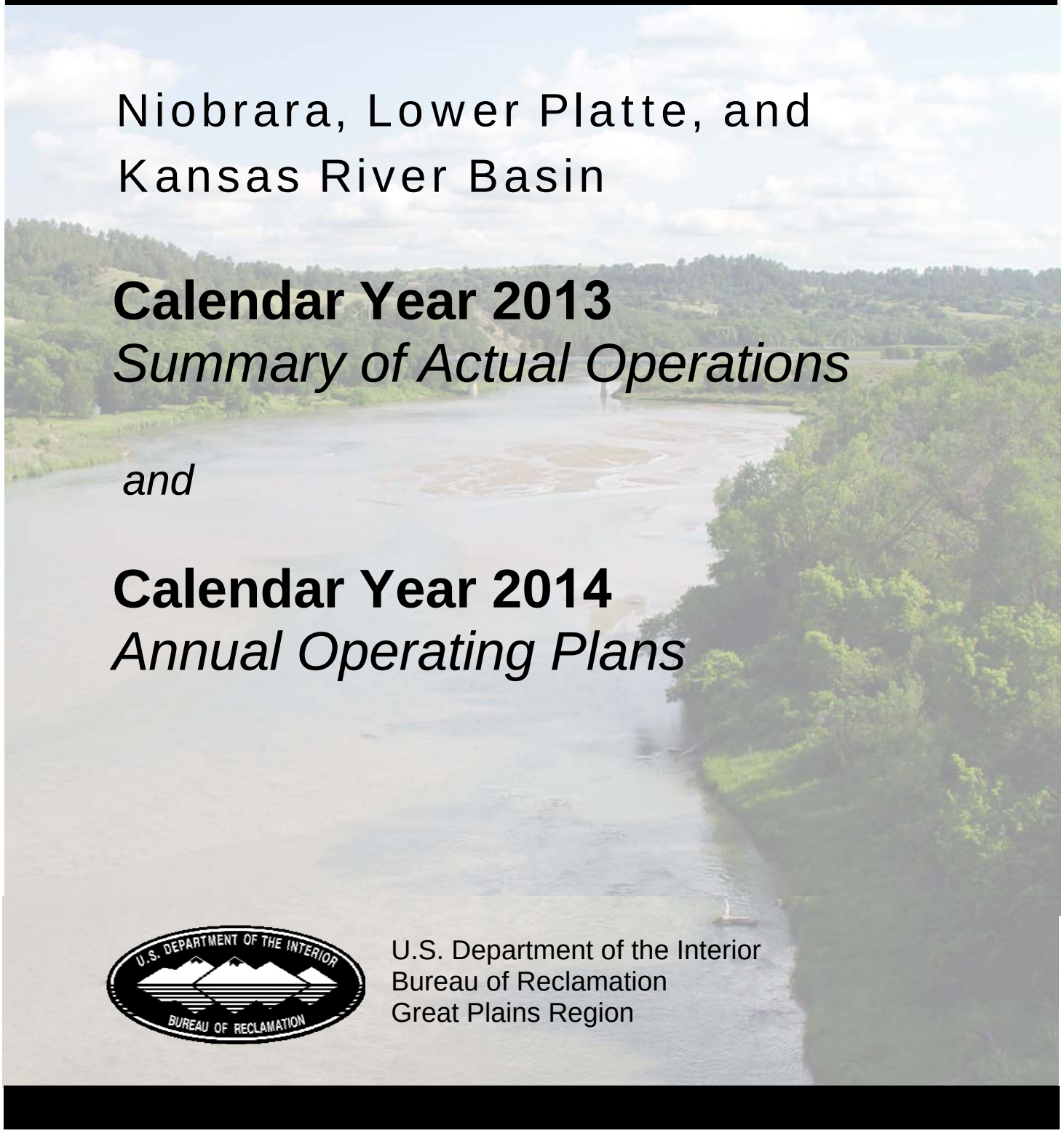
RECLAMATION

Managing Water in the West

Annual Operating Plans



Niobrara, Lower Platte, and
Kansas River Basin

Calendar Year 2013
Summary of Actual Operations

and

Calendar Year 2014
Annual Operating Plans

U.S. Department of the Interior
Bureau of Reclamation
Great Plains Region

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SYNOPSIS

General

This year is the 61st consecutive year that an Annual Operating Plan (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 nine diversion dams, nine pumping plants, and 20 canal systems serve approximately 269,745 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, located at McCook, Nebraska are 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 have 65 Hydromet stations that can be accessed. The Nebraska-Kansas Area Office (NKAO) has installed and maintains 40 of these Hydromet stations. 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 – Hydrological Data Center" under the Water Operations heading.

On page 6 "The Headlines 2013", which follows this synopsis is indicative of the awareness that the local residents have of the natural resource development and conservation in the Niobrara, Lower Platte, and Kansas River Basins.

2013 Summary

Climatic Conditions

Precipitation at the project dams during 2013 ranged from 64 percent of normal at Red Willow Dam to 115 percent of normal near Davis Creek Dam. Annual precipitation was below normal for 11 of the 16 project dams. Dams located in central and northern Nebraska recorded above normal precipitation for the year, while dams located in southwest Nebraska and north central Kansas recorded below precipitation for the second consecutive year.

Temperatures during the first two months of the year were generally above normal throughout the projects area. Temperatures during March were near the normal average. Precipitation totals varied from 32 percent to 130 percent of normal during January through March. January and March precipitation was below normal in most of the project areas while February precipitation was above normal at 15 of the 16 project dams.

Temperatures in April were slightly above normal, while temperatures in May were slightly below normal. Precipitation during April ranged from 42 percent of normal to 153 percent of normal. May precipitation ranged from 49 percent of normal to 194 percent of normal.

Temperatures were above normal during the summer. Total precipitation for June was well below normal for all of the projects. July totals ranged from 35 percent of normal to 150 percent of normal, while August precipitation was below normal for most of the project dams.

Precipitation recorded in September was well above normal for most of the project area. October and December precipitation was below normal for most of the projects. November precipitation ranged from 2 percent of normal to 159 percent of normal. Temperatures in the fall were below normal, and winter temperatures were above normal.

Storage Reservoirs

Conservation Operations: The 2013 inflow was below the dry-year forecast for Box Butte, Bonny, Enders, Hugh Butler, Lovewell, Webster, and Cedar Bluff Reservoirs. The remaining reservoirs had inflows between the dry-year and normal-year forecasts.

Twelve of the sixteen reservoirs had below average carryover storage from the 2012 water year. Reservoir releases were made from Merritt and Virginia Smith Dams to maintain or reduce reservoir levels prior to the 2013 irrigation season. Box Butte, Enders and Webster Reservoirs, along with Swanson, Hugh Butler, Harry Strunk, Keith Sebelius, and Harlan County Lakes, did not have sufficient storage to provide water users with a full water supply. A small amount of flood storage was utilized in Lovewell Reservoir prior to the irrigation season. Irrigation demands greatly reduced the storage in these project reservoirs throughout the summer. Reservoir storage was below average at all 16 reservoirs at the end of 2013.

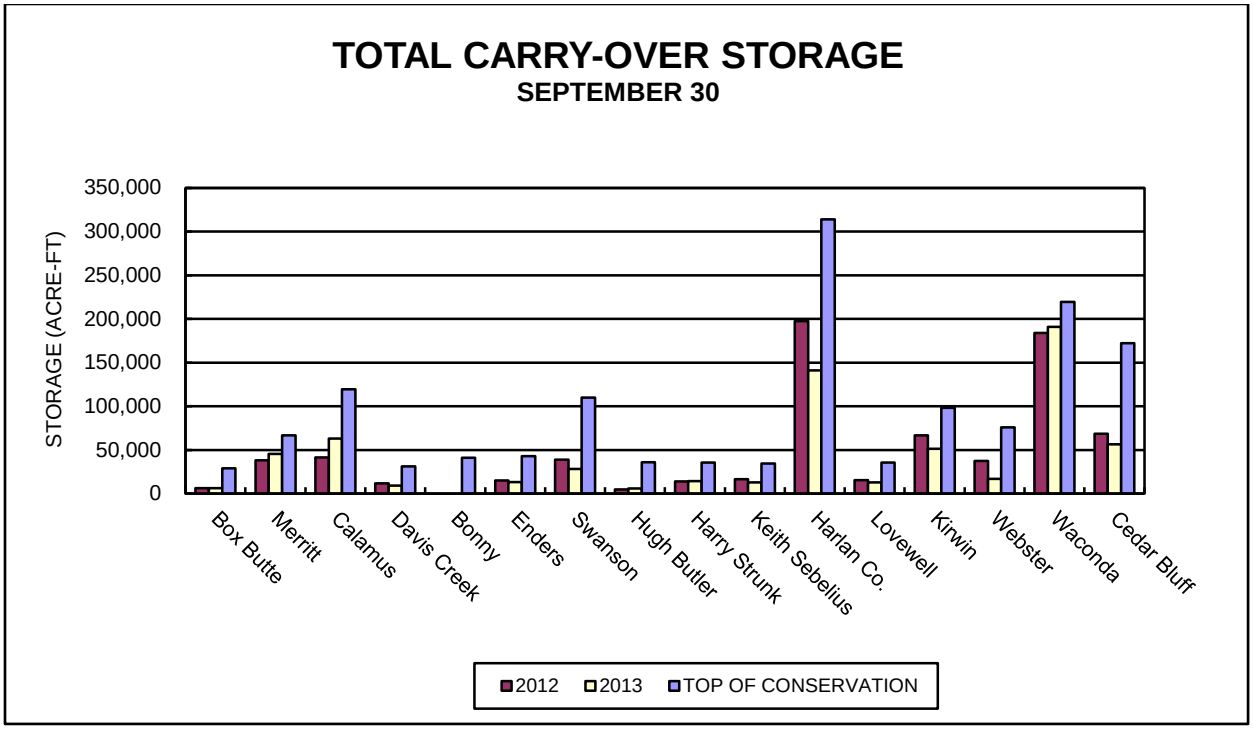
On September 20, 2011, the State of Colorado ordered that Bonny Reservoir be drained for Republican River Compact compliance. All of the water in Bonny Reservoir was evacuated by the end of May 2012 and no storage has been recorded since. The State of Colorado order remains in effect and inflows continue to be bypassed.

On January 1, 2013, the State of Nebraska, Department of Natural Resources (NE DNR) determined a "Compact Call Year" (Compact Call) to be in effect on the Republican River Basin. The Compact Call resulted in the NE DNR issuing closing notices on all natural flow and storage permits in the basin until such time that the NE DNR determines that yearly administration is no longer needed to ensure Republican River Compact compliance. All surface water appropriations in the Republican River Basin above Guide Rock Diversion Dam were closed on January 1, 2013. A total of 23,075 Acre-feet (AF) of reservoir inflows were bypassed

through Enders Reservoir, Swanson Lake, Hugh Butler Lake, and Harry Strunk Lake as a result of the Compact Call. There was also 7,765 AF bypassed through Harlan County Lake. An additional 15,598 AF of reservoir inflow was stored in Harlan County Lake under an Excess Capacity Contract (Warren Act) authority with Kansas Bostwick Irrigation District (KBID) that was later released to HBID. The Compact Call remained in effect the entire year. On December 23, 2013, the NE DNR notified Reclamation that all water being stored under the Compact Call as of December 31, 2013, would be transferred to project water and legally stored under the respective water rights. A total of 20,599 AF was retained in the respective reservoir or lakes and transferred for future project use.

Hugh Butler Lake has been maintained near the dead pool since embankment cracking was discovered in 2009. Safety of dam work began at Red Willow Dam in 2011, and substantial completion was declared in the fall of 2013. Storage in Hugh Butler Lake remains near the dead pool level due to the Compact Call release orders.

The following graph shows a comparison of 2012 and 2013 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 30, 2013.



Flood Control Operations: There were no direct flood releases made in 2013. The water year 2013 flood damages prevented by the operation of Reclamation's Nebraska-Kansas Projects facilities was $1,084,600 as determined by the Corps of Engineers. An additional benefit of $23,200 was credited to Harlan County Lake. The accumulative total of flood control benefits

for the years 1951-2013 by facilities in this report total $2,067,553,700 (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 the facilities of the Nebraska-Kansas projects during 2013 can be found in Table 7.

Water Service

There was 304,037 AF of water diverted to irrigate approximately 195,373 acres of project lands in the 12 irrigation districts (see tables 3 and 6). The project water supply was either inadequate or limited for 106,757 acres of the total project lands. This includes lands in Mirage Flats, Frenchman Valley, H&RW, Frenchman-Cambridge, Almena, and Nebraska Bostwick Irrigation Districts. The project water supplies for the other units mentioned in this report were adequate in 2013.

The water requirements were met in 2013 for the three municipalities, one rural water district and two fish hatchery. Storage releases and natural flows were both utilized in meeting these demands for 2013.

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 NKAO is available for meetings, if requested, with Nebraska, Colorado, and Kansas state management agencies to discuss the AOP. Information is solicited from the agencies to enhance fisheries resources within the flexibility allowed while still meeting contractual obligations with the various irrigation districts.

Reservoir operations were favorable for recreation and fish and wildlife uses in 2013 at those project reservoirs with full or nearly full conservation pools prior to the irrigation season. The higher water levels experienced early in the year submerged existing shoreline vegetation. Normal irrigation demands and the lack of precipitation during the summer greatly reduced the pool levels at several reservoirs allowing for late summer shoreline revegetation. The draining of Bonny Reservoir and the State administration of storage rights in southwest Nebraska reservoirs diminished recreation benefits at these facilities.

2014 Outlook

Three forecast conditions have been developed for each of the reservoirs in the Niobrara, Lower Platte, and Kansas River Basins conforming to establish operating criteria under various reservoir inflow conditions. These operation studies are included in Table 4, sheets 1 through 16. The municipal and rural water district water supply requirements will be met under all three inflow forecast conditions for all units.

Under reasonable minimum inflow forecast conditions, irrigation districts receiving storage water from the following lakes and reservoirs are expected to receive less than a full supply: Box Butte, Enders, Swanson, Hugh Butler, Harry Strunk, Keith Sebelius, Harlan County, Lovewell and Webster. The irrigation districts affected are Mirage Flats; Frenchman Valley and H&RW; Frenchman-Cambridge; Almena; Nebraska Bostwick; Kansas Bostwick; and Webster; respectively. If 2014 is a dry year, 157,794 acres of the total 269,745 acres with service available to be irrigated (58 percent) will have an inadequate water supply.

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

Even under reasonable maximum inflow conditions, Mirage Flats, Frenchman Valley, H&RW, and Frenchman-Cambridge Irrigation Districts are expected to experience irrigation demand shortages from Box Butte Reservoir, Enders Reservoir, Swanson Lake, Hugh Butler Lake, and Harry Strunk Lake.

Under reasonable minimum inflow conditions, the conservation pools at Merritt, Calamus, Davis Creek, and Lovewell Reservoirs are expected to fill during 2014.

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

Water is not expected to be stored in Bonny Reservoir during 2014 as the State of Colorado's order to bypass all inflows remains in effect. Bonny Reservoir was drained in 2012 by order of the State of Colorado to assist in meeting Republican River Compact compliance.

On January 1, 2014, the State of Nebraska, Department of Natural Resources (NE DNR) determined a "Compact Call Year" to be in effect on the Republican River Basin for 2014. Reservoir inflows are currently being bypassed through Enders Reservoir, Swanson Lake, Hugh Butler Lake, and Harry Strunk Lake. Inflows to Harlan County Lake are being stored under an Excess Capacity Contract (Warren Act Authority) with KBID to be used by KBID during the 2014 irrigation season.

2013 HEADLINES

Republican River lawsuit ruling: Nebraska owes Kansas $5M

No zebra mussels in Enders Lake

Niobrara river endangered

Nebraska sending 20,000 acre-feet of water to Kansas

Republican River Compact signers would be amazed

First water flows from Rock Creek augmentation project

State orders release of water from reservoirs

Dam project 'substantially complete'

Report: Irrigators doubled pumping from 2011 to 2012

Surface water districts file suit to halt NRD augmentation projects

Neb. restricts Republican River water use in 2013

Report: Nebraska's groundwater levels decreased last year

Contractor named for stoplog project at Harlan County Dam

Dealing with limited water in Republican Basin

DNR is forecasting another compact call year for compliance

World-Herald editorial: Roiling on the rivers

West's drought and growth intensify conflict over water rights

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 2013 and serves as a guideline for the 2014 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 water supply 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 are 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 2000 sediment survey 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 39.

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 1994-2013 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. Nebraska Bostwick Irrigation District has contracted their O&M responsibilities for Superior-Courtland 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 Mirage Flats Irrigation District is April-September. The contracted irrigation season for Frenchman-Cambridge Irrigation District is April 15-October 15 or such additional period from April 1-April 15 of each year as may be agreed upon between the District and Reclamation. The contracted irrigation season for Frenchman Valley and H&RW Irrigation Districts is from May 1-October 15 or such additional period from April 1-May 1 of each year as determined between the District and Reclamation. The contracted irrigation season for Twin Loups Reclamation District and Almena, Nebraska and Kansas-Bostwick Irrigation Districts is May 1-September 30 or such additional period from April 1-November 15 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 1-September 30.

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 or repayment contracts for full or supplemental water supplies.

Fish and Wildlife

The Calamus Fish Hatchery is located below Virginia Smith Dam and Calamus Reservoir. The hatchery is operated and maintained by the Nebraska Game and Parks Commission (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.

The State of Kansas is presently using the fish hatchery facility below Cedar Bluff Reservoir for waterfowl habitat.

State of Colorado Division of Wildlife

The State of Colorado 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, Parks and Tourism (KDWPT)

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. Subordination Agreements also exist between Reclamation, the Ainsworth Irrigation District and the Nebraska Public Power District and between Reclamation, the Mirage Flats Irrigation District, and the Nebraska Public Power District. Provisions of these agreements will be incorporated into the 2014 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 17 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 table land

wells in the accounting, and accounting for all reservoirs 15 AF 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 (KSU). 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 through 2009. The Conservation Committee presented a Summary Report of Preliminary Findings for the study at the 2011 Republican River Compact annual meeting held in Burlington, Colorado on August 31, 2011. The Republican River Compact Administration (RRCA) will review the report and determine if a formal study report is needed. If the RRCA requests a formal study report, the Conservation Committee will complete the report within six months of the RRCA's request.

"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 that "Water-Short Year Administration" would be in effect in 2013.

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 Stipulation by investigating system improvements in the Lower Republican River 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.

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.

Both states have expressed support of the feasibility study. At the 2009 Republican River Compact annual meeting, the Compact Commissioners re-affirmed their support of the feasibility study by passing a resolution of support. In late 2009, Reclamation, the Kansas Department of Agriculture (KDA), and the NE DNR began discussions of ways to take advantage of other state and Federal programs to complete feasibility study tasks while awaiting appropriations. Initial tasks included detailed topography of the Lovewell Dam embankment and recreation areas and initial surface water model scoping activities. To date, Reclamation has not received the necessary funding for the study.

Republican River Basin Study

In November 2012, the States of Colorado, Kansas, and Nebraska entered into a Memorandum of Agreement to conduct a study of the Republican River Basin under Reclamation's WaterSMART (Sustain and Manage America's Resources for Tomorrow) Basin Study Program. The two-year study encompasses the entire Republican River Basin down to the Clay Center stream gage in Kansas. The study will project future water supply and demands, analyze how existing water operations and infrastructure will perform in the face of uncertain or variable water supply, identify and evaluate options to improve operations and infrastructure to address future water supply needs, and recommend options (operations and infrastructure) to supply adequate water in the future. Study costs have been estimated at $848,000, which includes a federal contribution of $413,000 (49 percent) and a non-Federal cost-share of $435,000 (51 percent).

Currently both Nebraska and Kansas are finishing up on the groundwater/surface water models for the study. Reclamation will provide climate data sets so that the models can complete an evaluation of climate variability. Both Nebraska and Kansas have developed a number of alternatives that will be evaluated through the study. The study is scheduled to be completed by January of 2015.

Niobrara River Basin Study

In 2010, the NE DNR was selected for a Reclamation WaterSMART Basin Study for the Niobrara River Basin. Reclamation will provide $350,000 of Federal funding and staff resources for the estimated $850,000 Niobrara Basin Study. The Niobrara Basin Study will determine current and future water demands of the basin, assist in the development and implementation of Integrated Management Plans (IMPs) for the basin, identify opportunities for meeting water supply needs through structural and nonstructural means, and Analyze the potential effects of climate variability on water supply. Reclamation and NE DNR will work collaboratively in the development of a groundwater model and a surface water operations model to test the effects and potential viability of various management strategies under both current and potential future conditions. A Plan of Study was developed in early 2011 and a Memorandum of Agreement was signed in May 2011 outlining the scope of work for each agency. NE DNR is proceeding with development of the groundwater and surface water operations model. Reclamation is developing an economic model that will work in conjunction with the groundwater/surface water operations model. Delays in completion of the modeling have resulted in an extension of the study completion date. The revised targeted completion date for the study is January 2015.

Northeast Nebraska Rural Water Supply Feasibility Study

Through Reclamation's 2010 Rural Water Supply Program, the Lower Niobrara Natural Resource District (LNNRD) recently completed an "Appraisal Investigation for Regional Water Supply System Study in Northeast Nebraska, January 2011". This investigation evaluated and pursued the formation of a new rural water system in northeastern Nebraska. The study area (which experiences both water quality and quantity concerns) included the towns of Center, Niobrara, and Creighton, along with the Santee Sioux Nation and areas served by the West Knox Rural Water System (RWS). Expansion of the West Knox RWS was identified as the most promising alternative.

Reclamation reviewed the LNNRD Appraisal Investigation and completed a report titled "Northeast Nebraska Water Supply System Appraisal Report, March, 2011". Reclamation concluded that the LNNRD Appraisal Investigation met all requirements of the Rural Water Supply Program and that the alternatives suggested were viable to move to the Feasibility Study phase.

The LNNRD used the results of the appraisal investigation and report to successfully compete for funding of a feasibility study through the 2011 Rural Water Supply Program. The feasibility study will attempt to identify a preferred alternative that will provide the area with a clean and reliable water supply, including determining affordable solutions to reduce the secondary contaminant levels in the Santee Sioux water supply, to improve water quality to the villages of Center and Niobrara, and to identify a water supply sufficient to meet the areas water demands projected for the year 2055. The study will determine potential costs, environmental issues, and provide an economic analysis of each of the alternatives identified. Through a cooperative agreement with the LNNRD, Reclamation is providing financial assistance for the feasibility study, which is scheduled to be completed by September 2014. The non-Federal study partners are required to provide a minimum of 50 percent of the study costs.

The LNNRD completed a draft feasibility investigation and currently Reclamation is completing a technical review of the investigation.

South Sioux City, Nebraska – Rural Water Supply Appraisal Investigation

The City of South Sioux City, Nebraska submitted a successful appraisal investigation proposal through Reclamation's 2011 Rural Water Supply Program. The intent of the appraisal investigation is to examine the comprehensive water supply problems, needs, and opportunities throughout Dakota and Thurston Counties located in northeastern Nebraska. These two counties are located adjacent to the Missouri River and include a mixture of large and small communities, two existing rural water systems, Indian tribes/tribal organization (Omaha and Winnebago), multiple Natural Resources Districts, and numerous rural customers. The study area is experiencing both limited water quantities and poor water quality.

Reclamation is providing financial assistance to South Sioux City through a cooperative agreement. South Sioux City submitted the first draft of the appraisal investigation and currently Reclamation is completing a technical review of the investigation. Reclamation will complete an appraisal report by September 2014.

Emergency Management

The NKAO continues to coordinate with local jurisdictions that could potentially be impacted by flooding from large operational releases and/or dam failure. Tabletop exercises of the Emergency Action Plans (EAP) for Trenton, Red Willow, and Medicine Creek Dams were held in 2013 and a functional exercise was held for the Bonny Dam EAP. Functional exercises will be held for the Enders Dam and Cedar Bluff Dam EAPs in 2014. Communications directories for all of the EAPs are reviewed annually.

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. The NKAO has two satellite phones 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, and open to any other NKAO personnel finding the training relevant to their duties, was held in McCook, Nebraska in February 2013. This training, held in conjunction with the Dam Operator training required every three years, provided personnel the opportunity to update their training in Scaffolding, Occupational Safety and Health Administration (OSHA), and Security along with the annual Respirator Training and Fit Testing.

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 are not on-the-spot correctible. This format provides for enhanced communication and coordination between both the Area Safety Specialist and Staff

and team of Dam Safety Specialists.

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 contractor safety, defensive driving, NFPA 70E Electrical Safety/Arc Flash, construction equipment safety, lock out/tag out, personal protective equipment (PPE), welding, cutting, coating safety procedures, confined space, pesticide and herbicide use (MSDS), fall protection/slips, trips, falls, working alone, near-miss accident reporting, and completing job hazard analyses, with emphasis from managers, supervisors, employees, and the NKAO Safety Committee. 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 2004 to 2013, the project water supply averaged 9,127 AF, which is about .78 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 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.

2013 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 in the Mirage Flats Irrigation District totaled 17.14 inches, which is 101 percent of normal. The 2013 total inflow of 10,096 AF was below the dry-year forecast and the second lowest computed inflow ever recorded at the reservoir. February inflow was the lowest ever recorded for the month.

The reservoir level began the year at elevation 3989.50 feet (17.5 feet below the top of conservation). The pool level gradually increased during the late winter and early spring peaking at elevation 3994.70 feet on May 19. Diversions of 6,171 AF to the Mirage Flats Canal provided irrigation water for approximately 9,283 acres, 80 percent of the service available acreage. The farm deliveries from the project water supply totaled 2,581 AF (0.28 AF per irrigated acre), which is a delivery efficiency of 42 percent. Total reservoir storage was 5,705 AF at the end of the irrigation season. Privately owned irrigation wells supplemented the project water supply. The NDNR ordered that natural flows of the Niobrara River not be stored in Box Butte Reservoir from August 16-September 26 to protect insufficient natural flow. The reservoir level at the end of the year was 3990.14 feet (16.9 feet below the top of conservation).

Higher reservoir levels experienced in 2011 resulted in increased toe drain seepage and observed wet areas below the dam. Engineers with Reclamation's Technical Service Center (TSC) out of Denver, Colorado followed up with a special inspection that summer. Irrigation releases decreased the reservoir level throughout the summer, seepage returned to near normal levels, and observed wet areas dried up. Three Safety of Dam recommendations were completed in 2012 as a result of this event including performing an Issue Evaluation on changed seepage conditions at higher reservoir levels, stockpiling of filter sand and drain gravel at the dam, and daily monitoring of instrumentation when the reservoir level exceeds 4004.00 feet. A Corrective Action/Value Planning Study was initiated and Appraisal Level Design Alternatives and Costs were completed in 2013. An Internal Alert remains in effect at the dam.

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. In 2013, the district received funding assistance through the Water Conservation Field Services Program (WCFSP) to install new gates and automation equipment on seven of the check structures on Sturgeon Lateral. The district will begin installation of this automation equipment in the spring of 2014.

A Periodic Facility Review was held at Box Butte Dam in July 2013.

2014 Outlook

The project water supply is expected to be inadequate in 2014 as it has been since the early 1960's. In the spring, the district will inform their water users of the amount of water that will be available from storage in Box Butte Reservoir. It is anticipated that district irrigators will continue to use their privately-owned irrigation wells as a supplemental supply.

The district's future water conservation plans include the automation of Dunlap Diversion Dam and the outlet works gate at Box Butte Dam. The district is also researching opportunities to provide groundwater recharge benefits in the project area. District delivery system improvements will be reviewed as a potential alternative in the on-going Niobrara River Basin Study. These improvements include canal lining, canal automation, and installing a pump plant on the Niobrara River near the project acres, all in an effort to improve delivery efficiency in the district.

A Constructability Review is scheduled for 2014, and a Final Design is scheduled for completion in 2015 to address reservoir seepage conditions.

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 Snake River flows and Merritt Reservoir storage. 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 is then 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 cubic feet per second (cfs) below Merritt Dam.

Reclamation has executed a Memorandum of Agreement (MOA) between Reclamation, the 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.

2013 Summary

Precipitation, as recorded near Merritt Dam, totaled 20.92 inches, which was 102 percent of normal. The inflow for the year totaled 184,211 AF. This inflow was only slightly below the normal-year forecast. The reservoir level at the beginning of the year was at elevation 2944.10 feet. The water supply was more than adequate to meet the project's irrigation requirement. There were 68,622 AF diverted from Merritt Reservoir into Ainsworth Canal, with 38,645 AF delivered to the farm headgates (delivery efficiency of 56 percent). There were 34,618 acres of land irrigated in 2013. The reservoir elevation at the end of 2013 was 2943.90 feet.

The district provided a total of 368 AF of irrigation water from holding ponds located within the district’s service area.

The NE DNR ordered that natural flows of the Snake River not be stored in Merritt Reservoir from August 14-September 26 because the demands of other legal appropriators were not being met. This was the third consecutive year that a closing order was issued for Merritt Reservoir.

During the 2011 annual site inspection at Merritt Dam, a large seep located near the outlet works stilling basin wing wall was observed to be transporting a sand material. After discussions with personnel in the Regional Office and TSC, it was determined that the seep was an ongoing issue, and the seep is currently being monitored twice a week to ensure the situation remains stable. An Issue Evaluation was initiated in 2012 and a Risk Analysis was recently conducted.

Working with Reclamation's technical and financial assistance through a cooperative agreement, the district installed automation equipment on the lateral turnouts to the Sand Draw and Airport Laterals. Additionally, burial of lateral B-7.2, B-10.3, A-16.2, and B-13.1 were completed through the WCFSP.

2014 Outlook

During the winter months, the reservoir will be regulated to maintain elevation 2944.0 feet (2.0 feet below the top of conservation capacity). In order to alleviate erosive action to the lands around the reservoir and to maximize all benefits associated with the reservoir, releases from Merritt Reservoir will be regulated to fill the conservation capacity during the early spring. This filling generally takes place during April. If weather conditions or irrigation demands dictate, it may be necessary to begin filling the reservoir prior to this time. The reservoir level will be maintained from the end of April until irrigation releases begin. A 50 cfs release to the Snake River will begin when irrigation releases drop the reservoir pool below elevation 2946.0 feet. This release will be made for approximately 20 days and then terminated until the end of the irrigation season. Once the reservoir begins to refill following the irrigation season, a release of 50 cfs to the Snake River will resume until the reservoir reaches the desired winter elevation. The water supply is expected to be adequate in 2014 for the irrigation of 35,000 acres.

The Standing Operating Procedures (SOP) for Merritt Dam is scheduled for revision in 2014.

Completion of a Corrective Action Study is scheduled for 2014 to address the transportation of sand observed in 2009 and also 2011.

In accordance with the Ainsworth Irrigation District's water conservation plan, improved water measurement opportunities were identified as one of the main objectives of the district. The district is working with Reclamation to investigate the possibility of installing some new ramp flumes to improve delivery system operations. The district continues to evaluate measurement and automation opportunities on a number of laterals and turnouts. The district will be reviewing delivery system improvements as a potential alternative in the on-going Niobrara River Basin Study.

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 also provides 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 ditches 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 helps avoid ice damage to the soil cement on the upstream face of the dam. After the ice clears in the spring, the reservoir is 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 the storage reservoirs to deliver full water demands. 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 is 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 and reduced 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 Commission and are also open to day-use fishing with handicapped accessibility provided.

2013 Summary

Precipitation at Virginia Smith Dam was 25.08 inches which is 104 percent of normal for the year. The inflow totaled 258,881 AF which was between the dry-year and normal-year forecasts. The reservoir level at the first of the year was elevation 2235.14 feet (8.9 feet below the top of conservation). The conservation pool filled on May 30. Virginia Smith Dam recorded the third highest May precipitation on record. The water supply was more than adequate for the district's needs. There were 100,702 AF of water released into Mirdan Canal and 2,259 AF diverted through Kent Canal from the North Loup River. A total of 46,724 AF was diverted for district use above Davis Creek Reservoir. The farm headgate delivery was 24,643 AF which is a delivery efficiency of 53 percent. Land irrigated in 2013 totaled 34,110 acres above Davis Creek Reservoir. The Calamus Fish Hatchery used bypassed natural flows and storage from the

reservoir totaling 4,336 AF. Calamus Reservoir inflows were bypassed during July, August, and September as required. The elevation at the end of the year was 2239.99 feet.

The precipitation total of 28.42 inches near Davis Creek Dam was 115 percent of normal. Inflow to Davis Creek Reservoir totaled 47,965 AF during 2013. The reservoir elevation at the first of the year was 2063.51 feet, approximately 15 feet higher than the normal winter elevation. The higher elevation was needed so that extensive canal concrete lining repairs could be made during the early spring. Beginning in mid-April, Davis Creek Reservoir was filled from an elevation of approximately 2061.19 feet to a peak elevation of 2076.57 feet on May 30 using diversions from Calamus Reservoir. A release of 45,175 AF was made from Davis Creek Dam into Fullerton Canal with 20,563 AF delivered to the farm headgates, which is a 46 percent delivery efficiency. There were 21,016 acres irrigated below Davis Creek Reservoir. The monthly precipitation total for October was the second highest recorded at the site. The reservoir elevation at the end of 2013 was 2048.94 feet, 27.1 feet below the top of conservation.

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. In 2011, the district completed automation of turnouts on Mirdan laterals 36.3 and 37.1 and also completed a small canal lining project.

2014 Outlook

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

Water will be available for all irrigable acres with service from the Mirdan, Geranium, and Scotia Canals and Lateral Systems. It is estimated that approximately 34,000 acres will be irrigated from these canals. Water supplies will be sufficient to meet the full dry-year requirements.

The SOP for Davis Creek Dam is scheduled for review in 2014.

Filling of Davis Creek Reservoir will take place this spring with flows diverted from the North Loup River at Kent Division Dam and transported through Kent and Mirdan Canals. Storage water can also be transferred from Calamus Reservoir into Davis Creek Reservoir during the summer months via Mirdan Canal. Water will be sufficient to irrigate an estimated 21,000 acres from Elba and Fullerton Canals under all inflow forecast conditions. The reservoir level will be regulated to normal winter levels at the end of the season.

The fish hatchery demand for 2014 is expected to be similar to that of the last few years with approximately 6,000 AF required for the hatchery.

The district plans to expand their remote monitoring capabilities by installing equipment at additional wasteways and key canal measurement sites throughout their delivery system. In addition to further remote monitoring capabilities, the district will continue to expand the radio control network. Additionally, the district intends to further integrate an alarm and monitoring system into their existing infrastructure to reduce the risk of operational failure.

CHAPTER III - REPUBLICAN RIVER BASIN

Armel Unit, Upper Republican Division in Colorado

General

Normal reservoir operations for Bonny Reservoir have historically been for recreation and fish and wildlife support, although water has been 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 can utilize Bonny Reservoir storage water for 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 historic operation pattern of Bonny Reservoir enhanced the spring fish spawn and provided excellent fishing opportunities during the summer and hunting conditions each fall. In September 2011, the State of Colorado ordered all storage water evacuated from Bonny Reservoir for Republican River Compact compliance. As a result, the reservoir fishery was decimated and future operations are unlikely to provide fishing opportunities.

2013 Summary

The annual precipitation total of 14.02 inches at Bonny Dam was 82 percent of average. The annual computed inflow of 1,780 AF to Bonny Reservoir was below the dry-year forecast. Bonny Reservoir remains drained and inflows continue to be bypassed for the purpose of compact compliance. Currently, the State of Colorado plans to operate Bonny Reservoir as a dry reservoir.

2014 Outlook

The State of Colorado's order to release all of the storage in Bonny Reservoir for Republican River Compact compliance remains in effect. If the order continues throughout 2014, water will not be available in the reservoir for irrigation or fishery purposes. Any water allowed to be stored in Bonny Reservoir during 2014 would be available to Hale Ditch and other private irrigators under short-term water service contracts executed with the state.

A Comprehensive Facility Review is scheduled to be held at Bonny Dam in 2014.

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 irrigation releases 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 normally deplete the conservation storage by late summer, thereby limiting the fishing and recreational usage. Due to extremely low storage levels, irrigation releases have not been made from Enders Reservoir since 2003.

Annual reservoir inflows have steadily declined from around 61,000 AF when Enders Dam was constructed to only 6,000 AF in recent years. Extensive groundwater pumping from upstream well development along with various conservation practices have resulted in the depletion of inflows. The conservation pool has not filled since 1968.

2013 Summary

The annual precipitation total of 15.26 inches at Enders Dam was below normal (80 percent). The 2013 inflow into Enders Reservoir of 4,126 AF was below the dry-year forecast and the lowest ever recorded for the site. The reservoir level began the year at elevation 3090.71 feet (21.6 feet below top of conservation). The reservoir level increased slightly during the late winter to a peak elevation of 3091.22 feet on March 31. Spring releases totaling 566 AF for compact compliance decreased the reservoir elevation to 3090.76 feet on May 3. Evaporation gradually decreased the reservoir level through early November reaching elevation 3088.34 feet on November 3. Due to the extremely low water supply available, no water was released from Enders Reservoir for irrigation. The end of the year reservoir level was 23.8 feet (3088.55 feet) below the top of conservation.

The Frenchman Valley Irrigation District did not divert natural flow from Frenchman Creek in 2013 for irrigation. The district cooperated with the NDNR by allowing natural flows to remain in the stream to assist with compact compliance. The H&RW Irrigation District did not divert water into Culbertson Extension Canal in 2013 due to the extremely low water supply. This was the eleventh consecutive year that the district did not deliver water.

In 2013, the Frenchman Valley Irrigation District (along with Reclamation) again provided support for a Limited Irrigation Demonstration project with the University of Nebraska Extension Service.

A Periodic Facility Review was held at Enders Dam in May 2013.

Repairs were made to the river outlet works at Enders Dam in 2013. The outlet works deflector slab and concrete on the outlet works wall were repaired and sealed to prevent further deterioration.

2014 Outlook

The fall and early winter inflows into Enders Reservoir were below the normal-year forecast. If dry-year conditions prevail and the Compact Call remains in place, the project water supply is expected to experience a shortage of about 78,100 AF. Normal-year conditions are expected to be inadequate by 62,300 AF and wet-year conditions by 34,200 AF, to irrigate the 9,292 acres in the Frenchman Valley Irrigation District and 11,915 acres in the H&RW Irrigation District. The districts plan to divert all project water to Kansas-Bostwick Irrigation District in 2014.

All surface water appropriations in the Republican River Basin above Guide Rock Diversion Dam were closed by the NDNR on January 1, 2014. Reservoir inflows have been bypassed through Enders Reservoir since this time and natural flow diversions are prohibited.

A 4-inch sinkhole was discovered near the left wall of the spillway stilling basin in October 2010. While the location of the sinkhole suggested that the issue was not urgent, further investigations were warranted to ensure that the situation was understood. A dye test was performed in August 2012. No dye showed up in the spillway basin or the outlet works basin. Even after being saturated with dye, probing to a depth of 8 feet was difficult. It is expected that the initial recommendation to further investigate the sinkhole will be listed as complete in 2014.

The Frenchman Valley Irrigation District has expressed an interest in replacement of additional open ditch laterals with buried pipe. Future piping projects are somewhat limited due to the water supply shortage. The district is also investigating remote monitoring opportunities to improve the delivery system operations. The district has identified two additional operational wasteway sites that would improve delivery systems with remote monitoring.

The Frenchman Valley Irrigation District and the H&RW Irrigation District are investigating possible alternatives for the most efficient use of the declining water supply in the basin. The districts have also participated in discussions with NDNR on the water supply issues as they relate to the Republican River Compact and the settlement.

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.

2013 Summary

The annual precipitation total of 15.71 inches at Trenton Dam was 79 percent of normal. The inflow of 19,498 AF to Swanson Lake was between the dry-year and normal-year forecasts. January inflow was the second lowest and February inflow was the lowest ever recorded at the site for the respective months. The lake level began the year at elevation 2732.41 feet and gradually increased to a peak elevation of 2734.19 feet (17.8 feet below the top of conservation) on May 2. A total of 7,292 AF was released during April and May for compact compliance. The reservoir level decreased throughout the irrigation season and reached an elevation of 2729.51 feet on August 30. The district diverted 9,210 AF from June 26-August 30 and delivered 2,384 AF to the farms. The district was unable to use nearly 5,300 AF that remained in reservoir storage at the end of August due to the Compact Call. At the end of the year the reservoir level was 22.6 feet below the top of conservation at 2729.45 feet. The Corps of Engineers determined that Swanson Lake prevented $7,900 in flood damages.

In late February 2013, the Upper Republican Natural Resources District (URNRD) began operating the Rock Creek Augmentation Project. The URNRD is capable of pumping approximately 15,000AF annually into Rock Creek from 10 wells. The augmentation water flows from Rock Creek and enters the North Fork of the Republican River at Parks, Nebraska. From there the water travels approximately 35 miles to Swanson Reservoir.

The SOP for Trenton Dam was revised in 2013.

The left abutment embankment drain was reported damaged near the outfall in the 2004 CFR examination. During 2013, the Provo, Utah Construction Office completed replacement of the failed portion of the left embankment drain and installed manhole accesses at two locations along the drain alignment.

A Periodic Facility Review was held at Trenton Dam in May 2013.

The annual precipitation total of 12.63 inches at Red Willow Dam was 64 percent of normal. The annual inflow of 8,735 AF into Hugh Butler Lake was below the dry-year forecast and the second lowest ever recorded at the site. The reservoir level at the first of the year was 2553.63 feet, 28.2 feet below the top of conservation. The lake level gradually increased to a maximum elevation of 2556.81 feet on April 2. Releases totaling 4,315 AF were made from Red Willow Dam in April and May for the purpose of compact compliance. No irrigation releases were made from Hugh Butler Lake in 2013. The end of year elevation at Hugh Butler Lake was 2555.06 feet, 26.7 feet below the top of conservation.

During an inspection at Red Willow Dam in July 2005, a small quantity of fine sand was discovered near the river outlet works stilling basin drain outlet. 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 was issued and grouting of the underdrain system was completed in the fall of 2010. On October 21, 2009 a small hole was observed on the face of the downstream embankment approximately 130 feet upstream of the outlet works gatehouse on the alignment of the outlet works conduit. Dye was introduced into

the hole and subsequent excavation revealed cracks in the embankment material. Reclamation geotechnical engineers and geologists were onsite to conduct the investigations in coordination with the NKAO staff. A Response Level I was declared. A Dam Safety decision document was signed calling for a reduction of the reservoir water surface elevation to a range within 2552 to 2554 feet mean sea level (msl).

A Corrective Action Study (CAS) began in March 2010 to identify structural alternatives for repairing the dam, estimate risk for potential failure modes, and to document the technical, cost, and constructability of the various alternatives. The December 2010 CAS Decision Document identified the preferred alternative consisting of a full-height full-length filter/drain and construction of a berm/buttress to protect the filter and drains. The Modification Report, Finding of No Significant Impact, and Environmental Assessment were transmitted to Congress in July 2011. Final designs and contract documents were prepared during the summer of 2011. In September of 2011, a contract was awarded for the dam modification and construction began in late 2011.

Substantial completion was declared in the fall of 2013. Major repairs included excavation of the existing embankment and toe drain system; construction of a filter and drainage blanket; construction of a two-stage sand filter and coarse sand drain system including a geo-net composite membrane; and construction of a downstream stability berm. Modifications also occurred downstream of the spillway and outlet works stilling basins and limited portions of the upstream dam face. A new drain system at the toe of the dam was constructed and additional monitoring wells were installed.

The annual precipitation total of 17.79 inches at Medicine Creek Dam was 86 percent of normal. The inflow of 31,563 AF was between the dry-year and normal-year forecasts. The reservoir level at the beginning of 2013 was 10.1 feet below the top of conservation at 2355.97 feet. The reservoir level gradually increased to a peak elevation of 2361.81 feet on April 2. This was the lowest annual peak ever reached at the lake. A total of 10,902 AF was released from the lake during April and May as ordered by NDNR for the purpose of compact compliance. Irrigation releases began in late June and ran through September 2 reducing the reservoir level to 2349.87 feet. The district diverted 12,575 AF into Cambridge Canal and delivered 5,638 AF to 10,114 acres of district lands. As a result of the Compact Call, the District was unable to use approximately 4,968 AF that remained in the lake at the end of August. Late fall and early winter inflows increased the level of Harry Strunk Lake to 9.8 feet below the top of conservation at the end of the year (2356.34 feet). The Corps of Engineers determined that Harry Strunk Lake prevented $7,900 in flood damages.

The district was selected for a 2011 WaterSMART Water and Energy Efficiency Grant for a project which consists of installing a pumping plant on Cambridge Diversion Dam and two miles of 30-inch diameter pipe to the Bartley Canal. The pumping plant will include installation of four 2,500 gallon per minute pumps. This project will allow alternative water management options for the water supply in Bartley Canal. The project is expected to result in water savings of 4,660 acre-feet per year. Water conserved as a result of the project will be left in Swanson Lake. Reclamation is providing $630,000 of financial and technical assistance for the estimated $1.26 million project. The pumping plant installation was completed in 2013 and the district

continues to work on the pipeline installation. The project should be operational prior to the 2014 irrigation season.

The District was selected for a 2012 WaterSMART grant for a project which will allow the district to automate the Cambridge Canal headgate and the first section check structures in Cambridge Canal. This will improve district delivery system operations by minimizing river bypass and allow the district to store water in the larger canal bays. The estimated water savings from this project are 3,074 AF/year. The project includes a federal funding contribution of $299,715 and a non-federal contribution of $332,301. The gates were installed and operational prior to the 2013 irrigation season.

The District was also selected for a 2012 NKAO WCFSP grant for a project which will allow the district to automate the new Bartley Canal pumping plant on Cambridge Diversion Dam and to automate six check structures located downstream of the pumping plant outlet pipe. This project will provide delivery system improvement options and result in an estimated water savings of 1,622 AF/year. This project includes $95,902 of federal funding assistance with the District contributing $96,388 through funding and in-kind services. Due to the water supply shortage and other system improvements, the district plans on completing installation of the Bartley automation project in the spring of 2015.

2014 Outlook

Forecasts show that carry-over storage from the three lakes supplying the Frenchman-Cambridge Irrigation District will be inadequate to meet the full dry-year irrigation requirement by 82,800 AF. The water supply will be inadequate by 60,600 AF under normal-year conditions and by 35,100 AF under wet-year conditions. Most of the water shortage in 2014 can be attributed to the closing notice issued by the NE DNR on all natural flow and storage permits in the Republican River Basin. All surface water appropriations in the basin above Guide Rock Diversion Dam were closed on January 1, 2014. Reservoir inflows continue to be bypassed through Swanson, Hugh Butler, and Harry Strunk Lakes.

During the 2005 Annual Site Inspection at Trenton Dam, a depression was discovered left of the spillway just left of the embankment drain alignment. In 2014 the drain system will be cleaned and videoed to help identify the cause of the depression found in 2005.

Since initial filling of Harry Strunk Lake, seepage has been observed along the right slope of the outlet works excavation of Medicine Creek Dam. This seepage is collected in two toe drains installed during initial construction and an additional drain added in 2000. Sediment was observed within the drain pipes during a video inspection in 2003. A recommendation was created in 2006 to replace the outlet works toe drain with a new engineered drain including a manhole and method to measure flow and sediment and to place an engineered weighted filter with a drain over the right slope of the outlet works excavation.

An Issue Evaluation was performed in 2013 and a portion of the drain was exposed for further investigation of the soils and drain condition. The inspection discovered cementation of the gravel placed around the drain pipe during construction which could impede water from entering the toe drains and is the likely cause of the seepage in this vicinity. Final design of the repair and construction is planned for 2014.

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.

In July of 2007, the Kansas Department of Wildlife and Parks and the Almena Irrigation District entered into a Memorandum of Agreement (MOA) to maintain a minimum pool elevation in the reservoir for ten years. The MOA was approved by the irrigators within the District and provided that no water would be released for irrigation below elevation 2288.5 feet.

2013 Summary

The annual precipitation at Norton Dam totaled 20.90 inches which is 85 percent of normal. The total inflow of 4,705 AF was near the dry-year forecast. The reservoir was 10.3 feet below the top of conservation pool at the first of the year (2293.97 feet). The reservoir level slowly increased to elevation 2294.63 feet on May 19. Irrigation releases were made during June and July reducing the lake level by almost three feet. The reservoir level continued to gradually decrease the remainder of the year. Keith Sebelius Lake ended the year at elevation 2290.78 feet (13.5 feet below the top of conservation).

The Almena Irrigation District reports that 2,200 acres received 1,306 AF of water in 2013. There were 2,274 AF of water diverted into the Almena Canal. Farm delivery averaged about .59 foot per irrigated acre with a farm delivery efficiency of 57 percent in the District.

The City of Norton used 365 AF of municipal water during 2013.

The spillway concrete at Norton Dam was sealed and an access road was built in the summer of 2013.

2014 Outlook

If 2014 is a dry year without significant runoff producing storms above Keith Sebelius Lake, it is anticipated that the water supply may be inadequate by as much as 14,400 AF. If normal inflow into the lake and normal rainfall over the irrigated area occur in 2014, a shortage of 9,300 AF may be experienced. Requirements for the City of Norton will be met in full in 2014.

The District continues to plan projects to replace open ditch laterals with buried pipe that will reduce seepage losses, lessen maintenance requirements, and provide improvements in on-farm efficiencies. However, due to uncertainty of the district's water supply in the past and the temporary agreements with the state to forgo irrigation releases, the District may delay some identified delivery system improvement projects.

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.

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

The KDWPT have 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.

Harlan County Dam is currently operating under an Interim Operating Plan (IOP) initiated in 2003. The IOP resulted from a "Dam Safety Assurance Study" that evaluated the adequacy of the dam as required by Corps of Engineers dam safety regulations. There were three primary findings from this study: 1) tainter gate bearings may experience significant bearing friction when operated under increasing water load; 2) concerns of spillway stability due to water pressure in the foundation of the dam; and spillway was found to be hydrologically deficient when modern hydrologic criteria were applied to the dam. The IOP has resulted in a decrease of flood protection capability.

The Lovewell Reservoir Regulation Manual was revised in 2010 to allow for a two-foot raise in the conservation pool for water storage during drought years. Storing additional water during drought periods increases the project's irrigation beneficial purpose, without adversely affecting the ability to protect for the project design storm. A calculation of available water supply will be made at the end of March to determine if additional water can be stored in Lovewell Reservoir.

Bostwick Division - Harlan County Lake Operations

2013 Summary

The annual precipitation at Harlan County Dam totaled 17.46 inches of rainfall which is 77 percent of normal. The 2013 inflow of 48,794 AF was just above the dry-year forecast. Total natural inflow for 2013 was approximately 31,900 AF which is the third lowest on record at the site. Harlan County Lake began 2013 approximately 10.5 feet below the top of conservation pool at 1935.28 feet. The lake level gradually filled to a peak elevation of 1937.55 feet by June 12. Inflows during April and May included flows released from upstream reservoirs for compact compliance. NDNR ordered a release of 23,075 AF from the upstream reservoirs and 7,765 AF from Harlan County Lake prior to May 15. Irrigation releases began on June 12 and continued through September 10th. The lake level on September 11 was 1930.09 feet. Computed inflow at Harlan County Lake was the lowest on record in October and December and the third lowest in November. Kansas-Bostwick Irrigation District entered into an Excess Capacity Contract (Warren Act Authority) with Reclamation for the use of compact compliance water stored in Harlan County Lake during 2013. A total of 5,500 AF was released under this contract during the irrigation season and an additional 10,098 AF was released during November and December. The winter release was diverted into Lovewell Reservoir for future use. The level of Harlan County Lake on December 31, 2013 was at elevation 1927.85 feet (17.9 feet below the top of conservation). Harlan County Lake prevented $23,200 of downstream flood damages during 2013 according to the Corps of Engineers.

There was 38,432 AF delivered to Lovewell Reservoir via Courtland Canal during 2013. This was approximately 82 percent of the total Lovewell Reservoir inflow.

Nebraska Bostwick Division

2013 Summary

Irrigation diversions were made into Franklin, Naponee, Franklin Pump, Superior, and Courtland Canals in Nebraska in 2013. The District diverted 24,476 AF of water and delivered 11,024 AF to the farm headgates (45 percent delivery efficiency).

In 2013, the Nebraska Bostwick Irrigation District in was awarded a WaterSMART grant for a project which will replace approximately 6.8 miles of open ditch laterals with buried pipe and install a new overshot gate on an existing check structure. Laterals to be placed in pipe include Franklin Laterals 6.8, 27.9, and 37.7, Courtland Laterals 4.3 and 6.3, and Naponee Laterals 2.2, 2.7, and 3.2. The project is expected to provide an estimated water savings of 1,520 AF/year.

This project is to be completed with a federal contribution of $300,000 and a non-federal contribution of $319,507. These pipe projects provide delivery system improvements by eliminating seepage losses, eliminating operational wasteways, improving water measurement and accounting by utilizing water meters, and providing on-farm benefits by allowing land owners the opportunity to convert to sprinkler irrigation.

The District was also selected for a 2013 NKAO WCFSP grant for a project which will allow the District to convert 1.6 miles of open ditch lateral and canal to buried pipe. This project will replace Franklin Lateral 13.8 with buried pipe. The project will provide an estimated water savings of 740 AF/year. This project includes $100,000 of Federal funding assistance with the district contributing $113,618 through funding and in-kind services.

Kansas Bostwick Division

2013 Summary

The 2013 precipitation at Lovewell Dam totaled 28.20 inches which was 103 percent of normal. The total annual inflow recorded at Lovewell Reservoir was 47,037 AF. Approximately 8,600 AF of the inflow was from White Rock Creek which was below the dry-year forecast. The reservoir elevation at the beginning of 2013 was 1577.60 feet (5.0 feet below the top of conservation). Republican River diversions were made via the Courtland Canal into Lovewell Reservoir from January through mid-April and resumed in early May. The pool level gradually increased to elevation 1584.11 feet on May 5 (1.5 feet above top of conservation).

Canal releases from Lovewell Reservoir began on June 3 and continued through September 11. The reservoir elevation at the end of the irrigation season was at 1572.02 feet. Republican River flow was not diverted into Lovewell Reservoir immediately following the irrigation season to allow for much needed repairs to the canal inlet structure. Republican River diversions were made from late November through the end of December. The pool level at the end of the year was 1577.56 feet (5.0 feet below top of conservation).

The Kansas-Bostwick Irrigation District diverted a total of 60,232 AF to serve 7,661 acres above Lovewell Dam and 31,199 acres below Lovewell Dam. District farm delivery totaled 32,499 AF for an efficiency of 54 percent.

A Periodic Facility Review was held at Lovewell Dam in June 2013.

The Lovewell Dam SOP was revised in 2013.

Erosion at the toe of the Lovewell Dam dike section was repaired in February 2013. Sediment was removed and the Courtland Canal inlet structure for Lovewell Reservoir was repaired in September 2013.

The District was selected for a 2013 NKAO WCFSP grant for a project which will allow the District to convert 3.0 miles of open ditch lateral and canal to buried pipe. This project will replace Courtland Lateral 30.9 and White Rock Extension Lateral 8.5 with buried pipe. The

project will provide an estimated water savings of 297 AF/year. This project includes $100,000 of federal funding assistance with the District contributing $133,794 through funding and in-kind services.

Bostwick Division

2014 Outlook

The storage in Harlan County Lake and Lovewell Reservoir and flows of the Republican River and White Rock Creek are expected to be inadequate in meeting the full dry-year irrigation requirement for the Bostwick lands. Due to the continued Compact Call issued by NDNR, Nebraska Bostwick Irrigation District is expected to receive very little if any water in 2013.

NE DNR issued a closing notice on all natural flow and storage permits in the Republican River Basin on January 1, 2014. All surface water appropriations in the basin above Guide Rock Diversion Dam are currently closed. On January 31, 2014, NDNR issued another closing notice for Harlan County Lake for the purpose of retaining inflows and delivering water to Kansas-Bostwick Irrigation District. Similar to 2013, Kansas-Bostwick Irrigation District has entered into an Excess Capacity Contract (Warren Act authority) with Reclamation for compact water stored in Harlan County Lake.

Both districts will continue to investigate remote monitoring site installation that will provide system operations improvements. Nebraska Bostwick Irrigation District in has installed canal automation equipment on a number of check structures along Franklin Canal through a Water Conservation Field Services grant. The District continues to explore opportunities to increase this radio automated network. Kansas-Bostwick Irrigation District will continue to replace open ditch laterals with pipe.

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, 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.

2013 Summary

The annual precipitation total of 17.77 inches at Kirwin Dam was 75 percent of normal. The inflow of 13,132 AF was between the dry-year and normal-year forecasts. The reservoir level was 7.0 feet below the top of conservation pool at the first of the year (elevation 1722.21 feet). June precipitation was the second lowest ever recorded at Kirwin Dam for the month. The reservoir level slowly increased to elevation 1723.66 on May 19. Irrigation releases began on June 24 and continued through August 30 decreasing the reservoir level to 1718.37 feet. The reservoir level gradually decreased throughout the fall and winter to an elevation of 1717.78 feet on December 31 (11.5 feet below the top of conservation). The Corps of Engineers determined that Kirwin Reservoir prevented $11,100 in flood damages.

A total of 15,567 AF was released into Kirwin Canal to irrigate 8,317 acres of project lands during 2013. Farm delivery efficiency was 53 percent with 8,195 AF delivered to farms.

In spring 2011, the District completed a WCFSP project which replaced approximately 2.6 miles of open ditch laterals with buried pipe. Kirwin South Laterals 8.6 and 9.2 were placed in pipe which resulted in an estimated water savings of 600 AF/year. Reclamation provided $85,000 of financial assistance and the District provided $92,000 of funds and in-kind services.

2014 Outlook

Carry-over storage and the forecasted inflows in the North Fork of the Solomon River are expected to be adequate to irrigate all district lands even with below normal precipitation and dry-year forecasted inflows.

The District continues to explore opportunities for replacing sections of open ditch lateral with buried pipe. The District is also assisting landowners with on-farm improvements such as the installation of sprinklers through assisting with burying lines to pivots and through the relocation of turnouts. Future conservation projects include the possibility of installing remote monitoring equipment at the wasteways and at the Kirwin North/South Canal split. Future conservation projects may be delayed due to the declining water supply and availability of cost-share funding.

The District and Reclamation continue to participate in the Solomon Basin Working Group meetings as part of the State of Kansas' Subbasin Water Resources Management Program. This group is designed to take a proactive approach in developing water management strategies that address declines in stream flows and groundwater levels.

During the Comprehensive Facility Review in 2002, a recommendation was made to patch the spalled and delaminated area of the spillway chute floor. The deterioration of the spillway chute floor concrete was examined further in 2012 during the scoping and design data collection phase of the project. Corings were performed at spillway locations to assist in determining the depths of the delaminations. A Value Engineering Study was conducted in 2013 and a contract was awarded in September 2013. Work includes removing and replacing deteriorated concrete on the spillway floor, upstream apron, stilling basin and spillway chute blocks, and repairing the earthen dike located downstream of the stilling basin. Construction is scheduled to begin in the spring 2014 and conclude in fall 2014.

A Comprehensive Facility Review is scheduled to be held at Kirwin Dam in 2014.

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.

2013 Summary

In 2013, the precipitation at Webster Dam was 81 percent of normal (19.28 inches). The inflow of 5,120 AF was near the dry-year forecast and the fifth lowest on record. The reservoir level was 13.0 feet below the top of conservation pool at the first of the year (elevation 1879.44 feet). The reservoir level gradually increased to a peak elevation of 1879.88 feet on May 19. Irrigation releases began on June 22 and continued through August 29 decreasing the reservoir level to 1870.27 feet. August precipitation at the dam was the fourth lowest on record. The pool level continued to slowly drop reaching an elevation of 1869.56 feet on December 31 (22.9 feet below the top of conservation). The Corps of Engineers determined that the reservoir prevented $10,900 in flood damages.

A total of 5,441 acres received project water during 2013 with 5,634 AF delivered to farms. Diversions into Osborne Canal totaled 10,835 AF with a farm delivery efficiency of 52 percent.

The District was selected for a 2012 NKAO WCFSP Grant for a project which will allow the District to replace open ditch Osborne Laterals 23.8 and 24.5 with buried pipe. This project will provide delivery system improvement options and result in an estimated water savings of 477 AF/year. This project includes $74,000 of federal funding assistance with the District contributing $82,000 through funding and in-kind services.

2014 Outlook

The carry-over storage and the flows in the South Fork Solomon River are expected to be inadequate to irrigate all district lands in 2014 under dry-year conditions by 28,200 AF and under normal conditions by 4,700 AF. The water supply will be adequate under wet-year inflow conditions.

The District continued to explore opportunities to cost share with Reclamation and District irrigators for the replacement of open ditch laterals with buried pipe.

Due to the recent improvement in the district's water supplies, there has been increased interest in cost-sharing for water conservation projects such as replacement of open ditch laterals with buried pipe. The District will continue to seek outside funding for water conservation improvement projects. Future conservation projects include the possibility of installing remote monitoring equipment at the wasteways and at the beginning of the second and third sections of Osborne Canal.

Glen Elder Unit, Solomon Division in Kansas

General

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

2013 Summary

The annual precipitation total of 21.22 inches at Glen Elder Dam was 83 percent of normal. The inflow of 60,291 AF was between the dry-year and normal-year forecasts. The lake level at the beginning of the year was 2.9 feet below the top of conservation at 1452.67 feet. The level of Waconda Lake slowly increased to elevation 1453.81 on May 18. Irrigation releases began on May 18 and continued through September 23 decreasing the lake level to 1453.32 feet. Waconda Lake ended the year 2.7 feet (elevation 1452.90 feet) below the top of conservation. Waconda Lake prevented $36,300 of downstream flood damages during 2013 according to the Corps of Engineers.

A total of 15,868 AF of water was released from Glen Elder Dam in 2013. Storage releases of 2,176 AF were combined with natural flow releases of 6,633 AF for the irrigation of 5,752 acres in the Glen Elder Irrigation District. The District delivered 3,412 AF to the farms resulting in a delivery efficiency of 39 percent. No storage releases were made for the City of Beloit, however, 6,337 AF was bypassed for water quality as directed by the State Water Commissioner. Releases to the Mitchell County Rural Water District No. 2 totaled 722 AF.

The SOP for Glen Elder Dam was revised in 2013.

A Periodic Facility Review was held at Glen Elder Dam in June 2013.

2014 Outlook

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

The Glen Elder Irrigation District continues to encourage their producers to advance water ordering times to improve on water releases, making more efficient use of the District's water supply. Some District pumping sites present problems due to river conditions at the sites. In order to minimize required reservoir releases, the District is investigating potential improvements to those water pumping sites.

