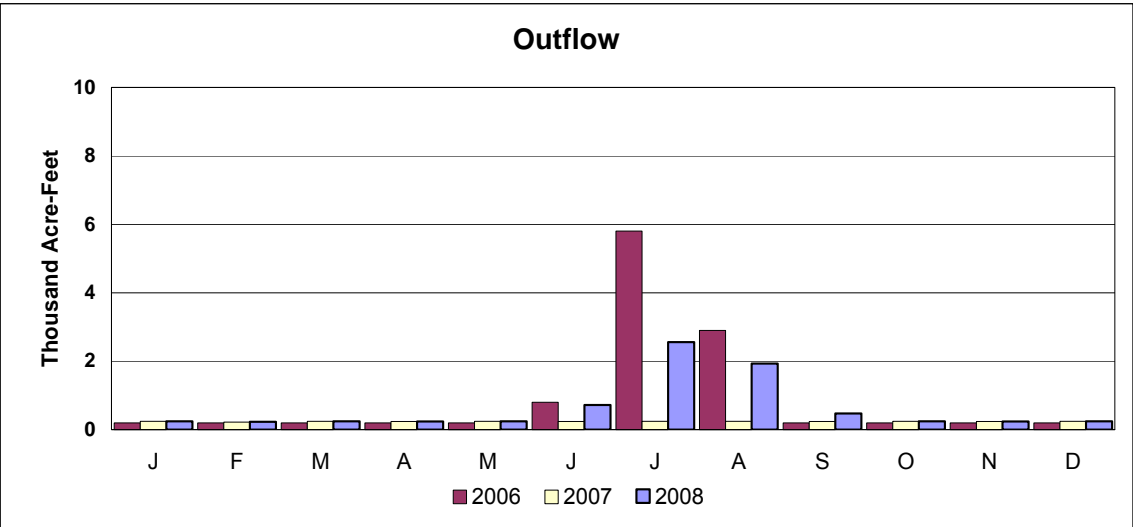
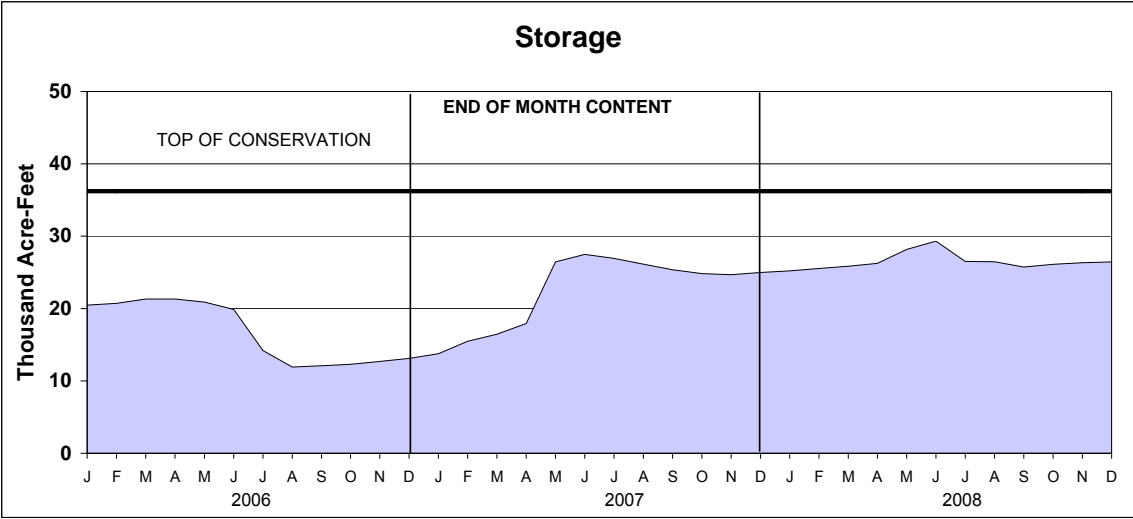
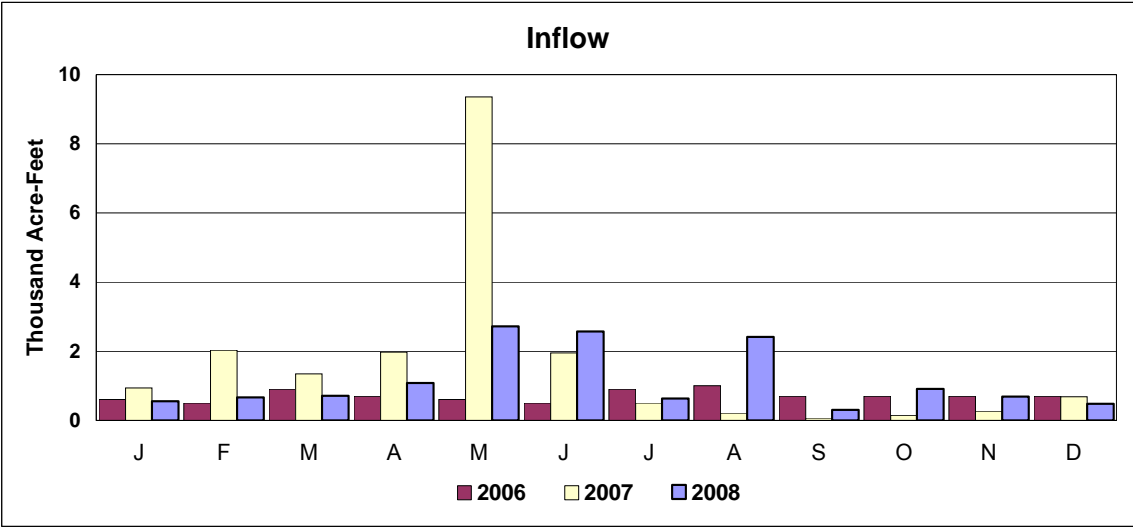
ENDERS RESERVOIR ACTUAL OPERATION



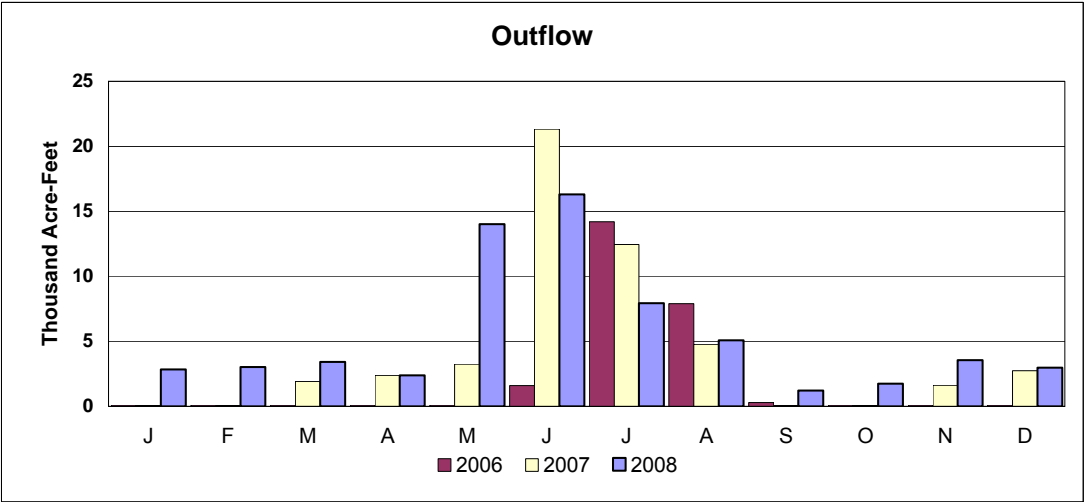
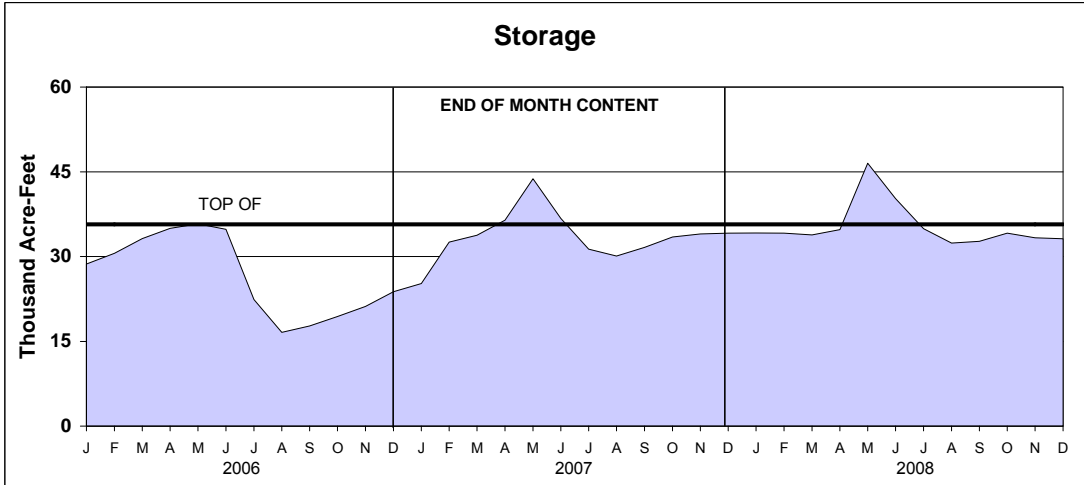
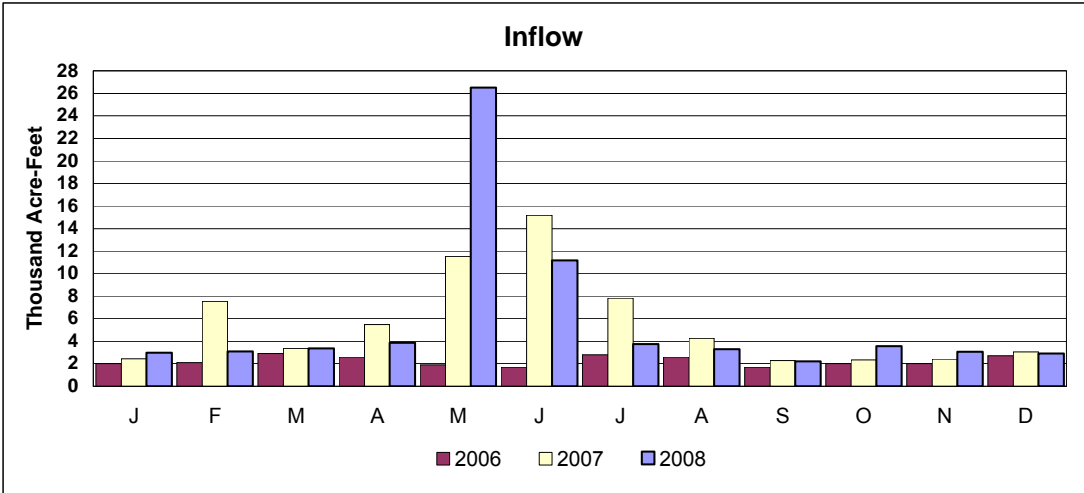
SWANSON LAKE ACTUAL OPERATION



