US Army Corps
of Engineers

Northwestern Division
Missouri River Basin
Water Management Division

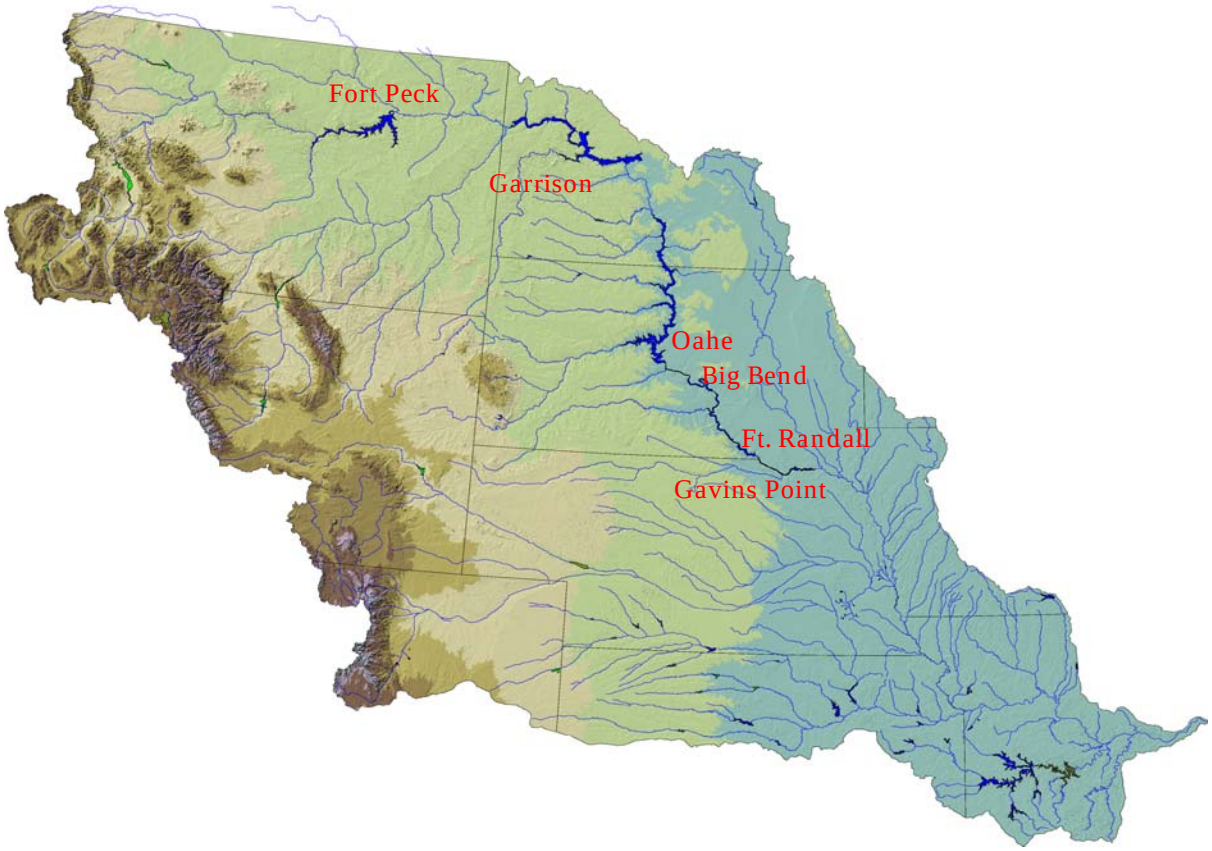
Final

AOP

2011-2012

Missouri River Mainstem System

2011-2012 Annual Operating Plan



Annual Operating Plan Process
59 Years Serving the Missouri River Basin

January 2012

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

REPLY TO
ATTENTION OF

JAN 4 2012

Division Commander

Dear Stakeholders and Concerned Citizens:

The historic Missouri River Flood of 2011 has severely impacted many communities, homeowners, farmers and businesses. As we move forward in 2012, the Corps of Engineers (Corps) is committed to working with other agencies and stakeholders to best prepare the system for the 2012 runoff season and reduce flood risk throughout the Basin. The operation of the reservoir system must be based on good data, science and engineering, and with consideration of ongoing critical repairs, other downstream impacts as well as the other authorized purposes. The recently released report of the independent external review panel provided recommendations to improve the operation of the reservoir system, some of which will be implemented and others that will require further analysis for possible future implementation, subject to the availability of funding.

This Annual Operating Plan (AOP) presents pertinent information and plans for the regulation of the Missouri River Mainstem Reservoir System through December 2012 under widely varying water supply conditions. The AOP is not intended to be a forecast for the coming year; rather it examines a range of potential runoff scenarios which span 80 percent of the historic record. The AOP provides a framework for the development of detailed monthly, weekly, and daily regulation schedules for the mainstem reservoir system's six individual dams during the upcoming year to serve its eight Congressionally-authorized project purposes. Actual real-time regulation of the system is done using the best information and tools available and is adjusted to respond to changing conditions on the ground.

A draft of this AOP was made available to the public in September 2011. Eight public meetings and workshops were held across the basin in late October and early November. As a result of input received at the meetings, a more flexible posture was adopted as 2011 flood water was evacuated from the dams in late fall and early winter. We are committed to maintaining an aggressive release schedule throughout the winter and spring if it appears that 2012 will be another high runoff year. In addition, the Corps will communicate more frequently and more broadly as the 2012 season unfolds. Twice monthly conference calls will be conducted to continue coordination with Federal, state, county and local officials, Tribes, emergency management officials, independent experts and the press to discuss conditions on the ground and current Corps' reservoir release plans and forecasts.

We realize that the benefits provided by the reservoir system are vitally important to the Nation and the people who live and work in the Basin. Flood control is our primary focus; the system is vulnerable in its present state and time is short to effect repairs. The Corps' top priority is to reduce flood risk by repairing the components of the flood risk management system to the extent possible against the constraints of time, weather and funding, and to ensure the reservoir system is ready for the 2012 runoff season. We believe the plan outlined in this report will result in appropriate balance of benefits and risks provided to all of the people who rely on the reservoir system. Thank you for your interest in the regulation of the mainstem reservoir system.

Sincerely,

John R. McMahon
Brigadier General, US Army
Division Commander

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MISSOURI RIVER MAINSTEM RESERVOIR SYSTEM

Annual Operating Plan
2011 - 2012

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ABBREVIATIONS

AOP	-	annual operating plan
ACHP	-	Advisory Council on Historic Preservation
AF	-	acre-feet
B	-	Billion
BiOp	-	Biological Opinion
BOR	-	Bureau of Reclamation
cfs	-	cubic feet per second
Corps	-	Corps of Engineers
CY	-	calendar year (January 1 to December 31)
elev	-	elevation
ESA	-	Endangered Species Act
ft	-	feet
FTT	-	Flow-to-Target
FY	-	fiscal year (October 1 to September 30)
GWh	-	gigawatt hour
ISAP	-	Independent Science Advisory Panel
KAF	-	1,000 acre-feet
kcfs	-	1,000 cubic feet per second
kW	-	kilowatt
kWh	-	kilowatt hour
MAF	-	million acre-feet
MRNRC	-	Missouri River Natural Resources Committee
msl	-	mean sea level
MW	-	megawatt
MWh	-	megawatt hour
NEPA	-	National Environmental Policy Act
plover	-	piping plover
PA	-	Programmatic Agreement
P-S MBP	-	Pick-Sloan Missouri Basin Program
RCC	-	Reservoir Control Center
RM	-	river mile
RPA	-	Reasonable and Prudent Alternative
SHPO	-	State Historic Preservation Officers
SR	-	Steady Release
System	-	Missouri River Mainstem System
tern	-	interior least tern
T&E	-	Threatened and Endangered
THPO	-	Tribal Historic Preservation Officers
USFWS	-	United States Fish and Wildlife Service
WY	-	water year
yr	-	year

DEFINITION OF TERMS

Acre-foot (AF, ac-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or 325,850 gallons.

Cubic foot per second (cfs) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute. The volume of water represented by a flow of 1 cubic foot per second for 24 hours is equivalent to 86,400 cubic feet, approximately 1.983 acre-feet, or 646,272 gallons.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

Drainage area of a stream at a specific location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by drainage system, which consists of a surface stream or body of impounded surface water together with all tributary surface streams and bodies of impounded water.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Runoff in inches shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

MISSOURI RIVER MAINSTEM RESERVOIR SYSTEM

Annual Operating Plan
2011 – 2012

I. FOREWORD

The historic flood of 2011 was unprecedented in both magnitude and duration and has severely impacted many communities, homeowners, farmers and businesses in the Missouri River basin. The U.S. Army Corps of Engineers (Corps) is committed to working with stakeholders throughout the region to best prepare the basin for the 2012 runoff season. Basin citizens and their elected officials have legitimately called for the preeminence of flood control. The system is vulnerable and many repairs will not be completed prior to the start of the 2012 runoff season. As a result, the Corps will maintain a flexible posture through the fall and winter as the remaining flood water is evacuated from the system. In particular, if conditions throughout the winter indicate that 2012 will be another high runoff year, the Corps will begin early evacuation of water from the system to provide additional storage to the extent that weather and downstream conditions allow. In addition, the Corps will communicate more broadly and frequently as the 2012 runoff season unfolds. Beginning in January the Corps will hold twice monthly conference calls with Federal, state, county and local officials, Tribes, emergency management officials, independent experts and the media to discuss conditions on the ground and the current release plans and forecasts. Recordings of the conference calls will be made available to the public through the Corps' website.

As part of post-flood assessment efforts, the U.S. Army Corps of Engineers, Northwestern Division, enlisted the assistance of experts in meteorology, hydrology, streamflow forecasting and reservoir system operations to review, analyze and assess the Corps' operation of the six mainstem dams along the Missouri River leading up to, and during the flood of 2011. The panel began its independent review on 4 October 2011 and submitted its findings to the Corps on 19 December 2011. The report is available on the Corps' website.

The panel reviewed and assessed a number of questions, including whether water management decisions made during the flood of 2011 were appropriate and in alignment with the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual), the water control plan that guides the operation of the Missouri River. The team also looked at whether the Corps could have prevented or reduced the impact of flooding by taking other management actions leading up to the flood, whether long-term regulation forecasts properly accounted for the runoff into the mainstem system, whether climate change played a role in this year's record runoff and

the role floodplain development played in the operation of the reservoir system proper to and during this year's flood event.

The panel's report also included recommendations for improvement, many of which can be implemented immediately; others may require detailed analysis and implementation could require a formal stakeholder process. In particular, the Corps has already begun to implement several of the recommendations including plans to update hydrologic studies and to review the flood control storage allocation. The Corps will also collaborate with other Federal, state and local agencies and our field offices to improve runoff forecasts, particularly as it relates to plains snowpack. This will require a collaborative effort to improve both data collection (i.e. plains snowpack water equivalent, soil moisture and frost depth) and hydrologic modeling. The Missouri River Flood Task Force may serve an excellent venue to accomplish this effort. The Corps will also improve our outreach efforts through earlier and more frequent communication including the twice monthly conference calls which are scheduled to begin in January 2012.

This Annual Operating Plan (AOP) presents pertinent information and plans for regulating the Missouri River Mainstem Reservoir System (System) through December 2012 under widely varying water supply conditions. It is important to note that the AOP is not intended to be a forecast for the coming year; rather it examines a range of potential runoff scenarios which span 80 percent of the historic record. There is still a 10 percent chance that runoff will be higher than shown in the AOP and a 10 percent chance that it will be lower. The studies included in the AOP provide an array of reservoir levels and releases that may be expected under the various runoff scenarios. It also indicates how the reservoir system will be regulated to serve the Congressionally authorized project purposes; to fulfill the Corps' responsibilities to Native American Tribes; and to comply with environmental laws, including the Endangered Species Act (ESA). The AOP provides a framework for the development of detailed monthly, weekly, and daily regulation schedules for the System's six individual dams during the coming year. Actual real-time regulation of the system is done using the best information and tools available and is adjusted to respond to changing conditions on the ground. As the runoff season unfolds, there is a possibility that real-time regulation plans will indicate runoff volumes, reservoir levels and releases outside those anticipated in this report. Should that occur, the Corps will appreciably increase its communication and outreach efforts to convey that information to stakeholders throughout the basin so that other Federal, state and local agencies, Tribes, communities, and local residents can take appropriate actions.

Regulation of the system is directed by the Missouri River Basin Water Management Division, Northwestern Division, U. S. Army Corps of Engineers (Corps) located in Omaha, Nebraska. A map of the Missouri River basin is shown on ***Plate 1***

and the summary of engineering data for the six individual mainstem projects and System is shown on ***Plate* 2**.

This plan may require adjustments such as when substantial departures from expected runoff occur; to meet emergencies including short-term intrasystem adjustments to protect human health and safety, during periods of extended drought to maintain minimum river or reservoir levels to keep intakes operational, and adjustments in reservoir releases or reservoir levels to prevent loss of historic and cultural properties; or to meet the provisions of applicable laws, including the ESA. These adjustments would be made to the extent possible after evaluating impacts to all System uses, would generally be short term in nature and would continue only until the issue is resolved.

This document provides the plan for future regulation of the System. Other documents that may be of interest include the "System Description and Regulation" report dated November 2007 or the "Summary of Actual Calendar Year 2010 Regulation," dated September 2011. Both reports are currently available at the "Reports and Publications" link on our web site at: **www.nwd-mr.usace.army.mil/rcc,** or you may contact the Missouri River Basin Water Management Division at 1616 Capitol Avenue, Suite 365, Omaha, Nebraska 68102-4909, phone (402) 996-3841 for copies. The "Summary of Actual Calendar Year 2011 Regulation" will be available at the same site in late spring or early summer of 2012.

II. BACKGROUND AND AOP PROCESS

Beginning in 1953, projected System reservoir regulation for the year ahead was developed annually as a basis for advance coordination with the various interested Federal, State, and local agencies and private citizens. Also beginning in 1953, a coordinating committee was organized to make recommendations on each upcoming year's System regulation. The Coordinating Committee on Missouri River Mainstem Reservoir Operations held meetings semiannually until 1981 and provided recommendations to the Corps. In 1982, the Committee was dissolved because it did not conform to the provisions of the Federal Advisory Committee Act. Since 1982, to continue providing a forum for public participation, one or more open public meetings are held semiannually in the spring and fall. The fall public meetings are conducted to take public input on the Draft AOP, which typically is published in mid-September each year. The spring meetings are conducted to update the public on the current hydrologic conditions and projected System regulation for the remainder of the year as it relates to implementing the Final AOP.

Under the terms of Stipulation 18 of the March 2004 "Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System for Compliance with the National Historic Preservation Act, as amended" (PA) the Corps has agreed to consult/meet with the affected Tribes and Tribal Historic Preservation Officers (THPO's), State Historic Preservation Officers (SHPO's), the Advisory Council on Historic Preservation (ACHP) and other parties on the Draft AOP. The purpose of this consultation/meeting is to determine whether operational changes are likely to cause changes to the nature, location or severity of adverse effects to historic properties or to the types of historic properties affected and whether amendments to the Corps Cultural Resources Management Plans and Five-Year Plan are warranted in order to better address such effects to historic properties. During 2006 the Corps worked with the affected Tribes to establish processes for consultation on AOP's under 36 CFR Part 800, the PA, and Executive Order 13175. The process consists of a series of informational meetings with the Tribes and/or government-to-government consultation with Tribes, as requested. A letter, dated September 22, 2011, was sent to the Tribes offering consultation on the 2011-2012 AOP. Meeting times and locations of the eight fall public meetings were also provided. Separate meetings will be scheduled for all Tribes requesting government-to-government consultation. All tribes, whether signatory to the PA or not, may request government-to-government consultation on this and all future AOP's. In addition, the Tribes have reserved water rights to the Missouri River and its major tributaries. In no way does this AOP attempt to define, regulate or quantify water rights or any other rights that the Tribes are entitled to by law or treaty.

The 2011 spring public meetings were held at the following locations and dates: April 12 at Nebraska City, Nebraska, and Fort Peck, Montana; April 13 at Bismarck, North Dakota and Pierre, South Dakota; April 14 at Jefferson City, Missouri and Kansas

City, Missouri. The attendees were given an update regarding the outlook for 2011 runoff and projected System regulation for the remainder of 2011. Eight fall public meetings, which included both an afternoon open house and a traditional evening public meeting, were held on the Draft 2011-2012 AOP at the following locations: October 24 in Omaha, Nebraska; October 25 in St. Joseph, Missouri; October 26 in Overland Park, Kansas; October 27 in Jefferson City, Missouri; October 31 in Glasgow, Montana; November 1 in Bismarck, North Dakota; November 2 in Pierre, South Dakota; and November 3 in Sioux City, Iowa. In the spring of 2012, public meetings will be held to discuss the basin's hydrologic conditions and the effects those conditions are expected to have on the implementation of the Final 2011-2012 AOP.

III. MAINSTEM MASTER MANUAL AND ESA CONSULTATIONS

The System is comprised of six dam and reservoir projects authorized by the Rivers and Harbors Act of 1935 and the Flood Control Act of 1944. Section 9 of the 1944 Flood Control Act authorized the System to be operated for the purposes of flood control, navigation, irrigation, hydropower, water supply, water quality control, recreation and fish and wildlife. In addition, operation of the System must also comply with other applicable Federal statutory and regulatory requirements, including the ESA. The System is regulated using guidelines published in the Master Manual. The Master Manual presents the water control plan and operational objectives for the integrated regulation of the System. Annual water management plans (Annual Operating Plans) are prepared each year, based on the water control criteria contained in the Master Manual, in order to detail reservoir regulation of the System for the current operating year.

First published in 1960 and subsequently revised during the 1970s, the Master Manual was revised in March 2004 to include more stringent drought conservation measures. The 2003 Amendment to the 2000 Biological Opinion (2003 Amended BiOp) presented the USFWS' opinion that the regulation of the System would jeopardize the continued existence of the endangered pallid sturgeon. The USFWS provided a Reasonable and Prudent Alternative (RPA) to avoid jeopardy to the pallid sturgeon that included a provision for the Corps to develop a plan to implement a bimodal 'spring pulse' from Gavins Point Dam. Working with the USFWS, Tribes, states and basin stakeholders, the Corps developed technical criteria for the bimodal spring pulse releases. In March 2006 the Master Manual was revised to include technical criteria for a spring pulse. Neither the 2004 nor the 2006 revisions to the Master Manual changed the volume of storage in the system reserved for flood risk reduction or the manner in which it is regulated. The Corps does not store water in the reservoirs specifically for the endangered species and the Master Manual storage allocations were not altered to facilitate the spring pulses. In years when water is released for endangered species, reservoir storage levels are not adjusted.

Current regulation of the System in accordance with the Master Manual to serve authorized project purposes is dependent on successful implementation of the 2003 Amended BiOp. Implementation of the RPA elements is accomplished through the Missouri River Recovery Program (MRRP) which includes the following elements: habitat construction including emergent sandbar habitat and shallow water habitat, flow modifications, propagation/hatchery support, research, monitoring and evaluation, and adaptive management. Simply put, the Corps must comply with environmental laws including the ESA, and the MRRP is the vehicle used to accomplish this. This AOP identifies flow modifications at Garrison, Fort Randall and Gavins Point for the benefit of the interior least tern and the piping plover while maintaining flood control and navigation as primary authorized purposes.

The 2011 flood event was unprecedented in both magnitude and duration along much of Missouri River resulting in significant damage to the projects, levees and other infrastructure. The Corps is in the initial phases of inspection, repair and restoration of this important infrastructure and it is unlikely that all repairs will be completed prior to the 2012 runoff season.

In addition, although a full assessment cannot be completed until the water levels recede, it is likely that the flood has also had a significant impact on the Missouri River ecosystem including emergent sandbar habitat utilized by the terns and plovers, and riverine habitat utilized by the pallid sturgeon. We expect emergent sandbar habitat to be abundant next year, as it was following the 1997 flood event; however riverine habitat impacts are generally unknown at this time. The river experienced a natural rise of near historic proportions in 2011, therefore we believe the efforts of the Missouri River Recovery Program should be focused on capturing the impact of the historic flood event rather than monitoring and analyzing a much smaller managed spring pulse in 2012.

Based on discussions with the USFWS regarding the above factors, and the ongoing review of the Gavins Point spring pulse by the Independent Science Advisory Panel (ISAP) which may inform the future direction of the spring pulse, this AOP does not include spring pulses from Gavins Point dam.

With regard to summer releases to minimize take of the interior least tern and piping plover, based on the historic runoff experienced this year, we anticipate an abundance of high, secure nesting habitat for the two bird species. This expectation is based on the observed habitat following the previous runoff of record in 1997. The proposed summer release pattern to be included in the AOP will be a steady release or a steady release flow-to-target pattern provided nests are at a sufficient elevation so as not to be inundated.

The Corps will continue to work closely with the USFWS to ensure the AOP will meet the intent of the 2003 Amended BiOp and result in management actions that support the continued existence of these species on the river.

Additional information on other efforts undertaken through the Missouri River Recovery Program to meet the requirements of the 2003 Amended BiOp can be found in the Annual Report on the Biological Opinion which can be found on the "MRRP Documents" page of the Recovery Program website at: www.moriverrecovery.org.

IV. FUTURE RUNOFF: AUGUST 2011 - DECEMBER 2012

Runoff into the six System reservoirs is typically low and relatively stable during the August-to-February period. The August 1 calendar year runoff forecast is normally used as input to the Basic reservoir regulation simulation in the AOP studies for the period August 2011 to February 2012. Due to the on-going flood evacuation and much higher than normal August runoff, this year's AOP studies use the September 1 calendar year runoff forecast as input to the Basic simulation. The September 1 runoff forecast for 2011 was 61.0 million acre-feet (MAF). Two other runoff scenarios based on the September 1 runoff forecast were developed for the same period. These are the Upper Basic and Lower Basic simulations, which are based on 120 percent and 80 percent of the September through February runoff forecast, respectively.

Simulations for the March 1, 2012 to February 28, 2013 time period use five statistically derived inflow scenarios based on an analysis of historic water supply. The report detailing the development of these inflow scenarios was updated in July 2008 to include 9 additional years of inflow data that now extends from 1898 to 2006. This report will be updated during 2012 to include runoff data from 2007 through 2011. The updated analysis will incorporate the current series of wet years including 2010, which was the fourth wettest year on record, and 2011, which was the wettest year on record. Using statistically derived inflow scenarios for the AOP provides a good range of simulation for dry, average, and wet conditions, and eliminates the need to forecast future precipitation months in advance, which is very difficult. In contrast, real-time regulation of the System is based on all available and relevant hydrometerological information including, but not limited to observed runoff volumes, National Weather Service short and long-range outlooks, plains and mountain snowpack data, observed base flows, soil moisture and frost depths.

The five statistically derived inflows used in the AOP are identified as the Upper Decile, Upper Quartile, Median, Lower Quartile and Lower Decile runoff conditions. Upper Decile runoff (34.3 MAF) has a 1 in 10 chance of being exceeded, Upper Quartile (30.3 MAF) has a 1 in 4 chance of being exceeded, and Median (24.4 MAF) has a 1 in 2 chance of being exceeded. Lower Quartile runoff (19.3 MAF) has a 1 in 4 chance of the

occurrence of less runoff, and Lower Decile (16.2 MAF) has a 1 in 10 chance of the occurrence of less runoff. There is still a 20 percent chance that a runoff condition may occur that has not been simulated; i.e., a 10 percent chance runoff could be lower than Lower Decile and a 10 percent chance runoff could be greater than Upper Decile.

The Upper Decile and Upper Quartile simulations extend from the end of the Upper Basic simulation through February 2013. Likewise, the Median simulation extends from the end of the Basic simulation, and the Lower Quartile and Lower Decile simulations extend from the end of the Lower Basic simulation through February 2013.

The estimated natural flow at Sioux City, the corresponding post-1949 water use effects, and the net flow available above Sioux City are shown in ***Table I,*** where water supply conditions are quantified for the period September 2011 through February 2013. The natural water supply for calendar year (CY) 2010 totaled 38.7 MAF.

TABLE I
NATURAL AND NET RUNOFF AT SIOUX CITY
(Volumes in 1,000 Acre-Feet)

	Natural 1/	Post-1949 Depletions	Net 2/
September 2011 through February 2012 (Basic Runoff Scenario)			
Basic	7,300	1,400	8,700
Upper Basic (120%)	8,800	1,400	10,200
Lower Basic (80%)	5,800	1,400	7,200
Runoff Year March 2012 through February 2013 (Statistical Analysis of Past Records)			
Upper Decile	34,300	-2,500	31,800
Upper Quartile	30,300	-2,500	27,800
Median	24,400	-2,600	21,800
Lower Quartile	19,300	-2,500	16,800
Lower Decile	16,200	-2,400	13,800

1/ The word "Natural" is used to designate runoff adjusted to the 1949 level of basin development, except that regulation and evaporation effects of the Fort Peck reservoir have also been eliminated during its period of regulation prior to 1949.

2/ The word "Net" represents the total runoff after deduction of the post-1949 irrigation, upstream storage, and other use effects.

V. ANNUAL OPERATING PLAN FOR 2011-2012

A. General. The Missouri River basin experienced a historic flood in 2011 with record runoff into the reservoir system, currently forecast to total 60.8 million acre-feet (MAF). Record pool elevations were set at three projects: Fort Peck, Oahe and Fort Randall; surcharge storage was utilized at Fort Peck and Garrison; spillways at Garrison and Big Bend that had never been used before were opened, and releases from all projects reached rates more than twice the previous records with catastrophic results from Montana to Missouri. The flood caused widespread damages from Montana to Missouri and caused many to question the validity of the Master Manual with regard to flood control. A risk analysis was conducted to determine the best way to prepare the basin for the 2012 runoff season. A number of options were considered, including several that provided more than 16.3 MAF of flood control storage as called for in the Master Manual. The selected drawdown strategy was designed to evacuate stored flood water as quickly as possible to allow people to get back into their homes, farms and businesses to begin the process of recovery, and to allow inspection and repair of infrastructure including the dams and levees to ensure they are ready for the 2012 season. Due to the risk imposed by the sustained high releases necessary to provide additional flood control storage, and the associated delay in the recovery process, the selected plan does not draw down system storage below the base of the Annual Flood Control and Multiple Use zone. However, a more flexible posture will be taken as water is evacuated during the fall and early winter, and if it appears that 2012 will be another high runoff year the corps will aggressively release water during the winter and spring as weather permits and repair work allows. This year's decision does not preclude changes in flood control storage in the future. The Corps will conduct an extensive review to assess the operation of the reservoir system, its effects, and where improvements or adjustments may be warranted. Given the 2011 record runoff, and the fact that this record runoff exceeded the design capacity of the system by over 20 percent, the Corps will conduct an analysis to determine how additional flood control storage may improve flood risk reduction for storms greater than the current design storm, including runoff volumes equal to and greater than the 2011 event. The study is intended to inform the path forward and will include a limited investigation of the potential impacts on other authorized purposes if such a change was made. Given the complexity of the issue and impacts on other authorized purposes, further studies might be recommended. This and other information, such as results of the external peer review of the 2011 system operation and a lower basin coincident frequency analysis, will be used to determine whether a Master Manual revision and/or reallocation study should be considered.

The anticipated regulation described in this AOP is designed to meet the regulation objectives presented in the current Master Manual. While some aspects of System and individual project regulation are clearly defined by technical criteria in the Master Manual, for example navigation service level and season length, others such as

minimum releases for irrigation and water supply in the reaches between the reservoirs are based on regulation experience and will be adjusted as needed to respond to changing conditions. Consideration has been given to all of the authorized project purposes, to historic and cultural resources and to the needs of threatened and endangered (T&E) species. The "System Description and Regulation" report provides a concise summary of the primary aspects of System regulation and should be referred to for further information. For ease of use, a summary of the frequently used technical criteria included in the Master Manual is presented on ***Plate 3.***

The plan relies on a wealth of regulation experience. Reservoir regulation experience available for preparation of the 2011-2012 AOP includes 13 years of regulation at Fort Peck (1940) as the sole Mainstem project, plus 58 years of System experience as Fort Randall (1953), Garrison (1955), Gavins Point (1955), Oahe (1962), and Big Bend (1964) were brought progressively into System regulation. This regulation experience includes lessons learned during two major droughts of six and eight years (1987-1992 and 2000–2007) that have occurred since the System filled in 1967. It also includes the high runoff period from 1993 – 1999 during which five of the seven years experienced runoff greater than Upper Quartile including the previous record runoff of 49.0 MAF in 1997, and the record runoff of 2011, forecast to be 60.8 MAF. In addition to the long period of actual System reservoir regulation experience, many background regulation studies for the completed System are available for reference.

B. <u>2011-2012 AOP Simulations</u>. AOP simulations for the five runoff scenarios are shown in the final section of this AOP as studies 4 through 8. As previously stated, the simulations use five statistically derived runoff scenarios and reflect 80 percent of the historic annual runoff volumes (between Upper and Lower Decile). The simulations provide information for planning purposes on a range of future reservoir levels and release rates, and are not meant to represent a particular forecast. The simulations shown use a monthly time-step, and thus do not provide the level of detail necessary to address specific flood control regulations. Detailed routing of specific flood flows is accomplished using forecast models which incorporate real time information including observed and forecasted precipitation, and these situations are handled individually during real-time regulation.

The AOP studies, in summary, provide the following: the full flood control capacity of the reservoir system will be available at the start of the runoff season and use of the exclusive flood control zone is not anticipated under any of the five runoff scenarios covered in the AOP; full service flow support throughout a full length navigation season under all runoff scenarios; lower than normal winter releases for Lower Quartile and Lower Decile runoff, normal winter releases under Median runoff, and above normal winter releases for Upper Decile and Upper Quartile runoff; a steady release-flow to target regulation during the tern and plover nesting season for Median and

below runoff and nearly steady releases for Upper Quartile and Upper Decile runoff though flood water evacuation is required; emphasis on Fort Peck and Oahe for a steady to rising reservoir level during the forage fish spawn; and reservoir releases and pool levels sufficient to keep all intakes operational under all runoff scenarios. While likely not the case for the 2011-2012 runoff year, water conservation measures will be implemented if runoff conditions indicate that it would be appropriate including cycling releases from Gavins Point during the early part of the nesting season, only supporting flow targets in reaches being used by commercial navigation, and utilization of the Kansas River projects authorized for Missouri River navigation flow support. Additional details about the studies are provided in the following paragraphs. Results of the simulations are shown in ***Plate 4*** and ***Plate 5*** for the System storage and the Fort Peck, Garrison and Oahe pool elevations.

Under all runoff scenarios modeled for the AOP, the full flood control capacity of the system is available at the start of the 2012 runoff season and all 2012 runoff is evacuated prior to the start of the 2013 runoff season. Although the March 1 and May 1 System storage is above the Gavins Point spring pulse precludes of 40.0 MAF, as discussed in Chapter III, spring pulses will not be conducted in 2012. The Corps will continue to work closely with the USFWS to ensure the AOP will meet the intent of the 2003 Amended BiOp and comply with the ESA.

The March 15 and July 1 System storage checks were used to determine the level of flow support for navigation and other downstream purposes as well as the navigation season length in 2012. Full service navigation flows or more are provided for all runoff conditions throughout the navigation season. Application of the July 1 System storage check (see ***Plate 3***) indicate that a full length navigation season would be provided for Median and lower runoff conditions. The upper two runoff scenarios provide a 10-day extension to the navigation season. Upper Quartile and Upper Decile simulations reach the desired 56.8 MAF System storage level on March 1, 2013. Storage is below the base of the annual flood control zone for median and lower runoff conditions.

For modeling purposes in this AOP, the Steady Release – Flow to Target (SR-FTT) regulation scenario for Gavins Point dam is shown during the 2012 tern and plover nesting season for Median and lower runoff conditions. For these simulations, the monthly average May release used in the simulations was determined by using the long-term average release (see ***Plate 3***) based on the service level for the first third of the month, followed by cycling between the May and July table values for the remainder of the month to reflect an every third day peaking cycle from Gavins Point. The modeled June release was set equal to the long-term average release for July (see ***Plate 3***) based on the service level for the first half of the navigation season. The long-term average releases (see ***Plate 3***) were used for July and August to indicate flowing to target. The Upper Quartile and Upper Decile runoff simulations follow the Master Manual, with much above normal runoff requiring release increases early in the year to

evacuate floodwater from the reservoirs. Although these modeled Gavins Point releases represent our best estimate of required releases during 2012, actual releases will be based on hydrologic conditions and the availability of habitat at that time. To the extent reasonably possible, measures to minimize incidental take of the protected species will be utilized. These may include not meeting flow targets in reaches without commercial navigation and utilizing the Kansas River tributary reservoirs for navigation flow support when appropriate. It may also be necessary to cycle releases for flood control regulation during the T&E species' nesting season.

The long-term average Gavins Point releases to meet target flows were used in the AOP studies for navigation support during the spring and fall months with the exception of Upper Quartile and Upper Decile. Under those two runoff scenarios, releases were based on flood water evacuation. Based on the September 1 storage checks and flood evacuation criteria, modeled Gavins Point winter releases ranged from 20,000 cfs to 24,000 cfs during the 2011-2012 winter season depending on the runoff scenario, and from 12,000 cfs to 20,000 cfs during the 2012-2013 winter season depending on the runoff scenario. Releases above theses ranges will be made in real-time operations during the winter of 2011-2012 to aggressively evacuate water from the system if conditions indicat that 2012 will be another high runoff year. Gavins Point releases will be increased to meet downstream water supply requirements in critical reaches, to the extent reasonably possible, if downstream incremental runoff is low.

The Gavins Point releases shown in this and previous AOPs are estimates based on historic averages and experience. Adjustments are made as necessary in real-time based on hydrologic conditions.

Intrasystem releases are adjusted to best serve the multiple purposes of the projects with special emphasis placed on regulation for non-listed fisheries starting in early April and for T&E bird species beginning in early May and continuing through August. As part of the overall plan to rotate emphasis among the upper three reservoirs during low runoff years, Fort Peck and Oahe are scheduled to be favored during the 2012 forage fish spawn while also attempting to maintain rising water levels at Garrison. The Median, Upper Quartile, and Upper Decile simulations show that it is possible to provide steady-to-rising pool levels in each of the three large upper reservoirs during the spring forage fish spawn period. Releases in the Lower Quartile and Lower Decile simulations are adjusted to maintain steady-to-rising pool levels at Fort Peck and Oahe. The Lower Quartile and Lower Decile simulations show the Garrison pool dropping during April and May.

Two additional modified reservoir regulation plans, the Fort Peck "mini-test" and unbalancing the upper three reservoirs, have been discussed in previous AOPs, but have not been implemented in recent years. Due to the large variability of reservoir levels in recent years, the unbalancing of the three reservoirs to benefit reservoir

fisheries and the endangered interior least tern and threatened piping plover will not be implemented 2012. Additionally, experience has shown that storing water in the annual flood control zone, particularly at Oahe, as the current criteria requires in order to implement unbalancing is undesirable due to flood control impacts. The Corps will work with each of the appropriate state agencies in 2012 to determine a modified version of unbalancing that may be implemented in future AOP's that does not adversely impact flood control. For the purposes of this AOP, the upper three reservoirs are shown in a balanced condition for all runoff scenarios. This balancing is computed based on the percent of the carryover multiple-use pool. With regard to the Fort Peck mini-test, a priority for pallid sturgeon recovery has been placed on the Lower Yellowstone Project at Intake, Montana. The Fort Peck mini-test and full test flows will be deferred until the efficacy of the Lower Yellowstone Project has been assessed. The groundbreaking for this project took place in August 2010.

Actual System regulation from January 1 through August 31, 2011 and the simulated regulating plans for each project through CY 2012 using the five runoff scenarios described on Page 4 are presented on ***Plate 6*** through ***Plate 11***, inclusive. Big Bend regulation is omitted since storage at that project is relatively constant and average monthly releases are essentially the same as those at Oahe. These plates also show, on a condensed scale, actual regulation since 1953.

Plate 12 illustrates for Fort Peck, Garrison, Oahe, and Gavins Point the actual releases (Regulated Flow) as well as the Missouri River flows that would have resulted if the reservoirs were not in place (Unregulated Flow) during the period January 2010 through July 2011. Regulation of the reservoir system in 2011 reduced peak flows by approximately 40,000 to 60,000 cfs at Fort Peck and by approximately 80,000 to 100,000 cfs downstream of the Yellowstone River to the mouth near St. Louis. ***Plate 13*** presents past and simulated gross average monthly power generation and gross peaking capability for the System.

C. <u>Regulation Plan for the Balance of the 2011 Navigation Season and Fall of 2011.</u> The regulation of the System for the period of August though November 2011 is presented in the following paragraphs.

<u>Fort Peck Dam</u>. As part of the continued evacuation of record runoff into the system in 2011, releases from Fort Peck were 30,000 cfs at the start of August, and then dropped to 25,000 cfs in mid-August. Releases were held at 25,000 cfs through late September when they were lowered to 20,000 cfs and eventually reached 9,000 cfs at the beginning of October. Average releases for August and September were 26,600 cfs and 23,000 cfs, respectively. Releases were held steady at 9,000 cfs from early October through early November and then increased to 10,000 cfs. The Fort Peck pool continued to drop quickly in September before slowing down in October and ending November near

2237.1 feet msl. A record high Fort Peck pool elevation of 2252.3 feet msl was set on June 15, 2.3 feet above the top of exclusive flood control pool. The previous record high pool elevation was 2251.6 feet msl set in July 1975.

Garrison Dam. Releases started August at 110,000 cfs and were gradually reduced to 65,000 cfs during the month. Releases continued to drop throughout September and ended the month at 26,000 cfs. Average releases for August and September were 91,100 cfs and 43,400 cfs, respectively. Releases were held steady at 26,000 cfs from October through early November, and then increased to 28,500 cfs to continue the evacuation of water from the annual flood control and multiple use zone. Releases were reduced in early December in anticipation of the December freeze-in downstream of Garrison between Washburn and Bismarck, North Dakota. The Garrison pool continued dropping quickly in September before slowing down in late September and then steadily dropping through the fall, ending at 1839.8 feet msl at the end of November. The Garrison pool elevation peaked at 1854.6 feet msl on July 1, 0.6 feet above the top of exclusive flood control pool. This was the second highest recorded pool elevation on record. The record high pool elevation was 1854.8 feet msl set in July 1975.

Oahe Dam. Releases started the month of August at 135,000 cfs and were gradually reduced to 80,000 cfs during the month. Releases continued to drop throughout September reaching 40,000 cfs near the end of the month. The monthly average release was 117,100 cfs in August and 67,300 cfs in September. October and November releases averaged 27,800 cfs and 36,300 cfs, respectively, to continue the evacuation of the record runoff stored in Oahe and to accommodate the fall drawdown of the Fort Randall pool. The Oahe pool ended November at elevation 1607.4 feet msl. A record high Oahe pool elevation of 1619.7 feet msl was set on June 26, within 0.3 foot of the top of exclusive flood control pool. The previous record high pool elevation was 1618.7 feet msl set in June 1995 and 1996.

Big Bend Dam. Releases parallel those from Oahe. Big Bend generally fluctuates between 1420.0 feet msl and 1421.0 feet msl for weekly cycling during high power load periods.

Fort Randall Dam. Releases started the month of August at 147,000 cfs and gradually dropped to 86,000 cfs by the end of the month; averaging 133,000 cfs. Average releases were 80,000 cfs in September, 39,300 cfs in October, and 36,300 cfs in November to continue the evacuation of flood water, to facilitate the annual drawdown of Fort Randall and to back up the releases from Gavins Point Dam. Fort Randall reservoir peaked at a record elevation of 1374.0 ft msl on July 11 (previous record pool of 1372.2 occurred in May 1997). Releases during the late summer and fall were focused on evacuating the record volume of water stored in the system and completing the annual fall drawdown of the reservoir for winter hydropower generation. Releases will

be reduced after the navigation season ends in early December to the level required to back up Gavins Point winter releases.

Gavins Point Dam. Releases were reduced from 155,000 cfs to 150,000 cfs on August 1, held at that rate through mid-August, and then gradually reduced to 90,000 cfs by the end of the month. The 90,000 cfs release rate was held until mid-September. Releases were reduced 5,000 cfs every other day until reaching 60,000 cfs and then reduced 5,000 cfs each day down to 40,000 cfs in early October. Releases were held at 40,000 cfs one week longer than initially planned as part of the Corps flexible release posture. These releases were above the level required for full service navigation levels to evacuate water from the reservoir system. A full length navigation season, plus a 10-day extension, was provided in 2011 in accordance with the technical criteria for the July 1 System storage check presented in the Master Manual. In accordance with the Missouri River Master Manual, during years of greater than normal water supply, the navigation season is extended as both an additional evacuation measure and to provide an increased benefit to navigation while striving to reach the base of the annual flood control zone by March 1 the following season. The last day of flow support for the commercial navigation season ranged from December 1 at Sioux City to December 10 at the mouth near St. Louis. Releases were reduced by approximately 3,000 cfs per day in early December until they reached 22,000 cfs. Releases will be maintained at that rate until colder weather moves into the basin at which time releases will be reduced to the winter release rate of 20,000 cfs. The 40,000 cfs release rate was extended through December 7, and higher winter releases may be adopted as repair work permits and conditions allow in order to evacuate additional water from the system. The Gavins Point pool level was raised 1.5 feet to elevation 1207.5 feet msl in September. The pool level will remain near that elevation during the fall and winter months.

D. Regulation Plan for Winter 2010-2011. The September 1 System storage check is used to determine the winter release rate from Gavins Point dam. A winter release of 12,000 cfs is scheduled if System storage is less than 55 MAF on September 1; 17,000 cfs is scheduled when System storage is above 58 MAF; and the release is prorated for System storages between 55 and 58 MAF. A modification to the winter release rate from Gavins Point dam may occur when the evacuation of System flood control storage cannot be accomplished by providing a full-service navigation season with a 10-day extension of the navigation season. With an excess annual water supply, the winter season Gavins Point release may be scheduled at a rate of up to 25,000 cfs to continue to evacuate the remaining excess water in System flood control storage. The planned winter System release for 2011-2012 is 20,000 cfs. It is anticipated that this year's winter release will be adequate to complete evacuation of stored flood waters and serve all downstream water intakes. Winter releases will remain flexible to allow evacuation of additional water as weather permits and repair work allows. In addition, an aggressive winter release schedule will be implemented if conditions indicate that 2012 will be another high runoff year.

Fort Peck Dam. Releases are expected to average 11,000 cfs in December and 12,000 cfs in January and February to serve winter power loads and to draw down the lake to the base of the annual flood control pool. The Fort Peck pool level is expected to decline about 3.1 feet from elevation 2237.1 feet msl at the end of November to near elevation 2234.0 feet msl by March 1.

Garrison Dam. Releases are scheduled to be 19,000 cfs in December increasing to 24,000 cfs for January and 26,000 cfs for February to serve winter power loads and to drawdown the reservoir to slightly below the base of the annual flood control pool. The December release rate will likely be reduced prior to the time of freeze-in to prevent ice induced flooding at the time of freeze-in. These temporary reductions in the releases may be scheduled to prevent exceedence of a 13-foot stage at the Bismarck gage. Flood stage is 16 feet. The Garrison pool level is expected to decline about 3.2 feet from elevation 1839.8 feet msl at the end of November to near elevation 1836.6 feet msl by March 1, 0.9 foot below the base of the annual flood control storage zone.

Oahe Dam. Releases for the winter season will provide backup for the Fort Randall and Gavins Point releases plus refill the recapture space available in the Fort Randall reservoir consistent with anticipated winter power loads. Monthly average releases may vary substantially with fluctuations in power loads occasioned by weather conditions but, in general, are expected to average about 23,600 cfs. Daily releases will vary widely to best meet power loads. Peak hourly releases, as well as daily energy generation, will be constrained to prevent urban flooding in the Pierre and Fort Pierre areas if severe ice problems develop downstream of Oahe Dam. This potential reduction is coordinated with the Western Area Power Administration. The Oahe pool level is expected to slowly decline from 1607.1 feet msl at the end of November to 1605.9 feet msl at the end of December. The pool will stay steady during January before starting to rise to elevation 1606.7 feet msl, slightly under the base of the annual flood control storage zone, by the beginning of March.

Big Bend Dam. The Big Bend pool level will be maintained in the normal 1420.0 to 1421.0 feet msl range during the winter.

Fort Randall Dam. Releases will average about 18,000 cfs during the winter season to support Gavins Point winter releases. The Fort Randall pool level is expected to rise from its fall drawdown elevation of 1337.5 feet msl in early December to near elevation 1350.0 feet msl, the seasonal base of flood control, by March 1. However, if the plains snowpack flood potential downstream of Oahe Dam is quite low, the Fort Randall pool level will be raised to near 1353.0 feet msl by March 1. It is likely that a pool level as high as 1355.0 feet msl could be reached by the end of the winter period on March 31 if runoff conditions permit. The Fort Randall pool level above the White River delta near Chamberlain, South Dakota will remain at a higher elevation than the pool level below

the delta from early October through December, due to the damming effect of this delta area.

Gavins Point Dam. Gavins Point winter releases are discussed in the first paragraph of this section. The Gavins Point pool level will be near elevation 1207.5 feet msl until late February when it will be lowered to elevation 1206.0 feet msl to create additional capacity to store spring runoff.

System storage for all runoff conditions will be at the base of the annual flood control zone of 56.8 million acre-feet, and possibly lower by March 1, 2012, the beginning of next year's runoff season.

E. Regulation During the 2012 Navigation Season. All five runoff scenarios modeled for this year's AOP follow the technical criteria presented in the current Master Manual for downstream flow support. Beginning in mid-March, Gavins Point releases will be gradually increased to provide navigation flow support at the mouth of the Missouri near St. Louis, MO by April 1, 2012, the normal navigation season opening date. The corresponding dates at upstream locations are Sioux City, March 23; Omaha, March 25; Nebraska City, March 26; and Kansas City, March 28. However, if during the 2012 navigation season there is no commercial navigation scheduled to use the upper reaches of the navigation channel, we will consider eliminating navigation flow support in those reaches to conserve water in the System, provide additional flood control, and/or minimize incidental take of the protected species during the nesting season.

Navigation flow support for the 2012 season will be determined by actual System storage on March 15 and July 1. Runoff scenarios modeled indicate full service flow support at the start of the 2012 navigation season for all runoff scenarios. Following the July 1 System storage check, full service would continue to be provided for all runoff scenarios. The normal 8-month navigation season is provided for Median and lower runoff scenarios as shown in ***Table II***. A 10-day extension to the navigation season is provided for the upper two runoff scenarios.