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 which 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 KDWPT (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 KDWPT 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. The KDWPT will be responsible for the joint pool releases and for the water rights.

2013 Summary

The annual precipitation total at Cedar Bluff Dam was 16.08 inches which is 77 percent of normal. The 2013 inflow of 5,605 AF was below the dry-year forecast. The reservoir level at the beginning of the year was 2122.67 feet (21.3 feet below top of conservation). A total of 1,231 AF of water was released for the City of Russell and 1,186 AF was released for the Kansas Water Office during March 2013 for recharge purposes. Evaporation and seepage losses exceeded inflows throughout the remainder of the year and the reservoir level gradually decreased to elevation 2118.83 feet on December 31 (25.2 feet below the top of conservation). The Corps of Engineers determined that the reservoir prevented $1,010,500 in flood damages.

The State of Kansas operates and maintains the fish hatchery facility located below Cedar Bluff Dam. There were no releases to the facility in 2013.

2014 Outlook

Storage in Cedar Bluff Reservoir on December 31, 2013 was within the joint use pool. The KDWPT is expected to use very little if any water in the operations of the fish hatchery facility. If conditions remain dry, the City of Russell and the Kansas Water Office may request a release to the river for recharge again in 2014.

A Comprehensive Facility Review is scheduled to be held at Cedar Bluff Dam in 2014.

The Cedar Bluff Dam SOP is scheduled for revision in 2014.

TABLE 1

RESERVOIR DATA - NIOBRARA, LOWER PLATTE AND KANSAS RIVER BASINS

CAPACITY ALLOCATIONS 1/

LIVE CONSERVATION

Reservoir		Dead	Inactive	Active	Flood Control
Box Butte	- Elevation Ft.	3969.0	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	35	20,150	119,469	---
	Net Acre-feet	35	20,115	99,319	---
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	0	0	36,508	165,328
	Net Acre-feet	0	0	36,508	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	- Elevation Ft.	2710.0	2720.0	2752.0	2773.0
Lake	Total Acre-feet	1,027	10,329	110,175	244,362
	Net Acre-feet	1,027	9,302	99,846	134,187
Hugh Butler	- Elevation Ft.	2552.0	2558.0	2581.8	2604.9
Lake	Total Acre-feet	5,185	8,921	36,224	85,070
	Net Acre-feet	5,185	3,736	27,303	48,846
Harry Strunk	- Elevation Ft.	2335.0	2343.0	2366.1	2386.2
Lake	Total Acre-feet	3,408	7,897	34,647	87,361
	Net Acre-feet	3,408	4,489	26,750	52,714
Keith Sebelius	- Elevation Ft.	2275.0	2280.4	2304.3	2331.4
Lake	Total Acre-feet	1,636	3,993	34,510	133,740
	Net Acre-feet	1,636	2,357	30,517	99,230
Harlan County	- Elevation Ft.	1885.0	1927.0	1945.73	1973.5
Lake 3/	Total Acre-feet	0	118,099	314,111	814,111
	Net Acre-feet	0	118,099	196,012	500,000
Lovewell	- Elevation Ft.	1562.07	1571.7	1582.6	1595.3
	Total Acre-feet	1,659	11,644	35,666	86,131
	Net Acre-feet	1,659	9,985	24,022	50,465
Kirwin	- Elevation Ft.	1693.0	1697.0	1729.25	1757.3
	Total Acre-feet	4,969	8,515	98,154	313,290
	Net Acre-feet	4,969	3,546	89,639	215,136
Webster	- Elevation Ft.	1855.5	1860.0	1892.45	1923.7
	Total Acre-feet	1,256	4,231	76,157	259,510
	Net Acre-feet	1,256	2,975	71,926	183,353
Waconda	- Elevation Ft.	1407.8	1428.0	1455.6	1488.3
Lake	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.)		32,379	264,764	1,457,448	3,815,125 2/
Total Net Acre-feet		32,379	232,385	1,192,684	2,357,677

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 2013 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.	767	30	69	0.23	8,976	0	0
Feb.	818	28	92	0.67	9,674	0	0
Mar.	1,329	31	172	0.27	10,800	0	0
Apr.	1,929	33	303	1.57	12,393	0	0
May	981	32	382	3.00	12,960	0	0
June	527	29	487	2.39	12,971	0	0
July	220	3,408	504	1.71	9,279	3,351	1,374
Aug.	238	2,930	289	2.14	6,298	2,820	1,207
Sep.	558	129	229	2.26	6,498	0	0
Oct.	1,163	29	173	2.28	7,459	0	0
Nov.	822	39	101	0.05	8,141	0	0
Dec.	744	16	62	0.57	8,807	0	0
TOTAL	10,096	6,734	2,863	17.14	--	6,171	2,581

NOTE -- Acres irrigated 2013: Mirage Flats Canal 9,283 acres.

SANDHILLS DIVISION
AINSWORTH UNIT

MERRITT RESERVOIR — AINSWORTH CANAL

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	14,836	14,599	237	0.22	61,370	0	0
Feb.	14,020	13,448	301	0.77	61,641	0	0
Mar.	16,640	11,703	432	1.28	66,146	0	0
Apr.	14,837	13,220	746	2.27	67,017	0	0
May	16,498	15,213	1,285	5.49	67,017	1,755	0
June	13,201	12,318	1,174	1.03	66,726	4,128	133
July	16,259	31,686	1,173	2.03	50,126	29,853	19,718
Aug.	17,983	20,093	788	1.88	47,228	19,507	9,819
Sep.	15,677	16,771	702	2.06	45,432	13,379	8,975
Oct.	16,520	3,074	658	2.68	58,220	0	0
Nov.	14,266	10,949	437	0.69	61,100	0	0
Dec.	13,474	13,508	235	0.52	60,831	0	0
TOTAL	184,211	176,582	8,168	20.92	--	68,622	38,645

NOTE -- Acres irrigated 2013: Ainsworth Canal 34,618 acres.

NORTH LOUP DIVISION
CALAMUS RESERVOIR — ABOVE DAVIS CREEK MIRDAN CAN

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release to Calamus Fish Hatch. (AF)	Release to Canal (AF)	Canal Use (AF)	Delivered To Farms (AF)
Jan.	19,234	1,628	402	0.16	97,514	231	0	0	0
Feb.	17,974	1,720	558	0.92	113,210	217	0	0	0
Mar.	25,241	17,508	1,068	0.83	119,875	654	0	0	0
Apr.	24,103	25,520	1,753	2.64	116,705	602	10,786	0	0
May	24,767	19,136	1,850	7.39	120,486	117	13,472	1,301	72
June	23,914	23,157	2,381	2.63	118,862	426	10,949	4,004	1,317
July	21,364	45,549	2,450	1.36	92,227	515	31,146	20,221	11,183
Aug	23,233	38,598	1,640	4.38	75,222	545	20,342	12,120	7,139
Sep.	19,232	29,874	1,445	2.46	63,135	452	14,007	9,078	4,932
Oct.	21,155	5,283	1,019	1.87	77,988	163	0	0	0
Nov.	19,542	4,683	618	0.44	92,229	195	0	0	0
Dec.	19,122	10,483	419	0.00	100,449	219	0	0	0
TOTAL	258,881	223,139	15,603	25.08	--	4,336	100,702	46,724	24,643

NOTE -- Acres irrigated 2013: Mirdan Canal 34,110 acres.

NORTH LOUP DIVISION (Continued)

	DAVIS CREEK RESERVOIR					BELOW DAVIS CREEK FULLERTON CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Mo. Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	204	770	79	0.16	18,309	0	0
Feb.	258	659	95	0.74	17,813	0	0
Mar.	273	692	165	0.46	17,229	0	0
Apr.	8,265	903	301	3.19	24,290	0	0
May	11,510	3,659	398	4.69	31,743	2,114	3
June	5,437	5,607	540	2.03	31,033	3,894	240
July	9,233	15,840	561	2.84	23,865	14,521	10,492
Aug.	7,737	12,777	340	5.31	18,485	11,970	5,375
Sep.	4,011	12,938	238	2.27	9,320	12,676	4,453
Oct.	931	194	145	5.98	9,912	0	0
Nov.	79	196	80	0.73	9,715	0	0
Dec.	27	191	50	0.02	9,501	0	0
TOTAL	47,965	54,426	2,992	28.42	--	45,175	20,563

NOTE - Acres irrigated 2013: Fullerton Canal 21,016 acres.

TABLE 2
SUMMARY OF 2013 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.	62	62	0	0.02	0	0
Feb.	119	119	0	0.38	0	0
Mar.	228	228	0	0.97	0	0
Apr.	345	345	0	2.06	0	0
May	430	430	0	1.49	0	0
June	226	226	0	0.75	0	0
July	64	64	0	2.91	0	0
Aug.	62	62	0	1.53	0	0
Sep.	60	60	0	3.13	0	0
Oct.	62	62	0	0.77	0	0
Nov.	60	60	0	0.01	0	0
Dec.	62	62	0	0.00	0	0
TOTAL	1,780	1,780	0	14.02	--	0

TABLE 2
SUMMARY OF 2013 OPERATIONS

FRENCHMAN-CAMBRIDGE DIVISION FRENCHMAN UNIT

	ENDERS RESERVOIR					CULBERTSON CANAL		CULBERTSON EXT.CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	466	246	63	0.12	15,279	0	0	0	0
Feb.	433	222	77	0.53	15,413	0	0	0	0
Mar.	535	246	129	1.21	15,573	0	0	0	0
Apr.	560	639	223	1.75	15,271	0	0	0	0
May	727	391	337	2.88	15,270	0	0	0	0
June	318	238	411	2.13	14,939	0	0	0	0
July	1	185	472	1.40	14,283	0	0	0	0
Aug.	156	185	434	1.62	13,820	0	0	0	0
Sep.	118	179	359	2.40	13,400	0	0	0	0
Oct.	119	185	149	0.55	13,185	0	0	0	0
Nov.	332	179	129	0.65	13,209	0	0	0	0
Dec.	361	185	65	0.02	13,320	0	0	0	0
TOTAL	4,126	3,080	2,848	15.26	--	0	0	0	0

NOTE: Acres irrigated 2013: Culbertson Canal - 0 acres; Culbertson Extension Canal - 0 acres.

FRENCHMAN-CAMBRIDGE DIVISION MEEKER-DRIFTWOOD UNIT (Continued)

	SWANSON LAKE					MEEKER-DRIFTWOOD	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	342	61	198	0.10	36,689	0	0
Feb.	736	56	236	1.01	37,133	0	0
Mar.	3,178	61	407	0.62	39,843	0	0
Apr.	5,374	2,809	830	2.68	41,578	0	0
May	3,975	4,550	1,218	1.92	39,785	0	0
June	1,929	672	1,657	1.66	39,385	709	0
July	855	5,417	1,490	3.29	33,333	5,049	1,181
Aug.	692	3,792	1,233	0.76	29,000	3,452	1,203
Sep.	312	60	1,034	2.69	28,218	0	0
Oct.	0	61	661	0.38	27,496	0	0
Nov.	822	60	402	0.46	27,856	0	0
Dec.	1,283	61	201	0.14	28,877	0	0
TOTAL	19,498	17,660	9,567	15.71	--	9,210	2,384

NOTE: Acres irrigated 2013: Meeker-Driftwood Canal - 5,206 acres.

FRENCHMAN-CAMBRIDGE DIVISION RED WLLOW UNIT (Continued)

	HUGH BUTLER LAKE					RED WILLOW CANAL		BARTLEY CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	752	123	38	0.03	6,689	0	0	0	0
Feb.	844	111	51	0.48	7,371	0	0	0	0
Mar.	921	123	89	0.10	8,080	0	0	0	0
Apr.	1,671	2,932	185	1.45	6,634	0	0	0	0
May	1,452	1,486	255	3.67	6,345	0	0	0	0
June	658	119	347	1.51	6,537	0	0	0	0
July	271	157	377	1.04	6,274	0	0	0	0
Aug.	315	123	339	0.71	6,127	0	0	0	0
Sep.	345	119	267	1.89	6,086	0	0	0	0
Oct.	351	123	123	1.11	6,191	0	0	0	0
Nov.	537	119	96	0.55	6,513	0	0	0	0
Dec.	618	123	47	0.09	6,961	0	0	0	0
TOTAL	8,735	5,658	2,214	12.63	--	0	0	0	0

NOTE -- Acres irrigated 2013: Red Willow Canal - 0 acres; Bartley Canal 0 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)

CAMBRIDGE UNIT

	HARRY STRUNK LAKE					CAMBRIDGE CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	2,580	62	80	0.09	22,377	0	0
Feb.	2,669	56	105	1.19	24,885	0	0
Mar.	2,847	62	183	0.36	27,487	0	0
Apr.	4,439	7,216	457	2.28	24,253	0	0
May	3,821	3,846	597	1.73	23,631	0	0
June	2,439	1,404	798	1.67	23,868	1,088	166
July	2,121	7,038	711	2.05	18,240	5,745	2,295
Aug.	2,417	6,242	537	2.53	13,878	5,355	2,928
Sep.	1,736	589	451	3.95	14,574	387	249
Oct.	1,945	62	247	1.08	16,210	0	0
Nov.	2,306	60	171	0.69	18,285	0	0
Dec.	2,243	62	84	0.17	20,382	0	0
TOTAL	31,563	26,699	4,421	17.79	--	12,575	5,638

NOTE -- Acres irrigated 2013: Cambridge Canal 10,114 acres.

TABLE 2
SUMMARY OF 2013 OPERATIONS

KANASKA DIVISION ALMENA UNIT

	KEITH SEBELIUS LAKE					ALMENA CANAL		
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To City Of Norton (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	372	50	91	0.73	16,693	19	0	0
Feb.	422	45	116	0.69	16,954	17	0	0
Mar.	539	50	197	0.41	17,246	19	0	0
Apr.	518	50	384	1.52	17,330	20	0	0
May	719	70	649	2.39	17,330	39	65	0
June	216	276	957	0.97	16,313	53	61	0
July	619	2,648	905	4.15	13,379	56	2,124	1,306
Aug.	356	70	626	3.79	13,039	39	24	0
Sep.	520	68	648	4.24	12,843	38	0	0
Oct.	126	57	331	1.32	12,581	26	0	0
Nov.	133	50	185	0.64	12,479	20	0	0
Dec.	165	49	93	0.05	12,502	19	0	0
TOTAL	4,705	3,483	5,182	20.90	--	365	2,274	1,306

NOTE: Acres irrigated 2013: Almena Canal - 2,200 acres.

BOSTWICK DIVISION FRANKLIN UNIT

	HARLAN COUNTY LAKE Data from Corps of Engineers					FRANKLIN CANAL		NAPONEE CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	1,180	0	667	0.31	191,638	0	0	0	0
Feb.	2,515	0	669	0.77	193,484	0	0	0	0
Mar.	5,455	0	1,044	0.98	197,895	0	0	0	0
Apr.	14,648	0	2,391	1.64	210,152	0	0	0	0
May	14,886	7,765	3,001	2.41	214,272	0	0	0	0
June	4,572	10,019	6,831	1.56	201,994	1,974	337	22	0
July	1,131	25,056	7,530	2.79	170,539	7,325	3,376	456	132
Aug.	1,656	18,218	5,308	2.11	148,669	6,497	3,337	277	106
Sep.	1,379	4,199	4,572	2.57	141,277	0	0	0	0
Oct.	430	0	3,246	1.11	138,461	0	0	0	0
Nov.	823	1,377	2,592	0.95	135,315	0	0	0	0
Dec.	119	8,721	2,191	0.26	124,522	0	0	0	0
TOTAL	48,794	75,355	40,042	17.46	--	15,796	7,050	755	238

NOTE: Acres irrigated 2013: Franklin Canal - 10,935 acres; Naponee Canal - 857 acres.

BOSTWICK DIVISION SUPERIOR-COURT UNIT (Continued)

	FRANKLIN PUMP CANAL		SUPERIOR CANAL			COURTLAND CANAL - ABOVE LOVEWELL			
						NEBRASKA USE		KANSAS USE	
Month	Diverted To Canal (AF)	Delivered To Farms (AF)	Diverted To Canal (AF)	Delivered To Farms (AF)	Total Diversion (AF)	Total (AF)	Delivered To Farms (AF)	Diversion To Canal (AF)	Delivered To Farms (AF)
Jan.	0	0	0	0	3,292	0	0	0	0
Feb.	0	0	0	0	4,384	0	0	0	0
Mar.	0	0	0	0	5,386	0	0	0	0
Apr.	0	0	0	0	2,055	0	0	0	0
May	0	0	0	0	6,406	0	0	0	0
June	18	0	1,001	260	8,136	58	51	3,473	841
July	683	363	3,500	1,554	14,404	304	276	8,664	4,975
Aug.	505	310	1,660	752	835	196	170	5,329	2,459
Sep.	0	0	0	0	4,412	0	0	2,627	1,565
Oct.	0	0	0	0	600	0	0	0	0
Nov.	0	0	0	0	1,403	0	0	0	0
Dec.	0	0	0	0	11,574	0	0	0	0
TOTAL	1,206	673	6,161	2,566	62,887	558	497	20,093	9,840

NOTE: Acres irrigated 2013: Franklin Pump Canal - 1,315 acres; Superior Canal - 6,154 acres.
Courtland Canal-Nebraska use - 1,195 acres.
Courtland Canal-Kansas use - 7,661 acres.

BOSTWICK DIVISION COURTLAND UNIT(Continued)

			LOVEWELL RESERVOIR					COURTLAND (Below)	
Month	Est. Flow from White Rock Creek (AF)	Inflow from Courtland 34.8 (AF)	Total Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	520	2,605	3,125	12	131	1.17	25,567	0	0
Feb.	659	3,247	3,906	11	187	1.15	29,275	0	0
Mar.	87	4,936	5,023	12	356	1.55	33,930	0	0
Apr.	756	1,959	2,715	12	517	2.68	36,116	0	0
May	1,753	4,016	5,769	379	1,382	6.70	40,124	369	0
June	576	3,249	3,825	6,823	1,579	2.69	35,547	7,124	2,746
July	1,026	4,430	5,456	16,662	1,279	2.42	23,062	17,703	11,011
Aug.	2,548	2,112	4,660	9,109	845	5.41	17,768	9,097	5,103
Sep.	434	1,654	2,088	6,284	763	1.22	12,809	5,846	3,799
Oct.	0	203	203	12	379	1.38	12,621	0	0
Nov.	0	581	581	12	239	1.63	12,951	0	0
Dec.	246	9,440	9,686	12	130	0.20	22,495	0	0
TOTAL	8,605	38,432	47,037	39,340	7,787	28.20	--	40,139	22,659

NOTE: Acres irrigated 2013: Courtland Canal below Lovewell 31,199 acres.

TABLE 2
SUMMARY OF 2013 OPERATIONS

SOLOMON DIVISION
KIRWIN UNIT

		KIRWIN RESERVOIR				KIRWIN CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	1,208	0	247	0.27	67,309	0	0
Feb.	1,757	0	342	0.89	68,724	0	0
Mar.	2,173	0	574	1.82	70,323	0	0
Apr.	1,889	0	728	2.01	71,484	0	0
May	2,527	0	1,900	3.50	72,111	0	0
June	584	1,367	2,522	0.87	68,806	1,570	426
July	372	7,767	2,177	2.21	59,234	7,768	3,918
Aug.	807	6,224	1,855	2.09	51,962	6,229	3,851
Sep.	1,345	0	1,906	1.58	51,401	0	0
Oct.	34	0	1,043	1.07	50,392	0	0
Nov.	274	0	551	1.33	50,115	0	0
Dec.	162	0	266	0.13	50,011	0	0
TOTAL	13,132	15,358	14,111	17.77	--	15,567	8,195

NOTE: Acres irrigated 2013: Kirwin Canal - 8,317 acres.

SOLOMON DIVISION WEBSTER UNIT (Continued)

		WEBSTER RESERVOIR				OSBORNE CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	332	0	163	0.80	36,336	0	0
Feb.	376	0	206	1.39	36,506	0	0
Mar.	452	0	355	0.75	36,603	0	0
Apr.	890	0	648	1.30	36,845	0	0
May	1,346	0	1,175	3.91	37,016	0	0
June	160	2,376	1,502	2.12	33,298	1,002	177
July	605	8,265	1,399	3.51	24,239	5,475	2,671
Aug.	404	6,101	839	0.95	17,703	4,358	2,786
Sep.	298	0	877	1.98	17,124	0	0
Oct.	87	0	447	1.33	16,764	0	0
Nov	87	0	265	1.10	16,586	0	0
Dec.	83	0	132	0.14	16,537	0	0
TOTAL	5,120	16,742	8,008	19.28	--	10,835	5,634

NOTE: Acres irrigated 2013: Osborne Canal - 5,441 acres.

SOLOMON DIVISION GLEN ELDER UNIT(Continued)

	WACONDA LAKE					OUTFLOW TO RIVER				
						City of Beloit				
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Storage Release (AF)	Quality Bypass (AF)	Irrig.District Storage Release (AF)	Other Controlled Releases (AF)	Release To Mitchell Co. RWD No. 2 (AF)
Jan.	4,839	804	668	1.04	187,912	0	738	0	0	66
Feb.	4,121	727	895	0.74	190,411	0	666	0	0	61
Mar.	6,070	800	1,590	1.71	194,091	0	738	0	0	62
Apr.	5,772	773	2,438	2.31	196,652	0	714	0	0	59
May	8,242	1,129	5,470	2.72	198,295	0	433	0	639	57
June	6,220	1,779	6,552	2.28	196,184	0	172	0	1,545	62
July	13,207	3,860	5,938	5.58	199,593	0	46	1,666	2,077	71
Aug.	4,915	1,732	5,422	1.48	197,354	0	478	341	853	60
Sep.	1,919	1,911	6,380	1.72	190,982	0	163	169	1,519	60
Oct.	1,047	792	3,890	0.66	187,347	0	737	0	0	55
Nov.	2,202	765	1,775	0.85	187,009	0	714	0	0	51
Dec.	1,737	796	828	0.13	187,122	0	738	0	0	58
TOTAL	60,291	15,868	41,846	21.22	--	0	6,337	2,176	6,633	722

NOTE: Acres irrigated 2013: Glen Elder District 5,752 acres.

SMOKY HILL DIVISION ELLIS UNIT

	CEDAR BLUFF RESERVOIR							
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release to City of Russell (AF)	Release To Fish Hatchery (AF)	Release to Kansas Water Office (AF)
Jan.	316	0	250	0.34	66,299	0	0	0
Feb.	227	0	326	0.92	66,200	0	0	0
Mar.	231	2,417	517	0.62	63,497	1231	0	1,186
Apr.	415	0	896	0.76	63,016	0	0	0
May	1,464	0	1,847	3.24	62,633	0	0	0
June	560	0	2,544	0.84	60,649	0	0	0
July	1,130	0	2,614	3.42	59,165	0	0	0
Aug.	335	0	1,795	0.76	57,705	0	0	0
Sep.	927	0	2,183	2.56	56,449	0	0	0
Oct.	0	0	1,032	1.31	55,417	0	0	0
Nov.	0	0	670	1.27	54,747	0	0	0
Dec.	0	0	405	0.04	54,342	0	0	0
TOTAL	5,605	2,417	15,079	16.08	--	1,231	0	1,186

TABLE 3

ACRES IRRIGATED IN 2013 AND ESTIMATES FOR 2014

Irrigation District and Canal	Acres With Service Available	Acres Irrigated in 2013	Estimated Acres to be Irrigated in 2014
Mirage Flats Irrigation District			
Mirage Flats Canal	11,662	9,283	9,000
Ainsworth Irrigation District			
Ainsworth Canal	35,000	34,618	34,500
Twin Loups Irrigation District			
Above Davis Creek	34,053	34,110	34,000
Below Davis Creek	21,063	21,016	21,000
Total Twin Loups Irrigation District	55,116	55,126	55,000
Frenchman Valley Irrigation District			
Culbertson Canal	9,292	0	0
H & RW Irrigation District			
Culbertson Extension Canal	11,915	0	0
Frenchman-Cambridge Irrigation District			
Meeker-Driftwood Canal	16,855	5,206	5,000
Red Willow Canal	4,797	0	0
Bartley Canal	6,353	0	0
Cambridge Canal	17,664	10,114	10,000
Total Frenchman-Cambridge Irrigation District	45,669	15,320	15,000
Almena Irrigation District			
Almena Canal	5,764	2,200	2,000
Bostwick Irrigation District in Nebraska			
Franklin Canal	11,031	10,935	0
Naponee Canal	1,607	857	0
Franklin Pump Canal	2,026	1,315	0
Superior Canal	6,056	6,154	0
Courtland Canal (Nebraska)	1,735	1,195	0
Total Bostwick Irrigation Dist. in Nebraska	22,455	20,456	0
Kansas-Bostwick Irrigation District			
Courtland Canal above Lovewell	13,378	7,661	7,500
Courtland Canal below Lovewell	29,122	31,199	29,000
Total Kansas-Bostwick Irrigation District	42,500	38,860	36,500
Kirwin Irrigation District			
Kirwin Canal	11,465	8,317	8,500
Webster Irrigation District			
Osborne Canal	8,537	5,441	0
Glen Elder Irrigation District	10,370	5,752	6,000
TOTAL PROJECT USES	269,745	195,373	166,500
Non-Project Uses			
Hale Ditch	700	0	0
TOTAL PROJECT AND NON-PROJECT	270,445	195,373	166,500

BOX BUTTE RESERVOIR OPERATION ESTIMATES - 2014

Month	Inflow Mean CFS	Inflow 1000 AF	Evaporation Inches	Evaporation 1000 AF	Release Requirement Mean CFS	Release Requirement 1000 AF	Reservoir Spill 1000 AF	Requirement Shortage 1000 AF	End of Month Elev FT	End of Month Cont 1000 AF	Reservoir Change 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	13	0.8	1.1	0.1	2	0.1	0.0	0.0	3990.9	9.4	0.6
FEB	16	0.9	1.3	0.1	2	0.1	0.0	0.0	3991.7	10.1	0.7
MAR	23	1.4	2.7	0.2	2	0.1	0.0	0.0	3992.9	11.2	1.1
APR	18	1.1	3.8	0.3	2	0.1	0.0	0.0	3993.6	11.9	0.7
MAY	15	0.9	4.6	0.4	2	0.1	0.0	0.0	3994.0	12.3	0.4
JUN	8	0.5	6.2	0.5	89	5.3	0.0	0.0	3987.7	7.0	-5.3
JUL	6	0.4	7.1	0.4	226	13.9	0.0	9.3	3979.0	2.4	-4.6
AUG	10	0.6	6.2	0.2	213	13.1	0.0	12.7	3979.0	2.4	0.0
SEP	10	0.6	4.6	0.1	40	2.4	0.0	1.9	3979.0	2.4	0.0
OCT	13	0.8	3.5	0.1	5	0.3	0.0	0.0	3980.0	2.8	0.4
NOV	17	1.0	1.8	0.1	2	0.1	0.0	0.0	3981.8	3.6	0.8
DEC	13	0.8	1.3	0.1	2	0.1	0.0	0.0	3983.0	4.2	0.6
TOTAL		9.8	44.2	2.6		35.7	0.0	23.9			-4.6
MOST PROBABLE INFLOW CONDITIONS											
JAN	19	1.2	1.0	0.1	2	0.1	0.0	0.0	3991.3	9.8	1.0
FEB	27	1.5	1.3	0.1	2	0.1	0.0	0.0	3992.8	11.1	1.3
MAR	34	2.1	2.4	0.2	2	0.1	0.0	0.0	3994.6	12.9	1.8
APR	30	1.8	3.5	0.3	2	0.1	0.0	0.0	3995.9	14.3	1.4
MAY	23	1.4	4.3	0.4	2	0.1	0.0	0.0	3996.8	15.2	0.9
JUN	13	0.8	5.7	0.5	68	4.2	0.0	0.0	3993.0	11.3	-3.9
JUL	10	0.6	6.6	0.5	209	12.9	0.0	3.9	3979.0	2.4	-8.9
AUG	16	1.0	5.7	0.2	164	10.1	0.0	9.3	3979.0	2.4	0.0
SEP	18	1.1	4.3	0.1	28	1.7	0.0	0.7	3979.0	2.4	0.0
OCT	19	1.2	3.2	0.1	5	0.3	0.0	0.0	3980.9	3.2	0.8
NOV	25	1.5	1.6	0.1	2	0.1	0.0	0.0	3983.5	4.5	1.3
DEC	21	1.3	1.3	0.1	2	0.1	0.0	0.0	3985.5	5.6	1.1
TOTAL		15.5	40.9	2.7		29.9	0.0	13.9			-3.2
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	24	1.5	0.9	0.1	2	0.1	0.0	0.0	3991.7	10.1	1.3
FEB	32	1.8	1.1	0.1	2	0.1	0.0	0.0	3993.4	11.7	1.6
MAR	42	2.6	2.3	0.2	2	0.1	0.0	0.0	3995.7	14.0	2.3
APR	37	2.2	3.2	0.3	2	0.1	0.0	0.0	3997.3	15.8	1.8
MAY	29	1.8	3.9	0.4	2	0.1	0.0	0.0	3998.4	17.1	1.3
JUN	17	1.0	5.3	0.5	47	2.8	0.0	0.0	3996.4	14.8	-2.3
JUL	11	0.7	6.0	0.6	135	8.3	0.0	0.0	3987.1	6.6	-8.2
AUG	19	1.2	5.3	0.3	104	6.4	0.0	1.3	3979.0	2.4	-4.2
SEP	20	1.2	3.9	0.1	18	1.1	0.0	0.0	3979.0	2.4	0.0
OCT	24	1.5	3.0	0.1	5	0.3	0.0	0.0	3981.6	3.5	1.1
NOV	32	1.9	1.5	0.1	2	0.1	0.0	0.0	3984.8	5.2	1.7
DEC	26	1.6	1.1	0.1	2	0.1	0.0	0.0	3987.1	6.6	1.4
TOTAL		19.0	37.5	2.9		19.6	0.0	1.3			-2.2

MERRITT RESERVOIR OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement Canal	River	Total		Reservoir Spill	Requirement Shortage	End of Month Elev	Cont	Reservoir Change
	Mean	1000		1000	1000	1000	Mean	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	AF	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	226	13.9	1.4	0.3	0.0	1.0	16	1.0	12.3	0.0	2944.0	61.1	0.3
FEB	246	13.7	1.8	0.4	0.0	1.0	18	1.0	12.3	0.0	2944.0	61.1	0.0
MAR	255	15.7	2.3	0.5	0.0	1.0	16	1.0	11.4	0.0	2945.0	63.9	2.8
APR	260	15.5	3.6	0.9	0.0	1.0	17	1.0	10.8	0.0	2946.0	66.7	2.8
MAY	252	15.5	4.5	1.1	3.4	1.0	71	4.4	10.0	0.0	2946.0	66.7	0.0
JUN	240	14.3	5.9	1.4	7.6	1.0	144	8.6	4.3	0.0	2946.0	66.7	0.0
JUL	240	14.8	6.8	1.6	33.4	3.0	591	36.4	0.0	0.0	2936.1	43.5	-23.2
AUG	247	15.2	5.9	0.9	31.0	1.0	519	32.0	0.0	0.0	2924.6	25.8	-17.7
SEP	242	14.4	5.0	0.5	8.5	1.0	159	9.5	0.0	0.0	2928.0	30.2	4.4
OCT	247	15.2	4.5	0.5	0.0	5.0	81	5.0	0.0	0.0	2934.1	39.9	9.7
NOV	240	14.3	2.3	0.3	0.0	1.0	17	1.0	0.0	0.0	2940.7	52.9	13.0
DEC	222	13.7	1.4	0.3	0.0	1.0	16	1.0	4.2	0.0	2944.0	61.1	8.2
TOTAL		176.2	45.4	8.7	83.9	18.0		101.9	65.3	0.0			0.3
MOST PROBABLE INFLOW CONDITIONS													
JAN	237	14.6	1.2	0.3	0.0	1.0	16	1.0	13.0	0.0	2944.0	61.1	0.3
FEB	259	14.4	1.6	0.4	0.0	1.0	16	1.0	13.0	0.0	2944.0	61.1	0.0
MAR	268	16.5	2.0	0.5	0.0	1.0	16	1.0	12.2	0.0	2945.0	63.9	2.8
APR	275	16.4	3.2	0.8	0.0	1.0	16	1.0	11.8	0.0	2946.0	66.7	2.8
MAY	265	16.3	4.0	1.0	2.9	1.0	63	3.9	11.4	0.0	2946.0	66.7	0.0
JUN	252	15.0	5.2	1.3	6.5	1.0	122	7.5	6.2	0.0	2946.0	66.7	0.0
JUL	252	15.5	6.1	1.5	28.5	3.0	511	31.5	0.0	0.0	2939.0	49.2	-17.5
AUG	258	15.9	5.3	0.9	26.6	1.0	448	27.6	0.0	0.0	2932.2	36.6	-12.6
SEP	255	15.2	4.4	0.6	7.3	1.0	135	8.3	0.0	0.0	2935.8	42.9	6.3
OCT	258	15.9	4.0	0.6	0.0	5.0	81	5.0	0.0	0.0	2940.8	53.2	10.3
NOV	252	15.0	2.0	0.4	0.0	1.0	16	1.0	5.7	0.0	2944.0	61.1	7.9
DEC	234	14.4	1.2	0.3	0.0	1.0	16	1.0	13.1	0.0	2944.0	61.1	0.0
TOTAL		185.1	40.2	8.6	71.8	18.0		89.8	86.4	0.0			0.3
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	253	15.6	1.1	0.2	0.0	1.0	16	1.0	14.1	0.0	2944.0	61.1	0.3
FEB	277	15.4	1.4	0.3	0.0	1.0	18	1.0	14.1	0.0	2944.0	61.1	0.0
MAR	284	17.5	1.8	0.4	0.0	1.0	16	1.0	13.3	0.0	2945.0	63.9	2.8
APR	289	17.2	2.8	0.7	0.0	1.0	17	1.0	12.7	0.0	2946.0	66.7	2.8
MAY	279	17.2	3.6	0.9	2.4	1.0	55	3.4	12.9	0.0	2946.0	66.7	0.0
JUN	268	16.0	4.6	1.1	5.3	1.0	106	6.3	8.6	0.0	2946.0	66.7	0.0
JUL	269	16.6	5.3	1.3	23.3	3.0	427	26.3	0.0	0.0	2941.9	55.7	-11.0
AUG	276	17.0	4.6	0.9	21.8	1.0	370	22.8	0.0	0.0	2938.8	49.0	-6.7
SEP	272	16.2	3.9	0.7	5.9	1.0	116	6.9	0.0	0.0	2942.6	57.6	8.6
OCT	276	17.0	3.5	0.7	0.0	5.0	81	5.0	7.8	0.0	2944.0	61.1	3.5
NOV	268	16.0	1.8	0.4	0.0	1.0	17	1.0	14.6	0.0	2944.0	61.1	0.0
DEC	250	15.4	1.1	0.2	0.0	1.0	16	1.0	14.2	0.0	2944.0	61.1	0.0
TOTAL		197.1	35.5	7.8	58.7	18.0		76.7	112.3	0.0			0.3

CALAMUS RESERVOIR OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement Canal	River	Total		Reservoir Spill	Requirement Shortage	End of Month Elev	Cont	Reservoir Change
	Mean	1000		1000	1000	1000	Mean	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	AF	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	300	18.5	1.3	0.5	0.5	3.1	58	3.6	14.3	0.0	2240.0	100.5	0.1
FEB	318	17.7	1.6	0.6	0.5	2.8	59	3.3	13.8	0.0	2240.0	100.5	0.0
MAR	356	21.9	2.9	1.1	0.5	3.1	58	3.6	8.0	0.0	2242.0	109.7	9.2
APR	369	22.0	4.6	1.8	0.5	3.0	59	3.5	6.9	0.0	2244.0	119.5	9.8
MAY	407	25.1	4.8	2.0	2.7	3.1	94	5.8	17.3	0.0	2244.0	119.5	0.0
JUN	372	22.2	5.9	2.5	5.6	3.0	144	8.6	11.1	0.0	2244.0	119.5	0.0
JUL	347	21.4	6.6	2.8	33.8	21.4	896	55.2	0.0	0.0	2235.8	82.9	-36.6
AUG	328	20.2	6.7	2.2	30.5	20.2	823	50.7	0.0	0.0	2226.3	50.2	-32.7
SEP	310	18.5	5.2	1.3	8.3	18.5	450	26.8	0.0	0.0	2222.8	40.6	-9.6
OCT	308	19.0	3.9	0.9	0.5	3.1	58	3.6	0.0	0.0	2227.9	55.1	14.5
NOV	335	20.0	2.1	0.5	0.5	3.0	59	3.5	0.0	0.0	2232.7	71.1	16.0
DEC	325	20.0	1.2	0.4	0.5	3.1	58	3.6	0.0	0.0	2236.8	87.1	16.0
TOTAL		246.5	46.8	16.6	84.4	87.4		171.8	71.4	0.0			-13.3
MOST PROBABLE INFLOW CONDITIONS													
JAN	334	20.6	1.2	0.4	0.5	3.1	58	3.6	16.5	0.0	2240.0	100.5	0.1
FEB	356	19.8	1.4	0.5	0.5	2.8	54	3.3	16.0	0.0	2240.0	100.5	0.0
MAR	396	24.4	2.6	0.9	0.5	3.1	58	3.6	10.7	0.0	2242.0	109.7	9.2
APR	411	24.5	4.1	1.6	0.5	3.0	57	3.5	9.6	0.0	2244.0	119.5	9.8
MAY	456	28.1	4.2	1.8	2.3	3.1	88	5.4	20.9	0.0	2244.0	119.5	0.0
JUN	416	24.8	5.1	2.2	4.7	3.0	125	7.7	14.9	0.0	2244.0	119.5	0.0
JUL	388	23.9	5.8	2.5	25.8	23.9	807	49.7	0.0	0.0	2237.8	91.2	-28.3
AUG	367	22.6	5.8	2.0	23.0	22.6	740	45.6	0.0	0.0	2231.3	66.2	-25.0
SEP	346	20.6	4.5	1.3	5.4	20.6	422	26.0	0.0	0.0	2229.3	59.5	-6.7
OCT	344	21.2	3.5	0.9	0.5	3.1	58	3.6	0.0	0.0	2234.1	76.2	16.7
NOV	374	22.3	1.9	0.6	0.5	3.0	57	3.5	0.0	0.0	2238.6	94.4	18.2
DEC	362	22.3	1.1	0.4	0.5	3.1	58	3.6	12.2	0.0	2240.0	100.5	6.1
TOTAL		275.1	41.2	15.1	64.7	94.4		159.1	100.8	0.0			0.1
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	385	23.7	1.0	0.4	0.5	3.1	58	3.6	19.6	0.0	2240.0	100.5	0.1
FEB	408	22.7	1.2	0.5	0.5	2.8	59	3.3	18.9	0.0	2240.0	100.5	0.0
MAR	455	28.0	2.3	0.8	0.5	3.1	58	3.6	14.4	0.0	2242.0	109.7	9.2
APR	470	28.0	3.6	1.4	0.5	3.0	59	3.5	13.3	0.0	2244.0	119.5	9.8
MAY	523	32.2	3.8	1.6	1.9	3.1	81	5.0	25.6	0.0	2244.0	119.5	0.0
JUN	476	28.4	4.6	1.9	3.8	3.0	114	6.8	19.7	0.0	2244.0	119.5	0.0
JUL	445	27.4	5.2	2.2	17.9	27.4	735	45.3	0.0	0.0	2239.7	99.4	-20.1
AUG	420	25.9	5.2	1.9	15.9	25.9	679	41.8	0.0	0.0	2235.5	81.6	-17.8
SEP	398	23.7	4.0	1.3	4.1	23.7	466	27.8	0.0	0.0	2234.1	76.2	-5.4
OCT	394	24.3	3.1	1.0	0.5	3.1	58	3.6	0.0	0.0	2238.9	95.9	19.7
NOV	429	25.6	1.7	0.6	0.5	3.0	59	3.5	16.9	0.0	2240.0	100.5	4.6
DEC	416	25.6	1.0	0.4	0.5	3.1	58	3.6	21.6	0.0	2240.0	100.5	0.0
TOTAL		315.5	36.7	14.0	47.1	104.3		151.4	150.0	0.0			0.1

DAVIS CREEK RESERVOIR OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement		Reservoir Spill	Requirement Shortage	End of Month Elev	End of Month Cont	Reservoir Change
	Mean	1000		1000	Mean	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	0	0.0	1.4	0.1	3	0.2	0.0	0.0	2048.4	9.2	-0.3
FEB	0	0.0	1.7	0.1	4	0.2	0.0	0.0	2047.8	8.9	-0.3
MAR	0	0.0	3.0	0.1	3	0.2	0.0	0.0	2047.1	8.6	-0.3
APR	101	6.0	4.7	0.2	5	0.3	0.0	0.0	2056.9	14.1	5.5
MAY	239	14.7	5.1	0.3	57	3.5	0.0	0.0	2070.2	25.0	10.9
JUN	240	14.3	6.1	0.5	127	7.6	0.0	0.0	2076.0	31.2	6.2
JUL	179	11.0	6.5	0.6	297	18.3	0.0	0.0	2068.4	23.3	-7.9
AUG	161	9.9	5.1	0.4	273	16.8	0.0	0.0	2059.6	16.0	-7.3
SEP	37	2.2	4.4	0.3	133	7.9	0.0	0.0	2049.9	10.0	-6.0
OCT	0	0.0	4.0	0.2	3	0.2	0.0	0.0	2049.1	9.6	-0.4
NOV	0	0.0	2.1	0.1	3	0.2	0.0	0.0	2048.5	9.3	-0.3
DEC	0	0.0	1.2	0.1	3	0.2	0.0	0.0	2047.9	9.0	-0.3
TOTAL		58.1	45.3	3.0		55.6	0.0	0.0			-0.5
MOST PROBABLE INFLOW CONDITIONS											
JAN	0	0.0	1.3	0.1	3	0.2	0.0	0.0	2048.3	9.2	-0.3
FEB	0	0.0	1.6	0.1	4	0.2	0.0	0.0	2047.7	8.9	-0.3
MAR	0	0.0	2.8	0.1	3	0.2	0.0	0.0	2047.0	8.6	-0.3
APR	57	3.4	4.5	0.2	3	0.2	0.0	0.0	2052.8	11.6	3.0
MAY	239	14.7	4.8	0.2	42	2.6	0.0	0.0	2068.6	23.5	11.9
JUN	240	14.3	5.8	0.5	99	6.1	0.0	0.0	2076.0	31.2	7.7
JUL	112	6.9	6.2	0.6	231	14.2	0.0	0.0	2068.4	23.3	-7.9
AUG	99	6.1	4.8	0.4	211	13.0	0.0	0.0	2059.6	16.0	-7.3
SEP	7	0.4	4.2	0.3	99	6.1	0.0	0.0	2049.9	10.0	-6.0
OCT	0	0.0	3.8	0.2	3	0.2	0.0	0.0	2049.1	9.6	-0.4
NOV	0	0.0	2.0	0.1	3	0.2	0.0	0.0	2048.5	9.3	-0.3
DEC	0	0.0	1.2	0.0	3	0.2	0.0	0.0	2048.1	9.1	-0.2
TOTAL		45.8	43.0	2.8		43.4	0.0	0.0			-0.4
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	0	0.0	1.2	0.0	3	0.2	0.0	0.0	2048.5	9.3	-0.2
FEB	0	0.0	1.5	0.1	4	0.2	0.0	0.0	2047.9	9.0	-0.3
MAR	0	0.0	2.6	0.1	3	0.2	0.0	0.0	2047.3	8.7	-0.3
APR	18	1.1	4.1	0.2	3	0.2	0.0	0.0	2048.7	9.4	0.7
MAY	239	14.7	4.4	0.2	32	2.0	0.0	0.0	2066.9	21.9	12.5
JUN	240	14.3	5.3	0.4	77	4.6	0.0	0.0	2076.0	31.2	9.3
JUL	52	3.2	5.6	0.5	172	10.6	0.0	0.0	2068.4	23.3	-7.9
AUG	42	2.6	4.4	0.3	156	9.6	0.0	0.0	2059.6	16.0	-7.3
SEP	0	0.0	3.8	0.2	97	5.8	0.0	0.0	2049.9	10.0	-6.0
OCT	0	0.0	3.4	0.1	3	0.2	0.0	0.0	2049.3	9.7	-0.3
NOV	0	0.0	1.8	0.1	3	0.2	0.0	0.0	2048.7	9.4	-0.3
DEC	0	0.0	1.1	0.0	3	0.2	0.0	0.0	2048.3	9.2	-0.2
TOTAL		35.9	39.2	2.2		34.0	0.0	0.0			-0.3

BONNY RESERVOIR OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement				Reservoir Spill	Requirement Shortage	End of Month		Reservoir Change
					Canal	River	Total				Elev	Cont	
	Mean	1000		1000	1000	1000	MEAN	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	AF	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	6	0.4	1.6	0.0	0.0	0.1	2	0.1	0.3	0.0	3638.0	0.0	0.0
FEB	7	0.4	2.2	0.0	0.0	0.1	2	0.1	0.3	0.0	3638.0	0.0	0.0
MAR	6	0.4	2.7	0.0	0.0	0.1	2	0.1	0.3	0.0	3638.0	0.0	0.0
APR	8	0.5	4.3	0.0	0.0	0.1	2	0.1	0.4	0.0	3638.0	0.0	0.0
MAY	10	0.6	5.4	0.0	0.0	0.1	2	0.1	0.5	0.0	3638.0	0.0	0.0
JUN	8	0.5	7.1	0.0	0.0	0.1	2	0.1	0.4	0.0	3638.0	0.0	0.0
JUL	5	0.3	8.2	0.0	0.0	0.1	2	0.1	0.2	0.0	3638.0	0.0	0.0
AUG	3	0.2	7.1	0.0	0.0	0.1	2	0.1	0.1	0.0	3638.0	0.0	0.0
SEP	2	0.1	6.0	0.0	0.0	0.1	2	0.1	0.0	0.0	3638.0	0.0	0.0
OCT	3	0.2	5.4	0.0	0.0	0.1	2	0.1	0.1	0.0	3638.0	0.0	0.0
NOV	5	0.3	2.7	0.0	0.0	0.1	2	0.1	0.2	0.0	3638.0	0.0	0.0
DEC	6	0.4	1.6	0.0	0.0	0.1	2	0.1	0.3	0.0	3638.0	0.0	0.0
TOTAL		4.3	54.3	0.0	0.0	1.2		1.2	3.1	0.0			0.0
MOST PROBABLE INFLOW CONDITIONS													
JAN	16	1.0	1.5	0.0	0.0	0.1	2	0.1	0.9	0.0	3638.0	0.0	0.0
FEB	16	0.9	1.9	0.0	0.0	0.1	2	0.1	0.8	0.0	3638.0	0.0	0.0
MAR	16	1.0	2.4	0.0	0.0	0.1	2	0.1	0.9	0.0	3638.0	0.0	0.0
APR	20	1.2	3.9	0.0	0.0	0.1	2	0.1	1.1	0.0	3638.0	0.0	0.0
MAY	23	1.4	4.8	0.0	0.0	0.1	2	0.1	1.3	0.0	3638.0	0.0	0.0
JUN	20	1.2	6.3	0.0	0.0	0.1	2	0.1	1.1	0.0	3638.0	0.0	0.0
JUL	10	0.6	7.3	0.0	0.0	0.1	2	0.1	0.5	0.0	3638.0	0.0	0.0
AUG	6	0.4	6.3	0.0	0.0	0.1	2	0.1	0.3	0.0	3638.0	0.0	0.0
SEP	5	0.3	5.3	0.0	0.0	0.1	2	0.1	0.2	0.0	3638.0	0.0	0.0
OCT	8	0.5	4.8	0.0	0.0	0.1	2	0.1	0.4	0.0	3638.0	0.0	0.0
NOV	13	0.8	2.4	0.0	0.0	0.1	2	0.1	0.7	0.0	3638.0	0.0	0.0
DEC	13	0.8	1.5	0.0	0.0	0.1	2	0.1	0.7	0.0	3638.0	0.0	0.0
TOTAL		10.1	48.4	0.0	0.0	1.2		1.2	8.9	0.0			0.0
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	24	1.5	1.3	0.0	0.0	0.1	2	0.1	1.4	0.0	3638.0	0.0	0.0
FEB	27	1.5	1.7	0.0	0.0	0.1	2	0.1	1.4	0.0	3638.0	0.0	0.0
MAR	29	1.8	2.1	0.0	0.0	0.1	2	0.1	1.7	0.0	3638.0	0.0	0.0
APR	32	1.9	3.5	0.0	0.0	0.1	2	0.1	1.8	0.0	3638.0	0.0	0.0
MAY	36	2.2	4.3	0.0	0.0	0.1	2	0.1	2.1	0.0	3638.0	0.0	0.0
JUN	32	1.9	5.6	0.0	0.0	0.1	2	0.1	1.8	0.0	3638.0	0.0	0.0
JUL	16	1.0	6.5	0.0	0.0	0.1	2	0.1	0.9	0.0	3638.0	0.0	0.0
AUG	11	0.7	5.6	0.0	0.0	0.1	2	0.1	0.6	0.0	3638.0	0.0	0.0
SEP	7	0.4	4.7	0.0	0.0	0.1	2	0.1	0.3	0.0	3638.0	0.0	0.0
OCT	13	0.8	4.3	0.0	0.0	0.1	2	0.1	0.7	0.0	3638.0	0.0	0.0
NOV	22	1.3	2.1	0.0	0.0	0.1	2	0.1	1.2	0.0	3638.0	0.0	0.0
DEC	21	1.3	1.3	0.0	0.0	0.1	2	0.1	1.2	0.0	3638.0	0.0	0.0
TOTAL		16.3	43.0	0.0	0.0	1.2		1.2	15.1	0.0			0.0

ENDERS RESERVOIR OPERATION ESTIMATES - 2014

Month	Inflow Mean CFS	Inflow 1000 AF	Evaporation Inches	Evaporation 1000 AF	Release Requirement Mean CFS	Release Requirement 1000 AF	Reservoir Spill 1000 AF	Requirement Shortage 1000 AF	End of Month Elev FT	End of Month Cont 1000 AF	Reservoir Change 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	6	0.4	1.1	0.1	3	0.2	0.1	0.0	3088.6	13.3	0.0
FEB	5	0.3	1.1	0.1	4	0.2	0.0	0.0	3088.6	13.3	0.0
MAR	6	0.4	1.9	0.1	3	0.2	0.1	0.0	3088.6	13.3	0.0
APR	7	0.4	4.2	0.3	3	0.2	0.0	0.0	3088.4	13.2	-0.1
MAY	6	0.4	5.3	0.4	3	0.2	4.1	0.0	3082.4	8.9	-4.3
JUN	7	0.4	6.8	0.4	176	10.5	0.0	10.3	3082.0	8.7	-0.2
JUL	6	0.4	7.4	0.4	532	32.8	0.0	32.6	3081.7	8.5	-0.2
AUG	6	0.4	6.3	0.3	505	31.1	0.0	30.9	3081.5	8.4	-0.1
SEP	5	0.3	4.7	0.2	75	4.5	0.0	4.3	3081.3	8.3	-0.1
OCT	5	0.3	3.0	0.1	3	0.2	0.0	0.0	3081.3	8.3	0.0
NOV	5	0.3	2.2	0.1	3	0.2	0.0	0.0	3081.3	8.3	0.0
DEC	5	0.3	1.2	0.1	3	0.2	0.0	0.0	3081.3	8.3	0.0
TOTAL		4.3	45.2	2.6		80.5	4.3	78.1			-5.0
MOST PROBABLE INFLOW CONDITIONS											
JAN	11	0.7	1.0	0.1	3	0.2	0.4	0.0	3088.6	13.3	0.0
FEB	13	0.7	1.1	0.1	3	0.2	0.4	0.0	3088.6	13.3	0.0
MAR	11	0.7	1.8	0.1	3	0.2	0.4	0.0	3088.6	13.3	0.0
APR	12	0.7	4.0	0.3	3	0.2	0.2	0.0	3088.6	13.3	0.0
MAY	13	0.8	5.1	0.3	3	0.2	4.7	0.0	3082.4	8.9	-4.4
JUN	12	0.7	6.4	0.3	114	7.0	0.2	6.8	3082.4	8.9	0.0
JUL	15	0.9	7.0	0.4	487	30.0	0.3	29.8	3082.4	8.9	0.0
AUG	13	0.8	6.0	0.3	388	23.9	0.3	23.7	3082.4	8.9	0.0
SEP	12	0.7	4.4	0.2	36	2.2	0.3	2.0	3082.4	8.9	0.0
OCT	11	0.7	2.8	0.1	3	0.2	0.4	0.0	3082.4	8.9	0.0
NOV	12	0.7	2.1	0.1	3	0.2	0.4	0.0	3082.4	8.9	0.0
DEC	11	0.7	1.2	0.1	3	0.2	0.4	0.0	3082.4	8.9	0.0
TOTAL		8.8	42.9	2.4		64.7	8.4	62.3			-4.4
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	26	1.6	0.9	0.1	3	0.2	1.3	0.0	3088.6	13.3	0.0
FEB	25	1.4	0.9	0.1	4	0.2	1.1	0.0	3088.6	13.3	0.0
MAR	24	1.5	1.6	0.1	3	0.2	1.2	0.0	3088.6	13.3	0.0
APR	25	1.5	3.6	0.2	3	0.2	1.1	0.0	3088.6	13.3	0.0
MAY	26	1.6	4.5	0.3	3	0.2	5.5	0.0	3082.4	8.9	-4.4
JUN	27	1.6	5.7	0.3	40	2.4	1.1	2.2	3082.4	8.9	0.0
JUL	31	1.9	6.3	0.3	297	18.3	1.4	18.1	3082.4	8.9	0.0
AUG	28	1.7	5.3	0.3	229	14.1	1.2	13.9	3082.4	8.9	0.0
SEP	25	1.5	3.9	0.2	3	0.2	1.1	0.0	3082.4	8.9	0.0
OCT	24	1.5	2.5	0.1	3	0.2	1.2	0.0	3082.4	8.9	0.0
NOV	25	1.5	1.8	0.1	3	0.2	1.2	0.0	3082.4	8.9	0.0
DEC	24	1.5	1.0	0.1	3	0.2	1.2	0.0	3082.4	8.9	0.0
TOTAL		18.8	38.0	2.2		36.6	18.6	34.2			-4.4

SWANSON LAKE OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement Canal	River	Total		Reservoir Spill	Requirement Shortage	End of Month Elev	Cont	Reservoir Change
	Mean	1000		1000	1000	1000	Mean	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	AF	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	19	1.2	1.0	0.2	0.0	0.1	2	0.1	0.9	0.0	2729.5	29.0	0.0
FEB	31	1.7	1.1	0.2	0.0	0.1	2	0.1	1.4	0.0	2729.5	29.0	0.0
MAR	34	2.1	2.1	0.4	0.0	0.1	2	0.1	1.6	0.0	2729.5	29.0	0.0
APR	37	2.2	4.5	0.9	0.0	0.1	2	0.1	1.2	0.0	2729.5	29.0	0.0
MAY	32	2.0	5.3	1.1	0.1	0.1	3	0.2	0.8	0.0	2729.4	28.9	-0.1
JUN	27	1.6	6.9	1.4	4.4	0.9	89	5.3	0.1	0.0	2727.2	23.7	-5.2
JUL	15	0.9	6.9	1.3	16.3	6.9	377	23.2	0.0	18.9	2725.0	19.0	-4.7
AUG	8	0.5	6.9	1.2	13.6	6.3	323	19.9	0.0	19.8	2724.6	18.2	-0.8
SEP	3	0.2	5.3	0.9	2.0	2.1	69	4.1	0.0	4.0	2724.2	17.4	-0.8
OCT	5	0.3	3.3	0.5	0.0	0.1	2	0.1	0.0	0.0	2724.0	17.1	-0.3
NOV	13	0.8	2.3	0.4	0.0	0.1	2	0.1	0.3	0.0	2724.0	17.1	0.0
DEC	15	0.9	1.2	0.2	0.0	0.1	2	0.1	0.6	0.0	2724.0	17.1	0.0
TOTAL		14.4	46.8	8.7	36.4	17.0		53.4	6.9	42.7			-11.9
MOST PROBABLE INFLOW CONDITIONS													
JAN	37	2.3	0.9	0.2	0.0	0.1	2	0.1	2.0	0.0	2729.5	29.0	0.0
FEB	59	3.3	1.0	0.2	0.0	0.1	2	0.1	3.0	0.0	2729.5	29.0	0.0
MAR	67	4.1	1.9	0.4	0.0	0.1	2	0.1	3.6	0.0	2729.5	29.0	0.0
APR	72	4.3	4.1	0.8	0.0	0.1	2	0.1	3.4	0.0	2729.5	29.0	0.0
MAY	65	4.0	4.9	1.0	0.1	0.1	3	0.2	2.9	0.0	2729.4	28.9	-0.1
JUN	52	3.1	6.3	1.3	3.8	0.1	63	3.9	1.7	0.0	2727.8	25.1	-3.8
JUL	28	1.7	6.3	1.2	14.2	4.2	299	18.4	0.4	12.2	2725.0	19.0	-6.1
AUG	15	0.9	6.3	1.1	11.7	4.1	256	15.8	0.0	15.7	2724.8	18.7	-0.3
SEP	8	0.5	4.9	0.8	1.7	0.1	29	1.8	0.0	1.7	2724.6	18.3	-0.4
OCT	11	0.7	3.0	0.5	0.0	0.1	2	0.1	0.1	0.0	2724.6	18.3	0.0
NOV	27	1.6	2.1	0.3	0.0	0.1	2	0.1	1.2	0.0	2724.6	18.3	0.0
DEC	31	1.9	1.1	0.2	0.0	0.1	2	0.1	1.6	0.0	2724.6	18.3	0.0
TOTAL		28.4	42.8	8.0	31.5	9.3		40.8	19.9	29.6			-10.7
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	76	4.7	0.9	0.2	0.0	0.1	2	0.1	4.4	0.0	2729.5	29.0	0.0
FEB	119	6.6	0.9	0.2	0.0	0.1	2	0.1	6.3	0.0	2729.5	29.0	0.0
MAR	133	8.2	1.7	0.4	0.0	0.1	2	0.1	7.7	0.0	2729.5	29.0	0.0
APR	146	8.7	3.8	0.8	0.0	0.1	2	0.1	7.8	0.0	2729.5	29.0	0.0
MAY	131	8.1	4.4	0.9	0.1	0.1	3	0.2	7.1	0.0	2729.4	28.9	-0.1
JUN	106	6.3	5.8	1.2	3.1	0.1	54	3.2	5.0	0.0	2728.1	25.8	-3.1
JUL	57	3.5	5.8	1.1	11.6	1.2	208	12.8	2.3	5.9	2725.0	19.0	-6.8
AUG	31	1.9	5.7	1.0	9.6	1.7	183	11.3	0.8	11.2	2725.0	19.0	0.0
SEP	15	0.9	4.4	0.7	1.4	0.1	25	1.5	0.1	1.4	2725.0	19.0	0.0
OCT	23	1.4	2.7	0.5	0.0	0.1	2	0.1	0.8	0.0	2725.0	19.0	0.0
NOV	55	3.3	1.9	0.3	0.0	0.1	2	0.1	2.9	0.0	2725.0	19.0	0.0
DEC	62	3.8	1.0	0.2	0.0	0.1	2	0.1	3.5	0.0	2725.0	19.0	0.0
TOTAL		57.4	39.0	7.5	25.8	3.9		29.7	48.7	18.5			-10.0

HUGH BUTLER LAKE OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement		Reservoir Spill	Requirement Shortage	End of Month Elev	End of Month Cont	Reservoir Change
	Mean	1000		1000	Mean	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	11	0.7	0.9	0.1	3	0.2	0.4	0.0	2555.1	7.0	0.0
FEB	14	0.8	1.0	0.1	4	0.2	0.5	0.0	2555.1	7.0	0.0
MAR	16	1.0	1.9	0.1	3	0.2	0.7	0.0	2555.1	7.0	0.0
APR	15	0.9	5.1	0.3	3	0.2	0.4	0.0	2555.1	7.0	0.0
MAY	16	1.0	6.0	0.3	3	0.2	0.5	0.0	2555.1	7.0	0.0
JUN	17	1.0	7.3	0.4	29	1.7	0.4	1.5	2555.1	7.0	0.0
JUL	13	0.8	8.1	0.4	73	4.5	0.2	4.3	2555.1	7.0	0.0
AUG	13	0.8	7.2	0.4	62	3.8	0.2	3.6	2555.1	7.0	0.0
SEP	8	0.5	5.6	0.3	15	0.9	0.0	0.7	2555.1	7.0	0.0
OCT	10	0.6	3.5	0.2	3	0.2	0.2	0.0	2555.1	7.0	0.0
NOV	12	0.7	2.2	0.1	3	0.2	0.4	0.0	2555.1	7.0	0.0
DEC	10	0.6	1.1	0.1	3	0.2	0.3	0.0	2555.1	7.0	0.0
TOTAL		9.4	49.9	2.8		12.5	4.2	10.1			0.0
MOST PROBABLE INFLOW CONDITIONS											
JAN	15	0.9	0.8	0.0	3	0.2	0.7	0.0	2555.1	7.0	0.0
FEB	20	1.1	0.9	0.0	3	0.2	0.9	0.0	2555.1	7.0	0.0
MAR	23	1.4	1.6	0.1	3	0.2	1.1	0.0	2555.1	7.0	0.0
APR	23	1.4	4.5	0.2	3	0.2	1.0	0.0	2555.1	7.0	0.0
MAY	24	1.5	5.3	0.3	3	0.2	1.0	0.0	2555.1	7.0	0.0
JUN	25	1.5	6.5	0.3	23	1.4	1.0	1.2	2555.1	7.0	0.0
JUL	19	1.2	7.2	0.4	62	3.8	0.6	3.6	2555.1	7.0	0.0
AUG	19	1.2	6.4	0.3	52	3.2	0.7	3.0	2555.1	7.0	0.0
SEP	13	0.8	5.0	0.3	13	0.8	0.3	0.6	2555.1	7.0	0.0
OCT	13	0.8	3.2	0.2	3	0.2	0.4	0.0	2555.1	7.0	0.0
NOV	15	0.9	1.9	0.1	3	0.2	0.6	0.0	2555.1	7.0	0.0
DEC	15	0.9	1.0	0.1	3	0.2	0.6	0.0	2555.1	7.0	0.0
TOTAL		13.6	44.3	2.3		10.8	8.9	8.4			0.0
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	21	1.3	0.7	0.0	3	0.2	1.1	0.0	2555.1	7.0	0.0
FEB	29	1.6	0.8	0.0	4	0.2	1.4	0.0	2555.1	7.0	0.0
MAR	32	2.0	1.5	0.1	3	0.2	1.7	0.0	2555.1	7.0	0.0
APR	32	1.9	4.1	0.2	3	0.2	1.5	0.0	2555.1	7.0	0.0
MAY	34	2.1	4.8	0.3	3	0.2	1.6	0.0	2555.1	7.0	0.0
JUN	35	2.1	5.9	0.3	18	1.1	1.6	0.9	2555.1	7.0	0.0
JUL	26	1.6	6.6	0.3	45	2.8	1.1	2.6	2555.1	7.0	0.0
AUG	28	1.7	5.8	0.3	39	2.4	1.2	2.2	2555.1	7.0	0.0
SEP	18	1.1	4.5	0.2	8	0.5	0.7	0.3	2555.1	7.0	0.0
OCT	19	1.2	2.9	0.1	3	0.2	0.9	0.0	2555.1	7.0	0.0
NOV	22	1.3	1.7	0.1	3	0.2	1.0	0.0	2555.1	7.0	0.0
DEC	21	1.3	0.9	0.0	3	0.2	1.1	0.0	2555.1	7.0	0.0
TOTAL		19.2	40.2	1.9		8.4	14.9	6.0			0.0