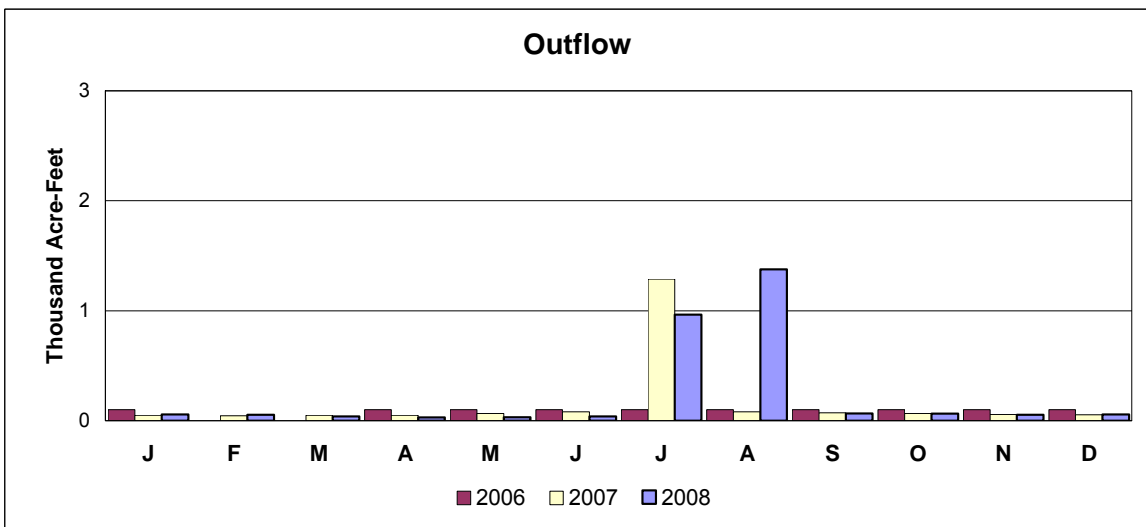
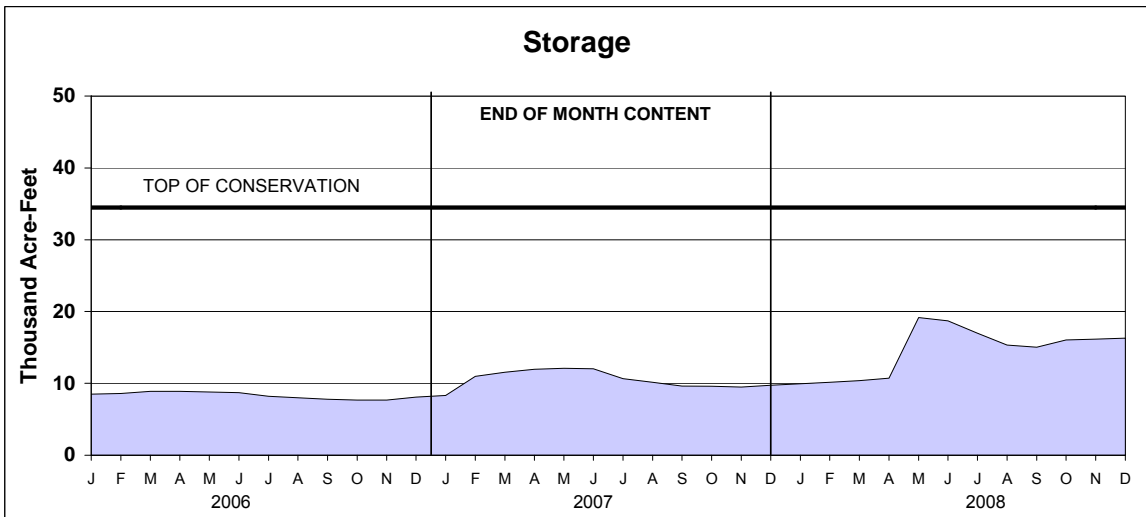
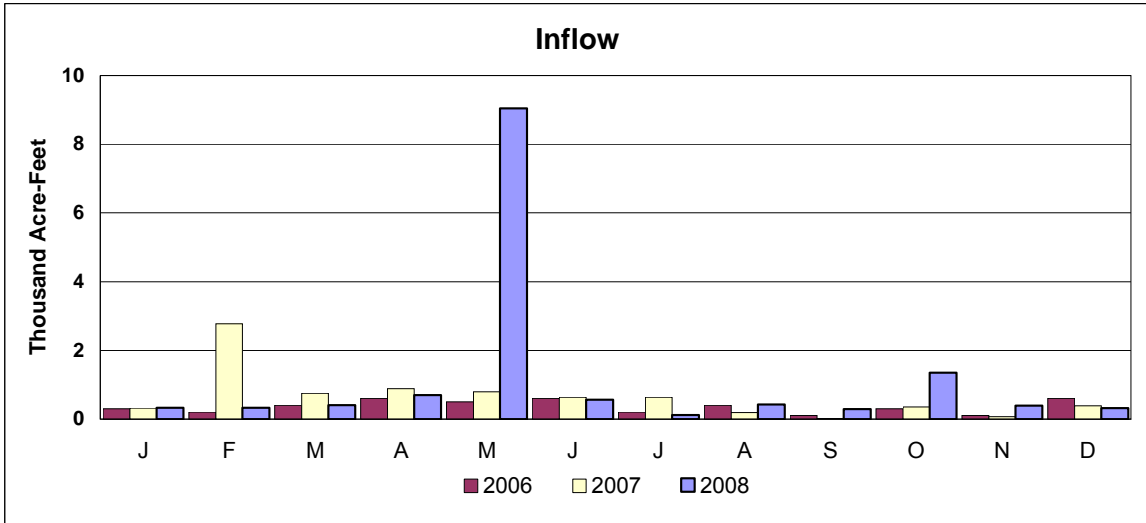
HUGH BUTLER LAKE ACTUAL OPERATION



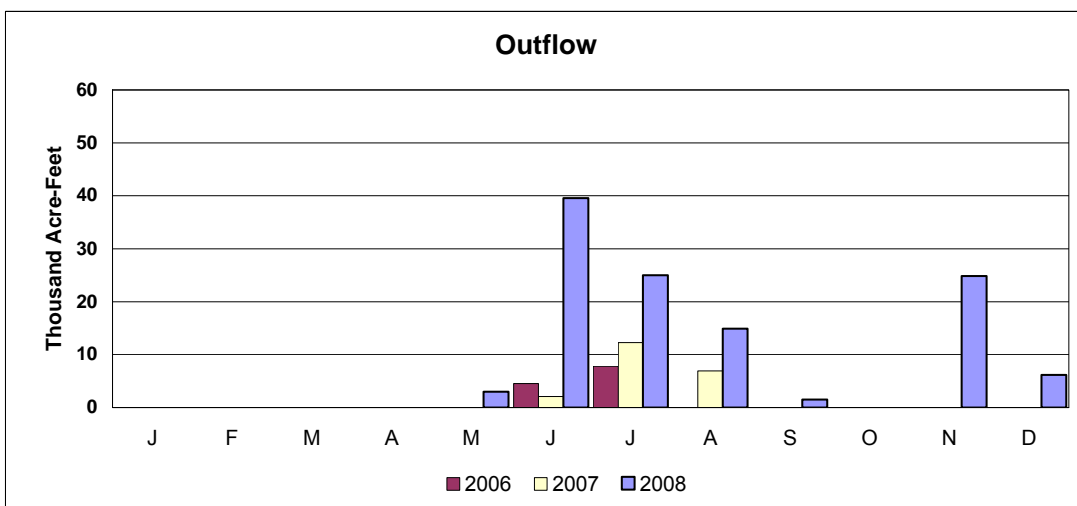
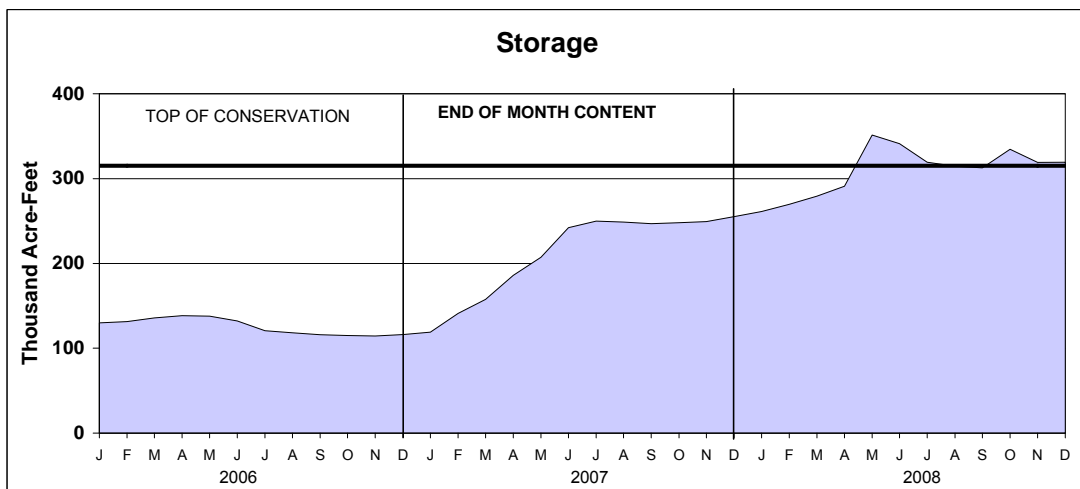
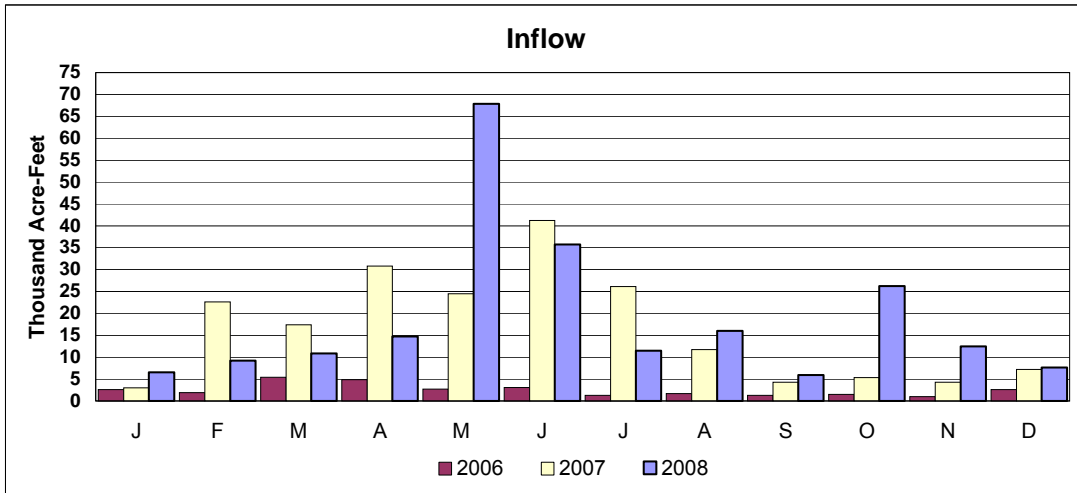
HARRY STRUNK LAKE ACTUAL OPERATION