TABLE II
NAVIGATION SERVICE SUPPORT
FOR THE 2012 SEASON

	Runoff Scenario (MAF)	System Storage March 15 (MAF)	System Storage July 1 (MAF)	Flow Level Above or Below Full Service (cfs) Spring	Flow Level Above or Below Full Service (cfs) Summer/Fall	Season Shortening (Days)
U.D.	34.3	57.8	65.0	+3.3	+19	0*
U.Q.	30.3	57.6	63.9	0	+12	0*
Med	24.4	57.5	61.6	0	0	0
L.Q.	19.3	57.3	58.4	0	0	0
L.D.	16.2	57.2	57.3	0	0	0

*Includes 10-day extension for Upper Quartile and Upper Decile

As previously stated, the modeled regulation for the 2012 nesting season below Gavins Point dam is Steady Release – Flow-to-Target (SR-FTT). With the expectation of large quantities of high elevation nesting habitat being available, it's possible that the actual regulation will be Flow-to-Target. The nesting situation will be closely monitored and if nesting appears to be taking place at low elevations a SR-FTT release scenario may be implemented. If a SR-FTT release scenario is used, the initial steady release, which has ranged from 18,000 cfs to 27,000 cfs in the five years previous to 2011, will be based on hydrologic conditions and the availability of habitat at that time. Model runs included in this AOP have a Gavins Point release peaking cycle of 2 days down and 1 day up during the last two-thirds of May to keep birds from nesting at low elevations. Gavins Point releases will be adjusted to meet downstream targets as tributary flows recede, but ideally the initial steady release will be sufficient to meet downstream targets until the majority of the birds have nested. The purpose of this regulation is to continue to meet the project purposes while minimizing the loss of nesting T&E species and conserving water in the upper three reservoirs, if required. Gavins Point releases for the Upper Quartile and Upper Decile runoff simulations are much above normal to evacuate flood water from the reservoirs. Releases from Garrison and Fort Randall will follow repetitive daily patterns from early May, at the beginning of the T&E species' nesting season, to the end of the nesting in late August. In addition to the intra-day pattern, Fort Randall releases may also be cycled with 2 days of low releases and 1 day of higher releases during the early part of the nesting season to maintain release flexibility in that reach while minimizing the potential for take.

Gavins Point releases may be quite variable during the 2012 navigation season but are expected to range from 26,000 to 52,000 cfs under the five runoff scenarios modeled. Release reductions necessary to minimize downstream flooding are not reflected in the

monthly averages shown in the simulations but will be implemented as conditions warrant. Reductions in System releases to integrate the use of downstream Missouri River flow support from the Kansas Reservoir System have not been included since they are based on downstream hydrologic conditions. However, this storage will be utilized to the extent possible as a water conservation measure or to minimize incidental take of protected species during the nesting season if conditions indicate it is prudent to do so. Simulated storages and releases for the System and individual reservoirs within the System are shown on ***Plate 6*** through ***Plate 11.*** Sufficient storage space exists in the System to control flood inflows under all scenarios simulated for this AOP, however, as experienced in 2011, runoff above or below simulated levels can occur and result in releases beyond those modeled for the AOP. As previously stated, should that occur, the Corps will increase its efforts to convey that information throughout the basin so that state and local agencies, communities, and local residents can take appropriate actions.

F. Regulation Activities for T&E Species and Fish Propagation Enhancement. The ability to provide steady to rising pool levels in the upper three reservoirs in low runoff years is very dependent on the volume, timing, and distribution of runoff. The reservoir regulation simulations presented in this AOP for the Upper Decile, Upper Quartile, and Median runoff scenarios show that steady to rising pool levels would occur during the spring fish spawn period for the upper three System reservoirs. As part of the overall plan to rotate emphasis among the upper three reservoirs during low runoff years, Fort Peck and Oahe are scheduled to be favored during the 2012 forage fish spawn if runoff is below median. The studies show that inflows are sufficient to maintain steady to rising pools at Fort Peck and Oahe from April through June for the Lower Quartile and Lower Decile runoff scenarios. This will be accomplished by setting releases at Fort Peck and Garrison at a level that would maintain a rising Fort Peck and Oahe pool, but no less than the minimum required for downstream water supply requirements including irrigation. These adjustments may be restricted when the terns and plovers begin nesting in May. Garrison pool levels may fall during both lower runoff scenarios. If the drought re-emerges, emphasis during the fish spawn will be rotated among the upper three reservoirs and may also be adjusted to be opportunistic in regard to runoff potential. The upper three reservoirs will be managed to benefit forage fish to the extent reasonably possible, while continuing to serve the other Congressionally authorized project purposes.

As discussed in the previous section, the 2011-2012 AOP will not include provisions for unbalancing the Fort Peck, Garrison, and Oahe reservoirs to benefit the reservoir fishery and endangered species, but unbalancing will be considered within the carryover multiple use zone in future years.

Fort Peck Dam. The repetitive daily pattern of releases from Fort Peck Dam has not been implemented since the 2004 tern and plover nesting season. This adaptive

management decision was made based on data collected during previous nesting seasons. In recent years, birds in this reach have nested on available high elevation habitat, and thus were not expected to be impacted by the potential range of releases from Fort Peck during the summer. Releases during the 2012 nesting season will not be restricted by the repetitive daily pattern unless habitat conditions or nesting patterns warrant a change.

If flood flows enter the Missouri River below the project during the nesting season, hourly releases will generally be lowered to no less than 3,000 cfs in order to keep traditional riverine fish rearing areas continuously inundated, while helping to lower river stages at downstream nesting sites. In rare instances releases below 3,000 cfs may be scheduled for flood damage reduction. April releases should be adequate for trout spawning below the project.

Maintaining a rising Fort Peck pool level will be dependent upon the daily inflow pattern to the reservoir, but appears possible under all the runoff scenarios. The Fort Peck "mini-test" will not be run pending an evaluation of the results of the Yellowstone River Intake Diversion fish passage structure.

Garrison Dam. As in previous years, releases from Garrison will follow a repetitive daily pattern during the T&E nesting season to limit peak stages below the project for nesting birds. Releases are scheduled to be 1,000 cfs lower in July and early August than the June releases to enhance conditions for the fledging of chicks. High elevation nesting habitat is expected to be abundant below Garrison Dam during the 2012 nesting season.

During 2012, cold-water habitat in Garrison should be adequate for all runoff scenarios.

A rising pool at Garrison during the fish spawn in April and May will be dependent upon the daily inflow pattern to the reservoir but appears possible for all runoff simulations with the exception of the Lower Quartile and Lower Decile.

Oahe Dam. Releases in the spring and summer will back up those from Gavins Point Dam. The pool level should be steady to rising in the spring during the fish spawn for all runoff scenarios.

Fort Randall Dam. To the extent reasonably possible, Fort Randall will be regulated to provide for a pool elevation near 1355 feet msl during the fish spawn period, provided water can be supplied from other reservoirs for downstream uses. The pool will not be drawn down below elevation 1337.5 feet msl in the fall to ensure adequate supply for water intakes. As a measure to minimize take while maintaining the flexibility to increase releases during the nesting season, hourly releases from Fort

Randall will follow a repetitive daily pattern to limit peak stages below the project for nesting birds. Daily average flows may be increased every third day to preserve the capability of increasing releases later in the summer with little or no incidental take if drier downstream conditions occur. If higher daily releases are required later in the nesting season, the daily peaking pattern may be adjusted, reduced or eliminated resulting in a steady release to avoid increased stages at downstream nesting sites. The need to utilize measures to minimize take may be lessened because of the large quantity of nesting habitat expected during the 2012 nesting season. Periods of zero release will be minimized to the extent reasonably possible during the nesting season given daily average releases, real-time hydrologic conditions, and System generating constraints as defined in coordination with Western Area Power Administration.

Gavins Point Dam. March and May spring pulses from Gavins Point Dam for the benefit of the endangered pallid sturgeon will not be implemented under any runoff scenarios in 2012.

It is anticipated that sufficient habitat to provide for successful nesting will be available above the planned release rates for all runoff conditions. This expectation is based on experience from the past record runoff in 1997. Following the 1997 runoff, high elevation nesting habitat was readily available and used successfully by the birds. Flows from Gavins Point Dam may follow the flow-to-target (FTT) release scenario. This scenario limits releases from Gavins Point to those needed to meet downstream targets. The actual release scenario will be evaluated when birds begin nesting in early May. If nests are initiated at a lower elevation which would be inundated later in the summer, a steady release-flow to target release scenario may be instituted. A full description of these release scenarios can be found in the Master Manual. Actual releases will be based on hydrologic conditions and the availability of habitat at that time.

All reasonable measures to minimize the loss of nesting T&E bird species will be used. While not anticipated because of the large quantity of high elevation habitat available, these measures include, but are not limited to, such things as a relatively high initial steady release during the peak of nest initiation, the use of the Kansas River basin reservoirs, moving nests to higher ground when possible, and monitoring nest fledge dates to determine if delaying an increase a few days might allow threatened chicks to fledge. The location of navigation tows and river conditions at intakes would also be monitored to determine if an increase could be temporarily delayed without impact. Cycling releases every third day may be used to conserve water early in the nesting season if extremely dry conditions develop. In addition, cycling may be used during downstream flood control regulation.

The Gavins Point pool will be regulated near 1206.0 feet msl in the spring and early summer, with minor day-to-day variations due to inflows resulting from rainfall

runoff. Several factors can limit the ability to protect nests from inundation in the upper end of the Gavins Point pool. First, because there are greater numbers of T&E bird species nesting below the Gavins Point project, regulation to minimize incidental take usually involves restricting Gavins Point releases, which means that the Gavins Point pool can fluctuate significantly due to increased runoff from rainfall events. Second, rainfall runoff between Fort Randall Dam and Gavins Point Dam can result in relatively rapid pool rises because the Gavins Point project has a smaller storage capacity than the other System reservoirs. And third, the regulation of Gavins Point for downstream flood control may necessitate immediate release reductions to reduce downstream damage. When combined, all these factors make it difficult and sometimes impossible to prevent inundation of nests in the upper end of the Gavins Point reservoir. However, because of the large quantity of habitat expected we do not anticipate nests being inundated. The pool will be increased to elevation 1207.5 feet msl late in August when it is determined that there are no terns or plovers nesting along the reservoir.

G. Regulation Activities for Historic and Cultural Properties. As acknowledged in the 2004 Programmatic Agreement (PA) for the Operation and Management of the Missouri River Main Stem System, wave action and fluctuation in the level of the reservoirs results in erosion along the banks of the reservoirs. The Corps will work with the Tribes utilizing 36 CFR Part 800 and the PA to address the exposure of historic and cultural sites. The objective of a programmatic agreement is to deal "…with the potential adverse effects of complex projects or multiple undertakings…" The PA objective was to collaboratively develop a preservation program that would avoid, minimize and/or mitigate adverse effects along the System reservoirs. All tribes, whether signatory to the PA or not, may request government-to-government consultation on the regulation of the System and the resulting effect on historic and cultural properties and other resources. As a result of the 2011 flood event, there will be impacts to cultural resources. A gradual drawdown of reservoir levels was preferred to avoid or minimize further damage to cultural resource sites. To address impacts, the most effective and comprehensive strategy is a phased approach; site assessment/ Native American Graves Protection and Repatriation Act (NAGPRA) survey, increased law enforcement efforts, engineering design, rip rap repair, and new rip rap placement. Although condition assessments will be conducted for all sites affected by flooding, priority will be given to site assessments at occupation sites to determine impacts and check for any NAGPRA-related items. Increased law enforcement will be necessary to detect or prevent, and possibly prosecute individuals for, Archeological Resources Protection Act (ARPA) violations. Engineers will need to collect data and prepare designs to repair existing rip rap and protection for any sites that were newly impacted.

In 2012 reservoir levels are expected to be more normal, but continuing exposure of cultural sites along the shorelines is still possible. Actions to avoid, minimize or

mitigate adverse impacts and expected results of the actions are covered under Chapter VI of this AOP. ***Plate 16*** shows the locations of the Tribal Reservations.

Fort Peck Dam. Depending on runoff in the Missouri River basin, System regulation during 2012 could result in a Fort Peck pool elevation variation from a high of 2244 feet msl to a low of 2222 feet msl. This is based on the Upper and Lower Decile runoff scenarios (see ***Plate 8*** and the studies included at the end of this report). Based on a review of existing information, approximately 14 known sites could be affected during this period.

Garrison Dam. Based on the Upper and Lower Decile runoff scenarios (see ***Plate 9*** and the studies included at the end of this report), Garrison pool elevations could range between 1848 and 1828 feet msl during 2012. Based on a review of existing information, approximately 112 known sites could be affected during this period.

Oahe Dam. At the Oahe reservoir, the System regulation under the Upper and Lower Decile runoff scenarios could result in pool elevations ranging from 1616 to 1594 feet msl (see ***Plate 10*** and the studies included at the end of this report). Based on a review of existing information, approximately 221 known sites could be affected during this period.

Big Bend Dam. System regulation will be adjusted to maintain the Big Bend pool level in the normal 1420 to 1421 feet msl range during 2012. Short-term increases above 1421 due to local rainfall may also occur. Based on a review of existing information, approximately four known sites could be affected during this period.

Fort Randall Dam. As part of the normal System regulation, the Fort Randall pool elevations will vary between 1350 and 1355 feet msl during the spring and summer of 2012. Short-term increases above 1355 feet msl due to local rainfall may occur. The annual fall drawdown of the reservoir to elevation 1337.5 feet msl will begin prior to the close of the navigation season and will be accomplished by early December. The reservoir will then be refilled during the winter to elevation 1350 feet msl. Based on a review of existing information, approximately seven known sites could be affected during this period.

Gavins Point Dam. System regulation will be adjusted to maintain the Gavins Point pool level in the normal 1206 to 1207.5 feet msl range during 2012. Short-term increases above 1207.5 feet msl may occur due to local rainfall. Based on a review of existing information, no known sites are expected to be affected during this period.

VI. SUMMARY OF RESULTS EXPECTED IN 2012

With regulation of the System in accordance with the 2011-2012 AOP outlined in the preceding pages, the following results can be expected. Table III summarizes the critical decision points throughout the year for all runoff conditions.

Table III
Summary of 2011-2012 AOP Studies

Decision Points	2011-2012 Runoff Condition				
	Upper Decile	Upper Quartile	Median	Lower Quartile	Lower Decile
March 1 System Storage March 23-31 GP Release	56.8 MAF 26.7 kcfs	56.8 MAF 26.7 kcfs	56.8 MAF 26.7 kcfs	56.8 MAF 29.8 kcfs	56.8 MAF 29.8 kcfs
March 15 System Storage Spring Service Level	57.8 MAF full service	57.6 MAF full service	57.5 MAF full service	57.3 MAF full service	57.2 MAF full service
May 1 System Storage May Cycling May GP Release	60.2 MAF None 37.0 kcfs	59.7 MAF 28.0/31.6 kcfs 28.7 kcfs	58.4 MAF 28.0/31.6 kcfs 28.7 kcfs	57.2 MAF 31.3/34.3 kcfs 31.9 kcfs	56.8 MAF 31.3/34.3 kcfs 31.9 kcfs
Fish Spawn Rise (Apr-Jun) FTPK Pool Elev Change GARR Pool Elev Change OAHE Pool Elev Change	 +8.5 feet +6.5 feet +6.2 feet	 +7.1 feet +5.5 feet +6.6 feet	 +4.6 feet +5.1 feet +3.3 feet	 +2.6 feet +0.8 feet +0.4 feet	 +0.7 feet -1.0 feet +0.1 feet
July 1 System Storage Sum-Fall Service Level (kcfs) Nav Season Length	64.8 MAF Full Service 10 Day extension	63.9 MAF Full Service 10 Day extension	61.6 MAF Full Service 0 Days shortening	58.4 MAF Full Service 0 Days shortening	57.2 MAF Full Service 0 Days shortening
September 1 System Storage Winter 2011-12 GP Release	63.0 MAF 20.0 kcfs	62.4 MAF 20.0 kcfs	60.0 MAF 17.0 kcfs	55.9 MAF 13.5 kcfs	54.1 MAF 12.5 kcfs
February 28 System Storage End-Year Pool Balance Percent Pool	56.8 MAF Balanced 100%	56.8 MAF Balanced 100%	56.2 MAF Balanced 98%	51.2 MAF Balanced 85%	48.8 MAF Balanced 79%

A. Flood Control. Flood control is the only authorized project purpose that requires the availability of empty storage space rather than impounded water. Actual flood events are generally not predictable well in advance; therefore, detailed routing of specific major flood flows is accomplished when floods occur. There is a recurring pattern of high-risk flood periods during each year: a season when snowmelt, ice jams, and protracted heavy rains will almost surely occur with or without generating consequent floods; and a season when these situations are less likely and the flood threat is correspondingly low. The high-risk flood season begins about March 1st and extends through the summer. As a consequence, regulation of the System throughout the fall and winter months is predicated on the achievement of a March 1st System storage level at or below the base of the annual flood control zone. All runoff scenarios studied for this AOP will begin the March 1, 2012 runoff season at the desired 56.8 MAF base of the annual flood control and multiple use zone. Therefore, the entire System flood control zone of 16.3 MAF, 11.6 MAF in the annual flood control and multiple use zone and 4.7 MAF in exclusive flood control zone, will be available to store surplus runoff. In addition, the Corps is committed to maintaining a flexible posture through the fall and winter of 2011-2012 as the remaining flood water is evacuated from the system. In particular, if conditions throughout the winter indicate that 2012 will be another high runoff year, the Corps will begin early evacuation of water from the system to provide additional storage to the extent that weather and downstream conditions allow which may result in additional flood control capacity at the start of the 2012 runoff season.

To the extent practical, the System is regulated to prevent damaging flows originating above or within the System from contributing to flooding in the downstream reaches of the Missouri River. In 2012, the full capacity of the System will be available to significantly reduce peak discharges and store a significant volume of water for all floods that may originate above the System.

The base of the exclusive flood control zone defines the maximum level of storage that will be accumulated for purposes other than flood control. When the exclusive flood control zone at a particular reservoir is encroached upon, the control of subsequent flood inflows becomes the dominant factor. During such periods, releases may substantially exceed the powerplant release capacity with the evacuation rate of any project dependent upon existing flood conditions, the potential for further inflows, and conditions of other reservoirs in the System. Maximum release rates at such times are based upon the Master Manual flood control criteria, the flood control status of the System, and the critical need to preserve the integrity of the dams. Detailed information regarding the adjustments of releases for flood control evacuation and downstream flood control constraints can be found in Chapter 7 of the Master Manual.

Being at the base of the annual flood control and multiple use zone at the start of the next runoff year will also provide full support for all of the other multiple purposes of the System.

Due to release limitations imposed by the formation of downstream ice cover, a major portion of the required flood control space must be evacuated prior to the winter season. Higher releases may be made on occasions when the downstream channel conditions permit. If plains and/or mountain snowpack accumulations are much above normal during the winter of 2011-2012, releases will be adjusted to the extent reasonably possible to evacuate water from the reservoir system early in the runoff season. High releases during the late winter and early spring periods may exacerbate localized flooding if coincident with plains snowmelt or spring rains, and may also contribute to significant ice jam flooding. Therefore, if higher than normal releases are indicated, local conditions will need to be closely monitored. Flexible scheduling of winter releases and aggressive early spring releases may draw actual system storage below 56.8 MAF prior to March 1, 2012. In addition, all 2012 runoff will be evacuated prior to the start of the 2013 runoff season.

B. <u>Water Supply and Water Quality Control</u>. Water supply problems at intakes located in the river reaches both between and below the Mainstem dams and in the reservoirs are related primarily to intake elevations or river access rather than inadequate water supply. In emergency situations, short-term adjustments to protect human health and safety would be considered to keep intakes operational.

Low reservoir levels during the 2000-2007 drought contributed to both intake access and water quality problems for intakes on Garrison and Oahe reservoirs, including several Tribal intakes. A return to higher reservoir elevations has eliminated concern over many of these intakes. If the drought re-emerges, reservoir pool levels and releases may decline renewing the potential for intake access and water quality problems at both river and reservoir intakes. Under the Lower Decile runoff scenario, minimum reservoir levels in 2012 would be at least 22 feet higher than the record lows set in the 2000-2007 drought. Although not below the critical shut-down elevations for any intake, return to lower levels would require extra monitoring to ensure the continued operation of the intakes.

Above normal Gavins Point releases are being scheduled in the winter of 2011-2012. Under the 2011-2012 runoff scenarios, all water supply and water quality requirements on the Missouri River both below Gavins Point Dam and between System reservoirs should be met for all flow conditions studied. Winter releases for 2012-2013 will be determined based on the September 1, 2012 System storage check. As shown in Table III, 2012-2013 winter releases of 20,000 cfs would be made for a Upper Decile and Upper Quartile runoff scenarios; 17,000 cfs under a Median runoff scenario; 13,500 cfs under Lower Quartile, and 12,500 cfs under Lower Decile runoff scenarios, respectively.

Should the 2011-2012 runoff be in the Lower Quartile or Lower Decile range, planned winter release rates may be less than required for downstream water supply intakes without sufficient incremental tributary flows below the System. Should that occur, releases may need to be set higher to ensure that downstream water supply intakes are operable. However, we believe the minimum winter release of 12,000 cfs presented in the Master Manual represents a reasonable long-term goal for water intake operability and for owners to strive for as they make improvements to their facilities. It may be necessary at times to increase Gavins Point releases to provide adequate downstream flows during periods when excessive river ice formation is forecast or if ice jams or blockages form which temporarily restrict flow. Based on past experiences, these events are expected to occur infrequently and be of short duration.

During non-navigation periods in the spring and fall from 2004 through 2007, System releases were scheduled as low as 9,000 cfs provided that enough downstream tributary flow existed to allow for continued operation of downstream water intakes. If a non-navigation year would occur in the future, summer releases (May thru August) could average around 18,000 cfs from the System. However, it should be noted that System releases will be set at levels that meet the operational requirements of all water intakes to the extent reasonably possible. Problems have occurred at several downstream intakes in the past, however in all cases the problems have been associated with access to the river or reservoir rather than insufficient water supply. In addition, the low summer release rate would likely result in higher water temperatures in the river, which could impact a power plant's ability to meet their thermal discharge permits. Again, it should be noted that System releases will be set at levels that allow the downstream power plant to meet their thermal discharge permit requirements to the extent reasonably possible. This may mean that actual System releases in the hottest part of the summer period may be set well above the 18,000 cfs level. The Corps continues to encourage intake operators throughout the System and along the lower river reach to make necessary modifications to their intakes to allow efficient operation over the widest possible range of hydrologic conditions. While the current level of System storage should allow adequate access for all intakes for those intake operators whom had issues or difficulty with access during the past drought years, adjustments should continue to be made during this more normal release period to improve access and flexibility when drought returns to the basin.

C. Irrigation. Scheduled releases from the System reservoirs will be sufficient to meet the volumes of flow required for irrigation diversions from the Missouri River. Some access problems may be experienced, however, if Lower Quartile or Lower Decile runoff conditions return. Below Fort Peck, localized dredging may once again be required in the vicinity of irrigation intakes in order to maintain access to the water if releases are low next summer. Tributary irrigation water usage is fully accounted for in the estimates of water supply.

D. Navigation. Service to navigation in 2012 will be at full service flow support from the beginning of the navigation season through the July 1 storage check for all runoff scenarios. In addition, all runoff scenarios indicate at least full service and a full navigation season based on the July 1 storage check. Although the AOP simulations provide a comparison of typical flow support under varying runoff conditions, the actual rate of flow support for the 2012 navigation season will be based on actual System storage on March 15 and July 1, 2012.

The lower three runoff simulations show a normal 8-month navigation season length and full service flows during 2012. The upper two runoff scenarios indicate a 10-day extension to the navigation season and flows above full service navigation flow support. The anticipated service level and season length for all runoff conditions simulated are shown in ***Table II***.

E. Power. ***Table IV and Table V*** give the estimated monthly System load requirements and hydropower supply of the Eastern Division, Pick-Sloan Missouri Basin Program (P-S MBP), from September 2011 through December 2012. Estimates of monthly peak demands and energy include customer requirements for firm, short-term firm, summer firm, peaking, and various other types of power sales, System losses, and the effects of diversity. Also included in the estimated requirements are deliveries of power to the Western Division, P-S MBP, to help meet its firm power commitments. Under median runoff, annual generation in 2012 is estimated to be 9.9 million MWh, 106 percent of average.

F. Recreation, Fish and Wildlife. The regulation of the System will continue to provide recreation and fish and wildlife opportunities in the project areas and along the Missouri River as well as other benefits of a managed system. Recreation access is expected to be at normal levels in 2012. If Lower Quartile or Lower Decile runoff were to occur in 2012, boat ramps that were lowered and low water ramps that were constructed during the two recent drought periods will provide adequate reservoir access. Special regulation adjustments incorporating specific objectives for these purposes will be made to the extent reasonably possible. Overall conditions should be favorable for the many visitors who enjoy the camping, boating, fishing, hunting, swimming, picnicking, and other recreational activities associated with the System reservoirs.

The effects of the simulated System regulation during 2012 on fish and wildlife are included in Chapter V, Section F, entitled, "Regulation Activities for T&E Species and Fish Propagation Enhancement."

G. Historic and Cultural Properties. As mentioned in Chapter V of this AOP, the regulation of the System during 2011 and 2012 will expose cultural sites due to erosion from the normal fluctuation of pool elevations. The Corps will work with the

Tribes utilizing 36 CFR Part 800 and the PA to address the exposure of these sites. The objective of a programmatic agreement is to deal "…with the potential adverse effects of complex projects or multiple undertakings…" The PA objective was to collaboratively develop a preservation program that would avoid, minimize and/or mitigate the adverse affects of the System operation. All tribes, whether signatory to the PA or not, may request government-to-government consultation on the regulation of the System and the resulting effect on historic and cultural properties and other resources.

The planned preservation program for this AOP is outlined by multiple stipulations in the PA. One of the stipulations, or program components, is the Five-Year Plan. This plan outlines how the Corps will accomplish its responsibilities under the PA and the National Historic Preservation Act. The "Draft Five Year Plan, dated July 2011" (see http://www.nwo.usace.army.mil/CR/) is currently being implemented. The plan includes inventory, testing and evaluation, mitigation and other specific activities that will allow the Corps to avoid, minimize and/or mitigate the adverse effects to cultural sites on Corps lands within the System. Many of the actions listed in the plan are within the elevation ranges that will occur with the implementation of the Master Manual criteria in 2011 and 2012. Two critical components of the Five-Year Plan that are applicable to this AOP are monitoring and mitigation, which will be briefly discussed in the following paragraphs.

First, a collaboratively developed plan, entitled "Draft Monitoring and Enforcement Plan, dated April 2005" (see http://www.nwo.usace.army.mil/CR/) is in place. This monitoring plan outlines the sites that require monitoring and specifies a frequency for monitoring. The Corps is strategically monitoring sites, including those sites within the potential operating pool elevations, to document the effects of the implementation of the 2011-2012 AOP. Specific sites are identified in the draft Monitoring and Enforcement Plan for the monitoring team, comprised of Corps rangers and Tribal monitors, to visit and document impacts. This focused monitoring is resulting in more accurate data on the current impacts to sites along the river plus it is assisting with the identification of sites for mitigation. The most recent training for the monitoring teams was held in August 2011.

Second, mitigation or protection of sites that are being adversely impacted continues. During the reporting period for the 2010 Annual Report by the Corps on the implementation of the Programmatic Agreement eight sites were either completed, started, or in the design phase. The annual report is available at http://www.nwo.usace.army.mil/CR/. In addition the Corps awarded a contract to develop an erosion model that will compare modeling data against actual erosion data, collected by the monitoring team, to assist in the prioritization of sites for protection. Work on the erosion model was completed in June 2011.

TABLE IV
PEAKING CAPABILITY AND SALES
(1,000 kW at plant)

2011	Estimated Committed Sales*	Expected C of E Capability					Expected Bureau Capability**					Expected Total System Capability				
			120%	Basic	80%			120%	Basic	80%			120%	Basic	80%	
Sep	2004		2253	2348	2351			202	202	202			2455	2550	2553	
Oct	1879		2344	2343	2346			202	202	202			2546	2545	2548	
Nov	1990		2303	2296	2308			201	201	201			2504	2497	2509	
Dec	2119		2296	2293	2300			198	198	198			2494	2491	2498	
2012																
Jan	2132		2314	2313	2317			195	199	195			2509	2512	2512	
Feb	2117		2320	2320	2320			193	195	193			2513	2515	2513	
		U.D.	U.Q.	Med	L.Q.	L.D.	U.D.	U.Q.	Med	L.Q.	L.D.	U.D.	U.Q.	Med	L.Q.	L.D.
Mar	2050	2329	2329	2324	2319	2318	192	192	192	192	192	2521	2521	2516	2511	2510
Apr	1918	2353	2346	2331	2315	2311	189	189	189	190	190	2542	2535	2520	2505	2501
May	1878	2370	2365	2338	2314	2308	189	189	190	193	192	2559	2554	2528	2507	2500
Jun	2080	2397	2394	2371	2326	2315	201	201	202	198	196	2598	2595	2573	2524	2511
Jul	2195	2388	2386	2367	2316	2299	202	202	202	195	201	2590	2588	2569	2511	2500
Aug	2198	2374	2373	2357	2295	2274	208	207	208	202	200	2582	2580	2565	2497	2474
Sep	2003	2365	2366	2339	2280	2256	208	208	209	205	200	2573	2574	2548	2485	2456
Oct	1877	2331	2335	2319	2256	2231	208	208	210	206	200	2539	2543	2529	2462	2431
Nov	1988	2292	2297	2284	2218	2192	206	206	207	205	199	2498	2503	2491	2423	2391
Dec	2117	2247	2252	2245	2181	2153	202	203	204	201	197	2449	2455	2449	2382	2350

* Estimated sales, including system reserves. Power in addition to hydro production needed for these load requirements will be obtained from other power systems by interchange or purchase.
** Total output of Canyon Ferry and 1/2 of the output of Yellowtail powerplant.

TABLE V
ENERGY GENERATION AND SALES
(Million kWh at plant)

2011	Estimated Committed Sales*	Expected C of E Generation					Expected Bureau Generation **					Expected Total System Generation				
			120%	Basic	80%			120%	Basic	80%			120%	Basic	80%	
Sep	736		1560	1562	1550			110	107	95			1670	1669	1645	
Oct	737		1198	969	755			102	96	85			1300	1065	840	
Nov	805		1202	1007	791			81	80	76			1283	1087	867	
Dec	915		870	812	723			83	82	78			953	894	801	
2012																
Jan	929		910	809	784			83	82	76			993	891	860	
Feb	898		831	741	719			77	76	70			908	817	789	
		U.D.	U.Q.	Med	L.Q.	L.D.	U.D.	U.Q.	Med	L.Q.	L.D.	U.D.	U.Q.	Med	L.Q.	L.D.
Mar	814	666	663	669	719	724	82	82	80	73	73	748	745	749	792	797
Apr	769	777	743	750	874	877	91	91	76	50	50	868	834	826	924	927
May	712	1075	920	908	1017	1015	121	114	94	53	53	1196	1034	1002	1070	1068
Jun	769	1280	1175	948	1020	1025	140	130	111	55	55	1420	1305	1059	1075	1080
Jul	845	1447	1306	1022	1064	1048	144	120	101	58	58	1591	1426	1123	1122	1106
Aug	861	1447	1304	1059	1060	1044	108	103	84	53	55	1555	1407	1143	1113	1099
Sep	736	1354	1204	913	926	914	96	90	73	51	53	1450	1294	986	977	967
Oct	737	1236	1081	742	762	752	86	83	72	51	53	1322	1164	814	813	805
Nov	803	1190	1052	664	663	646	86	82	81	65	49	1276	1134	745	728	695
Dec	914	848	808	666	598	561	88	84	83	66	51	936	892	749	664	612
CY TOT		13061	11997	9891	10206	10109	1202	1139	1015	722	696	14263	13136	10906	10928	10805

* Estimated sales including system reserves and losses. Power in addition to hydro production needed for these load requirements will be obtained from other systems by interchange or purchase.
** Total output Canyon Ferry and 1/2 output of Yellowtail powerplant.

Results expected from the proposed monitoring and mitigation actions include more accurate horizontal and vertical data on existing cultural sites, detailed impact data, proactive protection and preservation of sites. The effects of the simulated System regulation during 2011-2012 on cultural sites are included in the Chapter V, section G., entitled, "Regulation Activities for Historic and Cultural Properties."

H. System Storage. If September 1, 2011 Basic runoff forecast verifies, System storage will decline to 57.1 MAF by the close of CY 2011. This would be 23.2 MAF higher than the all-time record low storage of 33.9 MAF set on February 9, 2007 and near last year's end-of-year storage of 57.0 MAF. This end-of-year storage is 4.5 MAF more than the 1967 to 2010 average. The lowest storage during the 1988-1992 drought was 40.8 MAF in January 1991, and the record low storage was set during the 2000-2007 drought at 33.9 MAF in February 2007. The end-of-year System storages have ranged from a maximum of 60.9 MAF, in 1975, to the 2006 minimum of 34.4 MAF. Forecasted System storage on December 31, 2012 is presented in ***Table VI*** for the runoff scenarios simulated.

I. Summary of Water Use by Functions. Anticipated water use in CY 2011, under the regulation plan with the Basic forecast of water supply is shown in ***Table VII***. Under the reservoir regulation simulations in this AOP, estimated water use in CY 2012 also is shown in ***Table VII.*** Actual water use data for CY 2010 are included for information and comparison.

TABLE VI
ANTICIPATED DECEMBER 31, 2012 SYSTEM STORAGE

Water Supply Condition	Total (12/31/12)	Carryover Storage Remaining 1/	Unfilled Carryover Storage 2/	Total Change CY 2011
	(Volumes in 1,000 Acre-Feet)			
Upper Decile	57,000	38,900	0	100
Upper Quartile	57,100	38,900	0	200
Median	56,400	38,500	400	-700
Lower Quartile	51,300	33,400	5,500	-6,200
Lower Decile	49,100	31,200	7,700	-8,400

1/ Net usable storage above 17.9 MAF System minimum pool level established for power, recreation, irrigation diversions, and other purposes.

2/ System base of annual flood control zone containing 56.8 MAF.

TABLE VII
MISSOURI RIVER MAINSTEM SYSTEM
WATER USE FOR CALENDAR YEARS 2010, 2011, AND 2012 ABOVE SIOUX CITY, IOWA
in Million Acre-Feet (MAF)

		CY 2010 Actual	CY 2011 Basic Simulation	Simulations for Calendar Year 2012 Upper Decile	Upper Quartile	Median	Lower Quartile	Lower Decile
Upstream Depletions	(1)							
Irrigation, Tributary Reservoir Evaporation & Other Uses		2.4	2.6					
Tributary Reservoir Storage Change		-0.1	0.2					
Total Upstream Depletions		2.3	2.8	2.5	2.5	2.6	2.5	2.1
System Reservoir Evaporation	(2)	3.1	2.7	1.2	1.2	1.8	2.1	2.0
Sioux City Flows								
Navigation Season								
Unregulated Flood Inflows Between Gavins Point & Sioux City	(3)	0.8	0.8					
Navigation Service Requirement	(4)	15.3	15.7	17.1	16.6	15.9	16.3	16.0
Supplementary Releases								
T&E Species	(5)	0.5	0.0	0.2	0.2	0.3	0.2	0.2
Flood Evacuation	(6)	10.0	34.6	8.4	4.9	0.0	0.0	0.0
Non-navigation Season								
Flows		3.5	3.8	4.8	4.7	4.6	4.4	4.3
Flood Evacuation Releases	(7)	0.5	0.5	0.5	0.4	0.0	0.0	0.0
System Storage Change		0.1	0.1	-0.4	-0.2	-0.8	-6.2	-8.4
Total		38.7	61.0	34.3	30.3	24.4	19.3	16.2
Project Releases								
Fort Peck		4.1	13.3	8.6	8.0	6.7	6.6	6.6
Garrison		13.2	36.7	20.9	19.4	15.9	16.0	15.5
Oahe		17.2	41.5	24.6	21.9	17.6	18.8	18.9
Big Bend		16.6	40.9	24.5	21.8	17.6	18.9	19.0
Fort Randall		19.2	44.4	25.9	22.9	18.9	19.1	19.2
Gavins Point		21.7	46.5	28.1	24.8	19.6	20.3	20.2

(1) Tributary uses above the 1949 level of development including agricultural depletions and tributary storage effects.
(2) Net evaporation is shown for 2012.
(3) Incremental inflows to reach which exceed those usable in support of navigation at the target level, even if Gavins Point releases were held to as low as 6,000 cfs.
(4) Estimated requirement for downstream water supply and water quality is approximately 6.0 MAF.
(5) Increased releases required for endangered species regulation.
(6) Includes flood control releases for flood control storage evacuation and releases used to extend the navigation season beyond the normal December 1 closing date at the mouth of the Missouri River.
(7) Releases for flood control storage evacuation in excess of a 17,000 cfs Gavins Point release.

VII. TENTATIVE PROJECTION OF REGULATION THROUGH FEBRUARY 2018

The 5-year extensions to the AOP (March 2013 to March 2018) have been prepared to serve as a guide for the Western Area Power Administration's marketing activities and to provide data to allow basin interests to conduct long-term planning. Three runoff conditions are modeled in the extension studies: Median, Lower Quartile, and Lower Decile.

The full 16.3 MAF of flood control capacity or more was available at the start of each runoff season. The navigation service level and season length criteria described in ***Plate 3*** were applied to the extensions. The March 15 and July 1 System storage checks shown in ***Plate 3*** were used to determine the flow support for navigation and other downstream uses and the navigation season length. A steady release – flow to target (SR-FTT) regulation with cycling in May was modeled during the T&E bird species' nesting season. The Gavins Point releases to meet navigation target flows, as shown in ***Plate 3*** and as computed by the March 15 and July 1 System storage checks, were used prior to and following the nesting season. The September 1 System storage check was used to determine the winter System release. Navigation service support and season length, magnitudes of March and May spring pulses, March 1 reservoir unbalancing, end of year System storage, and the winter release rate for the extensions are shown on ***Table VII***. The criteria considered as each year of the extensions was modeled are listed, along with the results, in ***Tables VIII through X*** for the Median, Lower Quartile, and Lower Decile extension studies, respectively.

A. Median Runoff. Studies 9 through 13 present the results of simulating Median runoff (24.4 MAF) from March 2013 through February 2018. The March 1, 2013 System storage would be 56.2 MAF and would drop to 53.4 MAF by March 1, 2018, 3.4 MAF below the desired March 1 storage of 56.8 MAF, the base of the annual flood control and multiple use pool. The navigation service level would range from full service to 100 cfs below full service for the study period of 2013 to 2017. There would be full navigation seasons for the study period of 2013 through 2017. Winter releases would range from 17,000 cfs in the winter of 2013-2014 to 14,500 cfs in winter 2017-2018. March and May spring pulses would occur each year, with the magnitude of the May pulse ranging from 10,000 cfs in 2013 to 10,100 cfs in 2017. The May pulses in the study period of 2013 to 2017 would be limited in order to not exceed downstream flow limits during the pulse. For the entire study period, the carryover multiple use storage in Fort Peck, Garrison, and Oahe was balanced on March 1 each year.

TABLE VIII
NAVIGATION SERVICE SUPPORT, SPRING PULSES, UNBALANCING
AOP EXTENSION STUDIES

	2013	2014	2015	2016	2017
MEDIAN					
Annual Runoff Volume (MAF)	24.4	24.4	24.4	24.4	24.4
Spring Pulse					
March (kcfs)	5.0	5.0	5.0	5.0	5.0
May (kcfs)	10.0*	10.0*	10.0*	10.0*	10.1*
Flow Level Below Full Service					
Spring (kcfs)	Full	Full	Full	Full	Full-0.1
Summer/Fall (kcfs)	Full	Full	Full	Full	Full
Season Length	8 months	8 months	8 months	8 months	8 months
Reservoir Unbalancing (ft)					
Fort Peck	0	0	0	0	0
Garrison	0	0	0	0	0
Oahe	0	0	0	0	0
Dec 31 Storage (MAF)	55.7	54.9	54.2	53.6	53.3
Winter Release (kcfs)	17.0	17.0	16.5	15.2	14.5
Special Information					
LOWER QUARTILE					
Annual Runoff Volume (MAF)	19.7	20.7	21.5	22.8	24.4
Spring Pulse					
March (kcfs)	5.0	5.0	5.0	5.0	5.0
May (kcfs)	11.8	11.9	12.2	13.2	14.6
Flow Level Below Full Service					
Spring (kcfs)	Full-2.7	Full-6.0	Full-6.0	Full-6.0	Full-6.0
Summer/Fall (kcfs)	Full-3.3	Full-5.4	Full-6.0	Full-5.7	Full-4.3
Season Length	8 mnths	8 mnths-3 days	8 mnths-7 days	8 mnths-4 days	8 mnths
Reservoir Unbalancing (ft)					
Fort Peck	0	0	0	0	0
Garrison	0	0	0	0	0
Oahe	0	0	0	0	0
Dec 31 Storage (MAF)	47.6	46.3	46.1	46.6	48.0
Winter Release (kcfs)	12.5	12.5	12.5	12.5	12.5
LOWER DECILE					
Annual Runoff Volume (MAF)	16.8	17.1	18.7	19.2	19.4
Spring Pulse					
March (kcfs)	5.0	5.0	5.0	0	0
May (kcfs)	11.0	10.1	9.5	9.2	0
Flow Level Below Full Service					
Spring (kcfs)	Full-5.5	Full-6.0	Full-6.0	Full-6.0	Full-6.0
Summer/Fall (kcfs)	Full-5.9	Full-6.0	Full-6.0	Full-6.0	Full-6.0
Season Length	8 mnths-6 days	8 mnths-30 days	8 mnths-30 days	8 mnths-30 days	8 mnths-30 days
Reservoir Unbalancing (ft)					
Fort Peck	0	0	0	0	0
Garrison	0	0	0	0	0
Oahe	0	0	0	0	0
Dec 31 Storage (MAF)	44.4	41.2	39.4	38.3	37.5
Winter Release (kcfs)	12.5	12.5	12.5	12.5	12.5

* Limited by Downstream Flood-Control Limits.