HARRY STRUNK LAKE OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement		Reservoir Spill	Requirement Shortage	End of Month Elev	End of Month Cont	Reservoir Change
	Mean	1000		1000	Mean	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	34	2.1	0.9	0.1	2	0.1	1.9	0.0	2356.4	20.5	0.0
FEB	43	2.4	1.0	0.1	2	0.1	2.2	0.0	2356.4	20.5	0.0
MAR	45	2.8	1.8	0.2	2	0.1	2.5	0.0	2356.4	20.5	0.0
APR	45	2.7	5.0	0.5	2	0.1	2.1	0.0	2356.4	20.5	0.0
MAY	50	3.1	5.7	0.6	2	0.1	2.4	0.0	2356.4	20.5	0.0
JUN	50	3.0	7.2	0.7	89	5.3	2.2	0.0	2351.8	15.3	-5.2
JUL	47	2.9	7.9	0.7	318	19.6	2.1	12.1	2343.0	7.9	-7.4
AUG	37	2.3	7.0	0.4	268	16.5	1.8	16.4	2343.0	7.9	0.0
SEP	25	1.5	5.5	0.3	27	1.6	1.1	1.5	2343.0	7.9	0.0
OCT	31	1.9	3.6	0.2	2	0.1	1.6	0.0	2343.0	7.9	0.0
NOV	34	2.0	2.1	0.1	2	0.1	1.8	0.0	2343.0	7.9	0.0
DEC	32	2.0	1.1	0.1	2	0.1	1.8	0.0	2343.0	7.9	0.0
TOTAL		28.7	48.8	4.0		43.8	23.5	30.0			-12.6
MOST PROBABLE INFLOW CONDITIONS											
JAN	44	2.7	0.8	0.1	2	0.1	2.5	0.0	2356.4	20.5	0.0
FEB	58	3.2	0.9	0.1	2	0.1	3.0	0.0	2356.4	20.5	0.0
MAR	60	3.7	1.6	0.2	2	0.1	3.4	0.0	2356.4	20.5	0.0
APR	59	3.5	4.5	0.5	2	0.1	2.9	0.0	2356.4	20.5	0.0
MAY	63	3.9	5.2	0.5	2	0.1	3.3	0.0	2356.4	20.5	0.0
JUN	65	3.9	6.5	0.7	71	4.4	3.1	0.0	2352.6	16.2	-4.3
JUL	60	3.7	7.2	0.6	265	16.3	3.0	7.9	2343.0	7.9	-8.3
AUG	49	3.0	6.3	0.4	222	13.7	2.5	13.6	2343.0	7.9	0.0
SEP	32	1.9	5.0	0.3	19	1.2	1.5	1.1	2343.0	7.9	0.0
OCT	39	2.4	3.2	0.2	2	0.1	2.1	0.0	2343.0	7.9	0.0
NOV	44	2.6	2.0	0.1	2	0.1	2.4	0.0	2343.0	7.9	0.0
DEC	42	2.6	1.0	0.1	2	0.1	2.4	0.0	2343.0	7.9	0.0
TOTAL		37.1	44.2	3.8		36.4	32.1	22.6			-12.6
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	65	4.0	0.8	0.1	2	0.1	3.8	0.0	2356.4	20.5	0.0
FEB	83	4.6	0.8	0.1	2	0.1	4.4	0.0	2356.4	20.5	0.0
MAR	88	5.4	1.5	0.1	2	0.1	5.2	0.0	2356.4	20.5	0.0
APR	87	5.2	4.1	0.4	2	0.1	4.7	0.0	2356.4	20.5	0.0
MAY	94	5.8	4.7	0.5	2	0.1	5.2	0.0	2356.4	20.5	0.0
JUN	96	5.7	5.8	0.6	47	2.8	5.0	0.0	2354.1	17.8	-2.7
JUL	89	5.5	6.4	0.6	182	11.2	4.8	1.2	2343.0	7.9	-9.9
AUG	71	4.4	5.7	0.3	154	9.5	4.0	9.4	2343.0	7.9	0.0
SEP	47	2.8	4.4	0.3	2	0.1	2.4	0.0	2343.0	7.9	0.0
OCT	58	3.6	2.9	0.2	2	0.1	3.3	0.0	2343.0	7.9	0.0
NOV	64	3.8	1.7	0.1	2	0.1	3.6	0.0	2343.0	7.9	0.0
DEC	62	3.8	0.9	0.1	2	0.1	3.6	0.0	2343.0	7.9	0.0
TOTAL		54.6	39.7	3.4		24.4	50.0	10.6			-12.6

KEITH SEBELIUS LAKE OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement		Reservoir Spill	Requirement Shortage	End of Month Elev	End of Month Cont	Reservoir Change
	Mean	1000		1000	Mean	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	3	0.2	1.1	0.1	2	0.1	0.0	0.0	2290.8	12.5	0.0
FEB	4	0.2	1.3	0.1	2	0.1	0.0	0.0	2290.8	12.5	0.0
MAR	6	0.4	2.1	0.2	2	0.1	0.0	0.0	2290.9	12.6	0.1
APR	7	0.4	5.6	0.5	2	0.1	0.0	0.0	2290.7	12.4	-0.2
MAY	11	0.7	6.2	0.6	6	0.4	0.0	0.0	2290.4	12.1	-0.3
JUN	13	0.8	7.8	0.7	57	3.4	0.0	0.0	2287.0	8.8	-3.3
JUL	10	0.6	8.7	0.6	146	9.0	0.0	4.5	2280.9	4.3	-4.5
AUG	8	0.5	7.8	0.4	138	8.5	0.0	8.4	2280.9	4.3	0.0
SEP	5	0.3	6.1	0.3	27	1.6	0.0	1.5	2280.7	4.2	-0.1
OCT	2	0.1	4.2	0.2	2	0.1	0.0	0.0	2280.4	4.0	-0.2
NOV	3	0.2	2.3	0.1	2	0.1	0.0	0.0	2280.4	4.0	0.0
DEC	2	0.1	1.2	0.1	2	0.1	0.0	0.0	2280.2	3.9	-0.1
TOTAL		4.5	54.4	3.9		23.6	0.0	14.4			-8.6
MOST PROBABLE INFLOW CONDITIONS											
JAN	5	0.3	1.0	0.1	2	0.1	0.0	0.0	2290.9	12.6	0.1
FEB	7	0.4	1.1	0.1	2	0.1	0.0	0.0	2291.0	12.8	0.2
MAR	11	0.7	1.9	0.2	2	0.1	0.0	0.0	2291.4	13.2	0.4
APR	13	0.8	4.9	0.5	2	0.1	0.0	0.0	2291.5	13.4	0.2
MAY	19	1.2	5.4	0.5	3	0.2	0.0	0.0	2292.0	13.9	0.5
JUN	25	1.5	6.8	0.7	45	2.8	0.0	0.0	2290.2	11.9	-2.0
JUL	18	1.1	7.6	0.7	138	8.5	0.0	1.8	2282.9	5.6	-6.3
AUG	16	1.0	6.8	0.4	112	6.9	0.0	6.3	2282.9	5.6	0.0
SEP	7	0.4	5.4	0.3	21	1.3	0.0	1.2	2282.9	5.6	0.0
OCT	3	0.2	3.7	0.2	2	0.1	0.0	0.0	2282.8	5.5	-0.1
NOV	5	0.3	2.0	0.1	2	0.1	0.0	0.0	2282.9	5.6	0.1
DEC	3	0.2	1.0	0.1	2	0.1	0.0	0.0	2282.9	5.6	0.0
TOTAL		8.1	47.6	3.9		20.4	0.0	9.3			-6.9
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	10	0.6	0.8	0.1	2	0.1	0.0	0.0	2291.1	12.9	0.4
FEB	14	0.8	1.0	0.1	2	0.1	0.0	0.0	2291.6	13.5	0.6
MAR	23	1.4	1.7	0.2	2	0.1	0.0	0.0	2292.5	14.6	1.1
APR	25	1.5	4.3	0.5	2	0.1	0.0	0.0	2293.3	15.5	0.9
MAY	37	2.3	4.8	0.5	3	0.2	0.0	0.0	2294.4	17.1	1.6
JUN	49	2.9	6.1	0.7	27	1.6	0.0	0.0	2294.8	17.7	0.6
JUL	36	2.2	6.8	0.8	71	4.4	0.0	0.0	2292.6	14.7	-3.0
AUG	32	2.0	6.1	0.6	68	4.2	0.0	0.0	2290.2	11.9	-2.8
SEP	15	0.9	4.8	0.4	15	0.9	0.0	0.0	2289.9	11.5	-0.4
OCT	6	0.4	3.3	0.3	2	0.1	0.0	0.0	2289.9	11.5	0.0
NOV	10	0.6	1.8	0.2	2	0.1	0.0	0.0	2290.1	11.8	0.3
DEC	8	0.5	0.9	0.1	2	0.1	0.0	0.0	2290.4	12.1	0.3
TOTAL		16.1	42.4	4.5		12.0	0.0	0.0			-0.4

HARLAN COUNTY LAKE OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement		Reservoir Spill	Requirement Shortage	End of Month Elev	End of Month Cont	Reservoir Change
	Mean	1000		1000	Mean	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	41	2.5	1.0	0.7	0	0.0	0.0	0.0	1928.1	126.3	1.8
FEB	63	3.5	1.1	0.7	0	0.0	0.0	0.0	1928.4	129.1	2.8
MAR	84	5.2	2.0	1.3	0	0.0	0.0	0.0	1928.9	133.0	3.9
APR	74	4.4	4.6	3.1	0	0.0	0.0	0.0	1929.1	134.3	1.3
MAY	93	5.7	5.7	3.8	192	11.8	0.0	0.0	1927.8	124.4	-9.9
JUN	77	4.6	6.8	4.3	357	11.8	0.0	5.2	1927.0	118.1	-6.3
JUL	78	4.8	7.6	4.7	799	42.7	0.0	42.6	1927.0	118.1	0.0
AUG	62	3.8	6.7	4.1	554	34.1	0.0	34.4	1927.0	118.1	0.0
SEP	30	1.8	5.3	3.2	54	3.2	0.0	3.2	1926.8	116.7	-1.4
OCT	29	1.8	3.6	2.2	0	0.0	0.0	0.0	1926.8	116.3	-0.4
NOV	39	2.3	2.2	1.3	0	0.0	1.0	0.0	1926.8	116.3	0.0
DEC	37	2.3	1.4	0.9	0	0.0	1.4	0.0	1926.8	116.3	0.0
TOTAL		42.7	48.0	30.3		103.6	2.4	85.4			-8.2
MOST PROBABLE INFLOW CONDITIONS											
JAN	117	7.2	0.9	0.6	0	0.0	0.0	0.0	1928.7	131.1	6.6
FEB	183	10.2	1.0	0.7	0	0.0	0.0	0.0	1929.9	140.6	9.5
MAR	245	15.1	1.7	1.2	0	0.0	0.0	0.0	1931.5	154.5	13.9
APR	213	12.7	4.0	3.0	0	0.0	0.0	0.0	1932.5	164.2	9.7
MAY	268	16.5	4.9	3.8	0	0.0	0.0	0.0	1933.9	176.9	12.7
JUN	223	13.3	5.9	4.8	99	6.1	0.0	6.1	1934.7	185.4	8.5
JUL	226	13.9	6.6	5.5	633	39.0	0.0	22.9	1933.9	177.7	-7.7
AUG	182	11.2	5.8	4.7	446	27.5	0.0	19.0	1933.7	175.7	-2.0
SEP	89	5.3	4.6	3.7	41	2.5	0.0	2.5	1933.9	177.3	1.6
OCT	84	5.2	3.1	2.5	0	0.0	2.7	0.0	1933.9	177.3	0.0
NOV	112	6.7	2.0	1.6	0	0.0	5.1	0.0	1933.9	177.3	0.0
DEC	110	6.8	1.3	1.0	0	0.0	5.8	0.0	1933.9	177.3	0.0
TOTAL		124.1	41.8	33.1		75.1	13.6	50.5			52.8
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	266	16.4	0.8	0.5	0	0.0	0.0	0.0	1929.8	140.4	15.9
FEB	415	23.1	0.9	0.6	0	0.0	0.0	0.0	1932.4	162.9	22.5
MAR	558	34.4	1.5	1.2	0	0.0	0.0	0.0	1935.8	196.1	33.2
APR	483	28.8	3.5	3.0	0	0.0	0.0	0.0	1938.2	221.9	25.8
MAY	609	37.5	4.3	4.0	0	0.0	0.0	0.0	1941.1	255.4	33.5
JUN	507	30.2	5.1	5.1	37	2.2	0.0	0.0	1942.9	278.3	22.9
JUL	513	31.6	5.8	6.0	157	9.7	0.0	0.0	1944.2	294.2	15.9
AUG	412	25.4	5.1	5.4	157	9.7	0.0	0.0	1945.0	304.5	10.3
SEP	203	12.1	4.0	4.4	20	1.2	0.0	0.0	1945.5	311.0	6.5
OCT	192	11.8	2.7	3.0	0	0.0	5.7	0.0	1945.7	314.1	3.1
NOV	255	15.2	1.7	1.9	0	0.0	13.3	0.0	1945.7	314.1	0.0
DEC	252	15.5	1.1	1.2	0	0.0	14.3	0.0	1945.7	314.1	0.0
TOTAL		282.0	36.5	36.3		22.8	33.3	0.0			189.6

LOVEWELL RESERVOIR OPERATION ESTIMATES - 2014

Month	White Rock Creek Inflow 1000 AF	Courtland Canal Inflow 1000 AF	Total Inflow Mean CFS	Total Inflow 1000 AF	Evaporation Inches	Evaporation 1000 AF	Release Requirement Mean CFS	Release Requirement 1000 AF	Reservoir Spill 1000 AF	Requirement Shortage 1000 AF	End of Month Elev FT	End of Month Cont 1000 AF	Reservoir Change 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	0.5	0.0	8	0.5	0.8	0.2	0	0.0	0.0	0.0	1577.7	22.8	0.3
FEB	0.7	0.7	25	1.4	1.0	0.2	0	0.0	0.0	0.0	1578.2	24.0	1.2
MAR	1.5	3.3	78	4.8	1.8	0.4	0	0.0	0.0	0.0	1580.0	28.4	4.4
APR	1.4	2.3	62	3.7	3.8	0.8	0	0.0	0.0	0.0	1581.1	31.3	2.9
MAY	1.8	10.8	205	12.6	4.8	1.1	15	0.9	0.0	0.0	1584.6	41.9	10.6
JUN	1.9	0.0	32	1.9	6.2	1.7	168	10.0	0.0	0.0	1581.4	32.1	-9.8
JUL	1.3	0.0	21	1.3	6.8	1.6	505	31.1	0.0	11.0	1571.7	11.7	-20.4
AUG	0.1	0.0	2	0.1	5.5	0.7	347	21.4	0.0	22.0	1571.7	11.7	0.0
SEP	1.0	0.0	17	1.0	4.2	0.5	47	2.8	0.0	2.3	1571.7	11.7	0.0
OCT	0.7	1.9	42	2.6	2.9	0.4	0	0.0	0.0	0.0	1573.1	13.9	2.2
NOV	0.6	2.5	52	3.1	2.1	0.3	0	0.0	0.0	0.0	1574.7	16.7	2.8
DEC	0.4	2.6	49	3.0	1.0	0.2	0	0.0	0.0	0.0	1576.2	19.5	2.8
TOTAL	11.9	24.1		36.0	40.9	8.1		66.2	0.0	35.3			-3.0
MOST PROBABLE INFLOW CONDITIONS													
JAN	1.0	0.0	16	1.0	0.7	0.1	0	0.0	0.0	0.0	1578.0	23.4	0.9
FEB	1.5	0.0	27	1.5	0.9	0.2	0	0.0	0.0	0.0	1578.5	24.7	1.3
MAR	3.5	4.0	122	7.5	1.6	0.3	0	0.0	0.0	0.0	1581.3	31.9	7.2
APR	3.1	4.0	119	7.1	3.2	0.7	0	0.0	0.0	0.0	1583.5	38.3	6.4
MAY	4.0	1.5	89	5.5	4.1	1.1	13	0.8	0.0	0.0	1584.6	41.9	3.6
JUN	4.3	5.1	158	9.4	5.3	1.5	128	7.9	0.0	0.0	1584.6	41.9	0.0
JUL	2.9	7.6	170	10.5	5.8	1.6	404	24.9	0.0	0.0	1579.0	25.9	-16.0
AUG	0.3	3.6	63	3.9	4.7	1.0	278	17.1	0.0	0.0	1571.7	11.7	-14.2
SEP	2.3	0.6	49	2.9	3.5	0.4	36	2.2	0.0	0.0	1571.9	12.0	0.3
OCT	1.6	4.7	102	6.3	2.4	0.3	0	0.0	0.0	0.0	1575.4	18.0	6.0
NOV	1.3	4.1	91	5.4	1.8	0.3	0	0.0	0.0	0.0	1577.8	23.1	5.1
DEC	0.9	4.6	89	5.5	0.9	0.2	0	0.0	0.0	0.0	1580.0	28.4	5.3
TOTAL	26.7	39.8		66.5	34.9	7.7		52.9	0.0	0.0			5.9
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	2.9	0.0	47	2.9	0.6	0.1	0	0.0	0.0	0.0	1578.8	25.3	2.8
FEB	4.4	0.0	79	4.4	0.7	0.1	0	0.0	0.0	0.0	1580.5	29.6	4.3
MAR	10.0	0.0	162	10.0	1.3	0.3	0	0.0	3.6	0.0	1582.6	35.7	6.1
APR	9.1	0.0	153	9.1	2.8	0.7	0	0.0	8.4	0.0	1582.6	35.7	0.0
MAY	11.4	0.0	185	11.4	3.5	0.9	8	0.5	10.0	0.0	1582.6	35.7	0.0
JUN	12.4	1.2	228	13.6	4.6	1.1	87	5.2	7.3	0.0	1582.6	35.7	0.0
JUL	8.4	1.2	156	9.6	5.0	1.2	265	16.3	0.0	0.0	1579.8	27.8	-7.9
AUG	0.9	1.2	34	2.1	4.0	0.9	179	11.0	0.0	0.0	1575.4	18.0	-9.8
SEP	6.7	0.6	122	7.3	3.1	0.5	23	1.4	0.0	0.0	1578.0	23.4	5.4
OCT	4.5	0.0	73	4.5	2.1	0.4	0	0.0	0.0	0.0	1579.7	27.5	4.1
NOV	3.9	0.0	65	3.9	1.6	0.3	0	0.0	1.1	0.0	1580.6	30.0	2.5
DEC	2.6	0.0	42	2.6	0.7	0.2	0	0.0	2.4	0.0	1580.6	30.0	0.0
TOTAL	77.2	4.2		81.4	30.0	6.7		34.4	32.8	0.0			7.5

KIRWIN RESERVOIR OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement		Reservoir Spill	Requirement Shortage	End of Month Elev	End of Month Cont	Reservoir Change
	Mean	1000		1000	Mean	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	5	0.3	0.9	0.3	0	0.0	0.0	0.0	1717.8	50.0	0.0
FEB	7	0.4	1.1	0.3	0	0.0	0.0	0.0	1717.8	50.1	0.1
MAR	13	0.8	2.0	0.6	0	0.0	0.0	0.0	1717.9	50.3	0.2
APR	15	0.9	4.4	1.3	0	0.0	0.0	0.0	1717.8	49.9	-0.4
MAY	23	1.4	5.5	1.6	8	0.5	0.0	0.0	1717.5	49.2	-0.7
JUN	18	1.1	6.7	1.9	87	5.2	0.0	0.0	1715.7	43.2	-6.0
JUL	18	1.1	7.6	2.0	193	11.9	0.0	0.0	1711.2	30.4	-12.8
AUG	13	0.8	6.7	1.3	179	11.0	0.0	0.0	1705.2	18.9	-11.5
SEP	7	0.4	5.2	0.7	8	0.5	0.0	0.0	1704.6	18.1	-0.8
OCT	5	0.3	3.6	0.4	0	0.0	0.0	0.0	1704.6	18.0	-0.1
NOV	5	0.3	2.1	0.3	0	0.0	0.0	0.0	1704.6	18.0	0.0
DEC	5	0.3	1.1	0.1	0	0.0	0.0	0.0	1704.7	18.2	0.2
TOTAL		8.1	46.9	10.8		29.1	0.0	0.0			-31.8
MOST PROBABLE INFLOW CONDITIONS											
JAN	18	1.1	0.8	0.2	0	0.0	0.0	0.0	1718.0	50.9	0.9
FEB	31	1.7	1.0	0.3	0	0.0	0.0	0.0	1718.4	52.3	1.4
MAR	47	2.9	1.8	0.5	0	0.0	0.0	0.0	1719.1	54.7	2.4
APR	54	3.2	4.0	1.2	0	0.0	0.0	0.0	1719.6	56.7	2.0
MAY	84	5.2	4.9	1.5	6	0.4	0.0	0.0	1720.6	60.0	3.3
JUN	69	4.1	6.0	1.9	71	4.4	0.0	0.0	1720.0	57.8	-2.2
JUL	65	4.0	6.8	2.1	193	11.9	0.0	0.0	1717.1	47.8	-10.0
AUG	45	2.8	6.0	1.7	149	9.2	0.0	0.0	1714.6	39.7	-8.1
SEP	23	1.4	4.7	1.2	8	0.5	0.0	0.0	1714.5	39.4	-0.3
OCT	16	1.0	3.2	0.8	0	0.0	0.0	0.0	1714.6	39.6	0.2
NOV	20	1.2	1.9	0.5	0	0.0	0.0	0.0	1714.8	40.3	0.7
DEC	16	1.0	1.0	0.3	0	0.0	0.0	0.0	1715.0	41.0	0.7
TOTAL		29.6	42.1	12.2		26.4	0.0	0.0			-9.0
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	55	3.4	0.7	0.2	0	0.0	0.0	0.0	1718.7	53.2	3.2
FEB	90	5.0	0.9	0.3	0	0.0	0.0	0.0	1720.0	57.9	4.7
MAR	143	8.8	1.6	0.5	0	0.0	0.0	0.0	1722.2	66.2	8.3
APR	159	9.5	3.6	1.2	0	0.0	0.0	0.0	1724.2	74.5	8.3
MAY	252	15.5	4.4	1.6	5	0.3	0.0	0.0	1727.2	88.1	13.6
JUN	208	12.4	5.4	2.1	59	3.5	0.0	0.0	1728.6	94.9	6.8
JUL	196	12.1	6.1	2.5	167	10.3	0.0	0.0	1728.4	94.2	-0.7
AUG	138	8.5	5.4	2.2	119	7.3	0.0	0.0	1728.3	93.2	-1.0
SEP	72	4.3	4.2	1.7	7	0.4	0.0	0.0	1728.7	95.4	2.2
OCT	45	2.8	2.9	1.2	0	0.0	0.0	0.0	1729.0	97.0	1.6
NOV	62	3.7	1.7	0.7	0	0.0	1.8	0.0	1729.3	98.2	1.2
DEC	49	3.0	0.9	0.4	0	0.0	2.6	0.0	1729.3	98.2	0.0
TOTAL		89.0	37.8	14.6		21.8	4.4	0.0			48.2

WEBSTER RESERVOIR OPERATION ESTIMATES - 2014

	Inflow		Evaporation		Release Requirement		Reservoir Spill	Requirement Shortage	End of Month Elev	End of Month Cont	Reservoir Change
	Mean	1000		1000	MEAN	1000	1000	1000		1000	1000
Month	CFS	AF	Inches	AF	CFS	AF	AF	AF	FT	AF	AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	3	0.2	0.9	0.1	0	0.0	0.0	0.0	1869.6	16.6	0.1
FEB	5	0.3	1.1	0.1	0	0.0	0.0	0.0	1869.7	16.8	0.2
MAR	8	0.5	2.0	0.3	0	0.0	0.0	0.0	1869.8	17.0	0.2
APR	12	0.7	4.6	0.6	0	0.0	0.0	0.0	1869.9	17.1	0.1
MAY	16	1.0	5.8	0.8	16	1.0	0.0	0.0	1869.4	16.3	-0.8
JUN	12	0.7	7.3	1.0	107	6.4	0.0	0.0	1864.8	9.6	-6.7
JUL	11	0.7	8.0	0.9	253	15.6	0.0	13.6	1863.0	7.4	-2.2
AUG	6	0.4	7.5	0.7	227	14.0	0.0	14.0	1862.8	7.1	-0.3
SEP	3	0.2	5.5	0.5	10	0.6	0.0	0.6	1862.5	6.8	-0.3
OCT	2	0.1	3.6	0.3	0	0.0	0.0	0.0	1862.3	6.6	-0.2
NOV	3	0.2	2.2	0.2	0	0.0	0.0	0.0	1862.3	6.6	0.0
DEC	3	0.2	1.2	0.1	0	0.0	0.0	0.0	1862.4	6.7	0.1
TOTAL		5.2	49.7	5.6		37.6	0.0	28.2			-9.8
MOST PROBABLE INFLOW CONDITIONS											
JAN	15	0.9	0.8	0.1	0	0.0	0.0	0.0	1870.0	17.3	0.8
FEB	22	1.2	1.0	0.1	0	0.0	0.0	0.0	1870.7	18.4	1.1
MAR	32	2.0	1.8	0.3	0	0.0	0.0	0.0	1871.7	20.1	1.7
APR	47	2.8	4.1	0.6	0	0.0	0.0	0.0	1872.9	22.3	2.2
MAY	71	4.4	5.2	0.8	13	0.8	0.0	0.0	1874.4	25.1	2.8
JUN	50	3.0	6.5	1.1	71	4.4	0.0	0.0	1873.1	22.6	-2.5
JUL	49	3.0	7.2	1.1	208	12.8	0.0	0.0	1866.4	11.7	-10.9
AUG	28	1.7	6.7	0.8	161	9.9	0.0	4.7	1863.0	7.4	-4.3
SEP	17	1.0	4.9	0.5	5	0.3	0.0	0.0	1863.2	7.6	0.2
OCT	10	0.6	3.3	0.3	0	0.0	0.0	0.0	1863.5	7.9	0.3
NOV	13	0.8	2.0	0.2	0	0.0	0.0	0.0	1864.0	8.5	0.6
DEC	11	0.7	1.1	0.1	0	0.0	0.0	0.0	1864.4	9.1	0.6
TOTAL		22.1	44.6	6.0		28.2	0.0	4.7			-7.4
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	54	3.3	0.7	0.1	0	0.0	0.0	0.0	1871.4	19.7	3.2
FEB	79	4.4	0.9	0.1	0	0.0	0.0	0.0	1873.8	24.0	4.3
MAR	125	7.7	1.7	0.3	0	0.0	0.0	0.0	1877.4	31.4	7.4
APR	181	10.8	3.7	0.7	0	0.0	0.0	0.0	1881.6	41.5	10.1
MAY	268	16.5	4.7	1.0	6	0.4	0.0	0.0	1886.8	56.6	15.1
JUN	195	11.6	5.9	1.6	42	2.5	0.0	0.0	1889.1	64.1	7.5
JUL	183	11.3	6.5	1.8	125	7.7	0.0	0.0	1889.6	65.9	1.8
AUG	107	6.6	6.1	1.8	101	6.2	0.0	0.0	1889.2	64.5	-1.4
SEP	65	3.9	4.4	1.3	2	0.1	0.0	0.0	1889.9	67.0	2.5
OCT	36	2.2	2.9	0.9	0	0.0	0.0	0.0	1890.3	68.3	1.3
NOV	49	2.9	1.8	0.5	0	0.0	0.0	0.0	1891.0	70.7	2.4
DEC	45	2.8	1.0	0.3	0	0.0	0.0	0.0	1891.7	73.2	2.5
TOTAL		84.0	40.3	10.4		16.9	0.0	0.0			56.7

WACONDA RESERVOIR OPERATION ESTIMATES - 2014

Month	Inflow Mean CFS	Inflow 1000 AF	Evaporation Inches	Evaporation 1000 AF	Release Requirement Mean CFS	Release Requirement 1000 AF	Reservoir Spill 1000 AF	Requirement Shortage 1000 AF	End of Month Elev FT	End of Month Cont 1000 AF	Reservoir Change 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	31	1.9	0.8	0.8	19	1.2	0.0	0.0	1452.9	187.0	-0.1
FEB	47	2.6	1.0	1.0	20	1.1	0.0	0.0	1452.9	187.5	0.5
MAR	88	5.4	1.9	1.8	18	1.1	0.0	0.0	1453.2	190.0	2.5
APR	91	5.4	4.8	4.6	17	1.0	0.0	0.0	1453.1	189.8	-0.2
MAY	106	6.5	6.0	5.6	18	1.1	0.0	0.0	1453.1	189.6	-0.2
JUN	89	5.3	7.4	7.0	45	2.7	0.0	0.0	1452.7	185.2	-4.4
JUL	146	9.0	8.8	8.2	156	9.6	0.0	0.0	1451.9	176.4	-8.8
AUG	54	3.3	7.5	6.8	125	7.7	0.0	0.0	1450.9	165.2	-11.2
SEP	40	2.4	6.1	5.1	35	2.1	0.0	0.0	1450.4	160.4	-4.8
OCT	32	2.0	3.9	3.2	21	1.3	0.0	0.0	1450.1	157.9	-2.5
NOV	35	2.1	2.1	1.7	27	1.6	0.0	0.0	1450.0	156.7	-1.2
DEC	29	1.8	1.0	0.8	24	1.5	0.0	0.0	1450.0	156.2	-0.5
TOTAL		47.7	51.3	46.6		32.0	0.0	0.0			-30.9
MOST PROBABLE INFLOW CONDITIONS											
JAN	101	6.2	0.7	0.7	10	0.6	0.0	0.0	1453.3	192.0	4.9
FEB	149	8.3	0.9	0.9	10	0.6	0.0	0.0	1453.9	198.8	6.8
MAR	282	17.4	1.7	1.7	10	0.6	6.8	0.0	1454.6	207.1	8.3
APR	295	17.6	4.3	4.3	8	0.5	12.8	0.0	1454.6	207.1	0.0
MAY	339	20.9	5.3	5.4	10	0.6	2.6	0.0	1455.6	219.4	12.3
JUN	290	17.3	6.6	6.9	32	2.0	8.4	0.0	1455.6	219.4	0.0
JUL	471	29.0	7.8	8.2	112	6.9	13.9	0.0	1455.6	219.4	0.0
AUG	172	10.6	6.7	7.0	89	5.5	0.0	0.0	1455.5	217.5	-1.9
SEP	133	7.9	5.4	5.6	21	1.3	0.0	0.0	1455.5	218.5	1.0
OCT	102	6.3	3.5	3.6	10	0.6	1.2	0.0	1455.6	219.4	0.9
NOV	116	6.9	1.8	1.9	15	0.9	28.4	0.0	1453.6	195.1	-24.3
DEC	93	5.7	0.9	0.9	13	0.8	4.0	0.0	1453.6	195.1	0.0
TOTAL		154.1	45.6	47.1		20.9	78.1	0.0			8.0
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	310	19.1	0.7	0.6	3	0.2	0.0	0.0	1454.5	205.4	18.3
FEB	462	25.7	0.8	0.8	4	0.2	23.0	0.0	1454.6	207.1	1.7
MAR	873	53.8	1.5	1.5	5	0.3	52.0	0.0	1454.6	207.1	0.0
APR	911	54.3	3.9	3.9	5	0.3	50.1	0.0	1454.6	207.1	0.0
MAY	1052	64.8	4.8	4.8	5	0.3	47.4	0.0	1455.6	219.4	12.3
JUN	894	53.3	6.0	6.3	22	1.3	45.7	0.0	1455.6	219.4	0.0
JUL	1453	89.5	7.0	7.4	70	4.3	77.8	0.0	1455.6	219.4	0.0
AUG	534	32.9	6.1	6.4	57	3.5	23.0	0.0	1455.6	219.4	0.0
SEP	408	24.3	4.9	5.1	12	0.7	18.5	0.0	1455.6	219.4	0.0
OCT	317	19.5	3.1	3.3	6	0.4	15.8	0.0	1455.6	219.4	0.0
NOV	359	21.4	1.6	1.7	5	0.3	43.7	0.0	1453.6	195.1	-24.3
DEC	286	17.6	0.8	0.8	5	0.3	16.5	0.0	1453.6	195.1	0.0
TOTAL		476.2	41.2	42.6		12.1	413.5	0.0			8.0

CEDAR BLUFF RESERVOIR OPERATION ESTIMATES - 2014

Month	Inflow Mean CFS	Inflow 1000 AF	Evaporation Inches	Evaporation 1000 AF	Release Requirement Mean CFS	Release Requirement 1000 AF	Reservoir Spill 1000 AF	Requirement Shortage 1000 AF	End of Month Elev FT	End of Month Cont 1000 AF	Reservoir Change 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	3	0.2	1.1	0.3	0	0.0	0.0	0.0	2118.8	54.2	-0.1
FEB	4	0.2	1.2	0.3	0	0.0	0.0	0.0	2118.8	54.1	-0.1
MAR	6	0.4	2.2	0.5	0	0.0	0.0	0.0	2118.7	54.0	-0.1
APR	10	0.6	5.5	1.3	0	0.0	0.0	0.0	2118.5	53.3	-0.7
MAY	16	1.0	6.6	1.6	5	0.3	0.0	0.0	2118.2	52.4	-0.9
JUN	17	1.0	8.1	1.9	5	0.3	0.0	0.0	2117.7	51.2	-1.2
JUL	21	1.3	9.7	2.2	13	0.8	0.0	0.0	2117.1	49.5	-1.7
AUG	15	0.9	8.3	1.9	11	0.7	0.0	0.0	2116.5	47.8	-1.7
SEP	7	0.4	7.1	1.6	3	0.2	0.0	0.0	2115.9	46.4	-1.4
OCT	2	0.1	5.0	1.1	0	0.0	0.0	0.0	2115.5	45.4	-1.0
NOV	3	0.2	2.3	0.5	0	0.0	0.0	0.0	2115.4	45.1	-0.3
DEC	2	0.1	1.4	0.3	0	0.0	0.0	0.0	2115.3	44.9	-0.2
TOTAL		6.4	58.5	13.5		2.3	0.0	0.0			-9.4
MOST PROBABLE INFLOW CONDITIONS											
JAN	6	0.4	1.0	0.2	0	0.0	0.0	0.0	2118.9	54.5	0.2
FEB	9	0.5	1.1	0.3	0	0.0	0.0	0.0	2119.0	54.7	0.2
MAR	16	1.0	1.9	0.5	0	0.0	0.0	0.0	2119.1	55.2	0.5
APR	27	1.6	4.9	1.2	0	0.0	0.0	0.0	2119.3	55.6	0.4
MAY	41	2.5	5.9	1.4	3	0.2	0.0	0.0	2119.6	56.5	0.9
JUN	44	2.6	7.2	1.8	3	0.2	0.0	0.0	2119.8	57.1	0.6
JUL	55	3.4	8.7	2.2	11	0.7	0.0	0.0	2119.9	57.6	0.5
AUG	39	2.4	7.4	1.9	6	0.4	0.0	0.0	2120.0	57.7	0.1
SEP	15	0.9	6.4	1.6	2	0.1	0.0	0.0	2119.7	56.9	-0.8
OCT	6	0.4	4.5	1.1	0	0.0	0.0	0.0	2119.5	56.2	-0.7
NOV	8	0.5	2.1	0.5	0	0.0	0.0	0.0	2119.5	56.2	0.0
DEC	6	0.4	1.2	0.3	0	0.0	0.0	0.0	2119.5	56.3	0.1
TOTAL		16.6	52.3	13.0		1.6	0.0	0.0			2.0
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	21	1.3	0.9	0.2	0	0.0	0.0	0.0	2119.2	55.4	1.1
FEB	29	1.6	1.0	0.2	0	0.0	0.0	0.0	2119.7	56.8	1.4
MAR	50	3.1	1.7	0.4	0	0.0	0.0	0.0	2120.6	59.5	2.7
APR	84	5.0	4.3	1.1	0	0.0	0.0	0.0	2121.8	63.4	3.9
MAY	120	7.4	5.2	1.4	3	0.2	0.0	0.0	2123.6	69.2	5.8
JUN	129	7.7	6.4	1.8	3	0.2	0.0	0.0	2125.2	74.9	5.7
JUL	167	10.3	7.7	2.3	3	0.2	0.0	0.0	2127.3	82.7	7.8
AUG	115	7.1	6.6	2.1	0	0.0	0.0	0.0	2128.5	87.7	5.0
SEP	47	2.8	5.6	1.9	0	0.0	0.0	0.0	2128.8	88.6	0.9
OCT	19	1.2	4.0	1.4	0	0.0	0.0	0.0	2128.7	88.4	-0.2
NOV	27	1.6	1.8	0.6	0	0.0	0.0	0.0	2129.0	89.4	1.0
DEC	19	1.2	1.1	0.4	0	0.0	0.0	0.0	2129.2	90.2	0.8
TOTAL		50.3	46.3	13.8		0.6	0.0	0.0			

TABLE 5

FLOOD DAMAGES PREVENTED BY NEBRASKA-KANSAS PROJECTS RESERVOIRS

RESERVOIR	DURING FY 2013	PRIOR TO 2013	ACCUMULATED TOTAL
BONNY	$0	$2,868,900	$2,868,900
ENDERS	$0	$3,574,000	$3,574,000
SWANSON	$7,900	$29,642,100	$29,650,000
HUGH BUTLER	$0	$6,389,500	$6,389,500
HARRY STRUNK	$7,900	$16,129,000	$16,136,900
KEITH SEBELIUS	$0	$4,067,200	$4,067,200
HARLAN COUNTY	$23,200	$228,586,100	$228,609,300
LOVEWELL	$0	$152,771,200	$152,771,200
KIRWIN	$11,100	$95,010,600	$95,021,700
WEBSTER	$10,900	$113,072,400	$113,083,300
WACONDA	$36,300	$1,279,394,200	$1,279,430,500
CEDAR BLUFF	$1,010,500	$134,940,700	$135,951,200
TOTAL	$1,107,800	$2,066,445,900	$2,067,553,700

Estimates of damages prevented are received from the Army Corps of Engineer's Kansas City District Office. The accumulated totals date from 1951-2013. 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 2013 AND THE ESTIMATED DIVERSION FOR 2014
(Units - Acre-Feet)

Irrigation District and Canal	2013 Irrigation Operations From	To	10-Year Average Diversion (2003-2012)	2013 Diversion	Estimated Diversion in 2014
Mirage Flats Irrigation District					
Mirage Flats Canal	7/13	8/30	9,503	6,171	6,000
Ainsworth Irrigation District					
Ainsworth Canal	5/20	9/23	73,552	68,622	75,000
Twin Loups Irrigation District					
Above Davis Creek	4/8	9/23	46,895	46,724	46,000
Below Davis Creek	5/13	9/30	42,034	45,175	43,000
Total Twin Loups Irrigation District			88,929	91,899	89,000
Frenchman Valley Irrigation District					
Culbertson Canal	Did not run.		5,783	0	0
H & RW Irrigation District					
Culbertson Extension Canal	Did not run.		0	0	0
Frenchman-Cambridge Irrigation District					
Meeker-Driftwood Canal	6/26	8/30	9,724	9,210	7,000
Red Willow Canal	Did not run.		925	0	0
Bartley Canal	Did not run.		4,298	0	0
Cambridge Canal	4/26	9/13	20,382	12,575	10,000
Total Frenchman-Cambridge Irrigation District			35,329	21,785	17,000
Almena Irrigation District					
Almena Canal	6/30	7/23	1,703	2,274	3,000
Bostwick Irrigation District in Nebraska					
Franklin Canal	6/23	9/1	11,820	15,796	0
Naponee Canal	6/21	8/30	743	755	0
Franklin Pump Canal	6/21	8/30	630	1,206	0
Superior Canal	6/24	8/30	5,399	6,161	0
Courtland Canal (Nebraska)	6/20	8/29	403	558	0
Total Bostwick Irrigation District in Nebraska			18,995	24,476	0
Kansas-Bostwick Irrigation District					
Courtland Canal above Lovewell	6/12	9/11	14,669	20,093	20,000
Courtland Canal below Lovewell	6/4	9/11	34,456	40,139	38,000
Total Kansas-Bostwick Irrigation District			49,125	60,232	58,000
Kirwin Irrigation District					
Kirwin Canal	6/24	8/30	10,913	15,567	15,000
Webster Irrigation District					
Osborne Canal	6/25	8/30	6,095	10,835	0
Glen Elder Irrigation District	5/19	9/23	5,478	2,176	5,000
TOTAL			305,405	304,037	268,000

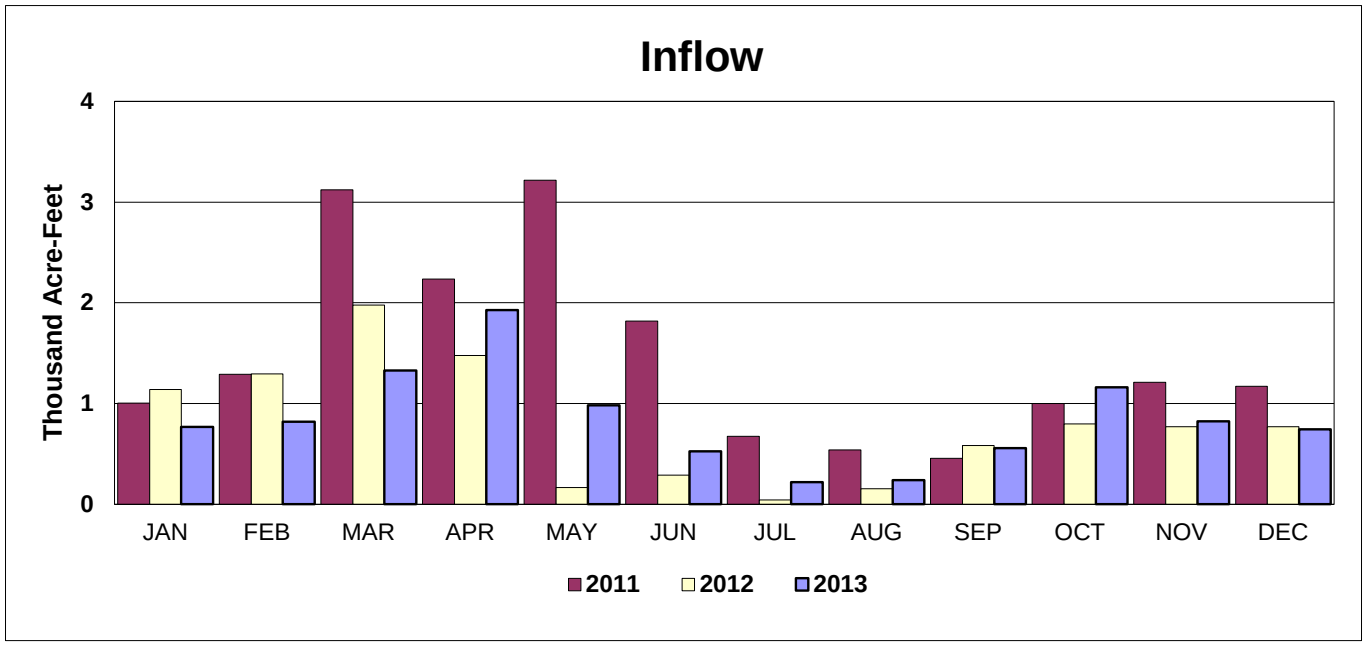
TABLE 7
NEBRASKA-KANSAS PROJECTS
Summary of Precipitation, Reservoir Storage and Inflows
CALENDAR YEAR 2013

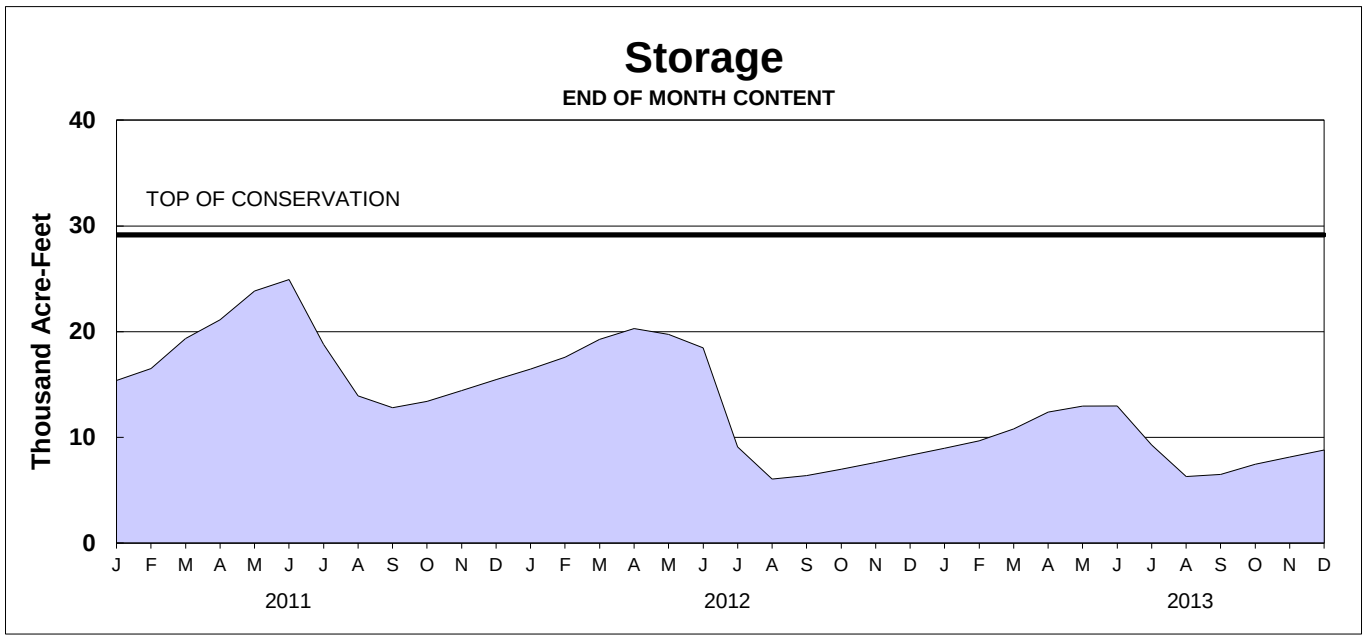
Reservoir	Total Precip. Inches	Percent Of Average %	Storage 12-31-12 AF	Storage 12-31-13 AF	Gain or Loss AF	Maximum Content AF	Storage Date	Minimum Content AF	Storage Date	Total Inflow AF	Percent of Most Probable %
Box Butte	17.14	101	8,308	8,807	499	12,981	MAY 19	5,705	AUG 29	10,096	62
Merritt	20.92	102	61,370	60,831	-539	67,602	MAY 23	42,929	SEP 13	184,211	100
Calamus	25.08	104	87,136	100,449	13,313	121,253	APR 5	61,540	SEP 23	258,881	94
Davis Creek	28.42	115	18,954	9,501	-9,453	31,812	MAY 30	9,320	SEP 30	47,965	125
Bonny	14.02	82	0	0	0	0	N/A	0	N/A	1,780	16
Enders	15.26	80	15,122	13,320	-1,802	15,573	MAR 31	13,153	NOV 3	4,126	43
Swanson	15.71	79	37,797	28,877	-8,920	41,665	MAY 2	27,376	NOV 3	19,498	64
Hugh Butler	12.63	64	6,098	6,961	863	8,094	APR 2	5,764	MAY 15	8,735	62
Harry Strunk	17.79	86	19,939	20,382	443	27,617	APR 2	13,447	SEP 2	31,563	82
Keith Sebelius	20.90	85	16,462	12,502	-3,960	17,372	MAY 19	12,468	NOV 28	4,705	53
Harlan County	17.46	77	191,125	124,522	-66,603	215,031	JUN 12	124,523	DEC 31	48,794	35
Lovewell	28.20	103	22,585	22,495	-90	40,349	JUN 5	12,127	SEP 11	47,037	69
Kirwin	17.77	75	66,348	50,011	-16,337	72,279	MAY 19	49,942	DEC 6	13,132	39
Webster	19.28	81	36,167	16,537	-19,630	37,236	MAY 19	16,505	DEC 7	5,120	19
Waconda	21.22	83	184,545	187,122	2,577	200,659	AUG 7	185,103	JAN 1	60,291	34
Cedar Bluff	16.08	77	66,233	54,342	-11,891	66,365	JAN 2	54,342	DEC 30	5,605	30

EXHIBIT 1A

BOX BUTTE RESERVOIR

ACTUAL OPERATION





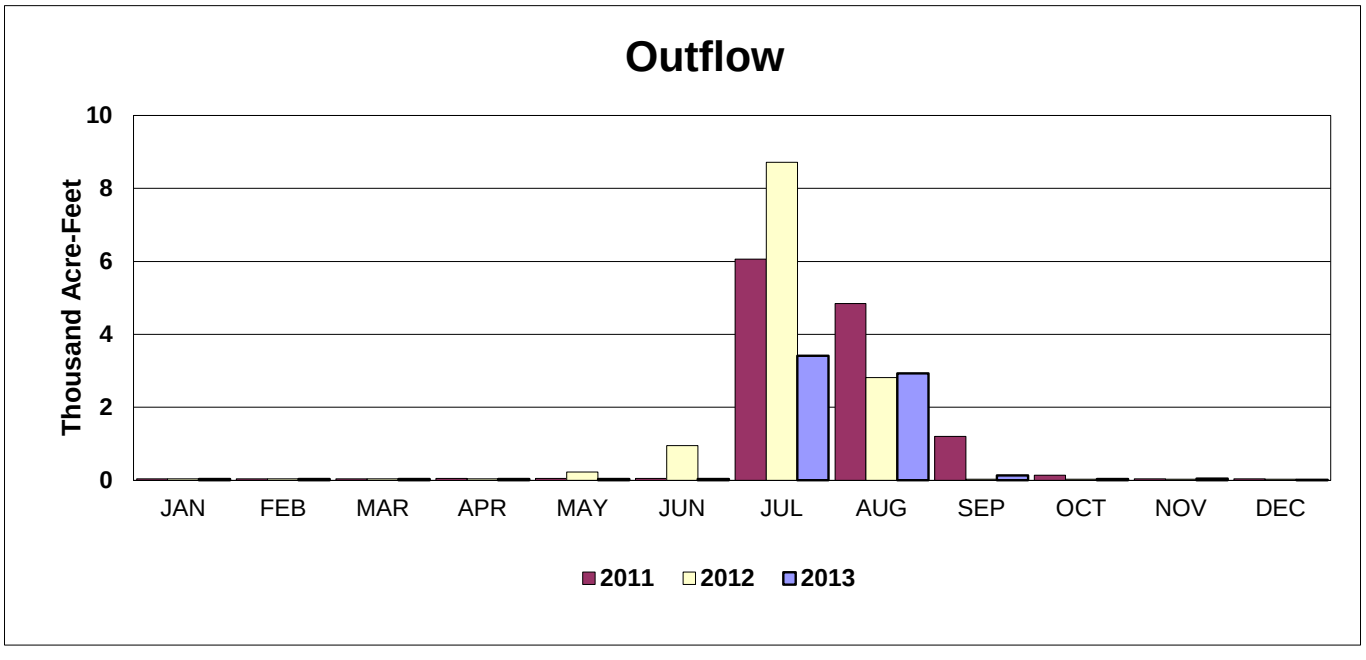
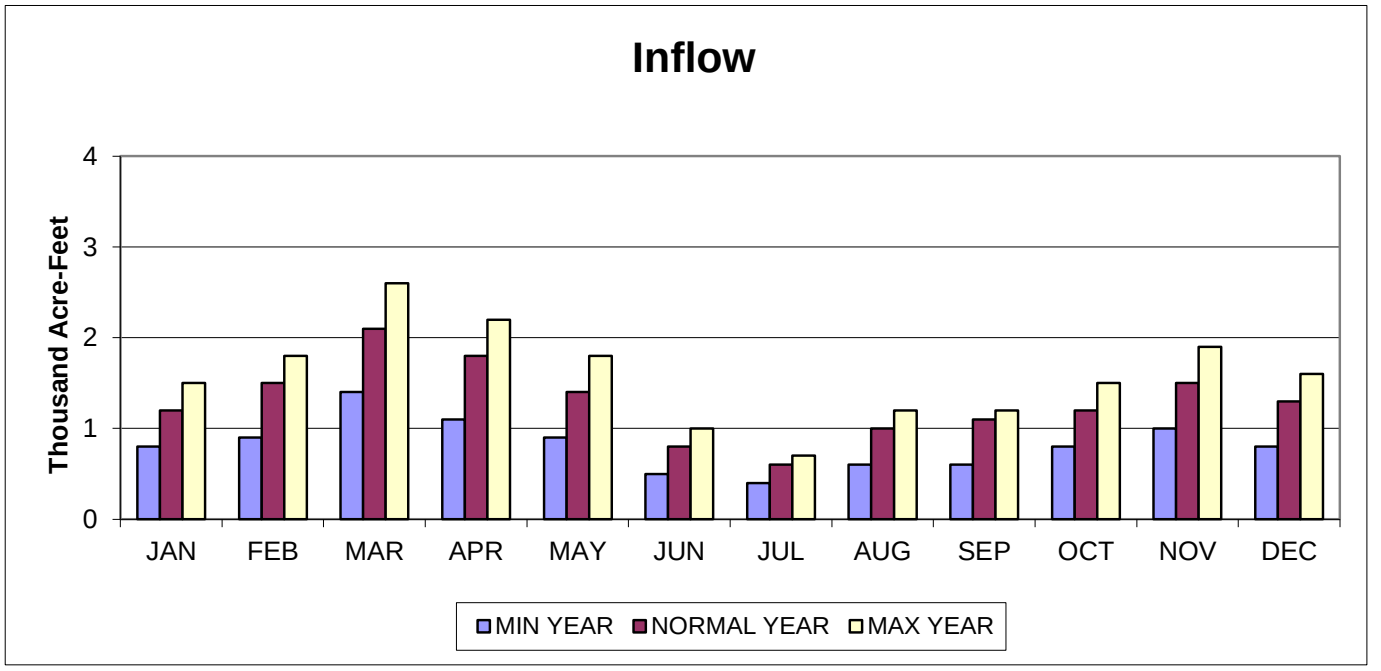
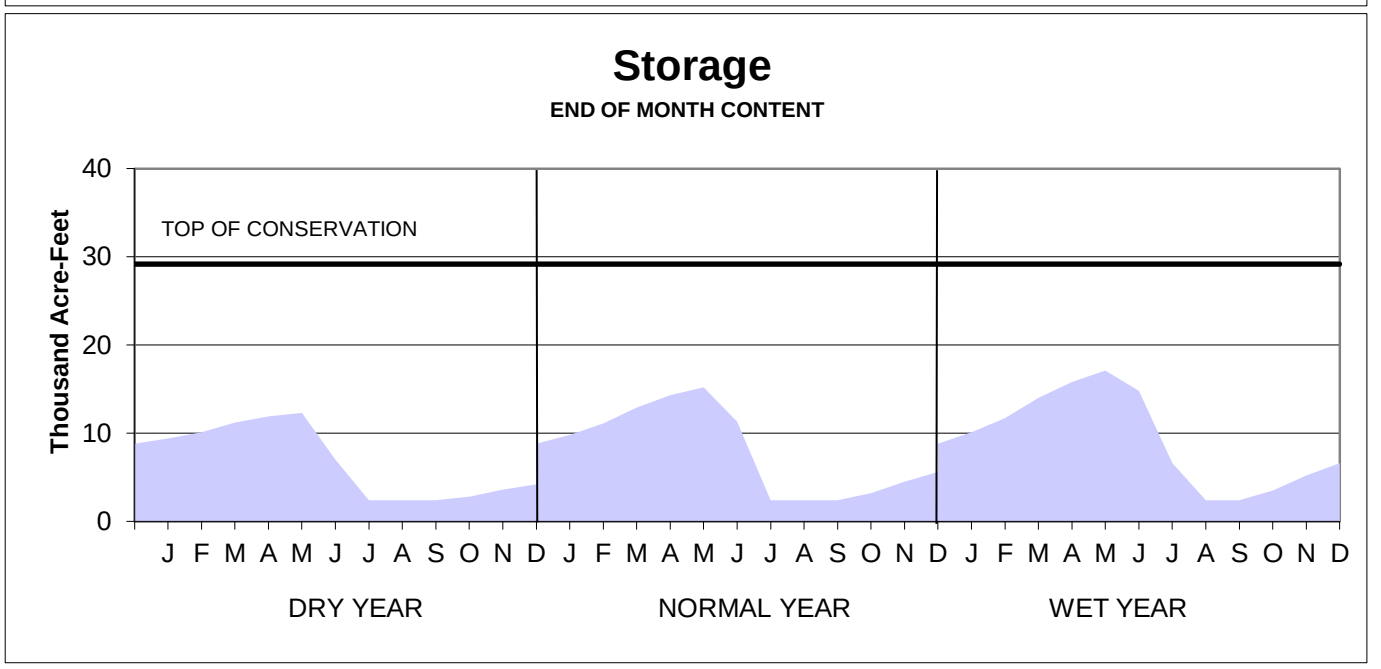