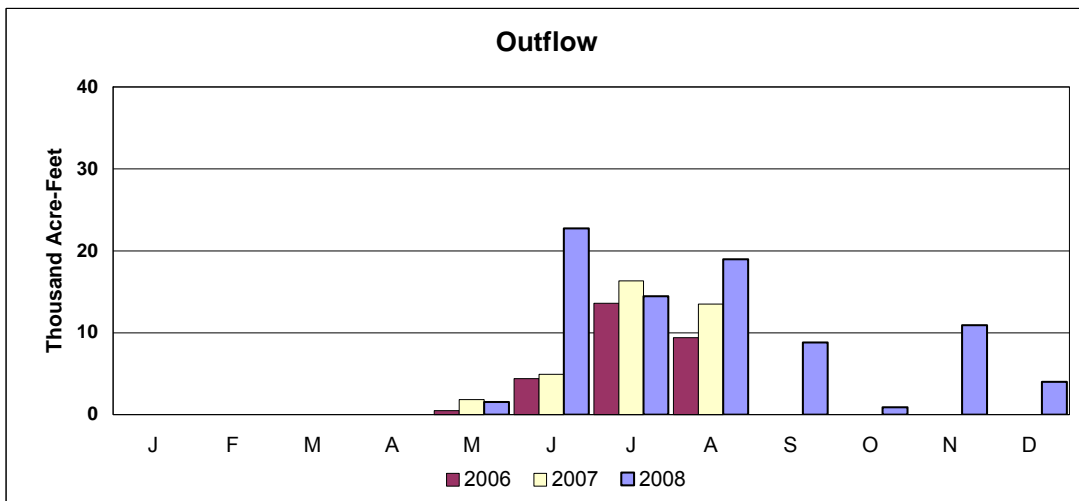
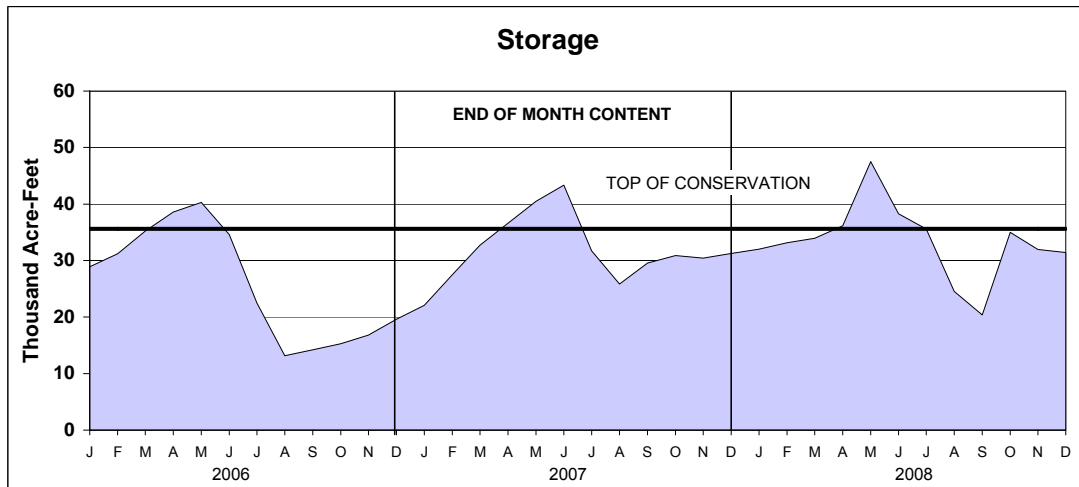
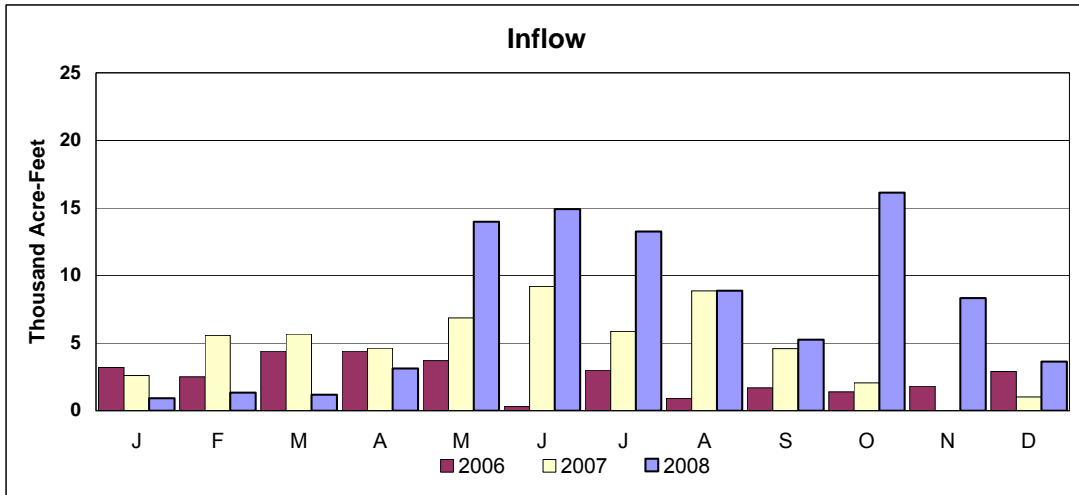
KEITH SEBELIUS LAKE ACTUAL OPERATION



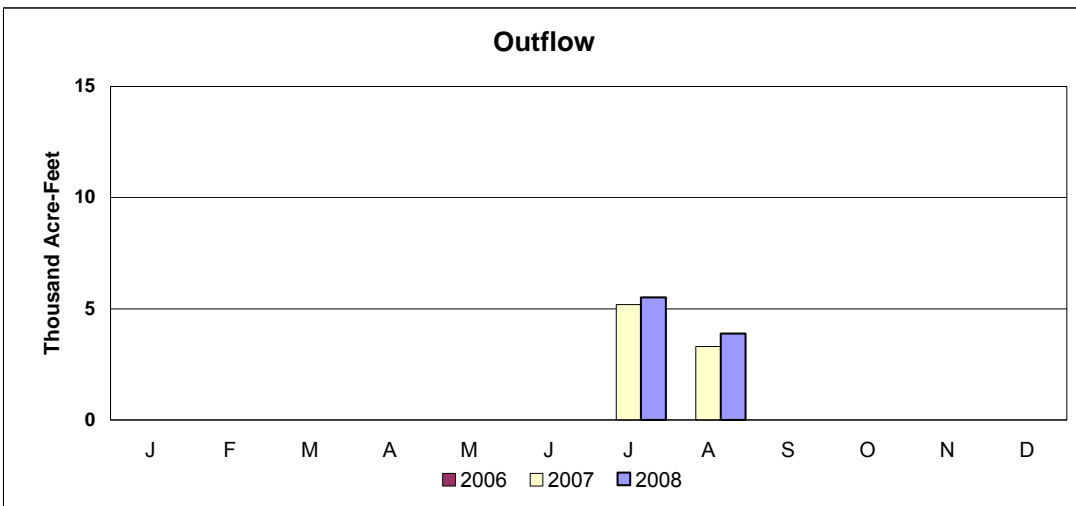
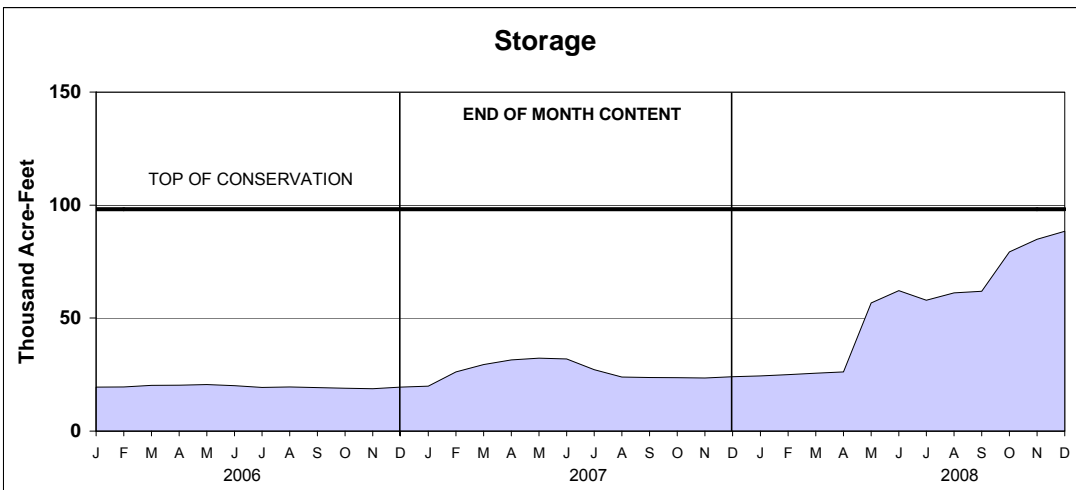
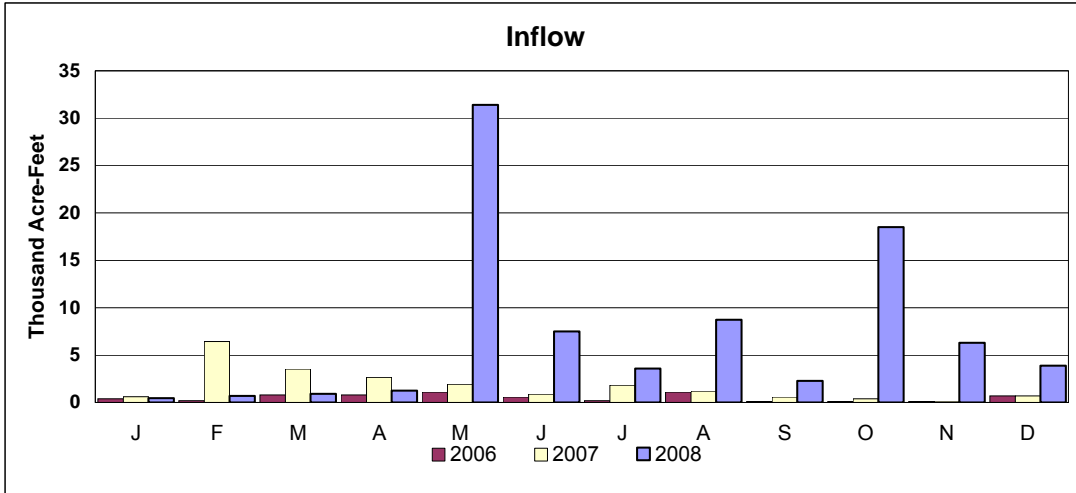
HARLAN COUNTY LAKE ACTUAL OPERATION



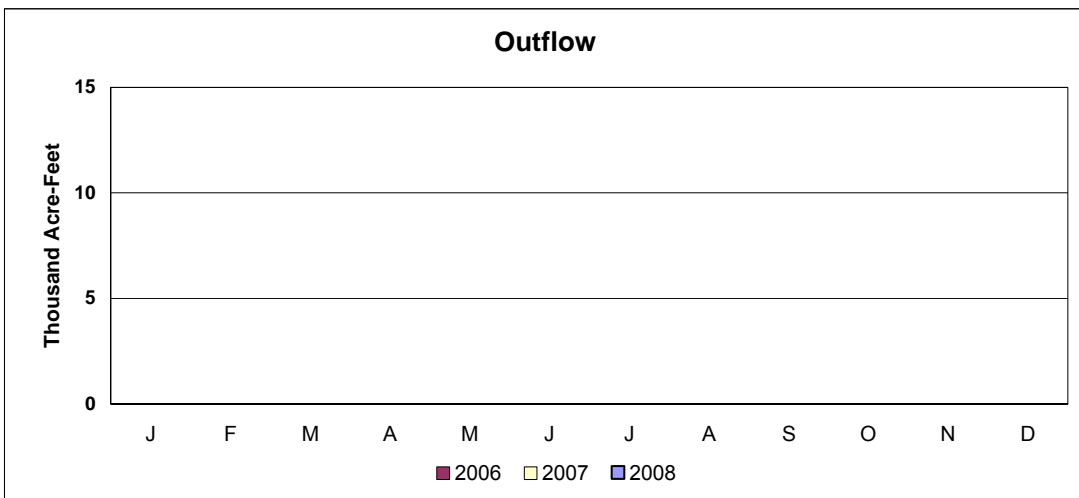
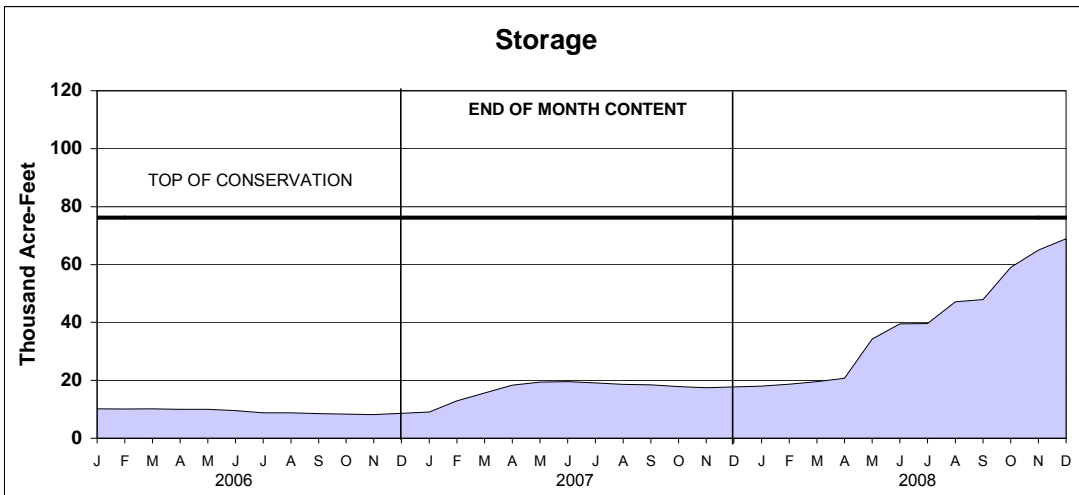
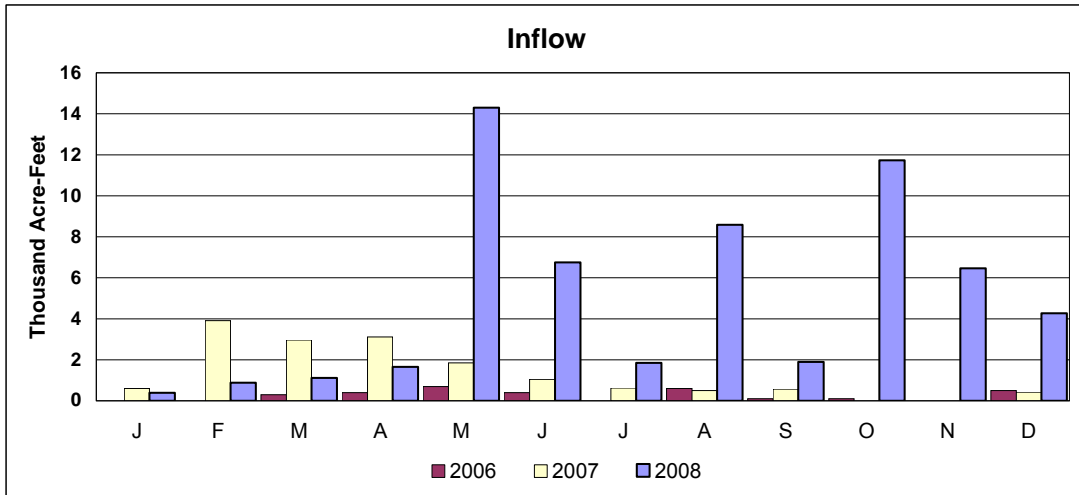
LOVEWELL RESERVOIR ACTUAL OPERATION