Table IX

Median Extension Studies - Criteria Considered in the Modeling Process

Study Number			9	10	11	12	13
	Units	Criteria	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
March 1 Storage	MAF	40	56.2	55.0	54.8	54.1	53.6
- March Spring Pulse?	N/A		Yes	Yes	Yes	Yes	Yes
March 15 Storage	MAF	31/49/54.5	57.0	56.2	55.5	54.8	54.4
- Service Level	N/A or kcfs	No Sea/Min/Full Thresholds	Full	Full	Full	Full	Full -0.1
- 3rd Period March GP Q	kcfs		28.9	28.9	28.9	28.9	28.8
- April Gavins Point Q	kcfs		26.7	26.7	26.7	26.7	26.6
May 1 Storage	MAF	40	57.9	57.1	56.4	55.7	55.3
- May Spring Pulse?	N/A		Yes	Yes	Yes	Yes	Yes
- Pulse Magnitude*	kcfs		16.0 (10)	16.0 (10)	16.0 (10)	16.0 (10)	16.0 (10.1)
- Gavins Point Cycling Qs	kcfs		28.0/31.6	28.0/31.6	28.0/31.6	28.0/31.6	27.9/31.5
- May Gavins Point Q	kcfs		30.7	30.7	30.7	30.7	30.6
- June Gavins Point Q	kcfs		31.6	31.6	31.6	31.6	31.5
July 1 Storage	MAF	50.5/57	60.9	60.2	59.4	58.7	58.3
- Service Level	N/A	Min/Full Thresholds	Full	Full	Full	Full	Full
- July Gavins Point Q	kcfs		31.6	31.6	31.6	31.6	31.6
- Aug Gavins Point Q	kcfs		33.2	33.2	33.2	33.2	33.2
- Sept Gavins Point Q	kcfs		32.6	32.6	32.6	32.6	32.6
July 1 Storage	MAF	36.5/41&46.8/51.5	60.9	60.2	59.4	58.7	58.3
- Season Length Shortening	days	61/31&31/0 Thresholds	0	0	0	0	0
- Oct Gavins Point Q	kcfs		32.0	32.0	32.0	32.0	32.0
- Nov Gavins Point Q	kcfs		28.2	28.2	28.2	28.0	28.0
September 1 Storage	MAF	55/58	59.3	58.5	57.7	56.9	56.5
- Winter Gavins Point Q	kcfs	12/17 Thresholds	17.0	17.0	16.5	15.2	14.5
End-of-Year Reservoir Storage	MAF		55.5	54.8	54.1	53.6	53.4
- Percent Full	N/A		96%	95%	93%	91%	91%
Balance/Unbalance	N/A	Bal <2227/1827/1600 ft msl	Balanced	Balanced	Balanced	Balanced	Balanced
Peck Rise 3/31-5/31	N/A		Yes	Yes	Yes	Yes	Yes
Garr Rise 3/31-5/31	N/A		Yes	Yes	Yes	Yes	Yes
Oahe Rise 3/31-5/31	N/A		Yes	Yes	Yes	Yes	Yes
Favored Reservoir - Fish Spawn	N/A		GA	FP/OA	GA	FP/OA	GA

* Pulse magnitudes are the calculated magnitude per technical criteria and simulated magnitude due to the downstream flow limits

Table X							
Lower Quartile Extension Studies - Criteria Considered in the Modeling Process							
Study Number			***14***	***15***	***16***	***17***	***18***
	Units	*Criteria*	***2013-2014***	***2014-2015***	***2015-2016***	***2016-2017***	***2017-2018***
March 1 Storage	*MAF*	*40*	51.2	47.7	46.6	46.3	47.0
- March Spring Pulse?	*N/A*		Yes	Yes	Yes	Yes	Yes
March 15 Storage	*MAF*	*31/49/54.5*	52.0	48.5	47.5	47.3	48.1
- Service Level	*N/A or kcfs*	*No Sea/Min/Full Thresholds*	Full - 2.7	Min Service	Min Service	Min Service	Min Service
- 3rd Period March GP Q	*kcfs*		29.3	26.0	26.0	26.0	26.0
- April Gavins Point Q	*kcfs*		27.1	23.8	23.8	23.8	23.8
May 1 Storage	*MAF*	*40*	52.1	49.1	48.2	48.3	49.3
- May Spring Pulse?	*N/A*		Yes	Yes	Yes	Yes	Yes
*- Pulse Magnitude**	*kcfs*		11.8	11.9	12.2	13.2	14.6
- Gavins Point Cycling Qs	*kcfs*		28.6/31.6	25.3/28.3	25.3/28.3	25.3/28.3	25.3/28.3
- May Gavins Point Q	*kcfs*		31.6	28.2	28.2	28.6	29.1
- June Gavins Point Q	*kcfs*		31.6	28.3	28.3	28.3	28.3
July 1 Storage	*MAF*	*50.5/57*	53.4	51.1	50.4	50.8	52.3
- Service Level	*N/A*	*Min/Full Thresholds*	Full - 3.3	Full - 5.4	Min Service	Full - 5.7	Full - 4.3
- July Gavins Point Q	*kcfs*		31.0	28.9	28.3	28.6	30.0
- Aug Gavins Point Q	*kcfs*		30.7	28.6	28.0	28.3	29.7
- Sept Gavins Point Q	*kcfs*		30.2	28.1	27.5	27.8	29.2
July 1 Storage	*MAF*	*36.5/41&46.8/51.5*	53.4	51.1	50.4	50.8	52.3
- Season Length Shortening	*days*	*61/31&31/0 Thresholds*	0	3	7	4	0
- Oct Gavins Point Q	*kcfs*		29.8	27.7	27.1	27.4	28.8
- Nov Gavins Point Q	*kcfs*		24.9	21.7	19.6	21.0	24.0
September 1 Storage	*MAF*	*55/58*	51.2	49.4	48.8	49.3	50.8
- Winter Gavins Point Q	*kcfs*	*12/17 Thresholds*	12.5	12.5	12.5	12.5	12.5
End-of-Year Reservoir Storage	*MAF*		47.7	46.6	46.3	47.0	48.4
- Percent Full	*N/A*		75%	73%	72%	74%	77%
Balance/Unbalance	*N/A*	*Bal <2227/1827/1600 ft msl*	Balance	Balance	Balance	Balance	Balance
Peck Rise 3/31-5/31	*N/A*		No	Yes	Yes	Yes	Yes
Garr Rise 3/31-5/31	*N/A*		Yes	Yes	Yes	Yes	Yes
Oahe Rise 3/31-5/31	*N/A*		No	Yes	Yes	Yes	Yes
Favored Reservoir - Fish Spawn	*N/A*		GA	FP/OA	GA	FP/OA	GA
** Pulse magnitudes are the calculated magnitude per technical criteria and simulated magnitude due to the downstream flow limits*							

Table XI

Lower Decile Extension Studies - Criteria Considered in the Modeling Process

Study Number			19	20	21	22	23
	Units	Criteria	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
March 1 Storage	MAF	40	48.8	44.3	41.2	39.5	38.4
- March Spring Pulse?	N/A		Yes	Yes	Yes	No	No
March 15 Storage	MAF	31/49/54.5	49.5	45.0	42.0	40.4	39.3
- Service Level	N/A or kcfs	No Sea/Min/Full Thresholds	Full - 5.5	Min Service	Min Service	Min Service	Min Service
- 3rd Period March GP Q	kcfs		26.5	26.0	26.0	23.8	23.8
- April Gavins Point Q	kcfs		24.3	23.8	23.8	23.8	23.8
May 1 Storage	MAF	40	49.6	45.2	42.4	41.0	39.8
- May Spring Pulse?	N/A		Yes	Yes	Yes	Yes	No
- Pulse Magnitude	kcfs		11.0	10.1	9.5	9.2	0.0
- Gavins Point Cycling Qs	kcfs		25.8/28.8	25.3/28.3	25.3/28.3	25.3/28.3	25.3/28.3
- May Gavins Point Q	kcfs		28.7	27.9	27.8	27.8	25.9
- June Gavins Point Q	kcfs		28.8	28.3	28.3	28.3	28.3
July 1 Storage	MAF	50.5/57	50.6	46.1	43.9	42.6	41.7
- Service Level	N/A	Min/Full Thresholds	Full - 5.9	Min Service	Min Service	Min Service	Min Service
- July Gavins Point Q	kcfs		28.4	28.3	28.3	28.3	28.3
- Aug Gavins Point Q	kcfs		28.1	28.0	28.0	28.0	28.0
- Sept Gavins Point Q	kcfs		27.6	27.5	27.5	27.5	27.5
July 1 Storage	MAF	36.5/41&46.8/51.5	50.6	46.1	43.9	42.6	41.7
- Season Length Shortening	days	61/31&31/0 Thresholds	6	30	30	30	30
- Oct Gavins Point Q	kcfs		27.2	23.9	23.9	23.9	23.9
- Nov Gavins Point Q	kcfs		19.0	9.0	9.0	9.0	9.0
September 1 Storage	MAF	55/58	47.9	43.6	41.6	40.3	39.4
- Winter Gavins Point Q	kcfs	12/17 Thresholds	12.5	12.5	12.5	12.5	12.5
End-of-Year Reservoir Storage	MAF		44.3	41.2	39.5	38.4	37.7
- Percent Full	N/A		66%	58%	54%	51%	49%
Balance/Unbalance	N/A	Bal <2227/1827/1600 ft msl	Balance	Balance	Balance	Balance	Balance
Peck Rise 3/31-5/31	N/A		Yes	Yes	Yes	Yes	Yes
Garr Rise 3/31-5/31	N/A		Yes	No	Yes	Yes	Yes
Oahe Rise 3/31-5/31	N/A		No	Yes	Yes	Yes	Yes
Favored Reservoir - Fish Spawn	N/A		GA	FP/OA	GA	FP/OA	GA

* Pulse magnitudes are the calculated magnitude per technical criteria and simulated magnitude due to the downstream flow limits

B. <u>Lower Quartile Runoff</u>. Studies 14 through 18 show the results of Lower Quartile runoff extensions. System storage on March 1, 2013 would be 51.2 MAF and fall to 48.4 MAF by March 1, 2018. Navigation service levels would range between 2,700 cfs below full service to minimum service for the simulation period 2013 to 2017. The navigation season is shortened no days in 2013, 3 days in 2014, 7 days in 2015, 4 days in 2016, and no shortening in 2017. A 12,500-cfs average winter release is shown for the entire study period. Spring pulses would occur every March and May from 2013 through 2017. Under Lower Quartile runoff, the carryover multiple use storage in the upper three reservoirs would be balanced each March 1.

C. <u>Lower Decile Runoff</u>. Studies 19 through 23 show the results of Lower Decile runoff extensions. System storage would be 48.8 MAF on March 1, 2013 and gradually decrease to 37.7 MAF on March 1, 2018. Navigation service levels would be 5,500 cfs below full service at the start of the 2013 season and then drop to 5,900 cfs below full service for the second half of the season. All remaining extension years would have minimum navigation service levels throughout the season. The navigation season would be shortened 6 days in 2013 and 30 days in 2014 through 2017. There are March spring pulses in 2013, 2014, and 2015, May spring pulses in 2013, 2014, 2015, and 2016, and the intrasystem storage is balanced each March 1 for the entire study period.

Plate 14 presents System storage, Gavins Point releases, and System peaking capability for Median, Lower Quartile, and Lower Decile runoff for the period 2013 through February 2018. Peak power, or peaking capability, is the amount of power available when all powerplants are operating at maximum.

Plate 15 presents reservoir pool elevations for Fort Peck, Garrison, Oahe, and Fort Randall for Median, Lower Quartile, and Lower Decile runoff for the period 2013 through February 2018.

Missouri River Basin

U.S. ARMY ENGINEERS, NORTHWESTERN DIVISION
CORPS OF ENGINEERS, OMAHA, NEBRASKA
AUGUST 2011

PLATE 1. Missouri River Basin Map.

Summary of Engineering Data -- Missouri River Mainstem System

Item No.	Subject	Fort Peck Dam - Fort Peck Lake	Garrison Dam - Lake Sakakawea	Oahe Dam - Lake Oahe
1	Location of Dam	Near Glasgow, Montana	Near Garrison, ND	Near Pierre, SD
2	River Mile - 1960 Mileage	Mile 1771.5	Mile 1389.9	Mile 1072.3
3	Total & incremental drainage areas in square miles	57,500	181,400 (2) 123,900	243,490 (1) 62,090
4	Approximate length of full reservoir (in valley miles)	134, ending near Zortman, MT	178, ending near Trenton, ND	231, ending near Bismarck, ND
5	Shoreline in miles (3)	1520 (elevation 2234)	1340 (elevation 1837.5)	2250 (elevation 1607.5)
6	Average total & incremental inflow in cfs	10,200	25,600 15,400	28,900 3,300
7	Max. discharge of record near damsite in cfs	137,000 (June 1953)	348,000 (April 1952)	440,000 (April 1952)
8	Construction started - calendar yr.	1933	1946	1948
9	In operation (4) calendar yr.	1940	1955	1962
	Dam and Embankment			
10	Top of dam, elevation in feet msl	2280.5	1875	1660
11	Length of dam in feet	21,026 (excluding spillway)	11,300 (including spillway)	9,300 (excluding spillway)
12	Damming height in feet (5)	220	180	200
13	Maximum height in feet (5)	250.5	210	245
14	Max. base width, total & w/o berms in feet	3500, 2700	3400, 2050	3500, 1500
15	Abutment formations (under dam & embankment)	Bearpaw shale and glacial fill	Fort Union clay shale	Pierre shale
16	Type of fill	Hydraulic & rolled earth fill	Rolled earth filled	Rolled earth fill & shale berms
17	Fill quantity, cubic yards	125,628,000	66,500,000	55,000,000 & 37,000,000
18	Volume of concrete, cubic yards	1,200,000	1,500,000	1,045,000
19	Date of closure	24 June 1937	15 April 1953	3 August 1958
	Spillway Data			
20	Location	Right bank - remote	Left bank - adjacent	Right bank - remote
21	Crest elevation in feet msl	2225	1825	1596.5
22	Width (including piers) in feet	820 gated	1336 gated	456 gated
23	No., size and type of gates	16 - 40' x 25' vertical lift gates	28 - 40' x 29' Tainter	8 - 50' x 23.5' Tainter
24	Design discharge capacity, cfs	275,000 at elev 2253.3	827,000 at elev 1858.5	304,000 at elev 1644.4
25	Discharge capacity at maximum operating pool in cfs	230,000	660,000	80,000
	Reservoir Data (6)			
26	Max. operating pool elev. & area	2250 msl 241,000 acres	1854 msl 380,000 acres	1620 msl 374,000 acres
27	Max. normal op. pool elev. & area	2246 msl 234,000 acres	1850 msl 364,000 acres	1617 msl 360,000 acres
28	Base flood control elev & area	2234 msl 210,000 acres	1837.5 msl 307,000 acres	1607.5 msl 312,000 acres
29	Min. operating pool elev. & area	2160 msl 89,000 acres	1775 msl 128,000 acres	1540 msl 117,000 acres
	Storage allocation & capacity			
30	Exclusive flood control	2250-2246 971,000 a.f.	1854-1850 1,489,000 a.f.	1620-1617 1,102,000 a.f.
31	Flood control & multiple use	2246-2234 2,704,000 a.f.	1850-1837.5 4,222,000 a.f.	1617-1607.5 3,201,000 a.f.
32	Carryover multiple use	2234-2160 10,700,000 a.f.	1837.5-1775 13,130,000 a.f.	1607.5-1540 13,461,000 a.f.
33	Permanent	2160-2030 4,088,000 a.f.	1775-1673 4,980,000 a.f.	1540-1415 5,373,000 a.f.
34	Gross	2250-2030 18,463,000 a.f.	1854-1673 23,821,000 a.f.	1620-1415 23,137,000 a.f.
35	Reservoir filling initiated	November 1937	December 1953	August 1958
36	Initially reached min. operating pool	27 May 1942	7 August 1955	3 April 1962
37	Estimated annual sediment inflow	17,700 a.f. 1030 yrs.	25,900 a.f. 920 yrs.	19,800 a.f. 1170 yrs.
	Outlet Works Data			
38	Location	Right bank	Right Bank	Right Bank
39	Number and size of conduits	2 - 24' 8" diameter (nos. 3 & 4)	1 - 26' dia. and 2 - 22' dia.	6 - 19.75' dia. upstream, 18.25' dia. downstream
40	Length of conduits in feet (8)	No. 3 - 6,615, No. 4 - 7,240	1529	3496 to 3659
41	No., size, and type of service gates	1 - 28' dia. cylindrical gate 6 ports, 7.6' x 8.5' high (net opening) in each control shaft	1 - 18' x 24.5' Tainter gate per conduit for fine regulation	1 - 13' x 22' per conduit, vertical lift, 4 cable suspension and 2 hydraulic suspension (fine regulation)
42	Entrance invert elevation (msl)	2095	1672	1425
43	Avg. discharge capacity per conduit & total	Elev. 2250 22,500 cfs - 45,000 cfs	Elev. 1854 30,400 cfs - 98,000 cfs	Elev. 1620 18,500 cfs - 111,000 cfs
44	Present tailwater elevation (ft msl)	2032-2036 5,000 - 35,000 cfs	1670-1680 15,000- 60,000 cfs	1423-1428 20,000-55,000 cfs
	Power Facilities and Data			
45	Avg. gross head available in feet (14)	194	161	174
46	Number and size of conduits	No. 1-24'8" dia., No. 2-22'4" dia.	5 - 29' dia., 25' penstocks	7 - 24' dia., imbedded penstocks
47	Length of conduits in feet (8)	No. 1 - 5,653, No. 2 - 6,355	1829	From 3,280 to 4,005
48	Surge tanks	PH#1: 3-40' dia., PH#2: 2-65' dia.	65' dia. - 2 per penstock	70' dia., 2 per penstock
49	No., type and speed of turbines	5 Francis, PH#1-2: 128.5 rpm, 1-164 rpm , PH#2-2: 128.6 rpm	5 Francis, 90 rpm	7 Francis, 100 rpm
50	Discharge cap. at rated head in cfs	PH#1, units 1&3 170', 2-140' 8,800 cfs, PH#2-4&5 170'-7,200 cfs	150' 41,000 cfs	185' 54,000 cfs
51	Generator nameplate rating in kW	1&3: 43,500; 2: 18,250; 4&5: 40,000	3 - 121,600, 2 - 109,250	112,290
52	Plant capacity in kW	185,250	583,300	786,030
53	Dependable capacity in kW (9)	181,000	388,000	534,000
54	Avg. annual energy, million kWh (12)	1,043	2,245	2,618
55	Initial generation, first and last unit	July 1943 - June 1961	January 1956 - October 1960	April 1962 - June 1963
56	Estimated cost September 1999 completed project (13)	$158,428,000	$305,274,000	$346,521,000

Summary of Engineering Data -- Missouri River Mainstem System

Big Bend Dam - Lake Sharpe	Fort Randall Dam - Lake Francis Case	Gavins Point Dam - Lewis & Clark Lake	Total	Item No.
21 miles upstream Chamberlain, SD	Near Lake Andes, SD	Near Yankton, SD		1
Mile 987.4	Mile 880.0	Mile 811.1		2
249,330 (1) 5,840	263,480 (1) 14,150	279,480 (1) 16,000		3
80, ending near Pierre, SD	107, ending at Big Bend Dam	25, ending near Niobrara, NE	755 miles	4
200 (elevation 1420)	540 (elevation 1350)	90 (elevation 1204.5)	5,940 miles	5
28,900	30,000 1,100	32,000 2,000		6
440,000 (April 1952)	447,000 (April 1952)	480,000 (April 1952)		7
1959	1946	1952		8
1964	1953	1955		9
1440	1395	1234		10
10,570 (including spillway)	10,700 (including spillway)	8,700 (including spillway)	71,596	11
78	140	45	863 feet	12
95	165	74		13
1200, 700	4300, 1250	850, 450		14
Pierre shale & Niobrara chalk	Niobrara chalk	Niobrara chalk & Carlile shale		15
Rolled earth, shale, chalk fill	Rolled earth fill & chalk berms	Rolled earth & chalk fill		16
17,000,000	28,000,000 & 22,000,000	7,000,000	358,128,000 cu. yds	17
540,000	961,000	308,000	5,554,000 cu. yds.	18
24 July 1963	20 July 1952	31 July 1955		19
Left bank - adjacent	Left bank - adjacent	Right bank - adjacent		20
1385	1346	1180		21
376 gated	1000 gated	664 gated		22
8 - 40' x 38' Tainter	21 - 40' x 29' Tainter	14 - 40' x 30' Tainter		23
390,000 at elev 1433.6	633,000 at elev 1379.8	584,000 at elev 1221.4		24
270,000	508,000	345,000		25
1423 msl 61,000 acres	1375 msl 102,000 acres	1210 msl 30,000 acres	1,188,000 acres	26
1422 msl 60,000 acres	1365 msl 95,000 acres	1208 msl 27,000 acres	1,140,000 acres	27
1420 msl 57,000 acres	1350 msl 77,000 acres	1204.5 msl 23,000 acres	986,000 acres	28
1415 msl 51,000 acres	1320 msl 38,000 acres	1204.5 msl 23,000 acres	446,000 acres	29
1423-1422 60,000 a.f.	1375-1365 985,000 a.f.	1210-1208 57,000 a.f.	4,664,000 a.f.	30
1422-1420 117,000 a.f.	1365-1350 1,309,000 a.f.	1208-1204.5 86,000 a.f.	11,639,000 a.f.	31
	1350-1320 1,607,000 a.f.		38,898,000 a.f.	32
1420-1345 1,621,000 a.f.	1320-1240 1,517,000 a.f.	1204.5-1160 307,000 a.f.	17,886,000 a.f.	33
1423-1345 1,798,000 a.f.	1375-1240 5,418,000 a.f.	1210-1160 450,000 a.f.	73,087,000 a.f.	34
November 1963	January 1953	August 1955		35
25 March 1964	24 November 1953	22 December 1955		36
5,300 a.f. 430 yrs.	18,400 a.f. 250 yrs.	2,600 a.f. 180 yrs.	89,700 a.f.	37
	Left Bank			38
None (7)	4 - 22' diameter	None (7)		39
	1013			40
	2 - 11' x 23' per conduit, vertical lift, cable suspension			41
1385 (11)	1229	1180 (11)		42
	Elev 1375			43
1351-1355(10) 25,000-100,000 cfs	32,000 cfs - 128,000 cfs 1228-1239 5,000-60,000 cfs	1155-1163 15,000-60,000 cfs		44
70	117	48	764 feet	45
None: direct intake	8 - 28' dia., 22' penstocks	None: direct intake		46
	1,074		55,083	47
None	59' dia, 2 per alternate penstock	None		48
8 Fixed blade, 81.8 rpm	8 Francis, 85.7 rpm	3 Kaplan, 75 rpm	36 units	49
67' 103,000 cfs	112' 44,500 cfs	48' 36,000 cfs		50
3 - 67,276, 5 - 58,500	40,000	44,100		51
494,320	320,000	132,300	2,501,200 kw	52
497,000	293,000	74,000	1,967,000 kw	53
969	1,729	727	9,331 million kWh	54
October 1964 - July 1966	March 1954 - January 1956	September 1956 - January 1957	July 1943 - July 1966	55
$107,498,000	$199,066,000	$49,617,000	$1,166,404,000	56

Remarks

(1) Includes 4,280 square miles of non-contributing areas.
(2) Includes 1,350 square miles of non-contributing areas.
(3) With pool at base of flood control.
(4) Storage first available for regulation of flows.
(5) Damming height is height from low water to maximum operating pool. Maximum height is from average streambed to top of dam.
(6) Based on latest available storage data.
(7) River regulation is attained by flows over low-crested spillway and through turbines.
(8) Length from upstream face of outlet or to spiral case.
(9) Based on 8th year (1961) of drought drawdown (From study 8-83-1985).
(10) Affected by level of Lake Francis case. Applicable to pool at elevation 1350.
(11) Spillway crest.
(12) 1967-2010 Average
(13) Source: Annual Report on Civil Works Activities of the Corps of Engineers. Extract Report Fiscal Year 1999.
(14) Based on Study 8-83-1985

Corps of Engineers, U.S. Army
Compiled by
Northwestern Division
Missouri River Region
August 2011

Plate 3
Summary of Master Manual Technical Criteria

NAVIGATION TARGET FLOWS

Location	Minimum Service (kcfs)	Full Service (kcfs)
Sioux City	25	31
Omaha	25	31
Nebraska City	31	37
Kansas City	35	41

RELATION OF SYSTEM STORAGE TO NAVIGATION SERVICE LEVEL

Date	System Storage (MAF)	Navigation Service Level
March 15	54.5 or more	35,000 cfs (full-service)
March 15	49.0 to 31	29,000 cfs (minimum-service)
March 15	31.0 or less	No navigation service
July 1	57.0 or more	35,000 cfs (full-service)
July 1	50.5 or less	29,000 cfs (minimum-service)

RELATION OF SYSTEM STORAGE TO NAVIGATION SEASON LENGTH

Date	System Storage (MAF)	Final Day of Navigation Support at Mouth of the Missouri River
July 1	51.5 or more	November 30 (8-month season)
July 1	46.8 through 41.0	October 31 (7-month season)
July 1	36.5 or less	September 30 (6-month season)

GAVINS POINT RELEASES NEEDED TO MEET TARGET FLOWS

1950 to 1996 Data (kcfs)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Median, Upper Quartile, Upper Decile Runoff								
Full Service	26.7	28.0	27.9	31.6	33.2	32.6	32.0	31.1
Minimum Service	20.7	22.0	21.9	25.6	27.2	26.6	26.0	25.1
Lower Quartile, Lower Decile Runoff								
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Full Service	29.8	31.3	31.2	34.3	34.0	33.5	33.1	31.2
Minimum Service	23.8	25.3	25.2	28.3	28.0	27.5	27.1	25.2

RESERVOIR UNBALANCING SCHEDULE

	Fort Peck		Garrison		Oahe	
Year	*March 1*	*Rest of Year*	*March 1*	*Rest of Year*	*March 1*	*Rest of Year*
1	High	Float	Low	Hold Peak	Raise & hold during spawn	Float
2	Raise & hold during spawn	Float	High	Float	Low	Hold peak
3	Low	Hold peak	Raise & hold during spawn	Float	High	Float

Notes: **Float year:** Normal regulation, then unbalance 1 foot during low pool years or 3 feet when System storage is near 57.0 MAF on March 1.
Low year: Begin low, then hold peak the remainder of the year.
High year: Begin high, raise and hold pool during spawn, then float.

MRNRC RECOMMENDED RESERVOIR ELEVATION GUIDELINES FOR UNBALANCING

	Fort Peck	Garrison	Oahe
Implement unbalancing if March 1 pool is above this level.	2234 feet msl	1837.5 feet msl	1607.5 feet msl
Implement unbalancing if March 1 pool level is in this range **and** the pool is expected to raise more than 3 feet after March 1.	2227-2234 feet msl	1827-1837.5 feet msl	1600-1607.5 feet msl
Scheduling Criteria	Avoid pool level decline during spawn period which ranges from April 15 – May 30	Schedule after spawn period of April 20 – May 20	Schedule after spawn period of April 8 – May 15

Plate 3 (cont'd)
Summary of Master Manual Technical Criteria

TECHNICAL CRITERIA FOR SPRING PULSES FROM GAVINS POINT DAM

Criteria Applicable to Both the March and May Spring Pulses

Flood Control Constraints	No change from current levels

Criteria Applicable to the March Spring Pulse

Drought Preclude	40.0 MAF or below measured on March 1.
Drought Proration of Pulse Magnitude*	None, 5 kcfs added to navigation releases, but no greater than 35 kcfs.
Initiation of Pulse	Extend the stepped System release increases that precede the beginning of the navigation season.
Rate of Rise before Peak	Approximately 5 kcfs for 1 day.
Duration of Peak	Two days.
Rate of Fall after Peak	Drop over 5 days to navigation target release.

Criteria Applicable to Time Period Between the Bimodal Pulses

Release	Existing Master Manual Criteria

Criteria Applicable to the May Spring Pulse

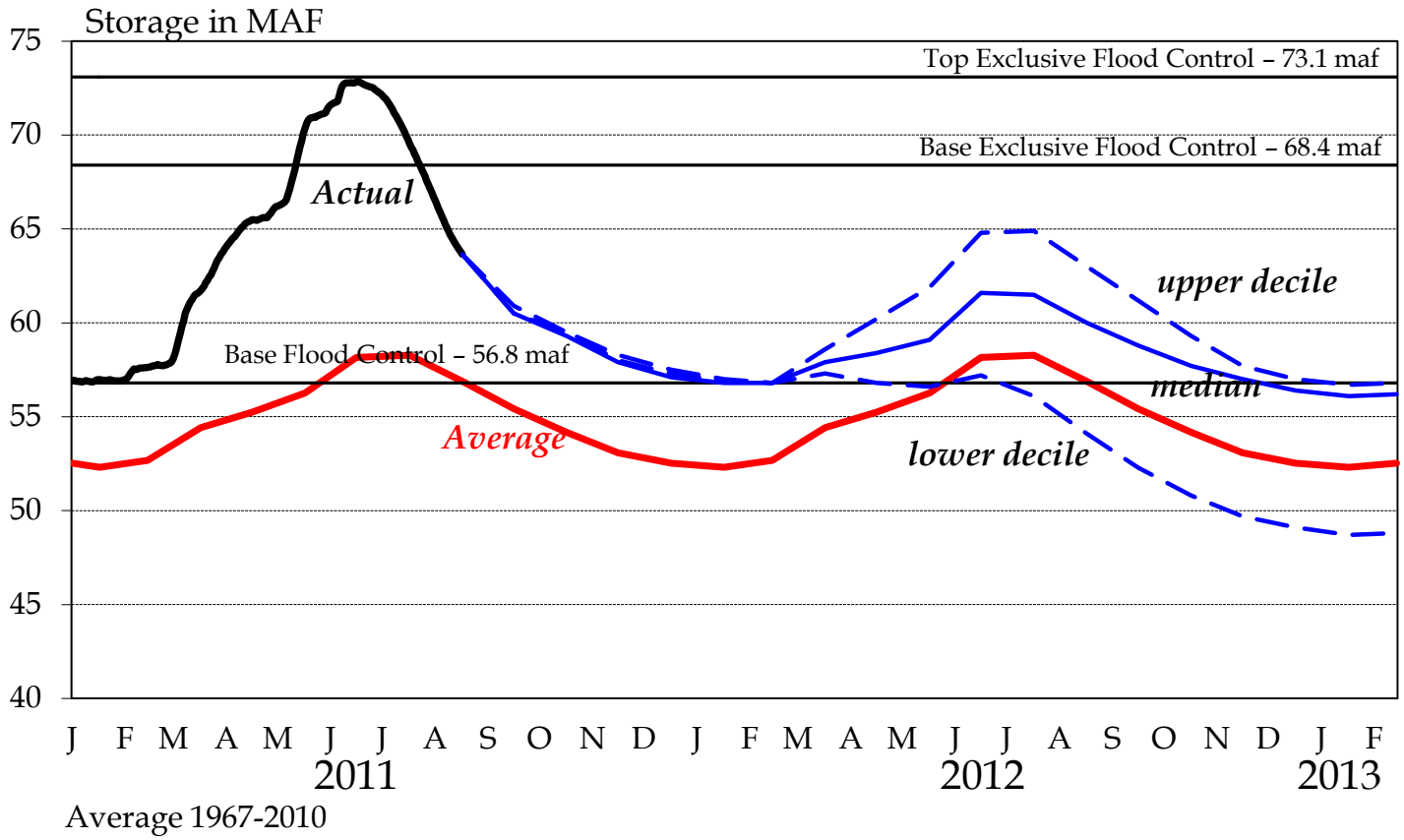
Drought Preclude	40.0 MAF or below measured on May 1.
Proration of Pulse Magnitude Based On System Storage*	Prorated from 16 kcfs based on a May 1 System Storage check; 100% at 54.5 MAF; straight line interpolation to 75% at 40.0 MAF.
Proration of Pulse Magnitude Based On Projected Runoff*	After the proration of the spring pulse magnitude for System Storage, the resultant magnitude would be further adjusted either up or down based on the May CY runoff forecast; 100% for Median; straight-line interpolation to 125% at Upper Quartile runoff; 125% for runoff above Upper Quartile; straight-line interpolation to 75% at Lower Quartile runoff; 75% for runoff below Lower Quartile.
Initiation of Pulse	Between May 1 to May 19, depending on Missouri River water temperature immediately below Gavins Point Dam. If possible, pulse will be initiated after the second daily occurrence of a 16 degree Celsius water temperature; however, the decision will be informed by the potential for 'take' of Threatened and Endangered bird species.
Rate of Rise before Peak	Approximately 6 kcfs per day.
Duration of Peak	Two days.
Rate of Fall after Peak	Approximately 30% drop over 2 days followed by a proportional reduction in releases back to the existing Master Manual criteria over an 8-day period.

Spring Pulse Downstream Flow Limits

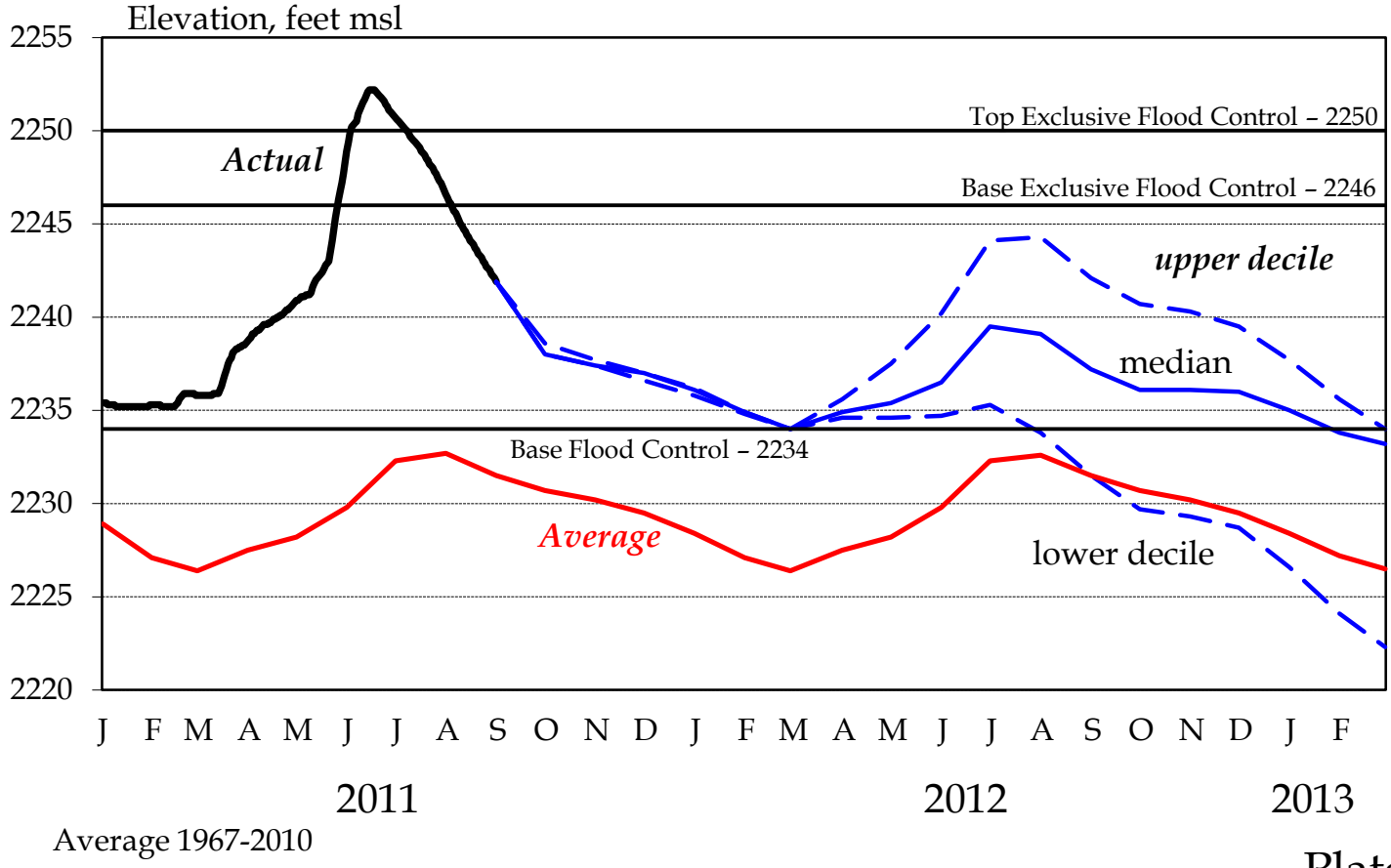
Omaha	41,000 cfs
Nebraska City	47,000 cfs
Kansas City	71,000 cfs

* Spring pulse magnitudes will be determined by taking the difference between pre-pulse Gavins Point releases and the peak pulse Missouri River flows measured just downstream of the mouth of the James River.

System Storage
2011-2012 AOP

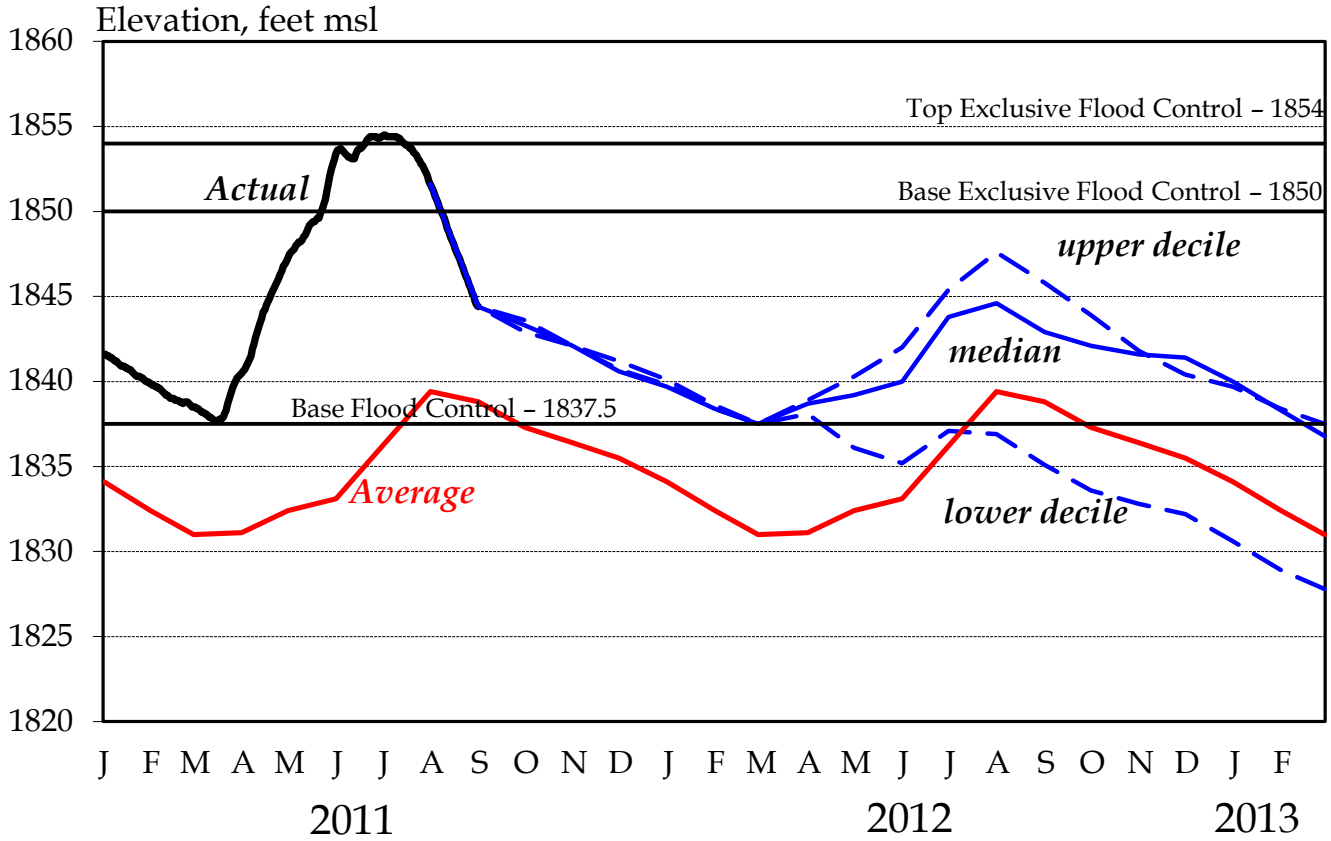


Fort Peck
2011-2012 AOP



Garrison

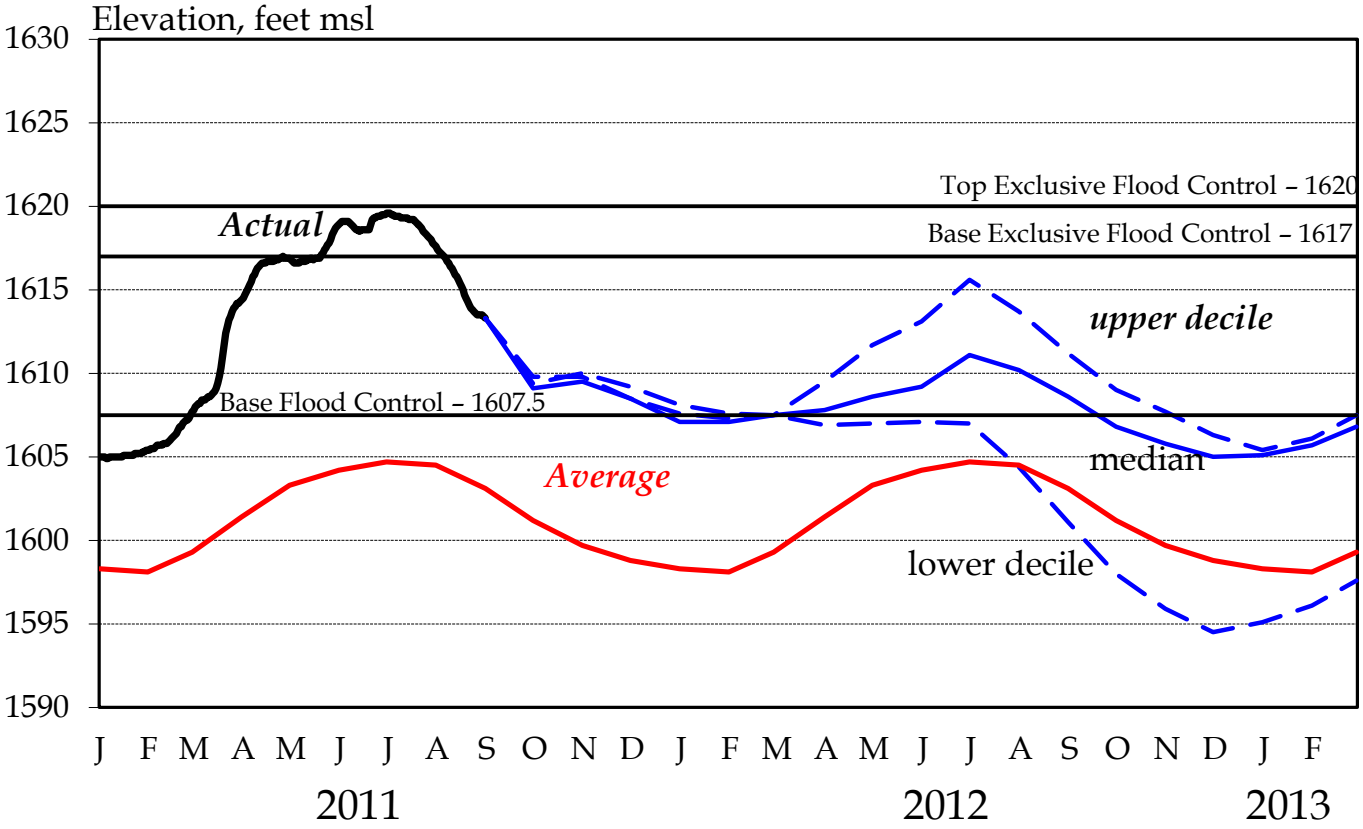
2011-2012 AOP



Average 1967-2010

Oahe

2011-2012 AOP



Average 1967-2010

System Storage

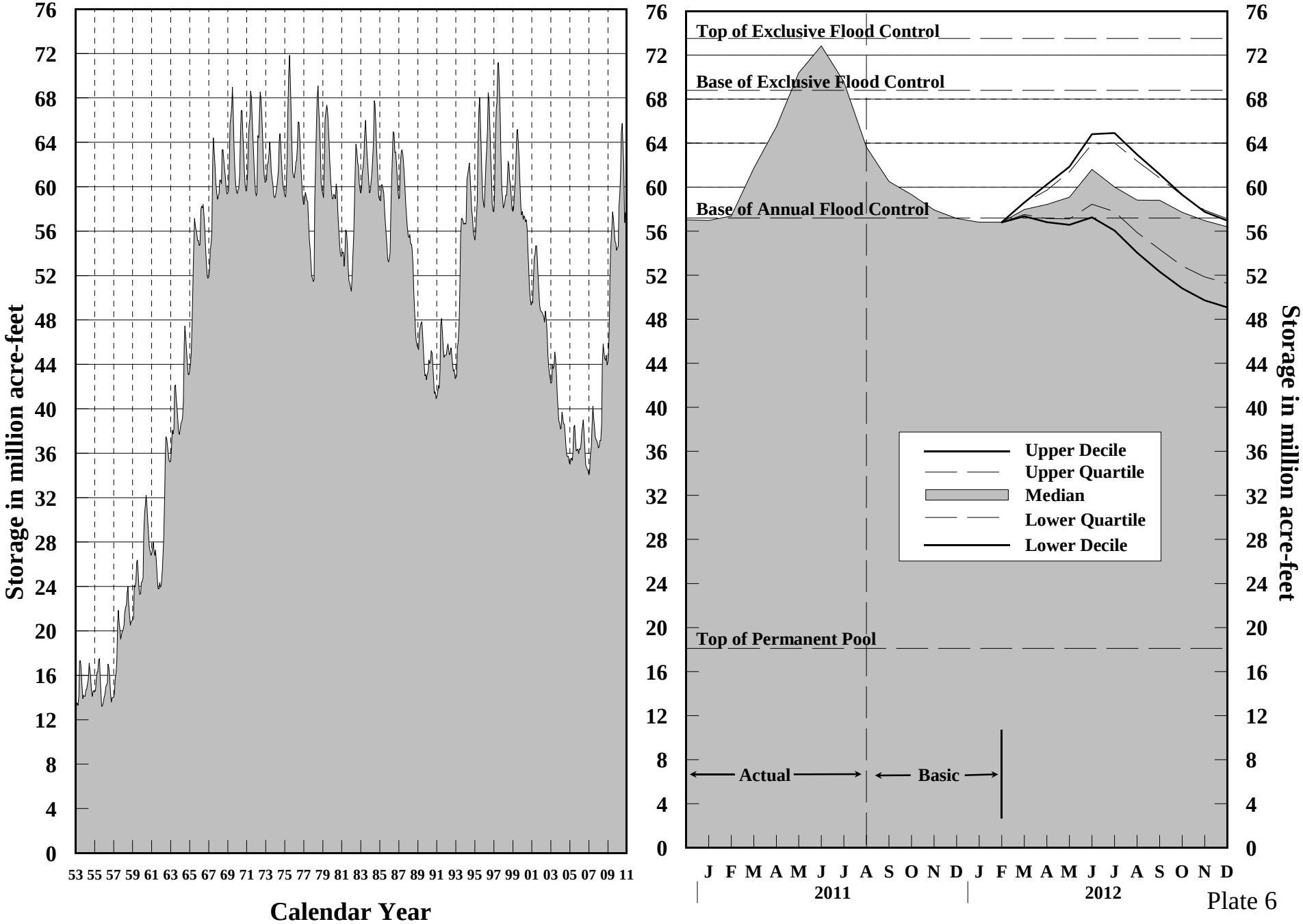
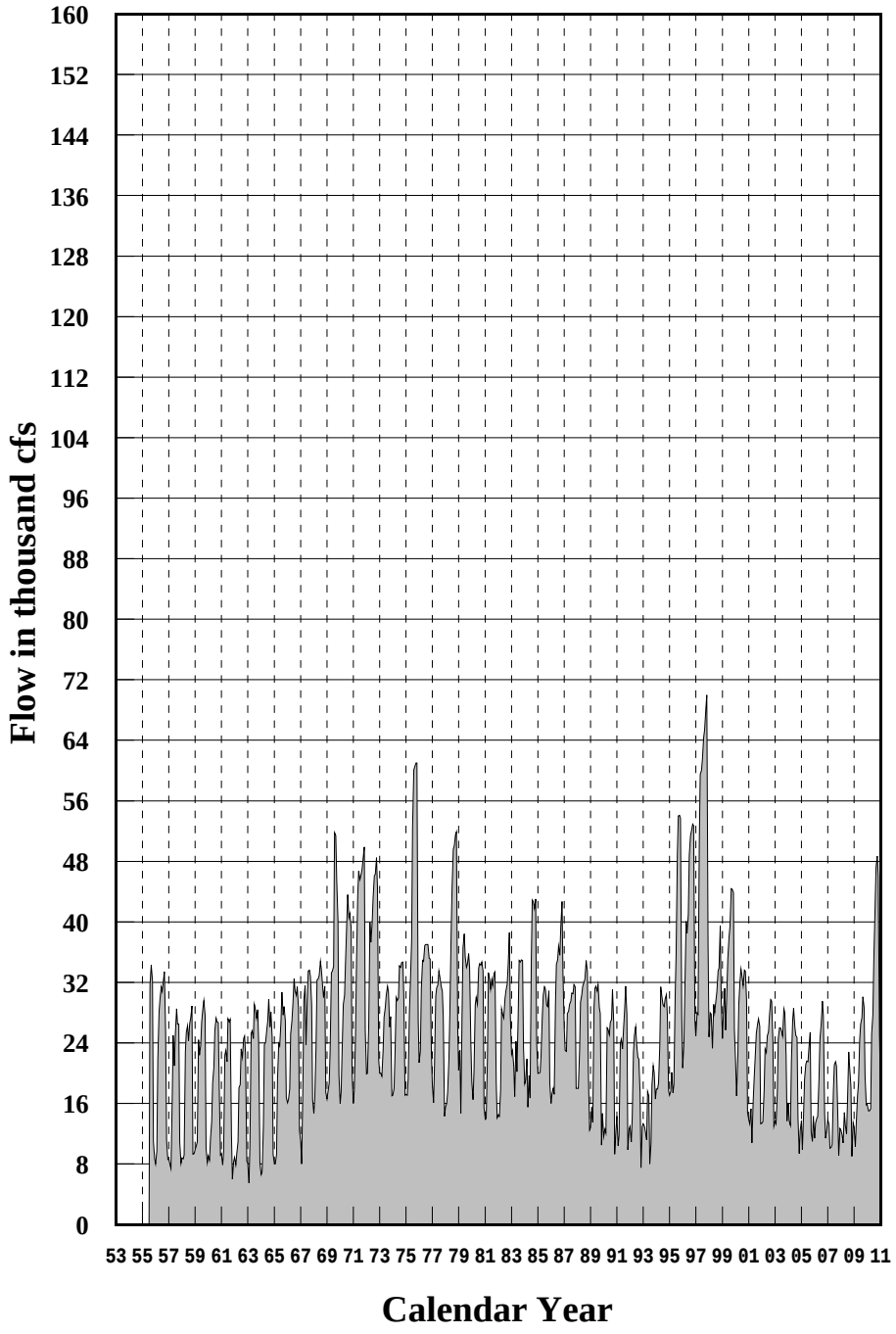