EXHIBIT 1B

BOX BUTTE RESERVOIR

2014 OPERATION PLAN





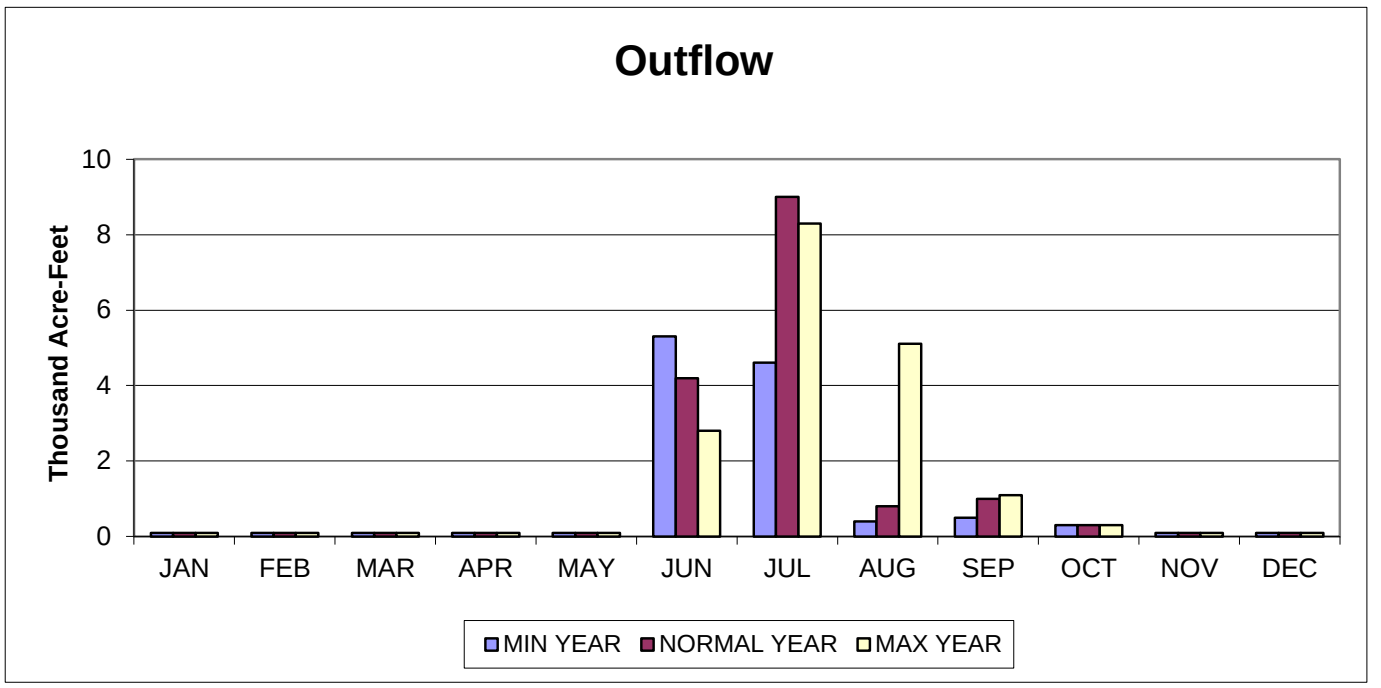


EXHIBIT 2A

MERRITT RESERVOIR

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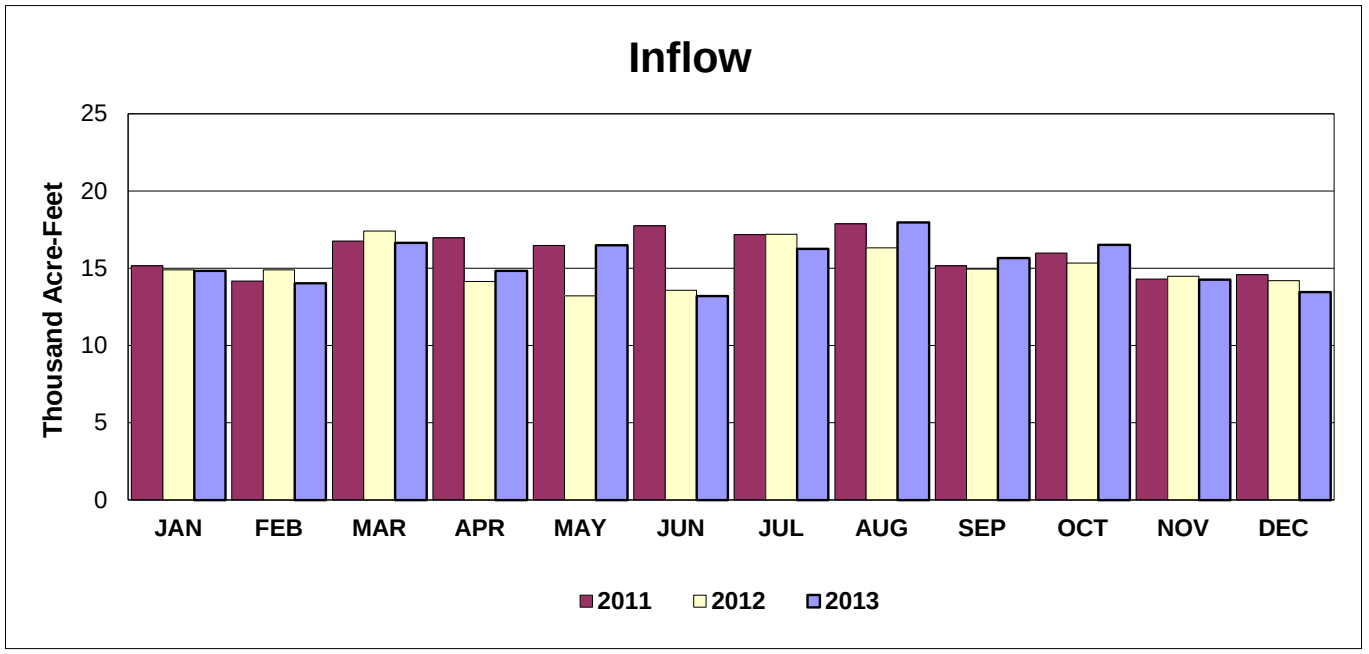
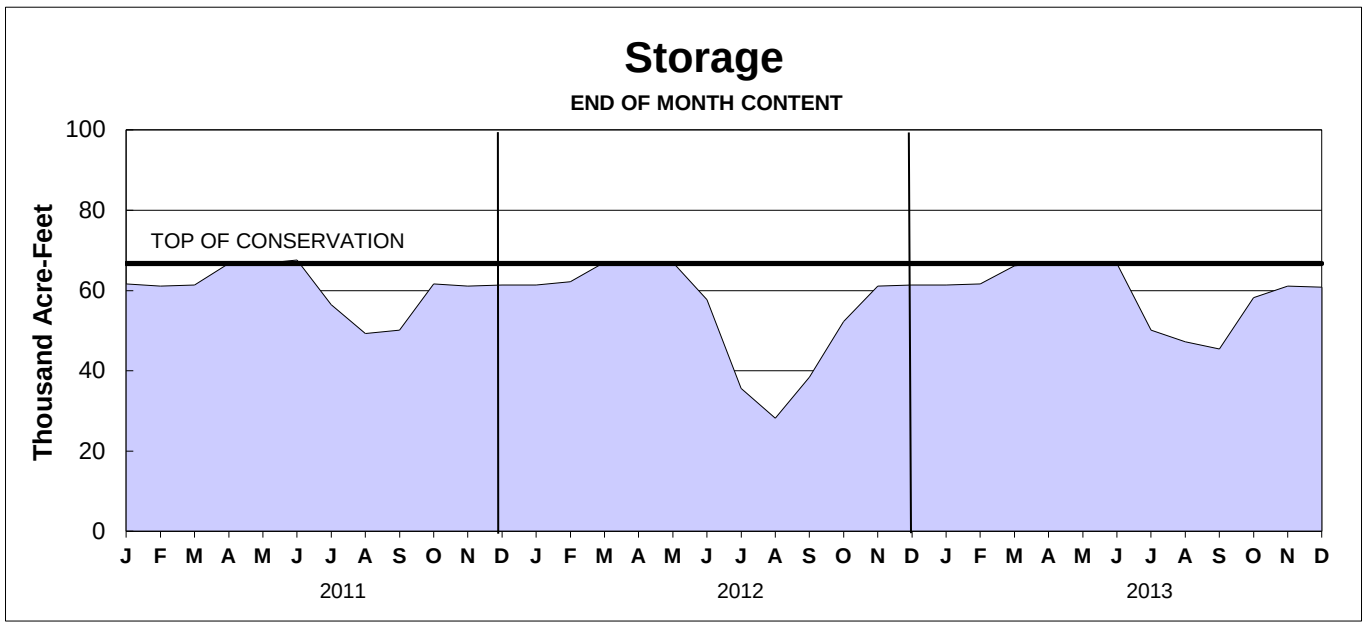




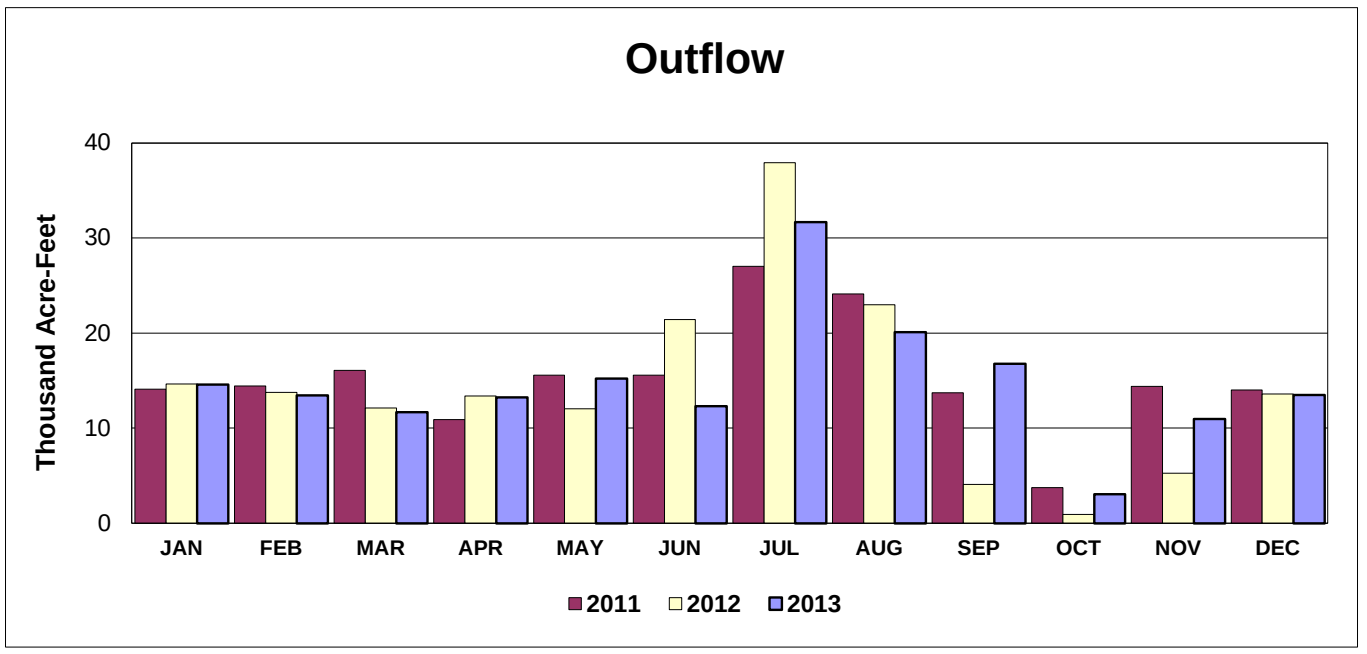
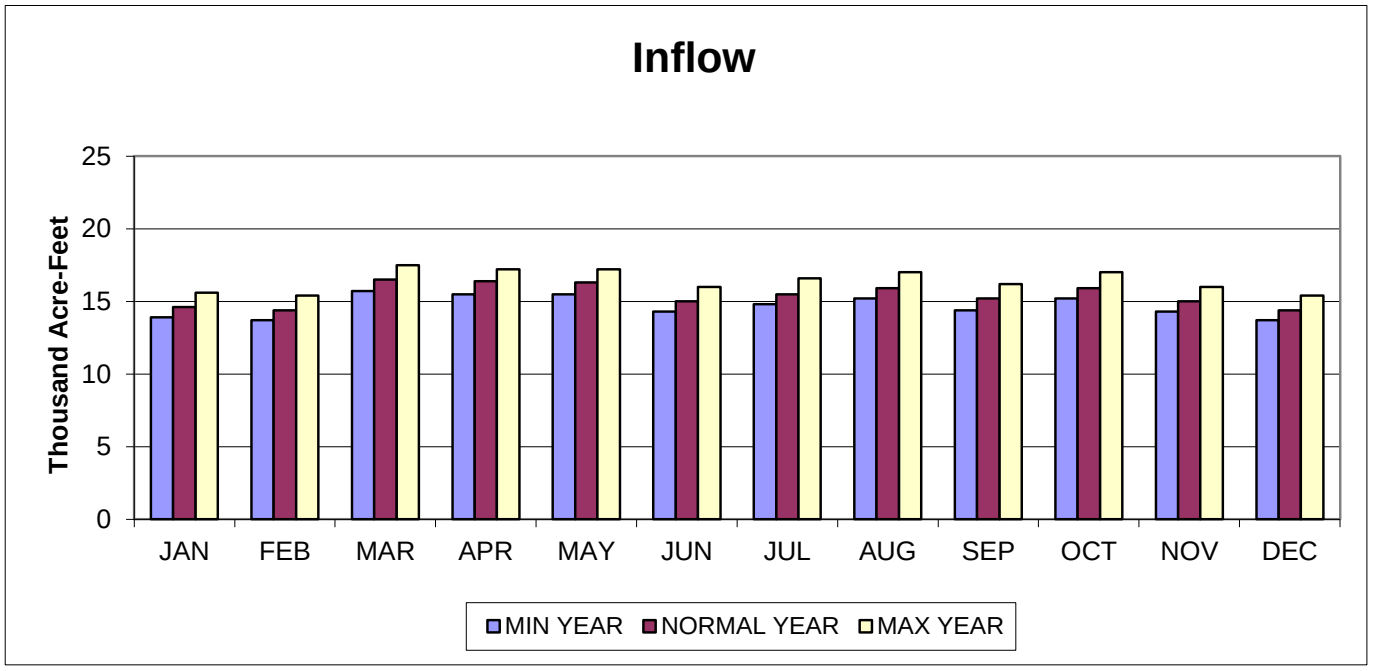
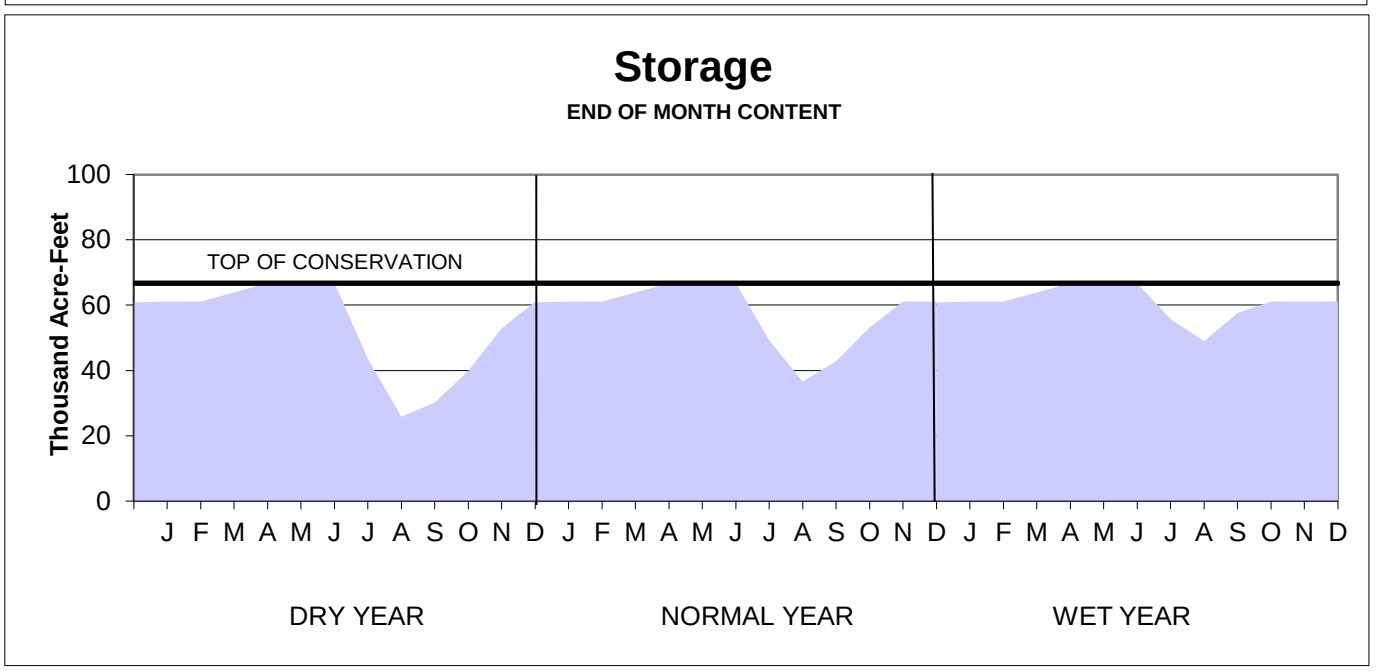


EXHIBIT 2B

MERRITT RESERVOIR

2014 OPERATION PLAN





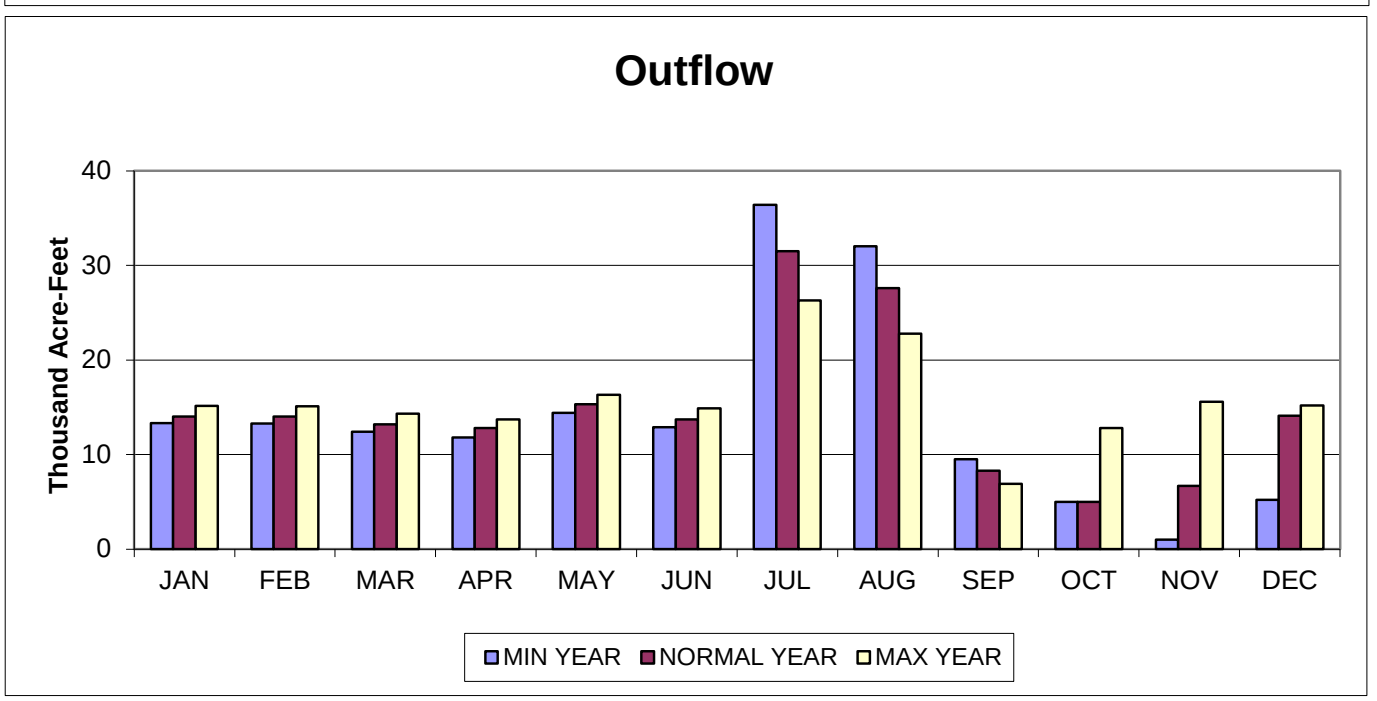
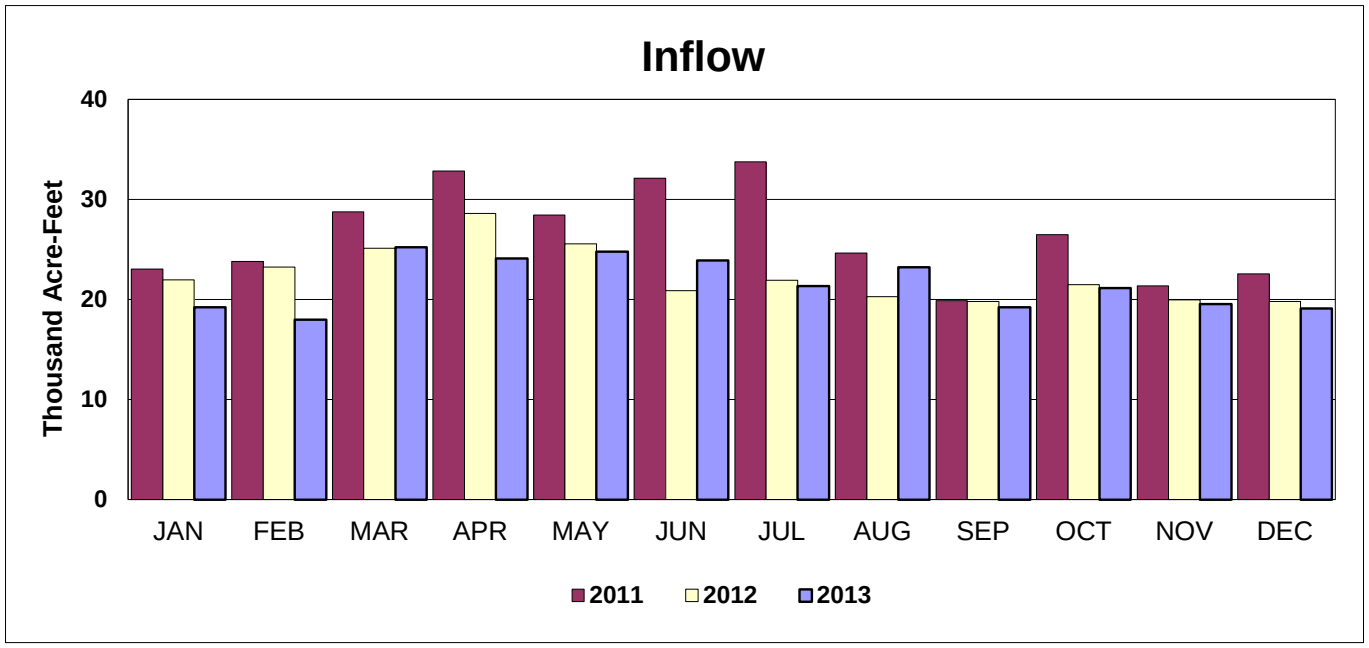
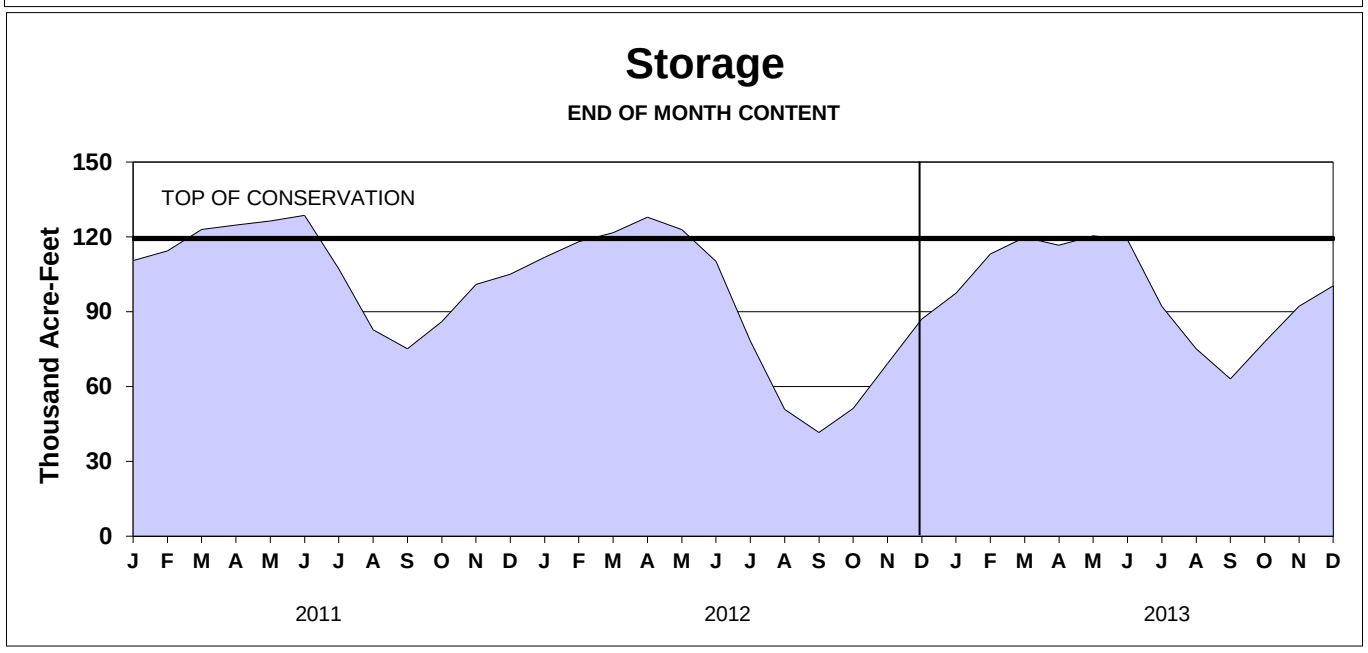


EXHIBIT 3A

CALAMUS RESERVOIR

ACTUAL OPERATION





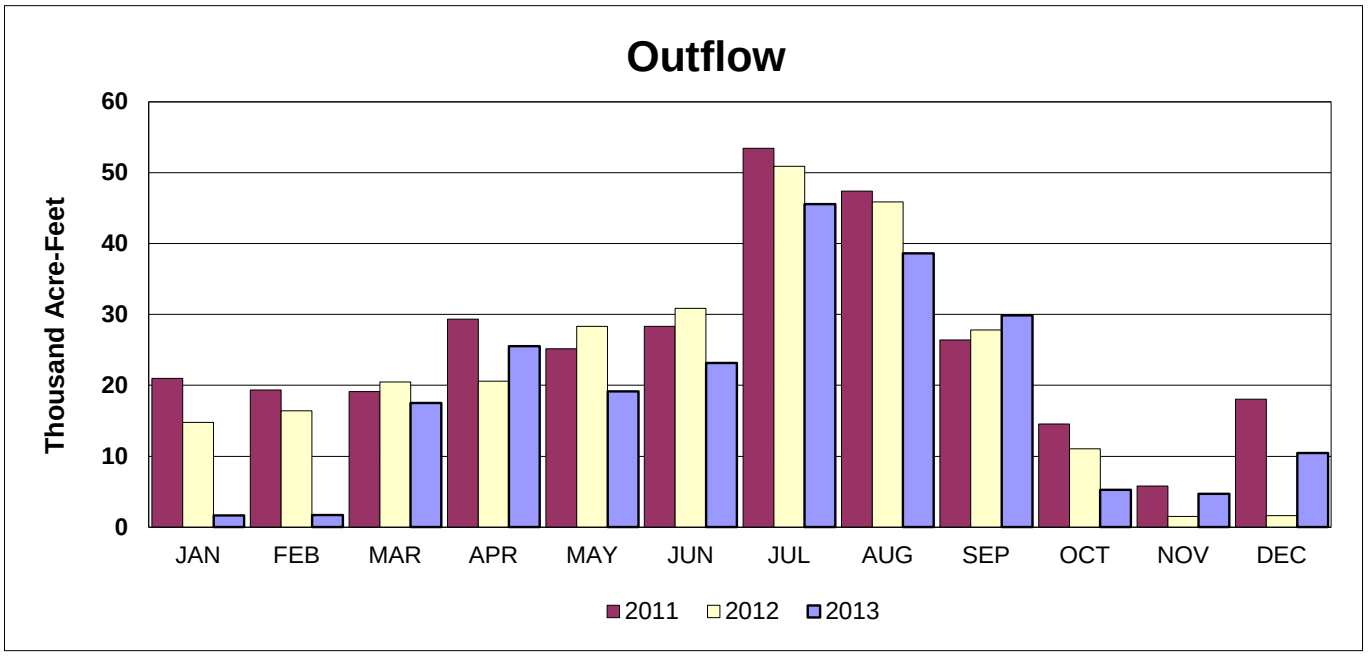
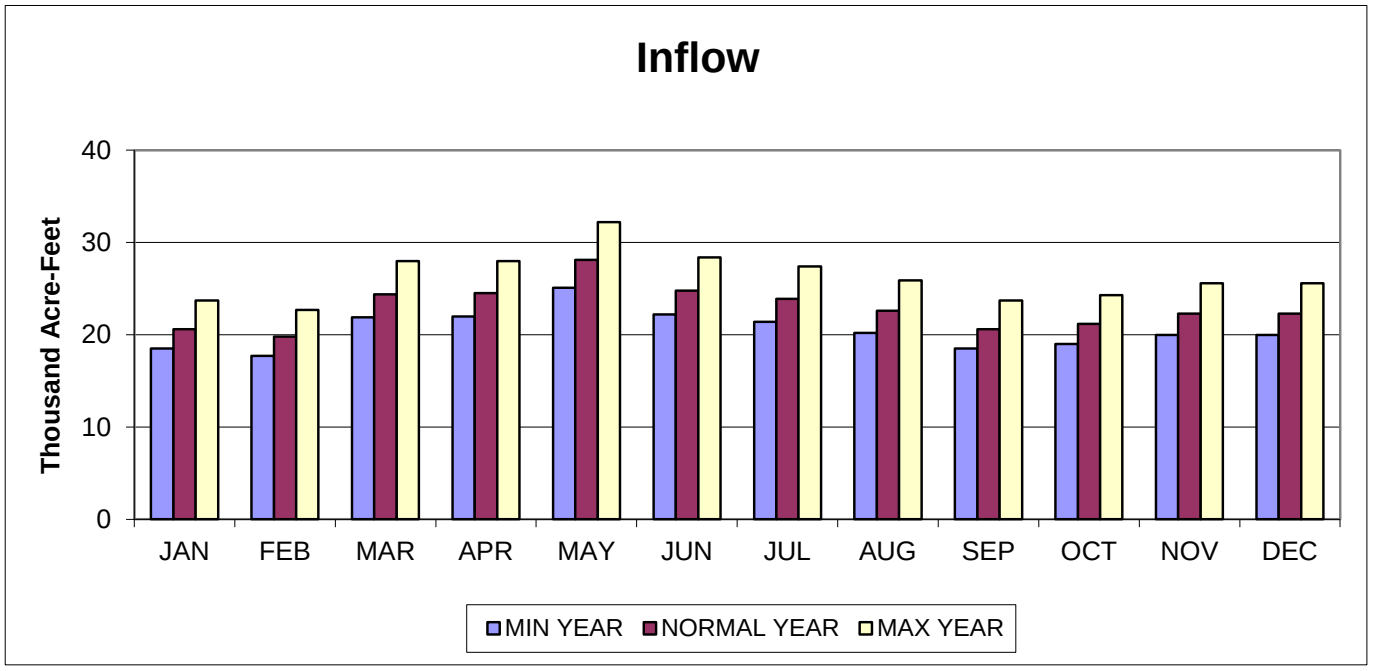
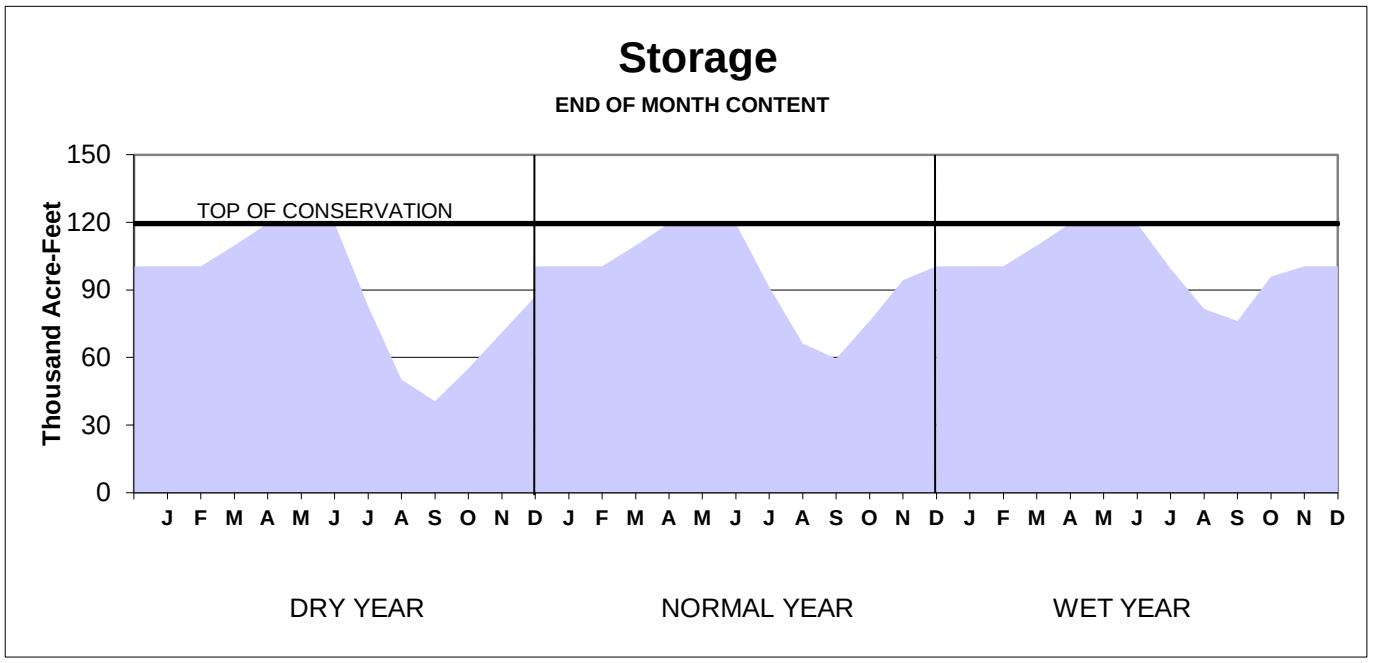


EXHIBIT 3B

CALAMUS RESERVOIR

2014 OPERATION PLAN





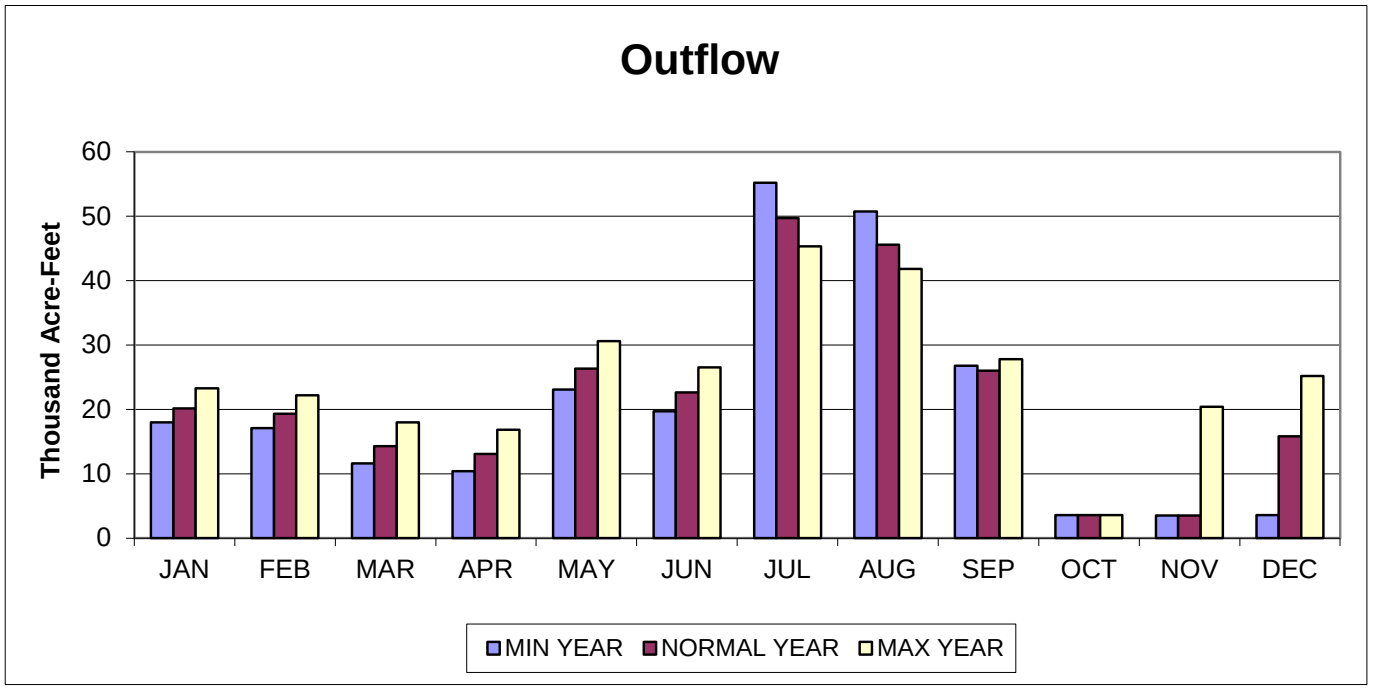
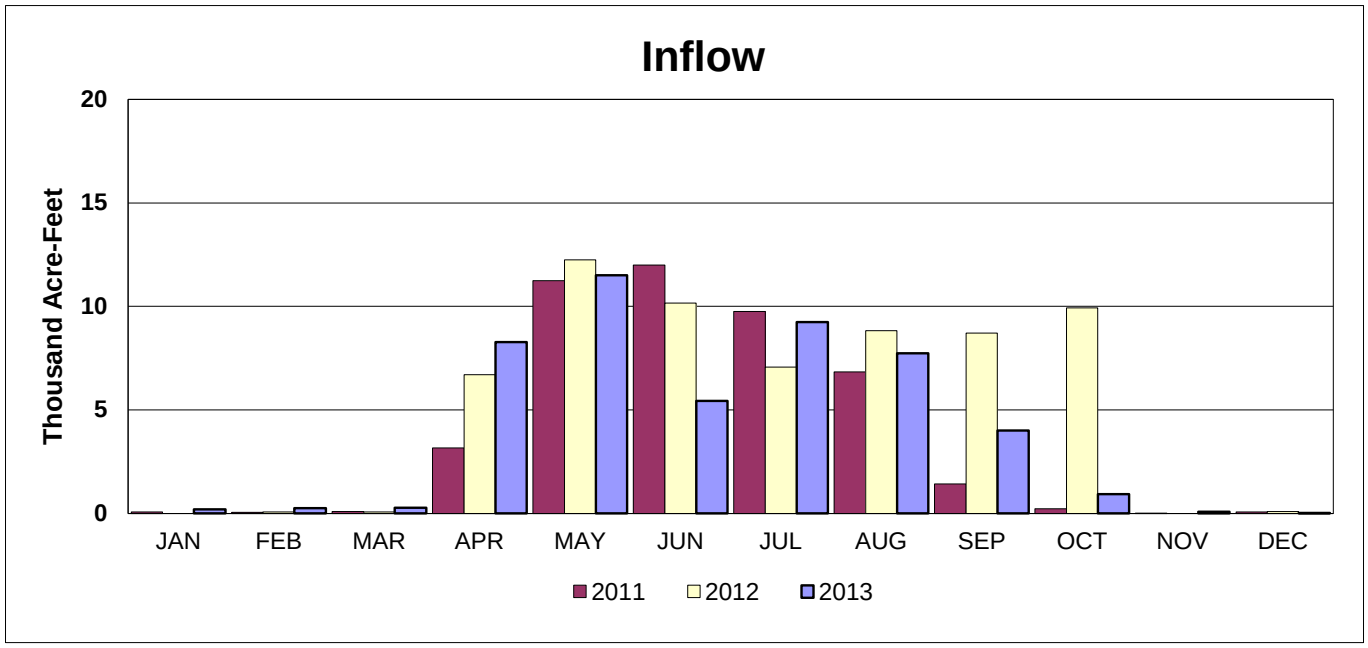
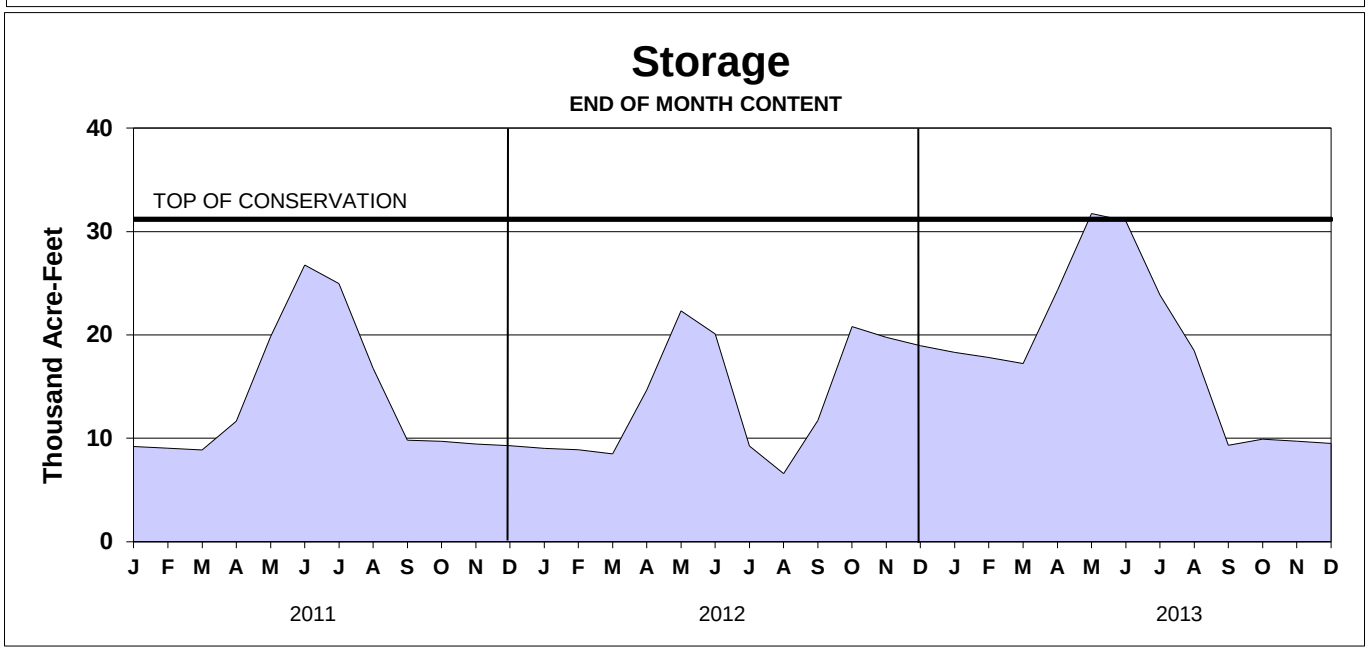


EXHIBIT 4A

DAVIS CREEK RESERVOIR

ACTUAL OPERATION





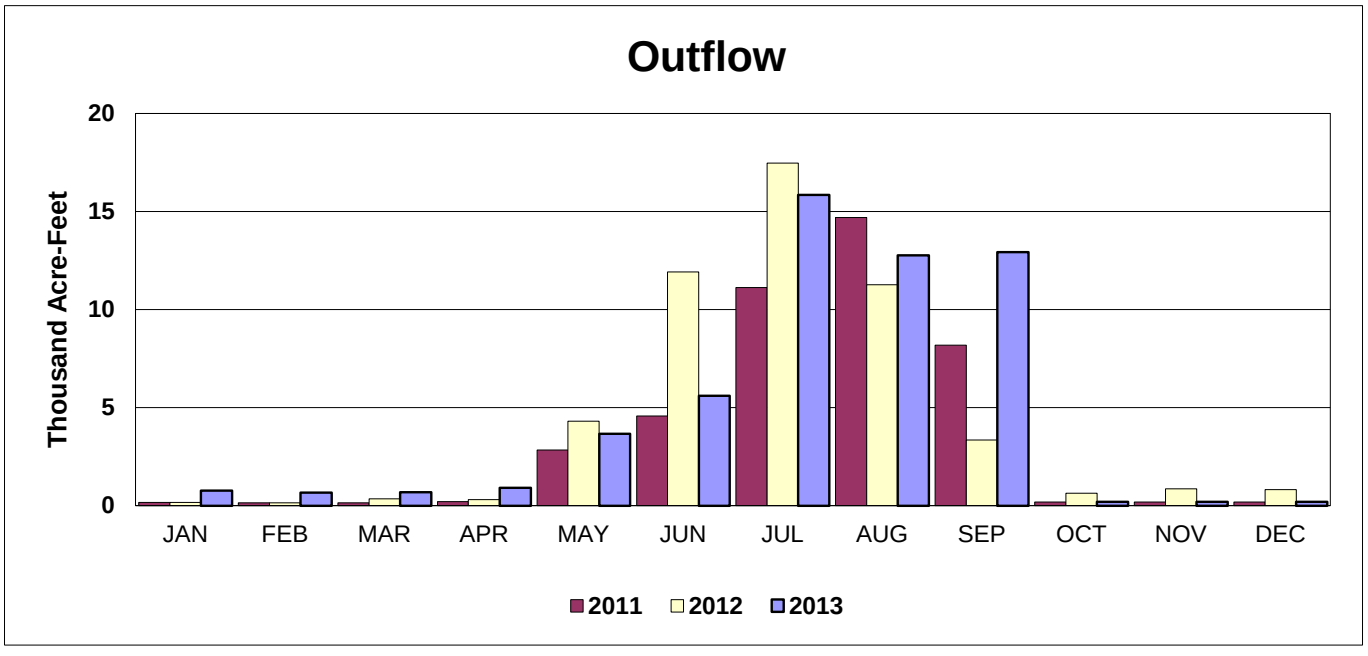
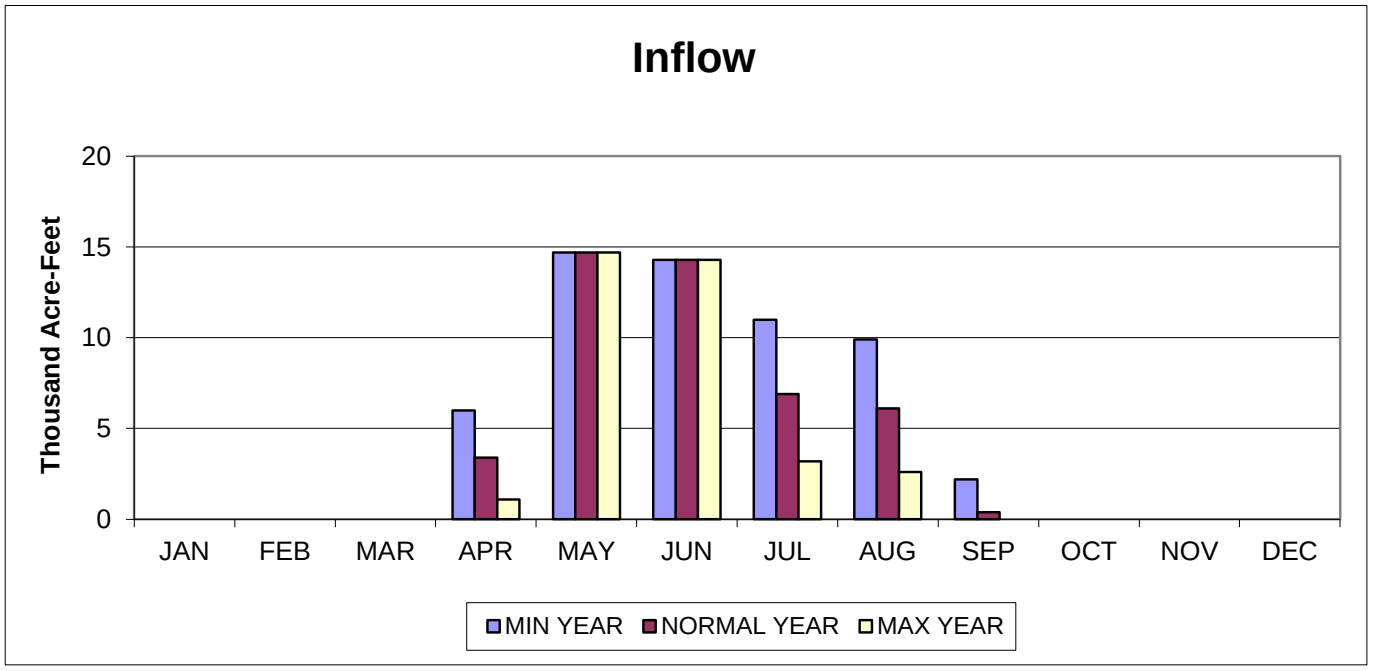
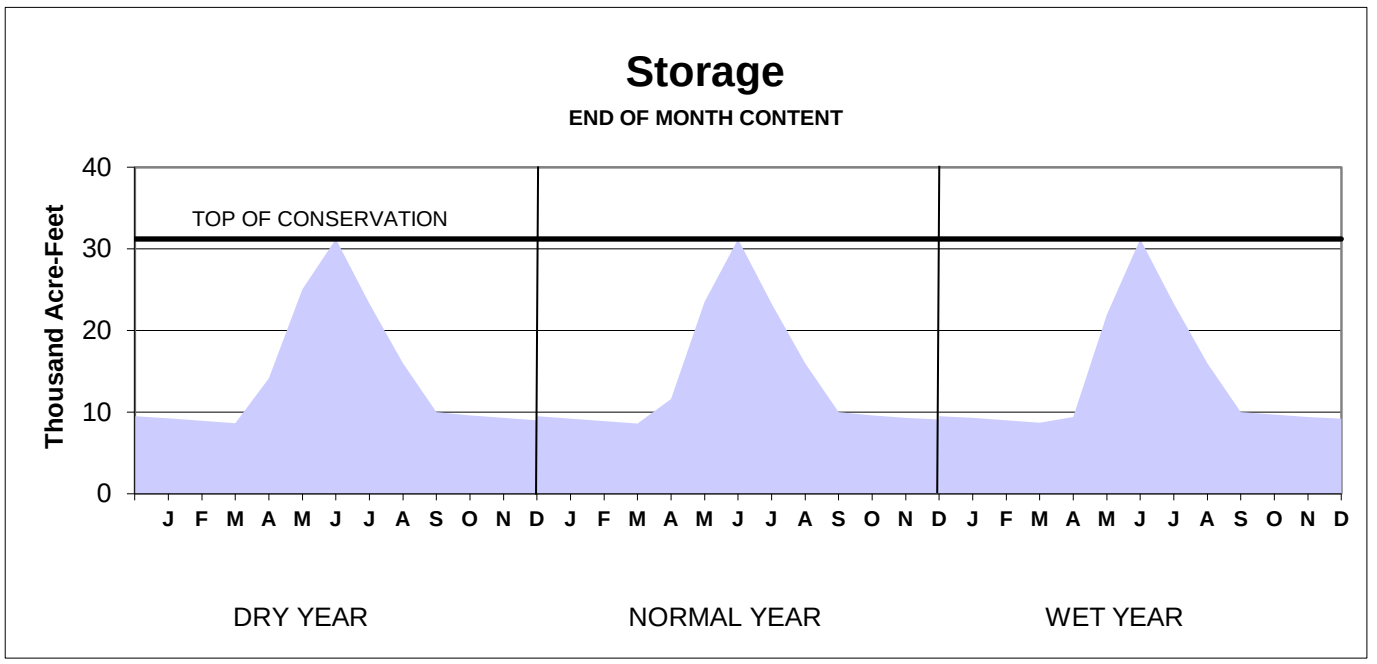


EXHIBIT 4B

DAVIS CREEK RESERVOIR

2014 OPERATION PLAN





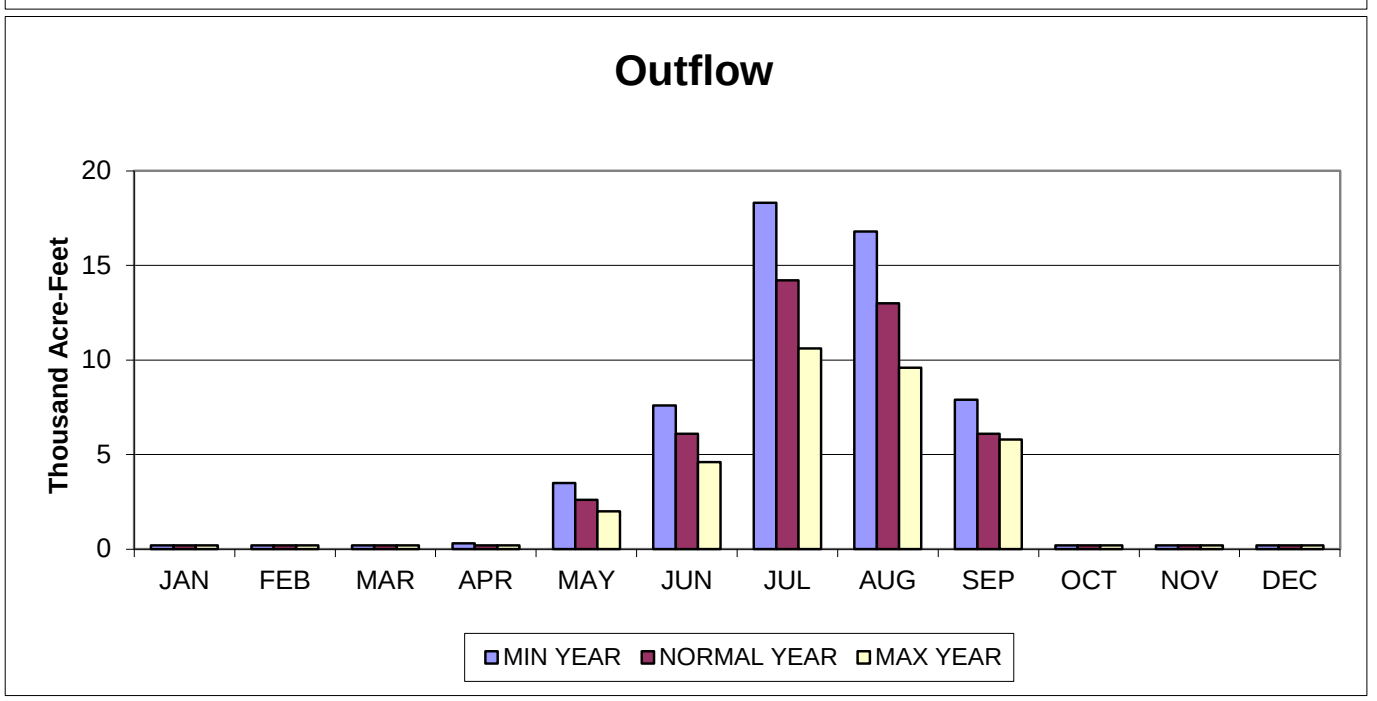
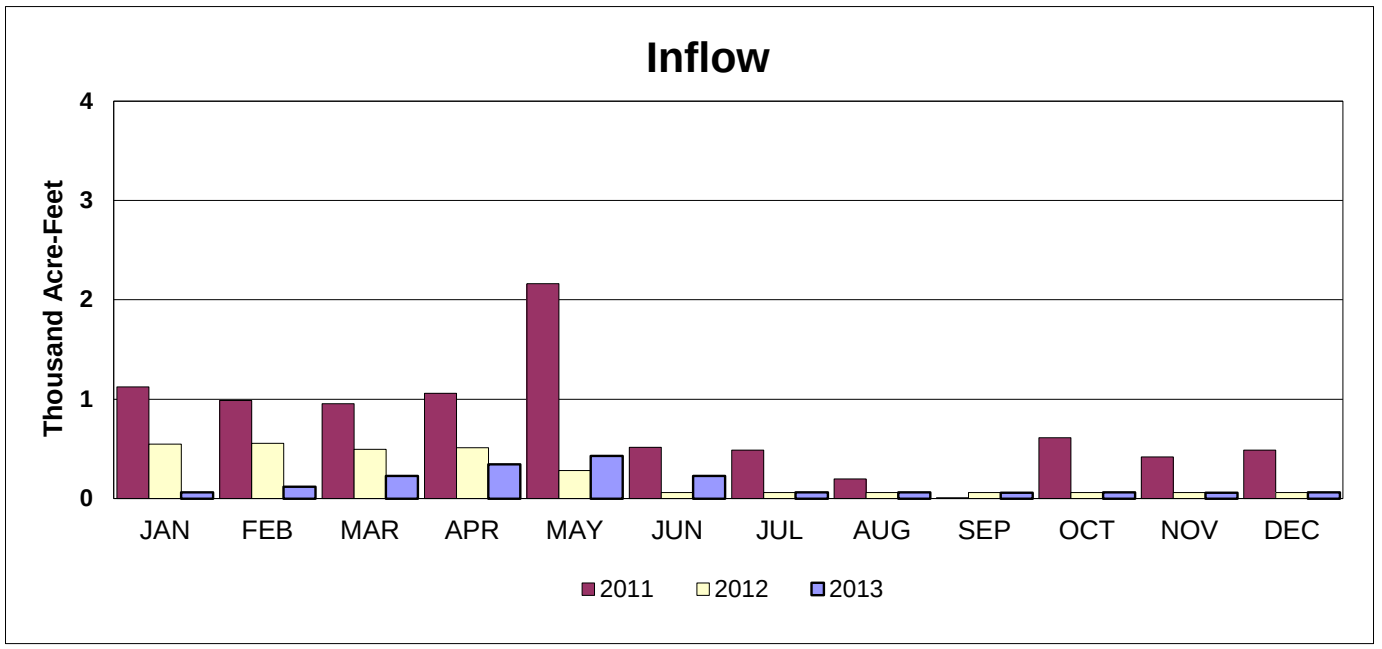
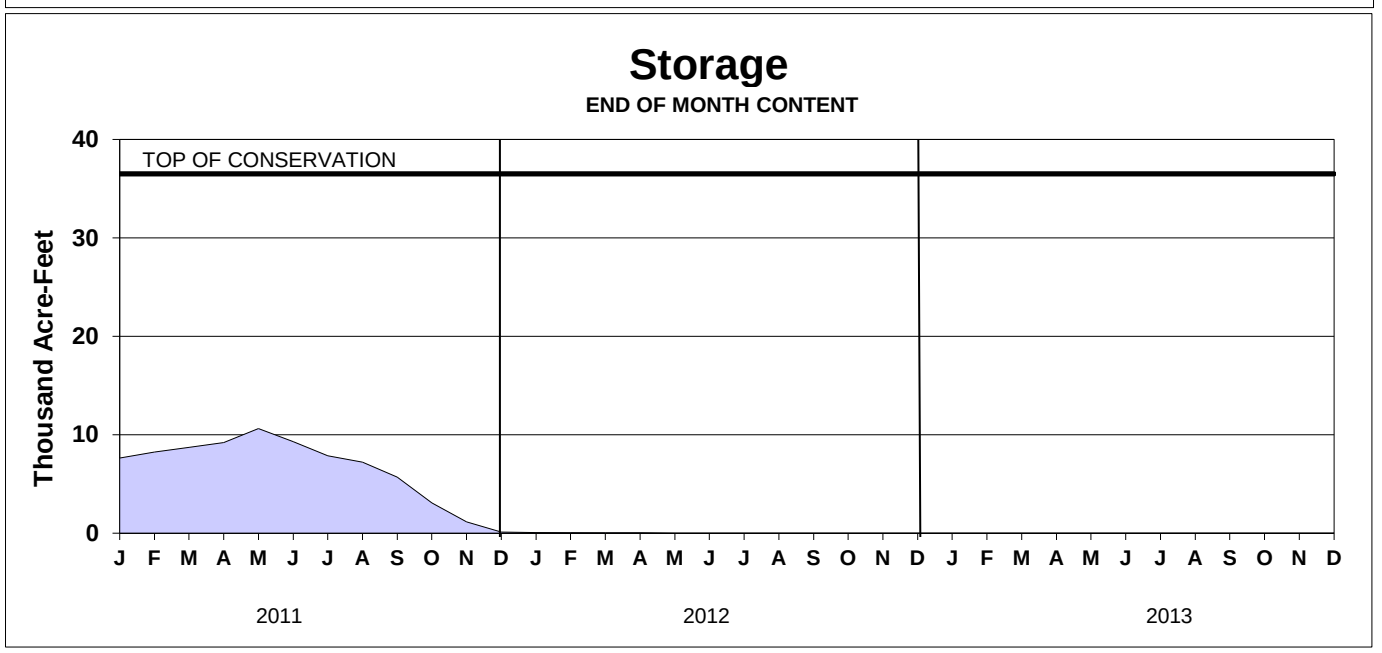


EXHIBIT 5A

BONNY RESERVOIR

ACTUAL OPERATION





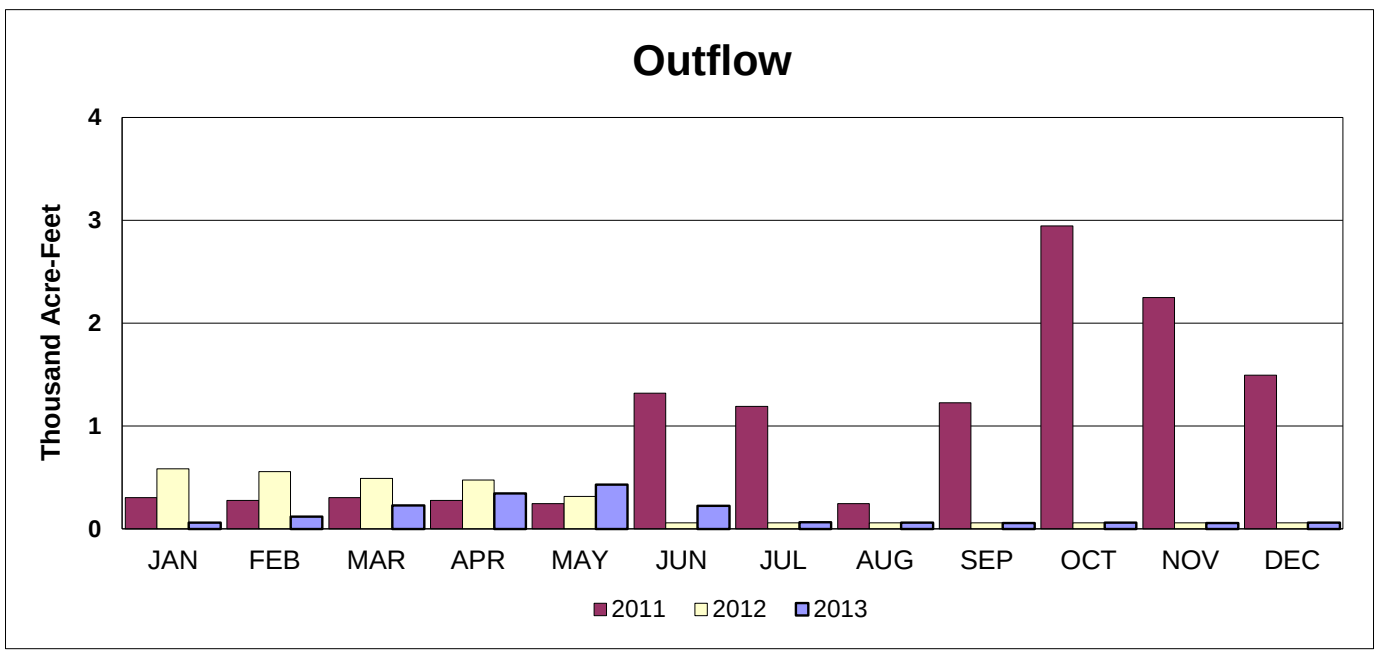
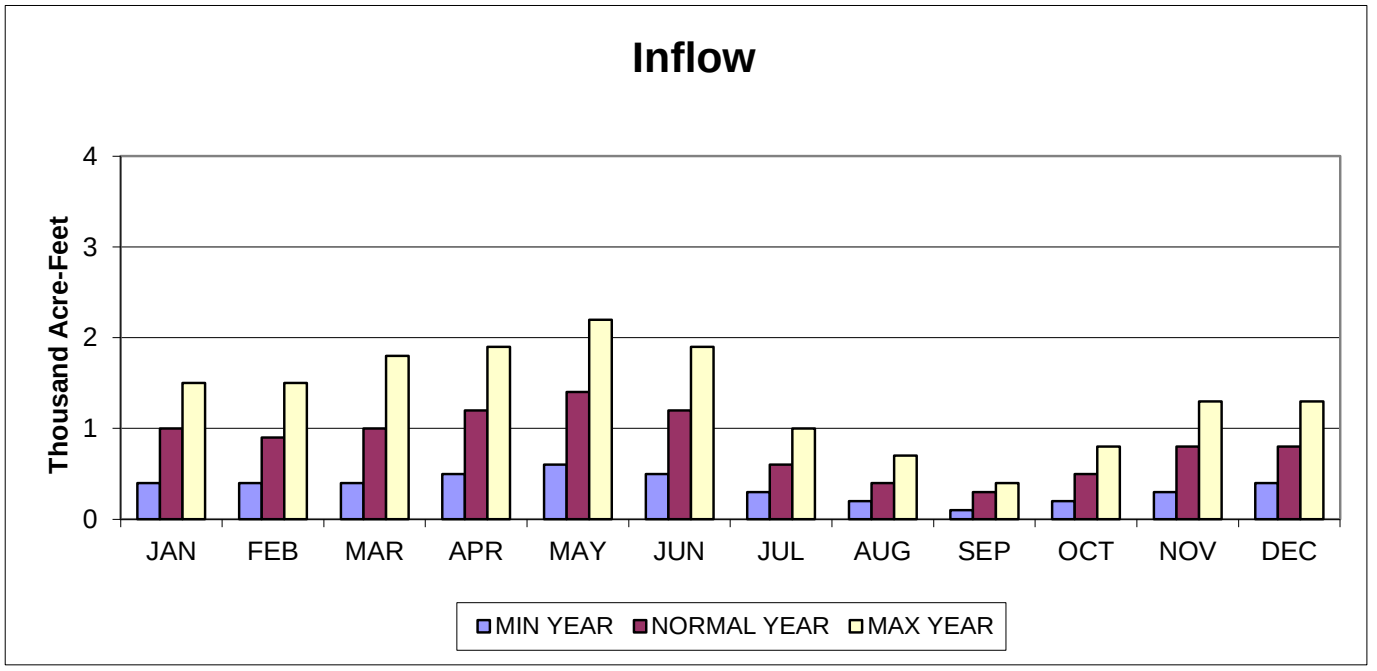
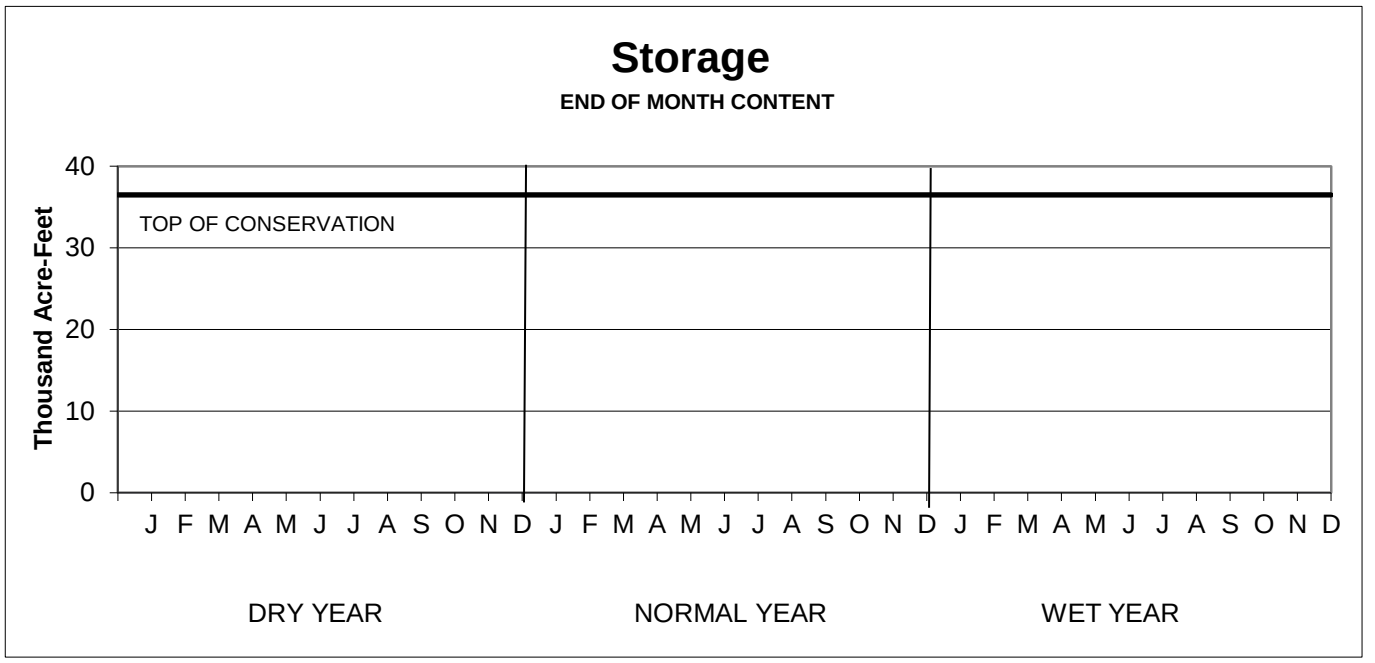