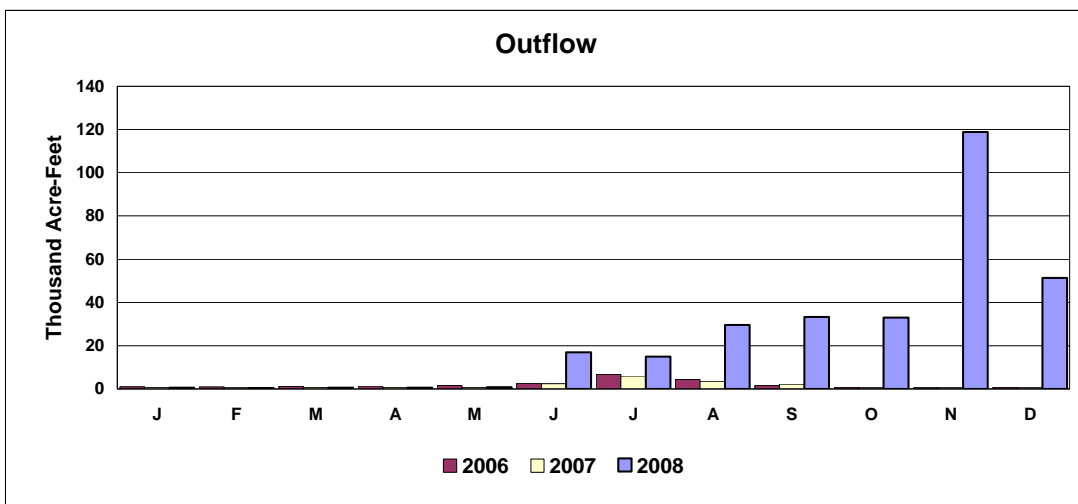
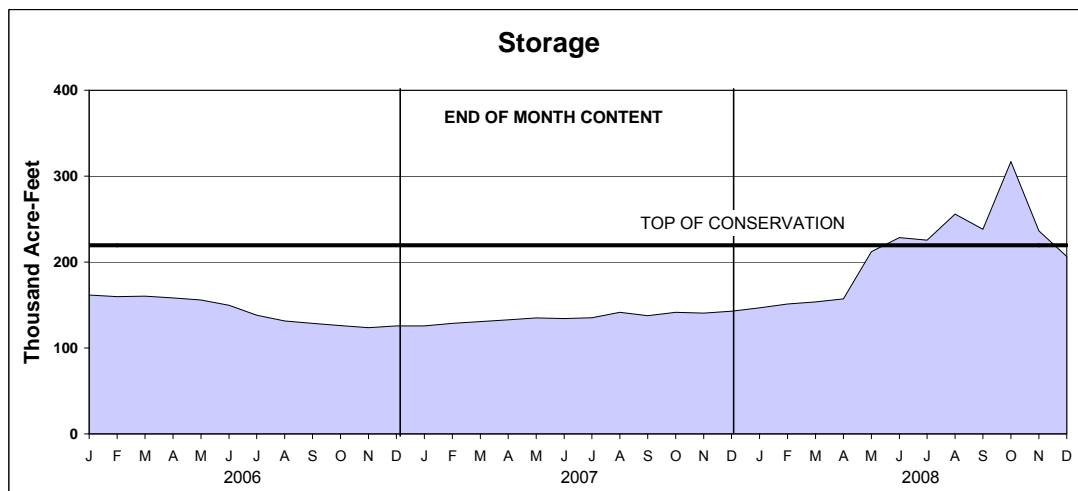
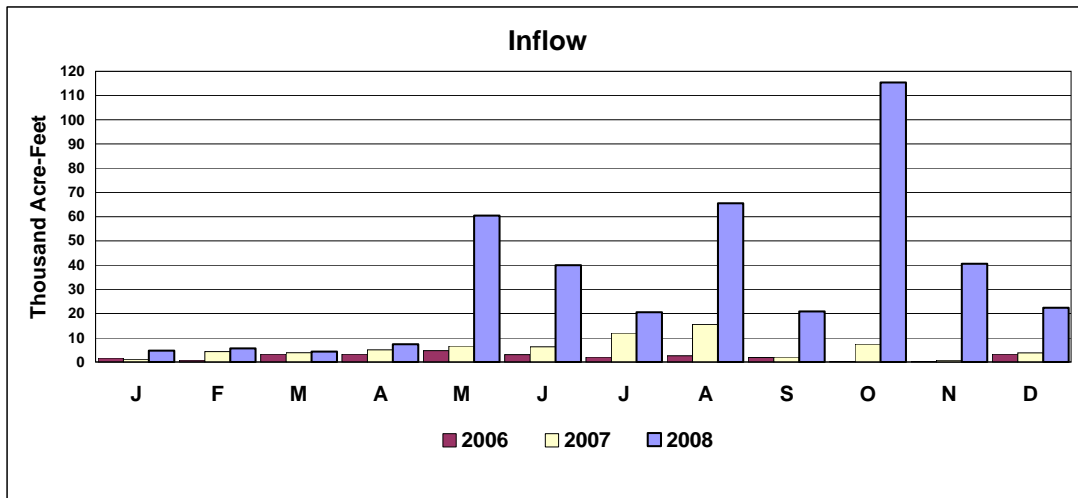
KIRWIN RESERVOIR ACTUAL OPERATION



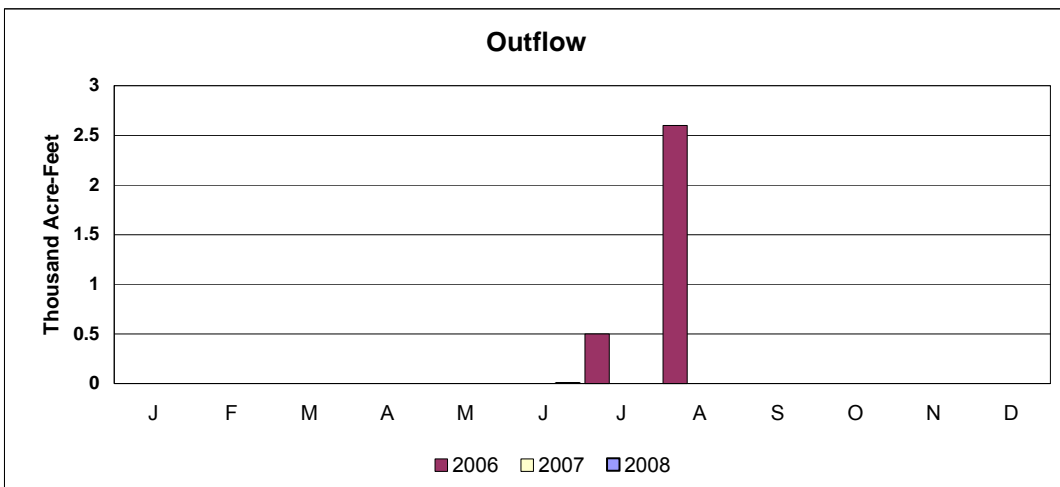
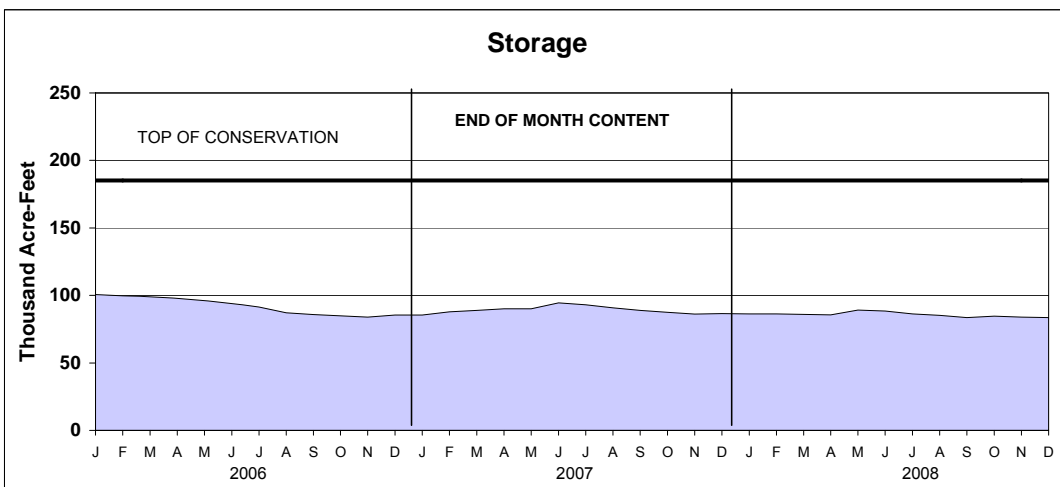
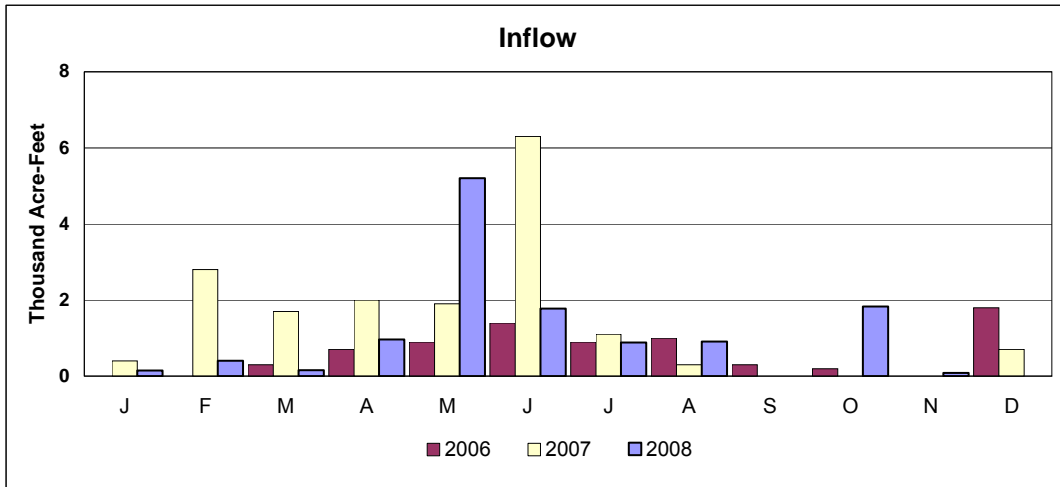
WEBSTER RESERVOIR ACTUAL OPERATION