Plate 6

Gavins Point Releases



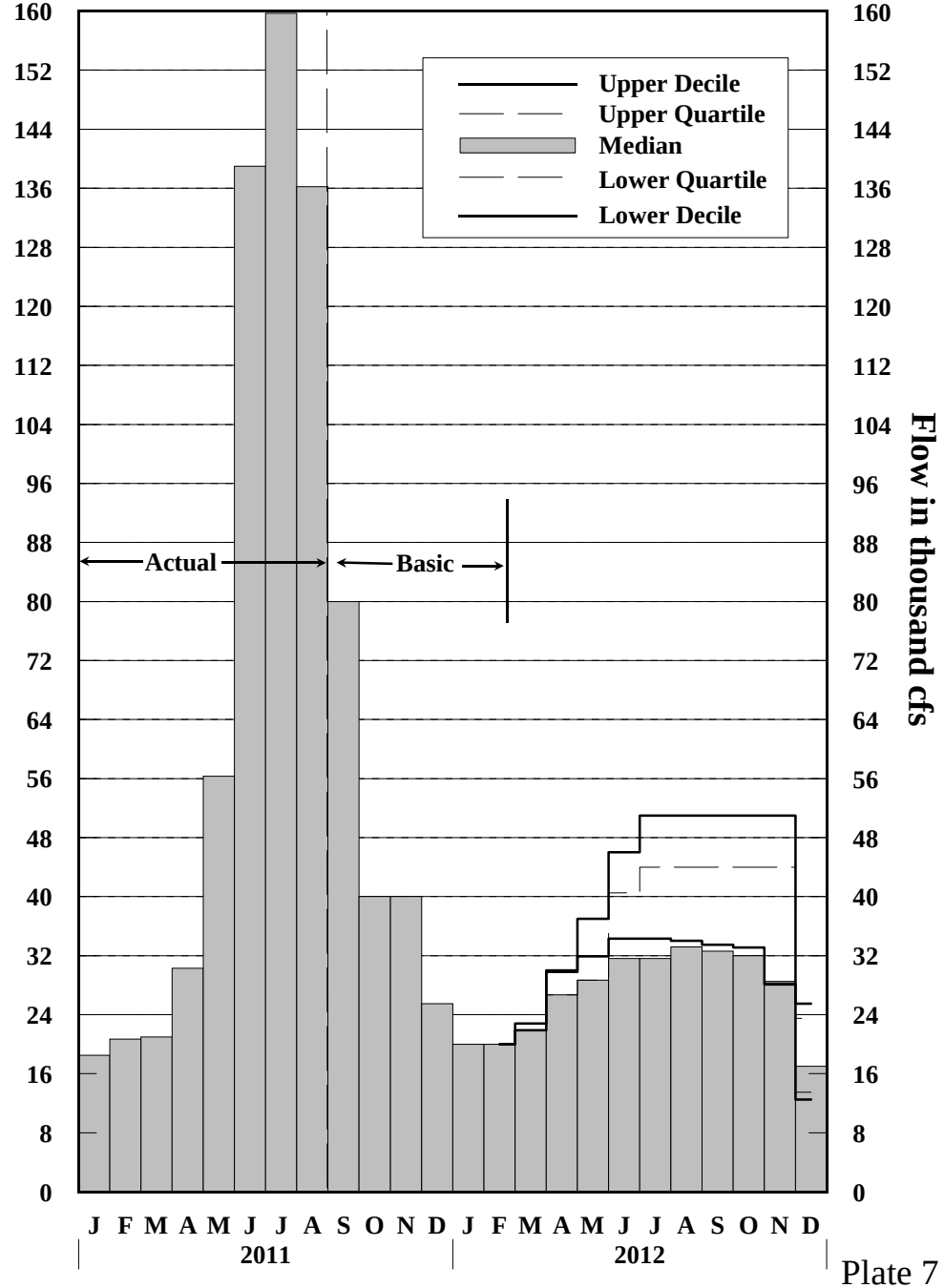
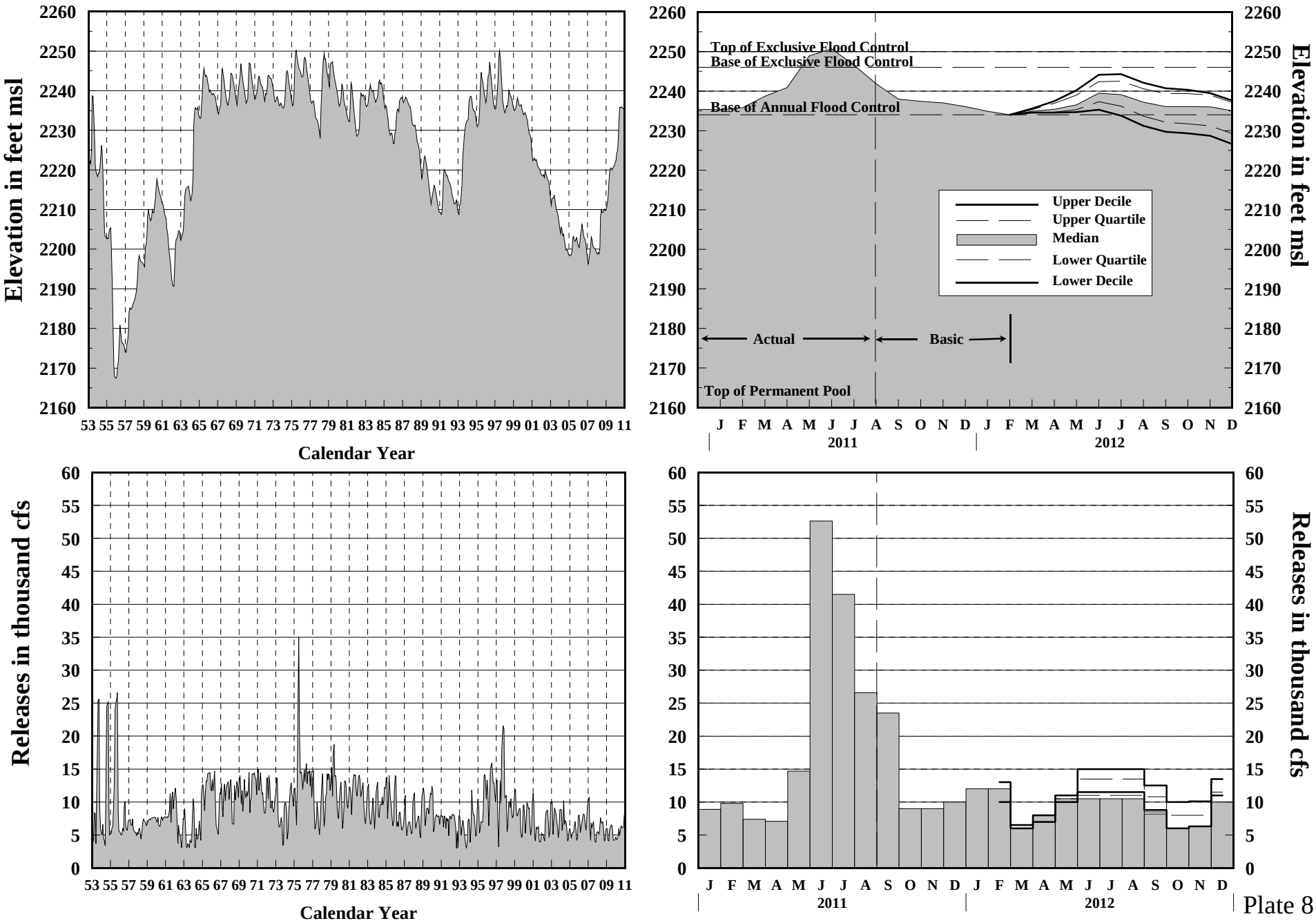
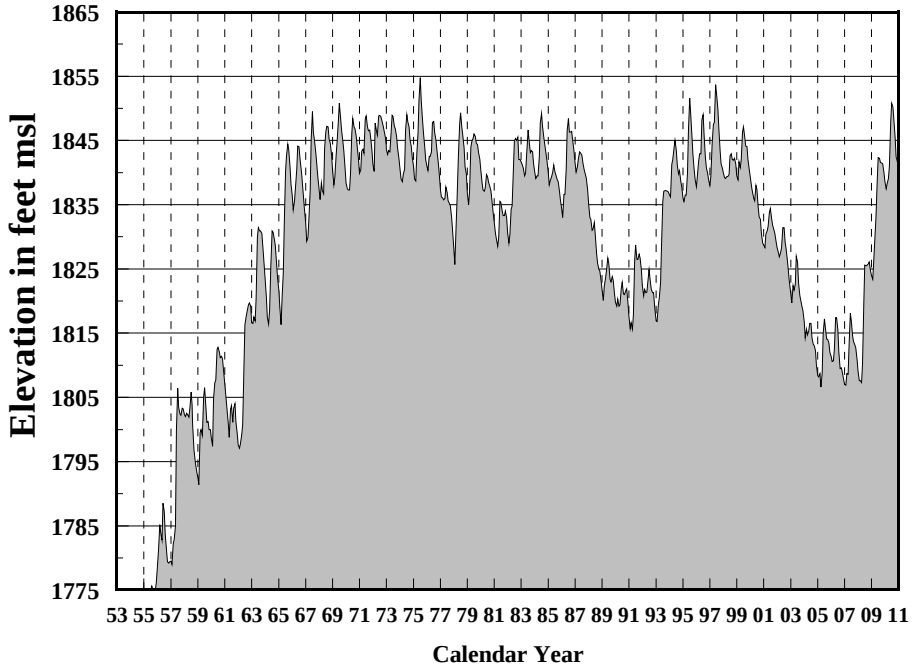


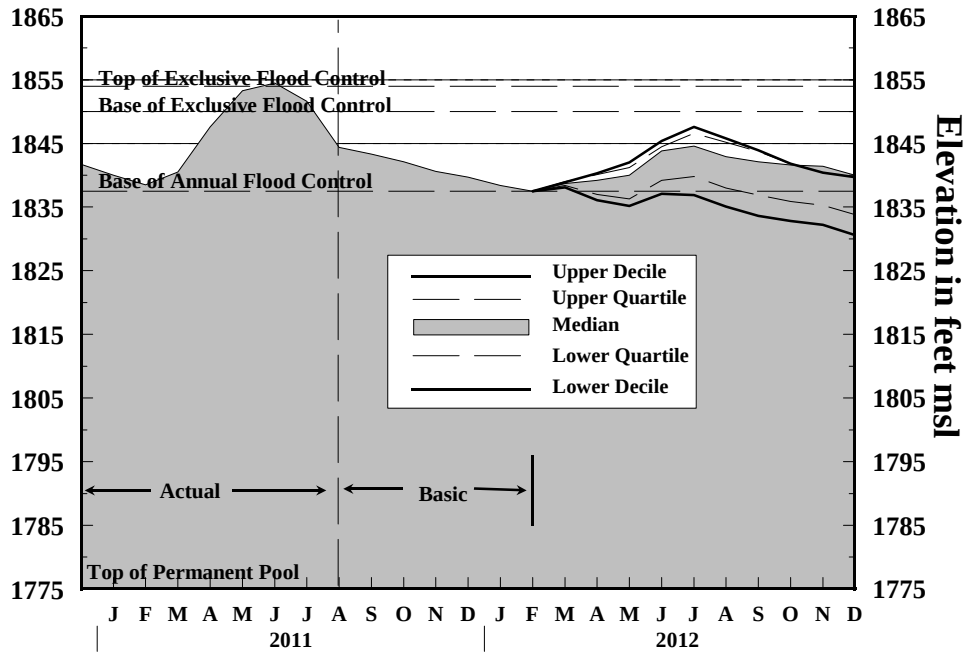
Plate 7

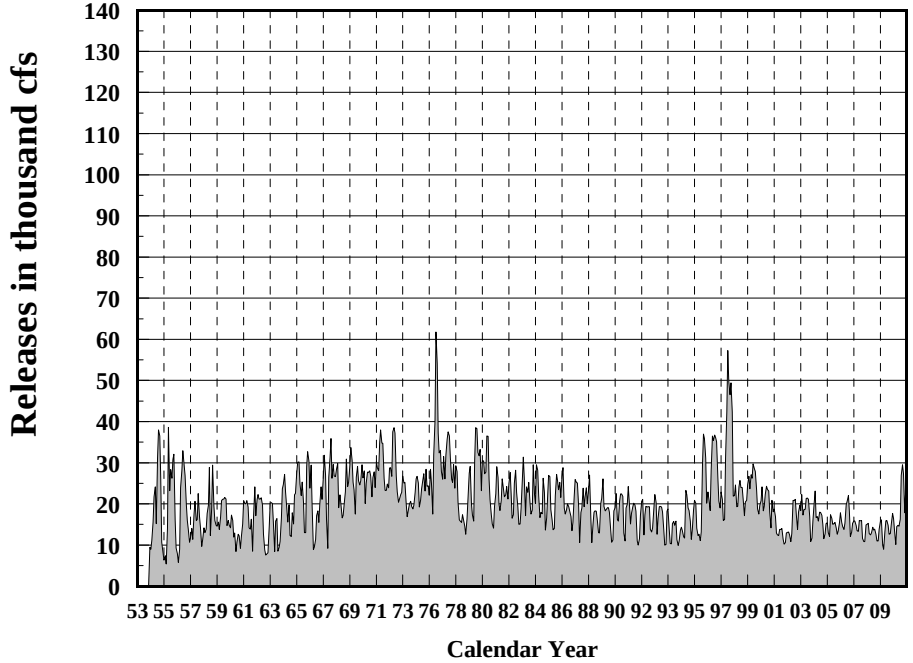
Fort Peck
Elevations and Releases



Garrison
Elevations and Releases







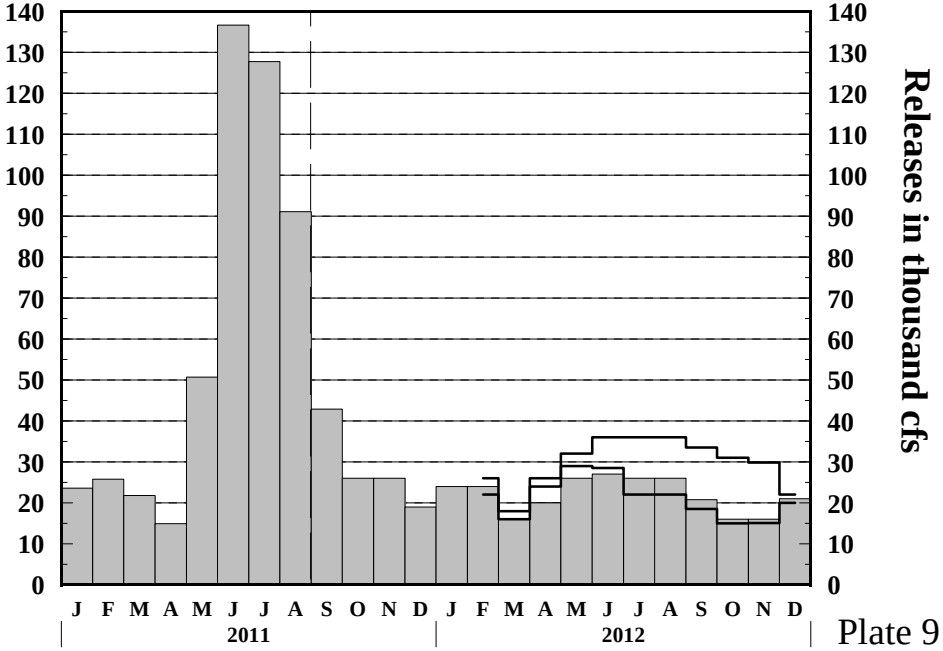
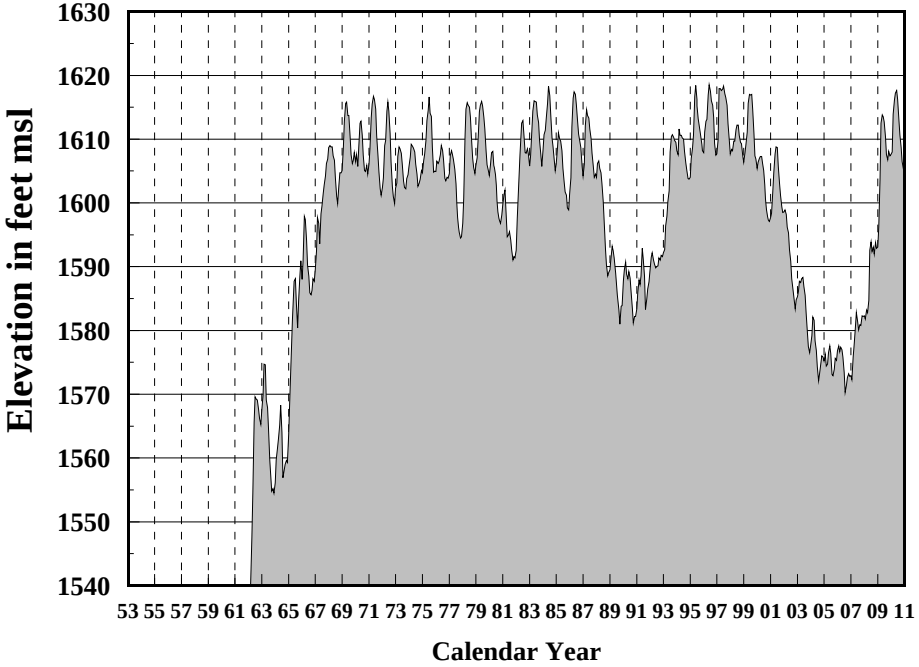
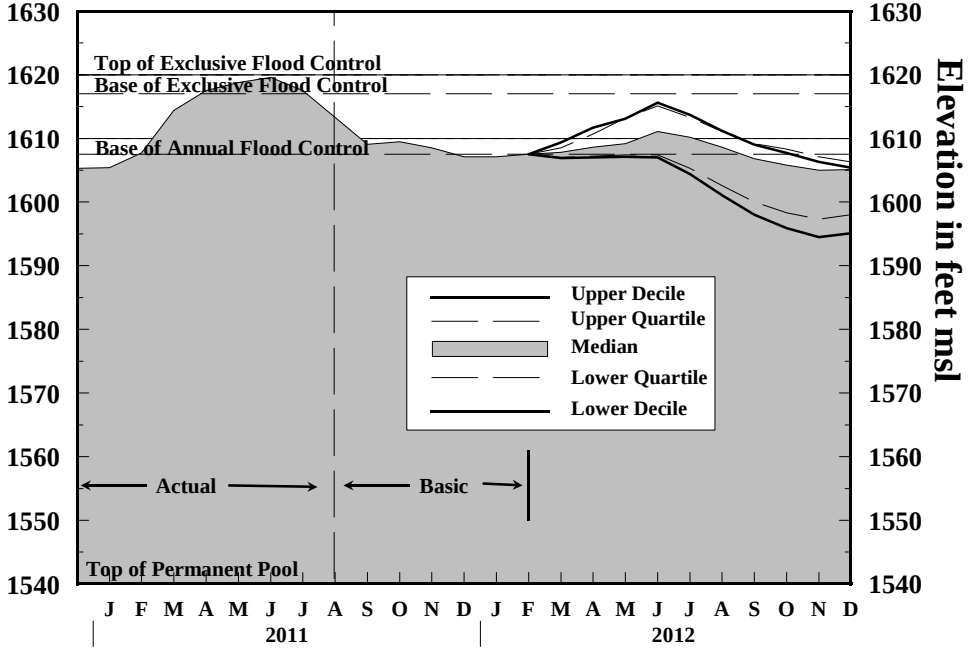
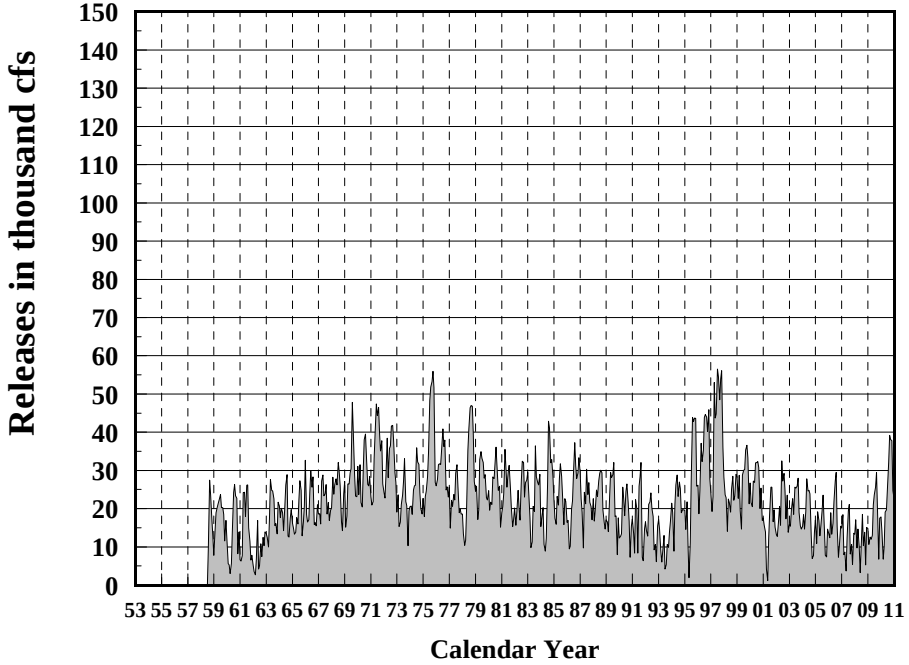


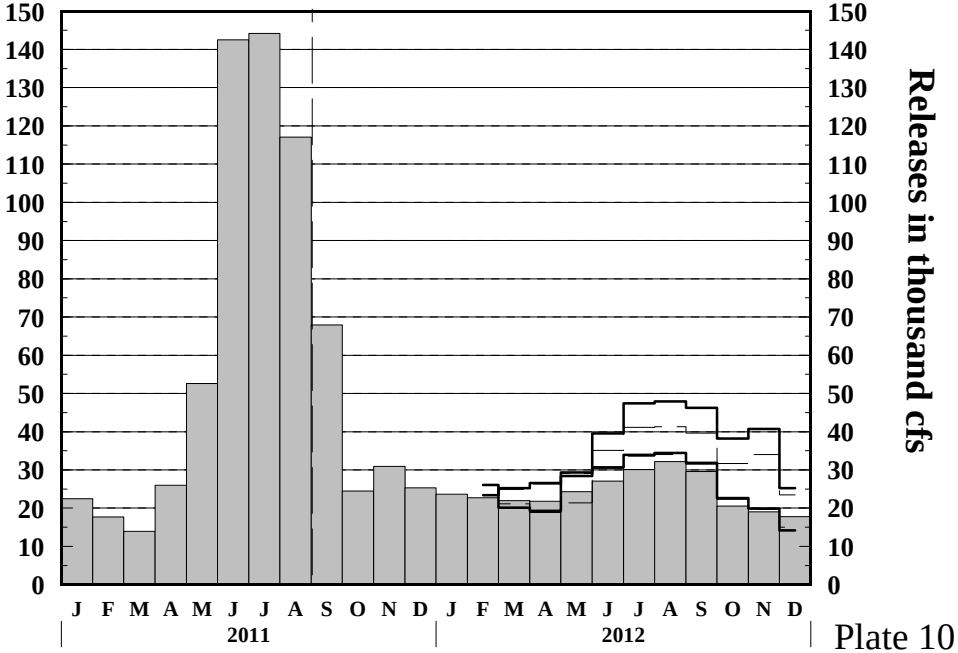
Plate 9

Oahe
Elevations and Releases

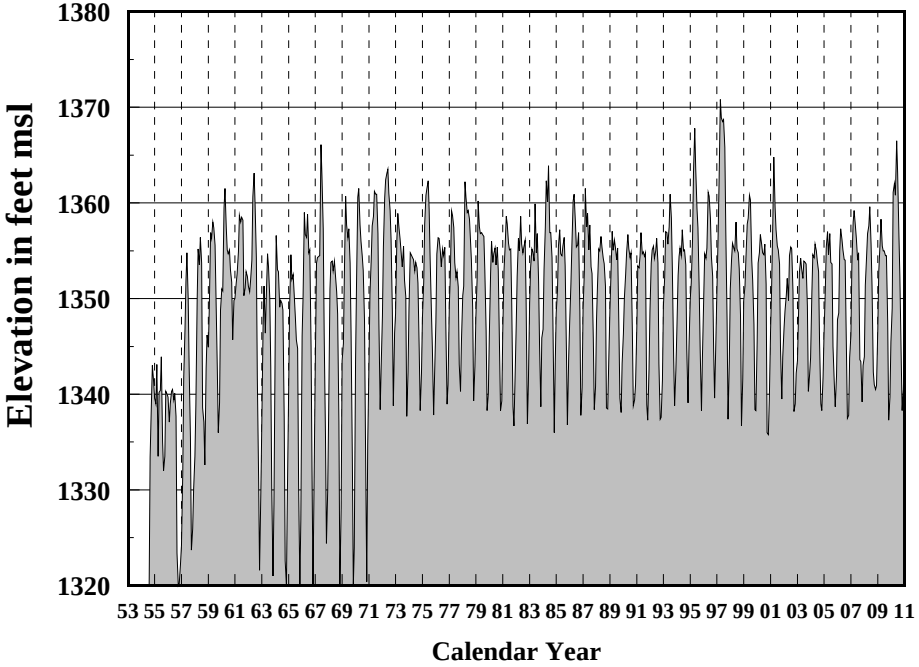


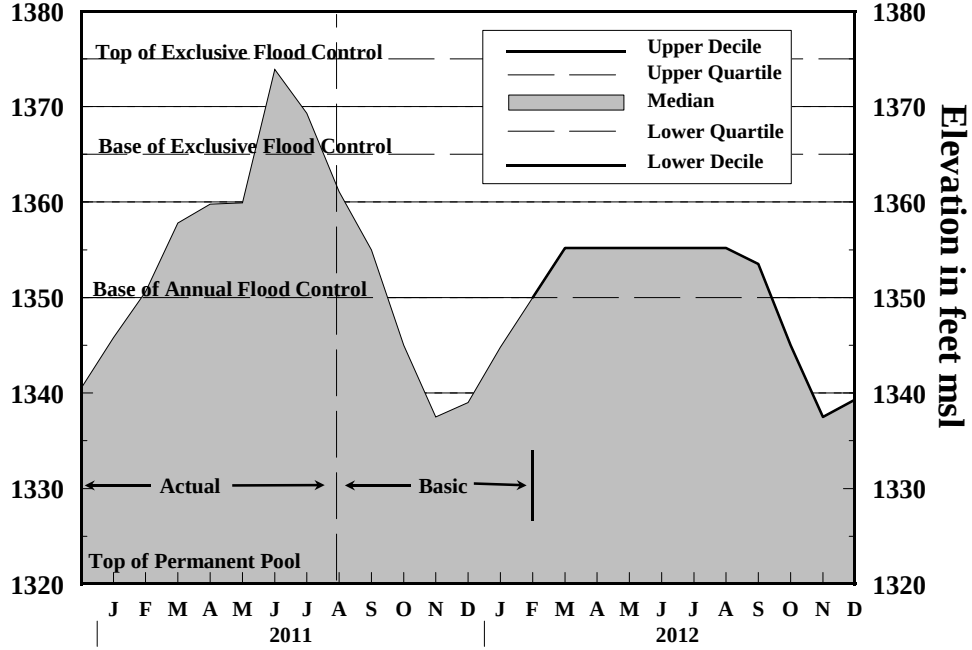


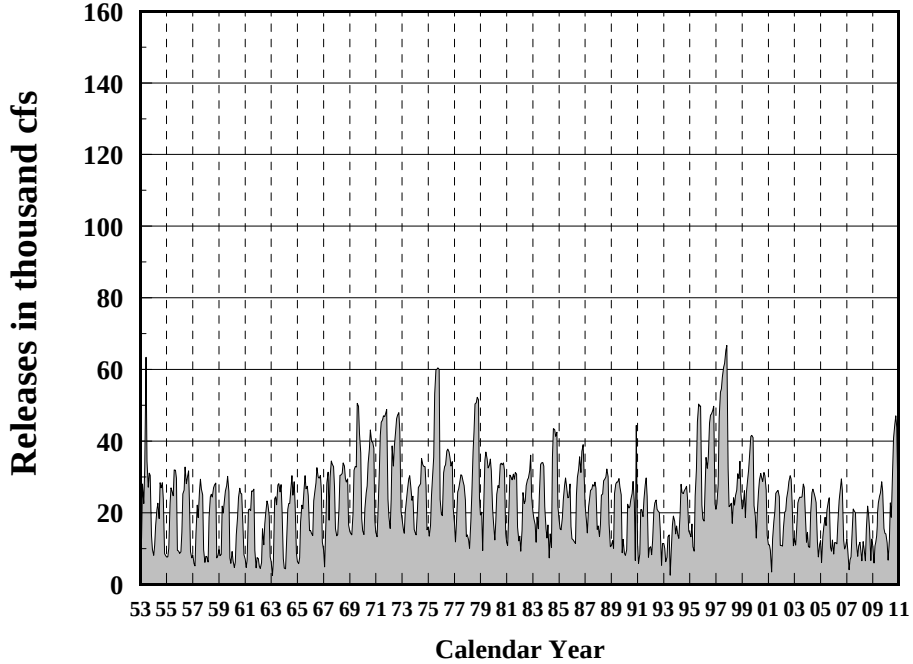




Fort Randall
Elevations and Releases







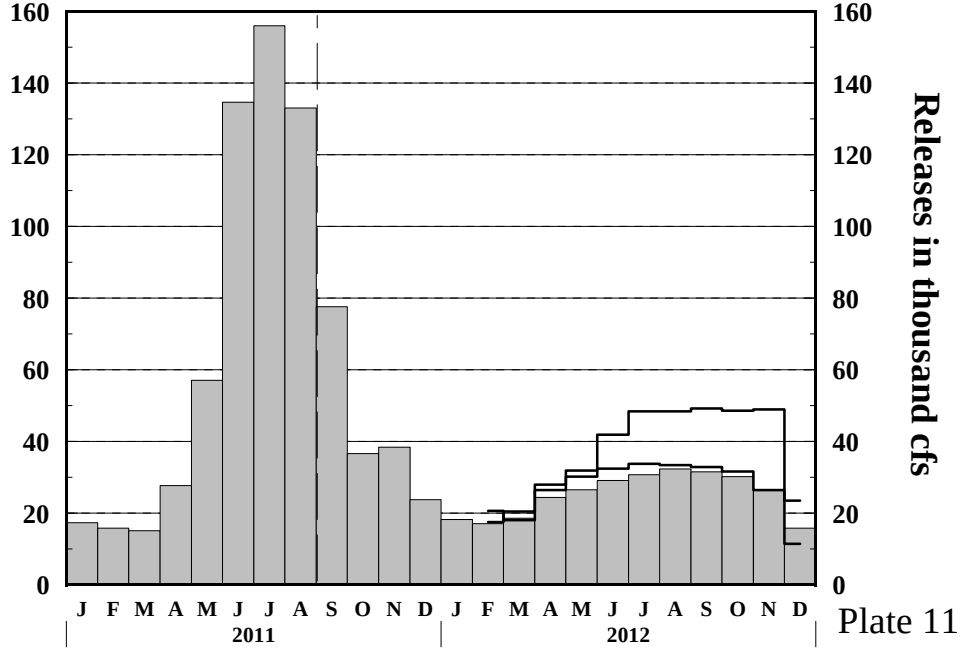
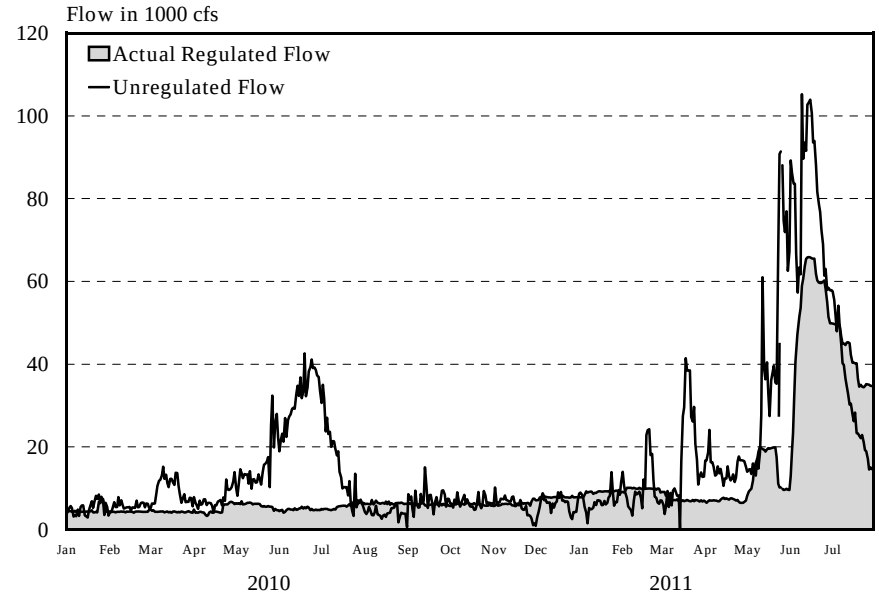