EXHIBIT 5B

BONNY RESERVOIR

2014 OPERATION PLAN





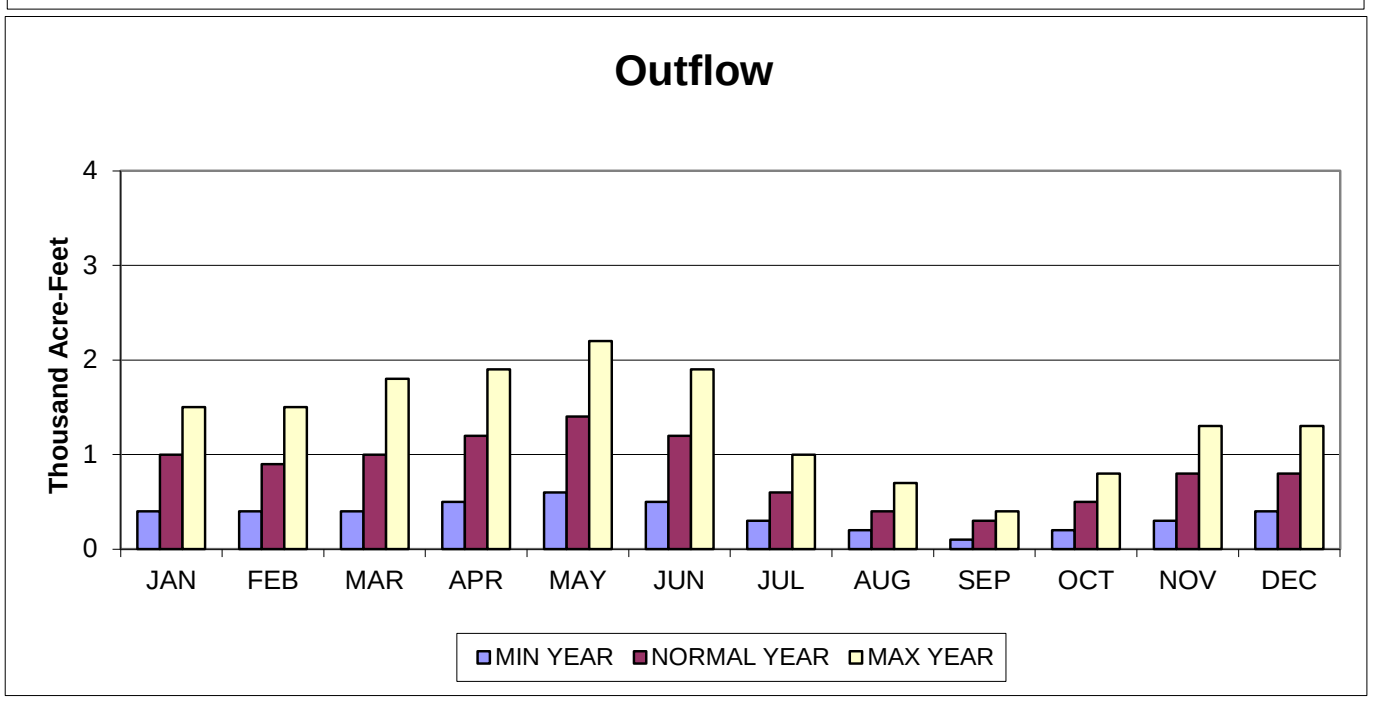
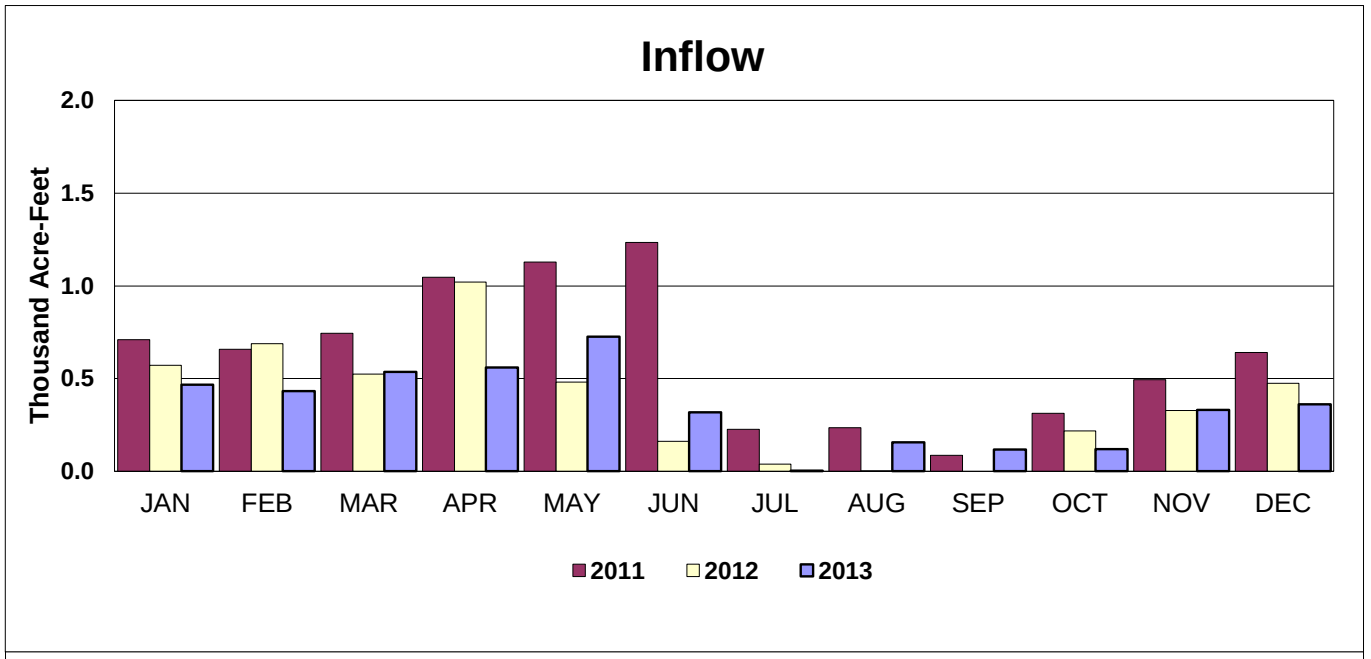
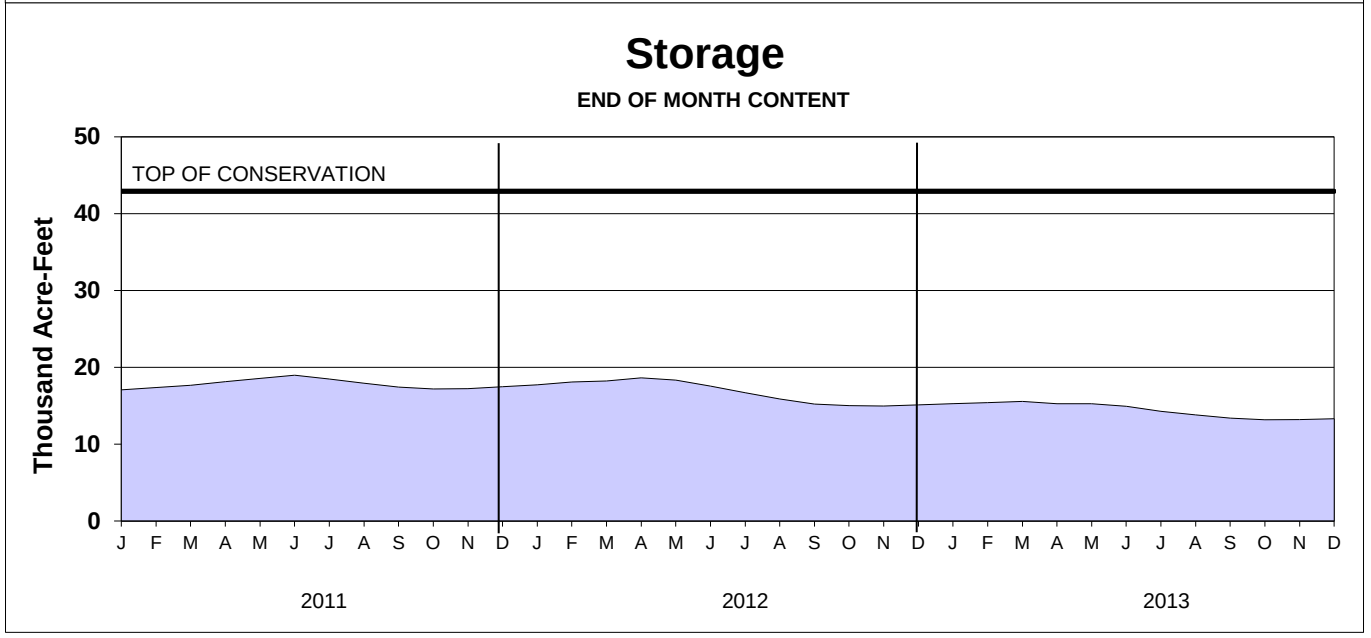


EXHIBIT 6A

ENDERS RESERVOIR

ACTUAL OPERATION





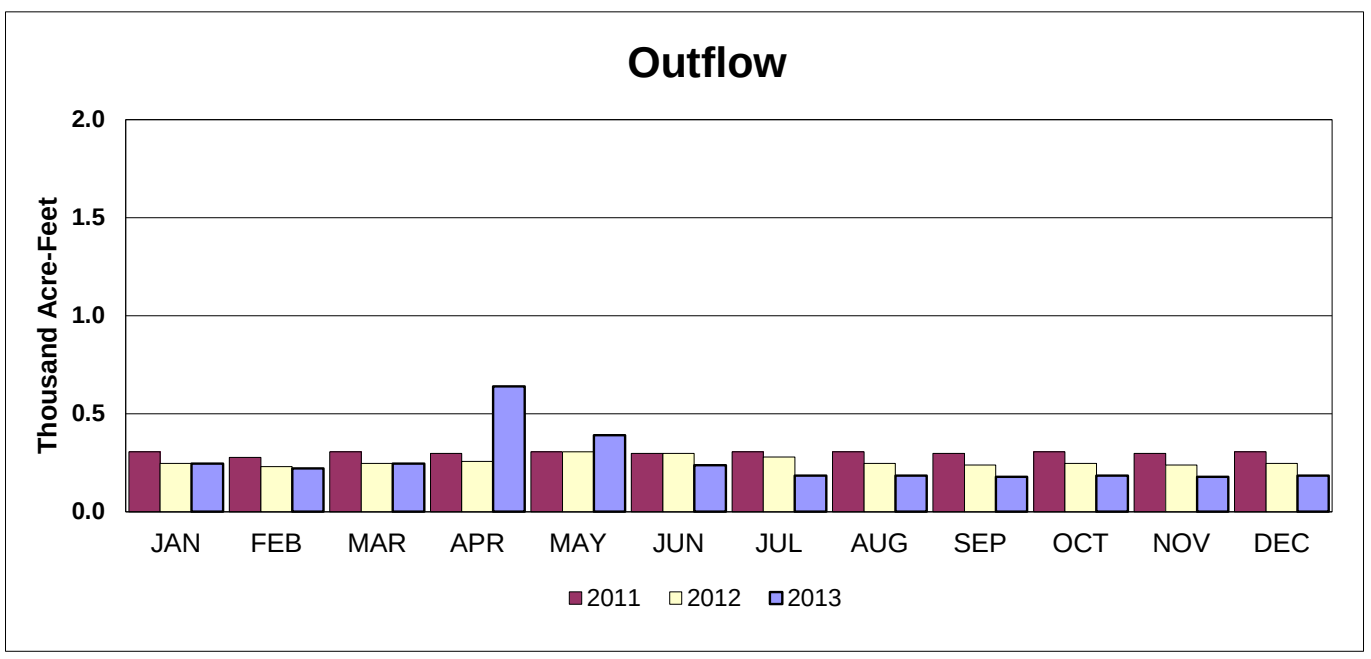
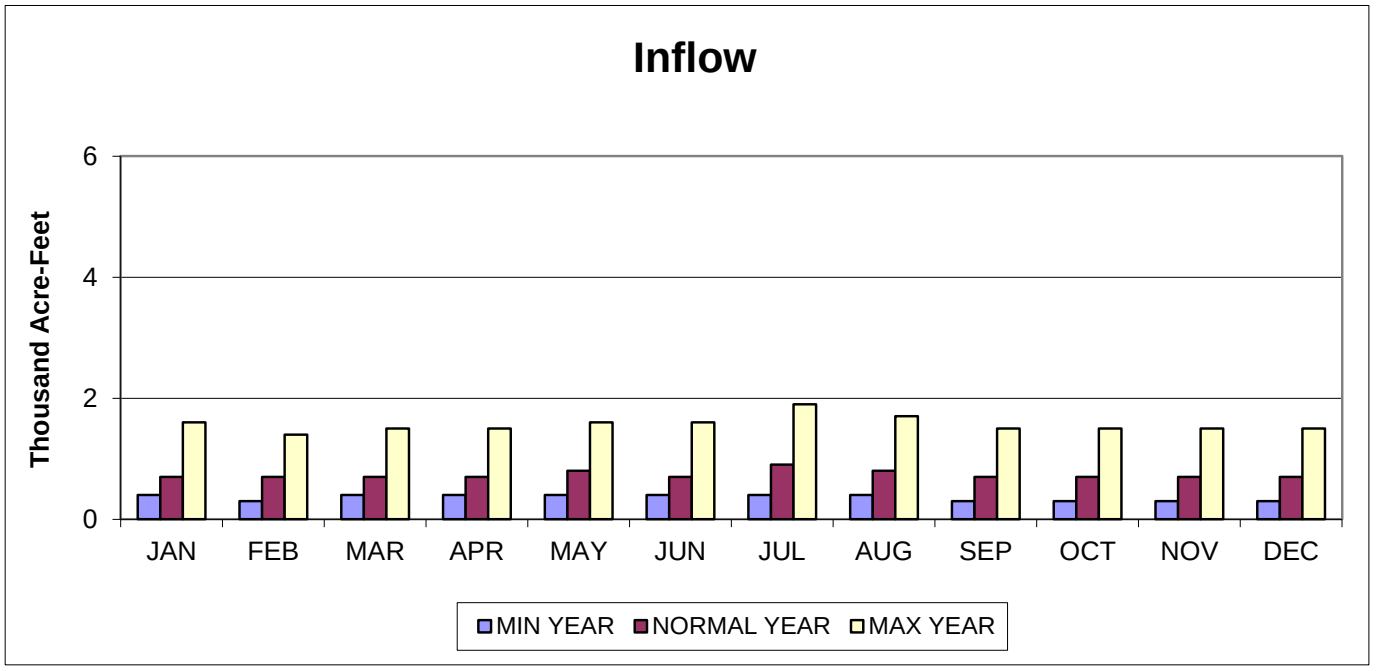
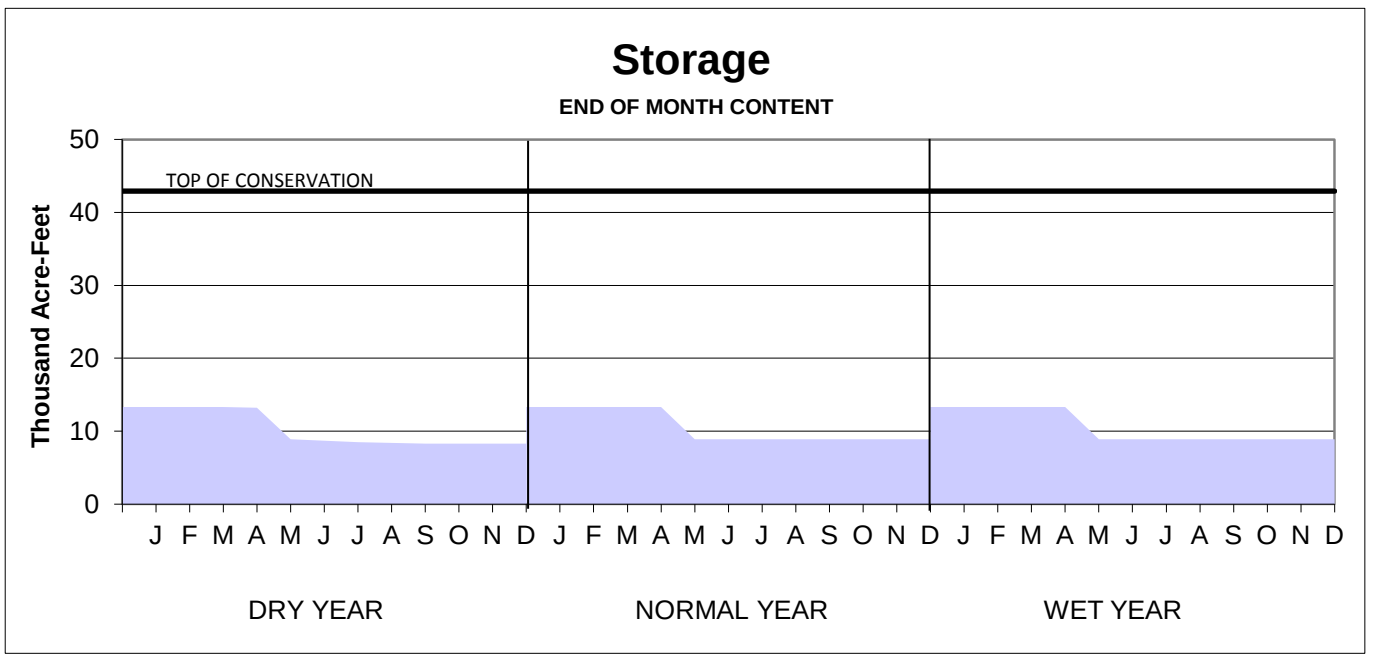


EXHIBIT 6B

ENDERS RESERVOIR

2014 OPERATION PLAN





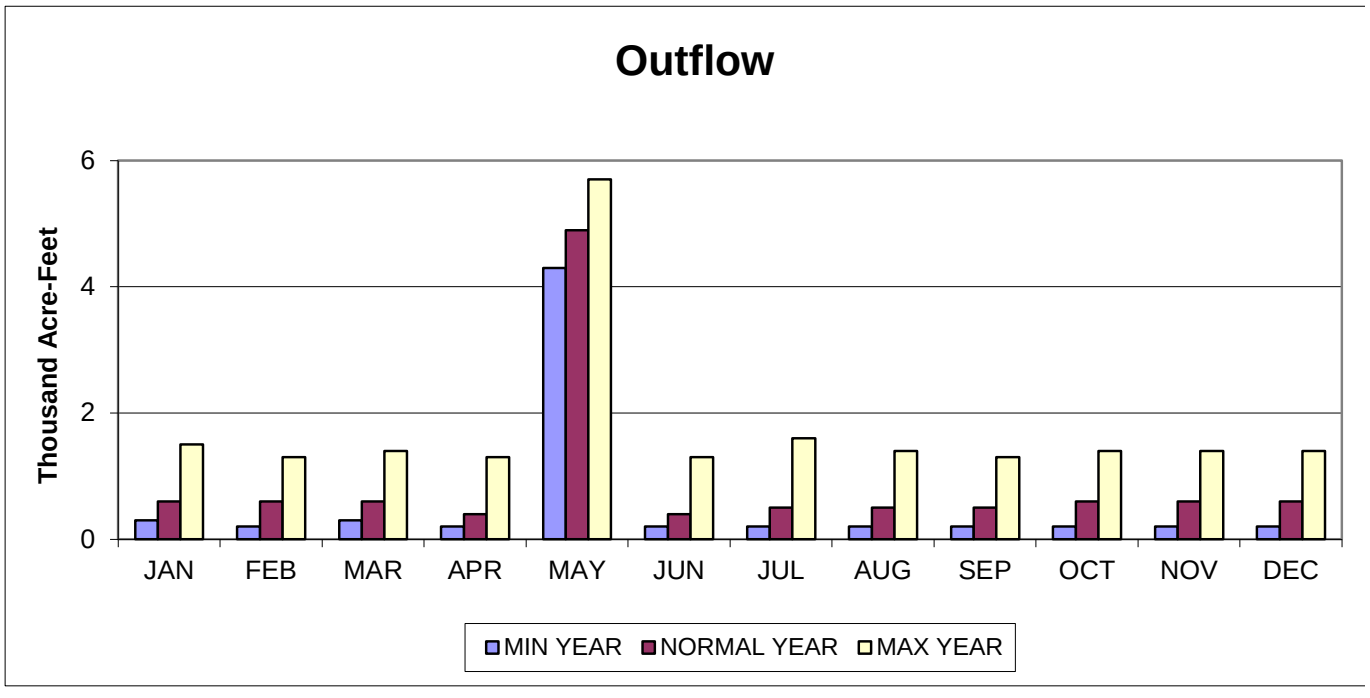
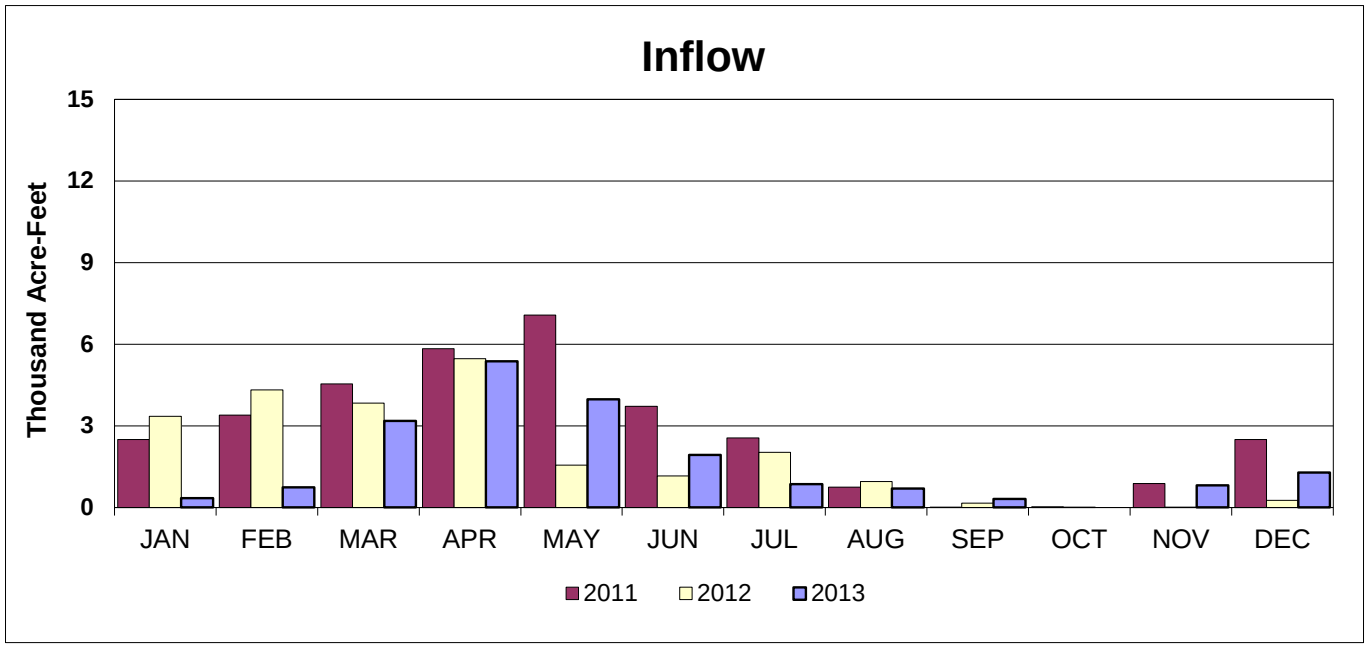
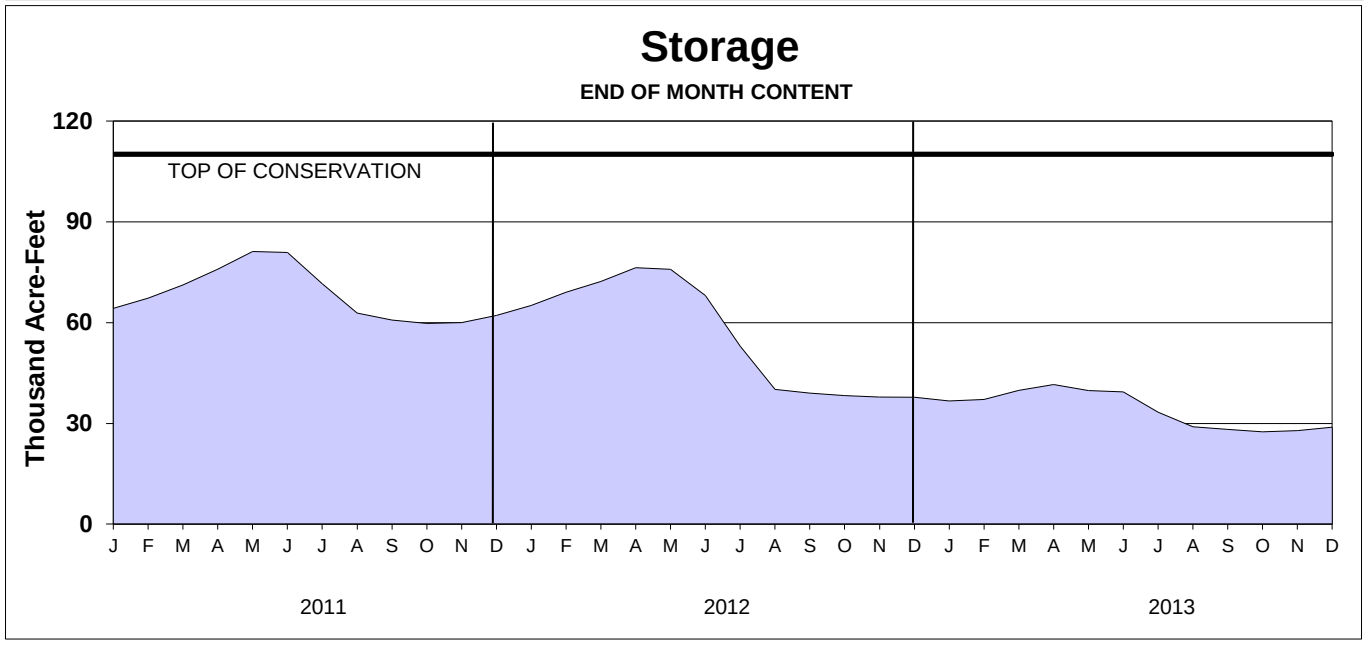


EXHIBIT 7A

SWANSON LAKE

ACTUAL OPERATION





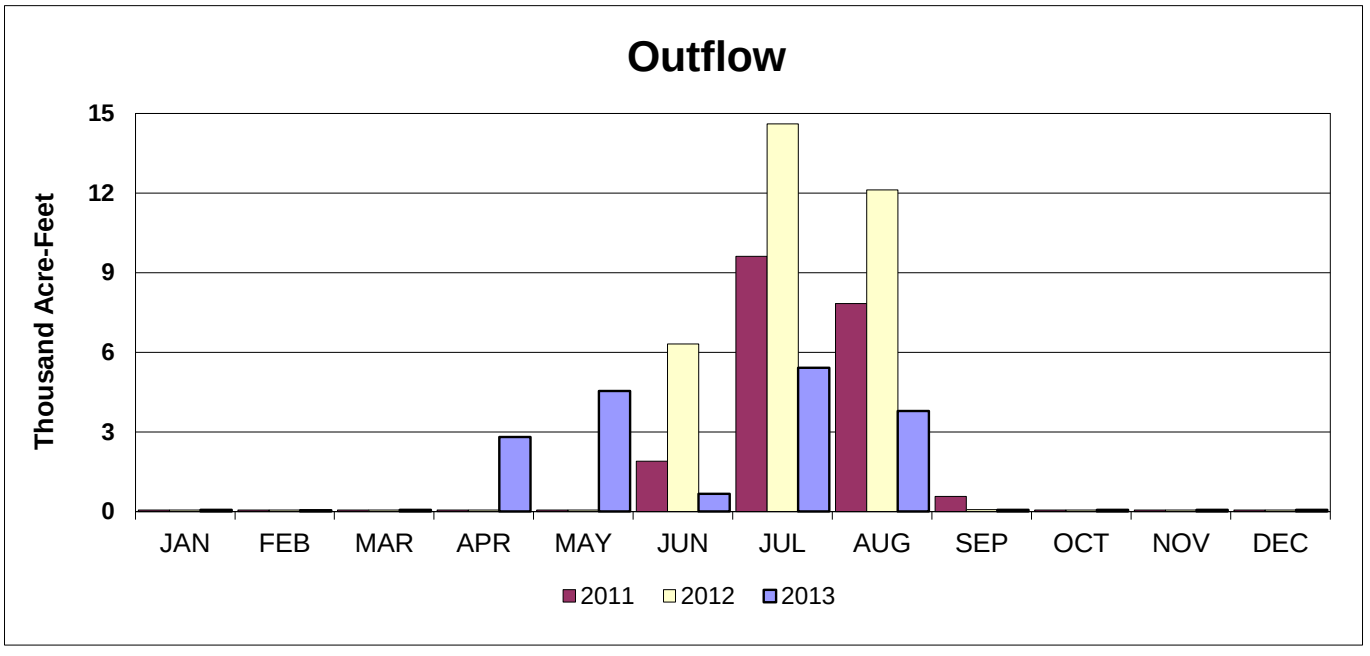
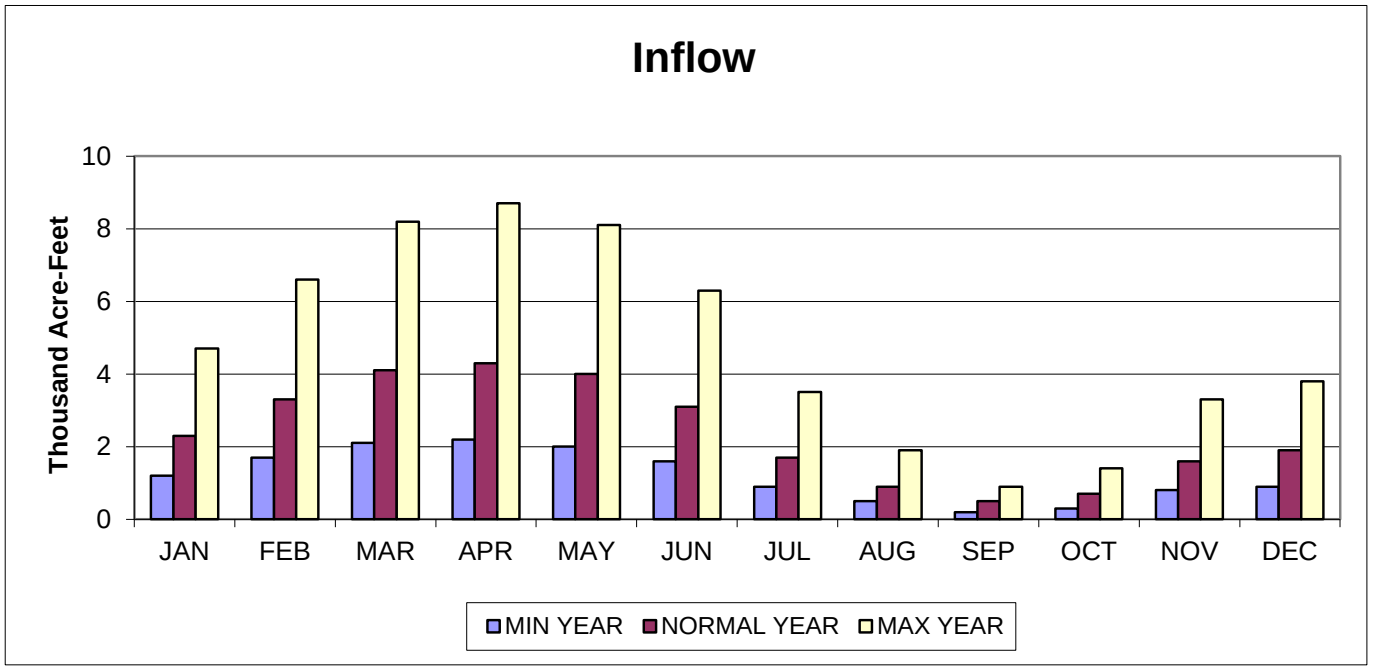
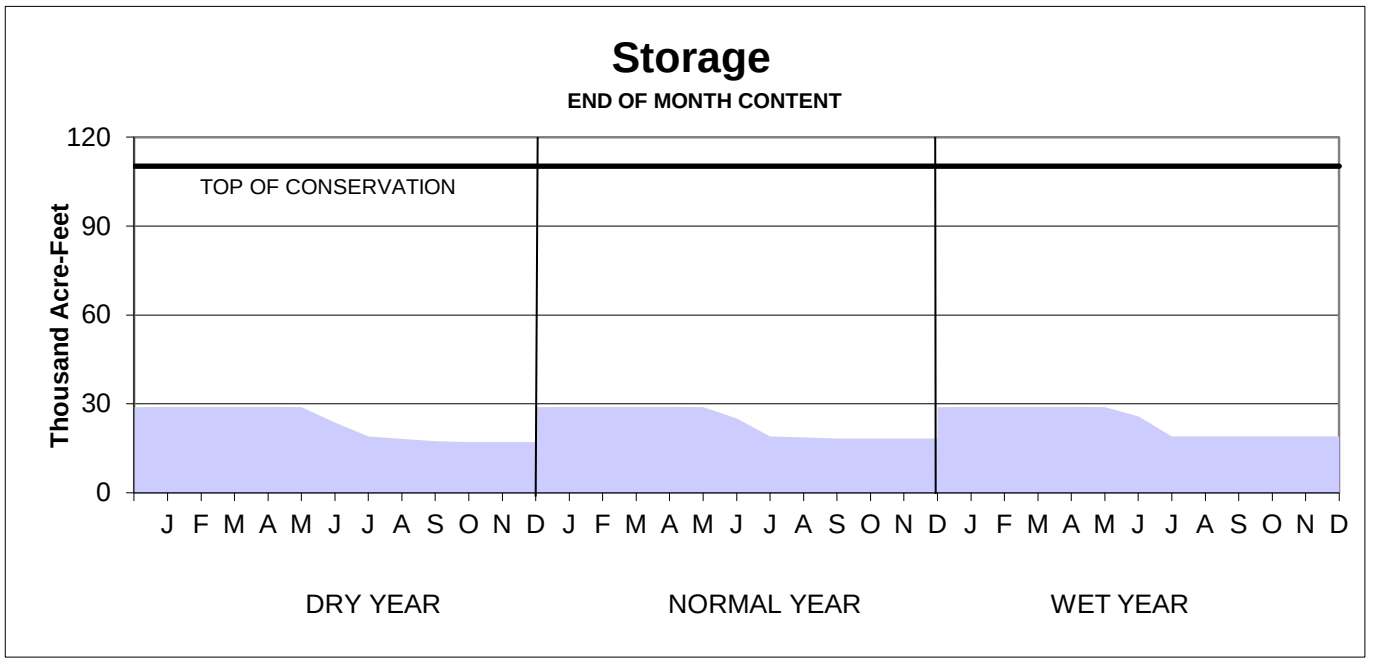


EXHIBIT 7B

SWANSON LAKE

2014 OPERATION PLAN





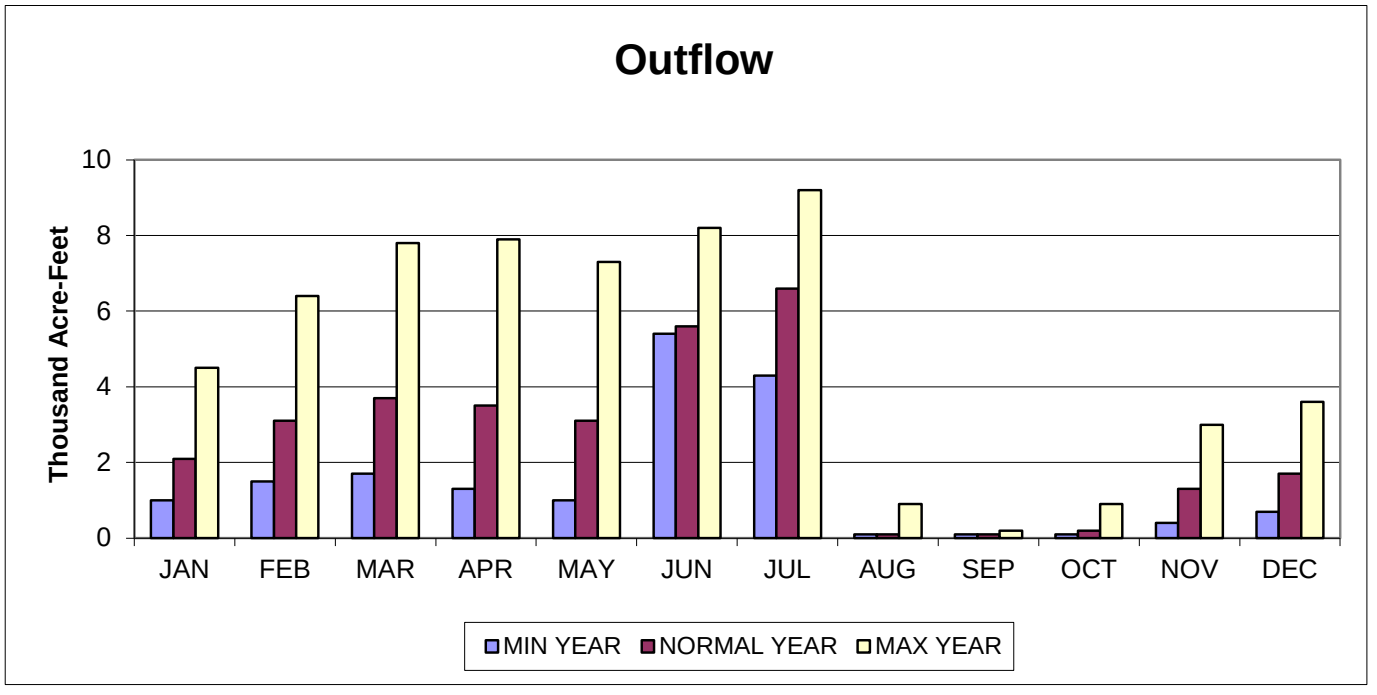
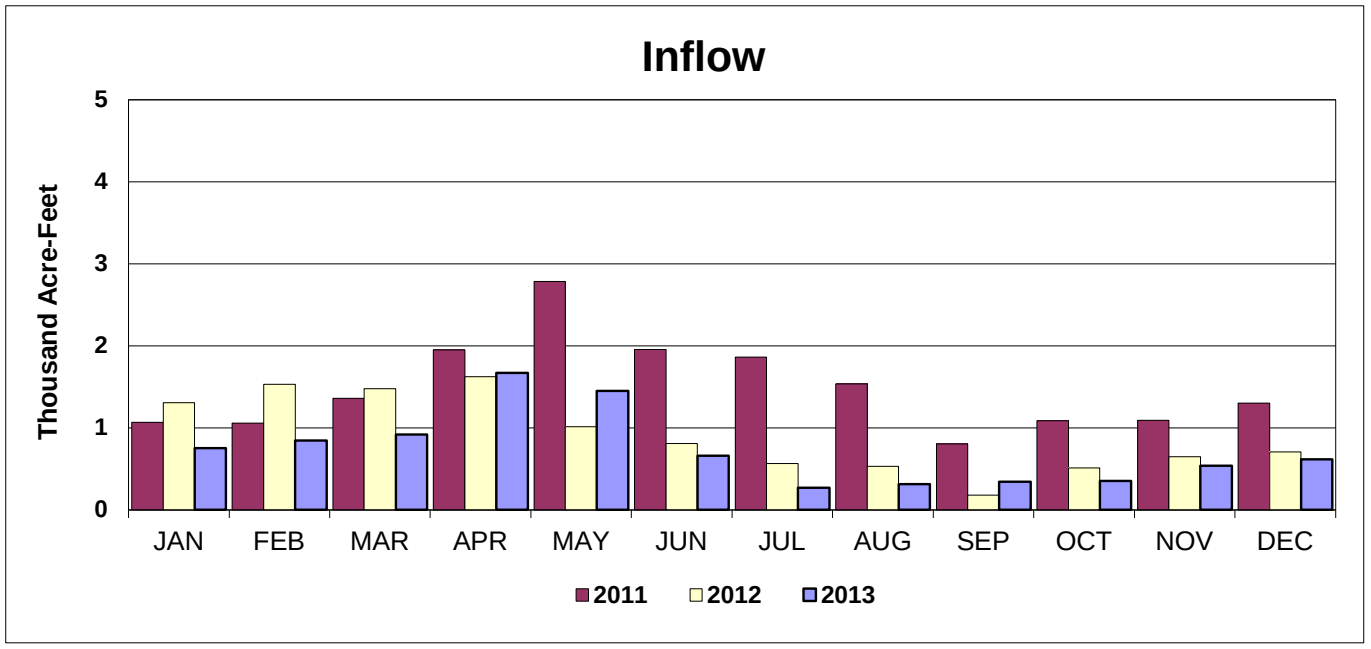
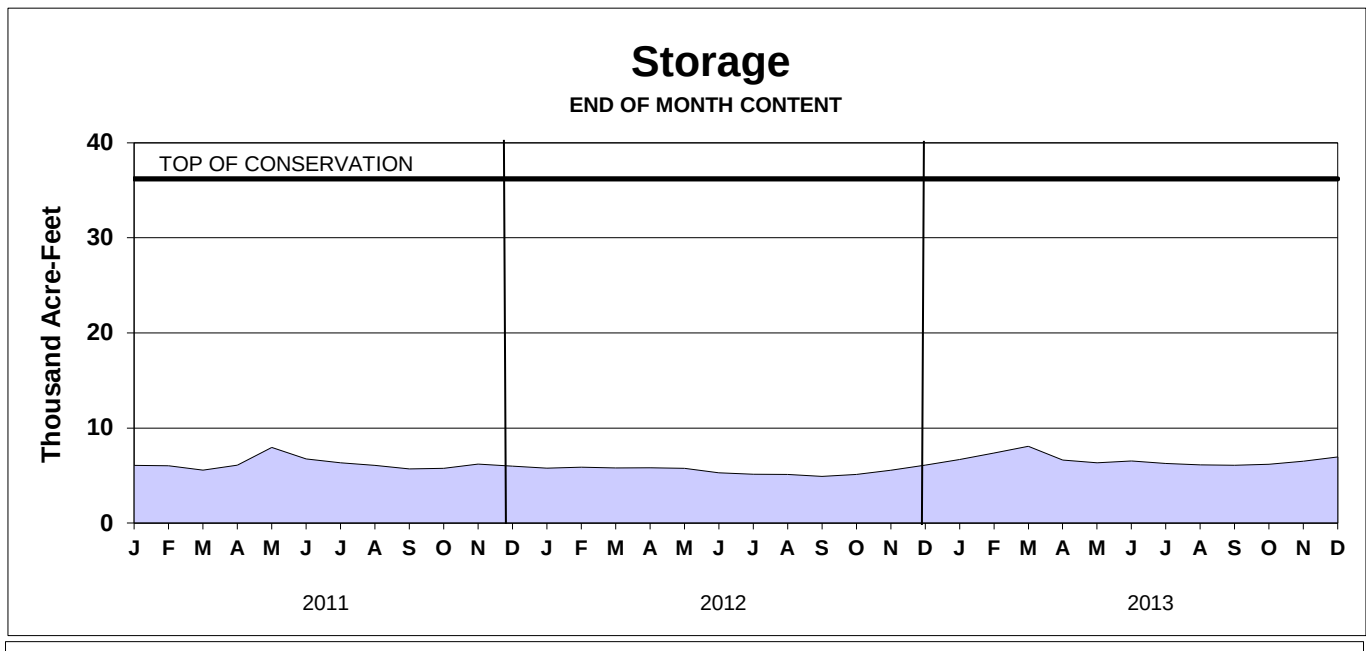


EXHIBIT 8A

HUGH BUTLER LAKE

ACTUAL OPERATION





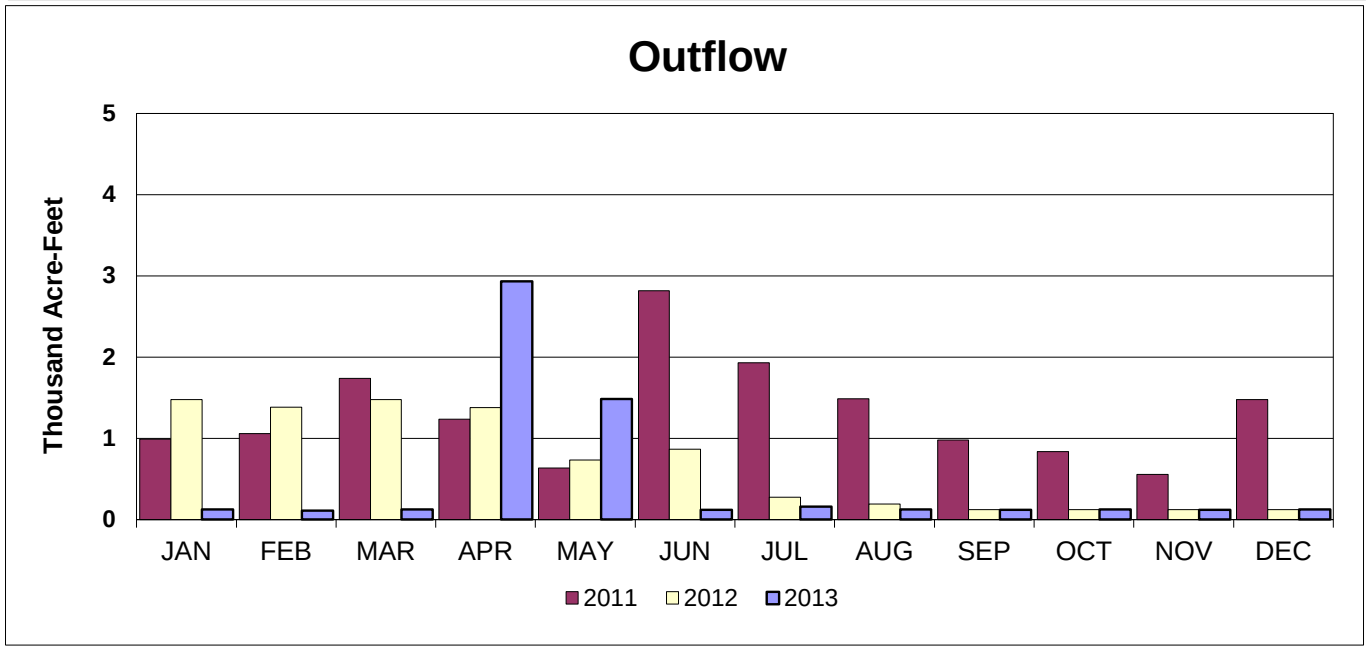
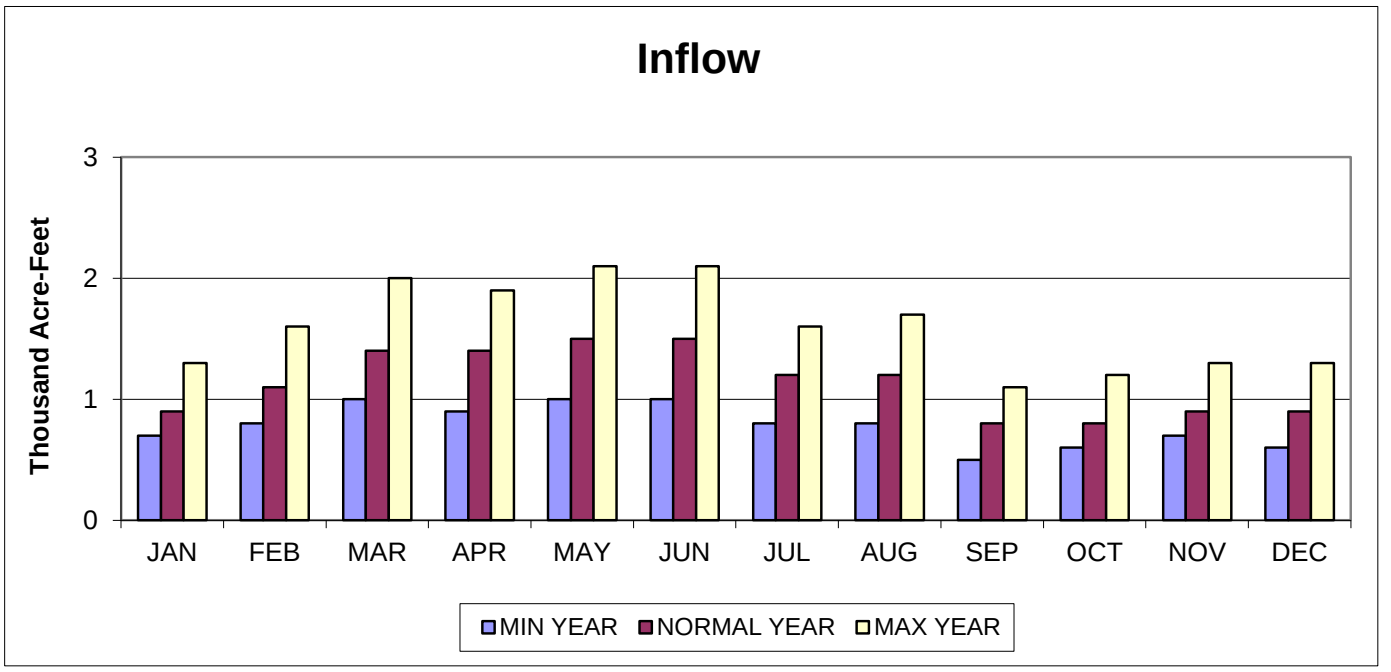
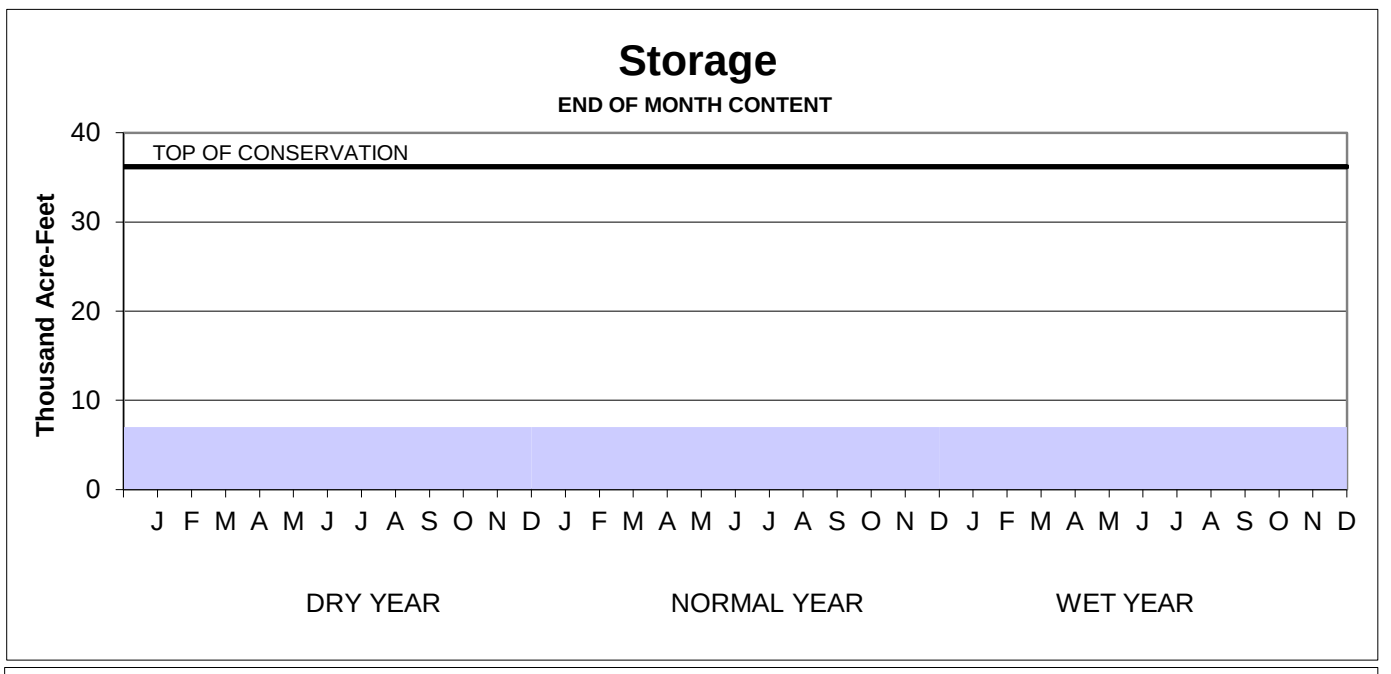


EXHIBIT 8B

HUGH BUTLER LAKE

2014 OPERATION PLAN





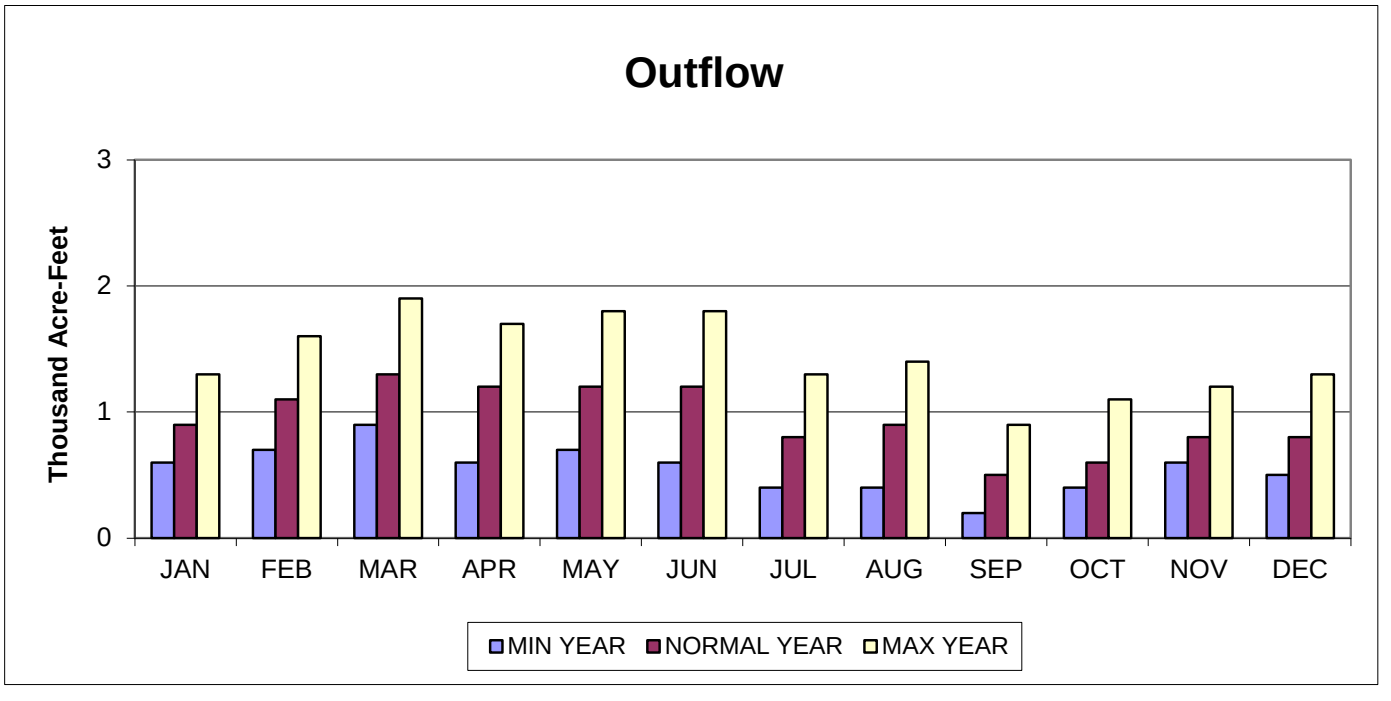
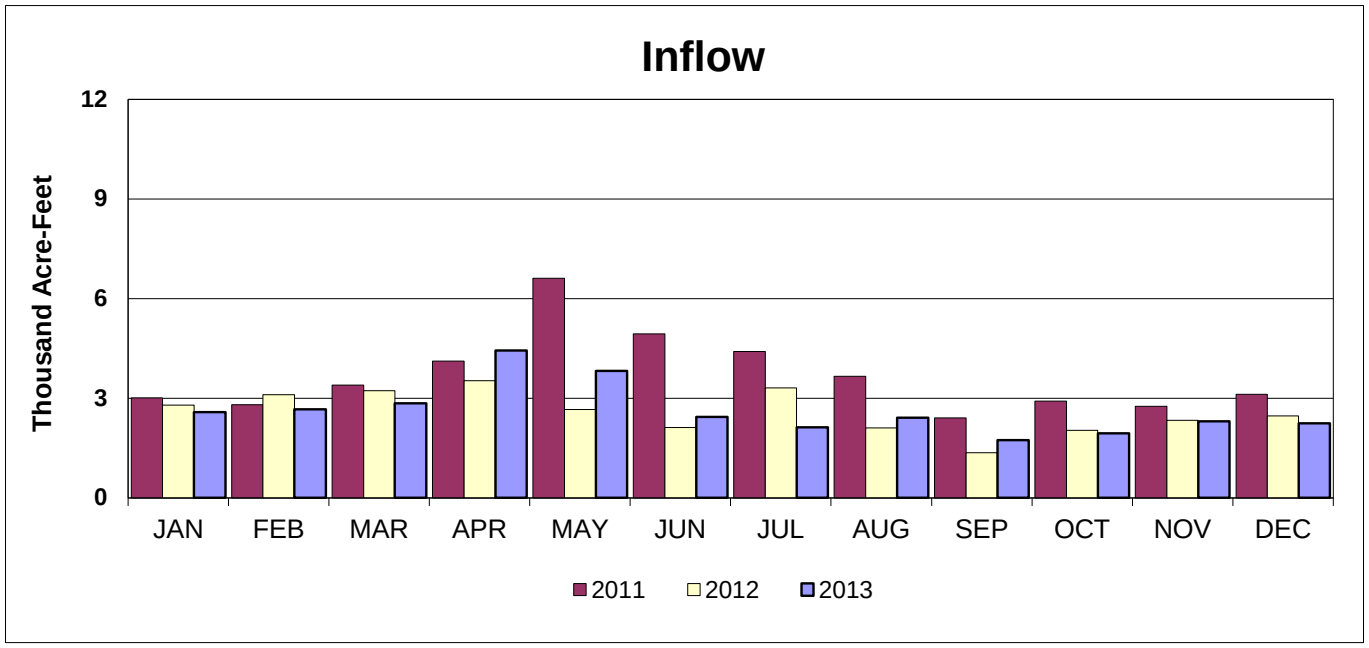
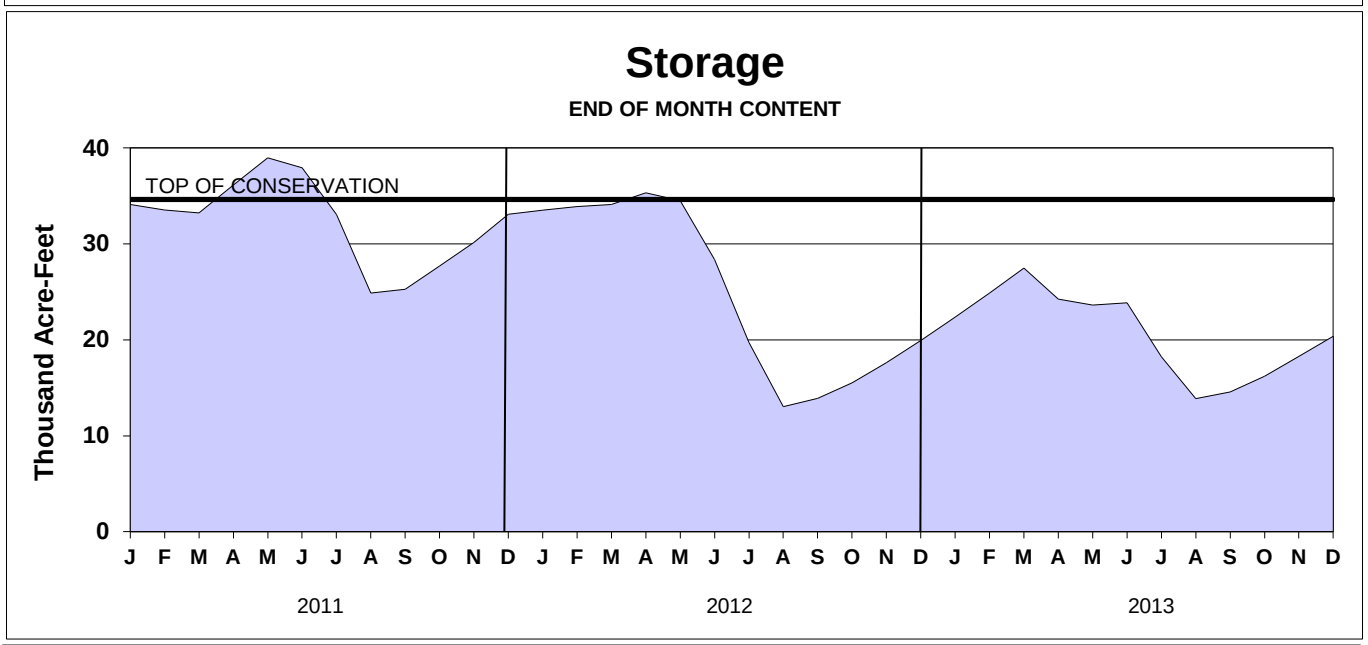