WACONDA LAKE ACTUAL OPERATION

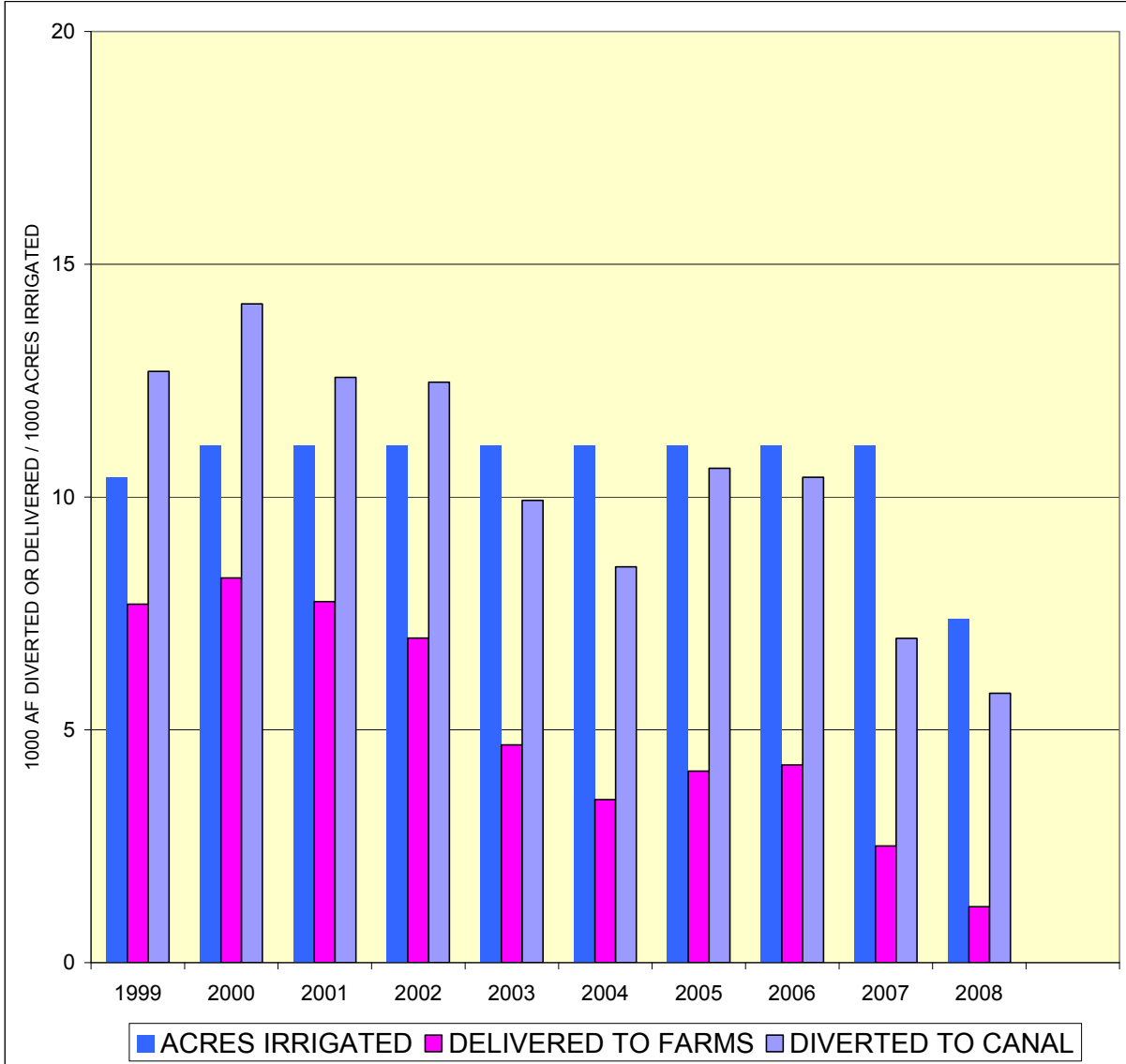


CEDAR BLUFF RESERVOIR ACTUAL OPERATION



MIRAGE FLATS IRRIGATION DISTRICT

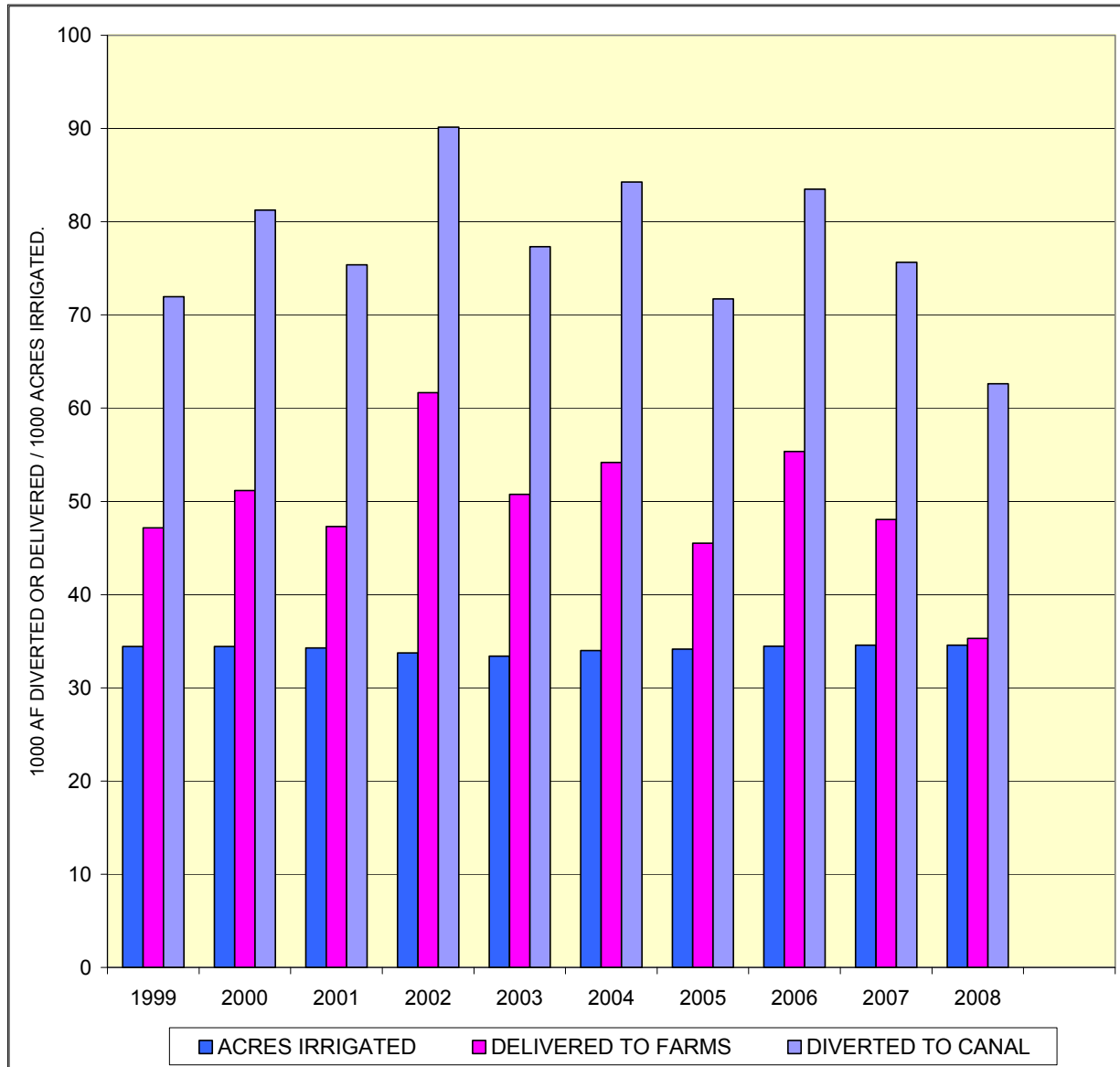
CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	1.22	1.28	1.13	1.12	0.90	0.77	0.96	0.94	0.63	0.78
DELIVERED af/acre	0.74	0.75	0.70	0.63	0.42	0.32	0.37	0.38	0.23	0.16
EFFICIENCY	61%	58%	62%	56%	47%	41%	39%	41%	36%	21%

AINSWORTH IRRIGATION DISTRICT

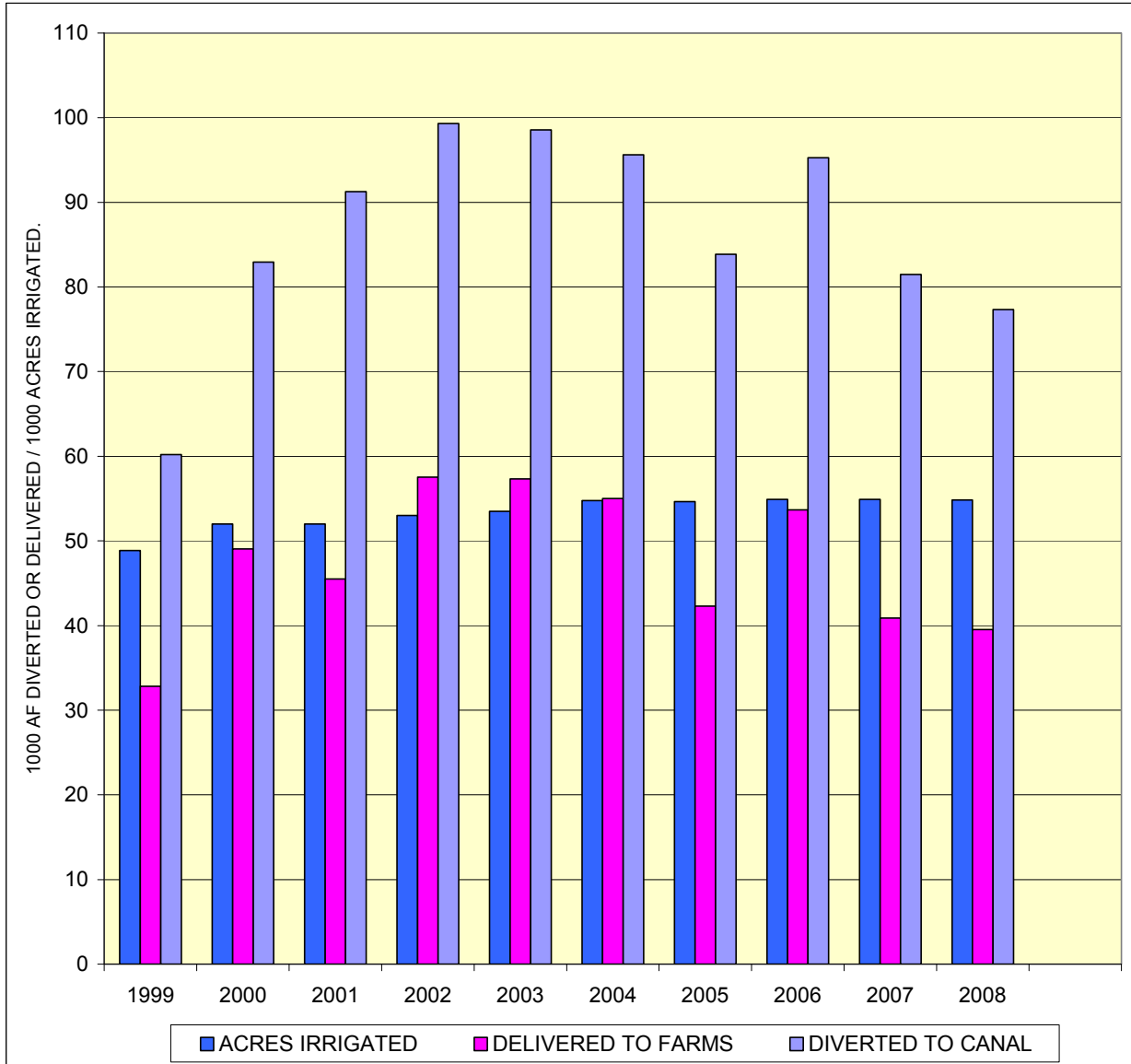
CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED <i>af/acre</i>	2.09	2.36	2.20	2.67	2.31	2.48	2.10	2.42	2.19	1.81
DELIVERED <i>af/acre</i>	1.37	1.49	1.38	1.83	1.52	1.59	1.33	1.61	1.39	1.02
EFFICIENCY	66%	63%	63%	68%	66%	64%	63%	66%	64%	56%