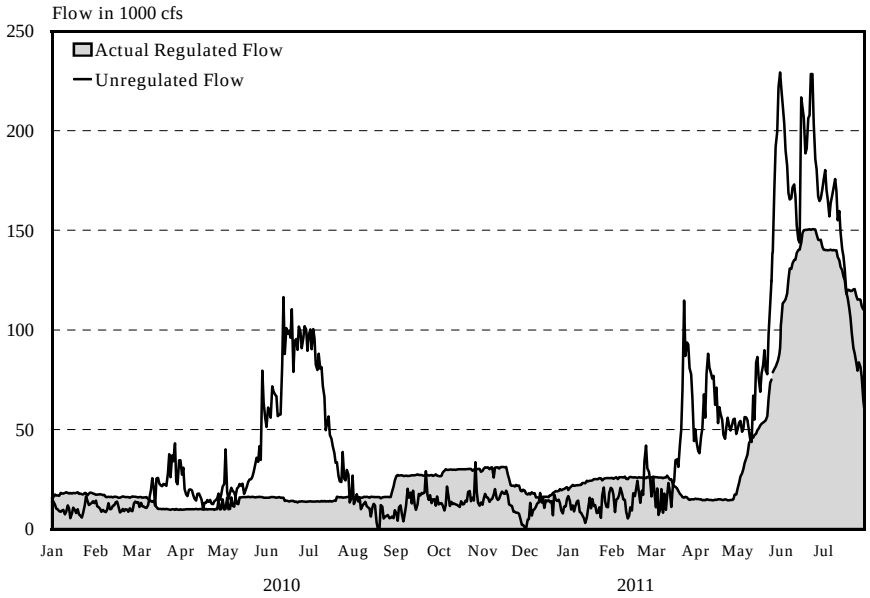
Plate 11

Reservoir Release and Unregulated Flow

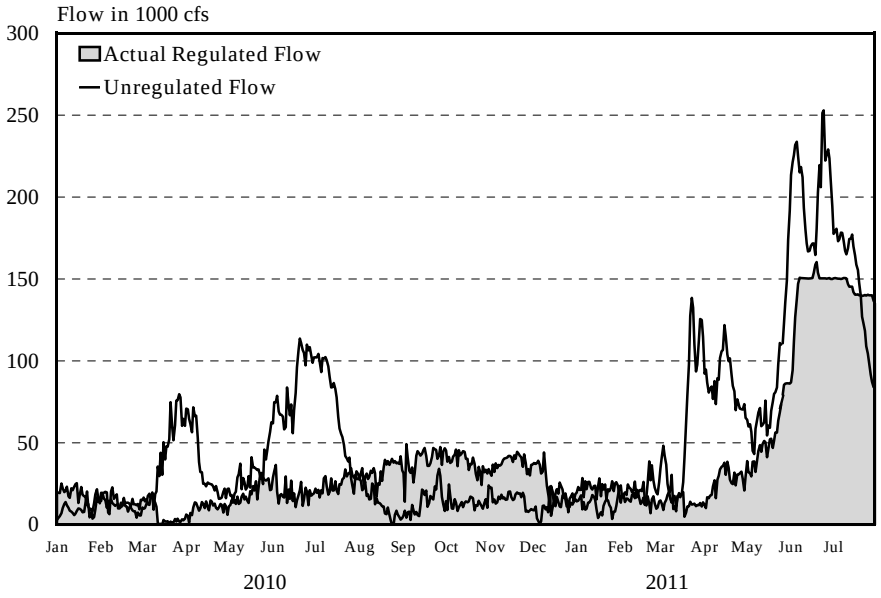
Fort Peck



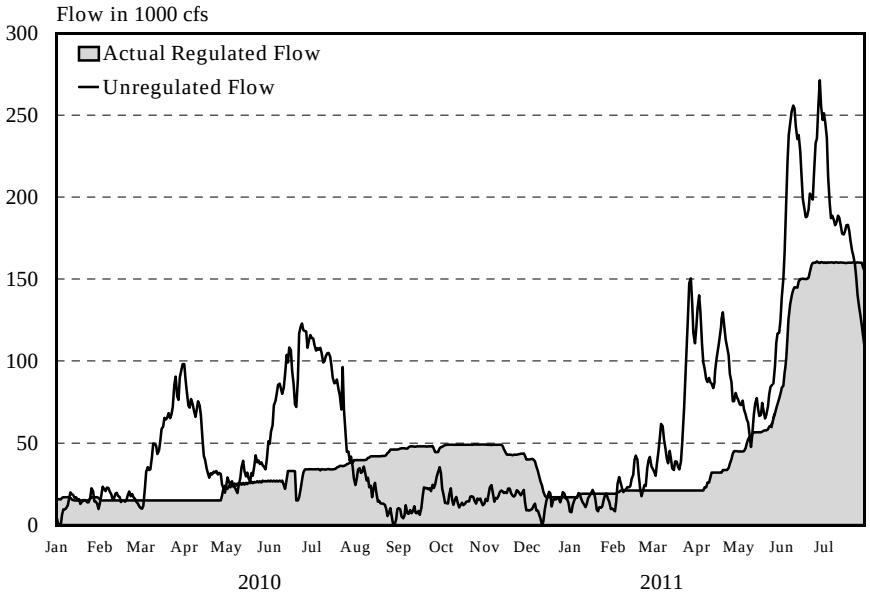
Garrison



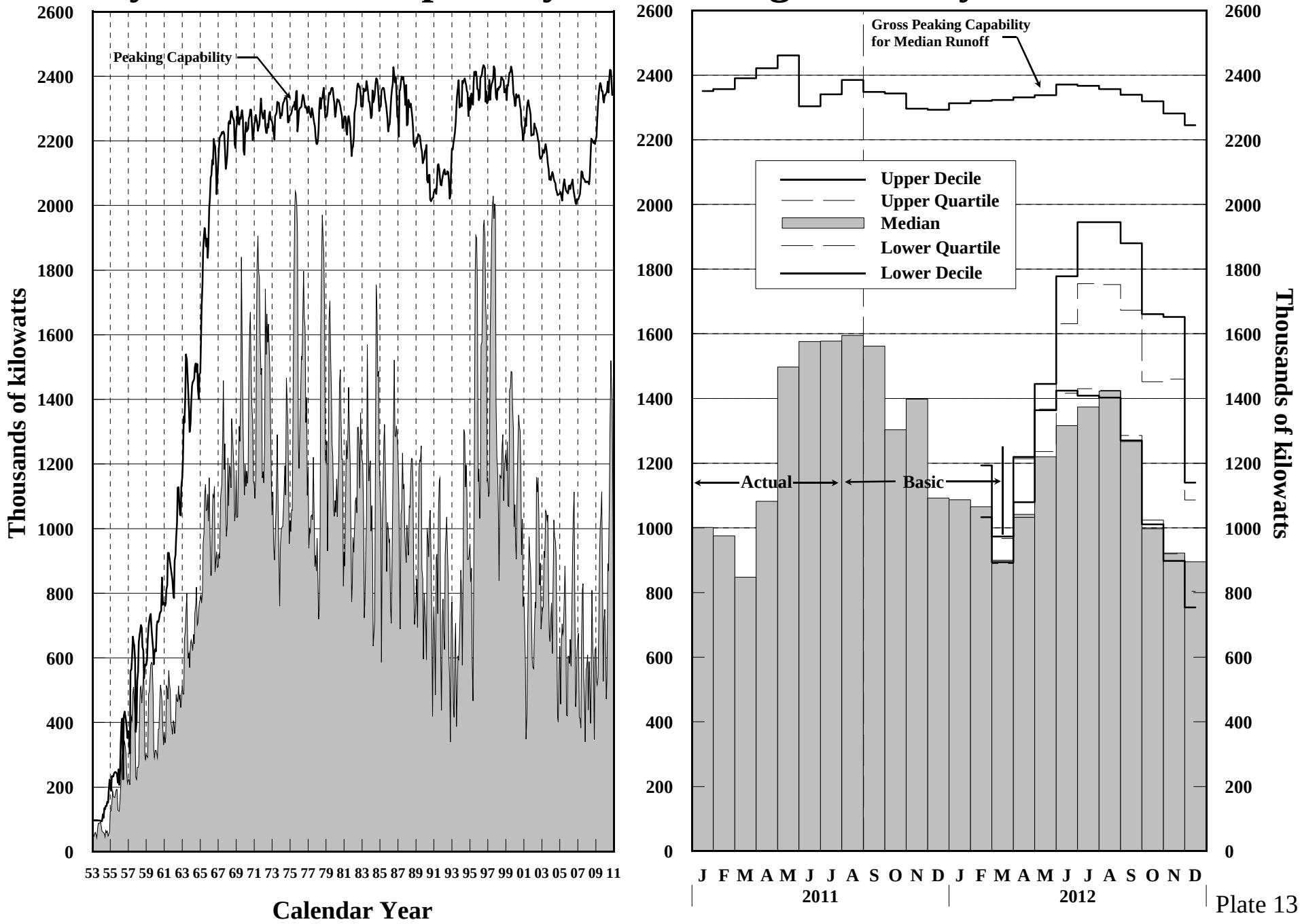
Oahe



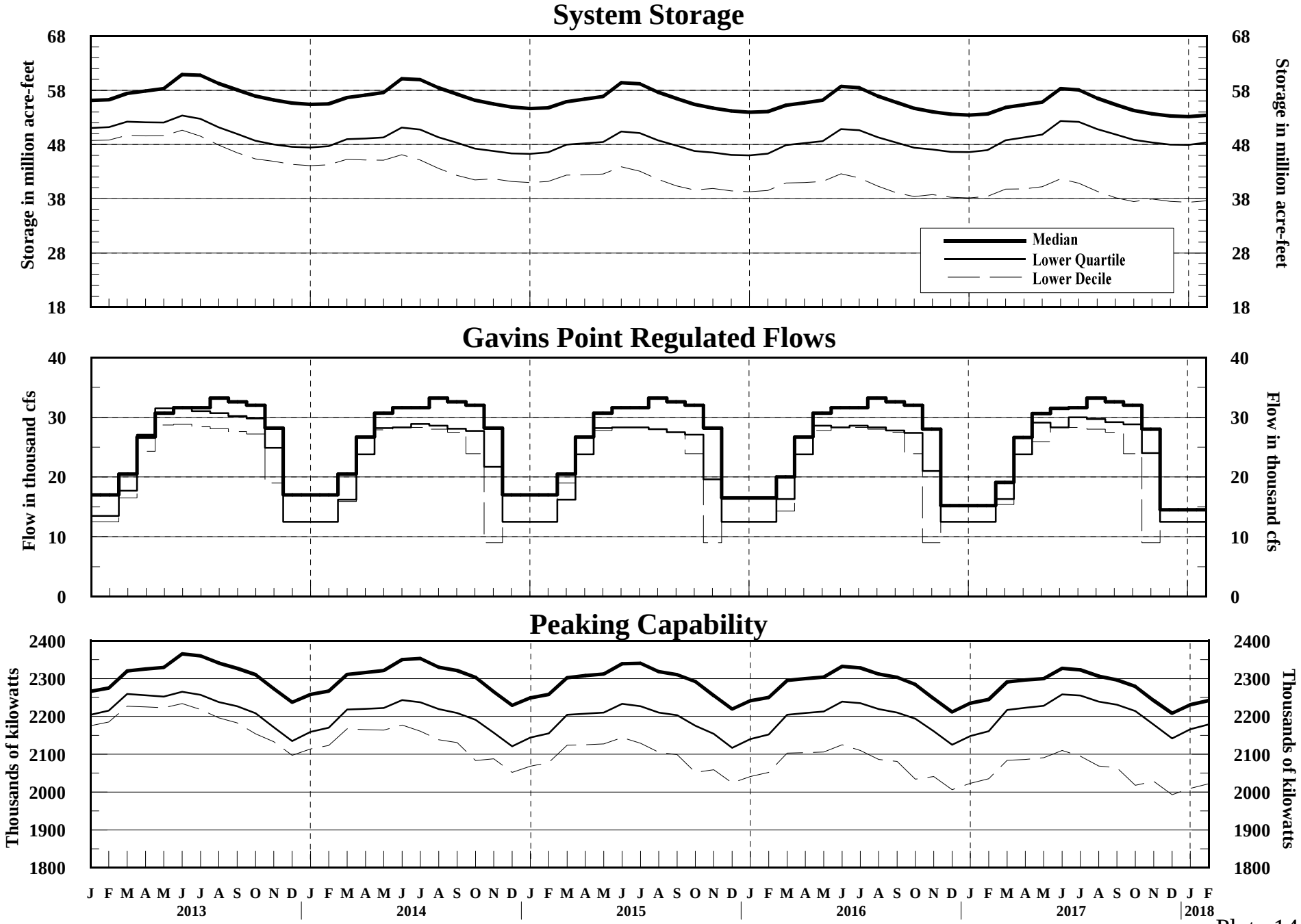
Gavins Point



System Gross Capability and Average Monthly Generation



Tentative Five Year Extensions of 2011-2012 AOP



Tentative Five Year Extensions of 2011-2012 AOP

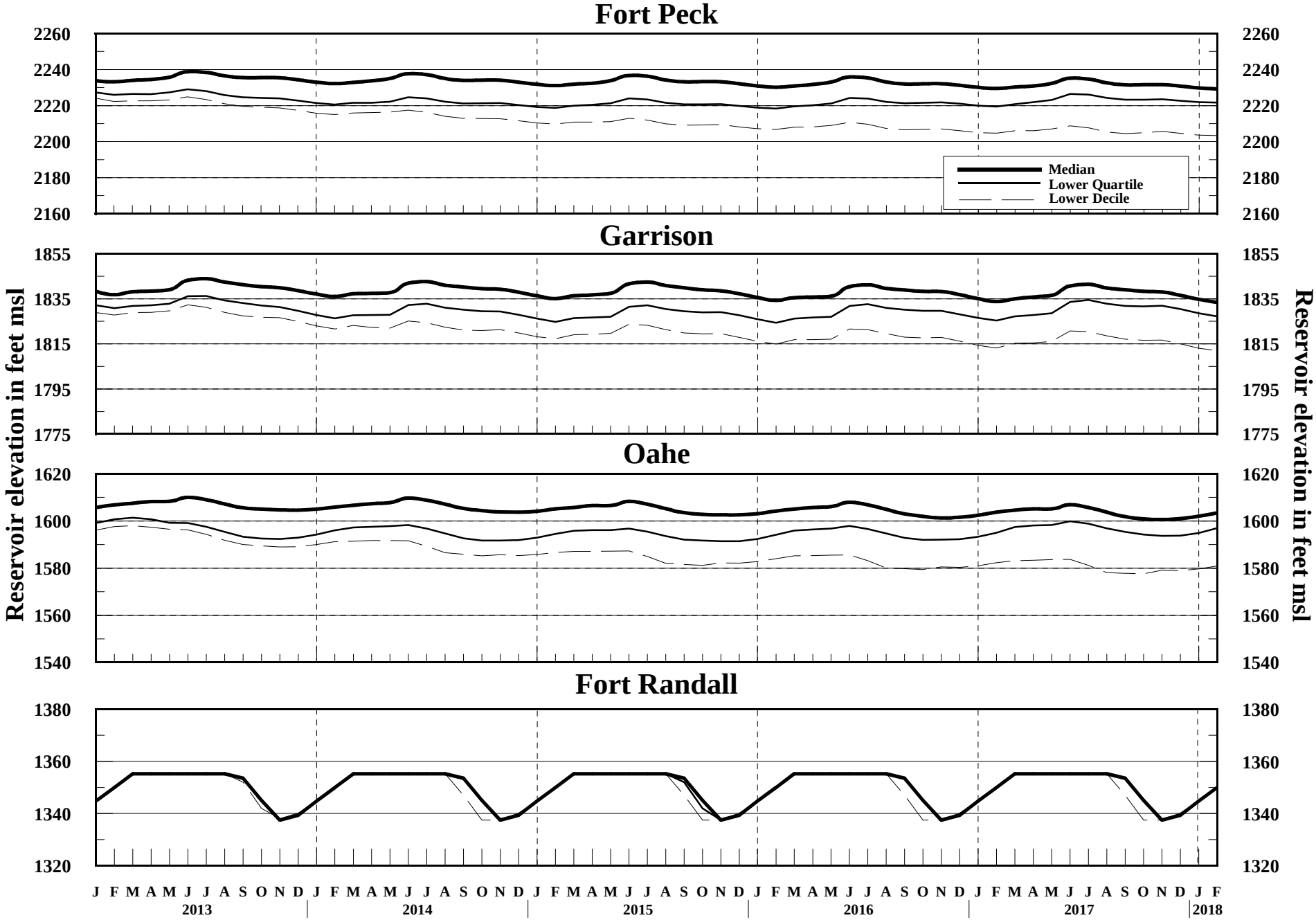


Plate 15

TIME OF STUDY 13:49:44 NAV SEASON 10-DAY EXTENSION STUDY NO 1

VALUES IN 1000 AF EXCEPT AS INDICATED

31AUG11	2011							2012
	INI-SUM	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--									
NAT INFLOW	2235	450	400	192	90	102	329	312	360
DEPLETION	-903	-177	-130	-67	-31	-36	-151	-166	-145
EVAPORATION	352	115	98	44	21	23	51		
MOD INFLOW	2786	512	432	215	100	115	429	478	505
RELEASE	4530	1398	553	268	125	143	615	738	690
STOR CHANGE	-1744	-886	-121	-53	-25	-28	-186	-260	-185
STORAGE	16537	15651	15529	15476	15452	15424	15238	14978	14793
ELEV FTMSL	2241.9	2238.0	2237.4	2237.2	2237.1	2237.0	2236.1	2234.9	2234.0
DISCH KCFS	24.5	23.5	9.0	9.0	9.0	9.0	10.0	12.0	12.0
POWER									
AVE POWER MW		166	124	124	124	124	137	160	159
PEAK POW MW		164	165	165	164	164	164	163	162
ENERGY GWH	632.1	119.2	92.3	44.6	20.8	23.8	101.9	118.9	110.7
--GARRISON--									
NAT INFLOW	2512	700	550	199	93	106	247	261	356
DEPLETION	-731	-219	-48	-112	-52	-60	-108	-77	-55
CHAN STOR	120	10	140				-10	-20	
EVAPORATION	404	132	114	51	23	27	57		
REG INFLOW	7489	2195	1178	528	247	282	903	1056	1101
RELEASE	9723	2552	1599	774	361	413	1168	1476	1381
STOR CHANGE	-2233	-357	-421	-245	-114	-131	-266	-420	-279
STORAGE	20348	19991	19570	19324	19210	19079	18814	18394	18115
ELEV FTMSL	1844.4	1843.3	1842.1	1841.3	1841.0	1840.6	1839.7	1838.4	1837.5
DISCH KCFS	74.0	42.9	26.0	26.0	26.0	26.0	19.0	24.0	24.0
POWER									
AVE POWER MW		499	331	329	329	328	240	300	298
PEAK POW MW		498	486	482	481	479	476	472	468
ENERGY GWH	1451.2	359.0	245.9	118.4	55.2	63.0	178.5	223.5	207.6
--OAHE--									
NAT INFLOW	372	130	70	35	16	19		12	90
DEPLETION	92	28	-9	2	1	1	15	21	33
CHAN STOR	189	115	66				27	-20	
EVAPORATION	396	130	110	50	23	26	56		
REG INFLOW	9796	2640	1633	757	353	404	1124	1447	1438
RELEASE	11701	4041	1507	830	420	589	1556	1449	1308
STOR CHANGE	-1905	-1401	126	-74	-67	-185	-432	-2	129
STORAGE	20744	19343	19469	19395	19328	19143	18712	18710	18839
ELEV FTMSL	1613.3	1609.1	1609.5	1609.3	1609.1	1608.5	1607.1	1607.1	1607.5
DISCH KCFS	80.0	67.9	24.5	27.9	30.3	37.1	25.3	23.6	22.7
POWER									
AVE POWER MW		725	319	363	393	480	327	303	293
PEAK POW MW		714	719	717	716	713	706	706	708
ENERGY GWH	1721.5	522.0	237.5	130.7	66.0	92.2	243.2	225.7	204.1
--BIG BEND--									
EVAPORATION	77	25	22	10	5	5	11		
REG INFLOW	11624	4016	1486	821	415	584	1545	1449	1308
RELEASE	11583	3975	1486	821	415	584	1545	1449	1308
STORAGE	1580	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1419.3	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	80.0	66.8	24.2	27.6	29.9	36.8	25.1	23.6	22.7
POWER									
AVE POWER MW		311	118	138	149	183	126	116	109
PEAK POW MW		511	538	538	538	538	538	538	529
ENERGY GWH	677.0	223.8	88.0	49.6	25.1	35.0	93.5	86.0	75.9
--FORT RANDALL--									
NAT INFLOW	262	140	18	9	4	5	12	25	49
DEPLETION	19	7	1	1	0	1	3	3	3
EVAPORATION	85	33	25	9	4	4	10		
REG INFLOW	11742	4075	1478	820	415	583	1546	1471	1354
RELEASE	12709	4619	2253	1142	531	607	1455	1121	980
STOR CHANGE	-967	-544	-776	-322	-116	-24	91	350	374
STORAGE	4074	3530	2755	2433	2317	2292	2383	2733	3107
ELEV FTMSL	1361.1	1355.0	1344.9	1339.9	1337.9	1337.4	1339.0	1344.6	1349.8
DISCH KCFS	87.0	77.6	36.6	38.4	38.3	38.3	23.7	18.2	17.0
POWER									
AVE POWER MW		361	294	283	271	267	172	138	135
PEAK POW MW		350	319	296	287	285	292	318	338
ENERGY GWH	1002.0	259.7	218.9	101.8	45.5	51.2	128.3	102.5	94.1
--GAVINS POINT--									
NAT INFLOW	740	150	140	60	28	32	100	100	130
DEPLETION	18	-5	2	5	2	3	10	1	
CHAN STOR	130	18	76	-3	0	0	27	10	2
EVAPORATION	27	9	8	3	2	2	4		
REG INFLOW	13533	4783	2460	1190	555	635	1568	1230	1112
RELEASE	13548	4760	2460	1190	555	635	1568	1230	1150
STOR CHANGE	-15	23							-38
STORAGE	357	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.6	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	90.0	80.0	40.0	40.0	40.0	40.0	25.5	20.0	20.0
POWER									
AVE POWER MW		109	116	116	116	116	89	71	70
PEAK POW MW		111	116	116	116	116	117	117	114
ENERGY GWH	416.6	78.4	86.7	41.9	19.6	22.4	66.6	52.5	48.7
--GAVINS POINT - SIOUX CITY--									
NAT INFLOW	1182	400	300	100	47	53	150	40	92
DEPLETION	88	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY									
KAF	14642	5136	2749	1284	599	685	1705	1256	1228
KCFS		86.3	44.7	43.2	43.2	43.2	27.7	20.4	21.4
--TOTAL--									
NAT INFLOW	7303	1970	1478	595	278	317	838	750	1077
DEPLETION	-1417	-342	-173	-165	-77	-88	-218	-204	-150
CHAN STOR	440	143	282	-2	0	-1	46	-29	2
EVAPORATION	1341	443	376	168	77	88	189		
STORAGE	63640	60516	59323	58629	58307	57939	57147	56816	56817
SYSTEM POWER									
AVE POWER MW		2169	1303	1353	1382	1498	1092	1087	1065
PEAK POW MW		2348	2343	2314	2303	2296	2293	2313	2320
ENERGY GWH	5900.5	1562.0	969.3	487.1	232.1	287.6	812.1	809.1	741.2
DAILY GWH		52.1	31.3	32.5	33.2	35.9	26.2	26.1	25.6
	INI-SUM	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

TIME OF STUDY 13:48:14 NAV SEASON 10-DAY EXTENSION STUDY NO 2

VALUES IN 1000 AF EXCEPT AS INDICATED

31AUG11	2011							2012
	INI-SUM	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--									
NAT INFLOW	2682	540	480	231	108	123	395	374	432
DEPLETION	-935	-194	-176	-74	-34	-39	-141	-163	-114
EVAPORATION	234	87	74	18	8	9	38		
MOD INFLOW	3383	647	582	286	134	153	498	537	546
RELEASE	5133	1405	769	372	174	190	676	799	748
STOR CHANGE	-1750	-758	-187	-85	-40	-38	-178	-262	-202
STORAGE	16537	15779	15592	15507	15467	15429	15251	14988	14787
ELEV FTMSL	2241.9	2238.6	2237.7	2237.3	2237.2	2237.0	2236.2	2234.9	2234.0
DISCH KCFS	24.5	23.6	12.5	12.5	12.5	12.0	11.0	13.0	13.0
POWER									
AVE POWER MW		166	165	165	165	161	149	163	162
PEAK POW MW		165	165	165	165	164	164	163	162
ENERGY GWH	705.6	119.3	122.9	59.3	27.7	30.9	110.9	121.5	113.1
--GARRISON--									
NAT INFLOW	3014	840	660	239	112	127	296	313	427
DEPLETION	-697	-220	-31	-110	-51	-58	-107	-74	-46
CHAN STOR	111	8	107			5	10	-20	
EVAPORATION	268	100	86	20	9	11	43		
REG INFLOW	8687	2374	1481	700	327	371	1046	1167	1221
RELEASE	10926	2655	1968	952	444	460	1353	1599	1496
STOR CHANGE	-2239	-281	-486	-252	-117	-90	-307	-432	-275
STORAGE	20348	20067	19581	19329	19212	19122	18815	18383	18109
ELEV FTMSL	1844.4	1843.6	1842.1	1841.3	1841.0	1840.7	1839.8	1838.4	1837.5
DISCH KCFS	74.0	44.6	32.0	32.0	32.0	29.0	22.0	26.0	26.0
POWER									
AVE POWER MW		499	406	405	404	366	277	325	323
PEAK POW MW		498	486	482	481	480	476	471	468
ENERGY GWH	1617.8	359.0	302.1	145.6	67.9	70.2	206.5	241.9	224.7
--OAHE--									
NAT INFLOW	446	156	84	42	20	22		14	108
DEPLETION	92	28	-9	2	1	1	15	21	33
CHAN STOR	181	109	49			12	27	-16	
EVAPORATION	265	99	84	20	9	10	43		
REG INFLOW	11196	2793	2025	972	454	483	1323	1576	1571
RELEASE	13108	3965	2035	1070	532	717	1611	1675	1502
STOR CHANGE	-1911	-1172	-10	-98	-79	-234	-288	-99	69
STORAGE	20744	19572	19563	19465	19386	19151	18863	18764	18833
ELEV FTMSL	1613.3	1609.8	1609.8	1609.5	1609.2	1608.5	1607.6	1607.3	1607.5
DISCH KCFS	80.0	66.6	33.1	36.0	38.4	45.2	26.2	27.2	26.1
POWER									
AVE POWER MW		727	431	468	497	583	339	351	336
PEAK POW MW		718	720	718	717	713	708	707	708
ENERGY GWH	1955.2	523.5	320.5	168.3	83.5	112.0	252.0	261.1	234.2
--BIG BEND--									
EVAPORATION	51	18	16	4	2	2	9		
REG INFLOW	13057	3947	2019	1067	531	715	1602	1675	1502
RELEASE	13016	3906	2019	1067	531	715	1602	1675	1502
STORAGE	1580	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1419.3	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	80.0	65.6	32.8	35.8	38.2	45.1	26.1	27.2	26.1
POWER									
AVE POWER MW		305	160	178	189	223	130	133	125
PEAK POW MW		511	538	538	538	538	538	538	529
ENERGY GWH	760.8	219.9	119.1	64.1	31.8	42.7	96.9	99.2	87.0
--FORT RANDALL--									
NAT INFLOW	315	168	22	11	5	6	14	30	59
DEPLETION	19	7	1	1	0	1	3	3	3
EVAPORATION	58	25	19	4	2	2	7		
REG INFLOW	13256	4042	2021	1073	534	718	1608	1702	1558
RELEASE	14214	4586	2794	1394	649	742	1512	1352	1184
STOR CHANGE	-958	-544	-773	-321	-116	-24	96	350	374
STORAGE	4074	3530	2757	2436	2320	2296	2392	2742	3116
ELEV FTMSL	1361.1	1355.0	1344.9	1339.9	1337.9	1337.5	1339.2	1344.7	1349.9
DISCH KCFS	87.0	77.1	45.4	46.9	46.8	46.8	24.6	22.0	20.6
POWER									
AVE POWER MW		361	333	308	292	286	179	166	163
PEAK POW MW		350	319	296	287	285	293	318	339
ENERGY GWH	1092.6	259.7	247.8	110.7	49.0	54.9	133.4	123.5	113.5
--GAVINS POINT--									
NAT INFLOW	889	180	168	73	34	39	120	120	156
DEPLETION	18	-5	2	5	2	3	10	1	
CHAN STOR	123	19	59	-3	0	0	41	5	3
EVAPORATION	18	6	6	1	1	1	3		
REG INFLOW	15191	4783	3013	1458	680	778	1660	1476	1343
RELEASE	15206	4760	3013	1458	680	778	1660	1476	1381
STOR CHANGE	-15	23							-38
STORAGE	357	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.6	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	90.0	80.0	49.0	49.0	49.0	49.0	27.0	24.0	24.0
POWER									
AVE POWER MW		109	116	116	116	116	95	84	83
PEAK POW MW		111	116	116	116	116	117	117	114
ENERGY GWH	438.7	78.4	85.9	41.6	19.4	22.2	70.4	62.7	58.1
--GAVINS POINT - SIOUX CITY--									
NAT INFLOW	1418	480	360	120	56	64	180	48	110
DEPLETION	88	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY									
KAF	16536	5216	3362	1572	734	838	1827	1510	1477
KCFS		87.7	54.7	52.8	52.8	52.8	29.7	24.6	25.7
--TOTAL--									
NAT INFLOW	8764	2364	1774	715	334	381	1005	899	1292
DEPLETION	-1415	-360	-202	-169	-79	-90	-207	-198	-110
CHAN STOR	417	136	215	-2	0	16	80	-31	3
EVAPORATION	894	334	285	67	31	35	143		
STORAGE	63640	60949	59494	58737	58386	58000	57322	56879	56807
SYSTEM POWER									
AVE POWER MW		2166	1611	1638	1662	1734	1170	1223	1193
PEAK POW MW		2353	2344	2315	2303	2296	2296	2314	2320
ENERGY GWH	6570.6	1559.9	1198.4	589.7	279.3	332.9	870.1	909.8	830.5
DAILY GWH		52.0	38.7	39.3	39.9	41.6	28.1	29.3	28.6
	INI-SUM	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

TIME OF STUDY 13:49:06 NAV SEASON 10-DAY EXTENSION STUDY NO 3

VALUES IN 1000 AF EXCEPT AS INDICATED

31AUG11	2011							2012
INI-SUM	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--								
NAT INFLOW 1788	360	320	154	72	82	263	250	288
DEPLETION -847	-195	-155	-60	-28	-32	-120	-138	-119
EVAPORATION 439	144	122	55	26	29	63		
MOD INFLOW 2196	411	353	158	74	85	320	388	407
RELEASE 3948	1298	492	238	111	127	492	615	575
STOR CHANGE -1752	-887	-139	-80	-37	-42	-172	-227	-168
STORAGE 16537	15650	15511	15431	15394	15352	15180	14953	14785
ELEV FTMSL 2241.9	2238.0	2237.4	2237.0	2236.8	2236.6	2235.8	2234.8	2234.0
DISCH KCFS 24.5	21.8	8.0	8.0	8.0	8.0	8.0	10.0	10.0
POWER								
AVE POWER MW	166	110	110	110	110	110	136	136
PEAK POW MW	164	165	164	164	164	164	163	162
ENERGY GWH 558.5	119.3	82.0	39.6	18.5	21.1	81.7	101.5	94.7
--GARRISON--								
NAT INFLOW 2010	560	440	159	74	85	198	209	285
DEPLETION -752	-202	-54	-117	-55	-62	-115	-84	-63
CHAN STOR 140	26	134					-20	
EVAPORATION 509	166	143	64	30	34	73		
REG INFLOW 6341	1920	977	450	210	240	732	888	923
RELEASE 8582	2437	1230	595	278	317	1107	1353	1265
STOR CHANGE -2241	-517	-253	-145	-68	-77	-375	-464	-342
STORAGE 20348	19831	19578	19433	19365	19288	18914	18449	18107
ELEV FTMSL 1844.4	1842.9	1842.1	1841.7	1841.4	1841.2	1840.1	1838.6	1837.5
DISCH KCFS 74.0	41.0	20.0	20.0	20.0	20.0	18.0	22.0	22.0
POWER								
AVE POWER MW	499	255	254	253	253	228	276	274
PEAK POW MW	497	487	483	482	481	477	472	468
ENERGY GWH 1296.2	358.9	189.5	91.4	42.6	48.6	169.3	205.3	190.6
--OAHE--								
NAT INFLOW 298	104	56	28	13	15		10	72
DEPLETION 92	28	-9	2	1	1	15	21	33
CHAN STOR 196	123	81			0	8	-16	
EVAPORATION 501	164	140	63	30	34	72		
REG INFLOW 8483	2472	1237	558	260	298	1028	1326	1304
RELEASE 10396	3779	1058	584	305	457	1388	1480	1344
STOR CHANGE -1913	-1307	178	-26	-45	-159	-360	-154	-40
STORAGE 20744	19437	19615	19589	19544	19385	19025	18871	18831
ELEV FTMSL 1613.3	1609.4	1610.0	1609.9	1609.7	1609.2	1608.1	1607.6	1607.5
DISCH KCFS 80.0	63.5	17.2	19.6	22.0	28.8	22.6	24.1	23.4
POWER								
AVE POWER MW	727	225	257	287	375	293	311	302
PEAK POW MW	717	721	720	720	717	711	708	708
ENERGY GWH 1563.0	523.3	167.5	92.4	48.3	71.9	218.1	231.5	210.0
--BIG BEND--								
EVAPORATION 96	31	27	12	6	7	14		
REG INFLOW 10300	3749	1031	572	300	450	1374	1480	1344
RELEASE 10259	3708	1031	572	300	450	1374	1480	1344
STORAGE 1580	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL 1419.3	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS 80.0	62.3	16.8	19.2	21.6	28.4	22.3	24.1	23.4
POWER								
AVE POWER MW	290	82	97	108	142	112	118	112
PEAK POW MW	511	538	538	538	538	538	538	529
ENERGY GWH 599.4	208.8	61.3	34.8	18.2	27.2	83.3	87.8	78.0
--FORT RANDALL--								
NAT INFLOW 209	112	14	7	3	4	10	20	39
DEPLETION 19	7	1	1	0	1	3	3	3
EVAPORATION 107	41	31	12	5	5	12		
REG INFLOW 10342	3772	1013	566	298	447	1369	1497	1380
RELEASE 11300	4314	1787	888	414	473	1271	1147	1006
STOR CHANGE -958	-543	-774	-322	-116	-26	99	350	374
STORAGE 4074	3531	2757	2436	2319	2294	2392	2742	3116
ELEV FTMSL 1361.1	1355.0	1344.9	1339.9	1337.9	1337.4	1339.2	1344.7	1349.9
DISCH KCFS 87.0	72.5	29.1	29.8	29.8	29.8	20.7	18.7	17.5
POWER								
AVE POWER MW	362	234	225	218	215	151	141	139
PEAK POW MW	351	319	296	287	285	293	318	339
ENERGY GWH 907.8	260.3	174.3	81.1	36.6	41.3	112.4	105.0	96.7
--GAVINS POINT--								
NAT INFLOW 592	120	112	48	22	26	80	80	104
DEPLETION 18	-5	2	5	2	3	10	1	
CHAN STOR 129	27	80	-1	0	0	17	4	2
EVAPORATION 34	11	10	4	2	2	5		
REG INFLOW 11969	4456	1968	925	432	493	1353	1230	1112
RELEASE 11984	4433	1968	925	432	493	1353	1230	1150
STOR CHANGE -15	23							-38
STORAGE 357	380	380	380	380	380	380	380	342
ELEV FTMSL 1206.6	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS 90.0	74.5	32.0	31.1	31.1	31.1	22.0	20.0	20.0
POWER								
AVE POWER MW	110	108	106	106	106	77	71	70
PEAK POW MW	112	117	117	117	117	117	117	114
ENERGY GWH 395.3	79.4	80.6	38.3	17.9	20.4	57.6	52.5	48.7
--GAVINS POINT - SIOUX CITY--								
NAT INFLOW 946	320	240	80	37	43	120	32	74
DEPLETION 88	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY								
KAF 12842	4729	2197	999	466	533	1460	1248	1210
KCFS	79.5	35.7	33.6	33.6	33.6	23.7	20.3	21.0
--TOTAL--								
NAT INFLOW 5843	1576	1182	476	222	254	671	601	862
DEPLETION -1382	-343	-204	-163	-76	-87	-194	-183	-132
CHAN STOR 466	176	296	-1	0	-1	25	-32	2
EVAPORATION 1687	556	473	211	98	111	239		
STORAGE 63640	60450	59462	58890	58624	58320	57512	57016	56802
SYSTEM POWER								
AVE POWER MW	2153	1015	1049	1083	1201	971	1053	1033
PEAK POW MW	2351	2346	2319	2308	2302	2300	2317	2320
ENERGY GWH 5320.1	1550.1	755.3	377.6	182.0	230.6	722.5	783.6	718.6
DAILY GWH	51.7	24.4	25.2	26.0	28.8	23.3	25.3	24.8
INI-SUM	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

TIME OF STUDY 13:51:07 STUDY NO 4

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB12	2012												2013			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	9500	315	147	189	790	1590	2465	1205	450	375	525	208	97	111	345	295	395
DEPLETION	385	-43	-20	-26	-108	313	668	231	-40	-128	-73	-24	-11	-13	-118	-140	-84
EVAPORATION	333							23	71	88	76	18	8	10	39		
MOD INFLOW	8782	357	167	214	898	1277	1797	951	419	415	522	213	100	114	424	435	479
RELEASE	8774	193	90	116	476	676	893	922	922	740	615	298	139	167	830	892	805
STOR CHANGE	8	164	76	98	422	601	904	29	-503	-325	-93	-84	-39	-53	-406	-457	-326
STORAGE	14787	14950	15027	15125	15547	16148	17052	17081	16578	16253	16160	16076	16037	15984	15578	15121	14795
ELEV FTMSL	2234.0	2234.8	2235.1	2235.6	2237.5	2240.2	2244.1	2244.3	2242.1	2240.7	2240.3	2239.9	2239.7	2239.5	2237.7	2235.6	2234.0
DISCH KCFS	13.0	6.5	6.5	6.5	8.0	11.0	15.0	15.0	15.0	12.4	10.0	10.0	10.0	10.5	13.5	14.5	14.5
POWER																	
AVE POWER MW		89	89	89	110	150	168	169	169	168	139	138	138	145	165	164	163
PEAK POW MW		163	163	163	165	167	169	169	168	167	167	167	166	166	165	163	162
ENERGY GWH	1308.6	32.0	14.9	19.2	79.1	111.8	120.9	126.1	125.5	120.7	103.1	49.9	23.2	27.8	123.1	122.0	109.3
--GARRISON--																	
NAT INFLOW	14000	528	246	316	1355	1840	3425	2715	835	570	645	258	120	137	270	325	415
DEPLETION	999	11	5	7	-73	-27	977	633	100	-126	10	-119	-56	-63	-119	-101	-60
CHAN STOR	-15	64			-15	-29	-39			25	23			-5	-29	-10	
EVAPORATION	377							26	82	101	86	20	9	11	43		
REG INFLOW	21384	774	331	426	1889	2514	3302	2979	1576	1360	1188	654	305	352	1147	1308	1280
RELEASE	21375	536	250	321	1428	1968	2142	2214	2214	1994	1906	922	430	421	1353	1722	1555
STOR CHANGE	8	239	81	104	461	546	1160	765	-638	-635	-719	-268	-125	-68	-206	-414	-275
STORAGE	18109	18347	18429	18533	18994	19540	20700	21465	20827	20192	19474	19206	19080	19012	18806	18392	18117
ELEV FTMSL	1837.5	1838.3	1838.5	1838.9	1840.3	1842.0	1845.4	1847.6	1845.8	1843.9	1841.8	1841.0	1840.6	1840.4	1839.7	1838.4	1837.5
DISCH KCFS	26.0	18.0	18.0	18.0	24.0	32.0	36.0	36.0	36.0	33.5	31.0	31.0	31.0	26.5	22.0	28.0	28.0
POWER																	
AVE POWER MW		224	225	225	301	404	451	459	460	428	394	392	391	334	277	350	347
PEAK POW MW		471	472	473	479	487	500	502	500	499	483	481	479	479	476	471	468
ENERGY GWH	3264.4	80.7	37.8	48.7	216.9	300.5	325.0	341.5	341.9	307.9	292.8	141.0	65.6	64.1	206.2	260.2	233.4
--OAHE--																	
NAT INFLOW	3800	358	167	215	545	360	1265	215	110	150	95	108	50	57	-45	25	125
DEPLETION	696	24	11	15	50	72	148	178	119	29	-11	1	0	1	13	18	28
CHAN STOR	-6	32			-23	-30	-15			9	10			18	18	-24	
EVAPORATION	362							26	79	96	82	19	9	10	41		
REG INFLOW	24111	901	406	522	1900	2225	3244	2225	2126	2029	1940	1010	471	485	1272	1704	1652
RELEASE	24103	617	288	330	1150	1749	2352	2913	2943	2751	2350	1122	557	744	1548	1469	1221
STOR CHANGE	8	285	118	191	750	477	892	-688	-817	-722	-410	-112	-86	-258	-277	235	431
STORAGE	18833	19117	19235	19426	20177	20653	21545	20857	20040	19318	18908	18796	18710	18452	18175	18410	18841
ELEV FTMSL	1607.5	1608.4	1608.8	1609.4	1611.7	1613.1	1615.6	1613.7	1611.2	1609.0	1607.7	1607.4	1607.1	1606.3	1605.4	1606.1	1607.5
DISCH KCFS	26.1	20.7	20.7	18.5	19.3	28.4	39.5	47.4	47.9	46.2	38.2	37.7	40.1	46.9	25.2	23.9	22.0
POWER																	
AVE POWER MW		268	269	241	254	376	525	628	626	600	493	484	514	596	322	305	283
PEAK POW MW		713	715	718	730	737	750	740	728	716	709	707	706	701	696	701	708
ENERGY GWH	3797.6	96.6	45.2	52.1	182.5	279.4	378.3	466.9	465.6	432.2	366.9	174.4	86.3	114.4	239.4	227.1	190.1
--BIG BEND--																	
EVAPORATION	71							5	15	19	16	4	2	2	9		
REG INFLOW	24032	617	288	330	1150	1749	2352	2908	2928	2732	2334	1118	555	742	1540	1469	1221
RELEASE	24032	617	288	330	1150	1749	2352	2908	2928	2732	2334	1118	555	742	1540	1469	1221
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	26.1	20.7	20.7	18.5	19.3	28.4	39.5	47.3	47.6	45.9	38.0	37.6	40.0	46.7	25.0	23.9	22.0
POWER																	
AVE POWER MW		98	97	87	90	133	185	221	223	217	185	186	198	231	125	117	105
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1387.2	35.3	16.3	18.7	65.1	99.0	133.2	164.5	165.6	156.3	137.3	67.1	33.3	44.3	93.2	87.1	70.8
--FORT RANDALL--																	
NAT INFLOW	1500	148	69	89	425	220	150	90	85	80	30	20	9	11	15		60
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	81							6	19	24	18	4	2	2	7		
REG INFLOW	25373	763	356	418	1571	1960	2490	2974	2979	2782	2345	1133	562	749	1547	1466	1278
RELEASE	25365	464	222	418	1571	1960	2490	2974	2979	2928	2988	1454	678	775	1444	1116	904
STOR CHANGE	8	299	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3116	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1349.9	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	20.6	15.6	16.0	23.4	26.4	31.9	41.9	48.4	48.4	49.2	48.6	48.9	48.9	48.9	23.5	18.1	16.3
POWER																	
AVE POWER MW		129	135	198	223	268	336	356	356	353	336	307	291	286	172	138	130
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	284	294	319	339
ENERGY GWH	2278.7	46.4	22.7	42.8	160.3	199.4	241.8	264.9	264.9	254.2	250.1	110.7	48.9	54.8	127.6	102.3	87.0
--GAVINS POINT--																	
NAT INFLOW	2300	121	56	73	225	345	290	215	185	135	155	70	33	37	90	105	165
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	6	10	-1	-14	-6	-10	-19	-12	0	-1	1	-1	0	0	47	10	3
EVAPORATION	24							2	5	6	6	1	1	1	3		
REG INFLOW	27533	595	278	477	1785	2275	2737	3136	3149	3060	3136	1517	708	809	1568	1230	1073
RELEASE	27533	595	278	477	1785	2275	2737	3136	3136	3035	3136	1517	708	809	1568	1230	1111
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	24.0	20.0	20.0	26.7	30.0	37.0	46.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	25.5	20.0	20.0
POWER																	
AVE POWER MW		69	69	91	101	114	113	112	113	115	115	115	115	115	79	70	69
PEAK POW MW		114	114	114	114	114	113	112	113	115	115	115	115	115	78	78	76
ENERGY GWH	870.2	24.8	11.6	19.7	72.6	85.0	81.1	83.1	83.7	82.5	85.8	41.5	19.4	22.1	58.6	52.0	46.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	3200	165	77	99	515	915	395	265	210	155	80	48	22	25	60	35	135
DEPLETION	268	7	3	4	22	36	31	39	37	24	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	30465	753	351	571	2278	3154	3101	3362	3309	3166	3205	1559	727	831	1615	1251	1231
KCFS		25.3	25.3	32.0	38.3	51.3	52.1	54.7	53.8	53.2	52.1	52.4	52.4	52.4	26.3	20.3	22.2
--TOTAL--																	
NAT INFLOW	34300	1633	762	980	3855	5270	7990	4705	1875	1465	1530	710	331	379	735	785	1295
DEPLETION	2542	0	0	0	-100	422	1860	1138	241	-199	-60	-130	-61	-69	-198	-205	-98
CHAN STOR	-13	106	-1	-14	-44	-70	-73	-12	0	33	34	-1	0	12	38	-24	3
EVAPORATION	1248							86	270	334	284	66	31	35	142		
STORAGE	56807	57793	58203	58596	60230	61853	64809	64916	62970	61168	59303	58517	58151	57745	56960	56674	56840
SYSTEM POWER																	
AVE POWER MW		877	884	931	1079	1445	1778	1945	1945	1880	1661	1624	1648	1706	1140	1143	1097
PEAK POW MW		2328	2329	2334	2353	2370	2397	2388	2374	2365	2331	2304	2292	2284	2247	2270	2282
ENERGY GWH	12906.6	315.8	148.5	201.2	776.6	1075.1	1280.3	1446.9	1447.3	1353.8	1236.1	584.5	276.8	327.5	848.2	850.7	737.2
DAILY GWH		21.1	21.2	22.4	25.9	34.7	42.7	46.7	46.7	45.1	39.9	39.0	39.5	40.9	27.4	27.4	26.3
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:48:14 STUDY NO 5

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB12	2012										2013					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	8650	288	134	173	715	1445	2245	1100	410	340	480	188	88	100	315	270	360
DEPLETION	382	-43	-20	-26	-108	312	669	231	-55	-118	-80	-25	-12	-13	-113	-135	-83
EVAPORATION	328							22	70	86	75	18	8	9	39		
MOD INFLOW	7940	331	154	198	823	1133	1576	847	395	372	485	195	91	104	389	405	443
RELEASE	7945	193	90	116	476	676	803	830	830	641	492	238	111	127	799	799	722
STOR CHANGE	-5	137	64	82	347	457	773	17	-435	-269	-7	-43	-20	-23	-410	-394	-279
STORAGE	14787	14924	14988	15070	15417	15874	16646	16663	16228	15959	15952	15909	15888	15865	15455	15061	14782
ELEV FTMSL	2234.0	2234.6	2234.9	2235.3	2236.9	2239.0	2242.4	2242.5	2240.6	2239.4	2239.4	2239.2	2239.1	2239.0	2237.1	2235.3	2234.0
DISCH KCFS	13.0	6.5	6.5	6.5	8.0	11.0	13.5	13.5	13.5	10.8	8.0	8.0	8.0	8.0	13.0	13.0	13.0
POWER																	
AVE POWER MW		89	89	89	110	150	167	168	168	148	111	111	111	111	165	164	163
PEAK POW MW		163	163	163	164	166	168	168	167	166	166	166	166	166	164	163	162
ENERGY GWH	1249.4	32.0	14.9	19.2	79.0	111.4	120.3	125.2	124.7	106.6	82.4	39.9	18.6	21.3	122.8	121.8	109.3
--GARRISON--																	
NAT INFLOW	12800	484	226	290	1240	1685	3130	2480	760	520	590	235	110	125	245	300	380
DEPLETION	998	11	5	7	-73	9	916	659	93	-129	-1	-120	-56	-64	-114	-93	-53
CHAN STOR	0	64			-15	-29	-24			26	27				-49		
EVAPORATION	375							25	81	100	86	20	9	11	43		
REG INFLOW	19372	731	311	400	1774	2323	2993	2626	1416	1216	1024	573	267	305	1066	1192	1155
RELEASE	19377	476	222	286	1398	1968	1904	1906	1906	1725	1660	803	375	413	1291	1599	1444
STOR CHANGE	-5	255	89	114	376	355	1089	720	-490	-510	-636	-231	-108	-107	-225	-406	-289
STORAGE	18109	18363	18452	18566	18942	19297	20386	21106	20616	20106	19470	19239	19131	19024	18799	18393	18104
ELEV FTMSL	1837.5	1838.3	1838.6	1839.0	1840.1	1841.2	1844.5	1846.6	1845.2	1843.7	1841.8	1841.1	1840.7	1840.4	1839.7	1838.4	1837.5
DISCH KCFS	26.0	16.0	16.0	16.0	23.5	32.0	32.0	31.0	31.0	29.0	27.0	27.0	27.0	26.0	21.0	26.0	26.0
POWER																	
AVE POWER MW		200	200	201	295	403	406	399	400	372	343	341	341	328	265	325	323
PEAK POW MW		471	472	474	478	482	499	501	500	499	483	481	480	479	476	471	468
ENERGY GWH	2969.6	71.9	33.6	43.4	212.3	299.7	292.4	297.0	297.5	267.5	255.3	122.9	57.3	63.0	197.0	241.8	216.9
--OAHE--																	
NAT INFLOW	3100	302	141	181	520	305	1010	185	95	125	65	55	26	29	-65	10	115
DEPLETION	696	24	11	15	50	72	148	178	119	29	-11	1	0	1	13	18	28
CHAN STOR	1	40			-29	-33		4		8	8			4	20	-20	
EVAPORATION	364							26	79	96	82	19	9	10	42		
REG INFLOW	21417	794	352	453	1839	2168	2766	1891	1803	1733	1662	838	391	435	1191	1571	1531
RELEASE	21422	646	301	348	1127	1314	2091	2529	2542	2359	1950	923	464	638	1445	1488	1257
STOR CHANGE	-5	148	51	105	712	854	675	-637	-738	-626	-288	-86	-73	-203	-254	83	274
STORAGE	18833	18980	19031	19136	19847	20702	21377	20739	20001	19375	19086	19001	18927	18725	18471	18554	18828
ELEV FTMSL	1607.5	1608.0	1608.1	1608.5	1610.7	1613.2	1615.1	1613.3	1611.1	1609.2	1608.3	1608.0	1607.8	1607.1	1606.3	1606.6	1607.5
DISCH KCFS	26.1	21.7	21.7	19.5	18.9	21.4	35.1	41.1	41.3	39.6	31.7	31.0	33.4	40.2	23.5	24.2	22.6
POWER																	
AVE POWER MW		281	281	253	247	282	467	546	543	516	411	401	431	516	302	310	291
PEAK POW MW		710	711	713	725	738	748	738	727	717	712	711	709	706	702	703	708
ENERGY GWH	3382.3	101.1	47.2	54.6	178.2	209.9	336.5	406.2	404.2	371.5	305.6	144.3	72.4	99.0	224.8	230.9	195.8
--BIG BEND--																	
EVAPORATION	71							5	15	19	16	4	2	2	9		
REG INFLOW	21352	646	301	348	1127	1314	2091	2524	2527	2340	1934	920	463	636	1437	1488	1257
RELEASE	21352	646	301	348	1127	1314	2091	2524	2527	2340	1934	920	463	636	1437	1488	1257
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	26.1	21.7	21.7	19.5	18.9	21.4	35.1	41.0	41.1	39.3	31.4	30.9	33.3	40.1	23.4	24.2	22.6
POWER																	
AVE POWER MW		103	102	91	89	100	164	192	192	186	153	154	166	198	117	119	108
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1234.1	37.1	17.1	19.7	63.9	74.4	118.4	142.8	143.0	134.1	114.1	55.4	27.8	38.1	87.1	88.2	72.9
--FORT RANDALL--																	
NAT INFLOW	1200	131	61	78	285	180	140	80	75	70	15	15	7	8	10	-5	50
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	81							6	19	24	18	4	2	2	7		
REG INFLOW	22392	776	362	425	1408	1485	2219	2580	2568	2380	1929	930	468	641	1438	1480	1304
RELEASE	22384	477	228	425	1408	1485	2219	2580	2568	2526	2572	1251	584	667	1335	1130	930
STOR CHANGE	8	299	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3116	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1349.9	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	20.6	16.0	16.4	23.8	23.7	24.1	37.3	42.0	41.8	42.4	41.8	42.0	42.0	42.0	21.7	18.4	16.7
POWER																	
AVE POWER MW		132	138	201	200	204	313	336	335	336	318	296	284	279	159	139	133
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	294	319	339
ENERGY GWH	2132.6	47.6	23.2	43.5	144.0	151.7	225.2	250.2	249.6	241.7	236.8	106.7	47.7	53.6	118.1	103.6	89.5
--GAVINS POINT--																	
NAT INFLOW	2000	109	51	65	185	300	240	175	165	120	140	65	30	35	85	95	140
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	6	9	-1	-14	0	-1	-25	-9	0	-1	1	0	0	0	38	6	3
EVAPORATION	24							2	5	6	6	1	1	1	3		
REG INFLOW	24251	595	278	477	1589	1765	2410	2705	2718	2643	2705	1309	611	698	1445	1230	1073
RELEASE	24251	595	278	477	1589	1765	2410	2705	2705	2618	2705	1309	611	698	1445	1230	1111
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	24.0	20.0	20.0	26.7	26.7	28.7	40.5	44.0	44.0	44.0	44.0	44.0	44.0	44.0	23.5	20.0	20.0
POWER																	
AVE POWER MW		69	69	91	91	98	114	113	114	115	116	116	116	116	78	70	69
PEAK POW MW		114	114	114	114	114	114	113	114	116	116	116	116	116	78	78	76
ENERGY GWH	854.9	24.8	11.6	19.7	65.6	72.6	81.9	84.1	84.8	82.9	86.3	41.8	19.5	22.3	58.4	52.0	46.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	2550	145	68	87	410	705	315	215	155	125	65	38	18	20	50	30	105
DEPLETION	268	7	3	4	22	36	31	39	37	24	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	26533	733	342	560	1977	2434	2694	2881	2823	2719	2759	1341	626	715	1482	1246	1201
KCFS		24.7	24.7	31.4	33.2	39.6	45.3	46.9	45.9	45.7	44.9	45.1	45.1	45.1	24.1	20.3	21.6
--TOTAL--																	
NAT INFLOW	30300	1459	681	875	3355	4620	7080	4235	1660	1300	1355	595	278	317	640	700	1150
DEPLETION	2538	0	0	0	-100	457	1800	1164	219	-192	-78	-132	-61	-70	-188	-192	-90
CHAN STOR	7	113	-1	-14	-44	-63	-50	-5	0	33	36	-1	0	3	10	-14	3
EVAPORATION	1242							85	268	331	284	66	31	35	142		
STORAGE	56807	57645	57983	58283	59718	61384	63921	64020	62370	60844	59269	58588	58271	57912	57126	56758	56801
SYSTEM POWER																	
AVE POWER MW		874	879	926	1032	1236	1631	1755	1752	1673	1452	1419	1448	1548	1086	1127	1088
PEAK POW MW		2326	2326	2329	2346	2365	2394	2386	2373	2366	2335	2308	2297	2290	2252	2272	2282
ENERGY GWH	11822.9	314.5	147.7	200.1	742.9	919.8	1174.6	1305.6	1303.8	1204.2	1080.6	511.0	243.3	297.2	808.2	838.3	730.9
DAILY GWH		21.0	21.1	22.2	24.8	29.7	39.2	42.1	42.1	40.1	34.9	34.1	34.8	37.2	26.1	27.0	26.1
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:44 STUDY NO 6