EXHIBIT 9A

HARRY STRUNK LAKE

ACTUAL OPERATION





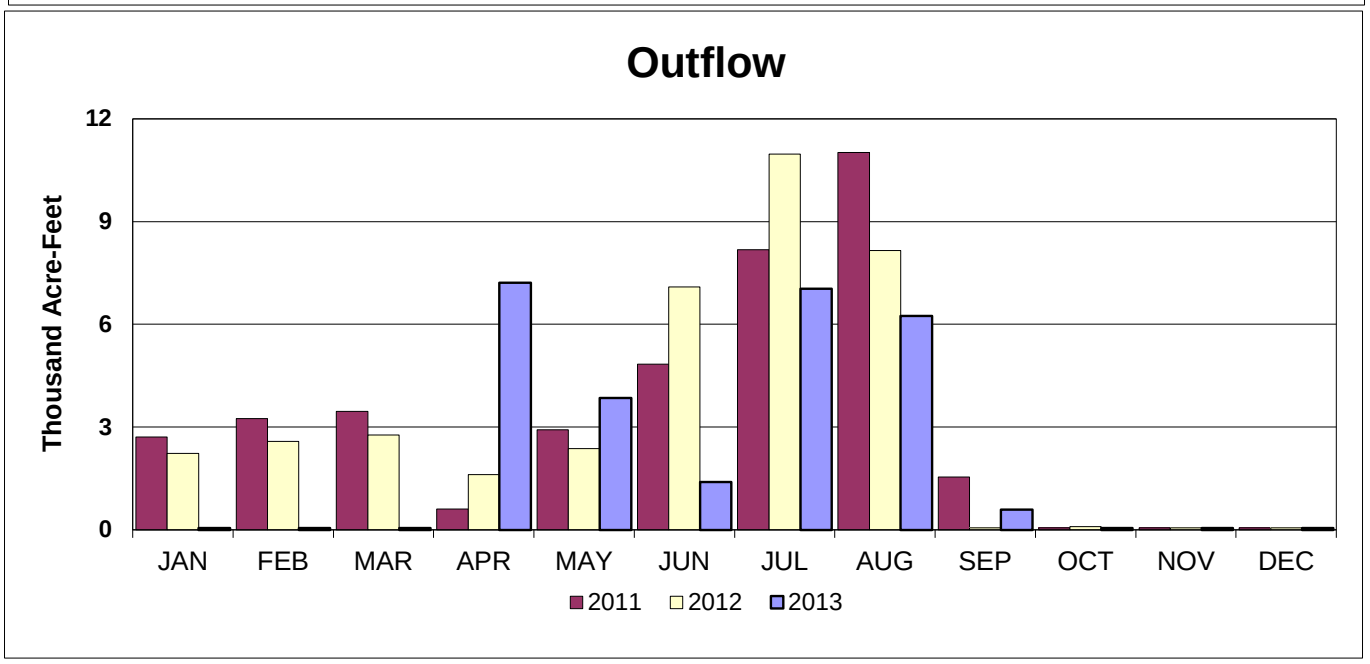
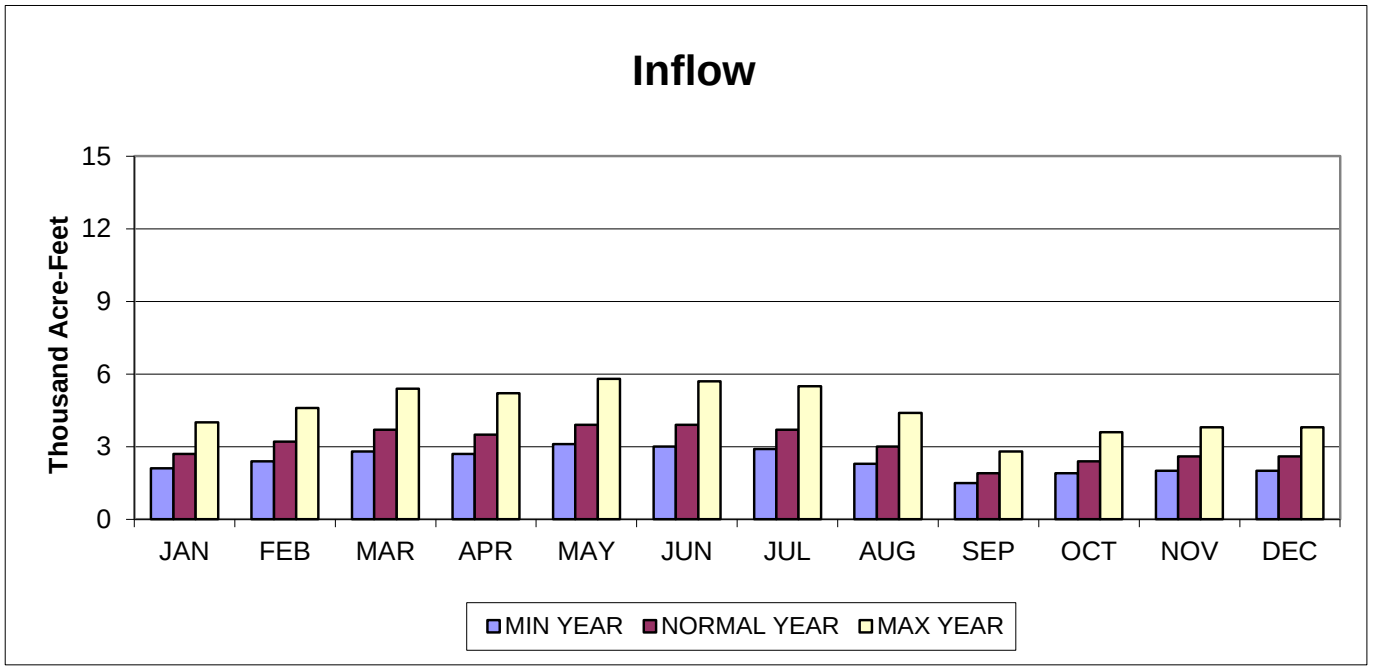
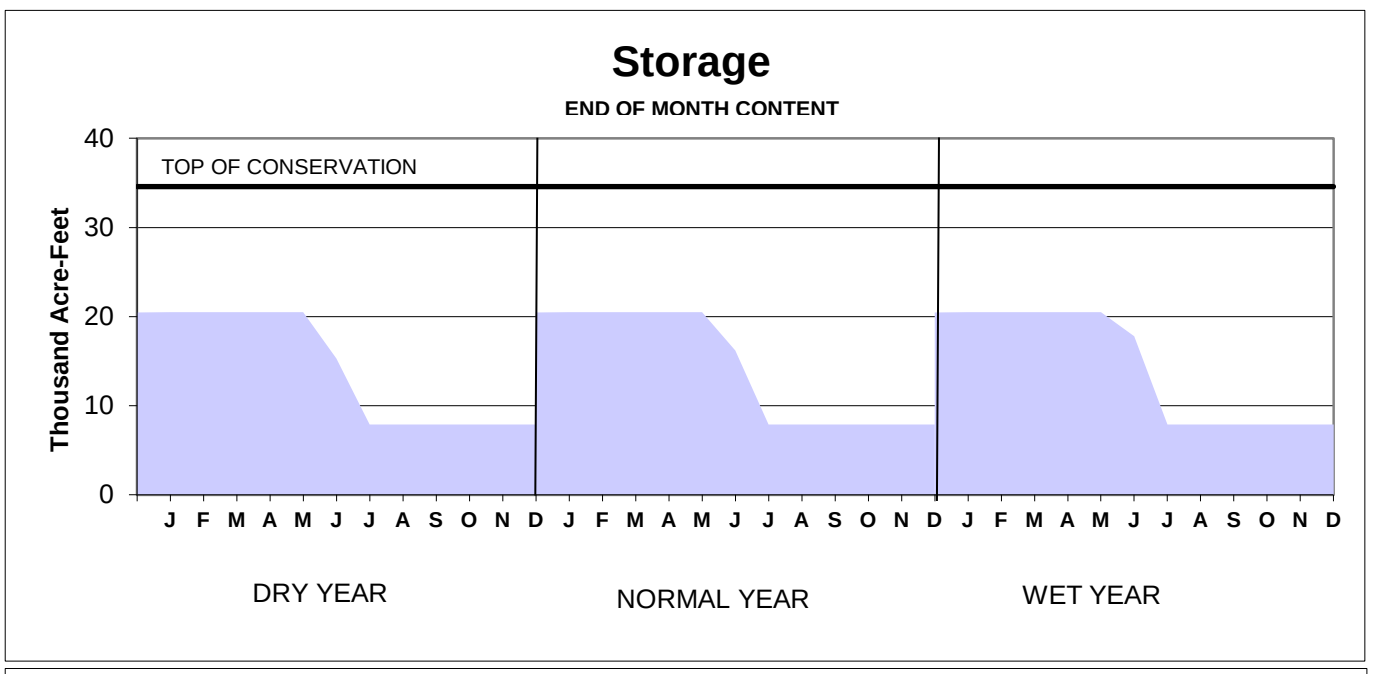


EXHIBIT 9B

HARRY STRUNK LAKE

2014 OPERATION PLAN





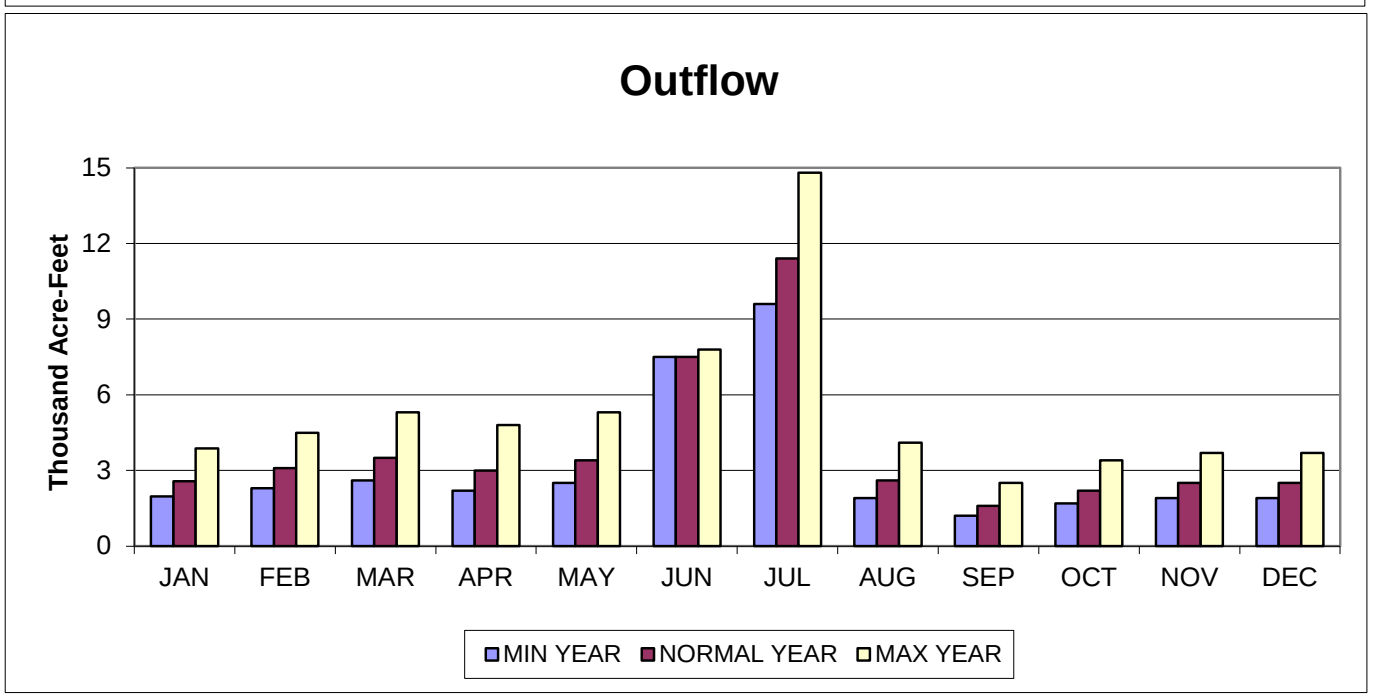
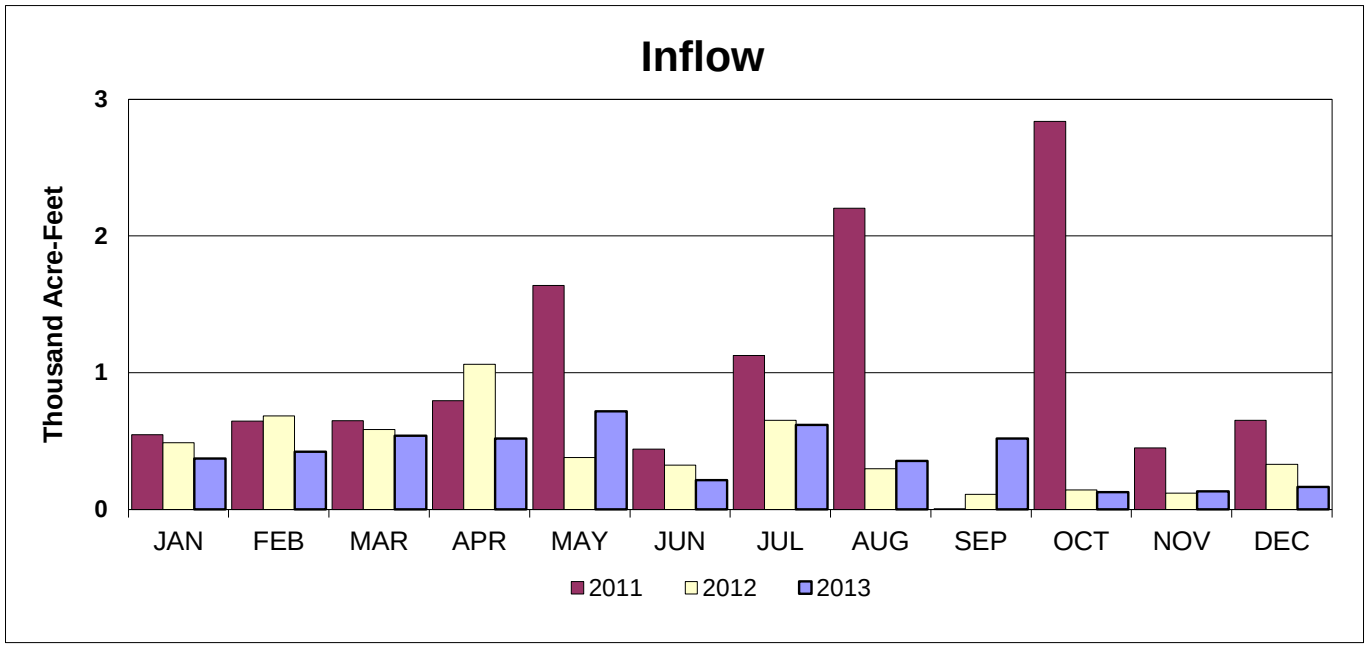
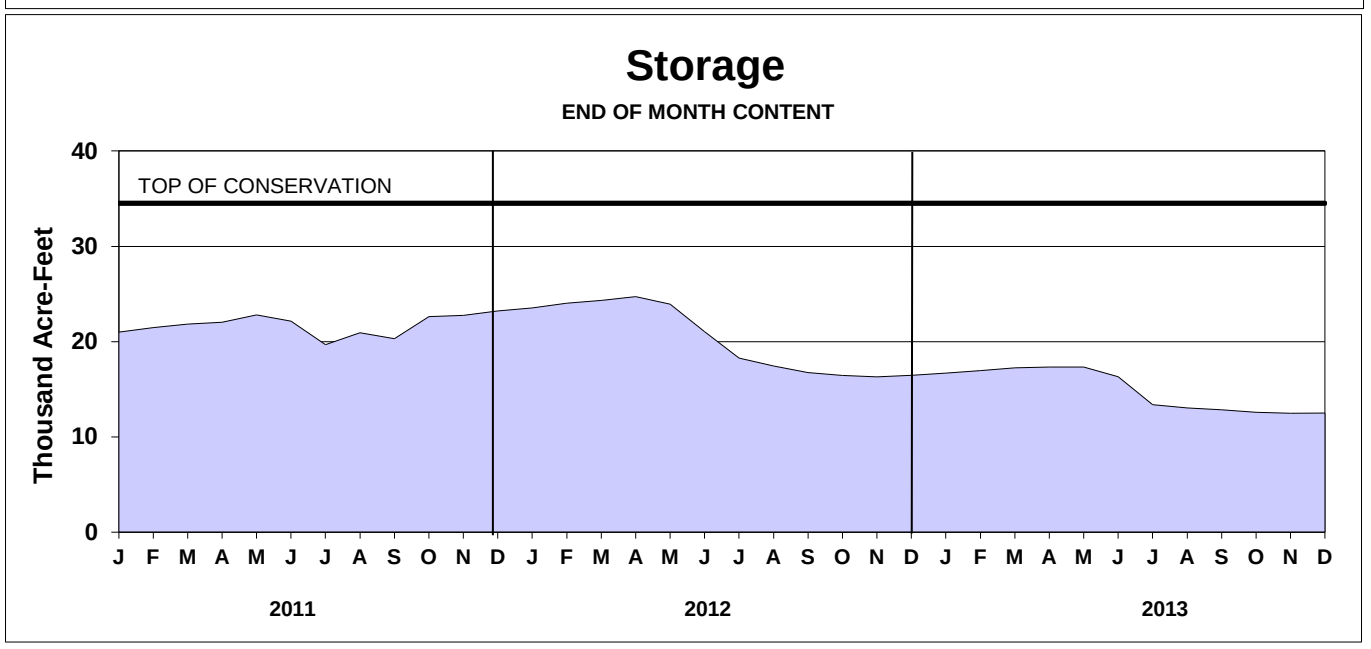


EXHIBIT 10A

KEITH SEBELIUS LAKE

ACTUAL OPERATION





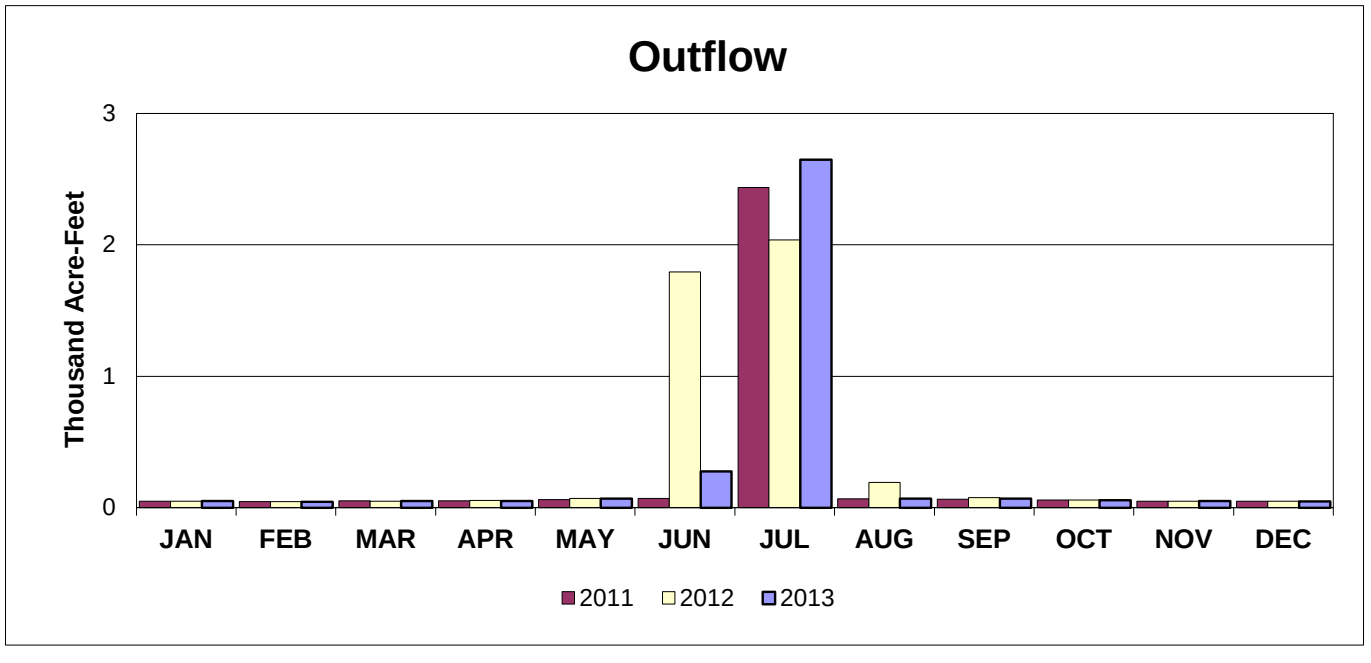
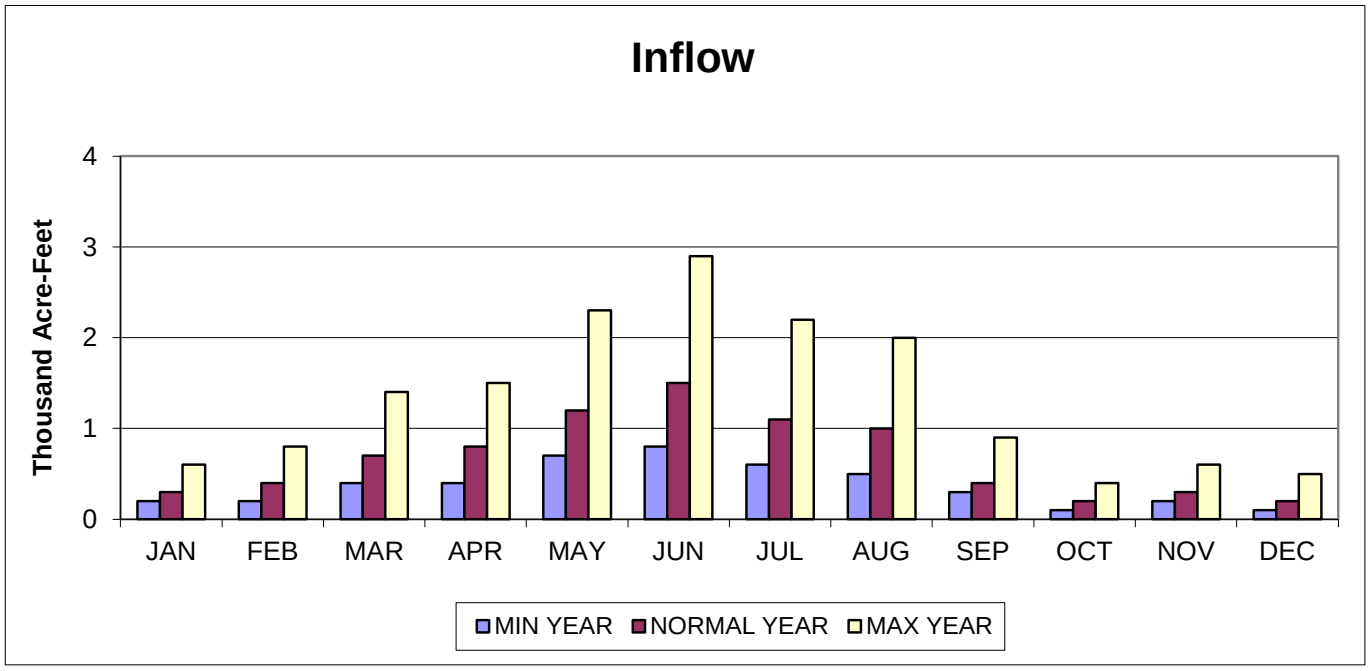
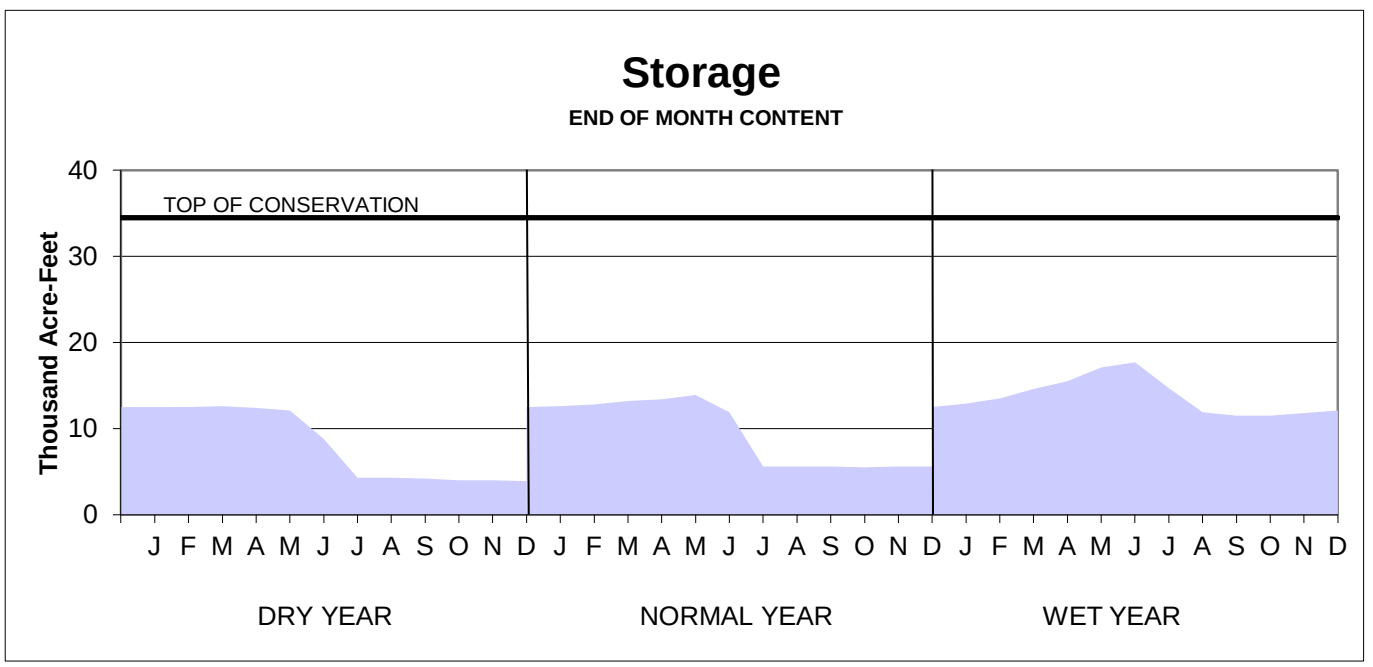


EXHIBIT 10B

KEITH SEBELIUS LAKE

2014 OPERATION PLAN





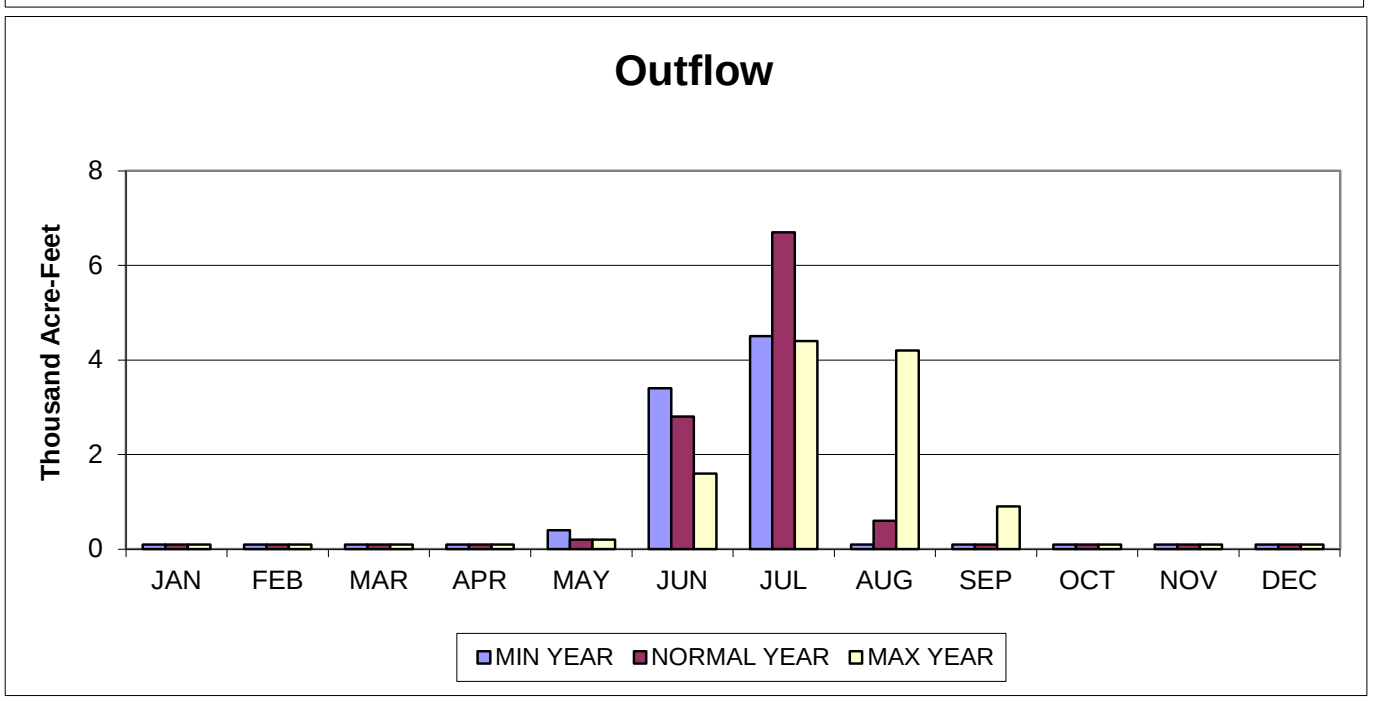
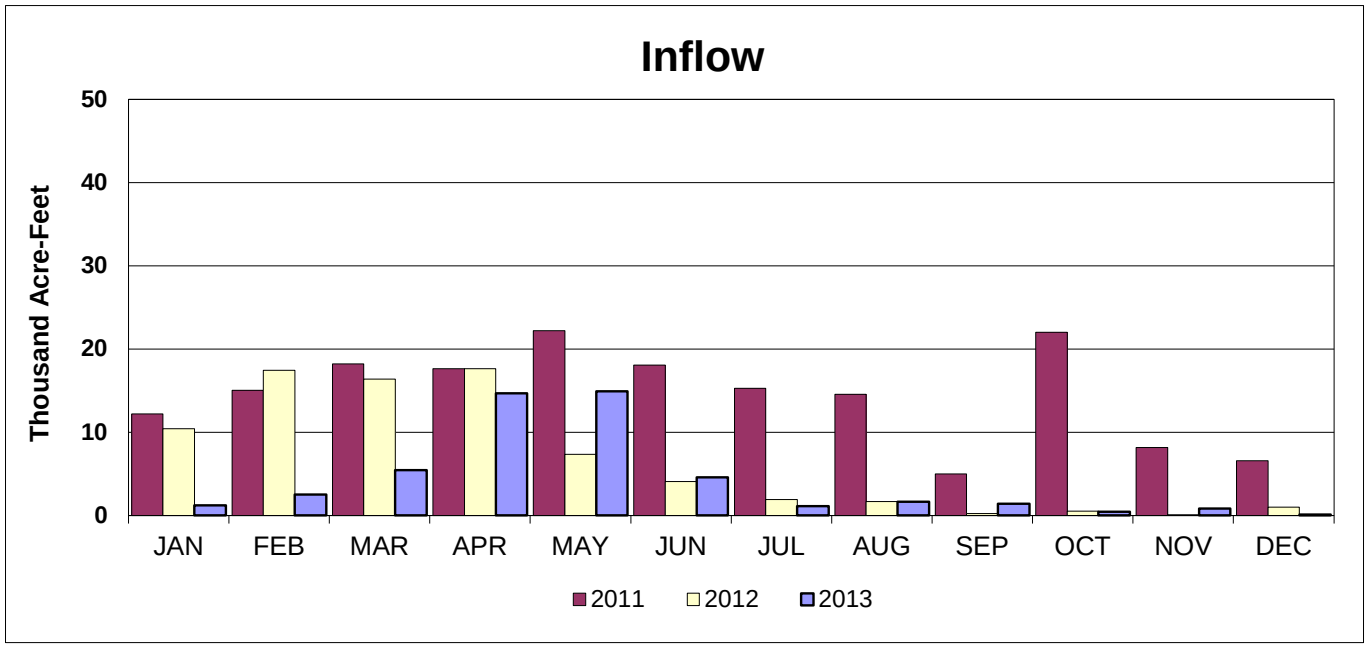
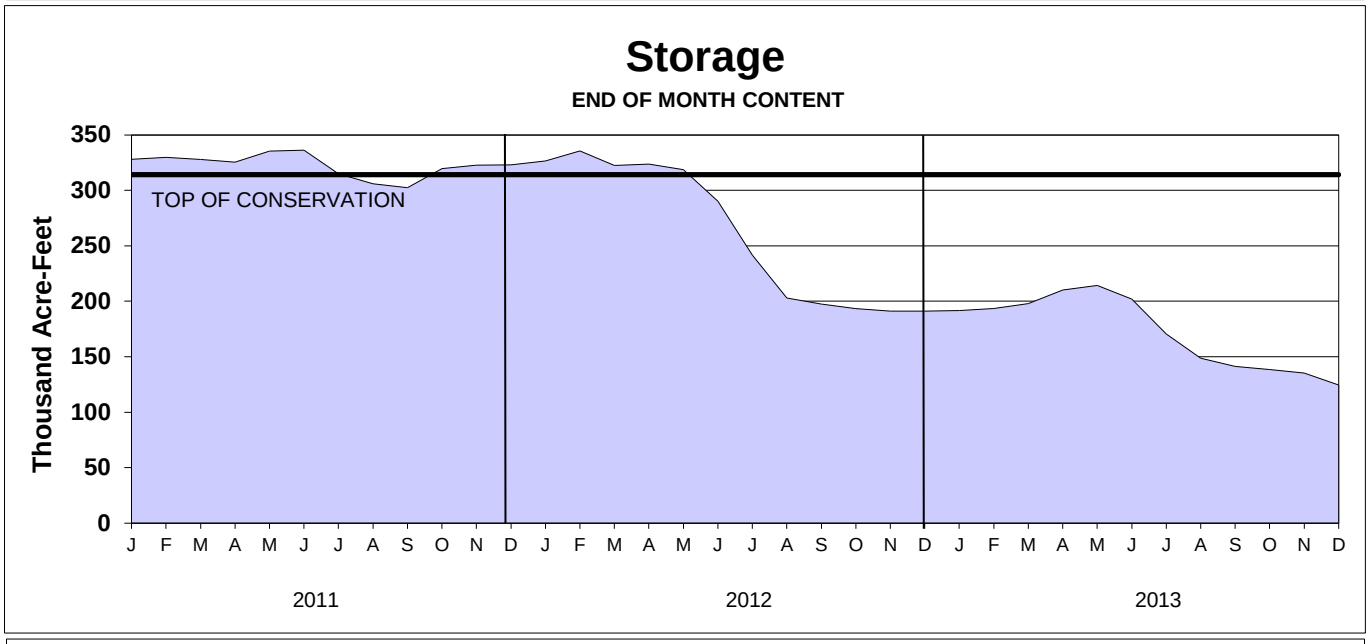


EXHIBIT 11A

HARLAN COUNTY LAKE

ACTUAL OPERATION





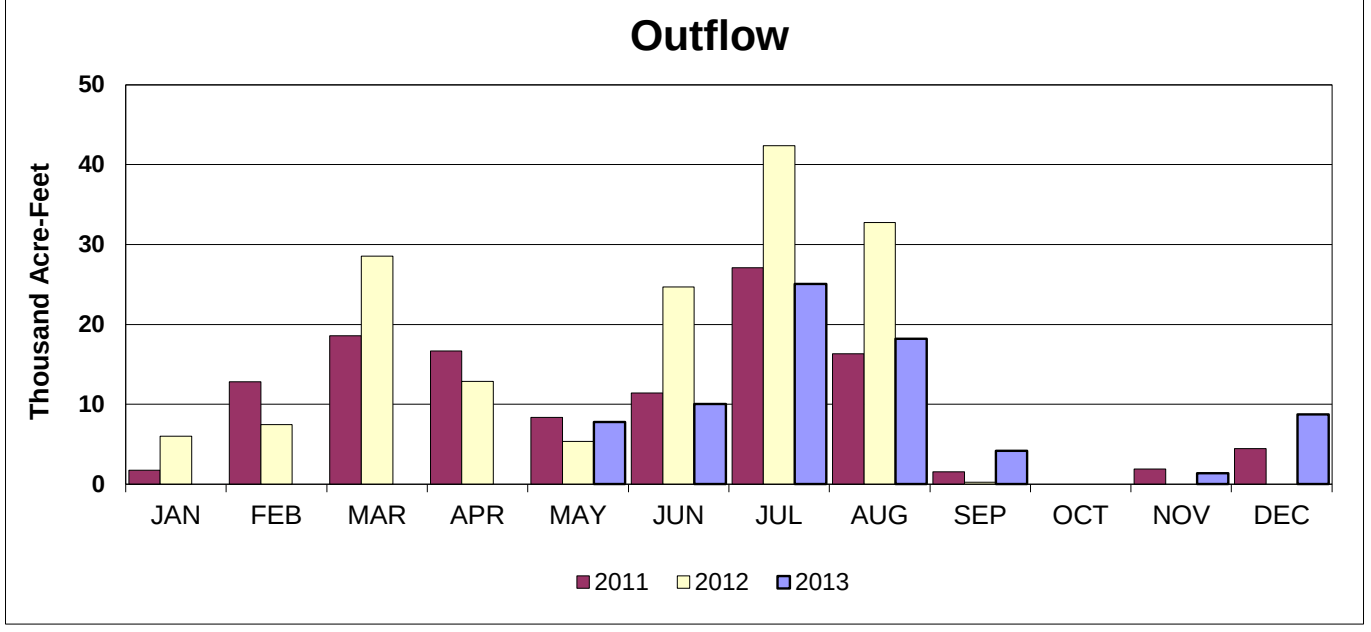
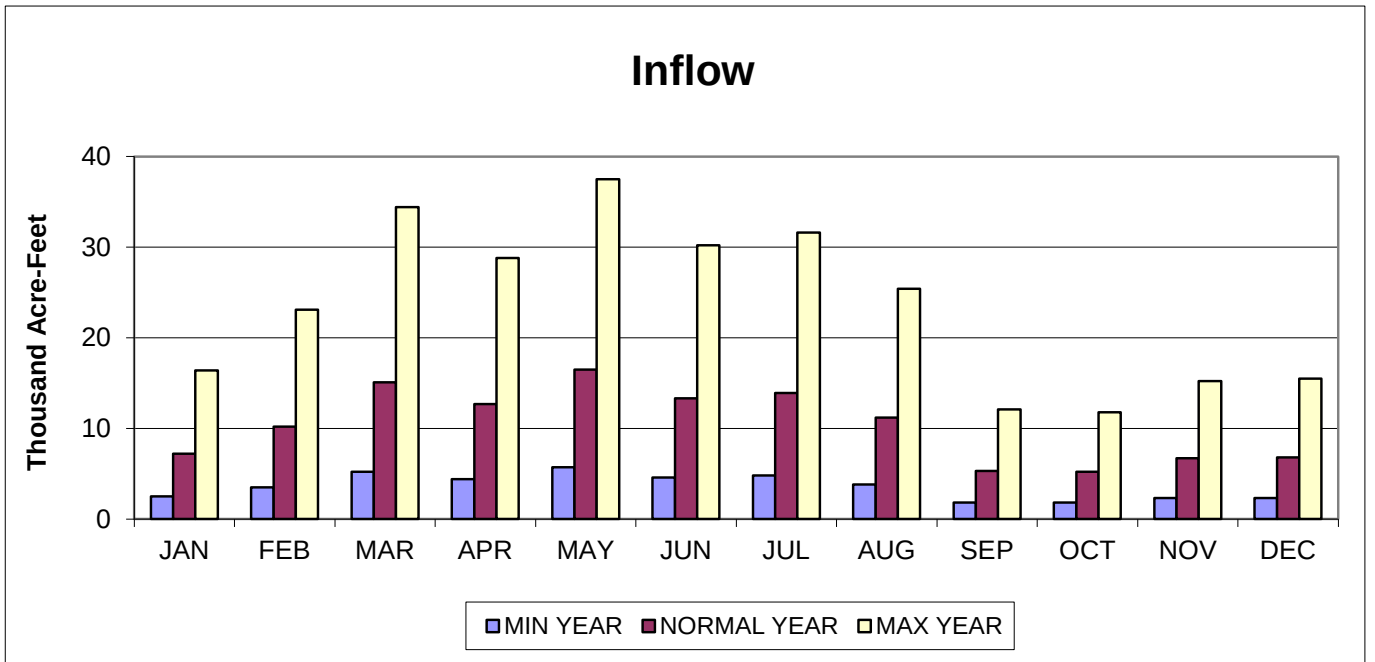
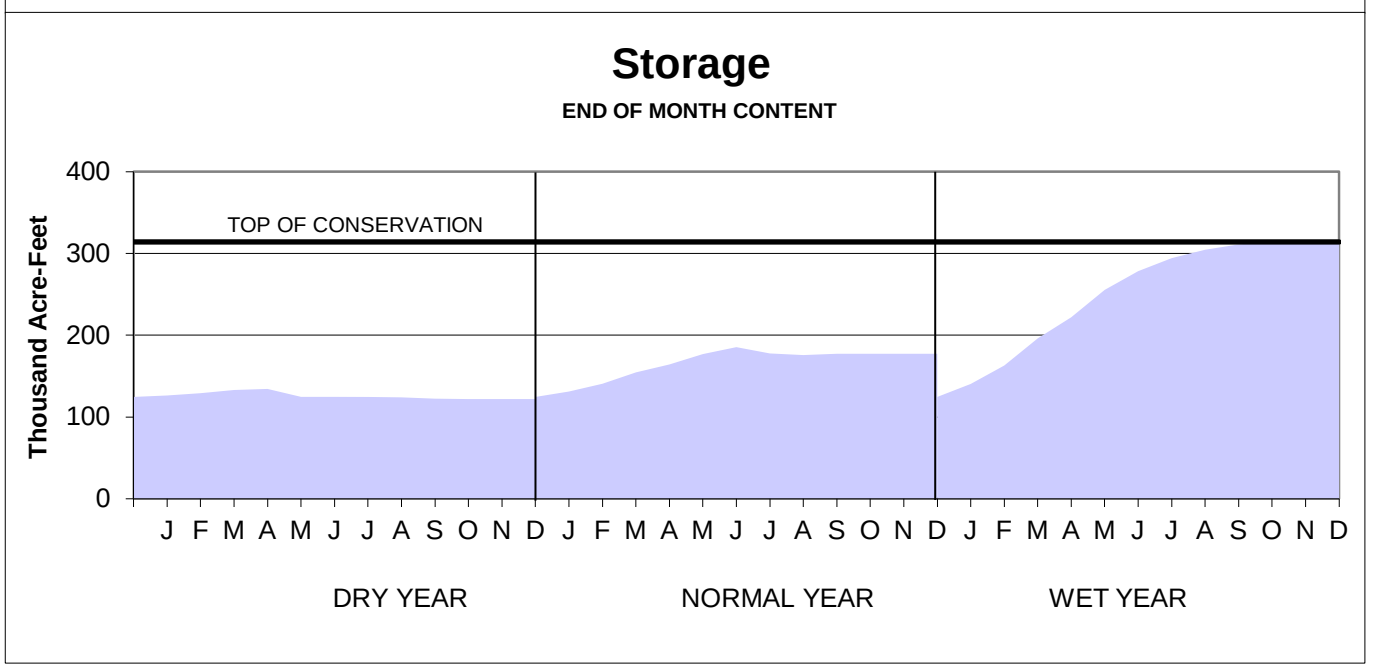


EXHIBIT 11B

HARLAN COUNTY LAKE

2014 OPERATION PLAN





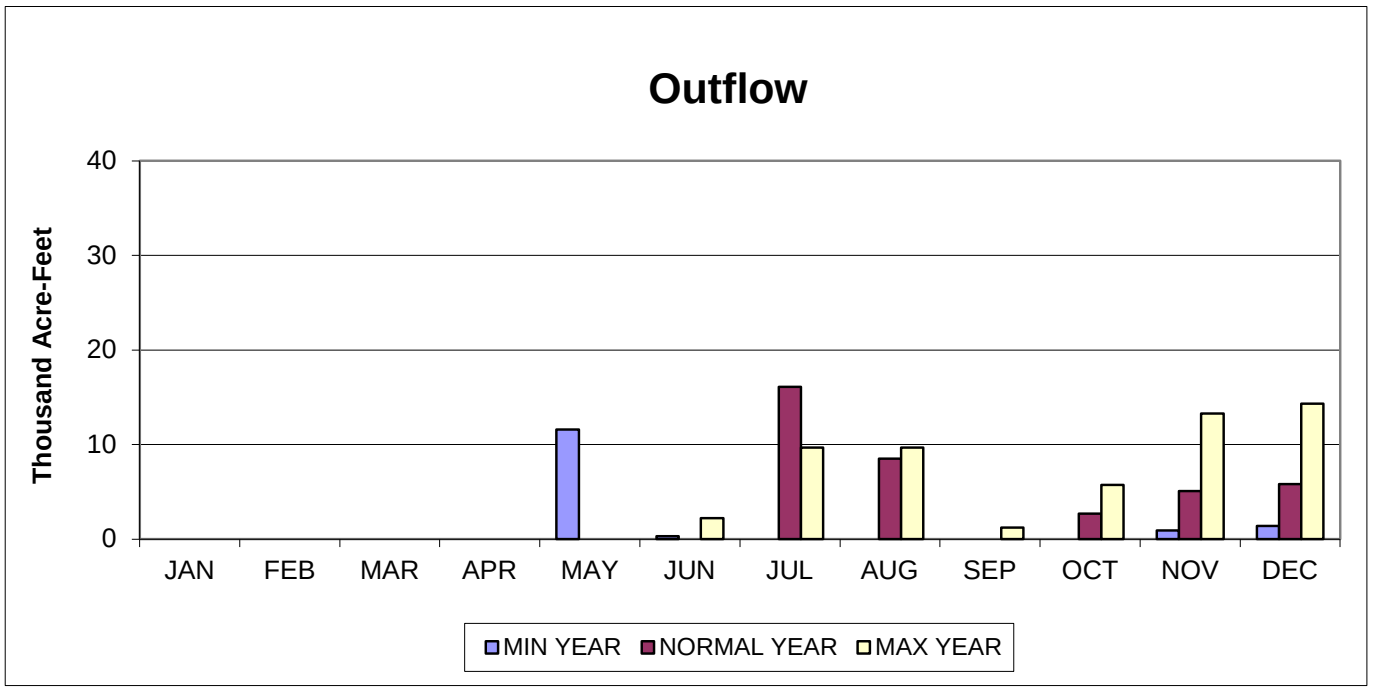
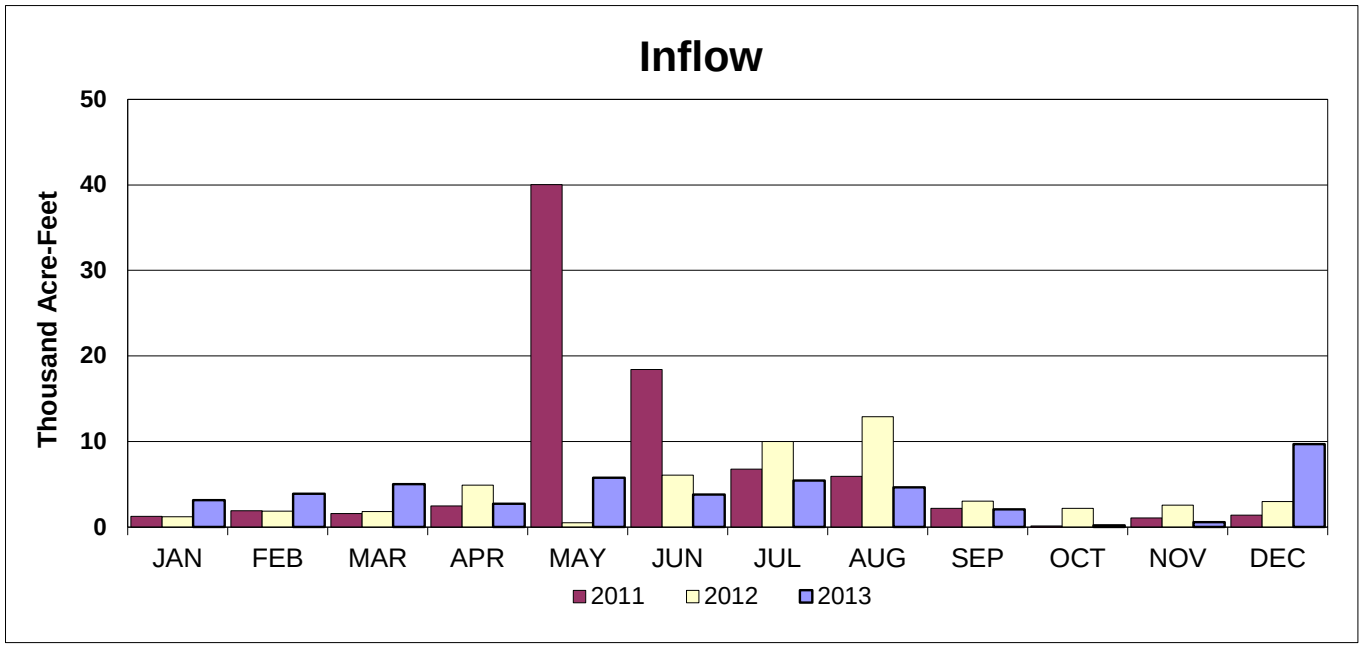
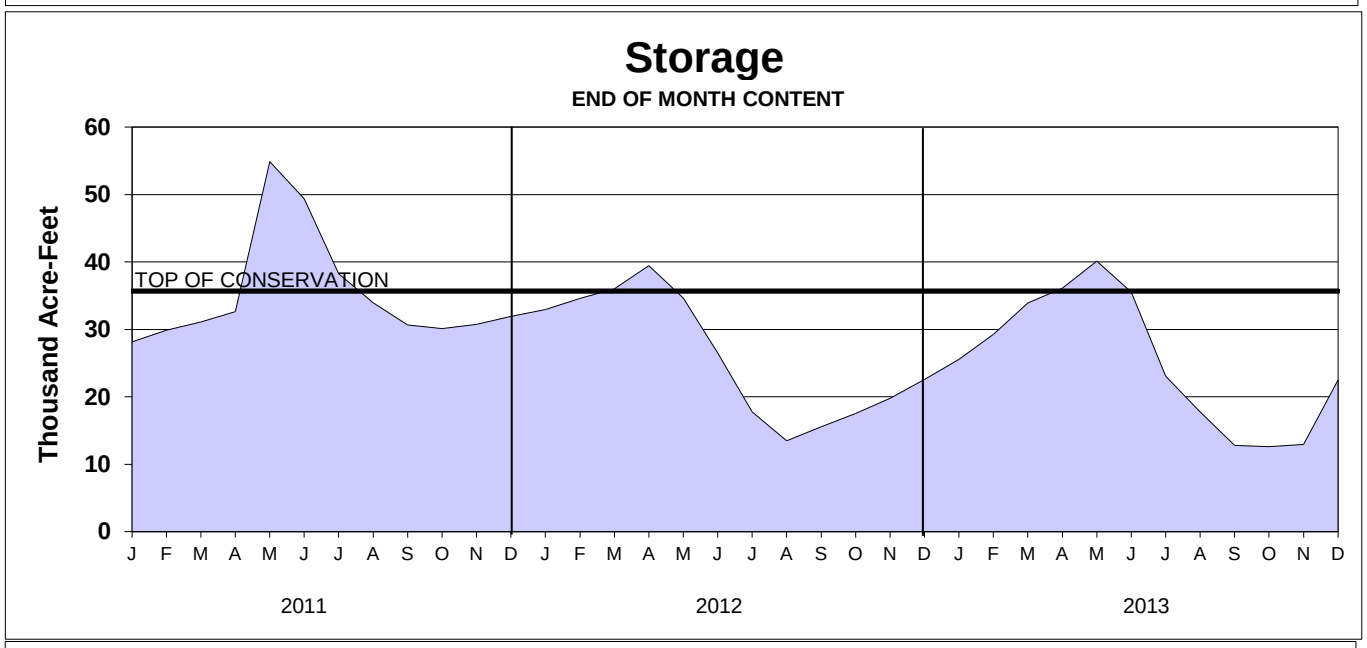


EXHIBIT 12A

LOVEWELL RESERVOIR

ACTUAL OPERATION





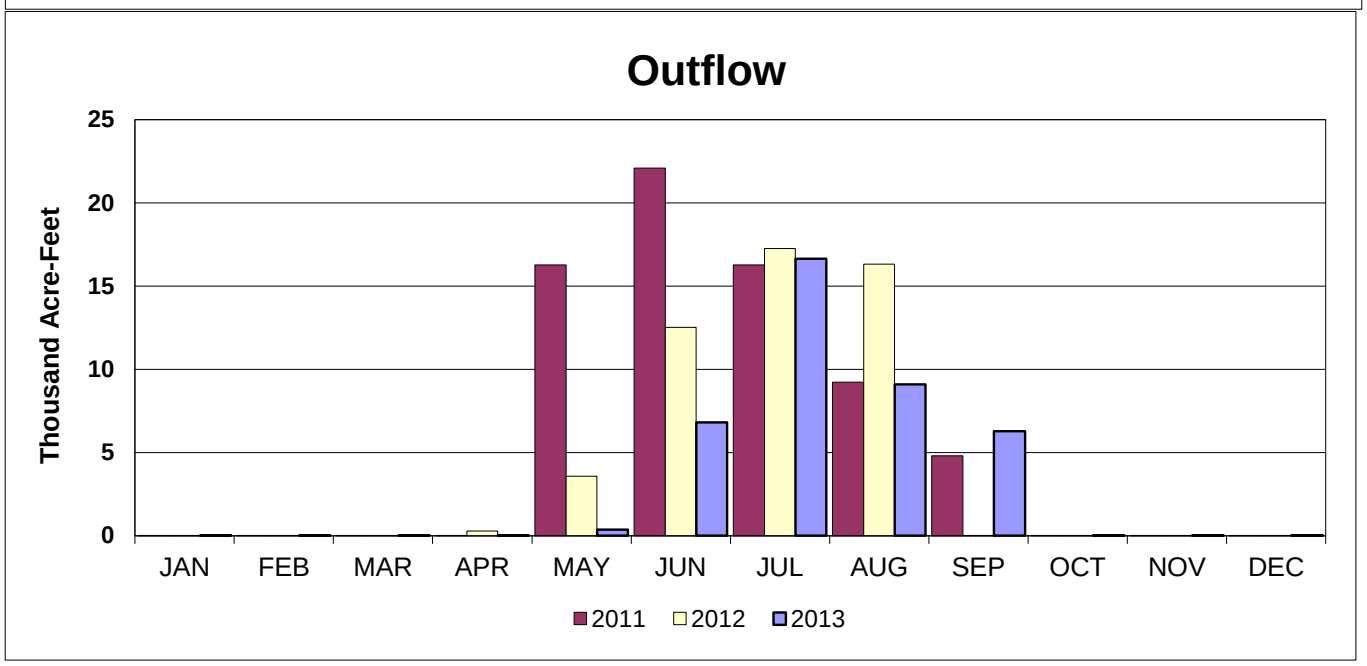
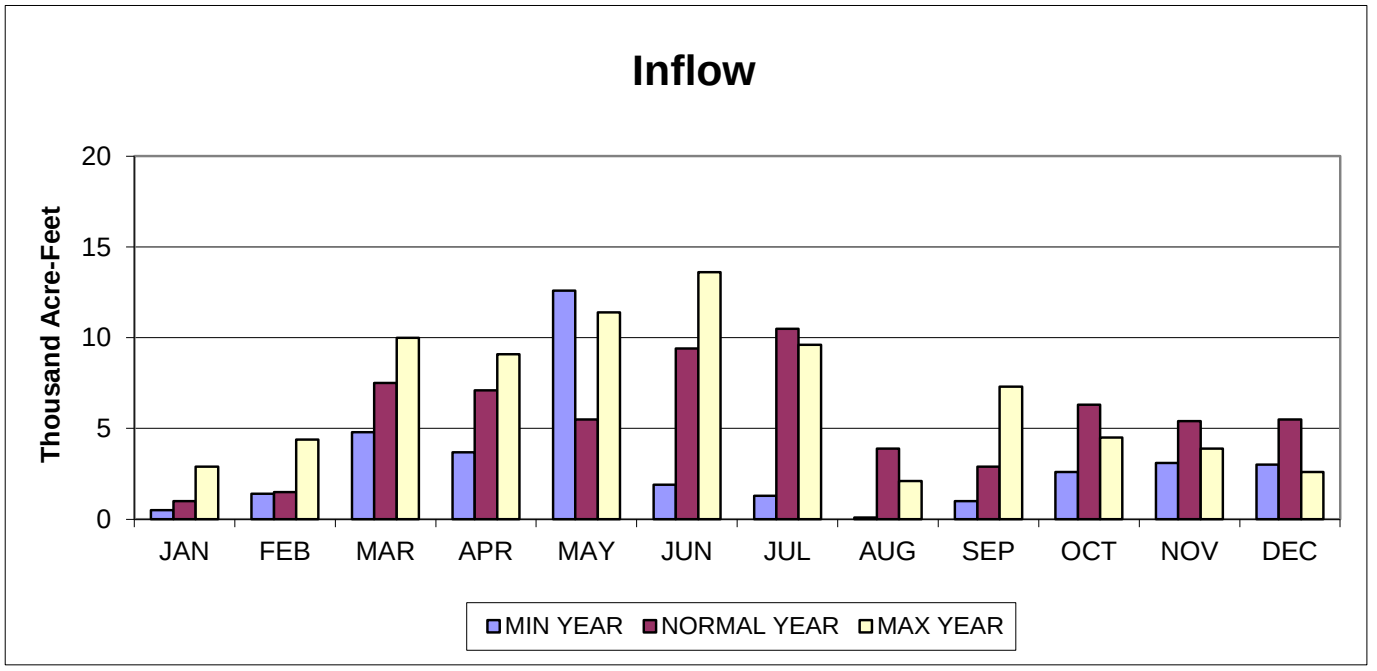
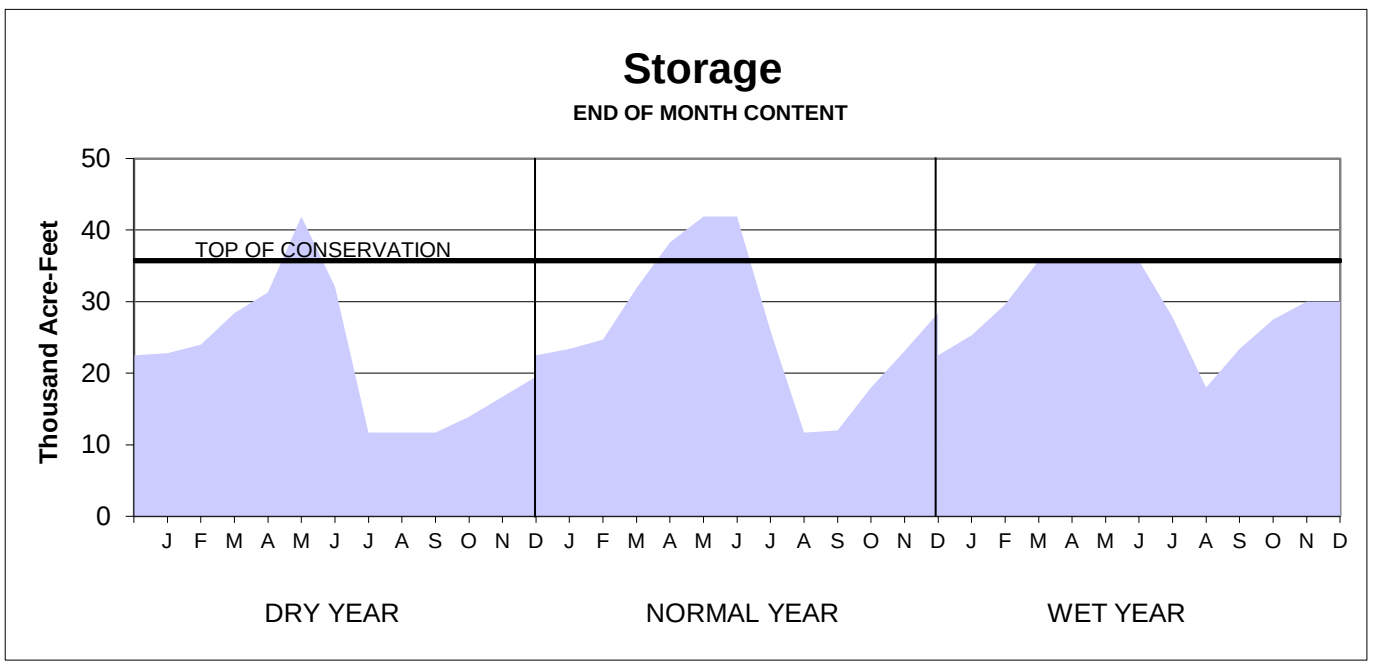