TWIN LOUPS IRRIGATION DISTRICT

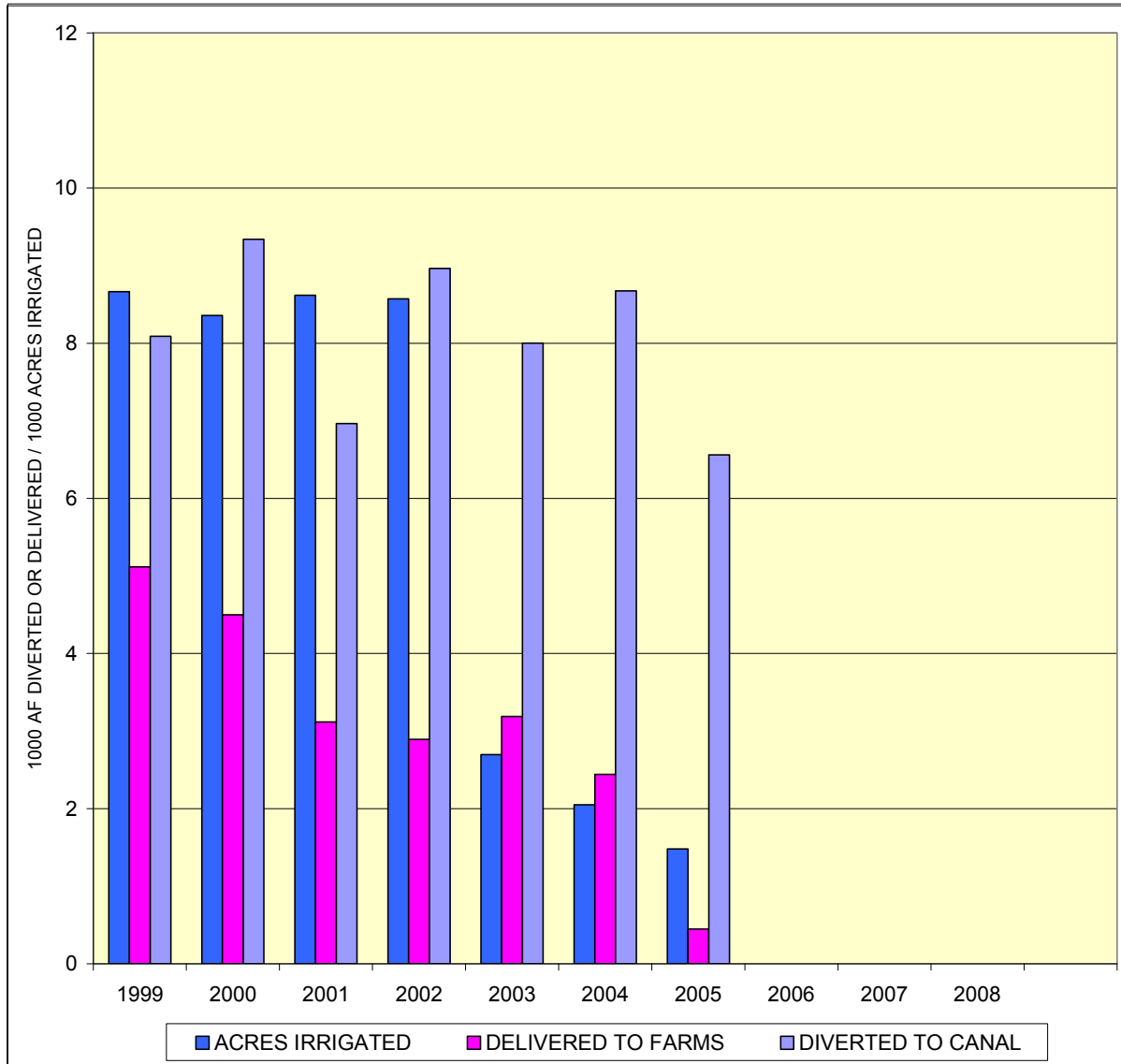
CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	1.23	1.60	1.76	1.87	1.84	1.75	1.53	1.74	1.48	1.41
DELIVERED af/acre	0.67	0.94	0.88	1.09	1.07	1.00	0.77	0.98	0.74	0.72
EFFICIENCY	55%	59%	50%	58%	58%	58%	50%	56%	50%	51%

FRENCHMAN VALLEY IRRIGATION DISTRICT

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

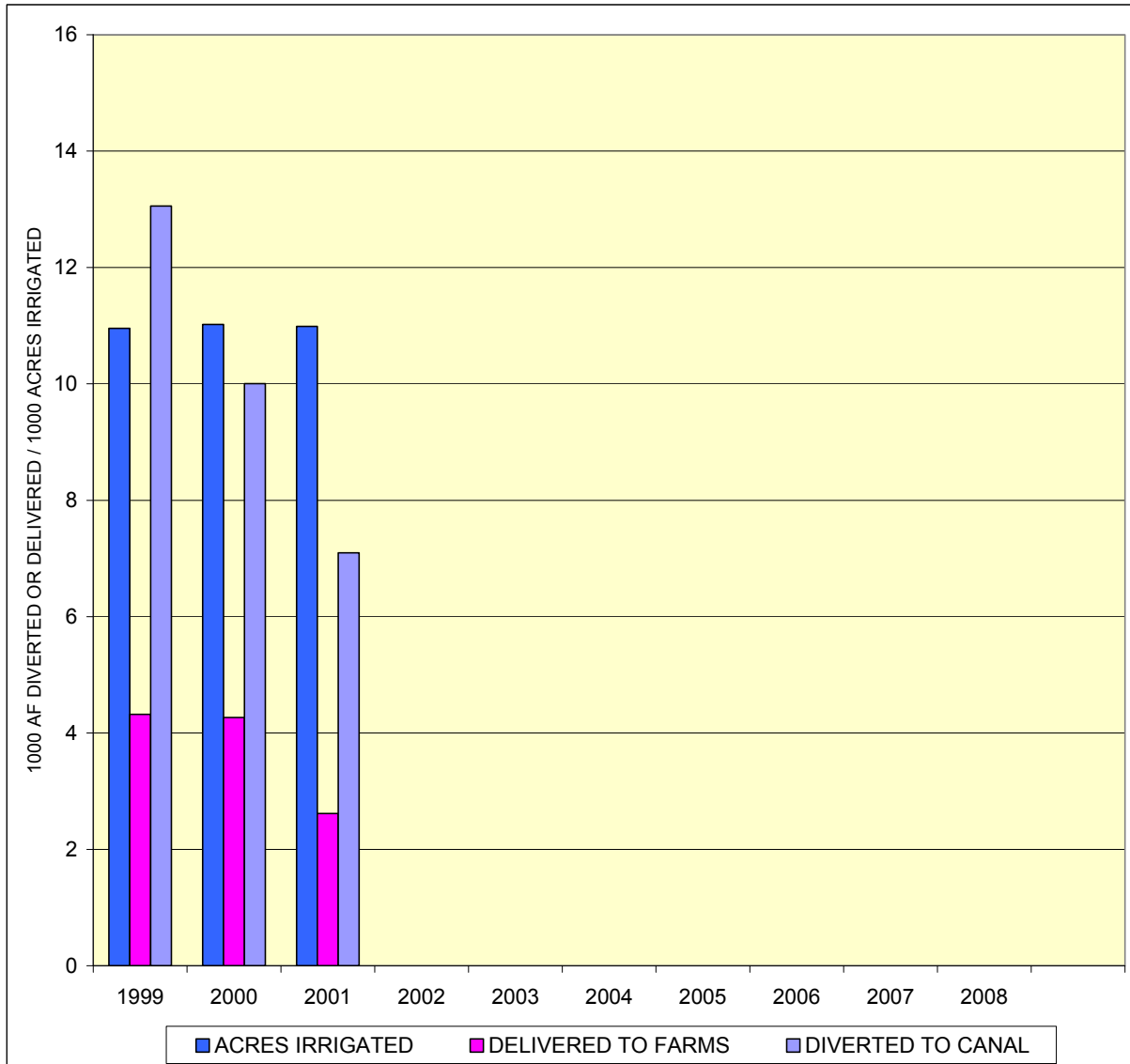


	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	0.93	1.12	0.81	1.05	2.97	4.24	4.43	0.00	0.00	0.00
DELIVERED af/acre	0.59	0.54	0.36	0.34	1.18	1.19	0.30	0.00	0.00	0.00
EFFICIENCY	63%	48%	45%	32%	40%	28%	7%	0%	0%	0%

EXHIBIT 21

H AND RW IRRIGATION DISTRICT

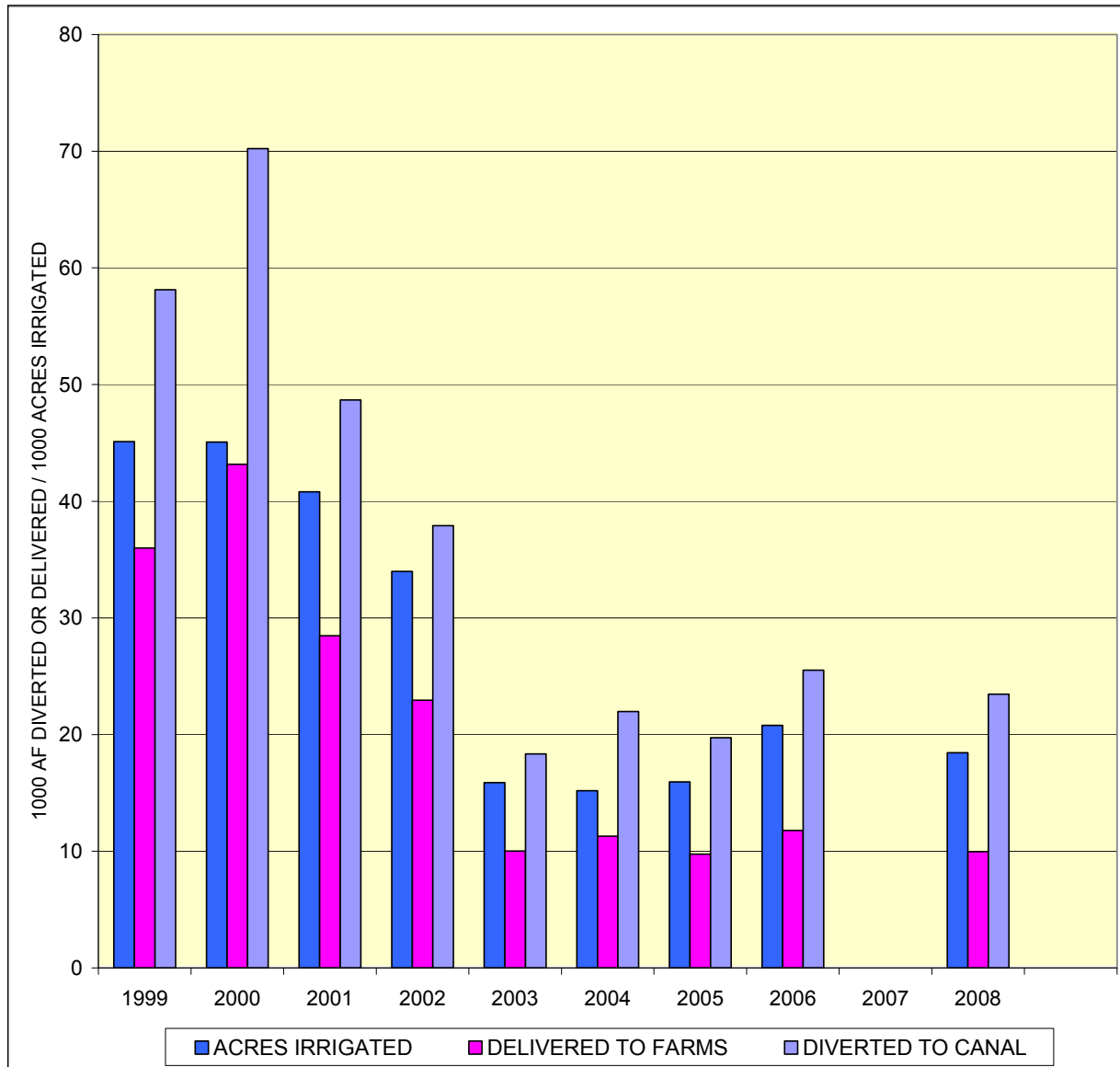
CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	1.19	0.91	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DELIVERED af/acre	0.39	0.39	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EFFICIENCY	33%	43%	37%	0%	0%	0%	0%	0%	0%	0%

FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

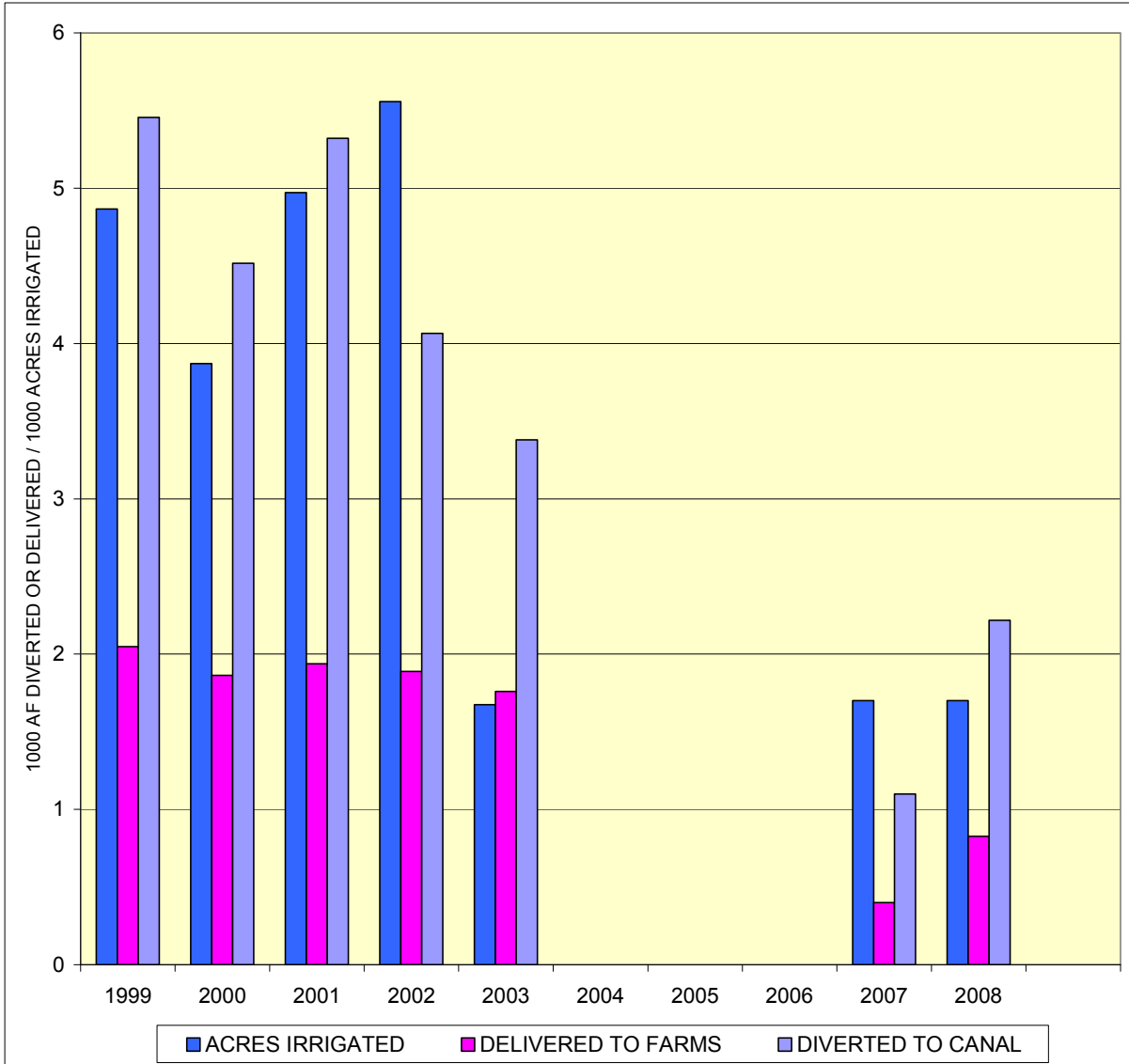
CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	1.29	1.56	1.19	1.12	1.15	1.45	1.24	1.23	0.00	1.27
DELIVERED f/acre	0.80	0.96	0.70	0.67	0.63	0.74	0.61	0.57	0.00	0.54
EFFICIENCY	62%	61%	58%	61%	55%	52%	50%	46%	0%	42%

ALMENA IRRIGATION DISTRICT

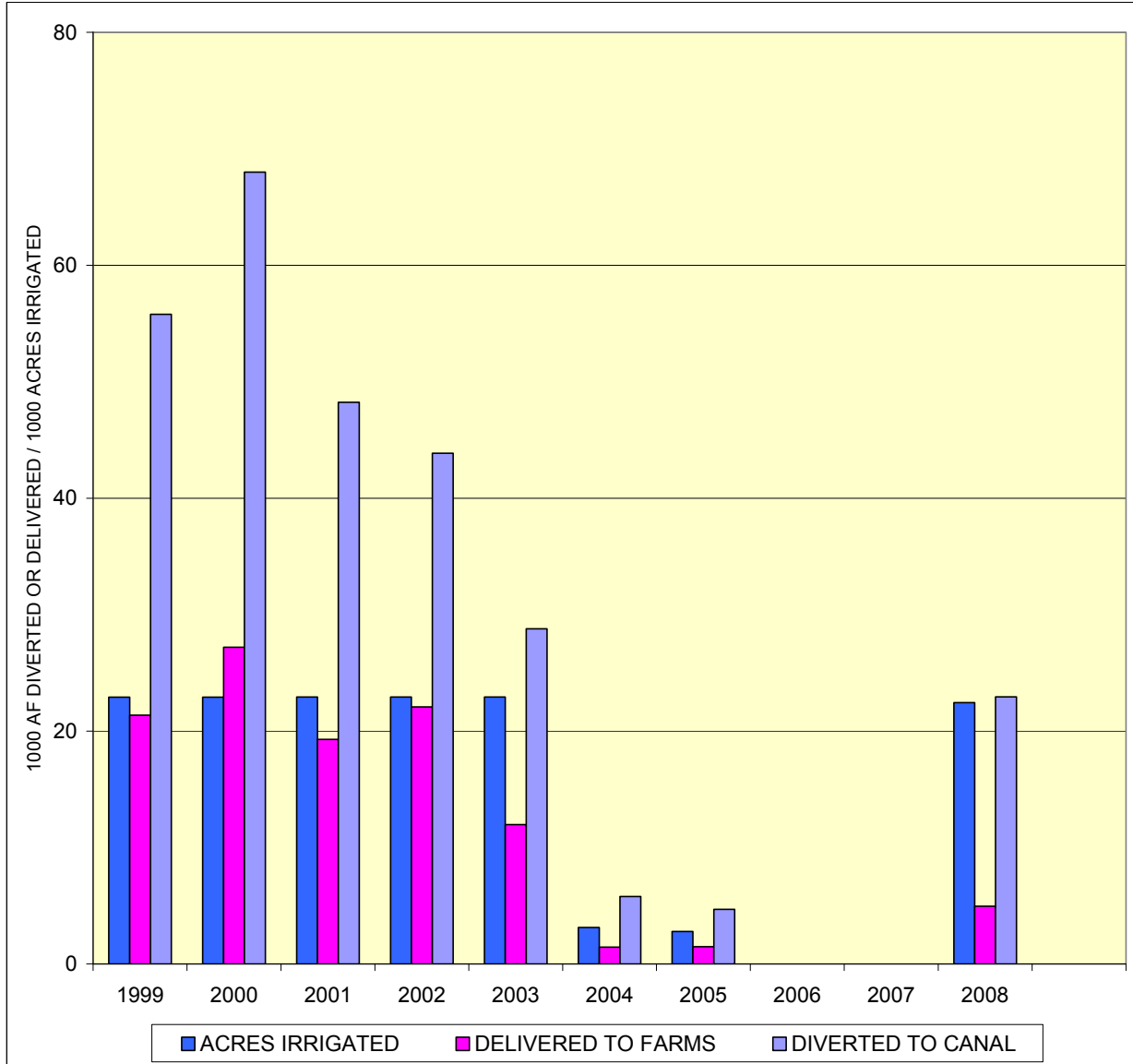
CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	1.12	1.17	1.07	0.73	2.02	0.00	0.00	0.00	0.65	1.30
DELIVERED af/acre	0.42	0.48	0.39	0.34	1.05	0.00	0.00	0.00	0.24	0.49
EFFICIENCY	38%	41%	36%	46%	52%	0%	0%	0%	36%	37%

BOSTWICK IRRIGATION DISTRICT - NEBRASKA

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

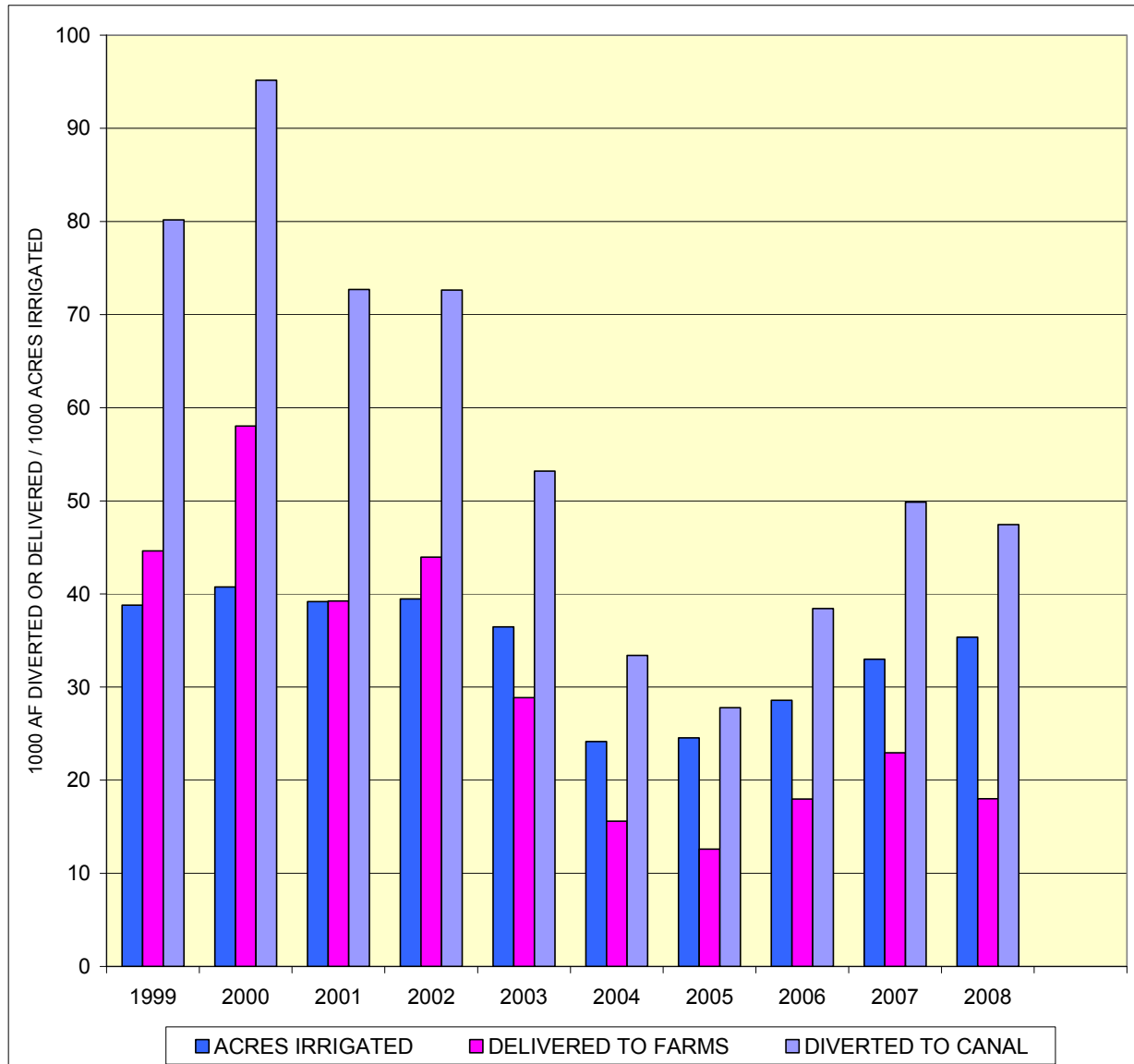


	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	2.44	2.97	2.10	1.91	1.25	1.85	1.68	0.00	0.00	1.02
DELIVERED af/acre	0.93	1.19	0.84	0.96	0.52	0.47	0.53	0.00	0.00	0.22
EFFICIENCY	38%	40%	40%	50%	42%	25%	32%	0%	0%	22%