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB12	2012										2013					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	7200	230	107	138	600	1180	1810	840	315	295	430	180	84	96	300	250	345
DEPLETION	419	-44	-20	-26	23	308	526	248	8	-69	-48	-43	-20	-23	-136	-157	-109
EVAPORATION	462							29	89	111	96	44	20	23	50		
MOD INFLOW	6319	273	128	164	577	872	1284	563	218	253	382	179	83	95	386	407	454
RELEASE	6487	179	83	107	476	646	625	646	646	487	369	179	83	119	615	646	583
STOR CHANGE	-168	95	44	57	101	226	659	-82	-428	-234	13	0	0	-24	-229	-239	-129
STORAGE	14793	14888	14932	14989	15090	15316	15975	15893	15466	15232	15245	15245	15245	15222	14993	14754	14625
ELEV FTMSL	2234.0	2234.5	2234.7	2234.9	2235.4	2236.5	2239.5	2239.1	2237.2	2236.1	2236.1	2236.1	2236.1	2236.0	2235.0	2233.8	2233.2
DISCH KCFS	12.0	6.0	6.0	6.0	8.0	10.5	10.5	10.5	10.5	8.2	6.0	6.0	6.0	7.5	10.0	10.5	10.5
POWER																	
AVE POWER MW		82	82	82	109	143	144	144	144	112	82	82	82	103	137	142	142
PEAK POW MW		163	163	163	163	164	166	166	165	164	164	164	164	164	163	162	162
ENERGY GWH	1071.8	29.5	13.8	17.7	78.8	106.2	103.5	107.4	107.0	80.9	61.3	29.7	13.8	19.8	101.6	105.6	95.1
--GARRISON--																	
NAT INFLOW	10800	460	214	276	870	1325	3095	1860	595	460	495	195	91	104	180	260	320
DEPLETION	1006	6	3	3	-17	112	860	602	97	-127	-28	-125	-58	-66	-117	-88	-51
CHAN STOR	15	60			-20	-25				22	21			-15	-24	-5	
EVAPORATION	538							33	104	130	112	51	24	27	58		
REG INFLOW	15758	692	295	379	1343	1834	2860	1871	1039	967	801	447	209	248	830	989	954
RELEASE	15965	476	222	286	1190	1599	1607	1599	1599	1235	984	476	222	254	1291	1537	1388
STOR CHANGE	-207	216	73	94	153	235	1253	272	-559	-268	-183	-29	-13	-6	-462	-548	-434
STORAGE	18115	18331	18404	18497	18651	18886	20139	20411	19852	19583	19400	19372	19358	19352	18891	18342	17908
ELEV FTMSL	1837.5	1838.2	1838.4	1838.7	1839.2	1840.0	1843.8	1844.6	1842.9	1842.1	1841.6	1841.5	1841.4	1841.4	1840.0	1838.3	1836.8
DISCH KCFS	24.0	16.0	16.0	16.0	20.0	26.0	27.0	26.0	26.0	20.8	16.0	16.0	16.0	16.0	21.0	25.0	25.0
POWER																	
AVE POWER MW		200	200	200	251	326	342	333	332	264	203	203	203	203	265	313	310
PEAK POW MW		471	472	473	475	477	499	499	498	487	483	482	482	482	477	471	466
ENERGY GWH	2439.2	71.8	33.6	43.3	180.4	242.6	246.0	247.9	247.3	190.3	151.4	73.1	34.1	39.0	197.5	232.7	208.2
--OAHE--																	
NAT INFLOW	2300	232	108	139	405	195	780	160	75	95	35	30	14	16	-80		95
DEPLETION	696	24	11	15	50	72	148	178	119	29	-11	1	0	1	13	18	28
CHAN STOR	-5	32			-16	-24	-4	4		21	19				-20	-16	
EVAPORATION	507							32	100	123	105	47	22	25	54		
REG INFLOW	17057	716	319	410	1529	1698	2235	1552	1455	1199	944	458	214	245	1124	1503	1455
RELEASE	17270	680	309	358	1298	1497	1611	1849	1979	1759	1259	562	296	272	1096	1324	1120
STOR CHANGE	-213	36	11	52	231	201	623	-297	-524	-560	-315	-104	-82	-28	28	179	335
STORAGE	18839	18875	18885	18938	19169	19370	19993	19696	19172	18613	18297	18194	18111	18084	18112	18291	18626
ELEV FTMSL	1607.5	1607.6	1607.7	1607.8	1608.6	1609.2	1611.1	1610.2	1608.6	1606.8	1605.8	1605.4	1605.1	1605.0	1605.1	1605.7	1606.8
DISCH KCFS	22.7	22.9	22.2	20.1	21.8	24.3	27.1	30.1	32.2	29.6	20.5	18.9	21.3	17.1	17.8	21.5	20.2
POWER																	
AVE POWER MW		295	287	260	283	316	354	394	418	381	263	242	272	219	227	275	259
PEAK POW MW		708	709	710	713	717	727	722	714	704	699	697	695	695	695	698	704
ENERGY GWH	2700.6	106.3	48.2	56.1	203.6	235.3	254.8	292.8	311.1	274.4	195.5	87.0	45.7	42.0	169.2	204.6	174.0
--BIG BEND--																	
EVAPORATION	103							6	20	25	22	10	5	5	11		
REG INFLOW	17167	680	309	358	1298	1497	1611	1843	1959	1734	1238	552	292	267	1085	1324	1120
RELEASE	17167	680	309	358	1298	1497	1611	1843	1959	1734	1238	552	292	267	1085	1324	1120
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	22.7	22.9	22.2	20.1	21.8	24.3	27.1	30.0	31.9	29.1	20.1	18.6	21.0	16.8	17.6	21.5	20.2
POWER																	
AVE POWER MW		108	104	94	102	114	127	140	149	138	99	93	105	85	89	106	97
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	991.7	39.0	17.5	20.3	73.5	84.8	91.3	104.4	110.9	99.4	73.5	33.6	17.7	16.3	66.0	78.6	65.0
--FORT RANDALL--																	
NAT INFLOW	900	119	55	71	155	140	135	70	65	30		10	5	5	5	-10	45
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117							8	25	31	25	9	4	4	10		
REG INFLOW	17870	797	363	428	1449	1628	1734	1887	1984	1726	1212	551	292	268	1077	1311	1162
RELEASE	17854	489	229	428	1449	1628	1734	1887	1984	1872	1855	872	408	294	974	961	788
STOR CHANGE	16	308	134					0	0	-146	-643	-321	-116	-26	102	350	374
STORAGE	3107	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2399	2749	3123
ELEV FTMSL	1349.8	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	17.0	16.4	16.5	24.0	24.4	26.5	29.1	30.7	32.3	31.5	30.2	29.3	29.4	18.5	15.8	15.6	14.2
POWER																	
AVE POWER MW		136	139	203	206	223	246	258	271	263	242	221	215	135	116	119	113
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1762.4	48.8	23.4	43.8	148.1	166.1	176.8	192.1	201.8	189.2	179.7	79.7	36.1	25.9	86.6	88.3	76.0
--GAVINS POINT--																	
NAT INFLOW	1500	104	49	62	145	160	175	100	90	95	120	60	28	32	80	85	115
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	4	1	0	-14	-1	-4	-5	-3	-3	2	2	2	0	20	5	0	3
EVAPORATION	36							2	6	9	8	3	2	2	4		
REG INFLOW	19208	595	278	477	1589	1765	1880	1943	2054	1965	1968	925	432	341	1045	1045	906
RELEASE	19208	595	278	477	1589	1765	1880	1943	2041	1940	1968	925	432	341	1045	1045	944
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.0	20.0	20.0	26.7	26.7	28.7	31.6	31.6	33.2	32.6	32.0	31.1	31.1	21.5	17.0	17.0	17.0
POWER																	
AVE POWER MW		69	69	91	91	98	105	105	109	109	108	106	106	76	60	60	60
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	787.5	24.8	11.6	19.7	65.6	72.6	75.3	77.8	80.9	78.3	80.6	38.3	17.9	14.5	44.7	44.7	40.1
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1700	138	64	83	325	295	150	180	120	105	55	30	14	16	25	25	75
DEPLETION	268	7	3	4	22	36	31	39	37	24	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	20640	726	339	555	1892	2024	1999	2084	2124	2021	2012	949	443	354	1057	1056	1004
KCFS		24.4	24.4	31.1	31.8	32.9	33.6	33.9	34.5	34.0	32.7	31.9	31.9	22.3	17.2	17.2	18.1
--TOTAL--																	
NAT INFLOW	24400	1283	598	769	2500	3295	6145	3210	1260	1080	1135	505	236	269	510	610	995
DEPLETION	2583	-6	-3	-3	87	556	1601	1124	286	-141	-73	-154	-72	-82	-214	-209	-114
CHAN STOR	14	92	0	-14	-36	-52	-9	1	-3	44	43	1	0	6	-40	-21	3
EVAPORATION	1763							110	345	428	368	164	76	86	187		
STORAGE	56817	57471	57733	57936	58421	59084	61620	61513	60015	58832	57703	57250	57039	56956	56396	56137	56245
SYSTEM POWER																	
AVE POWER MW		890	882	930	1042	1220	1316	1374	1423	1267	997	948	984	820	895	1014	980
PEAK POW MW		2324	2323	2325	2331	2338	2371	2367	2357	2339	2319	2294	2284	2281	2245	2266	2275
ENERGY GWH	9753.2	320.3	148.1	200.8	750.0	907.7	947.6	1022.4	1059.1	912.6	742.0	341.3	165.4	157.4	665.7	754.5	658.4
DAILY GWH		21.4	21.2	22.3	25.0	29.3	31.6	33.0	34.2	30.4	23.9	22.8	23.6	19.7	21.5	24.3	23.5
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:06 STUDY NO 7

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB12	2012										2013					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	6000	203	95	122	485	955	1480	665	285	255	340	165	77	88	260	220	305
DEPLETION	319	-45	-21	-27	55	194	385	188	43	-65	-44	-32	-15	-17	-102	-105	-73
EVAPORATION	553							35	108	133	115	52	24	28	59		
MOD INFLOW	5128	248	116	149	430	761	1095	442	134	187	269	145	68	78	303	325	378
RELEASE	6741	179	83	107	417	646	655	676	676	508	369	179	83	111	707	707	639
STOR CHANGE	-1613	70	33	42	13	115	440	-234	-542	-321	-100	-33	-16	-34	-404	-382	-261
STORAGE	14785	14855	14887	14929	14942	15058	15498	15264	14722	14401	14301	14268	14252	14219	13815	13433	13172
ELEV FTMSL	2234.0	2234.3	2234.5	2234.7	2234.7	2235.3	2237.3	2236.2	2233.7	2232.1	2231.7	2231.5	2231.4	2231.2	2229.2	2227.3	2226.0
DISCH KCFS	10.0	6.0	6.0	6.0	7.0	10.5	11.0	11.0	11.0	8.5	6.0	6.0	6.0	7.0	11.5	11.5	11.5
POWER																	
AVE POWER MW		82	82	82	96	142	149	149	148	116	81	81	81	95	151	149	148
PEAK POW MW		162	163	163	163	163	165	164	162	161	160	160	160	160	159	157	156
ENERGY GWH	1092.1	29.5	13.8	17.7	68.9	105.9	107.2	110.9	110.2	83.5	60.5	29.3	13.6	18.2	112.1	111.2	99.7
--GARRISON--																	
NAT INFLOW	9200	423	198	254	705	1110	2635	1585	505	390	420	165	77	88	150	220	275
DEPLETION	1060	2	1	1	21	134	710	531	161	-89	10	-115	-53	-61	-93	-62	-38
CHAN STOR	-15	40			-10	-35	-5			24	25			-10	-45		
EVAPORATION	623							39	122	150	129	58	27	31	66		
REG INFLOW	14243	640	280	360	1091	1587	2575	1691	898	861	675	400	187	219	839	989	952
RELEASE	16220	476	222	286	1547	1783	1696	1476	1476	1191	984	476	222	286	1291	1476	1333
STOR CHANGE	-1977	164	58	74	-456	-196	879	216	-577	-330	-309	-76	-35	-66	-452	-487	-381
STORAGE	18107	18271	18328	18403	17946	17750	18628	18844	18267	17937	17628	17552	17516	17450	16998	16511	16130
ELEV FTMSL	1837.5	1838.0	1838.2	1838.4	1837.0	1836.3	1839.2	1839.8	1838.0	1836.9	1835.9	1835.7	1835.5	1835.3	1833.8	1832.1	1830.8
DISCH KCFS	22.0	16.0	16.0	16.0	26.0	29.0	28.5	24.0	24.0	20.0	16.0	16.0	16.0	18.0	21.0	24.0	24.0
POWER																	
AVE POWER MW		199	200	200	322	357	353	301	300	249	198	197	197	221	256	289	286
PEAK POW MW		470	471	472	466	464	474	477	470	466	462	461	461	460	454	448	443
ENERGY GWH	2417.6	71.8	33.6	43.2	232.1	265.3	254.1	224.0	223.3	178.9	147.2	70.9	33.1	42.4	190.4	215.0	192.3
--OAHE--																	
NAT INFLOW	1300	203	95	122	180	130	275	140	65	75	15	13	6	7	-90	-10	75
DEPLETION	696	24	11	15	50	72	148	178	119	29	-11	1	0	1	13	18	28
CHAN STOR	-9	24			-40	-12	2	18		17	17			-9	-13	-13	
EVAPORATION	579							38	115	141	119	53	25	28	61		
REG INFLOW	16235	679	306	393	1637	1829	1825	1418	1306	1113	908	435	203	255	1114	1435	1380
RELEASE	18262	734	338	458	1567	1789	1806	2069	2092	1874	1371	594	312	266	923	1124	946
STOR CHANGE	-2027	-55	-32	-65	71	40	19	-651	-786	-761	-463	-159	-109	-11	191	311	434
STORAGE	18831	18776	18744	18679	18749	18790	18808	18157	17372	16611	16148	15989	15880	15868	16060	16370	16804
ELEV FTMSL	1607.5	1607.3	1607.2	1607.0	1607.2	1607.4	1607.4	1605.3	1602.6	1600.0	1598.3	1597.7	1597.3	1597.3	1598.0	1599.1	1600.7
DISCH KCFS	23.4	24.7	24.3	25.6	26.3	29.1	30.4	33.6	34.0	31.5	22.3	20.0	22.5	16.8	15.0	18.3	17.0
POWER																	
AVE POWER MW		318	314	330	339	374	391	430	429	392	275	245	275	205	184	225	211
PEAK POW MW		707	706	705	706	707	707	696	682	668	659	657	655	654	658	664	672
ENERGY GWH	2787.8	114.5	52.7	71.3	243.9	278.5	281.2	319.9	319.3	282.1	204.5	88.1	46.1	39.4	136.9	167.4	142.1
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	18133	734	338	458	1567	1789	1806	2061	2068	1843	1344	582	306	260	908	1124	946
RELEASE	18133	734	338	458	1567	1789	1806	2061	2068	1843	1344	582	306	260	908	1124	946
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	23.4	24.7	24.3	25.6	26.3	29.1	30.4	33.5	33.6	31.0	21.8	19.5	22.1	16.4	14.8	18.3	17.0
POWER																	
AVE POWER MW		117	114	120	123	136	142	157	157	147	107	98	111	82	75	90	82
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1045.5	42.1	19.1	25.9	88.7	101.3	102.3	116.7	117.1	105.7	79.7	35.3	18.6	15.8	55.4	66.8	54.9
--FORT RANDALL--																	
NAT INFLOW	450	73	34	44	90	65	125	35	25		-20	-8	-4	-4	-30	-15	40
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146							10	32	39	31	12	5	5	12		
REG INFLOW	18357	805	371	501	1653	1845	1919	2068	2046	1797	1292	561	297	250	864	1106	983
RELEASE	18350	506	237	501	1653	1845	1919	2068	2046	1943	1935	882	413	276	761	756	609
STOR CHANGE	7	299	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3116	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1349.9	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	17.5	17.0	17.1	28.0	27.8	30.0	32.3	33.6	33.3	32.7	31.5	29.6	29.8	17.4	12.4	12.3	11.0
POWER																	
AVE POWER MW		140	144	236	234	253	271	283	280	273	252	224	218	127	91	94	88
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1817.1	50.6	24.2	51.0	168.5	187.9	195.3	210.3	208.1	196.2	187.3	80.5	36.6	24.4	67.8	69.6	58.9
--GAVINS POINT--																	
NAT INFLOW	1300	87	41	52	125	140	150	85	75	80	110	53	25	28	75	75	100
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	11	1	0	-21	1	-4	-4	-3	1	1	2	3	0	23	9	0	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	19502	595	278	532	1773	1962	2041	2109	2104	2018	2035	928	433	322	830	830	712
RELEASE	19502	595	278	532	1773	1962	2041	2109	2091	1993	2035	928	433	322	830	830	750
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.0	20.0	20.0	29.8	29.8	31.9	34.3	34.3	34.0	33.5	33.1	31.2	31.2	20.3	13.5	13.5	13.5
POWER																	
AVE POWER MW		69	69	100	100	105	111	111	110	111	111	107	107	72	48	48	48
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	788.2	24.8	11.6	21.7	72.3	78.3	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.7	35.7	35.7	32.0
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1050	121	56	73	140	170	90	105	75	60	35	25	12	13	10	20	45
DEPLETION	268	7	3	4	22	36	31	39	37	24	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	20284	709	331	601	1891	2096	2100	2175	2129	2029	2059	947	442	332	827	836	780
KCFS		23.8	23.9	33.6	31.8	34.1	35.3	35.4	34.6	34.1	33.5	31.8	31.8	20.9	13.5	13.6	14.0
--TOTAL--																	
NAT INFLOW	19300	1111	518	666	1725	2570	4755	2615	1030	860	900	413	193	220	375	510	840
DEPLETION	2537	-11	-5	-7	157	464	1310	993	385	-99	-31	-134	-62	-71	-156	-131	-65
CHAN STOR	-14	64	0	-21	-49	-51	-7	15	1	42	45	3	0	5	-49	-13	2
EVAPORATION	2074							132	409	505	431	191	88	101	217		
STORAGE	56802	57279	57471	57522	57150	57109	58447	57778	55886	54352	52838	52248	51972	51835	51273	51065	51192
SYSTEM POWER																	
AVE POWER MW		926	922	1069	1214	1367	1416	1430	1425	1286	1024	951	987	802	804	895	863
PEAK POW MW		2321	2319	2319	2315	2314	2326	2316	2295	2280	2256	2230	2218	2215	2181	2204	2215
ENERGY GWH	9948.3	333.2	155.0	230.9	874.4	1017.2	1019.6	1064.0	1060.0	926.2	761.7	342.5	165.9	154.0	598.2	665.7	579.8
DAILY GWH		22.2	22.1	25.7	29.1	32.8	34.0	34.3	34.2	30.9	24.6	22.8	23.7	19.2	19.3	21.5	20.7
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:29 STUDY NO 8

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB12	2012												2013			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	5400	194	90	116	470	845	1195	610	270	245	320	158	74	84	230	210	290
DEPLETION	311	-45	-21	-27	55	194	385	188	7	-105	-88	-23	-11	-12	-77	-66	-43
EVAPORATION	537							34	105	129	112	50	23	27	57		
MOD INFLOW	4552	239	111	143	415	651	810	388	158	221	296	130	61	70	250	276	333
RELEASE	6844	179	83	107	417	615	684	707	707	523	369	179	83	111	676	738	666
STOR CHANGE	-2292	60	28	36	-2	36	126	-319	-549	-302	-72	-48	-22	-42	-426	-462	-333
STORAGE	14785	14845	14873	14909	14907	14943	15069	14750	14201	13900	13827	13779	13756	13715	13288	12826	12493
ELEV FTMSL	2234.0	2234.3	2234.4	2234.6	2234.6	2234.7	2235.3	2233.8	2231.2	2229.7	2229.3	2229.1	2228.9	2228.7	2226.6	2224.1	2222.3
DISCH KCFS	10.0	6.0	6.0	6.0	7.0	10.0	11.5	11.5	11.5	8.8	6.0	6.0	6.0	7.0	11.0	12.0	12.0
POWER																	
AVE POWER MW		82	82	82	96	136	154	154	152	118	81	81	81	94	144	152	151
PEAK POW MW		162	163	163	163	163	163	162	160	159	159	159	159	158	157	155	153
ENERGY GWH	1096.9	29.5	13.8	17.7	68.9	101.3	110.8	114.2	113.2	85.2	60.1	29.0	13.5	18.0	107.1	113.3	101.2
--GARRISON--																	
NAT INFLOW	7400	365	170	219	575	1055	2205	1080	360	160	390	148	69	79	135	135	255
DEPLETION	934	2	1	1	21	134	609	467	127	-107	-7	-101	-47	-54	-63	-32	-17
CHAN STOR	-21	40			-10	-30	-15			27	28			-10	-41	-10	
EVAPORATION	597							37	116	144	124	56	26	30	64		
REG INFLOW	12692	582	253	325	961	1506	2265	1283	824	673	670	371	173	204	770	895	938
RELEASE	15504	476	222	286	1547	1783	1696	1353	1353	1103	922	446	208	246	1230	1383	1250
STOR CHANGE	-2812	106	31	39	-586	-277	569	-70	-529	-430	-252	-75	-35	-42	-460	-489	-311
STORAGE	18107	18212	18243	18283	17696	17419	17988	17918	17389	16959	16707	16632	16597	16555	16095	15606	15295
ELEV FTMSL	1837.5	1837.8	1837.9	1838.1	1836.1	1835.2	1837.1	1836.9	1835.1	1833.6	1832.8	1832.5	1832.4	1832.2	1830.6	1828.9	1827.8
DISCH KCFS	22.0	16.0	16.0	16.0	26.0	29.0	28.5	22.0	22.0	18.5	15.0	15.0	15.0	15.5	20.0	22.5	22.5
POWER																	
AVE POWER MW		199	200	200	321	354	349	272	270	226	182	181	181	187	239	266	263
PEAK POW MW		469	470	470	463	460	467	466	459	454	451	450	449	449	443	437	432
ENERGY GWH	2280.1	71.8	33.5	43.1	231.2	263.7	251.6	202.4	201.1	162.7	135.3	65.2	30.4	35.9	177.8	197.6	176.8
--OAHE--																	
NAT INFLOW	1150	196	91	118	170	115	255	125	50	65	5	8	4	4	-100	-20	65
DEPLETION	696	24	11	15	50	72	148	178	119	29	-11	1	0	1	13	18	28
CHAN STOR	-4	24			-40	-12	2	26		15	16			-2	-20	-11	
EVAPORATION	563							37	113	137	115	51	24	27	59		
REG INFLOW	15391	672	302	389	1627	1814	1805	1288	1170	1017	839	402	188	220	1038	1334	1287
RELEASE	18273	744	342	464	1582	1804	1826	2084	2112	1894	1391	601	315	267	875	1073	901
STOR CHANGE	-2882	-72	-40	-75	46	10	-21	-795	-942	-877	-552	-199	-128	-46	163	262	386
STORAGE	18831	18759	18718	18643	18689	18699	18678	17883	16941	16063	15511	15312	15185	15138	15301	15563	15949
ELEV FTMSL	1607.5	1607.3	1607.1	1606.9	1607.0	1607.1	1607.0	1604.4	1601.1	1598.0	1595.9	1595.2	1594.7	1594.5	1595.1	1596.1	1597.6
DISCH KCFS	23.4	25.0	24.7	26.0	26.6	29.3	30.7	33.9	34.4	31.8	22.6	20.2	22.7	16.8	14.2	17.4	16.2
POWER																	
AVE POWER MW		322	318	334	342	377	394	431	430	392	275	244	273	202	172	211	198
PEAK POW MW		706	706	705	705	706	705	691	674	658	648	644	642	641	644	649	656
ENERGY GWH	2770.9	116.0	53.4	72.1	246.0	280.4	283.8	321.0	320.2	282.3	204.9	87.9	45.9	38.9	127.8	157.2	133.0
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	18144	744	342	464	1582	1804	1826	2076	2088	1863	1364	588	310	260	861	1073	901
RELEASE	18144	744	342	464	1582	1804	1826	2076	2088	1863	1364	588	310	260	861	1073	901
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	23.4	25.0	24.7	26.0	26.6	29.3	30.7	33.8	34.0	31.3	22.2	19.8	22.3	16.4	14.0	17.4	16.2
POWER																	
AVE POWER MW		118	115	122	124	137	144	158	159	148	109	99	112	83	71	86	78
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1045.8	42.6	19.4	26.3	89.6	102.1	103.4	117.5	118.2	106.8	80.9	35.8	18.8	15.8	52.5	63.8	52.3
--FORT RANDALL--																	
NAT INFLOW	350	68	32	41	85	60	115	25	15	-10	-30	-13	-6	-7	-40	-20	35
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146							10	32	39	31	12	5	5	12		
REG INFLOW	18268	810	373	503	1663	1855	1929	2073	2056	1807	1302	563	298	248	806	1050	933
RELEASE	18261	512	239	503	1663	1855	1929	2073	2056	1953	1945	884	414	274	703	700	559
STOR CHANGE	7	299	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3116	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1349.9	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	17.5	17.2	17.2	28.2	27.9	30.2	32.4	33.7	33.4	32.8	31.6	29.7	29.8	17.3	11.4	11.4	10.1
POWER																	
AVE POWER MW		142	145	238	235	254	273	283	281	274	253	224	218	126	84	87	80
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1809.5	51.1	24.4	51.3	169.5	188.9	196.3	210.8	209.1	197.2	188.3	80.7	36.7	24.1	62.7	64.5	54.0
--GAVINS POINT--																	
NAT INFLOW	1200	82	38	49	115	130	140	80	65	70	100	48	22	25	70	70	95
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	13	1	0	-21	0	-4	-4	-2	1	1	2	4	0	23	11	0	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	19315	595	278	532	1773	1962	2041	2109	2104	2018	2035	925	432	317	769	769	656
RELEASE	19315	595	278	532	1773	1962	2041	2109	2091	1993	2035	925	432	317	769	769	694
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.0	20.0	20.0	29.8	29.8	31.9	34.3	34.3	34.0	33.5	33.1	31.1	31.1	20.0	12.5	12.5	12.5
POWER																	
AVE POWER MW		69	69	100	100	105	111	111	110	111	111	106	106	71	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	780.3	24.8	11.6	21.7	72.3	78.3	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.5	33.0	33.0	29.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	700	87	41	52	90	120	65	70	40	35	25	18	8	9	5	15	20
DEPLETION	268	7	3	4	22	36	31	39	37	24	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	19747	675	315	580	1841	2046	2075	2140	2094	2004	2049	937	437	324	761	770	699
KCFS		22.7	22.7	32.5	30.9	33.3	34.9	34.8	34.0	33.7	33.3	31.5	31.5	20.4	12.4	12.5	12.6
--TOTAL--																	
NAT INFLOW	16200	992	463	595	1505	2325	3975	1990	800	565	810	365	170	195	300	390	760
DEPLETION	2403	-11	-5	-7	157	464	1209	929	315	-157	-92	-111	-52	-59	-101	-62	-14
CHAN STOR	-12	64	0	-21	-49	-46	-17	23	1	43	46	3	0	11	-50	-21	2
EVAPORATION	2017							129	399	491	419	186	86	98	211		
STORAGE	56802	57194	57346	57347	56805	56574	57247	56063	54056	52326	50806	50163	49862	49706	49086	48746	48824
SYSTEM POWER																	
AVE POWER MW		933	929	1075	1219	1364	1424	1409	1403	1270	1011	936	971	762	754	846	814
PEAK POW MW		2320	2318	2317	2311	2308	2315	2299	2274	2256	2231	2204	2192	2188	2153	2175	2185
ENERGY GWH	9783.6	335.8	156.1	232.3	877.4	1014.8	1025.4	1048.2	1044.0	914.1	751.9	336.9	163.2	146.3	560.9	629.4	546.9
DAILY GWH		22.4	22.3	25.8	29.2	32.7	34.2	33.8	33.7	30.5	24.3	22.5	23.3	18.3	18.1	20.3	19.5
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:44 STUDY NO 9

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB13	2013												2014			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	7200	230	107	138	600	1180	1810	840	315	295	430	180	84	96	300	250	345
DEPLETION	471	-30	-14	-18	28	334	518	240	4	-83	-45	-44	-20	-23	-135	-147	-95
EVAPORATION	459							28	88	110	96	43	20	23	50		
MOD INFLOW	6270	259	121	156	572	846	1292	572	223	268	379	180	84	96	385	397	440
RELEASE	6487	179	83	107	476	584	625	646	646	490	369	179	83	119	615	676	611
STOR CHANGE	-217	81	38	48	96	262	667	-74	-423	-222	10	2	1	-23	-230	-279	-171
STORAGE	14625	14706	14743	14792	14888	15150	15817	15743	15320	15098	15108	15110	15110	15088	14858	14578	14408
ELEV FTMSL	2233.2	2233.6	2233.8	2234.0	2234.5	2235.7	2238.8	2238.4	2236.5	2235.5	2235.5	2235.5	2235.5	2235.4	2234.3	2233.0	2232.2
DISCH KCFS	10.5	6.0	6.0	6.0	8.0	9.5	10.5	10.5	10.5	8.2	6.0	6.0	6.0	7.5	10.0	11.0	11.0
POWER																	
AVE POWER MW		82	82	82	109	130	143	144	143	113	82	82	82	103	136	147	147
PEAK POW MW		162	162	162	163	163	166	165	164	163	163	163	163	163	162	161	161
ENERGY GWH	1068.5	29.4	13.7	17.7	78.6	96.6	103.2	107.2	106.7	81.4	61.2	29.6	13.8	19.7	101.4	109.6	98.6
--GARRISON--																	
NAT INFLOW	10800	460	214	276	870	1325	3095	1860	595	460	495	195	91	104	180	260	320
DEPLETION	1111	1	1	1	20	186	798	644	104	-117	-19	-125	-58	-66	-115	-89	-55
CHAN STOR	-5	45			-20	-15	-10			22	22			-15	-25	-10	0
EVAPORATION	531							33	103	128	111	50	23	26	56		
REG INFLOW	15641	682	297	382	1306	1708	2912	1829	1033	961	794	448	209	248	829	1016	986
RELEASE	15905	476	222	286	1190	1537	1547	1568	1568	1295	1107	536	250	286	1230	1476	1333
STOR CHANGE	-264	206	75	96	116	171	1365	261	-535	-334	-313	-87	-41	-37	-401	-460	-347
STORAGE	17908	18113	18188	18285	18401	18572	19937	20198	19663	19329	19017	18929	18889	18852	18451	17991	17644
ELEV FTMSL	1836.8	1837.5	1837.8	1838.1	1838.4	1839.0	1843.2	1843.9	1842.4	1841.3	1840.4	1840.1	1840.0	1839.9	1838.6	1837.1	1836.0
DISCH KCFS	25.0	16.0	16.0	16.0	20.0	25.0	26.0	25.5	25.5	21.8	18.0	18.0	18.0	18.0	20.0	24.0	24.0
POWER																	
AVE POWER MW		199	199	200	250	312	329	326	325	276	228	227	227	227	251	298	296
PEAK POW MW		468	469	470	472	474	498	499	490	482	478	478	477	477	472	467	463
ENERGY GWH	2419.7	71.6	33.5	43.1	179.6	232.2	236.6	242.4	241.8	198.6	169.4	81.9	38.2	43.6	186.7	221.8	198.7
--OAHE--																	
NAT INFLOW	2300	232	108	139	405	195	780	160	75	95	35	30	14	16	-80		95
DEPLETION	709	24	11	15	50	73	151	182	122	30	-11	1	0	1	13	18	29
CHAN STOR	4	36			-16	-20	-4	2		15	15				-8	-16	
EVAPORATION	499							32	98	120	103	46	22	25	54		
REG INFLOW	17001	720	319	410	1529	1640	2172	1516	1423	1254	1065	518	242	276	1075	1441	1399
RELEASE	17272	574	267	409	1293	1624	1607	1849	1979	1759	1259	562	296	250	1099	1324	1120
STOR CHANGE	-270	146	52	2	236	16	565	-333	-556	-505	-194	-44	-54	26	-24	118	278
STORAGE	18626	18772	18824	18826	19062	19078	19643	19310	18754	18250	18055	18012	17957	17983	17960	18077	18356
ELEV FTMSL	1606.8	1607.3	1607.5	1607.5	1608.2	1608.3	1610.0	1609.0	1607.2	1605.6	1605.0	1604.8	1604.6	1604.7	1604.6	1605.0	1605.9
DISCH KCFS	20.2	19.3	19.2	22.9	21.7	26.4	27.0	30.1	32.2	29.6	20.5	18.9	21.3	15.8	17.9	21.5	20.2
POWER																	
AVE POWER MW		249	248	295	281	342	351	391	415	378	261	241	271	201	228	274	258
PEAK POW MW		707	708	708	712	712	721	716	706	698	694	694	693	693	693	695	700
ENERGY GWH	2689.1	89.6	41.7	63.8	202.4	254.3	252.9	291.2	309.1	272.5	194.5	86.6	45.6	38.6	169.3	203.9	173.3
--BIG BEND--																	
EVAPORATION	103							6	20	25	22	10	5	5	11		
REG INFLOW	17168	574	267	409	1293	1624	1607	1843	1959	1734	1238	552	292	245	1087	1324	1120
RELEASE	17168	574	267	409	1293	1624	1607	1843	1959	1734	1238	552	292	245	1087	1324	1120
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	20.2	19.3	19.2	22.9	21.7	26.4	27.0	30.0	31.9	29.1	20.1	18.6	21.0	15.5	17.7	21.5	20.2
POWER																	
AVE POWER MW		91	90	107	102	124	126	140	149	138	99	93	105	78	89	106	97
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	991.6	32.9	15.1	23.1	73.2	92.0	91.0	104.4	110.9	99.4	73.5	33.6	17.7	15.0	66.2	78.6	65.0
--FORT RANDALL--																	
NAT INFLOW	900	119	55	71	155	140	135	70	65	30		10	5	5	5	-10	45
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117							8	25	31	25	9	4	4	10		
REG INFLOW	17871	691	322	479	1444	1755	1730	1887	1984	1726	1212	551	292	246	1079	1311	1162
RELEASE	17871	400	188	479	1444	1755	1730	1887	1984	1872	1855	872	408	272	977	961	788
STOR CHANGE	0	292	134					0	0	-146	-643	-321	-116	-26	102	350	374
STORAGE	3123	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2399	2749	3123
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	14.2	13.4	13.5	26.8	24.3	28.5	29.1	30.7	32.3	31.5	30.2	29.3	29.4	17.1	15.9	15.6	14.2
POWER																	
AVE POWER MW		111	114	226	205	240	245	258	271	263	242	221	215	125	117	119	113
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1764.6	40.0	19.2	48.9	147.6	178.9	176.4	192.2	201.8	189.2	179.7	79.7	36.1	24.0	86.8	88.3	76.0
--GAVINS POINT--																	
NAT INFLOW	1500	104	49	62	145	160	175	100	90	95	120	60	28	32	80	85	115
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	1	0	-26	5	-8	-1	-3	-3	2	2	2	0	23	2	0	3
EVAPORATION	36							2	6	9	8	3	2	2	4		
REG INFLOW	19221	506	236	516	1589	1888	1880	1943	2054	1965	1968	925	432	322	1045	1045	906
RELEASE	19221	506	236	516	1589	1888	1880	1943	2041	1940	1968	925	432	322	1045	1045	944
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	17.0	17.0	17.0	28.9	26.7	30.7	31.6	31.6	33.2	32.6	32.0	31.1	31.1	20.3	17.0	17.0	17.0
POWER																	
AVE POWER MW		59	59	98	91	103	105	105	109	109	108	106	106	72	60	60	60
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	786.7	21.2	9.9	21.2	65.6	76.3	75.3	77.8	80.9	78.3	80.6	38.3	17.9	13.7	44.7	44.7	40.1
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1700	138	64	83	325	295	150	180	120	105	55	30	14	16	25	25	75
DEPLETION	269	7	3	4	22	36	31	39	37	25	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	20652	637	297	595	1892	2147	1999	2084	2124	2020	2012	949	443	335	1057	1056	1004
KCFS		21.4	21.4	33.3	31.8	34.9	33.6	33.9	34.5	33.9	32.7	31.9	31.9	21.1	17.2	17.2	18.1
--TOTAL--																	
NAT INFLOW	24400	1283	598	769	2500	3295	6145	3210	1260	1080	1135	505	236	269	510	610	995
DEPLETION	2754	4	2	2	129	657	1534	1162	292	-143	-61	-155	-72	-83	-211	-200	-103
CHAN STOR	-2	82	0	-26	-31	-43	-15	-1	-3	38	39	1	0	8	-31	-26	3
EVAPORATION	1744							109	341	423	364	162	75	86	185		
STORAGE	56245	56969	57268	57415	57863	58312	60909	60763	59262	58080	56941	56490	56280	56220	55668	55396	55493
SYSTEM POWER																	
AVE POWER MW		791	793	1008	1037	1250	1299	1364	1413	1277	1020	971	1008	805	880	1004	970
PEAK POW MW		2319	2318	2320	2325	2329	2365	2360	2341	2327	2310	2286	2276	2273	2237	2258	2267
ENERGY GWH	9720.1	284.8	133.1	217.8	746.9	930.2	935.4	1015.1	1051.3	919.4	758.9	349.6	169.3	154.6	655.1	746.9	651.7
DAILY GWH		19.0	19.0	24.2	24.9	30.0	31.2	32.7	33.9	30.6	24.5	23.3	24.2	19.3	21.1	24.1	23.3
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:44 STUDY NO 10

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB14		2014										2015				
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	7200	230	107	138	600	1180	1810	840	315	295	430	180	84	96	300	250	345
DEPLETION	487	-25	-12	-15	15	305	561	255	16	-102	-45	-44	-21	-23	-136	-148	-95
EVAPORATION	453							28	87	108	94	43	20	23	49		
MOD INFLOW	6260	255	119	153	585	875	1249	557	212	289	381	181	85	97	387	398	440
RELEASE	6473	179	83	107	417	615	655	676	676	496	369	179	83	95	615	646	583
STOR CHANGE	-213	76	35	46	168	260	594	-119	-465	-207	12	3	1	1	-228	-248	-143
STORAGE	14408	14484	14519	14565	14733	14993	15588	15468	15004	14796	14808	14811	14812	14813	14585	14338	14195
ELEV FTMSL	2232.2	2232.5	2232.7	2232.9	2233.7	2235.0	2237.7	2237.2	2235.0	2234.0	2234.1	2234.1	2234.1	2234.1	2233.0	2231.8	2231.1
DISCH KCFS	11.0	6.0	6.0	6.0	7.0	10.0	11.0	11.0	11.0	8.3	6.0	6.0	6.0	6.0	10.0	10.5	10.5
POWER																	
AVE POWER MW		81	82	82	95	136	149	149	149	114	82	82	82	82	136	141	141
PEAK POW MW		161	161	161	162	163	165	165	163	162	162	162	162	162	162	161	160
ENERGY GWH	1061.7	29.3	13.7	17.6	68.6	101.2	107.2	111.2	110.7	81.9	60.9	29.5	13.8	15.7	101.0	104.9	94.4
--GARRISON--																	
NAT INFLOW	10800	460	214	276	870	1325	3095	1860	595	460	495	195	91	104	180	260	320
DEPLETION	1090	3	1	2	24	151	803	657	110	-120	-23	-128	-60	-68	-117	-90	-55
CHAN STOR	5	50			-10	-30	-10			26	23				-39	-5	
EVAPORATION	522							32	102	126	109	49	23	26	56		
REG INFLOW	15666	685	296	381	1253	1759	2937	1847	1060	976	801	453	211	241	817	991	958
RELEASE	15926	476	222	286	1190	1660	1607	1599	1599	1253	1015	491	229	262	1230	1476	1333
STOR CHANGE	-260	209	74	95	63	99	1330	248	-539	-277	-214	-38	-18	-20	-413	-485	-375
STORAGE	17644	17853	17927	18023	18085	18184	19514	19762	19223	18947	18733	18695	18677	18656	18243	17758	17384
ELEV FTMSL	1836.0	1836.7	1836.9	1837.2	1837.4	1837.7	1841.9	1842.6	1841.0	1840.2	1839.5	1839.4	1839.3	1839.2	1837.9	1836.3	1835.1
DISCH KCFS	24.0	16.0	16.0	16.0	20.0	27.0	27.0	26.0	26.0	21.1	16.5	16.5	16.5	16.5	20.0	24.0	24.0
POWER																	
AVE POWER MW		198	198	199	248	334	339	330	329	266	208	208	208	208	250	297	294
PEAK POW MW		465	466	467	468	469	486	494	480	478	475	475	475	475	470	464	459
ENERGY GWH	2409.5	71.2	33.3	42.9	178.6	248.7	244.0	245.4	244.8	191.6	155.0	74.8	34.9	39.9	186.0	220.8	197.7
--OAHE--																	
NAT INFLOW	2300	232	108	139	405	195	780	160	75	95	35	30	14	16	-80		95
DEPLETION	724	25	12	15	51	75	154	187	125	30	-12	1	0	1	13	19	29
CHAN STOR	0	32			-16	-28		4		20	19				-14	-17	
EVAPORATION	496							31	97	120	103	46	21	24	53		
REG INFLOW	17006	716	319	410	1528	1752	2233	1544	1451	1218	978	474	221	253	1069	1440	1399
RELEASE	17272	574	267	409	1293	1624	1607	1849	1979	1759	1259	562	296	250	1099	1324	1120
STOR CHANGE	-266	142	52	2	235	128	625	-305	-528	-541	-282	-88	-75	2	-29	116	278
STORAGE	18356	18497	18549	18551	18786	18915	19540	19235	18707	18166	17884	17797	17722	17724	17695	17811	18090
ELEV FTMSL	1605.9	1606.4	1606.6	1606.6	1607.3	1607.8	1609.7	1608.8	1607.1	1605.3	1604.4	1604.1	1603.8	1603.8	1603.7	1604.1	1605.1
DISCH KCFS	20.2	19.3	19.2	22.9	21.7	26.4	27.0	30.1	32.2	29.6	20.5	18.9	21.3	15.8	17.9	21.5	20.2
POWER																	
AVE POWER MW		248	247	294	280	341	350	391	415	378	261	240	270	200	226	273	257
PEAK POW MW		702	703	703	707	709	720	715	706	696	691	690	688	688	688	690	695
ENERGY GWH	2680.9	89.2	41.5	63.5	201.4	253.4	252.3	290.8	308.8	272.2	194.0	86.3	45.4	38.4	168.4	202.9	172.4
--BIG BEND--																	
EVAPORATION	103							6	20	25	22	10	5	5	11		
REG INFLOW	17168	574	267	409	1293	1624	1607	1843	1959	1734	1238	552	292	245	1087	1324	1120
RELEASE	17168	574	267	409	1293	1624	1607	1843	1959	1734	1238	552	292	245	1087	1324	1120
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	20.2	19.3	19.2	22.9	21.7	26.4	27.0	30.0	31.9	29.1	20.1	18.6	21.0	15.5	17.7	21.5	20.2
POWER																	
AVE POWER MW		91	90	107	102	124	126	140	149	138	99	93	105	78	89	106	97
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	991.6	32.9	15.1	23.1	73.2	92.0	91.0	104.4	110.9	99.4	73.5	33.6	17.7	15.0	66.2	78.6	65.0
--FORT RANDALL--																	
NAT INFLOW	900	119	55	71	155	140	135	70	65	30		10	5	5	5	-10	45
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117							8	25	31	25	9	4	4	10		
REG INFLOW	17871	691	322	479	1444	1755	1730	1887	1984	1726	1212	551	292	246	1079	1311	1162
RELEASE	17871	400	188	479	1444	1755	1730	1887	1984	1872	1855	872	408	272	977	961	788
STOR CHANGE	0	292	134					0	0	-146	-643	-321	-116	-26	102	350	374
STORAGE	3123	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2399	2749	3123
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	14.2	13.4	13.5	26.8	24.3	28.5	29.1	30.7	32.3	31.5	30.2	29.3	29.4	17.1	15.9	15.6	14.2
POWER																	
AVE POWER MW		111	114	226	205	240	245	258	271	263	242	221	215	125	117	119	113
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1764.6	40.0	19.2	48.9	147.6	178.9	176.4	192.2	201.8	189.2	179.7	79.7	36.1	24.0	86.8	88.3	76.0
--GAVINS POINT--																	
NAT INFLOW	1500	104	49	62	145	160	175	100	90	95	120	60	28	32	80	85	115
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	1	0	-26	5	-8	-1	-3	-3	2	2	2	0	23	2	0	3
EVAPORATION	36							2	6	9	8	3	2	2	4		
REG INFLOW	19221	506	236	516	1589	1888	1880	1943	2054	1965	1968	925	432	322	1045	1045	906
RELEASE	19221	506	236	516	1589	1888	1880	1943	2041	1940	1968	925	432	322	1045	1045	944
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	17.0	17.0	17.0	28.9	26.7	30.7	31.6	31.6	33.2	32.6	32.0	31.1	31.1	20.3	17.0	17.0	17.0
POWER																	
AVE POWER MW		59	59	98	91	103	105	105	109	109	108	106	106	72	60	60	60
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	786.7	21.2	9.9	21.2	65.6	76.3	75.3	77.8	80.9	78.3	80.6	38.3	17.9	13.7	44.7	44.7	40.1
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1700	138	64	83	325	295	150	180	120	105	55	30	14	16	25	25	75
DEPLETION	276	7	3	4	23	36	32	39	38	25	11	7	3	3	14	15	15
REGULATED FLOW AT SIOUX CITY																	
KAF	20645	636	297	594	1891	2147	1998	2084	2123	2020	2012	949	443	335	1056	1055	1004
KCFS		21.4	21.4	33.3	31.8	34.9	33.6	33.9	34.5	33.9	32.7	31.9	31.9	21.1	17.2	17.2	18.1
--TOTAL--																	
NAT INFLOW	24400	1283	598	769	2500	3295	6145	3210	1260	1080	1135	505	236	269	510	610	995
DEPLETION	2771	11	5	7	122	595	1586	1195	314	-165	-66	-159	-74	-85	-213	-200	-103
CHAN STOR	3	84	0	-26	-21	-66	-11	1	-3	47	44	1	0	23	-52	-21	3
EVAPORATION	1726							108	338	419	360	160	74	85	183		
STORAGE	55493	56212	56507	56650	57116	57604	60154	59977	58459	57313	56186	55742	55534	55492	54924	54658	54754
SYSTEM POWER																	
AVE POWER MW		788	790	1006	1021	1278	1314	1373	1422	1268	1000	950	986	764	878	995	961
PEAK POW MW		2310	2310	2311	2316	2321	2350	2353	2330	2321	2303	2278	2268	2265	2229	2249	2258
ENERGY GWH	9695.0	283.9	132.7	217.2	735.0	950.5	946.2	1021.7	1057.9	912.7	743.7	342.1	165.7	146.7	653.1	740.2	645.6
DAILY GWH		18.9	19.0	24.1	24.5	30.7	31.5	33.0	34.1	30.4	24.0	22.8	23.7	18.3	21.1	23.9	23.1
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:44 STUDY NO 11