EXHIBIT 12B

LOVEWELL RESERVOIR

2014 OPERATION PLAN





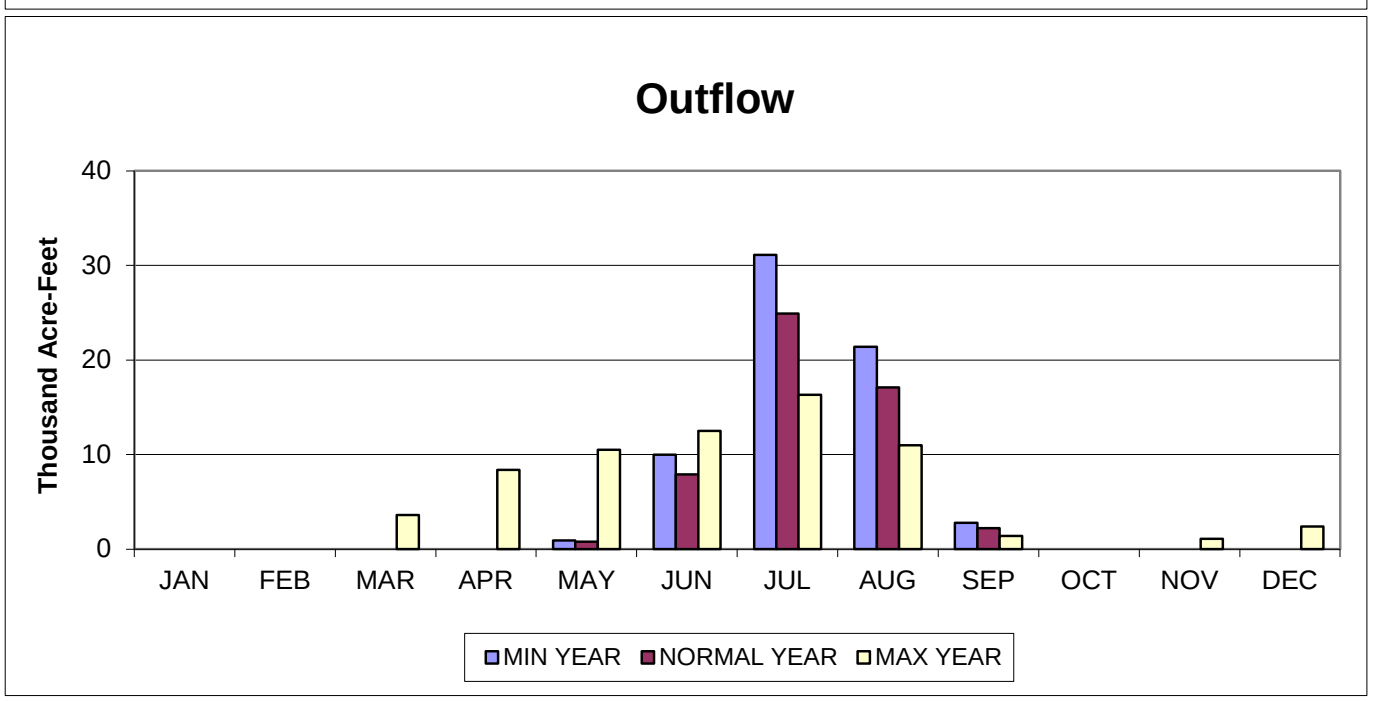
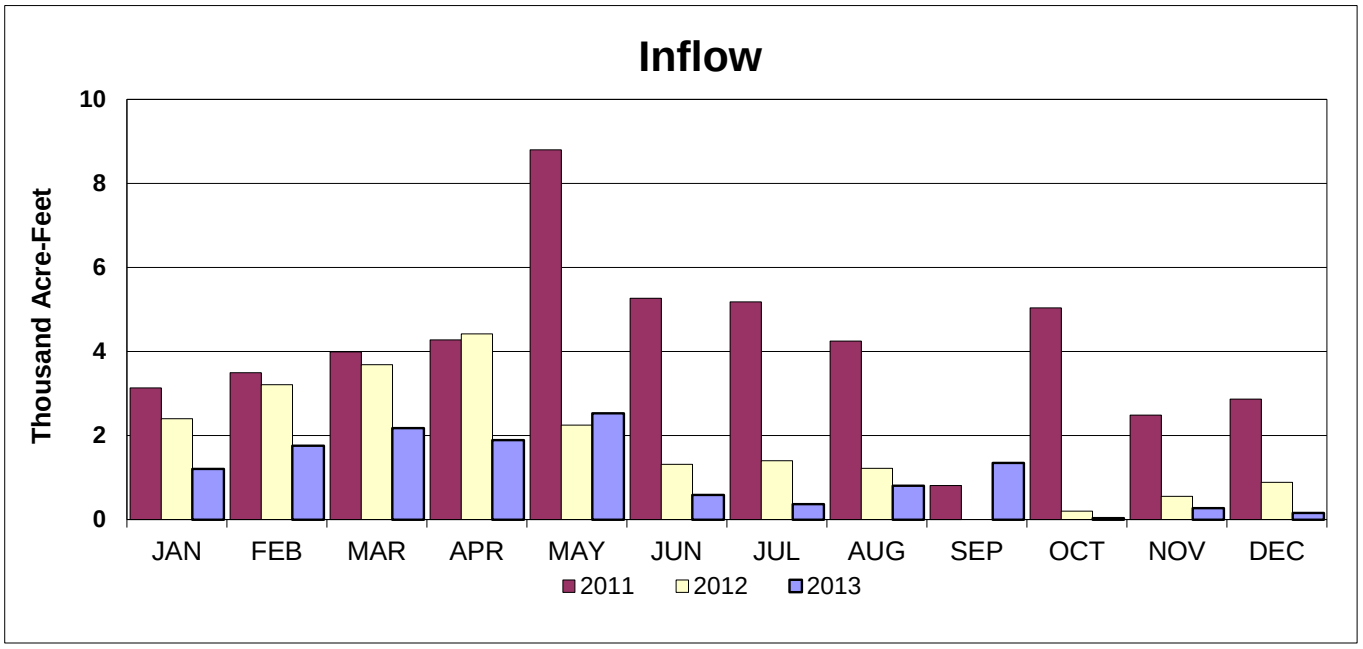
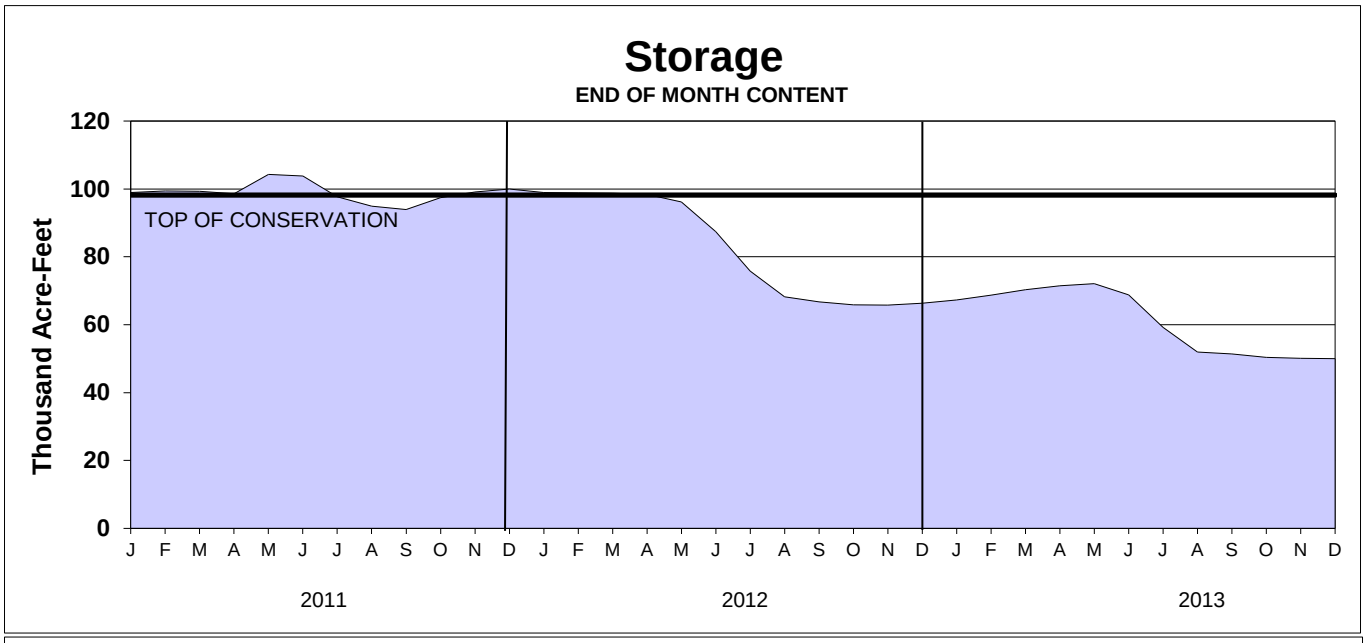


EXHIBIT 13A

KIRWIN RESERVOIR

ACTUAL OPERATION





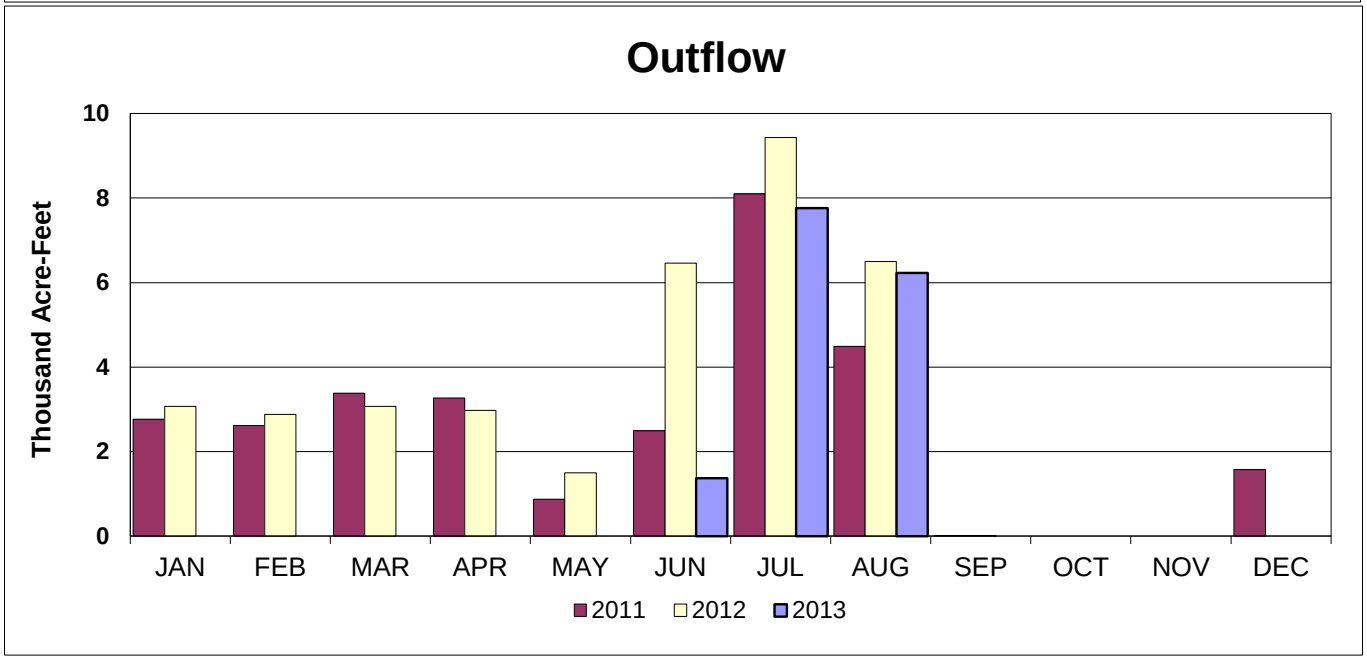
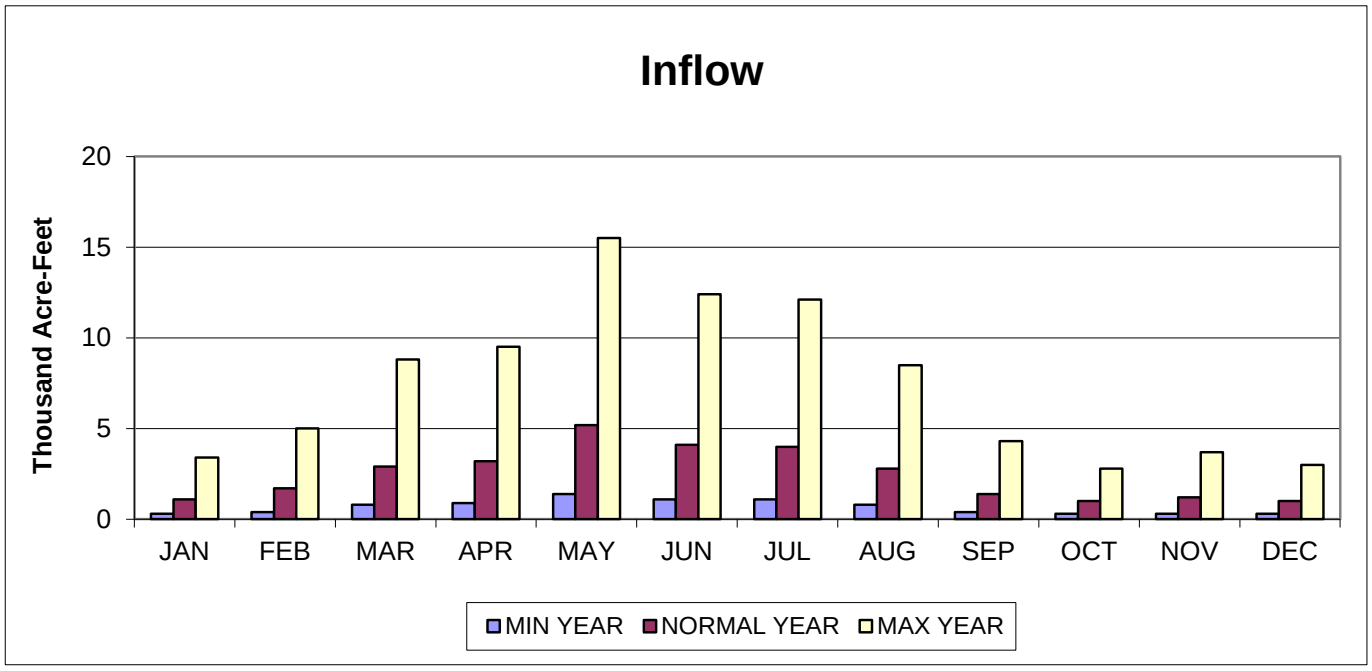
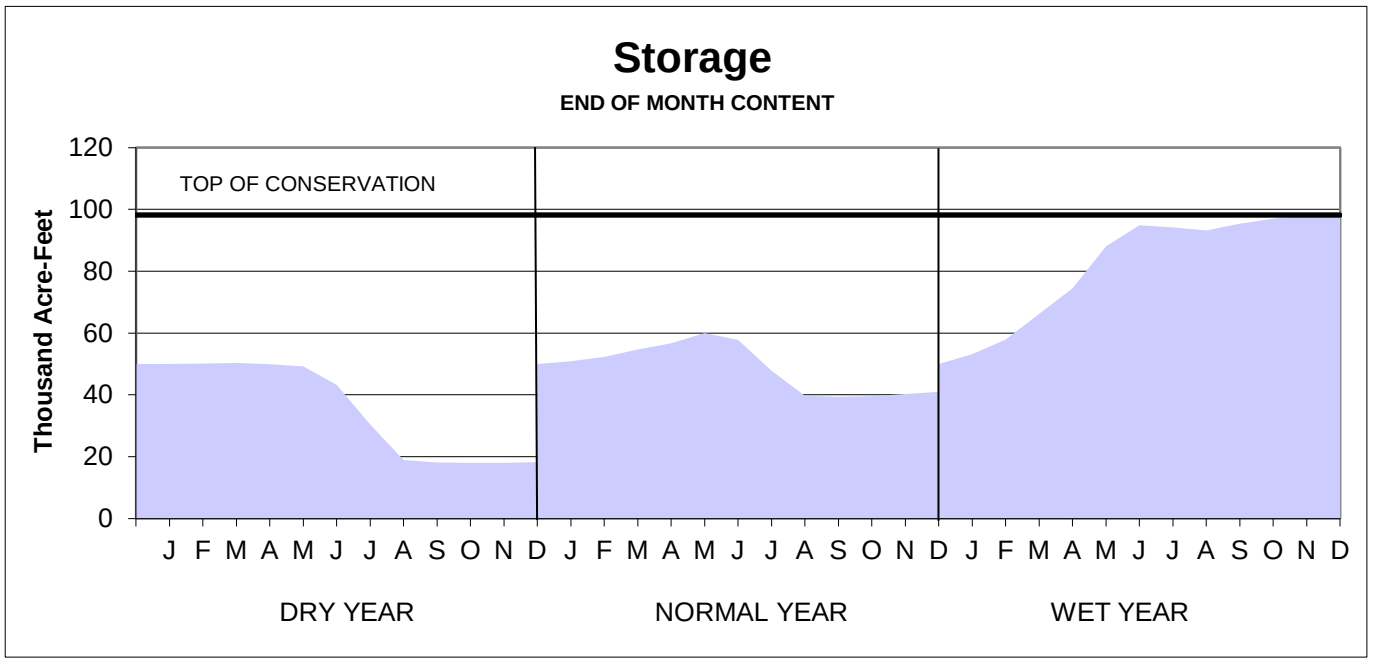


EXHIBIT 13B

KIRWIN RESERVOIR

2014 OPERATION PLAN





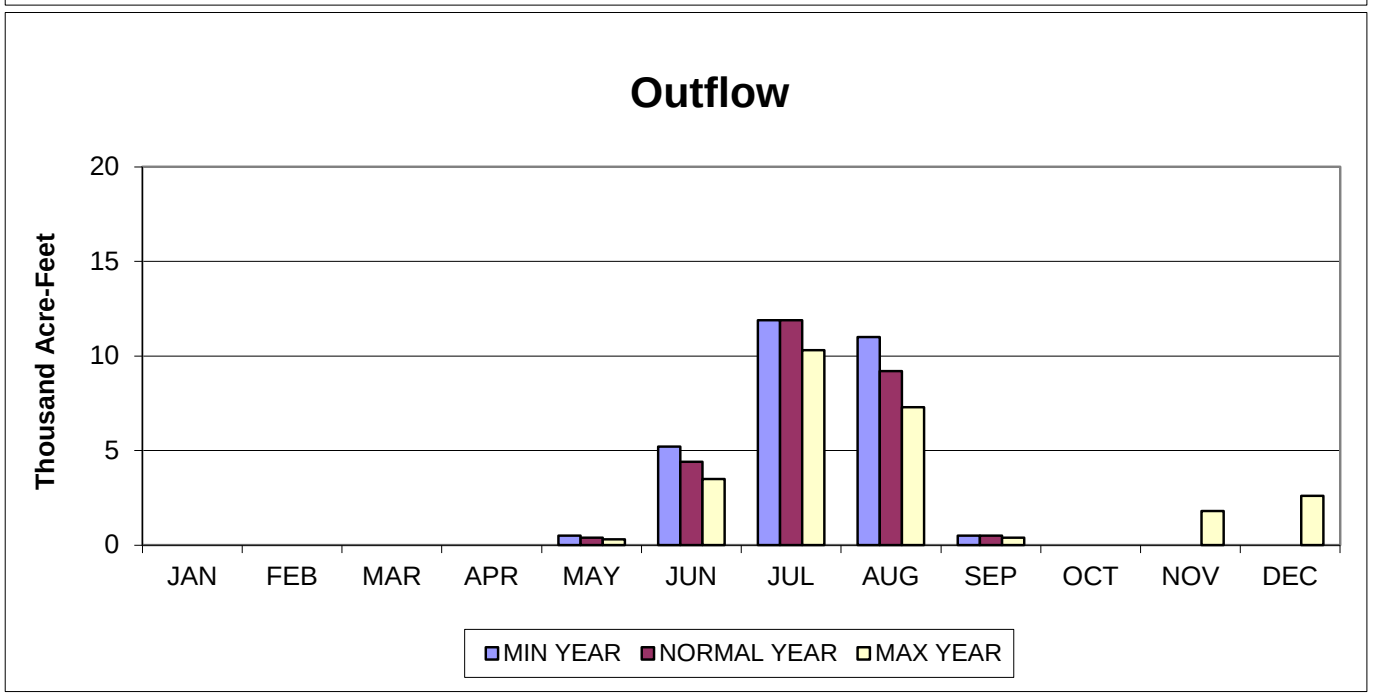
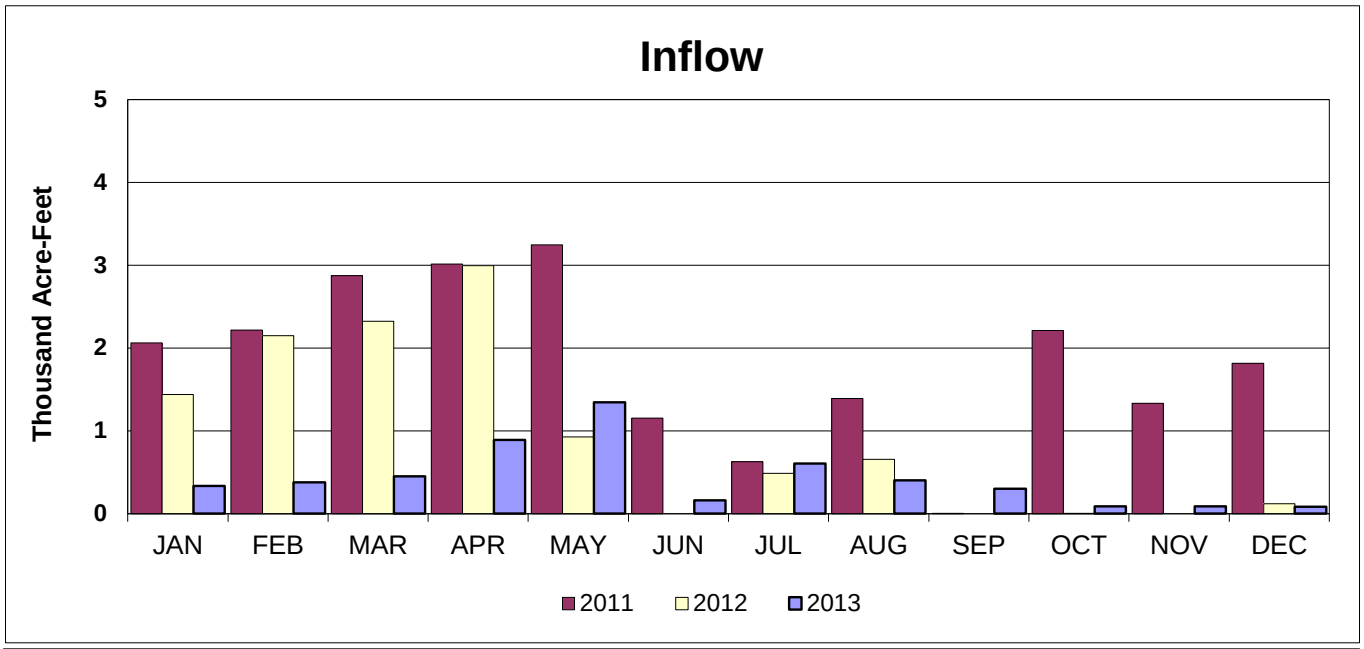
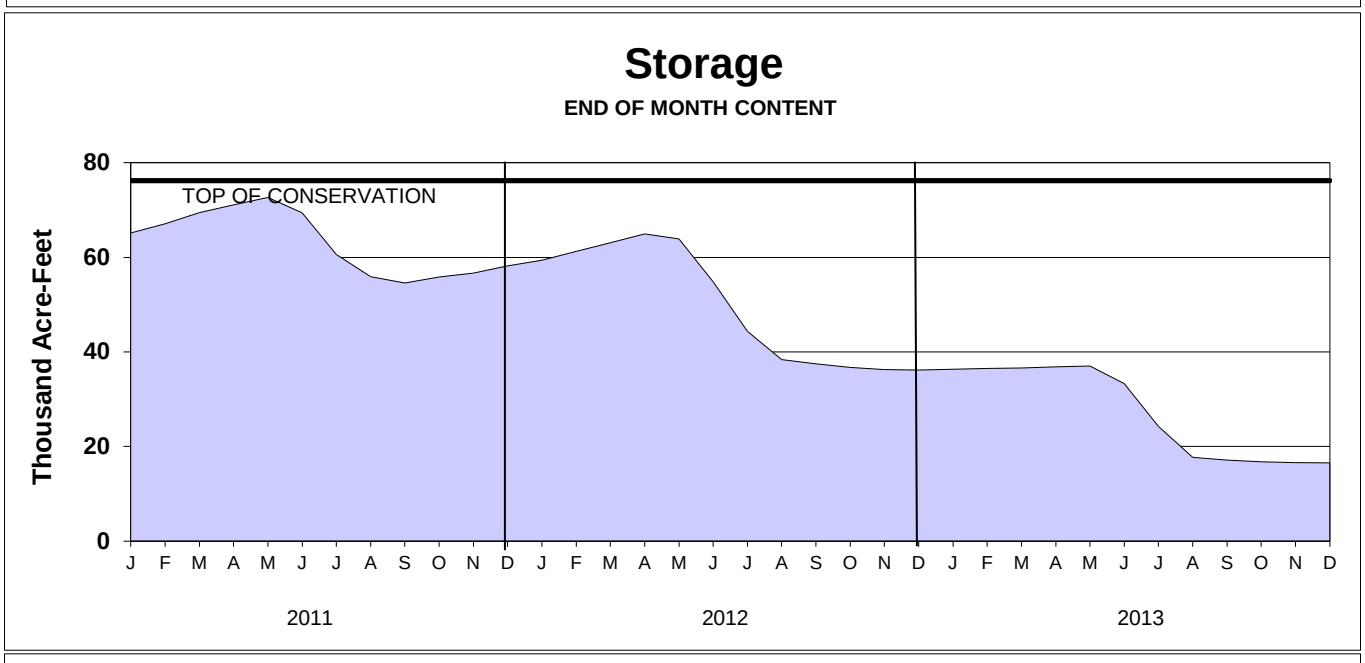


EXHIBIT 14A

WEBSTER RESERVOIR

ACTUAL OPERATION





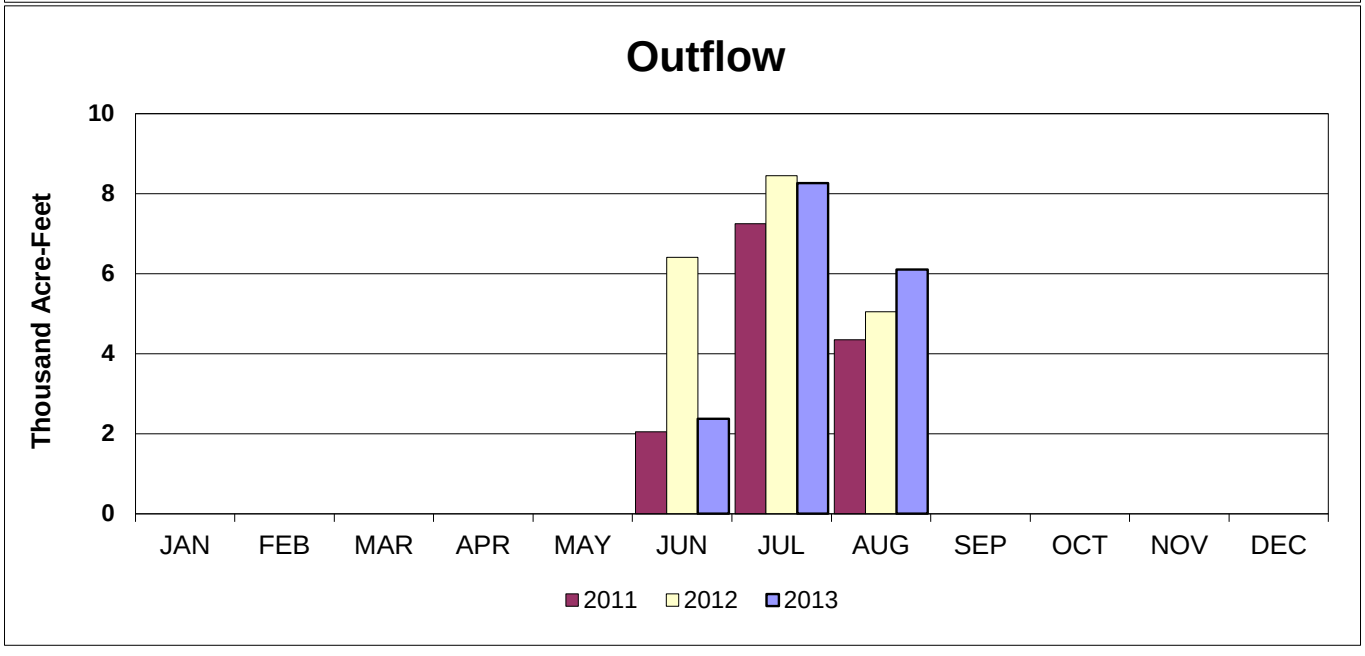
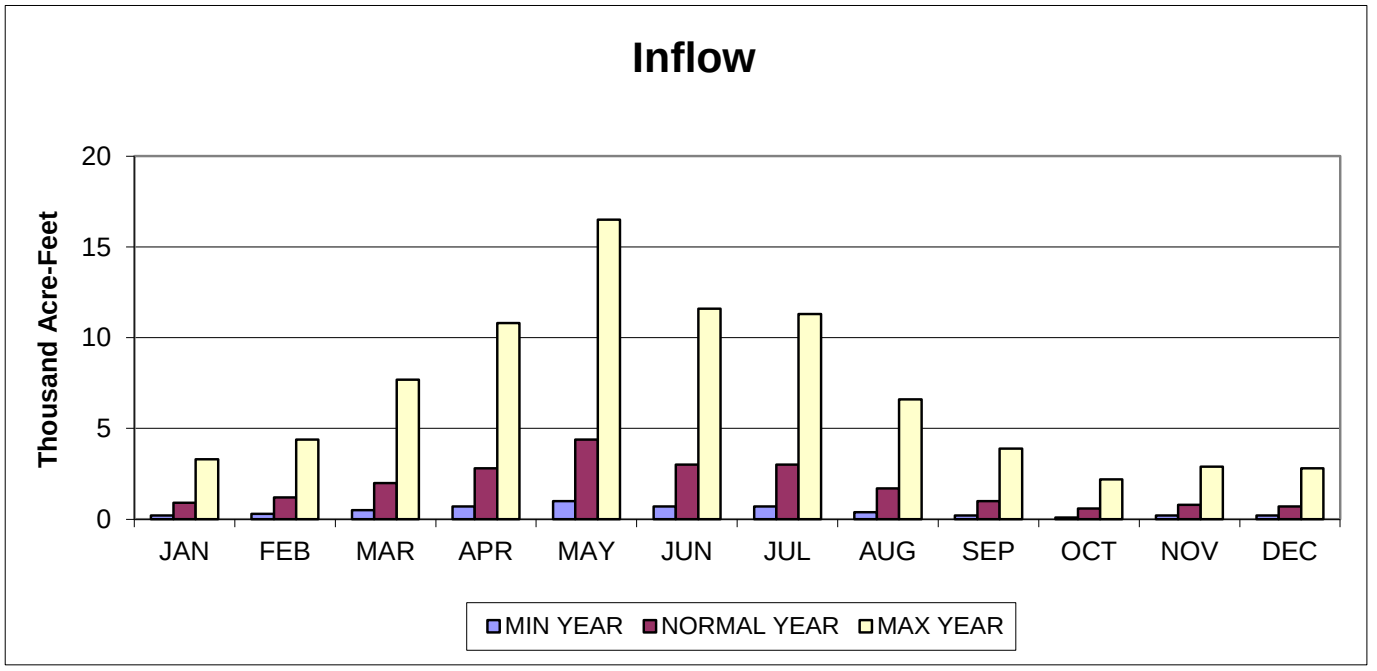
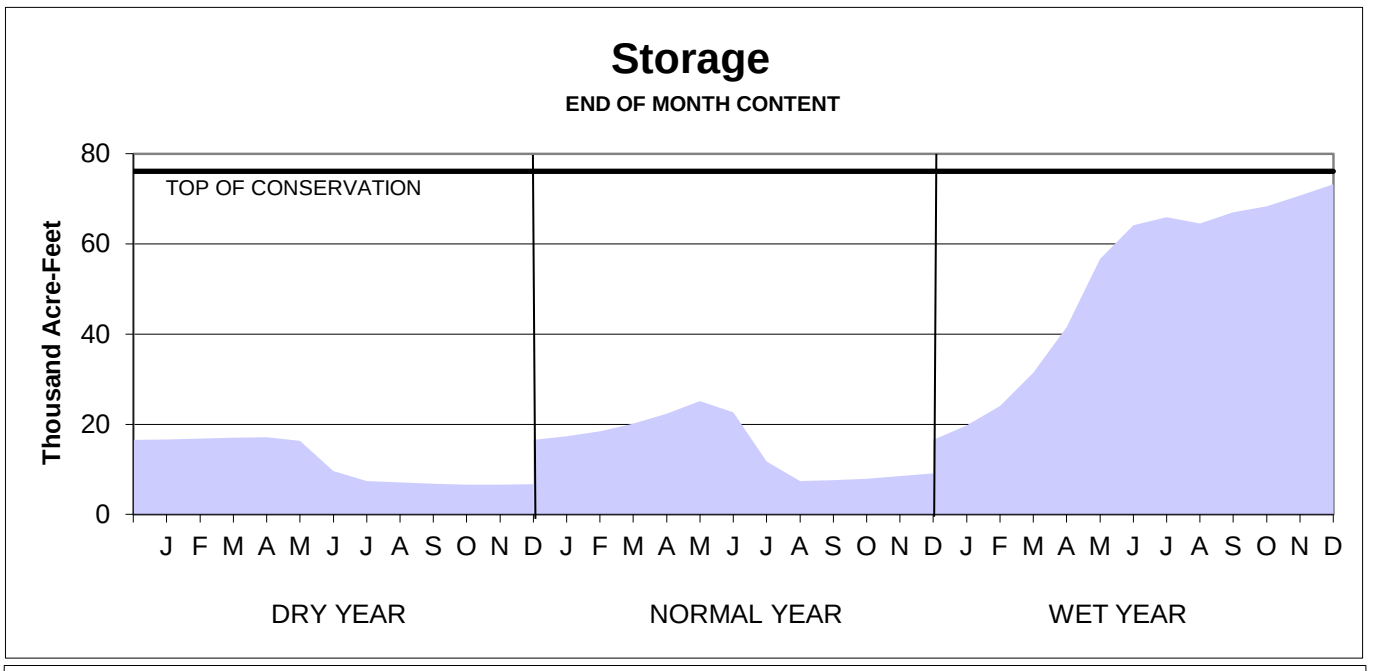


EXHIBIT 14B

WEBSTER RESERVOIR

2014 OPERATION PLAN





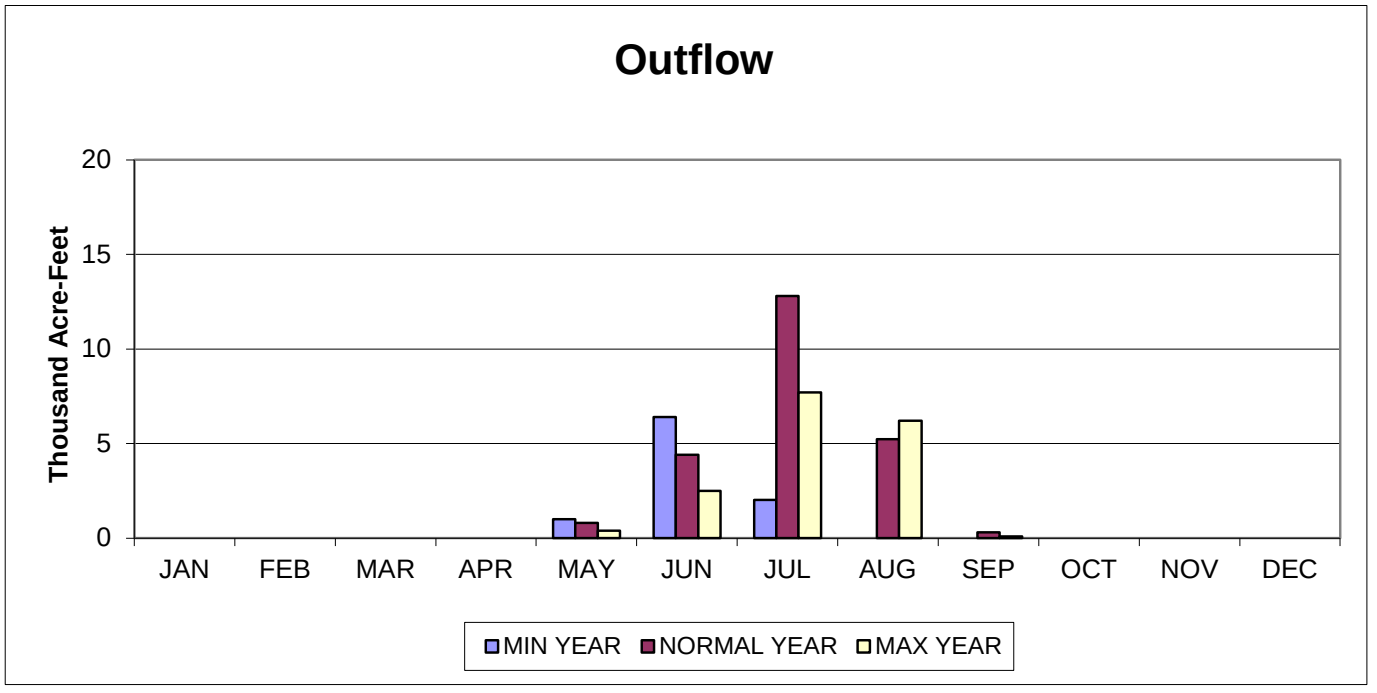
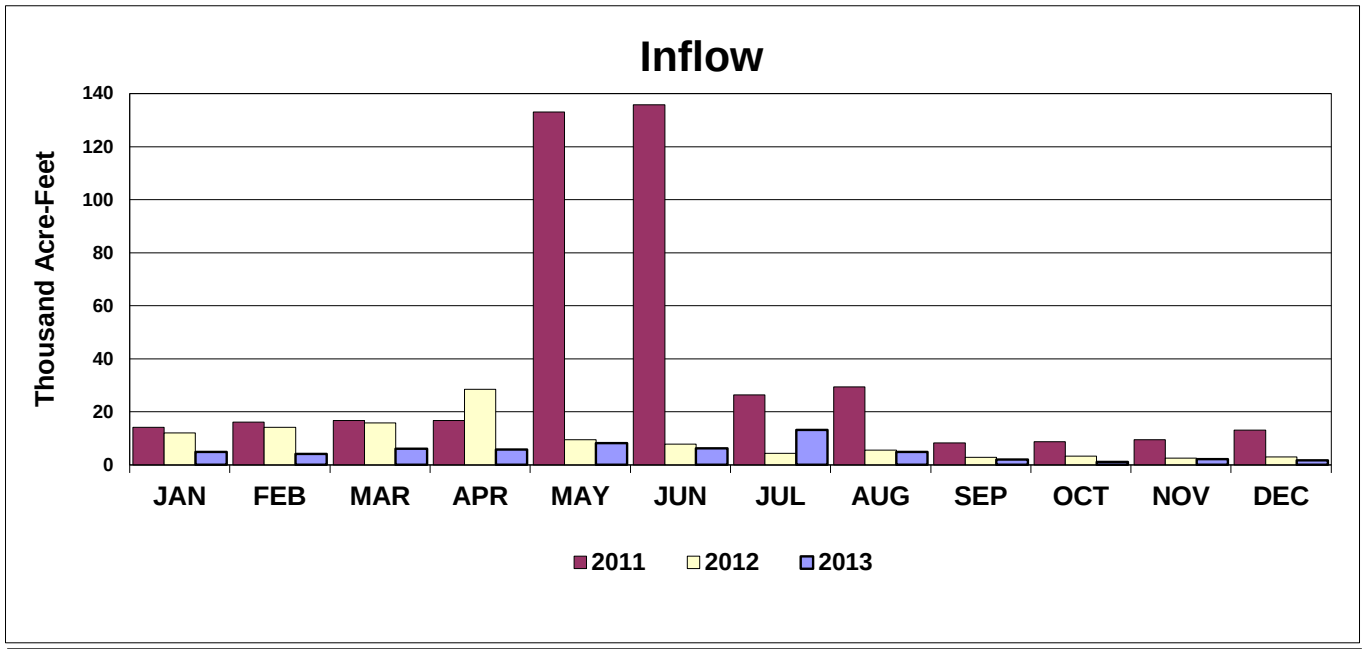
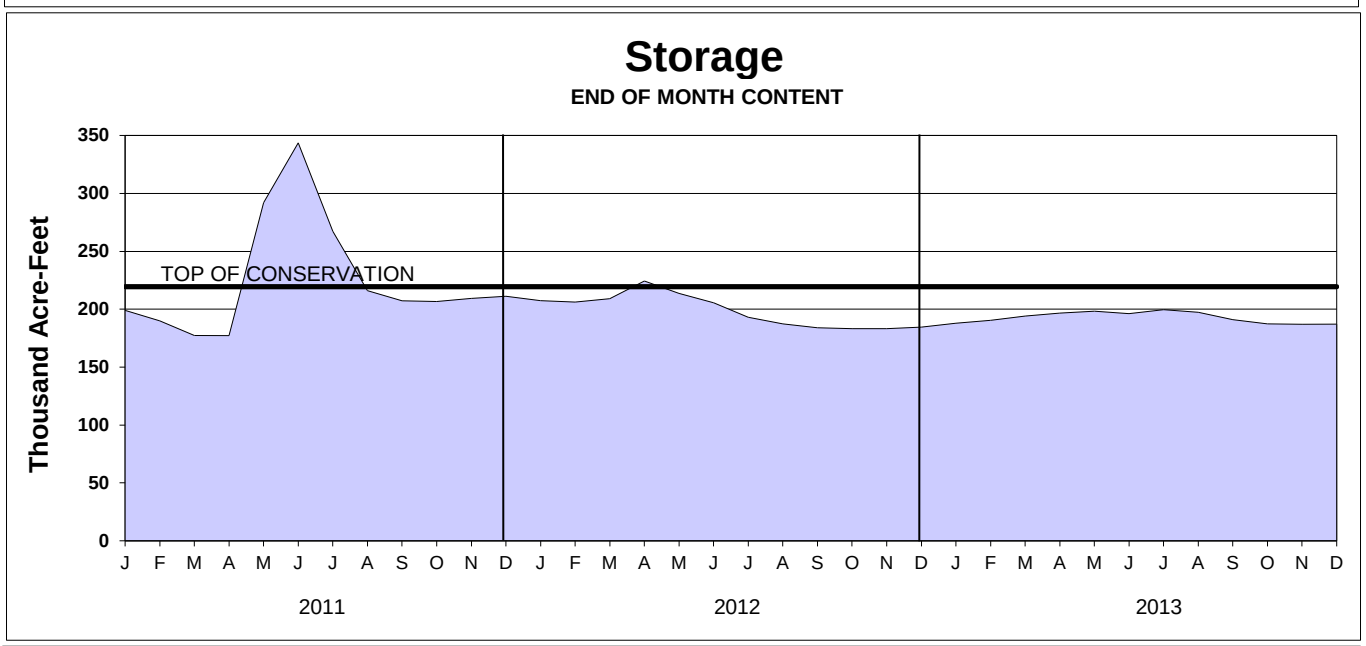


EXHIBIT 15A

WACONDA LAKE

ACTUAL OPERATION





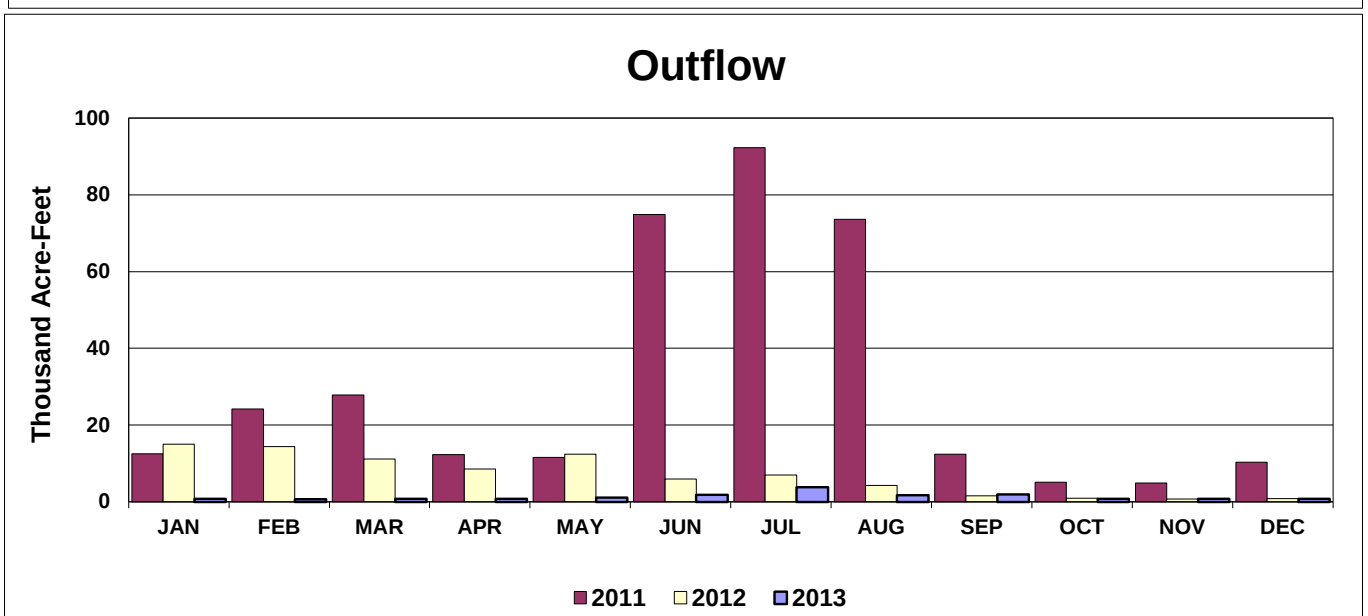
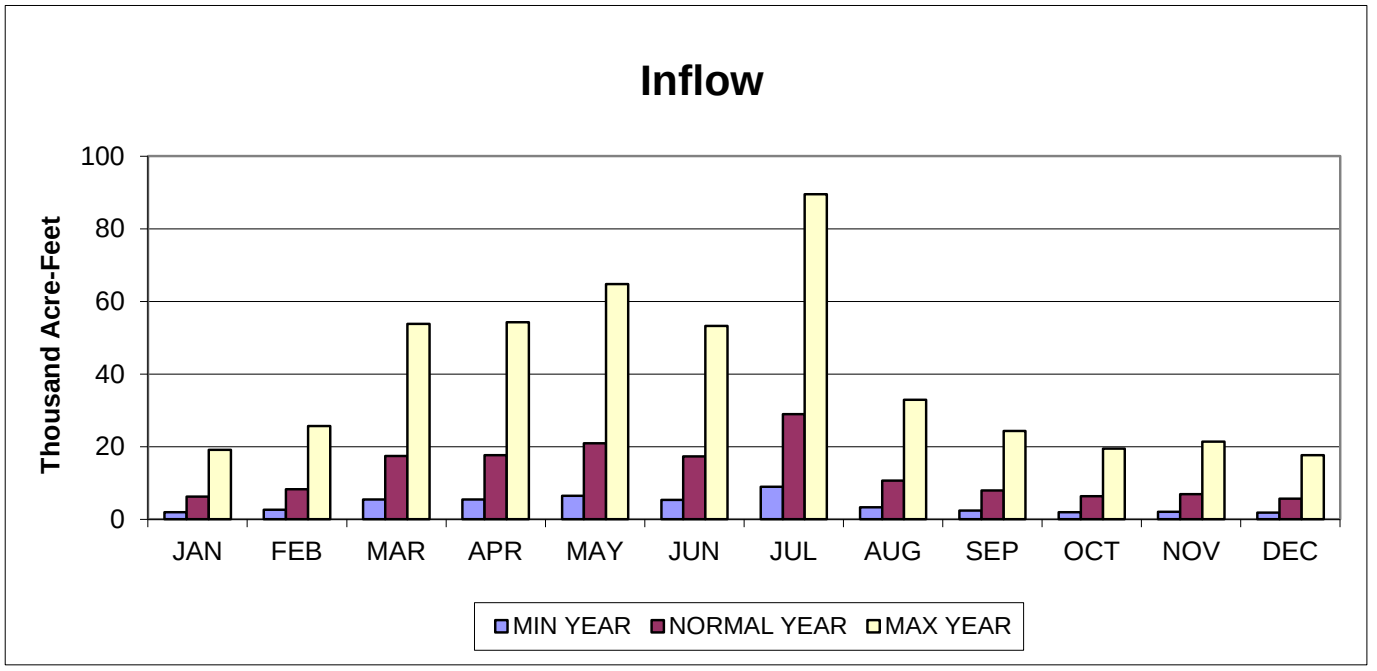
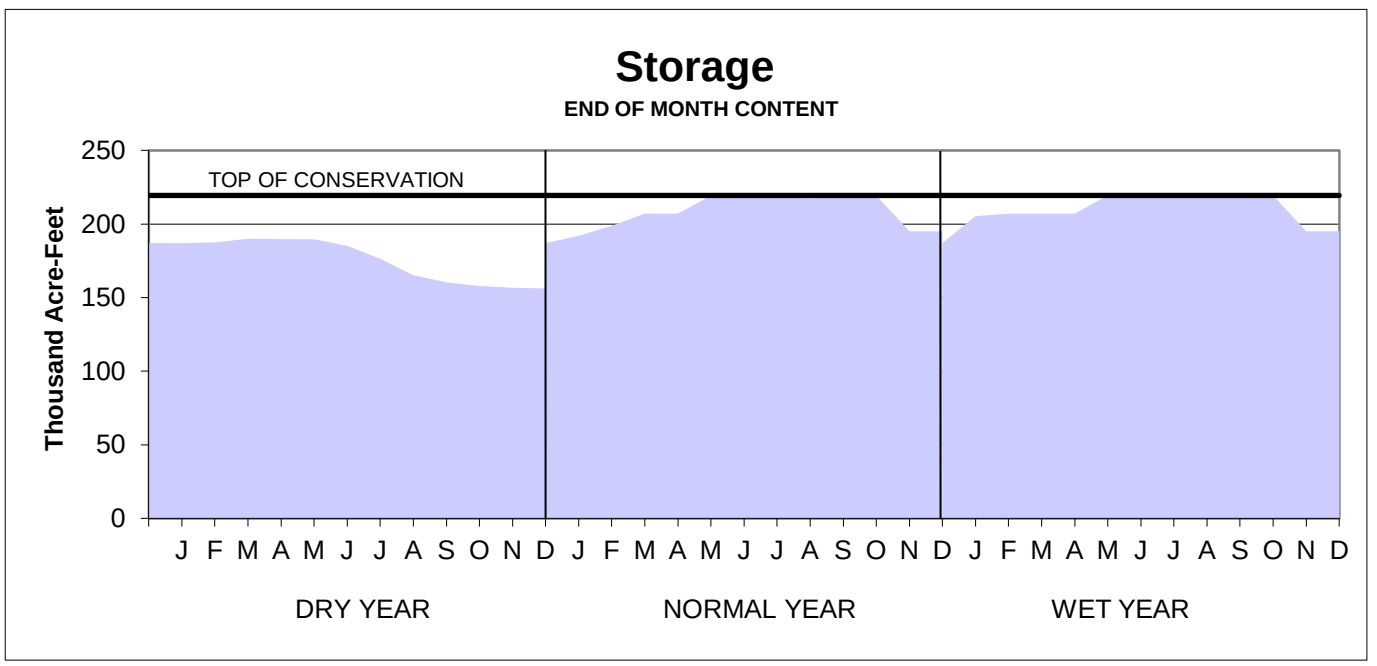


EXHIBIT 15B

WACONDA LAKE

2014 OPERATION PLAN





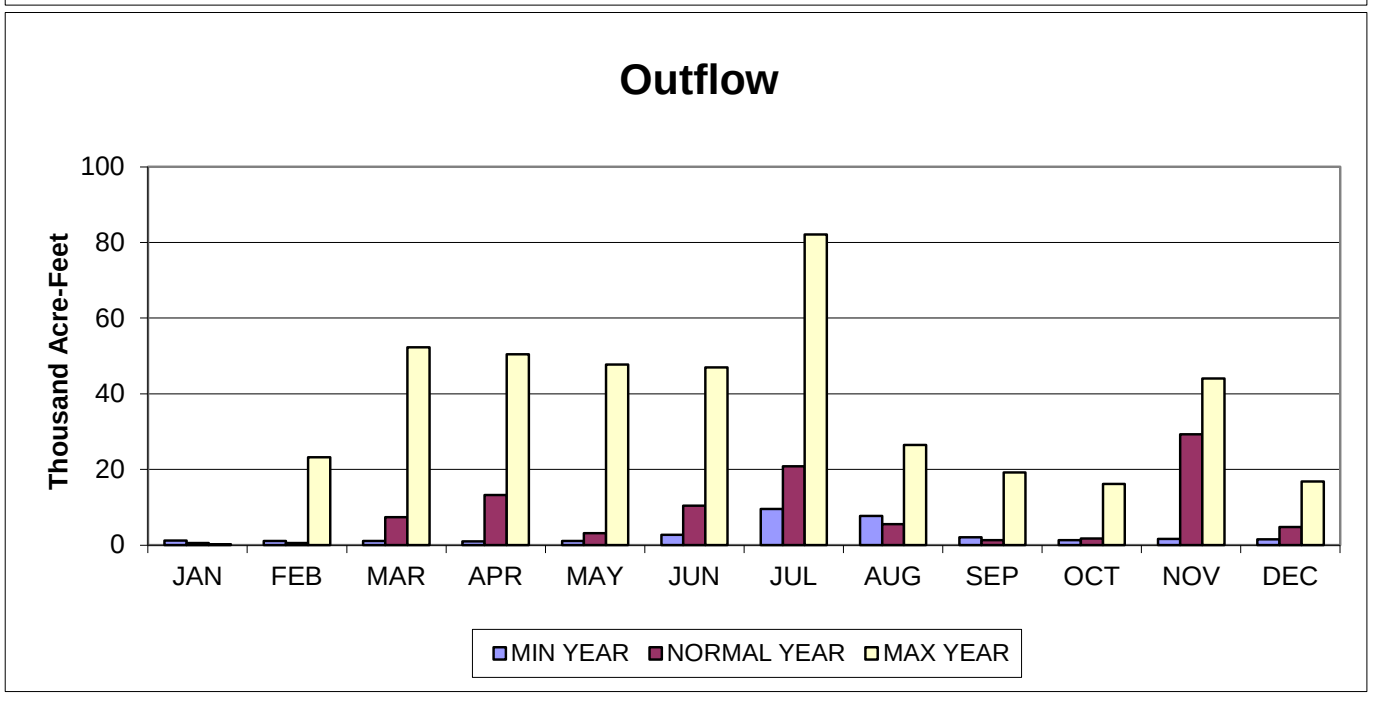
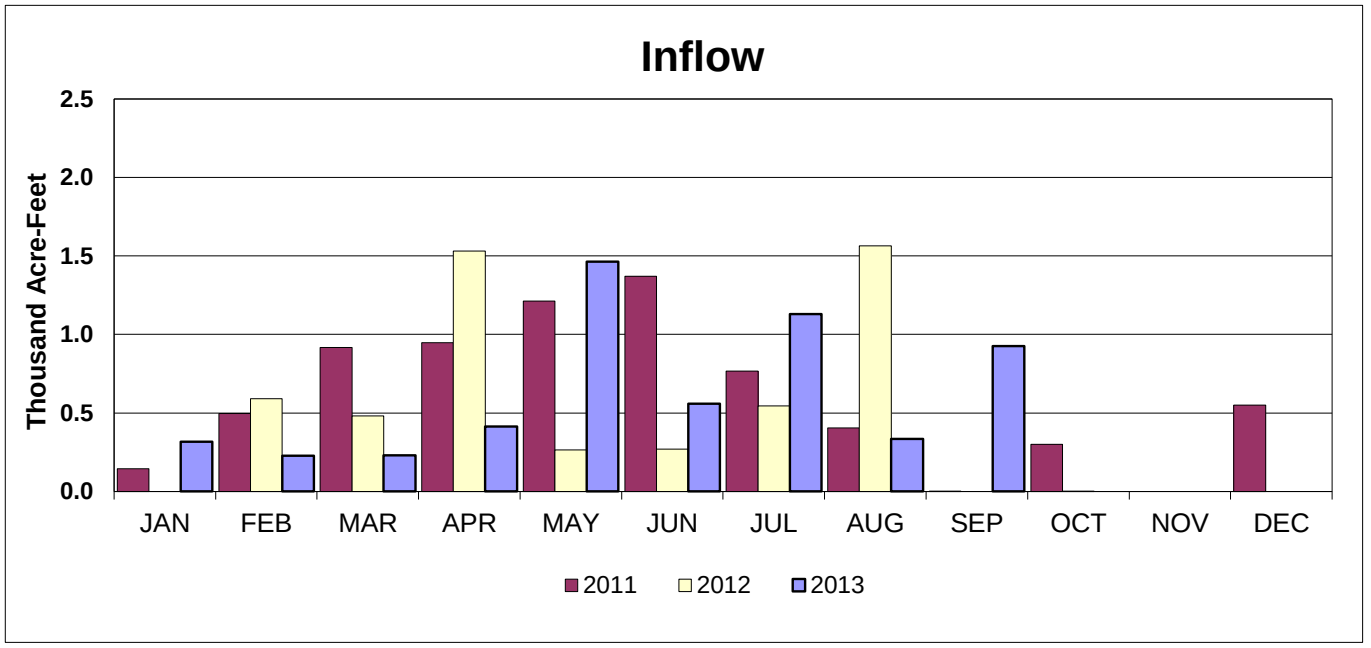
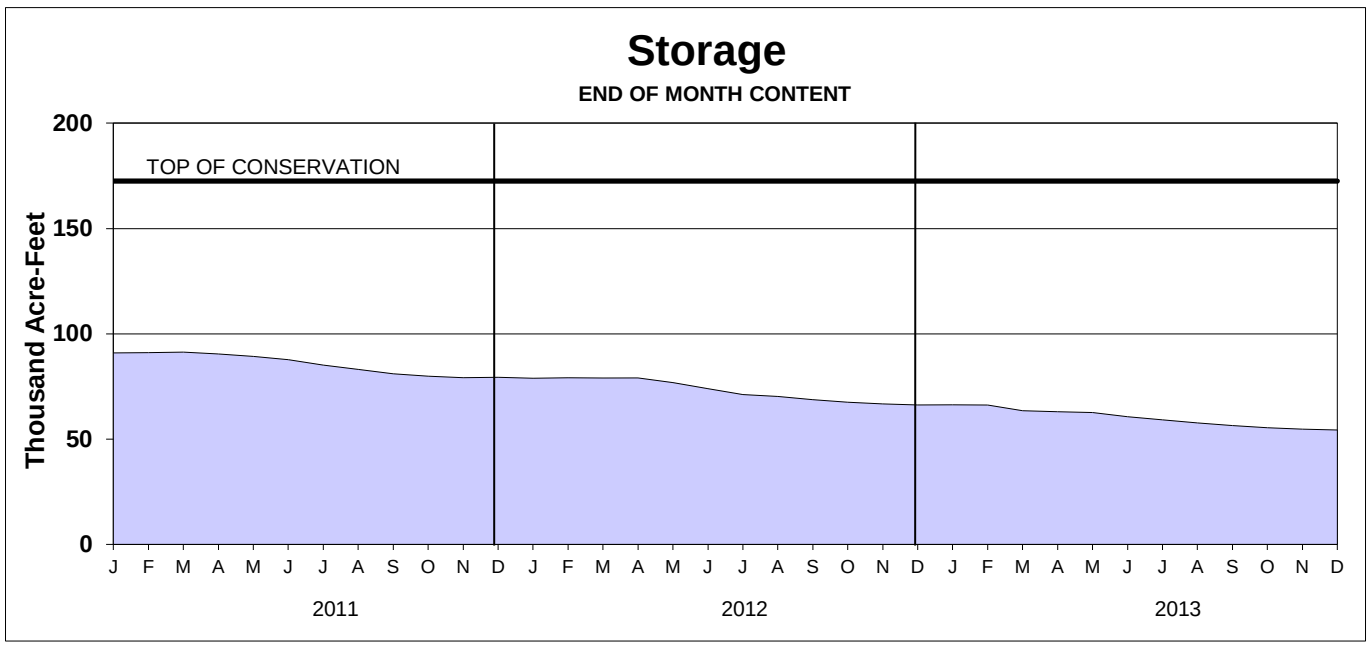