EXHIBIT 25

KANSAS-BOSTWICK IRRIGATION DISTRICT

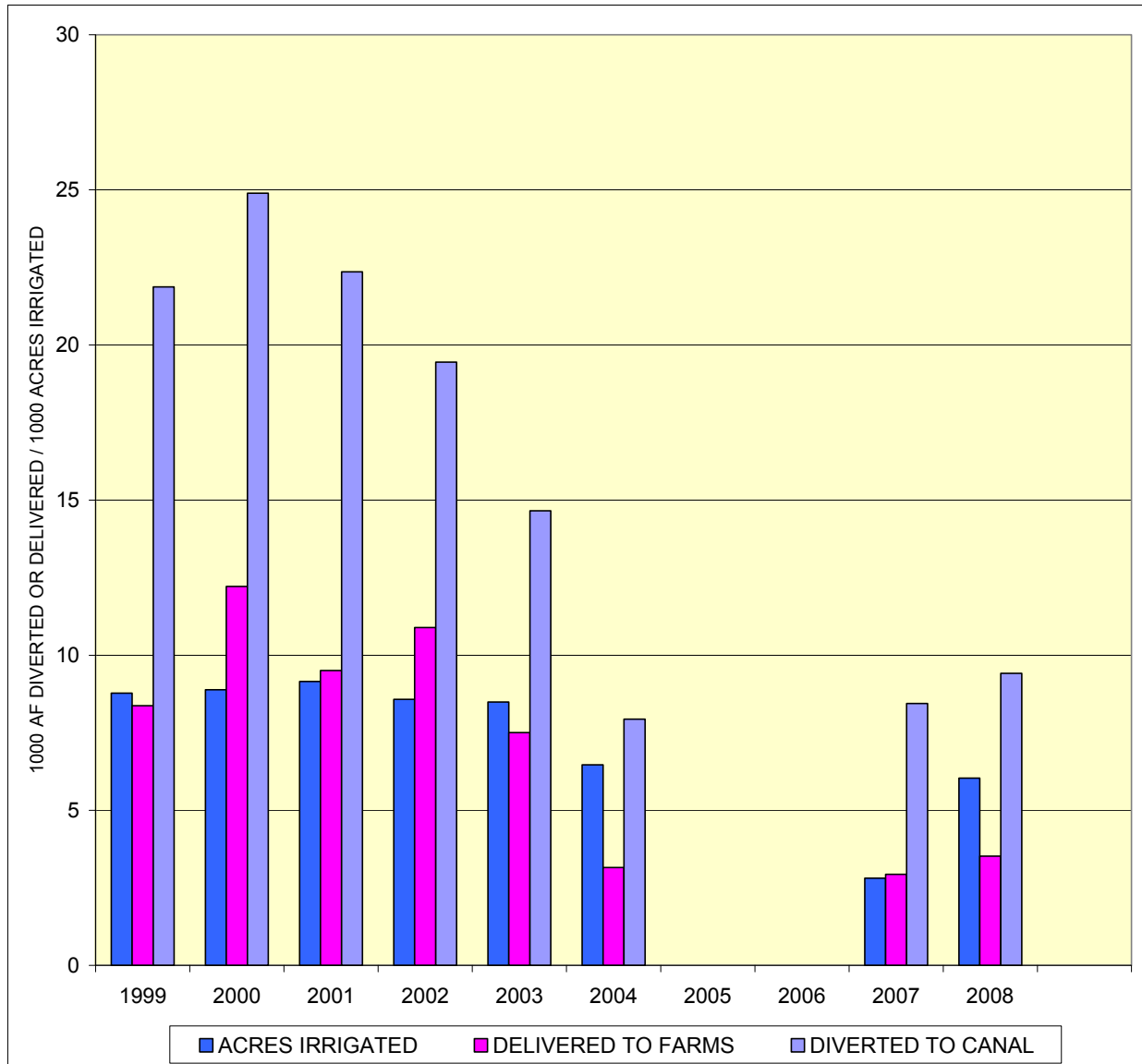
CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	2.07	2.33	1.86	1.84	1.46	1.38	1.13	1.35	1.51	1.34
DELIVERED af/acre	1.15	1.42	1.00	1.11	0.79	0.65	0.51	0.63	0.70	0.51
EFFICIENCY	56%	61%	54%	61%	54%	47%	45%	47%	46%	38%

KIRWIN IRRIGATION DISTRICT

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

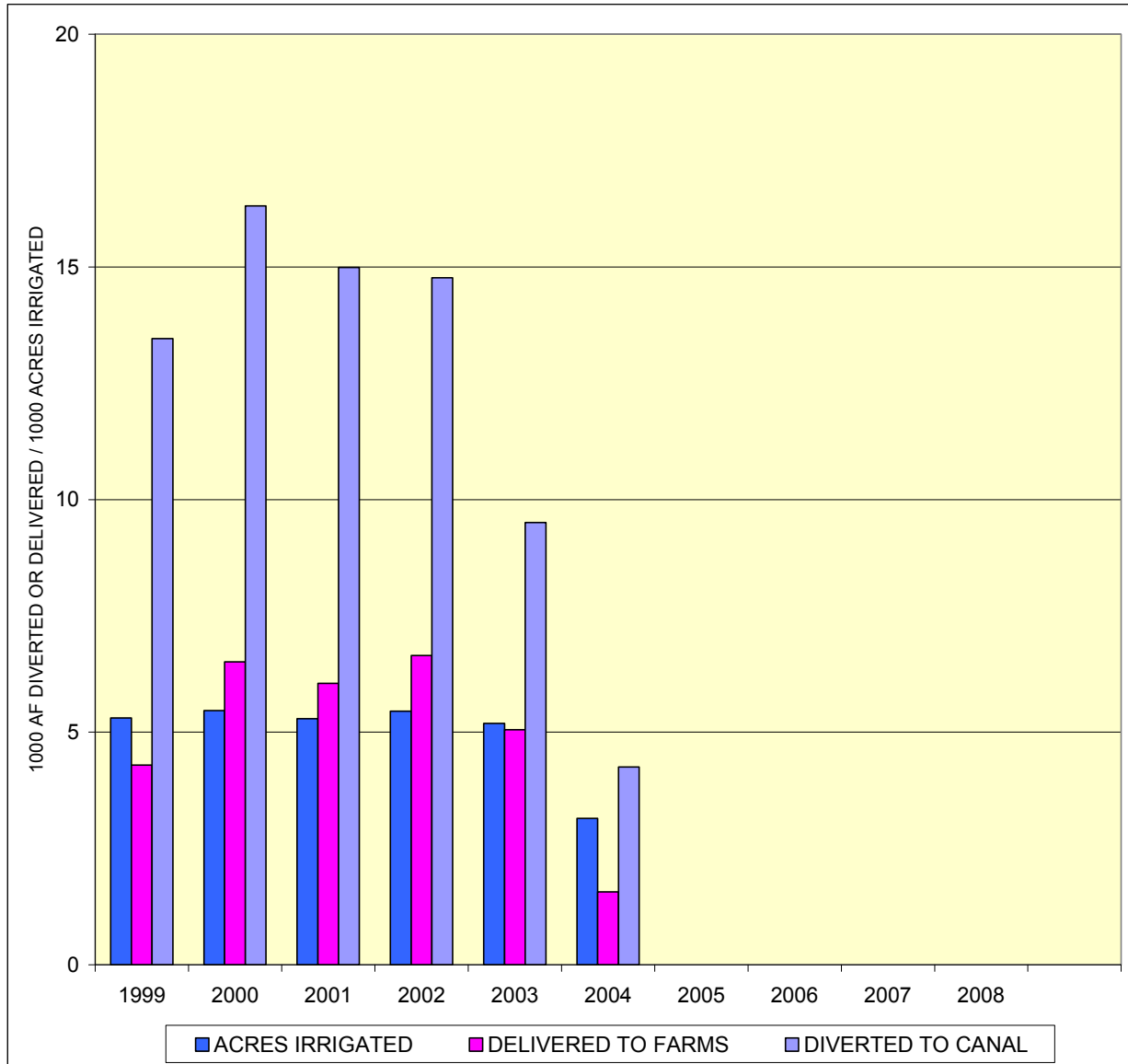


	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	1.00	2.80	2.44	2.27	1.73	1.23	0.00	0.00	3.00	1.56
DELIVERED af/acre	0.95	1.37	1.04	1.27	0.88	0.49	0.00	0.00	1.05	0.58
EFFICIENCY	38%	49%	43%	56%	51%	40%	0%	0%	35%	37%

EXHIBIT 27

WEBSTER IRRIGATION DISTRICT

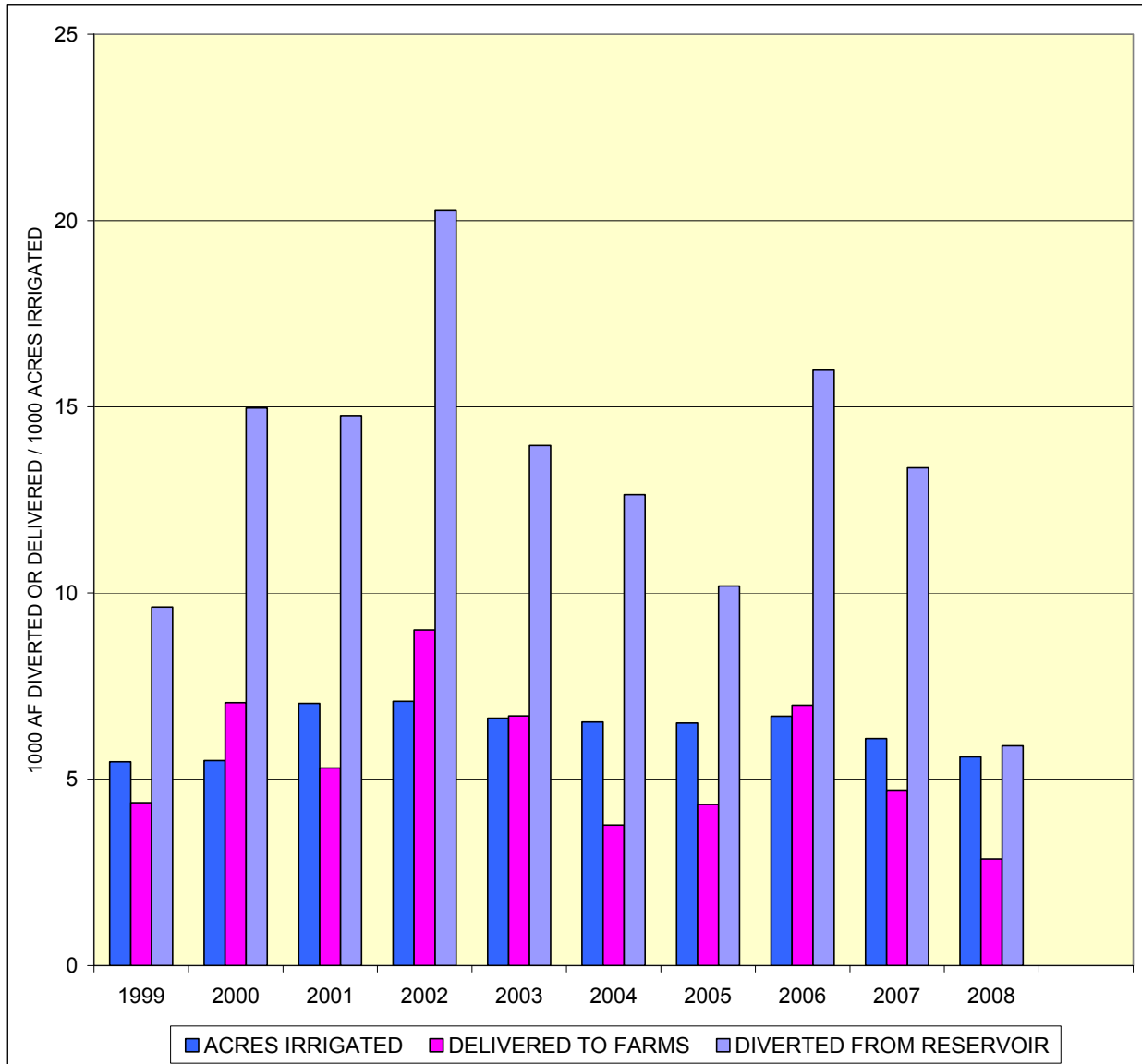
CANAL DIV., FARM DEL., AND ACRES IRRIG.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	2.54	2.98	2.83	2.71	1.83	1.35	0.00	0.00	0.00	0.00
DELIVERED af/acre	0.81	1.19	1.14	1.22	0.97	0.50	0.00	0.00	0.00	0.00
EFFICIENCY	32%	40%	40%	45%	53%	37%	0%	0%	0%	0%

GLEN ELDER IRRIGATION DISTRICT

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



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DIVERTED af/acre	1.76	2.72	1.00	1.00	1.00	1.93	1.57	2.39	0.00	1.05
DELIVERED af/acre	0.80	1.28	0.75	1.27	1.01	0.58	0.66	1.04	0.00	0.51
EFFICIENCY	45%	47%	36%	44%	48%	30%	42%	44%	129%	48%