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB15	2015												2016			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	7200	230	107	138	600	1180	1810	840	315	295	430	180	84	96	300	250	345
DEPLETION	495	-25	-12	-15	15	306	565	263	22	-101	-48	-44	-21	-23	-135	-146	-106
EVAPORATION	448							28	86	107	94	42	20	23	49		
MOD INFLOW	6257	255	119	153	585	874	1245	549	207	289	384	182	85	97	386	396	451
RELEASE	6455	179	83	107	476	584	625	646	646	495	369	179	83	119	615	646	604
STOR CHANGE	-198	77	36	46	109	290	620	-96	-439	-207	16	3	1	-22	-229	-250	-153
STORAGE	14195	14271	14307	14353	14462	14751	15372	15275	14836	14630	14645	14648	14650	14628	14399	14149	13996
ELEV FTMSL	2231.1	2231.5	2231.7	2231.9	2232.4	2233.8	2236.7	2236.3	2234.2	2233.2	2233.3	2233.3	2233.3	2233.2	2232.1	2230.9	2230.2
DISCH KCFS	10.5	6.0	6.0	6.0	8.0	9.5	10.5	10.5	10.5	8.3	6.0	6.0	6.0	7.5	10.0	10.5	10.5
POWER																	
AVE POWER MW		81	81	81	108	129	142	143	142	113	82	82	82	102	135	141	140
PEAK POW MW		160	161	161	161	162	164	164	162	162	162	162	162	162	161	160	159
ENERGY GWH	1057.3	29.2	13.7	17.6	78.1	96.0	102.5	106.4	105.9	81.6	60.8	29.4	13.7	19.6	100.7	104.6	97.5
--GARRISON--																	
NAT INFLOW	10800	460	214	276	870	1325	3095	1860	595	460	495	195	91	104	180	260	320
DEPLETION	1102	3	2	2	24	151	813	673	116	-123	-28	-132	-61	-70	-117	-90	-61
CHAN STOR	0	45			-20	-15	-10			21	23			-15	-25	-5	
EVAPORATION	519							32	101	126	108	48	23	26	55		
REG INFLOW	15634	680	296	381	1302	1743	2897	1800	1023	974	807	457	213	253	832	991	985
RELEASE	15879	476	222	286	1190	1537	1547	1537	1537	1282	1107	536	250	286	1230	1476	1381
STOR CHANGE	-245	204	74	95	112	206	1350	263	-514	-308	-300	-79	-37	-33	-398	-485	-396
STORAGE	17384	17588	17662	17757	17869	18075	19425	19688	19174	18866	18565	18486	18450	18417	18019	17534	17138
ELEV FTMSL	1835.1	1835.8	1836.0	1836.3	1836.7	1837.4	1841.6	1842.4	1840.9	1839.9	1839.0	1838.7	1838.6	1838.5	1837.2	1835.6	1834.3
DISCH KCFS	24.0	16.0	16.0	16.0	20.0	25.0	26.0	25.0	25.0	21.6	18.0	18.0	18.0	18.0	20.0	24.0	24.0
POWER																	
AVE POWER MW		197	197	198	247	309	326	317	316	272	226	226	225	225	249	295	293
PEAK POW MW		462	463	464	465	468	483	491	480	477	473	473	472	472	467	461	456
ENERGY GWH	2395.2	70.8	33.1	42.7	177.7	229.8	234.7	235.7	235.3	196.0	168.5	81.2	37.8	43.2	185.2	219.8	203.7
--OAHE--																	
NAT INFLOW	2300	232	108	139	405	195	780	160	75	95	35	30	14	16	-80		95
DEPLETION	736	25	12	15	51	76	157	191	128	31	-12	1	0	1	13	19	29
CHAN STOR	0	33			-16	-20	-4	4		14	15				-8	-17	
EVAPORATION	484							31	95	116	100	45	21	24	52		
REG INFLOW	16959	716	319	410	1528	1636	2166	1479	1389	1244	1068	519	242	277	1076	1440	1447
RELEASE	17211	574	267	409	1293	1624	1607	1849	1979	1759	1259	562	296	247	1067	1293	1126
STOR CHANGE	-252	142	52	2	235	12	559	-370	-589	-515	-191	-42	-54	30	9	147	321
STORAGE	18090	18232	18284	18285	18520	18533	19091	18722	18132	17617	17426	17384	17330	17361	17370	17516	17837
ELEV FTMSL	1605.1	1605.5	1605.7	1605.7	1606.5	1606.5	1608.3	1607.1	1605.2	1603.5	1602.8	1602.7	1602.5	1602.6	1602.6	1603.1	1604.2
DISCH KCFS	20.2	19.3	19.2	22.9	21.7	26.4	27.0	30.1	32.2	29.6	20.5	18.9	21.3	15.6	17.4	21.0	19.6
POWER																	
AVE POWER MW		246	246	293	278	339	348	388	411	374	258	238	268	196	219	265	248
PEAK POW MW		697	698	698	702	703	712	706	696	687	683	682	681	682	682	685	691
ENERGY GWH	2652.6	88.7	41.3	63.2	200.5	252.0	250.6	288.5	305.8	269.4	192.2	85.6	45.1	37.6	162.6	197.1	172.4
--BIG BEND--																	
EVAPORATION	103							6	20	25	22	10	5	5	11		
REG INFLOW	17108	574	267	409	1293	1624	1607	1843	1959	1734	1238	552	292	242	1056	1293	1126
RELEASE	17108	574	267	409	1293	1624	1607	1843	1959	1734	1238	552	292	242	1056	1293	1126
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	20.2	19.3	19.2	22.9	21.7	26.4	27.0	30.0	31.9	29.1	20.1	18.6	21.0	15.2	17.2	21.0	19.6
POWER																	
AVE POWER MW		91	90	107	102	124	126	140	149	138	99	93	105	77	86	103	94
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	988.1	32.9	15.1	23.1	73.2	92.0	91.0	104.4	110.9	99.4	73.5	33.6	17.7	14.7	64.3	76.8	65.3
--FORT RANDALL--																	
NAT INFLOW	900	119	55	71	155	140	135	70	65	30		10	5	5	5	-10	45
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117							8	25	31	25	9	4	4	10		
REG INFLOW	17811	691	322	479	1444	1755	1730	1887	1984	1726	1212	551	292	243	1048	1280	1168
RELEASE	17811	400	188	479	1444	1755	1730	1887	1984	1872	1855	872	408	268	946	930	794
STOR CHANGE	0	292	134					0	0	-146	-643	-321	-116	-26	102	350	374
STORAGE	3123	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2399	2749	3123
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	14.2	13.4	13.5	26.8	24.3	28.5	29.1	30.7	32.3	31.5	30.2	29.3	29.4	16.9	15.4	15.1	13.8
POWER																	
AVE POWER MW		111	114	226	205	240	245	258	271	263	242	221	215	123	113	115	110
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1759.3	40.0	19.2	48.9	147.6	178.9	176.4	192.2	201.8	189.2	179.7	79.7	36.1	23.7	84.1	85.5	76.5
--GAVINS POINT--																	
NAT INFLOW	1500	104	49	62	145	160	175	100	90	95	120	60	28	32	80	85	115
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	0	1	0	-26	5	-8	-1	-3	-3	2	2	2	0	23	3	0	2
EVAPORATION	36							2	6	9	8	3	2	2	4		
REG INFLOW	19161	506	236	516	1589	1888	1880	1943	2054	1965	1968	925	432	319	1015	1015	911
RELEASE	19161	506	236	516	1589	1888	1880	1943	2041	1940	1968	925	432	319	1015	1015	949
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	17.0	17.0	17.0	28.9	26.7	30.7	31.6	31.6	33.2	32.6	32.0	31.1	31.1	20.1	16.5	16.5	16.5
POWER																	
AVE POWER MW		59	59	98	91	103	105	105	109	109	108	106	106	71	58	58	58
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	784.2	21.2	9.9	21.2	65.6	76.3	75.3	77.8	80.9	78.3	80.6	38.3	17.9	13.6	43.4	43.4	40.3
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1700	138	64	83	325	295	150	180	120	105	55	30	14	16	25	25	75
DEPLETION	277	7	3	4	23	36	32	40	38	25	11	7	3	3	14	15	15
REGULATED FLOW AT SIOUX CITY																	
KAF	20584	636	297	594	1891	2147	1998	2083	2123	2020	2012	949	443	332	1026	1025	1009
KCFS		21.4	21.4	33.3	31.8	34.9	33.6	33.9	34.5	33.9	32.7	31.9	31.9	20.9	16.7	16.7	17.5
--TOTAL--																	
NAT INFLOW	24400	1283	598	769	2500	3295	6145	3210	1260	1080	1135	505	236	269	510	610	995
DEPLETION	2804	11	5	7	122	597	1603	1224	329	-166	-74	-162	-76	-86	-212	-198	-120
CHAN STOR	-1	79	0	-26	-31	-43	-15	1	-3	37	40	1	0	9	-30	-21	2
EVAPORATION	1707							107	334	414	356	159	73	84	181		
STORAGE	54754	55468	55764	55907	56363	56871	59400	59197	57667	56516	55398	54959	54753	54703	54188	53950	54058
SYSTEM POWER																	
AVE POWER MW		786	788	1003	1031	1243	1292	1351	1399	1269	1015	966	1002	794	861	977	942
PEAK POW MW		2302	2301	2302	2308	2312	2339	2340	2318	2310	2292	2268	2258	2255	2219	2241	2250
ENERGY GWH	9636.6	282.9	132.3	216.6	742.6	924.9	930.5	1005.0	1040.7	914.0	755.3	347.8	168.3	152.5	640.3	727.1	655.7
DAILY GWH		18.9	18.9	24.1	24.8	29.8	31.0	32.4	33.6	30.5	24.4	23.2	24.0	19.1	20.7	23.5	22.6
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

TIME OF STUDY 13:49:44 STUDY NO 12

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB16	2016												2017			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	7200	230	107	138	600	1180	1810	840	315	295	430	180	84	96	300	250	345
DEPLETION	512	-24	-11	-15	15	307	569	270	25	-102	-51	-45	-21	-24	-137	-148	-96
EVAPORATION	443							27	85	106	92	42	19	22	48		
MOD INFLOW	6245	254	119	152	585	873	1241	543	205	291	389	183	86	98	389	398	441
RELEASE	6367	179	83	107	417	584	655	676	676	509	369	179	83	95	584	615	555
STOR CHANGE	-121	76	35	45	168	289	586	-134	-472	-218	20	5	2	3	-195	-217	-114
STORAGE	13996	14072	14107	14152	14321	14610	15196	15062	14591	14372	14392	14397	14399	14402	14206	13989	13875
ELEV FTMSL	2230.2	2230.5	2230.7	2230.9	2231.7	2233.1	2235.9	2235.3	2233.1	2232.0	2232.1	2232.1	2232.1	2232.1	2231.2	2230.1	2229.5
DISCH KCFS	10.5	6.0	6.0	6.0	7.0	9.5	11.0	11.0	11.0	8.6	6.0	6.0	6.0	6.0	9.5	10.0	10.0
POWER																	
AVE POWER MW		81	81	81	95	129	148	148	148	116	81	81	81	81	128	135	134
PEAK POW MW		160	160	160	161	162	164	163	162	161	161	161	161	161	160	159	159
ENERGY GWH	1039.6	29.1	13.6	17.5	68.2	95.8	106.4	110.4	109.8	83.6	60.6	29.3	13.7	15.6	95.6	100.1	90.2
--GARRISON--																	
NAT INFLOW	10800	460	214	276	870	1325	3095	1860	595	460	495	195	91	104	180	260	320
DEPLETION	1124	4	2	2	25	148	826	692	121	-126	-32	-136	-63	-72	-120	-91	-56
CHAN STOR	5	45			-10	-25	-15			24	25				-35	-5	
EVAPORATION	512							32	99	123	107	48	22	26	55		
REG INFLOW	15536	680	296	381	1252	1736	2909	1813	1051	996	815	461	215	246	795	961	931
RELEASE	15684	476	222	286	1160	1660	1547	1568	1568	1223	984	476	222	254	1230	1476	1333
STOR CHANGE	-148	204	74	95	91	76	1361	245	-517	-226	-169	-15	-7	-8	-435	-515	-402
STORAGE	17138	17342	17416	17511	17602	17678	19039	19284	18767	18541	18371	18356	18349	18342	17906	17392	16990
ELEV FTMSL	1834.3	1834.9	1835.2	1835.5	1835.8	1836.1	1840.4	1841.2	1839.6	1838.9	1838.3	1838.3	1838.3	1838.2	1836.8	1835.1	1833.8
DISCH KCFS	24.0	16.0	16.0	16.0	19.5	27.0	26.0	25.5	25.5	20.5	16.0	16.0	16.0	16.0	20.0	24.0	24.0
POWER																	
AVE POWER MW		196	196	197	239	331	323	322	321	258	200	200	200	200	248	295	292
PEAK POW MW		459	460	461	462	463	479	482	476	473	471	471	471	471	466	459	454
ENERGY GWH	2355.0	70.4	33.0	42.5	172.4	246.2	232.9	239.7	239.1	185.6	149.2	72.0	33.6	38.4	184.8	219.2	196.1
--OAHE--																	
NAT INFLOW	2300	232	108	139	405	195	780	160	75	95	35	30	14	16	-80		95
DEPLETION	752	25	12	15	52	77	160	195	132	32	-12	1	0	1	13	19	30
CHAN STOR	0	33			-14	-30	4	2		20	19				-17	-17	
EVAPORATION	480							30	94	116	99	44	21	24	51		
REG INFLOW	16752	716	319	410	1499	1748	2171	1504	1417	1190	951	461	215	246	1069	1440	1398
RELEASE	16904	553	257	410	1293	1624	1607	1849	1979	1759	1259	562	296	236	986	1213	1021
STOR CHANGE	-152	163	62	0	206	124	564	-345	-562	-569	-309	-101	-81	10	82	227	377
STORAGE	17837	18001	18062	18062	18269	18392	18956	18611	18049	17480	17172	17070	16989	16999	17081	17308	17685
ELEV FTMSL	1604.2	1604.8	1605.0	1605.0	1605.7	1606.1	1607.9	1606.8	1604.9	1603.0	1601.9	1601.6	1601.3	1601.3	1601.6	1602.4	1603.7
DISCH KCFS	19.6	18.6	18.5	23.0	21.7	26.4	27.0	30.1	32.2	29.6	20.5	18.9	21.3	14.9	16.0	19.7	18.4
POWER																	
AVE POWER MW		236	236	292	277	337	347	387	410	373	257	237	267	186	201	247	232
PEAK POW MW		693	694	694	698	700	710	704	694	684	678	677	675	675	677	681	688
ENERGY GWH	2597.1	85.1	39.7	63.2	199.6	251.1	250.0	287.9	305.3	268.9	191.5	85.2	44.8	35.7	149.4	184.1	155.8
--BIG BEND--																	
EVAPORATION	103							6	20	25	22	10	5	5	11		
REG INFLOW	16801	553	257	410	1293	1624	1607	1843	1959	1734	1238	552	292	231	975	1213	1021
RELEASE	16801	553	257	410	1293	1624	1607	1843	1959	1734	1238	552	292	231	975	1213	1021
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	19.6	18.6	18.5	23.0	21.7	26.4	27.0	30.0	31.9	29.1	20.1	18.6	21.0	14.5	15.9	19.7	18.4
POWER																	
AVE POWER MW		88	87	108	102	124	126	140	149	138	99	93	105	73	80	97	88
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	970.0	31.7	14.6	23.2	73.2	92.0	91.0	104.4	110.9	99.4	73.5	33.6	17.7	14.1	59.4	72.1	59.2
--FORT RANDALL--																	
NAT INFLOW	900	119	55	71	155	140	135	70	65	30		10	5	5	5	-10	45
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117							8	25	31	25	9	4	4	10		
REG INFLOW	17505	670	312	480	1444	1755	1730	1887	1984	1726	1212	551	292	232	967	1200	1063
RELEASE	17504	378	178	480	1444	1755	1730	1887	1984	1872	1855	872	408	258	865	850	689
STOR CHANGE	0	292	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3123	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	13.8	12.7	12.8	26.9	24.3	28.5	29.1	30.7	32.3	31.5	30.2	29.3	29.4	16.2	14.1	13.8	12.4
POWER																	
AVE POWER MW		105	108	227	205	240	245	258	271	263	242	221	215	118	103	105	99
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1730.9	37.9	18.2	49.0	147.5	178.9	176.4	192.2	201.8	189.2	179.7	79.7	36.1	22.7	76.9	78.2	66.5
--GAVINS POINT--																	
NAT INFLOW	1500	104	49	62	145	160	175	100	90	95	120	60	28	32	80	85	115
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	1	2	0	-27	5	-8	-1	-3	-3	2	2	2	0	24	4	0	3
EVAPORATION	36							2	6	9	8	3	2	2	4		
REG INFLOW	18856	485	226	516	1589	1888	1880	1943	2054	1965	1968	925	432	309	935	935	806
RELEASE	18856	485	226	516	1589	1888	1880	1943	2041	1940	1968	925	432	309	935	935	844
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	16.5	16.3	16.3	28.9	26.7	30.7	31.6	31.6	33.2	32.6	32.0	31.1	31.1	19.5	15.2	15.2	15.2
POWER																	
AVE POWER MW		57	57	98	91	103	105	105	109	109	108	106	106	69	54	54	53
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	771.4	20.4	9.5	21.2	65.6	76.3	75.3	77.8	80.9	78.3	80.6	38.3	17.9	13.2	40.1	40.1	35.9
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1700	138	64	83	325	295	150	180	120	105	55	30	14	16	25	25	75
DEPLETION	280	7	3	4	24	37	32	40	38	25	12	7	3	3	14	15	15
REGULATED FLOW AT SIOUX CITY																	
KAF	20276	616	287	594	1890	2146	1998	2083	2123	2020	2011	949	443	322	946	945	904
KCFS		20.7	20.7	33.3	31.8	34.9	33.6	33.9	34.5	33.9	32.7	31.9	31.9	20.3	15.4	15.4	16.3
--TOTAL--																	
NAT INFLOW	24400	1283	598	769	2500	3295	6145	3210	1260	1080	1135	505	236	269	510	610	995
DEPLETION	2862	13	6	8	125	597	1623	1254	341	-169	-80	-167	-78	-89	-217	-201	-104
CHAN STOR	6	80	0	-27	-19	-64	-12	-1	-3	46	47	1	0	25	-48	-21	3
EVAPORATION	1690							106	330	410	352	157	73	83	179		
STORAGE	54058	54793	55097	55237	55703	56192	58704	58470	56932	55797	54696	54264	54062	54040	53595	53439	53637
SYSTEM POWER																	
AVE POWER MW		763	765	1003	1009	1264	1294	1361	1408	1257	988	939	975	728	815	932	898
PEAK POW MW		2294	2294	2295	2300	2304	2332	2328	2312	2303	2284	2260	2249	2247	2212	2235	2245
ENERGY GWH	9464.1	274.6	128.5	216.6	726.5	940.2	932.0	1012.4	1047.9	905.0	735.0	338.0	163.7	139.8	606.3	693.7	603.7
DAILY GWH		18.3	18.4	24.1	24.2	30.3	31.1	32.7	33.8	30.2	23.7	22.5	23.4	17.5	19.6	22.4	21.6
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:44 STUDY NO 13

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB17	2017												2018			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	7200	230	107	138	600	1180	1810	840	315	295	430	180	84	96	300	250	345
DEPLETION	519	-25	-12	-15	15	308	573	277	29	-103	-53	-46	-21	-25	-138	-149	-96
EVAPORATION	440							27	85	105	92	41	19	22	48		
MOD INFLOW	6241	255	119	153	585	872	1237	536	201	293	391	185	86	98	390	399	441
RELEASE	6314	179	83	107	476	584	625	646	646	520	369	179	83	95	553	615	555
STOR CHANGE	-73	77	36	46	109	288	612	-110	-445	-227	22	6	3	3	-163	-216	-114
STORAGE	13875	13952	13987	14033	14142	14430	15042	14932	14488	14261	14283	14289	14292	14295	14132	13916	13802
ELEV FTMSL	2229.5	2229.9	2230.1	2230.3	2230.9	2232.3	2235.2	2234.7	2232.6	2231.5	2231.6	2231.6	2231.6	2231.6	2230.8	2229.8	2229.2
DISCH KCFS	10.0	6.0	6.0	6.0	8.0	9.5	10.5	10.5	10.5	8.7	6.0	6.0	6.0	6.0	9.0	10.0	10.0
POWER																	
AVE POWER MW		81	81	81	108	128	142	142	142	118	81	81	81	81	122	134	134
PEAK POW MW		159	159	160	160	161	163	163	161	160	160	160	160	160	160	159	159
ENERGY GWH	1031.1	29.1	13.6	17.5	77.7	95.6	102.0	105.8	105.3	85.1	60.5	29.3	13.7	15.6	90.4	100.0	90.0
--GARRISON--																	
NAT INFLOW	10800	460	214	276	870	1325	3095	1860	595	460	495	195	91	104	180	260	320
DEPLETION	1137	4	2	3	26	151	834	706	126	-129	-37	-139	-65	-74	-122	-92	-57
CHAN STOR	0	40			-20	-15	-10			17	27				-30	-10	
EVAPORATION	512							32	100	124	107	48	22	25	55		
REG INFLOW	15465	674	296	380	1300	1743	2876	1768	1015	1002	821	465	217	248	771	957	932
RELEASE	15555	476	222	286	1071	1537	1547	1537	1537	1247	1045	506	236	270	1230	1476	1333
STOR CHANGE	-90	198	74	95	229	206	1329	231	-522	-244	-224	-41	-19	-22	-459	-519	-401
STORAGE	16990	17188	17262	17357	17585	17791	19120	19351	18828	18584	18360	18319	18300	18278	17819	17300	16900
ELEV FTMSL	1833.8	1834.4	1834.7	1835.0	1835.8	1836.5	1840.7	1841.4	1839.8	1839.0	1838.3	1838.2	1838.1	1838.0	1836.5	1834.8	1833.4
DISCH KCFS	24.0	16.0	16.0	16.0	18.0	25.0	26.0	25.0	25.0	20.9	17.0	17.0	17.0	17.0	20.0	24.0	24.0
POWER																	
AVE POWER MW		195	196	196	221	307	324	316	316	263	213	212	212	212	248	294	291
PEAK POW MW		457	458	459	462	464	480	482	477	474	471	471	470	470	465	458	453
ENERGY GWH	2335.6	70.2	32.8	42.3	159.0	228.4	233.3	235.1	234.8	189.3	158.4	76.5	35.7	40.7	184.6	218.8	195.7
--OAHE--																	
NAT INFLOW	2300	232	108	139	405	195	780	160	75	95	35	30	14	16	-80		95
DEPLETION	765	25	12	15	52	78	163	200	135	32	-13	1	0	1	14	20	30
CHAN STOR	0	33			-8	-29	-4	4		17	17	0			-13	-17	
EVAPORATION	473							30	93	114	98	44	20	23	51		
REG INFLOW	16617	716	319	410	1416	1626	2160	1471	1385	1212	1012	491	229	262	1072	1439	1398
RELEASE	16710	520	242	410	1286	1618	1601	1850	1979	1759	1259	562	296	232	942	1170	982
STOR CHANGE	-92	196	77	-1	129	8	559	-378	-594	-547	-247	-71	-67	29	130	269	416
STORAGE	17685	17881	17958	17957	18087	18095	18653	18275	17681	17134	16887	16816	16749	16778	16908	17177	17593
ELEV FTMSL	1603.7	1604.4	1604.6	1604.6	1605.1	1605.1	1606.9	1605.7	1603.7	1601.8	1600.9	1600.7	1600.5	1600.6	1601.0	1602.0	1603.4
DISCH KCFS	18.4	17.5	17.4	23.0	21.6	26.3	26.9	30.1	32.2	29.6	20.5	18.9	21.3	14.6	15.3	19.0	17.7
POWER																	
AVE POWER MW		222	222	292	275	335	344	385	408	371	256	235	265	182	191	238	223
PEAK POW MW		691	693	693	695	695	705	698	688	678	673	672	671	671	674	679	686
ENERGY GWH	2555.6	79.9	37.2	63.1	198.1	249.0	247.7	286.3	303.4	267.1	190.4	84.7	44.6	35.0	142.3	177.1	149.6
--BIG BEND--																	
EVAPORATION	103							6	20	25	22	10	5	5	11		
REG INFLOW	16606	520	242	410	1286	1618	1601	1843	1959	1734	1238	552	292	227	931	1170	982
RELEASE	16606	520	242	410	1286	1618	1601	1843	1959	1734	1238	552	292	227	931	1170	982
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	18.4	17.5	17.4	23.0	21.6	26.3	26.9	30.0	31.9	29.1	20.1	18.6	21.0	14.3	15.1	19.0	17.7
POWER																	
AVE POWER MW		83	82	108	101	123	126	140	149	138	99	93	105	72	76	93	85
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	958.7	29.8	13.7	23.2	72.9	91.6	90.7	104.4	110.9	99.4	73.5	33.6	17.7	13.9	56.8	69.5	57.0
--FORT RANDALL--																	
NAT INFLOW	900	119	55	71	155	140	135	70	65	30		10	5	5	5	-10	45
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117							8	25	31	25	9	4	4	10		
REG INFLOW	17310	638	296	481	1437	1749	1724	1887	1984	1726	1212	551	292	228	923	1157	1024
RELEASE	17310	346	162	481	1437	1749	1724	1887	1984	1872	1855	872	408	254	821	807	650
STOR CHANGE	0	291	134				0	0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	12.4	11.6	11.7	26.9	24.2	28.4	29.0	30.7	32.3	31.5	30.2	29.3	29.4	16.0	13.3	13.1	11.7
POWER																	
AVE POWER MW		96	99	227	204	240	244	258	271	263	242	221	215	117	98	100	93
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1712.6	34.7	16.6	49.0	146.9	178.3	175.8	192.2	201.8	189.2	179.7	79.7	36.1	22.4	73.1	74.3	62.7
--GAVINS POINT--																	
NAT INFLOW	1500	104	49	62	145	160	175	100	90	95	120	60	28	32	80	85	115
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	0	1	0	-29	5	-8	-1	-3	-3	2	2	2	0	25	5	0	3
EVAPORATION	36							2	6	9	8	3	2	2	4		
REG INFLOW	18660	452	211	514	1583	1882	1874	1943	2054	1965	1968	925	432	306	892	892	767
RELEASE	18660	452	211	514	1583	1882	1874	1943	2041	1940	1968	925	432	306	892	892	805
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	15.2	15.2	15.2	28.8	26.6	30.6	31.5	31.6	33.2	32.6	32.0	31.1	31.1	19.3	14.5	14.5	14.5
POWER																	
AVE POWER MW		53	53	98	91	102	104	105	109	109	108	106	106	68	51	51	51
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	763.4	19.1	8.9	21.1	65.3	76.1	75.2	77.8	80.9	78.3	80.6	38.3	17.9	13.1	38.3	38.3	34.3
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1700	138	64	83	325	295	150	180	120	105	55	30	14	16	25	25	75
DEPLETION	283	7	3	4	24	37	32	40	39	26	12	7	3	3	14	15	16
REGULATED FLOW AT SIOUX CITY																	
KAF	20077	583	272	592	1884	2140	1992	2083	2122	2019	2011	949	443	319	903	902	864
KCFS		19.6	19.6	33.2	31.7	34.8	33.5	33.9	34.5	33.9	32.7	31.9	31.9	20.1	14.7	14.7	15.6
--TOTAL--																	
NAT INFLOW	24400	1283	598	769	2500	3295	6145	3210	1260	1080	1135	505	236	269	510	610	995
DEPLETION	2898	13	6	8	126	602	1638	1280	354	-172	-88	-172	-80	-91	-219	-202	-104
CHAN STOR	0	75	0	-29	-23	-52	-15	1	-3	36	46	1	0	25	-38	-27	3
EVAPORATION	1681							105	329	407	350	156	72	82	178		
STORAGE	53637	54399	54719	54859	55326	55828	58328	58070	56522	55383	54292	53864	53665	53650	53260	53144	53381
SYSTEM POWER																	
AVE POWER MW		730	732	1001	1000	1235	1284	1346	1394	1262	999	950	985	733	787	911	877
PEAK POW MW		2289	2289	2291	2296	2300	2327	2323	2306	2296	2279	2254	2244	2242	2208	2231	2242
ENERGY GWH	9357.0	262.8	122.9	216.3	720.0	919.0	924.7	1001.6	1037.1	908.5	743.0	341.9	165.5	140.8	585.4	677.9	589.4
DAILY GWH		17.5	17.6	24.0	24.0	29.6	30.8	32.3	33.5	30.3	24.0	22.8	23.6	17.6	18.9	21.9	21.0
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:06 STUDY NO 14

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB13	2013										2014					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	6100	207	96	124	493	971	1505	676	290	259	346	168	78	89	264	224	310
DEPLETION	513	-17	-8	-10	47	289	540	246	10	-108	-54	-40	-18	-21	-120	-133	-89
EVAPORATION	504							32	98	121	105	47	22	25	54		
MOD INFLOW	5083	224	105	134	446	682	965	398	182	246	295	160	75	85	330	357	399
RELEASE	6091	179	83	107	476	492	595	615	615	480	369	179	83	95	553	615	555
STOR CHANGE	-1008	46	21	27	-30	190	370	-216	-433	-234	-74	-19	-9	-10	-224	-258	-156
STORAGE	13172	13217	13239	13266	13236	13426	13796	13580	13147	12913	12840	12821	12812	12802	12578	12320	12164
ELEV FTMSL	2226.0	2226.2	2226.3	2226.4	2226.3	2227.3	2229.1	2228.1	2225.8	2224.6	2224.2	2224.1	2224.0	2224.0	2222.8	2221.4	2220.5
DISCH KCFS	11.5	6.0	6.0	6.0	8.0	8.0	10.0	10.0	10.0	8.1	6.0	6.0	6.0	6.0	9.0	10.0	10.0
POWER																	
AVE POWER MW		80	80	80	106	107	133	134	133	107	79	79	79	79	118	130	130
PEAK POW MW		156	157	157	157	157	159	158	156	155	155	155	154	154	153	152	151
ENERGY GWH	974.9	28.7	13.4	17.3	76.6	79.3	96.1	99.4	98.9	76.9	59.1	28.6	13.3	15.2	88.0	96.9	87.0
--GARRISON--																	
NAT INFLOW	9338	430	200	258	716	1127	2674	1609	513	396	426	168	78	89	152	223	279
DEPLETION	1129	10	5	6	29	124	802	657	114	-110	-18	-124	-58	-66	-109	-81	-52
CHAN STOR	15	56			-20		-20			19	21				-31	-10	
EVAPORATION	592							37	115	143	123	55	26	29	63		
REG INFLOW	13723	654	279	359	1143	1495	2447	1530	899	863	711	415	194	221	720	909	886
RELEASE	14962	476	222	286	1071	1291	1488	1476	1476	1202	1045	506	236	270	1168	1445	1305
STOR CHANGE	-1239	178	57	73	72	204	959	54	-577	-339	-335	-91	-42	-48	-448	-536	-419
STORAGE	16130	16308	16365	16438	16510	16713	17673	17727	17150	16811	16476	16385	16342	16294	15846	15310	14891
ELEV FTMSL	1830.8	1831.4	1831.6	1831.8	1832.1	1832.8	1836.1	1836.2	1834.3	1833.1	1832.0	1831.7	1831.5	1831.3	1829.7	1827.8	1826.3
DISCH KCFS	24.0	16.0	16.0	16.0	18.0	21.0	25.0	24.0	24.0	20.2	17.0	17.0	17.0	17.0	19.0	23.5	23.5
POWER																	
AVE POWER MW		191	192	192	216	252	304	295	293	245	205	204	204	203	226	275	272
PEAK POW MW		446	446	447	448	451	463	464	456	452	448	447	446	446	440	433	427
ENERGY GWH	2173.8	68.8	32.2	41.5	155.6	187.8	218.7	219.4	218.2	176.3	152.5	73.4	34.2	39.1	168.0	204.9	183.0
--OAHE--																	
NAT INFLOW	1369	214	100	128	190	137	290	147	68	79	16	13	6	7	-95	-10	79
DEPLETION	709	24	11	15	50	73	151	182	122	30	-11	1	0	1	13	18	29
CHAN STOR	2	34			-8	-13	-17	4		17	15	0			-9	-21	0
EVAPORATION	529							34	104	127	109	49	23	26	57		
REG INFLOW	15095	700	311	399	1203	1342	1609	1411	1318	1141	978	469	219	250	994	1396	1355
RELEASE	16365	438	317	447	1393	1763	1631	1862	1886	1677	1167	496	266	205	868	1062	887
STOR CHANGE	-1270	261	-6	-48	-191	-420	-22	-451	-568	-536	-189	-27	-47	45	126	334	468
STORAGE	16804	17065	17059	17011	16820	16400	16378	15928	15360	14824	14635	14608	14561	14606	14732	15065	15534
ELEV FTMSL	1600.7	1601.6	1601.5	1601.4	1600.7	1599.2	1599.1	1597.5	1595.4	1593.3	1592.5	1592.4	1592.2	1592.4	1592.9	1594.2	1596.0
DISCH KCFS	17.0	14.7	22.8	25.1	23.4	28.7	27.4	30.3	30.7	28.2	19.0	16.7	19.2	12.9	14.1	17.3	16.0
POWER																	
AVE POWER MW		184	285	313	292	354	337	371	372	338	226	198	228	154	168	207	193
PEAK POW MW		677	676	676	672	664	664	656	645	635	631	631	630	631	633	640	648
ENERGY GWH	2410.3	66.3	47.9	67.6	210.0	263.7	243.0	275.8	276.4	243.1	168.4	71.4	38.3	29.6	125.3	154.0	129.7
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	16237	438	317	447	1393	1763	1631	1854	1862	1646	1140	483	260	198	854	1062	887
RELEASE	16237	438	317	447	1393	1763	1631	1854	1862	1646	1140	483	260	198	854	1062	887
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.0	14.7	22.8	25.1	23.4	28.7	27.4	30.2	30.3	27.7	18.5	16.2	18.8	12.5	13.9	17.3	16.0
POWER																	
AVE POWER MW		70	107	117	110	134	128	141	142	131	91	82	94	63	70	85	77
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	936.3	25.1	18.0	25.3	78.9	99.8	92.4	105.0	105.4	94.4	67.7	29.5	15.8	12.1	52.1	63.2	51.5
--FORT RANDALL--																	
NAT INFLOW	480	77	36	46	96	69	133	37	27		-21	-8	-4	-4	-32	-16	43
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146							10	32	39	31	12	5	5	12		
REG INFLOW	16490	514	353	493	1485	1823	1752	1863	1842	1599	1087	462	251	189	807	1043	927
RELEASE	16490	223	219	493	1485	1823	1752	1863	1842	1746	1730	783	367	215	704	693	553
STOR CHANGE	0	291	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	11.0	7.5	15.7	27.6	25.0	29.6	29.4	30.3	30.0	29.3	28.1	26.3	26.4	13.5	11.4	11.3	10.0
POWER																	
AVE POWER MW		62	133	233	211	250	248	255	252	245	226	199	194	99	84	86	80
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1636.2	22.5	22.3	50.3	151.7	185.7	178.5	189.8	187.6	176.6	167.8	71.7	32.6	19.0	62.7	63.9	53.5
--GAVINS POINT--																	
NAT INFLOW	1318	89	41	53	127	142	152	86	76	81	112	53	25	28	76	76	101
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	1	7	-16	-23	5	-9	0	-2	1	1	2	3	0	24	4	0	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	17650	319	244	524	1612	1937	1880	1906	1901	1822	1832	830	387	262	769	769	656
RELEASE	17650	319	244	524	1612	1937	1880	1906	1888	1797	1832	830	387	262	769	769	694
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	13.5	10.7	17.6	29.3	27.1	31.5	31.6	31.0	30.7	30.2	29.8	27.9	27.9	16.5	12.5	12.5	12.5
POWER																	
AVE POWER MW		38	61	99	92	104	105	103	103	103	103	98	98	58	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	727.8	13.5	10.2	21.4	66.5	77.7	75.3	76.8	76.6	74.3	76.8	35.2	16.4	11.2	33.0	33.0	29.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1095	126	59	76	146	177	94	109	78	63	37	26	12	14	10	21	47
DEPLETION	270	7	3	4	23	36	31	39	37	25	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	18475	438	300	595	1735	2078	1943	1976	1929	1835	1858	850	397	273	766	776	726
KCFS		14.7	21.6	33.3	29.2	33.8	32.7	32.1	31.4	30.8	30.2	28.6	28.6	17.2	12.5	12.6	13.1
--TOTAL--																	
NAT INFLOW	19700	1143	533	685	1768	2623	4848	2664	1052	878	916	419	196	223	375	518	859
DEPLETION	2815	25	12	15	158	550	1560	1181	308	-161	-69	-151	-70	-80	-190	-178	-94
CHAN STOR	17	97	-16	-23	-24	-22	-37	3	1	38	38	3	0	24	-36	-31	2
EVAPORATION	1944							122	381	472	405	180	83	95	206		
STORAGE	51192	51969	52175	52227	52078	52051	53359	52746	51181	49952	48711	48253	48038	47999	47556	47446	47675
SYSTEM POWER																	
AVE POWER MW		625	858	1034	1027	1202	1255	1299	1295	1169	930	860	897	657	711	828	795
PEAK POW MW		2261	2259	2259	2256	2252	2265	2257	2238	2227	2208	2183	2173	2171	2135	2159	2170
ENERGY GWH	8859.2	225.0	144.1	223.4	739.4	894.0	904.0	966.2	963.2	841.7	692.2	309.7	150.6	126.2	529.3	615.9	534.3
DAILY GWH		15.0	20.6	24.8	24.6	28.8	30.1	31.2	31.1	28.1	22.3	20.6	21.5	15.8	17.1	19.9	19.1
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:06 STUDY NO 15

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB14	2014										2015					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	6345	215	100	129	513	1010	1565	703	301	270	360	175	81	93	275	233	322
DEPLETION	492	-26	-12	-15	23	292	574	248	8	-114	-57	-41	-19	-22	-122	-135	-91
EVAPORATION	487							30	94	117	102	46	22	25	53		
MOD INFLOW	5366	241	112	144	490	718	991	425	199	267	315	169	79	90	344	368	413
RELEASE	5686	149	69	89	476	615	536	553	553	418	307	149	69	95	553	553	500
STOR CHANGE	-320	92	43	55	14	103	455	-128	-354	-150	8	20	9	-5	-210	-185	-87
STORAGE	12164	12256	12298	12353	12367	12470	12926	12798	12444	12294	12301	12321	12331	12326	12116	11931	11844
ELEV FTMSL	2220.5	2221.0	2221.3	2221.6	2221.6	2222.2	2224.6	2224.0	2222.1	2221.2	2221.3	2221.4	2221.4	2221.4	2220.3	2219.2	2218.7
DISCH KCFS	10.0	5.0	5.0	5.0	8.0	10.0	9.0	9.0	9.0	7.0	5.0	5.0	5.0	6.0	9.0	9.0	9.0
POWER																	
AVE POWER MW		65	65	65	104	130	118	119	118	92	65	65	65	78	117	116	116
PEAK POW MW		151	152	152	152	153	155	154	152	152	152	152	152	152	151	150	149
ENERGY GWH	897.9	23.5	11.0	14.1	75.2	96.8	85.2	88.4	87.9	66.0	48.6	23.5	11.0	15.1	87.1	86.6	78.0
--GARRISON--																	
NAT INFLOW	9674	445	208	267	741	1167	2771	1667	531	410	442	174	81	93	158	231	289
DEPLETION	1041	5	2	3	24	160	754	658	120	-120	-30	-132	-62	-70	-120	-91	-61
CHAN STOR	10	52			-31	-21	10			20	21			-10	-31		
EVAPORATION	575							35	111	138	120	54	25	29	62		
REG INFLOW	13755	641	275	353	1162	1601	2563	1527	854	829	680	400	187	219	739	875	850
RELEASE	14148	431	201	259	1131	1568	1369	1353	1353	1069	861	417	194	230	1138	1353	1222
STOR CHANGE	-393	209	73	94	31	33	1194	174	-499	-240	-181	-16	-8	-11	-399	-477	-372
STORAGE	14891	15100	15174	15268	15299	15332	16527	16701	16202	15962	15781	15765	15757	15746	15347	14870	14498
ELEV FTMSL	1826.3	1827.0	1827.3	1827.7	1827.8	1827.9	1832.2	1832.8	1831.0	1830.2	1829.5	1829.5	1829.4	1829.4	1827.9	1826.2	1824.8
DISCH KCFS	23.5	14.5	14.5	14.5	19.0	25.5	23.0	22.0	22.0	18.0	14.0	14.0	14.0	14.5	18.5	22.0	22.0
POWER																	
AVE POWER MW		168	169	169	222	297	272	264	263	214	166	166	166	172	217	255	252
PEAK POW MW		430	431	432	432	433	449	451	444	441	439	439	439	438	433	427	421
ENERGY GWH	2013.7	60.7	28.4	36.6	159.6	220.8	195.8	196.7	195.9	154.0	123.6	59.7	27.8	32.9	161.7	189.8	169.7
--OAHE--																	
NAT INFLOW	1547	242	113	145	214	155	327	167	77	89	18	15	7	8	-107	-12	89
DEPLETION	724	25	12	15	51	75	154	187	125	30	-12	1	0	1	13	19	29
CHAN STOR	6	40		0	-20	-29	11	4		18	18			-2	-19	-16	0
EVAPORATION	524							33	103	126	108	49	23	26	56		
REG INFLOW	14453	689	303	389	1274	1619	1553	1304	1202	1021	801	382	178	209	942	1305	1282
RELEASE	14856	425	270	378	1177	1543	1408	1725	1750	1549	1038	433	195	147	878	1063	876
STOR CHANGE	-403	264	32	11	97	76	145	-421	-548	-528	-238	-51	-17	62	64	242	406
STORAGE	15534	15797	15830	15841	15938	16014	16159	15737	15190	14661	14424	14373	14356	14418	14482	14725	15131
ELEV FTMSL	1596.0	1597.0	1597.1	1597.2	1597.5	1597.8	1598.3	1596.8	1594.7	1592.6	1591.7	1591.5	1591.4	1591.7	1591.9	1592.9	1594.5
DISCH KCFS	16.0	14.3	19.5	21.2	19.8	25.1	23.7	28.1	28.5	26.0	16.9	14.5	14.1	9.3	14.3	17.3	15.8
POWER																	
AVE POWER MW		174	238	258	242	307	290	342	344	311	201	172	167	110	170	206	189
PEAK POW MW		653	654	654	656	657	660	652	642	632	627	626	626	627	628	633	641
ENERGY GWH	2170.4	62.7	39.9	55.8	174.0	228.1	208.7	254.6	255.7	223.9	149.4	62.1	28.0	21.2	126.2	153.1	127.1
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	14727	425	270	378	1177	1543	1408	1718	1726	1518	1011	420	189	141	864	1063	876
RELEASE	14727	425	270	378	1177	1543	1408	1718	1726	1518	1011	420	189	141	864	1063	876
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	16.0	14.3	19.5	21.2	19.8	25.1	23.7	27.9	28.1	25.5	16.4	14.1	13.6	8.9	14.1	17.3	15.8
POWER																	
AVE POWER MW		68	91	99	93	117	111	131	131	121	81	71	69	45	71	85	76
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	849.8	24.4	15.3	21.4	66.7	87.4	79.7	97.3	97.7	87.0	60.1	25.7	11.6	8.6	52.8	63.2	50.8
--FORT RANDALL--																	
NAT INFLOW	560	91	42	54	112	81	155	44	31		-25	-10	-4	-5	-37	-19	50
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146							10	32	39	31	12	5	5	12		
REG INFLOW	15060	514	312	431	1285	1615	1551	1734	1710	1472	955	397	179	130	812	1041	923
RELEASE	15060	223	178	431	1285	1615	1551	1734	1710	1618	1598	719	296	156	709	691	549
STOR CHANGE	0	291	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	10.0	7.5	12.8	24.2	21.6	26.3	26.1	28.2	27.8	27.2	26.0	24.2	21.3	9.8	11.5	11.2	9.9
POWER																	
AVE POWER MW		62	108	204	183	222	220	238	234	228	209	183	156	72	85	86	79
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1495.6	22.5	18.2	44.1	131.5	164.9	158.3	176.8	174.4	163.9	155.2	65.9	26.3	13.8	63.2	63.7	53.1
--GAVINS POINT--																	
NAT INFLOW	1361	91	42	55	131	147	157	89	79	84	115	55	26	29	78	78	105
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	5	-10	-22	5	-9	0	-4	1	1	2	3	5	21	-3	1	3
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	16262	319	210	465	1416	1734	1684	1777	1772	1697	1703	768	322	202	769	769	656
RELEASE	16262	319	210	465	1416	1734	1684	1777	1759	1672	1703	768	322	202	769	769	694
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	12.5	10.7	15.2	26.0	23.8	28.2	28.3	28.9	28.6	28.1	27.7	25.8	23.2	12.7	12.5	12.5	12.5
POWER																	
AVE POWER MW		38	53	89	82	96	96	98	98	97	97	90	82	45	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	679.9	13.6	8.9	19.2	58.7	71.4	69.3	73.1	72.7	70.2	72.2	32.6	13.7	8.7	33.0	33.0	29.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1212	140	65	84	162	196	104	121	87	69	40	29	14	15	11	23	52
DEPLETION	276	7	3	4	23	36	32	39	38	25	11	7	3	3	14	15	15
REGULATED FLOW AT SIOUX CITY																	
KAF	17198	452	272	544	1555	1894	1756	1859	1808	1716	1732	790	333	214	766	777	731
KCFS		15.2	19.6	30.5	26.1	30.8	29.5	30.2	29.4	28.8	28.2	26.6	24.0	13.5	12.5	12.6	13.2
--TOTAL--																	
NAT INFLOW	20699	1224	571	734	1873	2756	5079	2791	1106	922	950	438	204	233	378	534	907
DEPLETION	2727	13	6	8	130	591	1550	1189	316	-177	-85	-159	-74	-85	-202	-188	-105
CHAN STOR	15	97	-10	-22	-46	-58	22	0	1	40	41	3	5	9	-53	-16	3
EVAPORATION	1905							119	371	462	398	177	82	94	203		
STORAGE	47675	48531	48814	48974	49116	49329	51124	50748	49360	48321	47267	46899	46768	46788	46346	46276	46559
SYSTEM POWER																	
AVE POWER MW		576	724	885	925	1168	1107	1192	1189	1062	819	748	705	522	704	792	756
PEAK POW MW		2216	2216	2218	2220	2222	2243	2237	2219	2209	2191	2167	2158	2157	2121	2144	2155
ENERGY GWH	8107.4	207.3	121.7	191.2	665.8	869.3	797.0	886.8	884.4	765.0	609.1	269.4	118.4	100.3	524.0	589.5	508.3
DAILY GWH		13.8	17.4	21.2	22.2	28.0	26.6	28.6	28.5	25.5	19.6	18.0	16.9	12.5	16.9	19.0	18.2
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:06 STUDY NO 16