EXHIBIT 16A

CEDAR BLUFF RESERVOIR

ACTUAL OPERATION





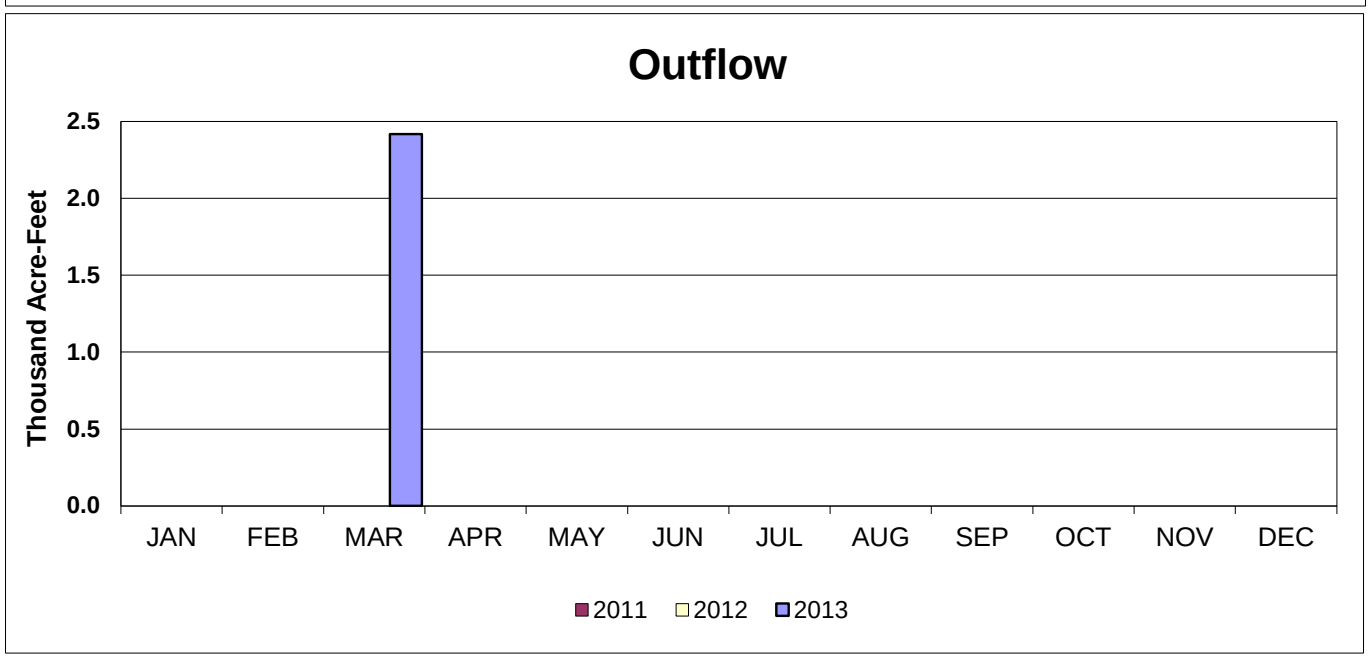
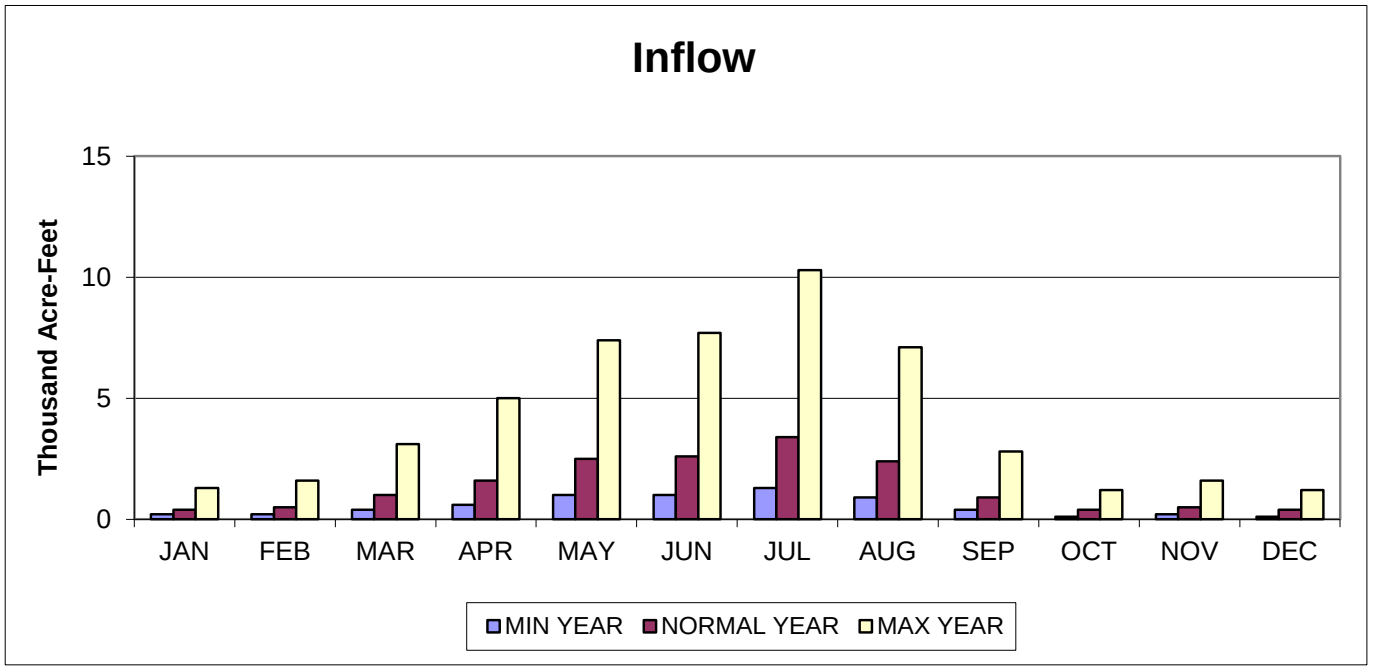
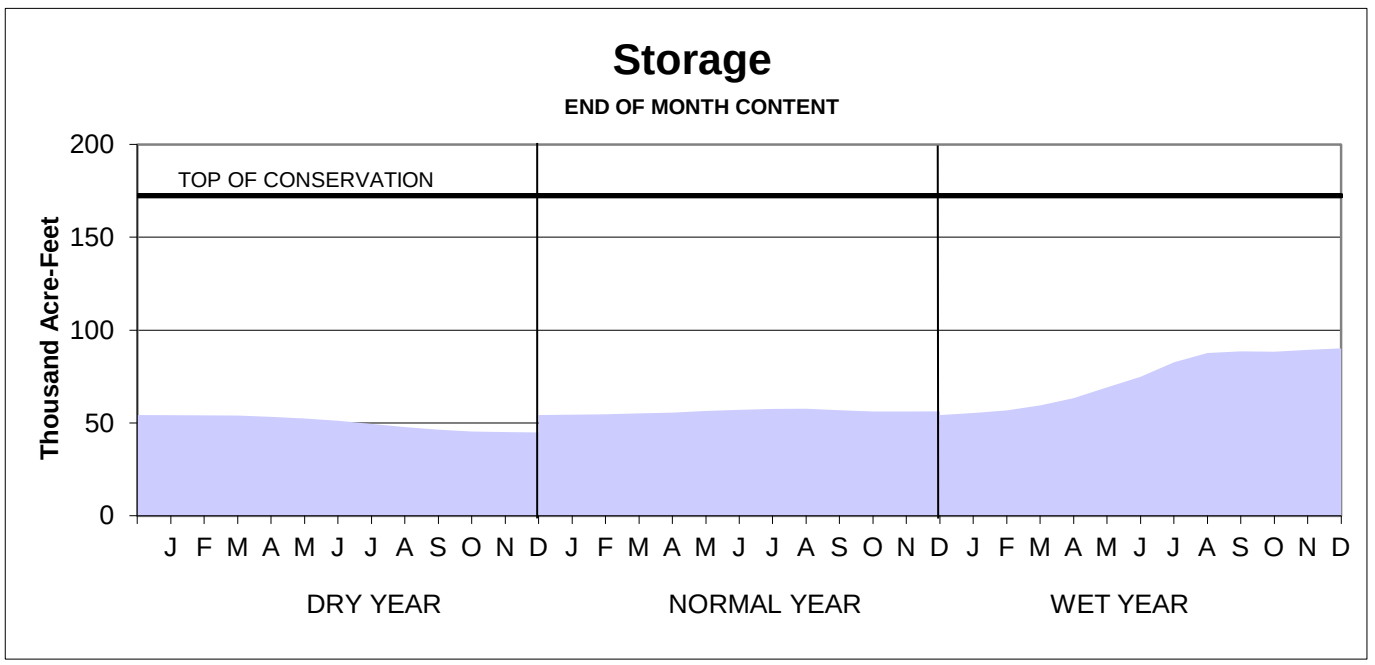


EXHIBIT 16B

CEDAR BLUFF RESERVOIR

2014 OPERATION PLAN





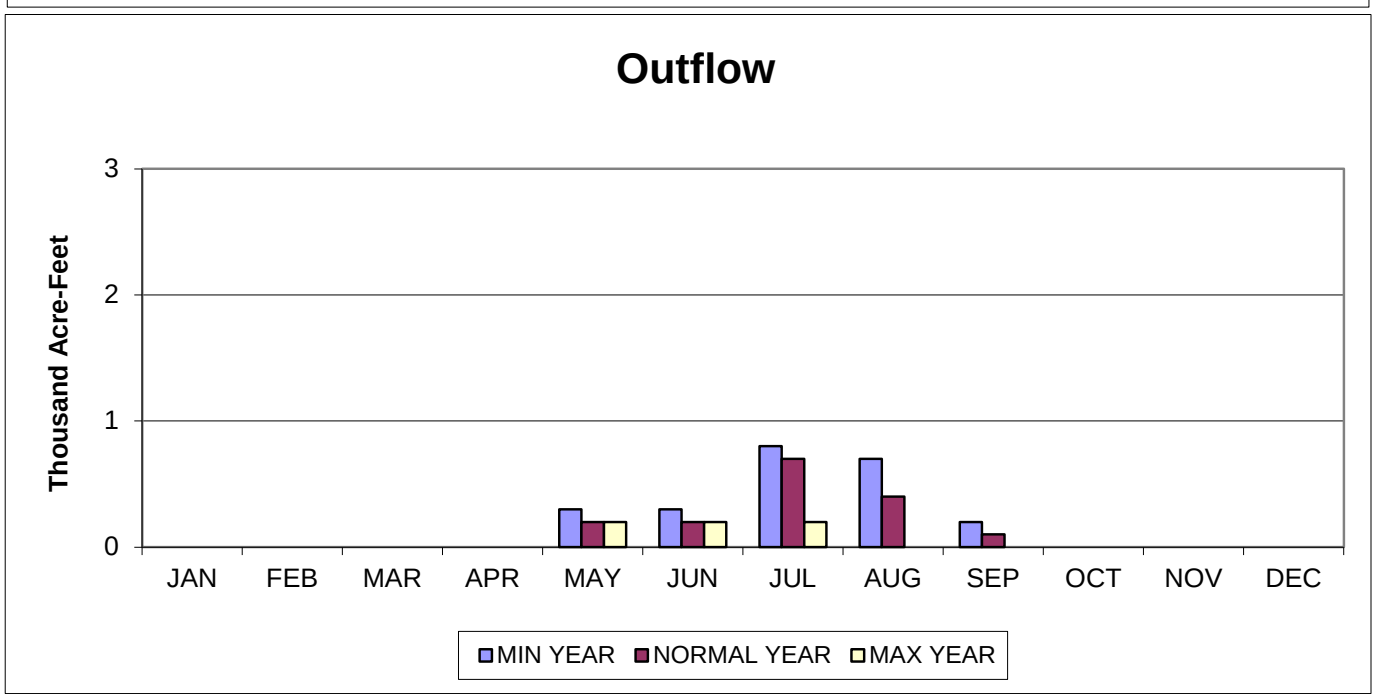
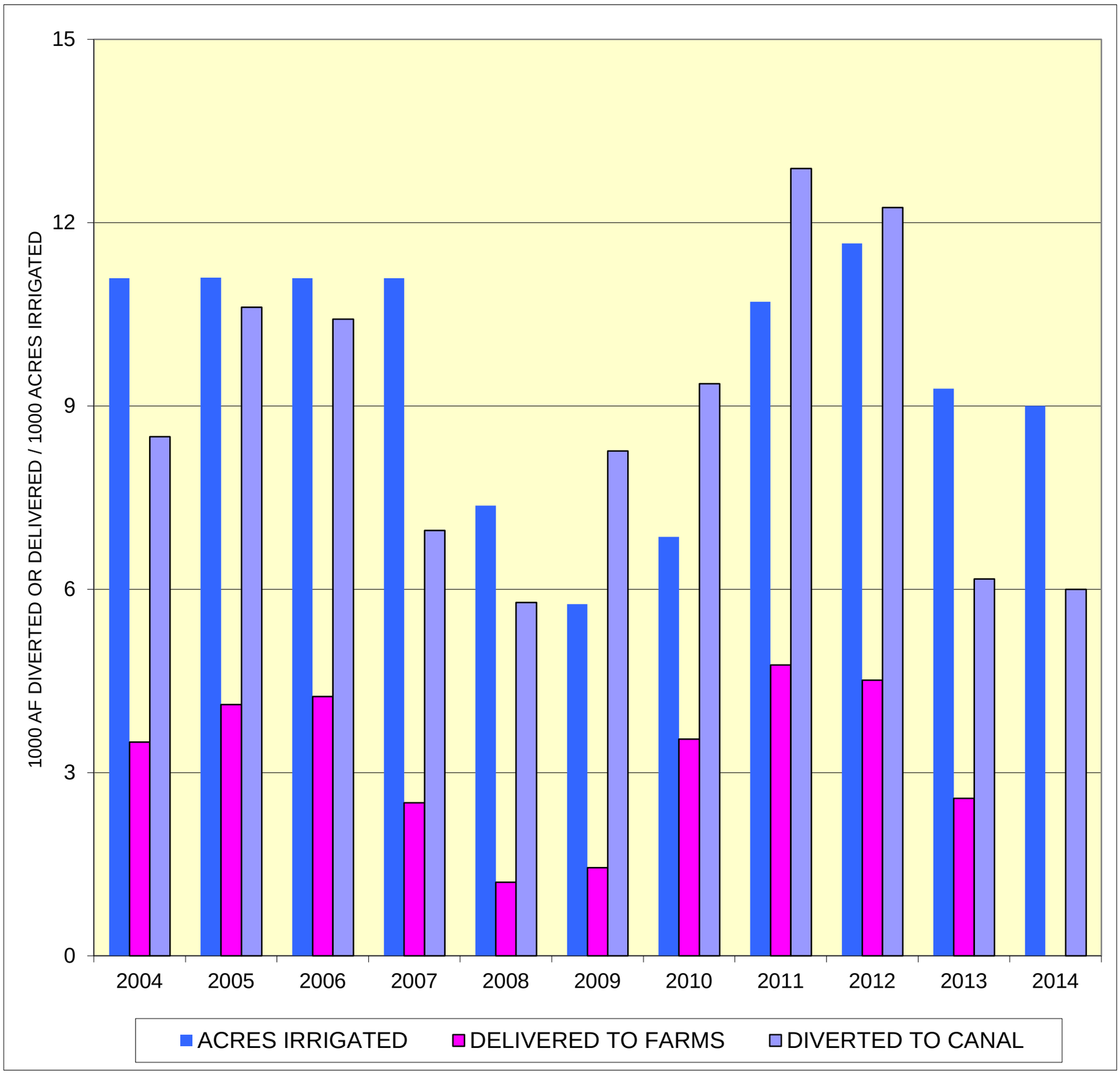


EXHIBIT 17

MIRAGE FLATS IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	0.77	0.96	0.94	0.63	0.78	1.44	1.37	1.20	1.05	0.66
DELIVERED af/acre	0.32	0.37	0.38	0.23	0.16	0.25	0.52	0.44	0.39	0.28
EFFICIENCY	41%	39%	41%	36%	21%	18%	38%	37%	37%	42%

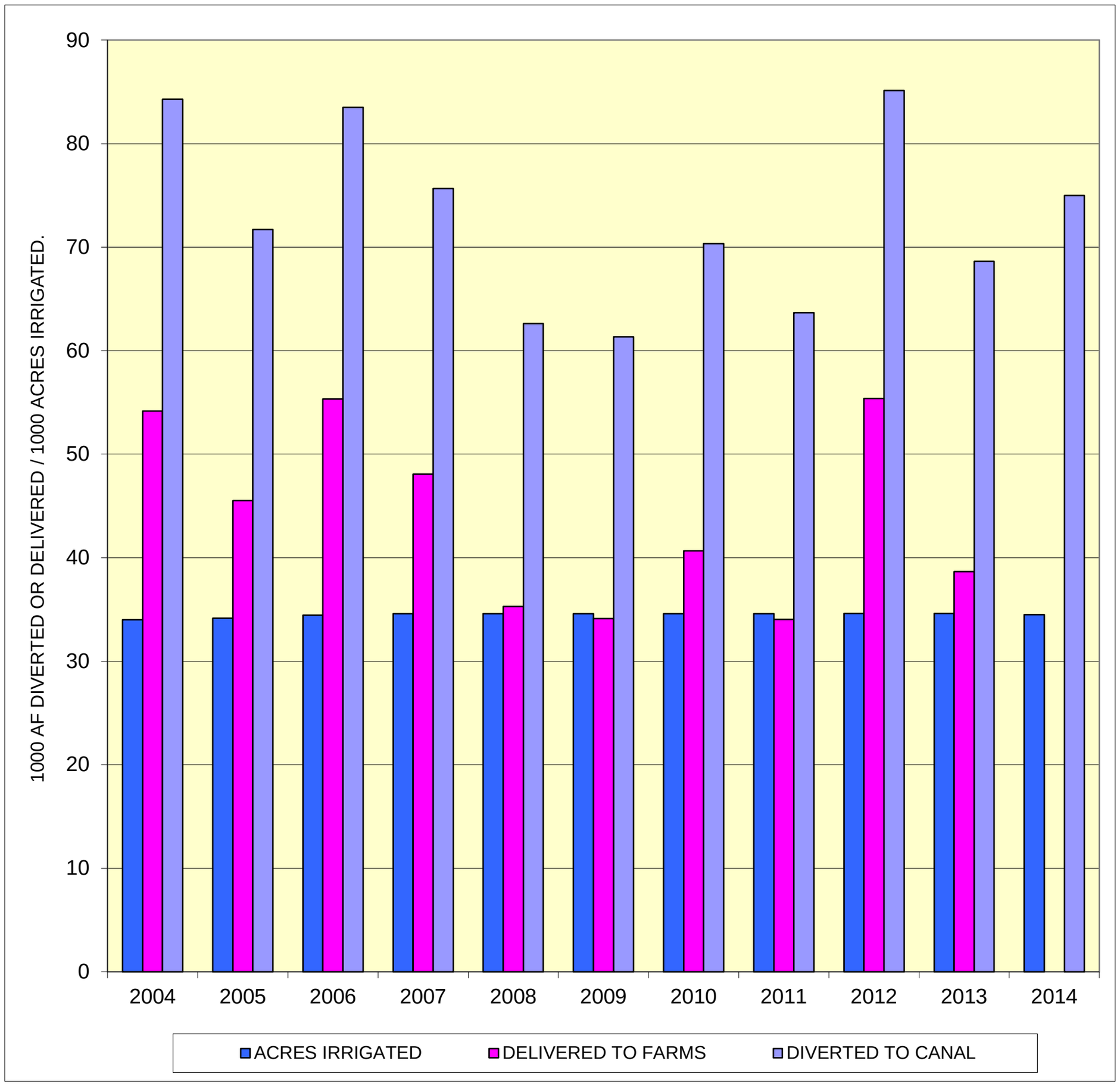
FORECASTED SHORTAGES (2014)

DRY YEAR	23,900 AF
NORMAL YEAR	13,900 AF
WET YEAR	1,300 AF

EXHIBIT 18

AINSWORTH IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	2.48	2.10	2.42	2.19	1.81	1.77	2.03	1.84	2.46	1.98
DELIVERED af/acre	1.59	1.33	1.61	1.39	1.02	0.99	1.18	0.98	1.60	1.12
EFFICIENCY	64%	63%	66%	64%	56%	56%	58%	53%	65%	56%

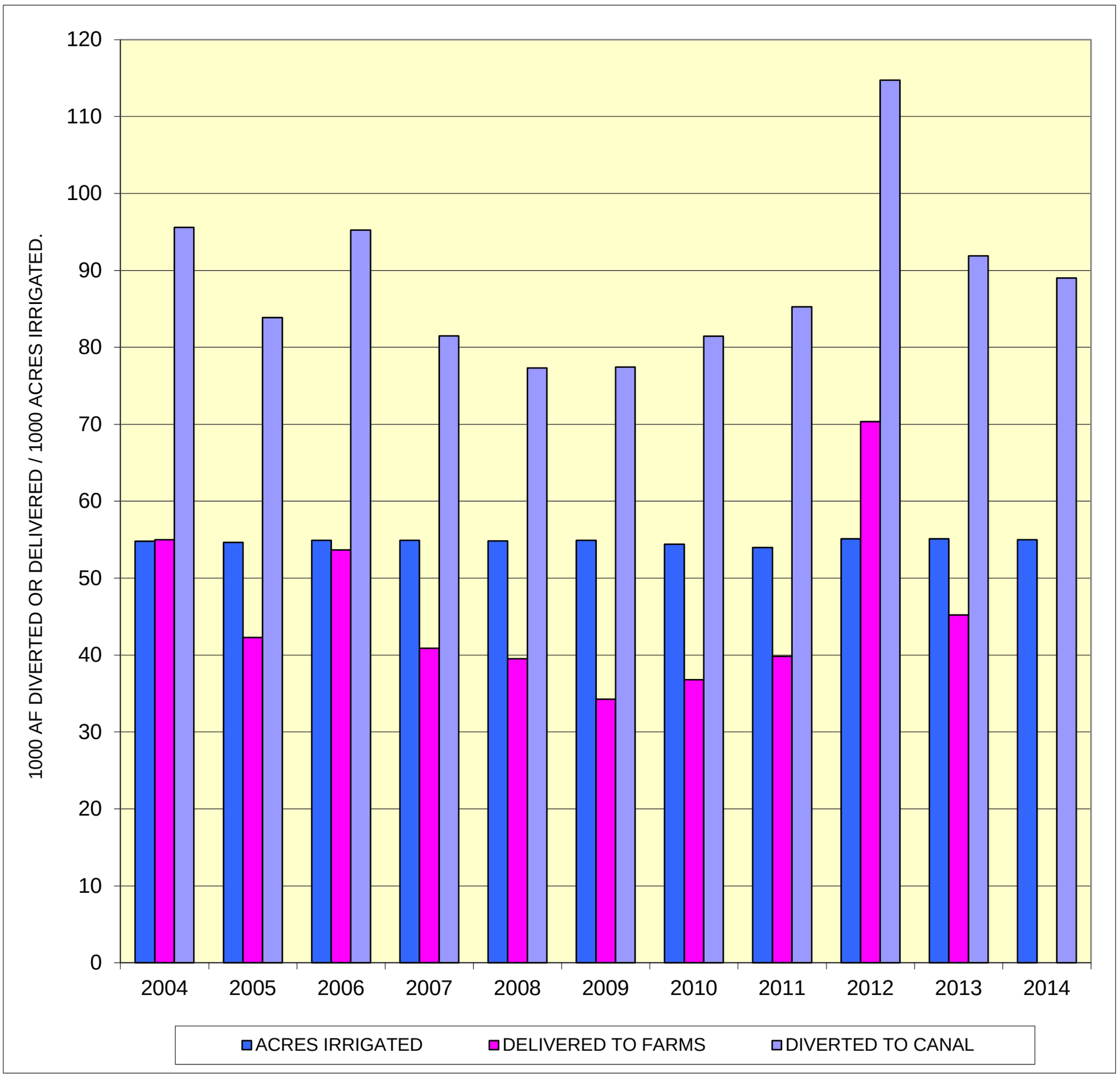
FORECASTED SHORTAGES (2014)

DRY YEAR	0 AF
NORMAL YEAR	0 AF
WET YEAR	0 AF

EXHIBIT 19

TWIN LOUPS IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	1.75	1.53	1.74	1.48	1.41	1.41	1.50	1.58	2.08	1.67
DELIVERED af/acre	1.00	0.77	0.98	0.74	0.72	0.62	0.68	0.74	1.28	0.82
EFFICIENCY	58%	50%	56%	50%	51%	44%	45%	47%	61%	49%

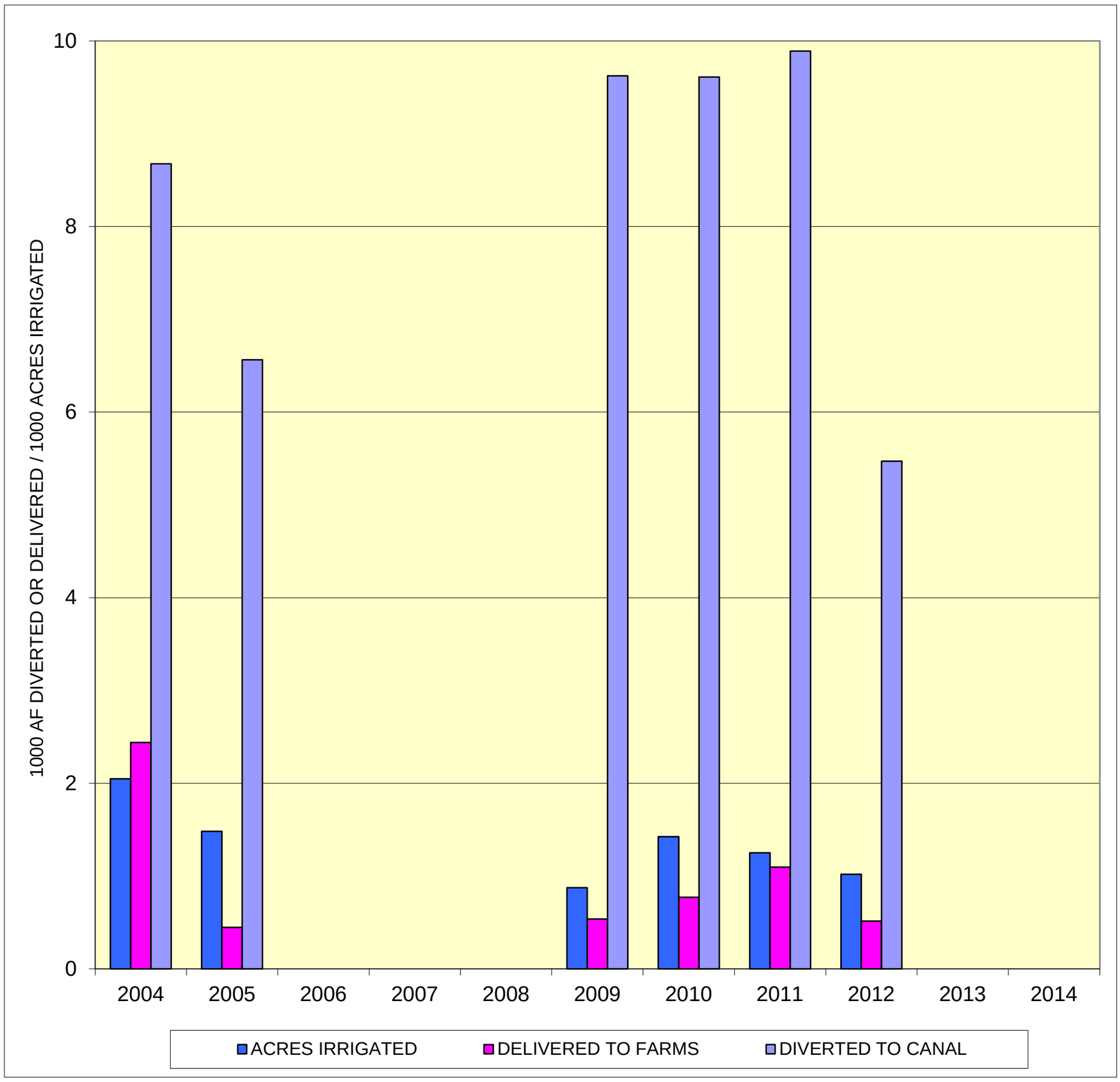
FORECASTED SHORTAGES (2014)

DRY YEAR	0 AF
NORMAL YEAR	0 AF
WET YEAR	0 AF

EXHIBIT 20

FRENCHMAN VALLEY IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	4.24	4.43	0.00	0.00	0.00	11.01	6.74	7.91	5.36	0.00
DELIVERED af/acre	1.19	0.30	0.00	0.00	0.00	0.61	0.54	0.88	0.50	0.00
EFFICIENCY	28%	7%	0%	0%	0%	6%	8%	11%	9%	0%

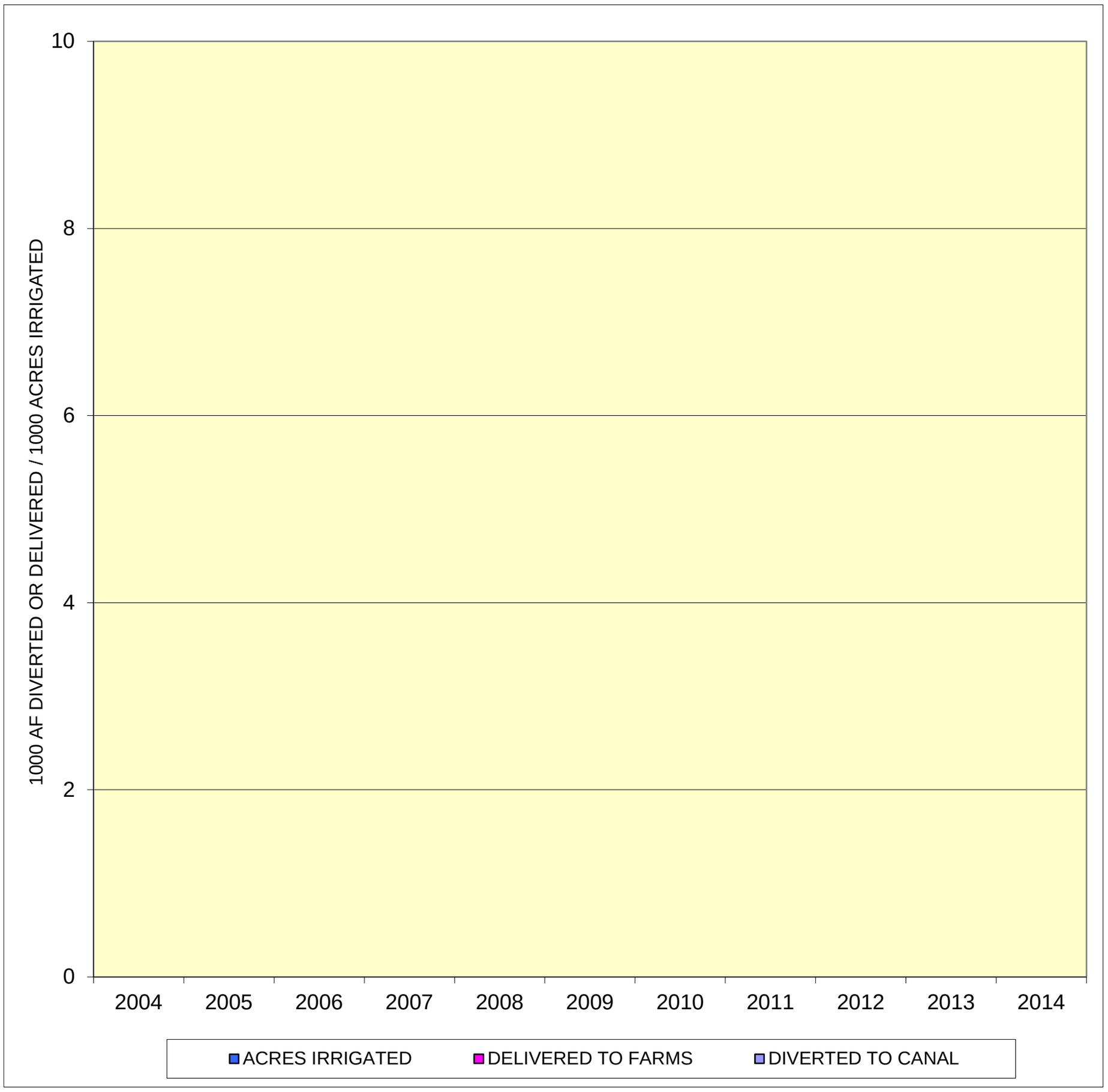
FORECASTED SHORTAGES (2014)

DRY YEAR	34,500 AF
NORMAL YEAR	27,400 AF
WET YEAR	15,000 AF

EXHIBIT 21

H&RW IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DELIVERED af/a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EFFICIENCY	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

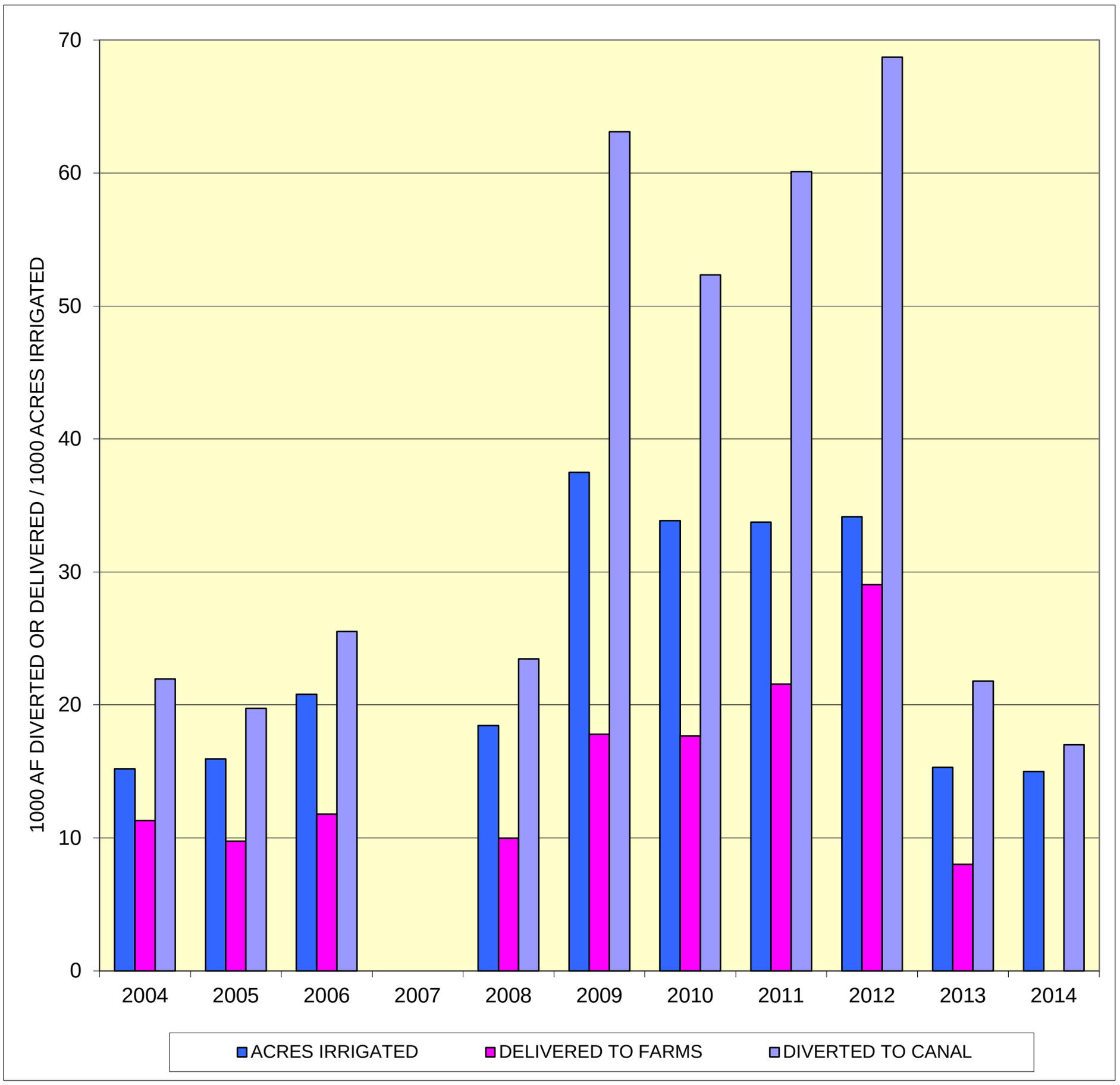
FORECASTED SHORTAGES (2014)

DRY YEAR	43,800 AF
NORMAL YEAR	34,800 AF
WET YEAR	19,200 AF

EXHIBIT 22

FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	1.45	1.24	1.23	0.00	1.27	1.68	1.55	1.78	2.01	1.42
DELIVERED af/acre	0.74	0.61	0.57	0.00	0.54	0.47	0.52	0.64	0.85	0.52
EFFICIENCY	52%	50%	46%	0%	42%	28%	34%	36%	42%	37%

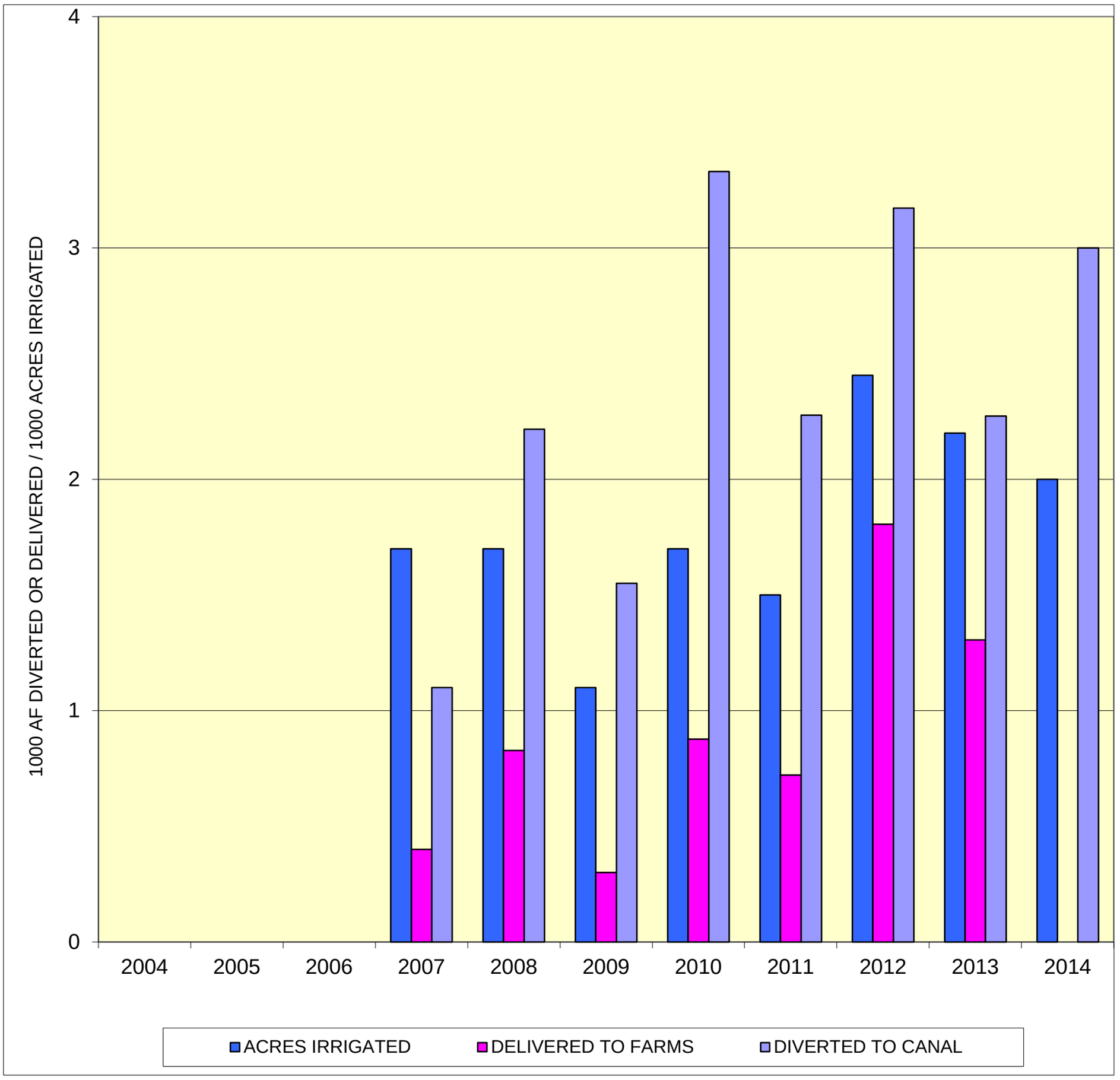
FORECASTED SHORTAGES (2014)

DRY YEAR	82,800 AF
NORMAL YEAR	60,600 AF
WET YEAR	35,100 AF

EXHIBIT 23

ALMENA IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	0.00	0.00	0.00	0.65	1.30	1.41	1.96	1.52	1.29	1.03
DELIVERED af/acre	0.00	0.00	0.00	0.24	0.49	0.27	0.52	0.48	0.74	0.59
EFFICIENCY	0%	0%	0%	36%	37%	19%	26%	32%	57%	57%

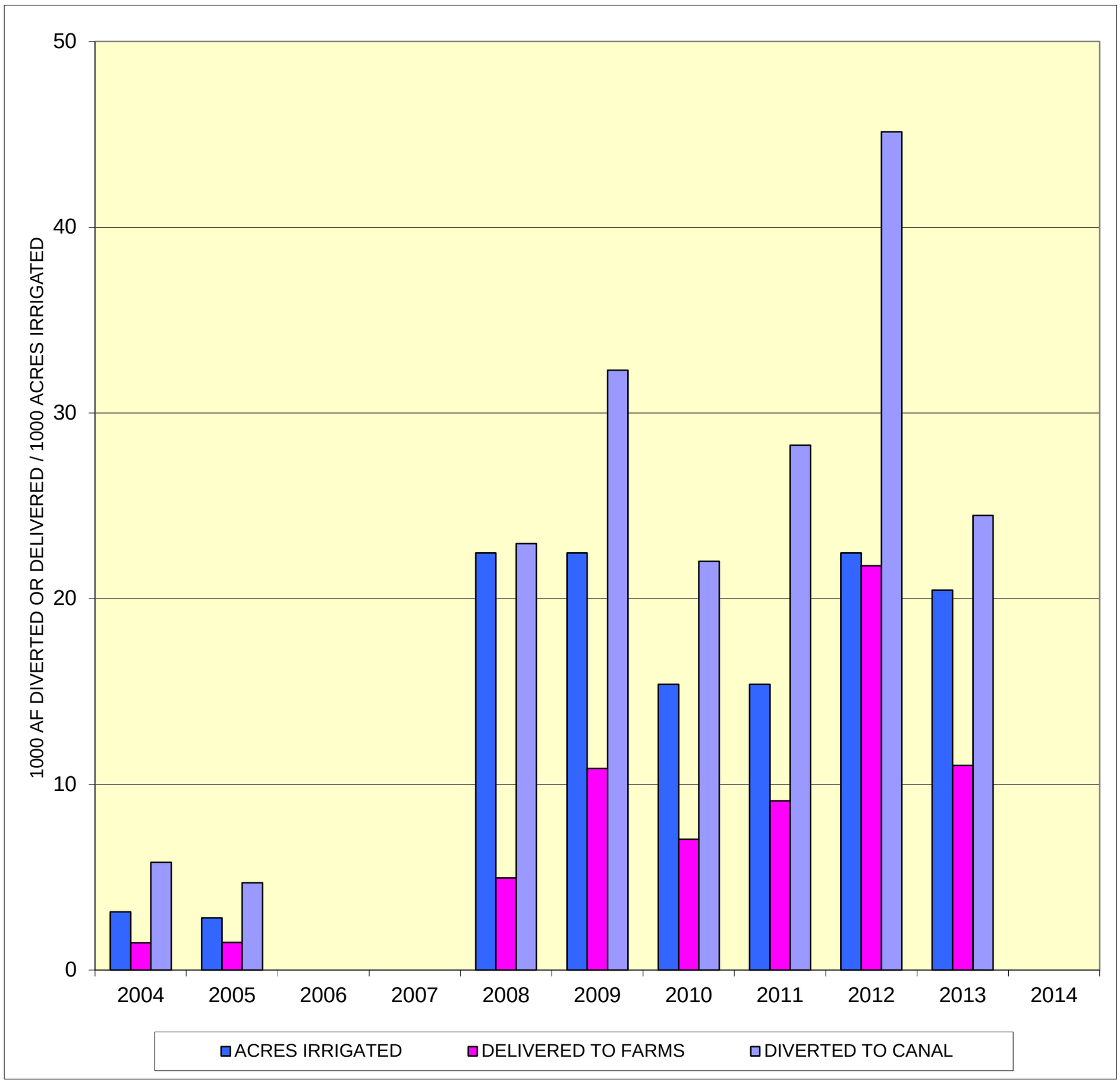
FORECASTED SHORTAGES (2014)

DRY YEAR	14,400 AF
NORMAL YEAR	9,300 AF
WET YEAR	0 AF

EXHIBIT 24

BOSTWICK IRRIGATION DISTRICT - NEBRASKA

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	1.85	1.68	0.00	0.00	1.02	1.44	1.43	1.84	2.01	1.20
DELIVERED af/acre	0.47	0.53	0.00	0.00	0.22	0.48	0.46	0.59	0.97	0.54
EFFICIENCY	25%	32%	0%	0%	22%	34%	32%	32%	48%	45%

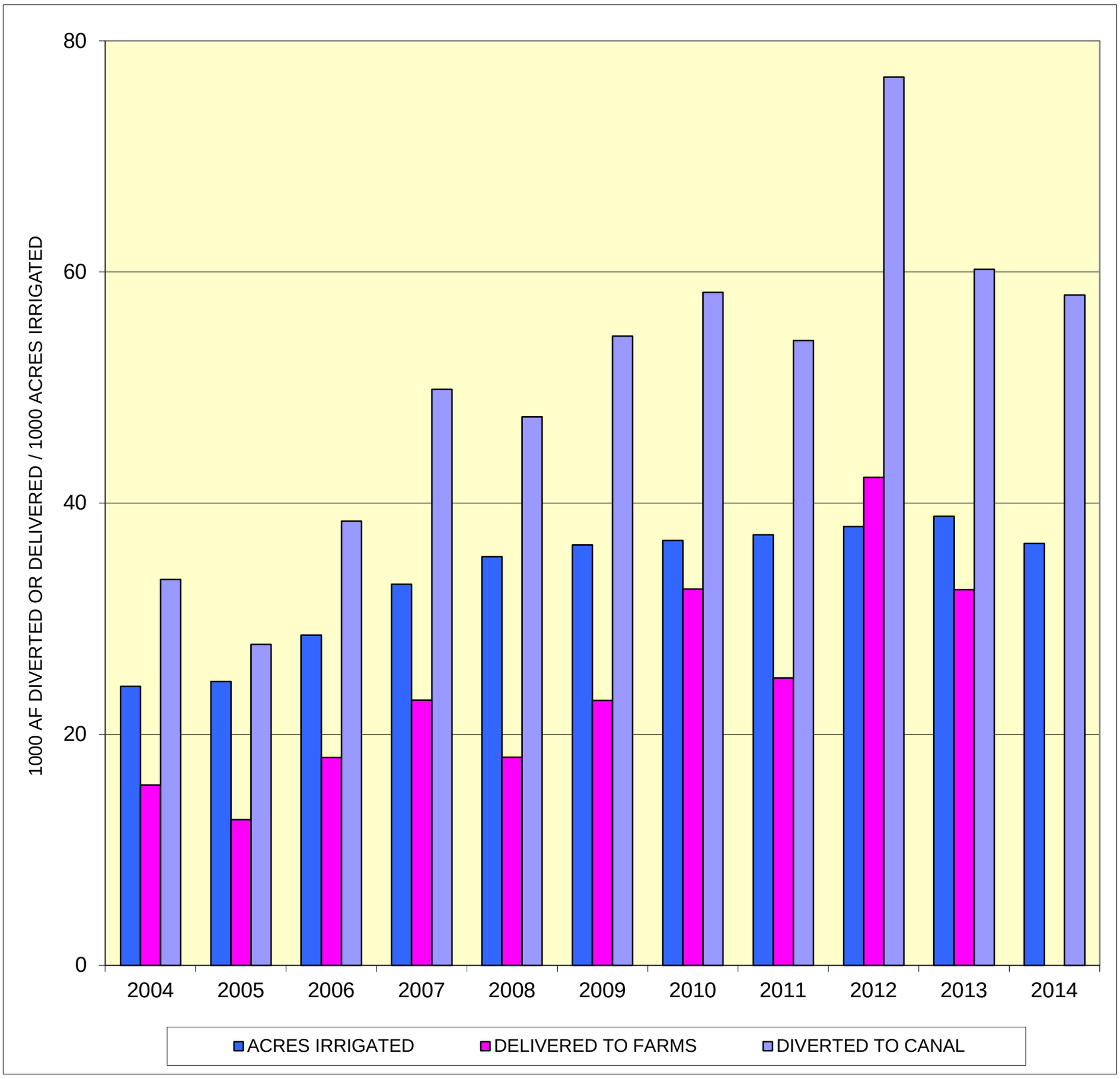
FORECASTED SHORTAGES (2014)

DRY YEAR	62,500 AF
NORMAL YEAR	50,500 AF
WET YEAR	0 AF

EXHIBIT 25

KANSAS-BOSTWICK IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	1.38	1.13	1.35	1.51	1.34	1.50	1.58	1.45	2.02	1.55
DELIVERED af/acre	0.65	0.51	0.63	0.70	0.51	0.63	0.89	0.67	1.11	0.84
EFFICIENCY	47%	45%	47%	46%	38%	42%	56%	46%	55%	54%

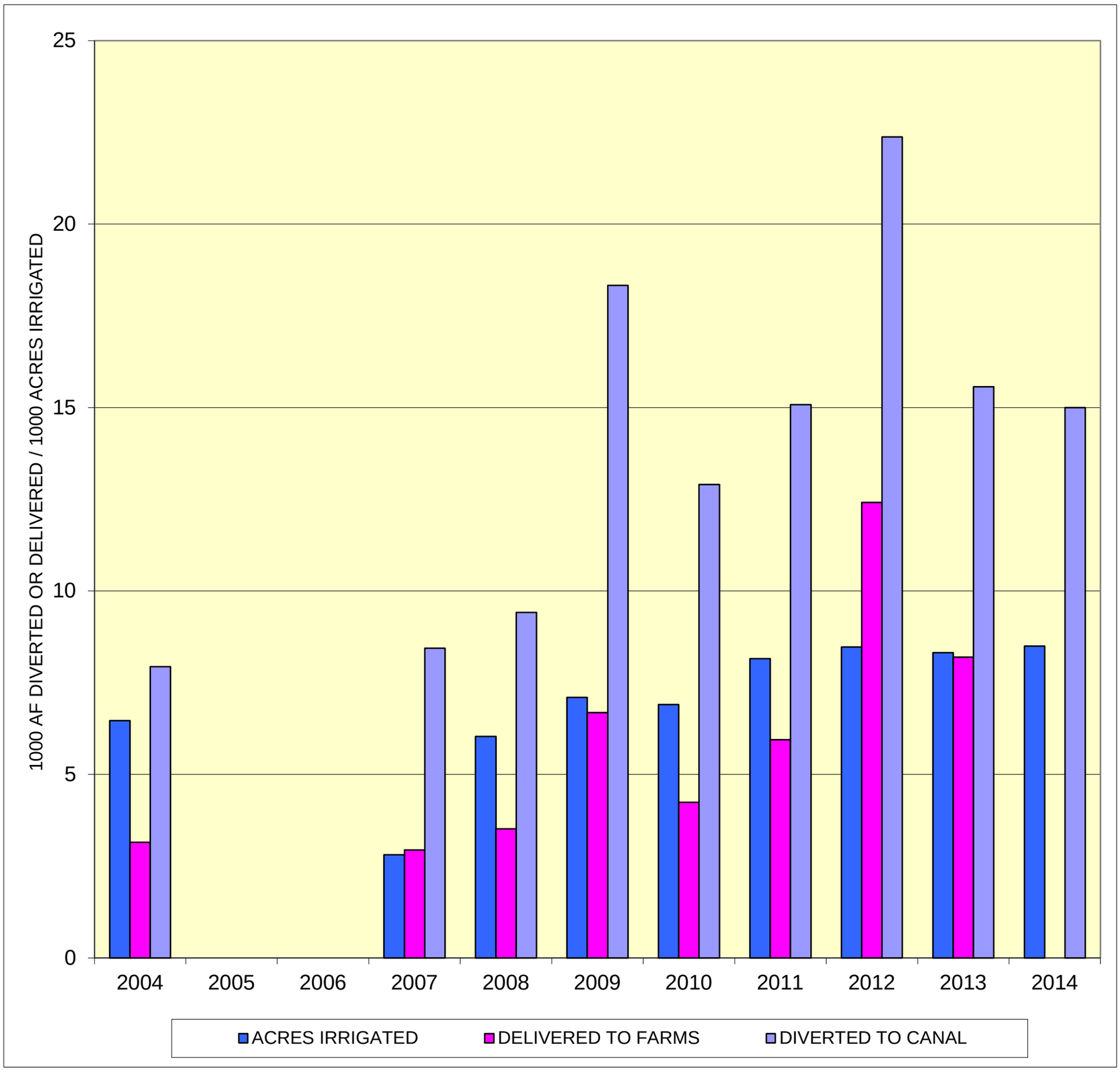
FORECASTED SHORTAGES (2014)

DRY YEAR	64,300 AF
NORMAL YEAR	0 AF
WET YEAR	0 AF

EXHIBIT 26

KIRWIN IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	1.23	0.00	0.00	3.00	1.56	2.58	1.87	1.85	2.64	1.87
DELIVERED af/acre	0.49	0.00	0.00	1.05	0.58	0.94	0.61	0.73	1.46	0.99
EFFICIENCY	40%	0%	0%	35%	37%	36%	33%	39%	55%	53%

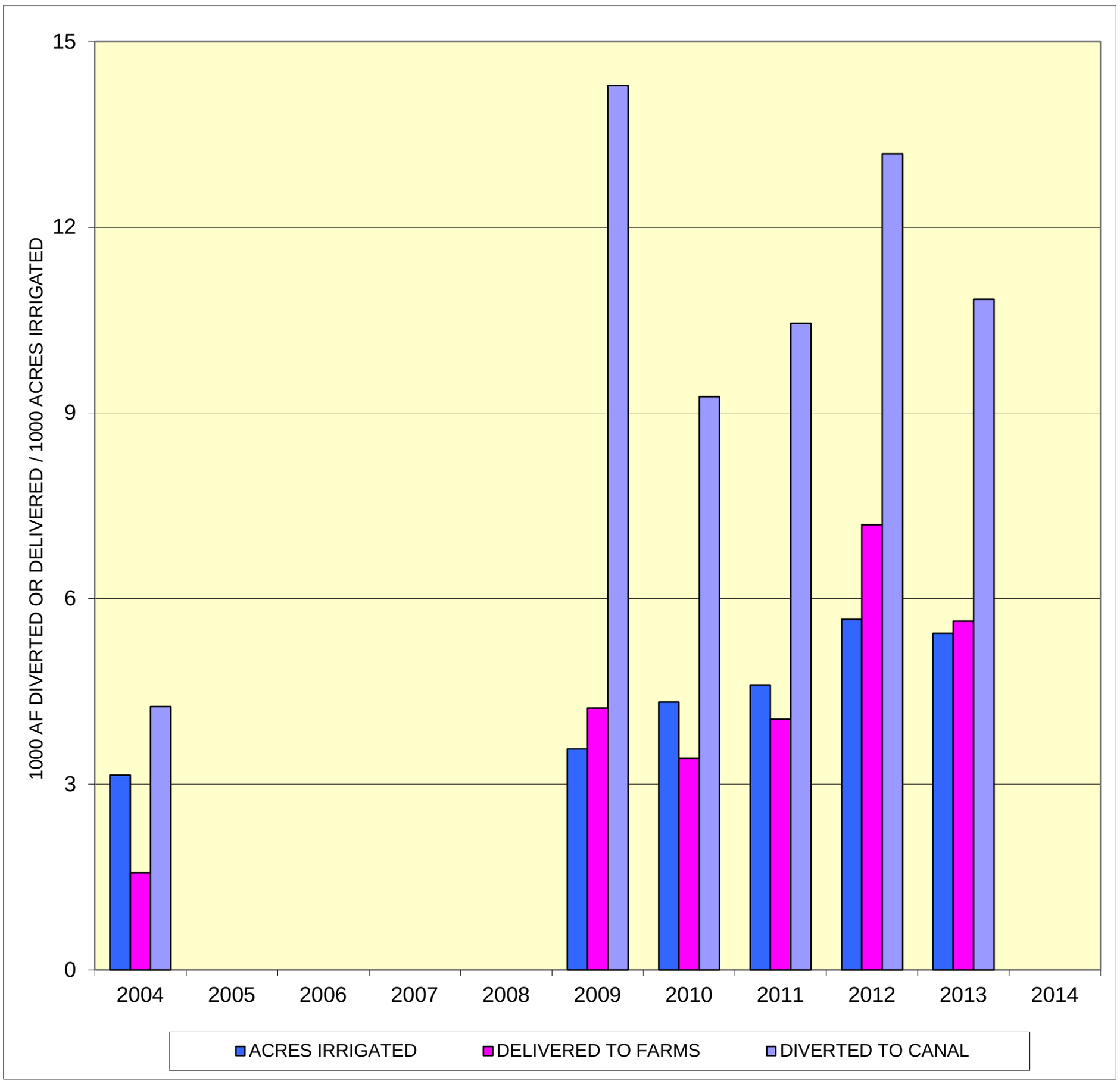
FORECASTED SHORTAGES (2014)

DRY YEAR	0 AF
NORMAL YEAR	0 AF
WET YEAR	0 AF

EXHIBIT 27

WEBSTER IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	1.35	0.00	0.00	0.00	0.00	4.00	2.14	2.27	2.33	1.99
DELIVERED af/acre	0.50	0.00	0.00	0.00	0.00	1.18	0.79	0.88	1.27	1.04
EFFICIENCY	37%	0%	0%	0%	0%	30%	37%	39%	55%	52%

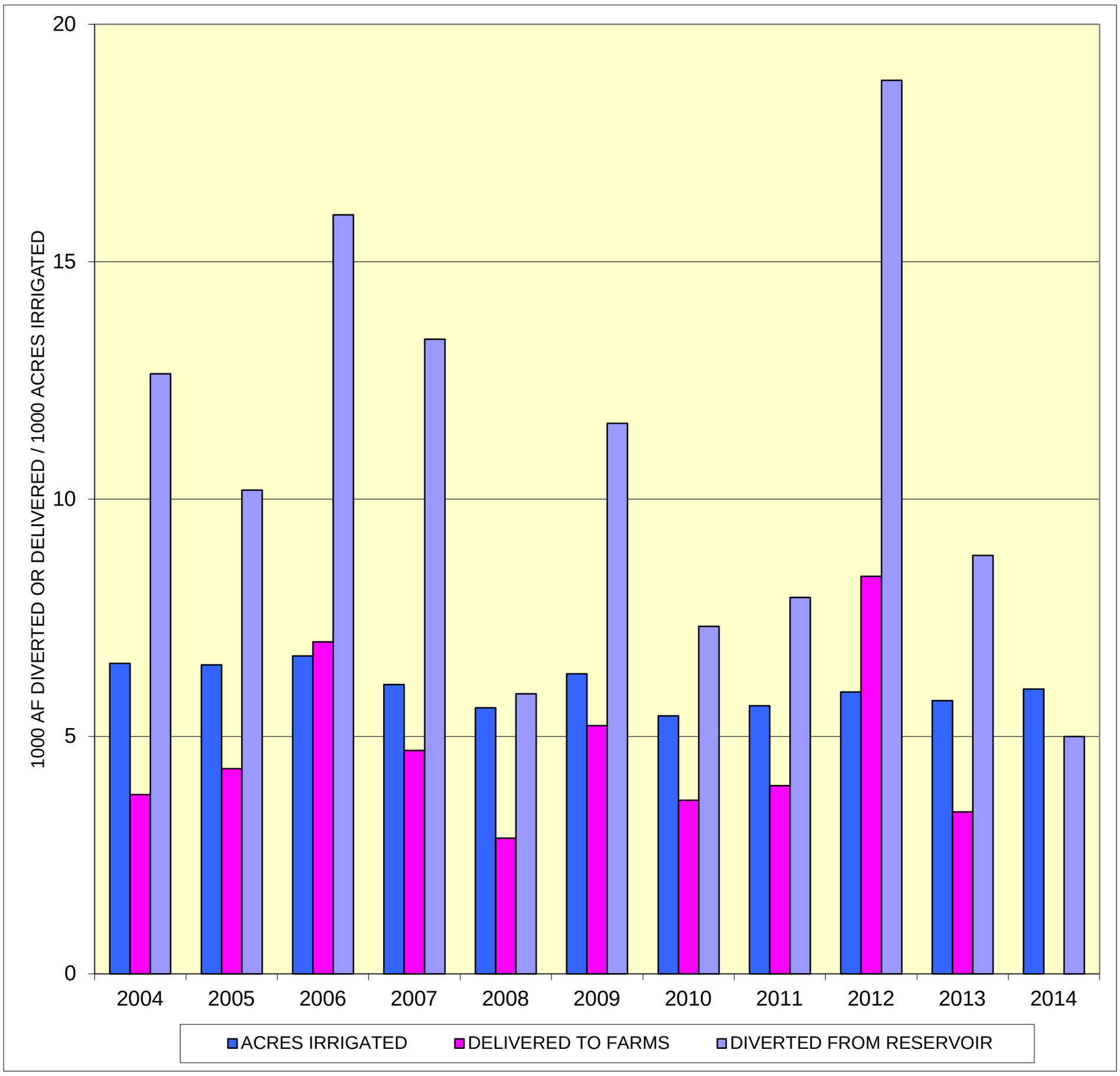
FORECASTED SHORTAGES (2014)

DRY YEAR	28,200 AF
NORMAL YEAR	4,700 AF
WET YEAR	0 AF

EXHIBIT 28

GLEN ELDER IRRIGATION DISTRICT

ACRES IRRIGATED, FARM DELIVERED, CANAL DIVERTED



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DIVERTED af/acre	1.93	1.57	2.39	2.19	1.05	1.83	1.35	1.40	3.17	1.53
DELIVERED af/acre	0.58	0.66	1.04	0.77	0.51	0.83	0.67	0.70	1.41	0.59
EFFICIENCY	30%	42%	44%	35%	48%	45%	50%	50%	44%	39%

FORECASTED SHORTAGES (2014)

DRY YEAR	0 AF
NORMAL YEAR	0 AF
WET YEAR	0 AF