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB15	2015												2016			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	6537	222	103	133	528	1041	1613	724	310	278	370	180	84	96	283	240	332
DEPLETION	496	-26	-12	-16	21	292	577	256	12	-114	-59	-41	-19	-22	-121	-133	-100
EVAPORATION	485							30	93	116	101	46	21	24	53		
MOD INFLOW	5556	248	116	149	507	749	1036	438	205	276	328	175	81	93	351	373	432
RELEASE	5625	149	69	89	417	584	536	553	553	415	338	164	76	87	523	553	518
STOR CHANGE	-69	99	46	59	90	165	500	-115	-348	-140	-11	11	5	6	-172	-180	-86
STORAGE	11844	11943	11989	12048	12139	12304	12804	12689	12341	12201	12190	12201	12206	12212	12041	11860	11775
ELEV FTMSL	2218.7	2219.3	2219.5	2219.9	2220.4	2221.3	2224.0	2223.4	2221.5	2220.7	2220.7	2220.7	2220.7	2220.8	2219.8	2218.8	2218.3
DISCH KCFS	9.0	5.0	5.0	5.0	7.0	9.5	9.0	9.0	9.0	7.0	5.5	5.5	5.5	5.5	8.5	9.0	9.0
POWER																	
AVE POWER MW		65	65	65	91	123	118	118	118	91	72	72	72	72	110	116	116
PEAK POW MW		150	150	150	151	152	154	154	152	151	151	151	151	151	150	149	149
ENERGY GWH	885.8	23.3	10.9	14.0	65.4	91.9	84.9	88.2	87.7	65.5	53.3	25.8	12.0	13.8	82.1	86.5	80.6
--GARRISON--																	
NAT INFLOW	9933	457	213	274	761	1198	2845	1711	545	421	454	178	83	95	162	238	297
DEPLETION	1103	1	0	1	15	184	790	694	125	-123	-35	-135	-63	-72	-121	-91	-67
CHAN STOR	0	42			-21	-26	5			21	15		0	0	-31	-5	
EVAPORATION	571							35	110	137	119	54	25	29	62		
REG INFLOW	13884	647	282	363	1142	1572	2596	1535	863	843	723	423	197	225	713	877	882
RELEASE	13972	417	194	250	1071	1476	1369	1353	1353	1072	861	417	194	222	1107	1353	1265
STOR CHANGE	-88	231	88	113	71	96	1227	183	-489	-229	-138	6	3	3	-394	-476	-384
STORAGE	14498	14728	14816	14929	15000	15096	16324	16506	16017	15788	15650	15656	15659	15663	15269	14793	14410
ELEV FTMSL	1824.8	1825.6	1826.0	1826.4	1826.7	1827.0	1831.4	1832.1	1830.4	1829.5	1829.0	1829.1	1829.1	1829.1	1827.7	1825.9	1824.4
DISCH KCFS	22.0	14.0	14.0	14.0	18.0	24.0	23.0	22.0	22.0	18.0	14.0	14.0	14.0	14.0	18.0	22.0	22.0
POWER																	
AVE POWER MW		161	162	162	209	278	270	263	262	213	166	165	165	165	211	255	252
PEAK POW MW		425	426	427	428	430	446	448	442	439	437	437	437	437	432	426	420
ENERGY GWH	1980.4	58.0	27.2	35.0	150.1	206.6	194.7	195.8	195.1	153.6	123.2	59.5	27.8	31.8	157.0	189.5	175.4
--OAHE--																	
NAT INFLOW	1698	265	124	159	235	170	359	183	85	98	20	17	8	9	-118	-13	98
DEPLETION	736	25	12	15	51	76	157	191	128	31	-12	1	0	1	13	19	29
CHAN STOR	0	36			-18	-27	4	4		18	19			0	-19	-19	
EVAPORATION	519							33	101	125	108	49	23	26	56		
REG INFLOW	14415	693	307	394	1237	1543	1575	1317	1209	1032	804	383	179	205	901	1302	1334
RELEASE	14505	415	264	370	1161	1530	1385	1680	1707	1390	924	494	162	188	880	1063	893
STOR CHANGE	-90	279	42	24	76	13	191	-364	-498	-357	-120	-110	17	17	21	239	442
STORAGE	15131	15409	15452	15476	15552	15565	15755	15391	14893	14536	14415	14305	14322	14339	14360	14599	15041
ELEV FTMSL	1594.5	1595.5	1595.7	1595.8	1596.1	1596.1	1596.8	1595.5	1593.6	1592.1	1591.7	1591.2	1591.3	1591.4	1591.4	1592.4	1594.1
DISCH KCFS	15.8	13.9	19.0	20.7	19.5	24.9	23.3	27.3	27.8	23.4	15.0	16.6	11.7	11.8	14.3	17.3	15.5
POWER																	
AVE POWER MW		169	231	251	237	301	283	331	333	278	178	196	138	140	169	205	186
PEAK POW MW		646	647	647	649	649	652	646	636	629	627	625	625	625	626	631	639
ENERGY GWH	2107.6	60.7	38.7	54.2	170.4	224.3	203.5	246.2	247.8	200.1	132.8	70.7	23.3	26.9	126.1	152.7	129.2
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	14376	415	264	370	1161	1530	1385	1673	1683	1359	897	481	157	181	866	1063	893
RELEASE	14376	415	264	370	1161	1530	1385	1673	1683	1359	897	481	157	181	866	1063	893
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	15.8	13.9	19.0	20.7	19.5	24.9	23.3	27.2	27.4	22.8	14.6	16.2	11.3	11.4	14.1	17.3	15.5
POWER																	
AVE POWER MW		66	89	97	91	116	109	127	128	108	73	82	57	58	71	85	74
PEAK POW MW		517	509	509	509	509	509	509	509	521	538	538	538	538	538	538	529
ENERGY GWH	830.5	23.8	15.0	21.0	65.8	86.7	78.4	94.7	95.3	77.8	54.2	29.3	9.6	11.1	52.8	63.2	51.8
--FORT RANDALL--																	
NAT INFLOW	627	101	47	61	125	91	174	49	35		-28	-11	-5	-6	-42	-21	56
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	143							10	32	39	29	11	5	5	12		
REG INFLOW	14781	515	311	430	1282	1612	1547	1694	1671	1313	839	459	147	170	808	1039	946
RELEASE	14781	223	177	430	1282	1612	1547	1694	1671	1580	1558	699	173	170	705	689	572
STOR CHANGE	0	291	134	0	0			0	0	-267	-719	-240	-26	0	103	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3282	2563	2323	2297	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1352.0	1342.0	1338.0	1337.5	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	9.9	7.5	12.7	24.1	21.5	26.2	26.0	27.5	27.2	26.6	25.3	23.5	12.4	10.7	11.5	11.2	9.9
POWER																	
AVE POWER MW		62	108	203	182	221	219	232	229	221	200	174	91	78	84	85	79
PEAK POW MW		351	356	356	356	356	356	356	356	345	305	287	285	285	293	319	339
ENERGY GWH	1463.8	22.5	18.1	43.9	131.2	164.6	157.9	172.8	170.5	159.2	148.5	62.7	15.3	15.0	62.9	63.5	55.3
--GAVINS POINT--																	
NAT INFLOW	1394	93	44	56	134	150	161	91	81	86	118	57	26	30	80	80	107
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	5	-10	-22	5	-9	0	-3	1	1	2	3	20	3	-1	0	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	16015	322	211	464	1416	1734	1684	1740	1735	1661	1666	750	215	198	769	769	681
RELEASE	16015	322	211	464	1416	1734	1684	1740	1722	1636	1666	750	215	198	769	769	719
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	12.5	10.8	15.2	26.0	23.8	28.2	28.3	28.3	28.0	27.5	27.1	25.2	15.5	12.5	12.5	12.5	12.5
POWER																	
AVE POWER MW		38	53	89	82	96	96	96	96	96	95	88	55	44	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	669.9	13.6	8.9	19.2	58.7	71.4	69.3	71.6	71.3	68.8	70.6	31.8	9.2	8.5	33.0	33.0	30.7
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1311	151	70	91	175	212	112	131	94	75	44	31	14	17	13	25	56
DEPLETION	277	7	3	4	23	36	32	40	38	25	11	7	3	3	14	15	15
REGULATED FLOW AT SIOUX CITY																	
KAF	17049	465	278	551	1568	1910	1764	1831	1778	1686	1699	774	227	211	768	779	760
KCFS		15.6	20.0	30.8	26.4	31.1	29.6	29.8	28.9	28.3	27.6	26.0	16.3	13.3	12.5	12.7	13.2
--TOTAL--																	
NAT INFLOW	21500	1290	602	774	1958	2862	5264	2889	1150	958	978	452	211	241	378	549	946
DEPLETION	2806	8	4	5	119	616	1592	1238	328	-179	-92	-162	-76	-86	-202	-186	-120
CHAN STOR	-1	83	-10	-22	-34	-62	10	1	1	40	36	4	21	3	-51	-23	2
EVAPORATION	1892							117	368	459	395	176	82	93	202		
STORAGE	46559	47459	47769	47966	48203	48477	50395	50099	48776	47808	46820	46486	46485	46511	46070	46003	46311
SYSTEM POWER																	
AVE POWER MW		561	707	868	891	1136	1096	1168	1166	1007	783	778	579	558	691	791	751
PEAK POW MW		2202	2202	2204	2207	2210	2233	2227	2210	2203	2175	2155	2153	2154	2117	2140	2152
ENERGY GWH	7937.9	201.9	118.8	187.4	641.7	845.3	788.8	869.2	867.6	725.0	582.6	279.9	97.2	107.1	514.0	588.4	523.0
DAILY GWH		13.5	17.0	20.8	21.4	27.3	26.3	28.0	28.0	24.2	18.8	18.7	13.9	13.4	16.6	19.0	18.0
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

TIME OF STUDY 13:49:06 STUDY NO 17

VALUES IN 1000 AF EXCEPT AS INDICATED

	29FEB16	2016												2017			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	6841	232	108	139	553	1089	1687	758	325	291	388	188	88	100	296	251	348
DEPLETION	510	-25	-12	-15	21	293	581	262	16	-114	-61	-42	-20	-22	-124	-136	-92
EVAPORATION	488							30	93	117	102	46	22	25	53		
MOD INFLOW	5843	257	120	154	532	796	1106	466	216	288	347	184	86	98	367	387	440
RELEASE	5658	149	69	89	417	615	536	553	553	421	307	149	69	95	523	584	528
STOR CHANGE	186	108	50	65	115	181	570	-87	-338	-133	40	35	16	3	-156	-197	-88
STORAGE	11775	11883	11933	11998	12114	12295	12865	12778	12440	12307	12347	12382	12398	12401	12245	12048	11960
ELEV FTMSL	2218.3	2219.0	2219.2	2219.6	2220.2	2221.2	2224.3	2223.9	2222.0	2221.3	2221.5	2221.7	2221.8	2221.8	2221.0	2219.9	2219.4
DISCH KCFS	9.0	5.0	5.0	5.0	7.0	10.0	9.0	9.0	9.0	7.1	5.0	5.0	5.0	6.0	8.5	9.5	9.5
POWER																	
AVE POWER MW		65	65	65	91	129	118	119	118	92	65	65	65	79	111	123	123
PEAK POW MW		149	150	150	151	152	155	154	152	152	152	152	152	152	151	150	150
ENERGY GWH	892.4	23.3	10.9	14.0	65.4	96.3	85.0	88.3	87.9	66.6	48.6	23.6	11.0	15.1	82.4	91.7	82.5
--GARRISON--																	
NAT INFLOW	10335	476	222	285	792	1247	2960	1780	567	438	472	186	87	99	169	247	309
DEPLETION	1124	2	1	1	17	185	800	710	130	-126	-39	-140	-65	-74	-123	-92	-63
CHAN STOR	-5	42			-21	-31	10			20	21			-10	-26	-10	
EVAPORATION	575							35	111	138	120	54	25	29	62		
REG INFLOW	14289	665	290	373	1171	1646	2706	1588	880	866	719	420	196	229	727	913	900
RELEASE	14059	417	194	250	1041	1568	1369	1353	1353	1078	861	417	194	222	1168	1353	1222
STOR CHANGE	230	248	96	123	129	78	1337	236	-473	-211	-141	3	1	7	-442	-440	-322
STORAGE	14410	14658	14754	14877	15006	15084	16422	16657	16184	15973	15831	15834	15836	15843	15402	14962	14639
ELEV FTMSL	1824.4	1825.4	1825.7	1826.2	1826.7	1827.0	1831.8	1832.6	1830.9	1830.2	1829.7	1829.7	1829.7	1829.7	1828.1	1826.5	1825.3
DISCH KCFS	22.0	14.0	14.0	14.0	17.5	25.5	23.0	22.0	22.0	18.1	14.0	14.0	14.0	14.0	19.0	22.0	22.0
POWER																	
AVE POWER MW		161	162	162	203	295	271	264	263	215	166	166	166	166	224	256	253
PEAK POW MW		424	425	427	429	430	447	450	444	441	439	440	440	440	434	428	423
ENERGY GWH	1997.4	57.9	27.1	35.0	145.9	219.3	194.9	196.3	195.8	155.1	123.7	59.8	27.9	31.9	166.3	190.2	170.2
--OAHE--																	
NAT INFLOW	1957	306	143	183	271	195	414	211	98	113	23	19	9	10	-135	-15	113
DEPLETION	752	25	12	15	52	77	160	195	132	32	-12	1	0	1	13	19	30
CHAN STOR	0	36			-16	-36	11	4		18	19			0	-23	-14	0
EVAPORATION	525							33	102	126	109	49	23	26	57		
REG INFLOW	14739	734	325	418	1245	1650	1634	1340	1216	1050	806	385	180	205	940	1305	1305
RELEASE	14504	396	254	357	1132	1532	1345	1688	1718	1526	1021	420	164	148	886	1064	854
STOR CHANGE	235	338	71	62	112	118	289	-347	-501	-476	-215	-35	16	57	54	241	451
STORAGE	15041	15378	15449	15511	15623	15741	16030	15683	15182	14706	14491	14456	14472	14530	14583	14824	15275
ELEV FTMSL	1594.1	1595.4	1595.7	1595.9	1596.4	1596.8	1597.9	1596.6	1594.7	1592.8	1592.0	1591.8	1591.9	1592.1	1592.3	1593.3	1595.0
DISCH KCFS	15.5	13.3	18.3	20.0	19.0	24.9	22.6	27.4	27.9	25.6	16.6	14.1	11.8	9.3	14.4	17.3	15.4
POWER																	
AVE POWER MW		161	222	242	231	303	276	334	337	307	198	168	140	111	172	206	185
PEAK POW MW		645	647	648	650	652	658	651	642	633	628	628	628	629	630	635	644
ENERGY GWH	2115.5	57.9	37.3	52.3	166.3	225.2	198.6	248.6	250.8	220.7	147.0	60.4	23.5	21.4	127.7	153.6	124.2
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	14376	396	254	357	1132	1532	1345	1680	1693	1495	994	408	158	142	872	1064	854
RELEASE	14376	396	254	357	1132	1532	1345	1680	1693	1495	994	408	158	142	872	1064	854
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	15.5	13.3	18.3	20.0	19.0	24.9	22.6	27.3	27.5	25.1	16.2	13.7	11.4	8.9	14.2	17.3	15.4
POWER																	
AVE POWER MW		63	86	94	89	117	106	128	129	119	79	69	58	45	72	85	74
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	829.7	22.7	14.4	20.2	64.1	86.8	76.2	95.1	95.9	85.7	59.1	24.9	9.7	8.7	53.3	63.3	49.6
--FORT RANDALL--																	
NAT INFLOW	744	120	56	72	149	108	207	58	41		-33	-13	-6	-7	-50	-25	66
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146							10	32	39	31	12	5	5	12		
REG INFLOW	14892	515	310	428	1277	1631	1540	1710	1688	1449	929	382	147	129	807	1036	917
RELEASE	14892	223	176	428	1277	1631	1540	1710	1688	1595	1572	703	263	155	704	686	543
STOR CHANGE	0	291	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	9.9	7.5	12.7	24.0	21.5	26.5	25.9	27.8	27.4	26.8	25.6	23.6	18.9	9.8	11.4	11.2	9.8
POWER																	
AVE POWER MW		62	107	202	182	224	218	234	231	224	205	179	139	72	84	85	78
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1479.6	22.5	18.0	43.7	130.7	166.5	157.2	174.4	172.1	161.6	152.7	64.5	23.4	13.8	62.7	63.2	52.5
--GAVINS POINT--																	
NAT INFLOW	1444	97	45	58	139	156	167	94	83	89	122	59	27	31	83	83	111
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	5	-10	-22	5	-10	1	-4	1	1	2	4	9	17	-3	1	3
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	16177	325	211	464	1416	1759	1684	1759	1753	1679	1685	756	294	198	769	769	656
RELEASE	16177	325	211	464	1416	1759	1684	1759	1740	1654	1685	756	294	198	769	769	694
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	12.5	10.9	15.2	26.0	23.8	28.6	28.3	28.6	28.3	27.8	27.4	25.4	21.2	12.5	12.5	12.5	12.5
POWER																	
AVE POWER MW		38	53	89	82	97	96	97	97	96	96	89	75	44	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	676.4	13.8	8.9	19.2	58.7	72.4	69.3	72.4	72.0	69.5	71.4	32.1	12.5	8.5	33.0	33.0	29.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1479	170	79	102	197	240	127	148	106	85	49	35	16	19	14	28	63
DEPLETION	280	7	3	4	24	37	32	40	38	25	12	7	3	3	14	15	15
REGULATED FLOW AT SIOUX CITY																	
KAF	17376	488	287	562	1589	1962	1779	1867	1808	1714	1722	784	308	214	769	782	742
KCFS		16.4	20.7	31.5	26.7	31.9	29.9	30.4	29.4	28.8	28.0	26.4	22.2	13.5	12.5	12.7	13.4
--TOTAL--																	
NAT INFLOW	22800	1401	653	840	2101	3035	5562	3049	1220	1016	1021	473	221	252	377	569	1010
DEPLETION	2860	10	5	6	123	620	1609	1264	341	-181	-97	-168	-78	-90	-207	-190	-107
CHAN STOR	-7	83	-10	-22	-32	-77	23	1	1	38	43	3	9	7	-53	-24	3
EVAPORATION	1907							118	371	462	398	178	82	94	204		
STORAGE	46311	47297	47648	47898	48255	48632	50829	50630	49331	48390	47430	47112	47030	47072	46631	46584	46962
SYSTEM POWER																	
AVE POWER MW		550	694	854	877	1165	1085	1176	1175	1054	810	737	643	517	706	800	757
PEAK POW MW		2200	2201	2204	2209	2213	2239	2235	2219	2210	2194	2170	2162	2161	2125	2148	2161
ENERGY GWH	7991.0	198.0	116.6	184.4	631.3	866.4	781.2	875.2	874.5	759.2	602.7	265.2	108.1	99.3	525.4	595.0	508.6
DAILY GWH		13.2	16.7	20.5	21.0	27.9	26.0	28.2	28.2	25.3	19.4	17.7	15.4	12.4	16.9	19.2	18.2
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:06 STUDY NO 18

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB17	2017												2018			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	7200	244	114	146	582	1146	1776	798	342	306	408	198	92	106	312	264	366
DEPLETION	521	-26	-12	-16	21	293	585	269	21	-114	-62	-43	-20	-23	-125	-136	-92
EVAPORATION	497							31	96	119	104	47	22	25	54		
MOD INFLOW	6182	270	126	162	561	853	1191	498	225	301	366	194	90	103	383	400	458
RELEASE	5771	149	69	89	357	615	565	584	584	456	369	179	83	95	523	553	500
STOR CHANGE	411	121	57	73	204	238	626	-86	-359	-155	-3	15	7	8	-140	-153	-42
STORAGE	11960	12082	12138	12211	12415	12653	13279	13193	12834	12679	12677	12692	12699	12707	12567	12414	12372
ELEV FTMSL	2219.4	2220.1	2220.4	2220.8	2221.9	2223.2	2226.5	2226.1	2224.2	2223.3	2223.3	2223.4	2223.4	2223.5	2222.7	2221.9	2221.7
DISCH KCFS	9.5	5.0	5.0	5.0	6.0	10.0	9.5	9.5	9.5	7.7	6.0	6.0	6.0	6.0	8.5	9.0	9.0
POWER																	
AVE POWER MW		65	65	65	78	131	126	126	126	101	79	79	79	79	112	118	117
PEAK POW MW		150	151	151	152	154	157	156	155	154	154	154	154	154	153	152	152
ENERGY GWH	918.0	23.4	10.9	14.1	56.4	97.1	90.5	94.0	93.6	72.7	58.8	28.5	13.3	15.2	83.1	87.6	79.0
--GARRISON--																	
NAT INFLOW	10800	497	232	298	828	1303	3093	1861	593	458	493	194	90	103	176	258	323
DEPLETION	1114	1	1	1	17	184	810	726	136	-129	-44	-143	-67	-76	-132	-101	-70
CHAN STOR	5	47			-10	-41	5			19	17				-25	-5	
EVAPORATION	586							36	113	141	122	55	26	30	64		
REG INFLOW	14876	691	301	386	1158	1693	2853	1683	928	921	801	460	215	245	742	907	893
RELEASE	14372	417	194	250	1012	1476	1428	1414	1414	1213	861	417	194	222	1168	1414	1277
STOR CHANGE	504	275	106	137	146	217	1425	269	-486	-292	-60	43	20	23	-427	-507	-385
STORAGE	14639	14914	15020	15157	15303	15520	16945	17214	16728	16436	16376	16419	16439	16462	16035	15528	15144
ELEV FTMSL	1825.3	1826.3	1826.7	1827.2	1827.8	1828.6	1833.6	1834.5	1832.8	1831.8	1831.6	1831.8	1831.8	1831.9	1830.4	1828.6	1827.2
DISCH KCFS	22.0	14.0	14.0	14.0	17.0	24.0	24.0	23.0	23.0	20.4	14.0	14.0	14.0	14.0	19.0	23.0	23.0
POWER																	
AVE POWER MW		162	163	163	198	280	286	279	278	245	168	168	168	168	227	271	268
PEAK POW MW		427	429	431	433	435	454	457	451	447	447	447	447	448	442	435	430
ENERGY GWH	2065.6	58.3	27.3	35.2	142.8	208.4	205.6	207.6	207.1	176.4	125.2	60.6	28.3	32.3	168.7	201.6	180.2
--OAHE--																	
NAT INFLOW	2300	360	168	216	318	230	486	248	115	133	27	22	10	12	-159	-18	133
DEPLETION	765	25	12	15	52	78	163	200	135	32	-13	1	0	1	14	20	30
CHAN STOR	-4	36			-13	-31		4		12	29			0	-23	-18	
EVAPORATION	540							34	106	130	112	50	23	27	58		
REG INFLOW	15363	787	350	450	1264	1597	1751	1432	1288	1196	818	387	181	207	915	1358	1380
RELEASE	14845	368	241	339	1096	1536	1295	1760	1792	1606	1109	465	252	198	886	1065	836
STOR CHANGE	518	419	110	111	168	61	456	-328	-503	-410	-291	-78	-71	9	29	293	545
STORAGE	15275	15695	15804	15915	16083	16144	16601	16273	15770	15359	15068	14990	14919	14928	14956	15249	15794
ELEV FTMSL	1595.0	1596.6	1597.0	1597.4	1598.1	1598.3	1599.9	1598.8	1596.9	1595.4	1594.2	1593.9	1593.7	1593.7	1593.8	1594.9	1597.0
DISCH KCFS	15.4	12.4	17.3	19.0	18.4	25.0	21.8	28.6	29.1	27.0	18.0	15.6	18.2	12.5	14.4	17.3	15.0
POWER																	
AVE POWER MW		150	212	232	226	306	268	353	356	327	217	188	218	150	173	208	183
PEAK POW MW		651	653	655	658	660	668	662	653	645	640	638	637	637	637	643	653
ENERGY GWH	2187.0	54.1	35.5	50.1	162.5	227.7	193.2	262.4	264.7	235.3	161.8	67.7	36.6	28.7	128.7	155.1	122.8
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	14716	368	241	339	1096	1536	1295	1753	1767	1575	1082	453	246	191	872	1065	836
RELEASE	14716	368	241	339	1096	1536	1295	1753	1767	1575	1082	453	246	191	872	1065	836
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	15.4	12.4	17.3	19.0	18.4	25.0	21.8	28.5	28.7	26.5	17.6	15.2	17.7	12.1	14.2	17.3	15.0
POWER																	
AVE POWER MW		59	81	89	86	117	102	133	135	125	86	77	89	61	72	85	72
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	849.8	21.1	13.6	19.2	62.1	87.0	73.3	99.3	100.1	90.3	64.3	27.6	15.0	11.7	53.2	63.4	48.5
--FORT RANDALL--																	
NAT INFLOW	900	145	68	87	180	130	250	70	50		-40	-15	-7	-8	-60	-30	80
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146							10	32	39	31	12	5	5	12		
REG INFLOW	15389	512	308	426	1272	1657	1533	1795	1771	1529	1010	425	234	178	797	1032	913
RELEASE	15389	220	174	426	1272	1657	1533	1795	1771	1675	1653	746	350	204	694	682	539
STOR CHANGE	0	291	134		0	0		0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	9.8	7.4	12.5	23.8	21.4	26.9	25.8	29.2	28.8	28.1	26.9	25.1	25.2	12.8	11.3	11.1	9.7
POWER																	
AVE POWER MW		62	106	201	181	227	217	246	243	236	216	190	185	94	83	85	78
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1527.0	22.2	17.8	43.5	130.2	169.1	156.5	182.9	180.5	169.6	160.5	68.3	31.0	18.0	61.9	62.9	52.1
--GAVINS POINT--																	
NAT INFLOW	1500	101	47	60	144	162	173	98	86	92	127	61	28	32	87	87	115
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	5	-10	-22	5	-11	2	-7	1	1	2	3	0	23	3	0	3
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	16729	326	211	464	1416	1789	1684	1845	1839	1763	1771	800	373	254	769	769	656
RELEASE	16729	326	211	464	1416	1789	1684	1845	1826	1738	1771	800	373	254	769	769	694
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	12.5	11.0	15.2	26.0	23.8	29.1	28.3	30.0	29.7	29.2	28.8	26.9	26.9	16.0	12.5	12.5	12.5
POWER																	
AVE POWER MW		38	53	89	82	99	96	101	101	101	101	94	94	57	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	697.3	13.8	8.9	19.2	58.7	73.5	69.3	75.1	74.9	72.6	74.9	33.9	15.8	10.9	33.0	33.0	29.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1700	196	91	118	227	275	146	170	121	97	57	41	19	22	16	32	73
DEPLETION	283	7	3	4	24	37	32	40	39	26	12	7	3	3	14	15	16
REGULATED FLOW AT SIOUX CITY																	
KAF	18146	515	299	578	1619	2027	1798	1975	1908	1809	1816	834	389	272	771	786	751
KCFS		17.3	21.6	32.4	27.2	33.0	30.2	32.1	31.0	30.4	29.5	28.0	28.0	17.1	12.5	12.8	13.5
--TOTAL--																	
NAT INFLOW	24400	1543	719	925	2279	3246	5924	3245	1307	1086	1072	500	233	266	372	593	1090
DEPLETION	2877	9	4	5	123	620	1626	1292	356	-183	-104	-172	-80	-92	-216	-198	-113
CHAN STOR	0	88	-10	-22	-19	-83	7	-2	1	31	48	3	0	23	-46	-23	3
EVAPORATION	1942							121	379	471	405	181	84	95	207		
STORAGE	46962	48069	48475	48795	49313	49829	52337	52192	50857	49878	48881	48540	48380	48394	47959	47941	48396
SYSTEM POWER																	
AVE POWER MW		535	679	840	851	1160	1095	1238	1238	1135	868	796	833	609	711	811	762
PEAK POW MW		2211	2212	2217	2223	2228	2258	2255	2239	2231	2214	2190	2180	2178	2142	2166	2179
ENERGY GWH	8244.7	192.8	114.1	181.4	612.9	862.8	788.4	921.2	920.9	816.9	645.5	286.6	140.0	116.9	528.6	603.6	512.2
DAILY GWH		12.9	16.3	20.2	20.4	27.8	26.3	29.7	29.7	27.2	20.8	19.1	20.0	14.6	17.1	19.5	18.3
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:29 STUDY NO 19

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB13	2013										2014					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	5527	198	93	119	481	865	1223	624	276	251	328	161	75	86	235	215	297
DEPLETION	537	-6	-3	-4	56	215	387	297	68	-54	-43	-33	-15	-17	-107	-119	-85
EVAPORATION	481							30	93	116	100	45	21	24	52		
MOD INFLOW	4509	205	95	123	425	650	836	297	115	189	271	148	69	79	290	334	382
RELEASE	5816	179	83	107	417	553	536	553	553	443	369	179	83	95	553	584	528
STOR CHANGE	-1307	26	12	16	8	97	300	-256	-438	-254	-98	-30	-14	-16	-263	-250	-146
STORAGE	12493	12519	12531	12547	12556	12652	12953	12696	12258	12004	11906	11875	11861	11845	11582	11332	11186
ELEV FTMSL	2222.3	2222.5	2222.5	2222.6	2222.7	2223.2	2224.8	2223.4	2221.0	2219.6	2219.1	2218.9	2218.8	2218.7	2217.3	2215.8	2215.0
DISCH KCFS	12.0	6.0	6.0	6.0	7.0	9.0	9.0	9.0	9.0	7.5	6.0	6.0	6.0	6.0	9.0	9.5	9.5
POWER																	
AVE POWER MW		79	79	79	92	118	119	119	118	97	78	78	78	77	116	121	120
PEAK POW MW		153	153	153	153	154	155	154	151	150	149	149	149	149	147	146	145
ENERGY GWH	914.1	28.3	13.2	17.0	66.1	87.9	85.4	88.3	87.6	69.7	57.8	27.9	13.0	14.9	86.0	90.1	80.9
--GARRISON--																	
NAT INFLOW	7739	382	178	229	601	1103	2306	1129	377	167	408	155	72	82	141	141	267
DEPLETION	1234	23	11	14	16	100	782	669	158	-114	-21	-114	-53	-61	-86	-56	-33
CHAN STOR	26	62			-10	-21				16	15				-31	-5	
EVAPORATION	559							35	109	134	116	52	24	28	60		
REG INFLOW	11788	600	251	323	991	1536	2060	978	664	606	697	395	184	211	689	776	828
RELEASE	13392	417	194	250	952	1353	1309	1291	1291	1045	861	417	194	222	1138	1291	1166
STOR CHANGE	-1604	184	57	73	39	183	750	-313	-628	-440	-164	-22	-10	-12	-448	-515	-339
STORAGE	15295	15479	15535	15608	15647	15830	16581	16268	15640	15201	15037	15015	15005	14993	14545	14030	13691
ELEV FTMSL	1827.8	1828.4	1828.6	1828.9	1829.0	1829.7	1832.3	1831.2	1829.0	1827.4	1826.8	1826.7	1826.7	1826.6	1824.9	1823.0	1821.6
DISCH KCFS	22.5	14.0	14.0	14.0	16.0	22.0	22.0	21.0	21.0	17.6	14.0	14.0	14.0	14.0	18.5	21.0	21.0
POWER																	
AVE POWER MW		164	165	165	189	259	262	251	249	206	163	163	163	163	213	239	236
PEAK POW MW		435	436	437	437	440	449	445	437	431	429	429	428	428	422	415	410
ENERGY GWH	1893.3	59.1	27.7	35.6	135.8	192.7	188.6	187.0	185.0	148.2	121.4	58.6	27.3	31.2	158.6	177.6	158.6
--OAHE--																	
NAT INFLOW	1181	201	94	121	175	118	262	128	51	67	5	8	4	4	-103	-20	67
DEPLETION	709	24	11	15	50	73	151	182	122	30	-11	1	0	1	13	18	29
CHAN STOR	6	37			-9	-26		4		16	17			0	-22	-12	
EVAPORATION	507							32	99	122	105	47	22	25	55		
REG INFLOW	13363	631	277	356	1068	1371	1420	1210	1121	976	789	376	175	201	945	1241	1204
RELEASE	15008	457	289	403	1243	1606	1485	1717	1748	1421	950	508	188	154	919	1022	897
STOR CHANGE	-1645	175	-12	-47	-174	-234	-65	-508	-626	-445	-161	-132	-13	47	26	219	308
STORAGE	15949	16124	16112	16065	15890	15656	15591	15083	14456	14011	13850	13718	13705	13751	13777	13997	14304
ELEV FTMSL	1597.6	1598.2	1598.2	1598.0	1597.3	1596.5	1596.2	1594.3	1591.8	1590.0	1589.4	1588.8	1588.8	1589.0	1589.1	1590.0	1591.2
DISCH KCFS	16.2	15.3	20.8	22.6	20.9	26.1	25.0	27.9	28.4	23.9	15.5	17.1	13.6	9.7	15.0	16.6	16.1
POWER																	
AVE POWER MW		188	255	277	256	318	303	336	338	281	181	200	159	113	175	195	190
PEAK POW MW		659	659	658	655	651	649	640	628	619	616	613	613	614	614	619	625
ENERGY GWH	2171.0	67.8	42.9	59.8	184.0	236.3	218.0	250.3	251.6	202.5	134.8	71.8	26.6	21.8	130.0	144.8	127.9
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	14879	457	289	403	1243	1606	1485	1710	1723	1391	923	496	183	147	905	1022	897
RELEASE	14879	457	289	403	1243	1606	1485	1710	1723	1391	923	496	183	147	905	1022	897
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	16.2	15.3	20.8	22.6	20.9	26.1	25.0	27.8	28.0	23.4	15.0	16.7	13.2	9.3	14.7	16.6	16.1
POWER																	
AVE POWER MW		73	97	106	98	122	117	130	131	111	75	84	66	47	74	82	77
PEAK POW MW		517	509	509	509	509	509	509	509	521	538	538	538	538	538	538	529
ENERGY GWH	859.0	26.2	16.4	22.8	70.4	90.9	84.1	96.8	97.6	79.6	55.7	30.2	11.2	9.0	55.2	60.8	52.1
--FORT RANDALL--																	
NAT INFLOW	368	71	33	43	90	63	121	26	16	-11	-32	-13	-6	-7	-42	-21	37
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	143							10	32	39	29	11	5	5	12		
REG INFLOW	15024	526	321	445	1329	1660	1594	1708	1692	1334	861	471	172	135	848	998	931
RELEASE	15024	235	187	445	1329	1660	1594	1708	1692	1601	1580	710	199	108	722	698	557
STOR CHANGE	0	291	134			0	0	0	0	-267	-719	-239	-27	27	126	300	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3282	2563	2324	2297	2324	2450	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1352.0	1342.0	1338.0	1337.5	1338.0	1340.2	1344.8	1350.0
DISCH KCFS	10.1	7.9	13.5	24.9	22.3	27.0	26.8	27.8	27.5	26.9	25.7	23.9	14.3	6.8	11.7	11.3	10.0
POWER																	
AVE POWER MW		66	114	210	189	228	226	234	232	224	202	177	105	50	87	87	80
PEAK POW MW		351	356	356	356	356	356	356	356	345	305	287	285	287	297	319	339
ENERGY GWH	1488.9	23.6	19.2	45.4	136.0	169.3	162.7	174.2	172.6	161.2	150.6	63.7	17.6	9.6	64.7	64.6	53.8
--GAVINS POINT--																	
NAT INFLOW	1223	84	39	50	117	133	143	82	66	71	102	49	23	26	71	71	97
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	4	-11	-22	5	-9	0	-2	0	1	2	3	18	14	-9	1	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	16088	323	216	473	1446	1765	1714	1746	1741	1667	1672	753	235	143	769	769	656
RELEASE	16088	323	216	473	1446	1765	1714	1746	1728	1642	1672	753	235	143	769	769	694
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	12.5	10.9	15.6	26.5	24.3	28.7	28.8	28.4	28.1	27.6	27.2	25.3	16.9	9.0	12.5	12.5	12.5
POWER																	
AVE POWER MW		38	54	91	83	98	98	97	96	96	95	89	60	32	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	672.5	13.7	9.1	19.5	59.9	72.6	70.5	71.9	71.5	69.0	70.9	32.0	10.0	6.2	33.0	33.0	29.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	762	95	44	57	98	131	71	76	44	38	27	19	9	10	5	16	22
DEPLETION	270	7	3	4	23	36	31	39	37	25	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	16580	411	257	526	1521	1860	1754	1783	1735	1655	1688	766	241	150	761	771	701
KCFS		13.8	18.5	29.5	25.6	30.2	29.5	29.0	28.2	27.8	27.5	25.7	17.3	9.4	12.4	12.5	12.6
--TOTAL--																	
NAT INFLOW	16800	1032	481	619	1562	2413	4126	2065	830	583	838	378	176	201	307	402	787
DEPLETION	2944	48	23	29	154	452	1387	1244	410	-111	-61	-134	-62	-71	-154	-139	-71
CHAN STOR	32	104	-11	-22	-14	-56	0	3	0	33	34	4	18	14	-62	-16	2
EVAPORATION	1863							117	365	452	387	172	80	91	198		
STORAGE	48824	49499	49690	49732	49605	49650	50636	49559	47880	46499	45356	44933	44869	44914	44355	44109	44268
SYSTEM POWER																	
AVE POWER MW		608	765	927	906	1142	1124	1167	1164	1014	795	790	630	483	709	767	748
PEAK POW MW		2229	2227	2227	2225	2223	2234	2218	2196	2183	2154	2133	2130	2133	2097	2114	2123
ENERGY GWH	7998.9	218.9	128.4	200.3	652.2	849.8	809.3	868.5	865.9	730.2	591.3	284.2	105.8	92.7	527.6	570.9	502.9
DAILY GWH		14.6	18.3	22.3	21.7	27.4	27.0	28.0	27.9	24.3	19.1	18.9	15.1	11.6	17.0	18.4	18.0
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:29 STUDY NO 20

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB14	2014										2015					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	5589	200	93	120	486	875	1237	631	280	254	331	163	76	87	238	217	300
DEPLETION	517	-24	-11	-15	72	299	503	261	28	-96	-80	-39	-18	-21	-118	-130	-95
EVAPORATION	451							28	87	108	94	42	20	23	49		
MOD INFLOW	4621	225	105	135	414	576	734	342	165	242	317	159	74	85	307	347	395
RELEASE	5507	149	69	89	387	523	536	553	553	429	338	164	76	95	492	553	500
STOR CHANGE	-886	76	35	45	27	53	198	-211	-388	-187	-21	-5	-2	-10	-185	-206	-105
STORAGE	11186	11262	11297	11343	11370	11423	11622	11410	11022	10835	10814	10809	10807	10796	10612	10405	10300
ELEV FTMSL	2215.0	2215.4	2215.6	2215.9	2216.1	2216.4	2217.5	2216.3	2214.0	2212.9	2212.8	2212.8	2212.8	2212.7	2211.6	2210.3	2209.7
DISCH KCFS	9.5	5.0	5.0	5.0	6.5	8.5	9.0	9.0	9.0	7.2	5.5	5.5	5.5	6.0	8.0	9.0	9.0
POWER																	
AVE POWER MW		64	64	64	83	108	115	115	114	91	69	69	69	75	100	112	111
PEAK POW MW		145	146	146	146	146	148	146	144	142	142	142	142	142	141	139	139
ENERGY GWH	840.4	22.9	10.7	13.8	59.6	80.5	82.8	85.5	84.8	65.3	51.4	24.9	11.6	14.5	74.3	83.1	74.7
--GARRISON--																	
NAT INFLOW	7910	391	182	234	615	1128	2357	1154	385	171	417	158	74	84	144	144	273
DEPLETION	1084	15	7	9	33	170	757	637	122	-122	-31	-130	-61	-69	-113	-83	-57
CHAN STOR	5	48			-16	-21	-5			19	18		0	-5	-21	-11	
EVAPORATION	520							32	100	125	108	49	23	26	56		
REG INFLOW	11819	572	245	314	953	1459	2130	1038	716	617	696	402	188	217	671	770	830
RELEASE	12906	357	167	214	1190	1537	1309	1230	1230	951	738	357	167	190	1045	1168	1055
STOR CHANGE	-1087	215	78	100	-237	-78	821	-192	-514	-335	-42	45	21	27	-374	-399	-225
STORAGE	13691	13906	13984	14085	13847	13770	14591	14399	13886	13551	13509	13555	13576	13602	13228	12830	12604
ELEV FTMSL	1821.6	1822.5	1822.8	1823.2	1822.3	1822.0	1825.1	1824.4	1822.4	1821.1	1820.9	1821.1	1821.2	1821.3	1819.8	1818.2	1817.3
DISCH KCFS	21.0	12.0	12.0	12.0	20.0	25.0	22.0	20.0	20.0	16.0	12.0	12.0	12.0	12.0	17.0	19.0	19.0
POWER																	
AVE POWER MW		135	136	136	226	280	249	229	227	180	134	134	135	135	189	209	207
PEAK POW MW		413	414	416	412	411	423	420	413	408	407	408	408	409	403	397	394
ENERGY GWH	1751.5	48.8	22.8	29.4	162.4	208.3	179.4	170.1	168.6	129.3	100.0	48.4	22.6	25.9	140.8	155.5	139.2
--OAHE--																	
NAT INFLOW	1196	204	95	122	177	119	265	130	52	68	5	8	4	4	-104	-21	68
DEPLETION	724	25	12	15	51	75	154	187	125	30	-12	1	0	1	13	19	29
CHAN STOR	9	42			-37	-23	14	9		20	20				-25	-10	
EVAPORATION	479							30	93	115	99	45	21	24	52		
REG INFLOW	12908	578	250	322	1279	1558	1434	1152	1064	894	675	319	149	170	852	1118	1094
RELEASE	14023	452	260	395	1210	1553	1452	1711	1740	1032	852	236	126	141	945	1022	896
STOR CHANGE	-1115	127	-10	-73	69	5	-18	-559	-676	-138	-176	83	23	29	-93	96	198
STORAGE	14304	14431	14421	14347	14416	14421	14403	13843	13167	13029	12853	12936	12959	12987	12894	12991	13189
ELEV FTMSL	1591.2	1591.7	1591.7	1591.4	1591.7	1591.7	1591.6	1589.3	1586.5	1585.9	1585.2	1585.5	1585.6	1585.7	1585.3	1585.8	1586.6
DISCH KCFS	16.1	15.2	18.7	22.1	20.3	25.3	24.4	27.8	28.3	17.3	13.8	7.9	9.1	8.9	15.4	16.6	16.1
POWER																	
AVE POWER MW		180	222	262	241	298	288	326	327	199	159	91	104	102	176	190	185
PEAK POW MW		627	627	626	627	627	627	615	601	598	593	595	596	597	594	597	601
ENERGY GWH	1976.1	64.8	37.3	56.5	173.2	222.1	207.7	242.8	243.3	143.5	118.1	32.8	17.5	19.7	130.9	141.5	124.6
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	13895	452	260	395	1210	1553	1452	1703	1716	1001	825	224	120	135	930	1022	896
RELEASE	13895	452	260	395	1210	1553	1452	1703	1716	1001	825	224	120	135	930	1022	896
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	16.1	15.2	18.7	22.1	20.3	25.3	24.4	27.7	27.9	16.8	13.4	7.5	8.7	8.5	15.1	16.6	16.1
POWER																	
AVE POWER MW		72	88	104	95	118	114	130	131	82	68	38	44	43	76	82	77
PEAK POW MW		517	509	509	509	509	509	509	509	538	538	538	538	538	538	538	529
ENERGY GWH	803.8	25.9	14.7	22.4	68.5	88.0	82.3	96.5	97.2	59.1	50.4	13.7	7.4	8.3	56.7	60.8	52.0
--FORT RANDALL--																	
NAT INFLOW	378	73	34	44	92	65	124	27	16	-11	-32	-14	-6	-7	-43	-22	38
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	137							10	32	37	26	10	5	5	12		
REG INFLOW	14055	523	294	438	1298	1609	1564	1702	1685	947	765	200	109	122	872	997	931
RELEASE	14055	232	160	438	1298	1609	1564	1702	1685	1594	1370	200	109	122	719	697	557
STOR CHANGE	0	291	134					0	0	-647	-605	0	0	0	153	300	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	2902	2297	2297	2297	2297	2450	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1347.0	1337.5	1337.5	1337.5	1337.5	1340.2	1344.8	1350.0
DISCH KCFS	10.0	7.8	11.5	24.5	21.8	26.2	26.3	27.7	27.4	26.8	22.3	6.7	7.8	7.7	11.7	11.3	10.0
POWER																	
AVE POWER MW		65	97	207	185	221	222	233	231	218	169	49	57	56	86	87	80
PEAK POW MW		351	356	356	356	356	356	356	356	328	284	285	285	285	297	319	339
ENERGY GWH	1390.3	23.3	16.4	44.8	132.8	164.2	159.7	173.6	171.9	157.2	125.4	17.8	9.6	10.8	64.4	64.5	53.8
--GAVINS POINT--																	
NAT INFLOW	1233	85	40	51	118	134	144	82	67	72	103	49	23	26	72	72	97
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	4	-7	-25	5	-8	0	-3	1	1	8	29	-2	0	-7	1	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	15128	322	192	464	1416	1716	1684	1740	1735	1661	1470	268	125	143	769	769	656
RELEASE	15128	322	192	464	1416	1716	1684	1740	1722	1636	1470	268	125	143	769	769	694
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	12.5	10.8	13.9	26.0	23.8	27.9	28.3	28.3	28.0	27.5	23.9	9.0	9.0	9.0	12.5	12.5	12.5
POWER																	
AVE POWER MW		38	48	89	82	95	96	96	96	96	84	32	32	32	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	632.7	13.6	8.1	19.2	58.8	70.7	69.3	71.6	71.3	68.8	62.5	11.6	5.4	6.2	33.0	33.0	29.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	794	99	46	59	102	136	74	79	45	40	28	20	9	11	6	17	23
DEPLETION	276	7	3	4	23	36	32	39	38	25	11	7	3	3	14	15	15
REGULATED FLOW AT SIOUX CITY																	
KAF	15646	413	235	519	1495	1816	1726	1780	1729	1651	1487	281	131	150	761	771	702
KCFS		13.9	16.9	29.1	25.1	29.5	29.0	29.0	28.1	27.8	24.2	9.5	9.5	9.5	12.4	12.5	12.6
--TOTAL--																	
NAT INFLOW	17100	1051	490	630	1590	2457	4201	2103	845	594	852	384	179	205	313	407	799
DEPLETION	2795	24	11	14	188	608	1482	1181	338	-161	-109	-155	-72	-83	-191	-175	-105
CHAN STOR	13	94	-7	-25	-48	-53	8	7	1	40	45	29	-2	-5	-53	-20	2
EVAPORATION	1759							111	344	425	364	163	76	87	189		
STORAGE	44268	44977	45214	45286	45145	45126	46127	45165	43600	42318	41473	41597	41639	41684	41185	40977	41181
SYSTEM POWER																	
AVE POWER MW		554	655	861	910	1121	1085	1129	1125	866	683	414	441	444	672	724	705
PEAK POW MW		2168	2166	2167	2165	2164	2177	2161	2138	2131	2083	2086	2087	2088	2052	2068	2078
ENERGY GWH	7394.8	199.3	110.1	186.0	655.4	833.7	781.1	840.2	837.1	623.2	507.8	149.1	74.1	85.2	500.1	538.4	473.9
DAILY GWH		13.3	15.7	20.7	21.8	26.9	26.0	27.1	27.0	20.8	16.4	9.9	10.6	10.7	16.1	17.4	16.9
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:29 STUDY NO 21

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB15	2015										2016					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	5895	212	99	127	513	922	1305	666	295	267	349	172	80	92	251	229	317
DEPLETION	496	-30	-14	-18	65	293	501	268	33	-96	-82	-38	-18	-20	-117	-129	-103
EVAPORATION	433							27	83	104	90	41	19	22	47		
MOD INFLOW	4966	241	112	145	448	629	804	371	179	259	341	169	79	90	321	358	420
RELEASE	5434	149	69	89	446	584	506	523	523	398	307	149	69	87	523	523	489
STOR CHANGE	-468	92	43	55	2	45	298	-151	-344	-138	33	20	9	3	-202	-165	-69
STORAGE	10300	10393	10436	10491	10493	10537	10836	10684	10340	10202	10235	10255	10265	10268	10066	9901	9832
ELEV FTMSL	2209.7	2210.3	2210.5	2210.9	2210.9	2211.1	2212.9	2212.0	2209.9	2209.1	2209.3	2209.4	2209.5	2209.5	2208.2	2207.2	2206.8
DISCH KCFS	9.0	5.0	5.0	5.0	7.5	9.5	8.5	8.5	8.5	6.7	5.0	5.0	5.0	5.5	8.5	8.5	8.5
POWER																	
AVE POWER MW		62	62	62	93	118	106	106	106	83	62	62	62	68	104	104	103
PEAK POW MW		139	140	140	140	140	142	141	139	138	138	138	139	139	137	136	135
ENERGY GWH	812.9	22.3	10.4	13.4	67.1	87.7	76.4	79.1	78.5	59.4	45.9	22.2	10.4	13.0	77.7	77.3	72.0
--GARRISON--																	
NAT INFLOW	8842	437	204	262	687	1261	2635	1290	430	191	466	177	82	94	161	161	305
DEPLETION	1052	3	1	2	-4	194	812	655	129	-133	-44	-138	-64	-74	-124	-92	-71
CHAN STOR	6	43			-27	-21	11	0		19	18			-5	-32		0
EVAPORATION	512							32	99	123	107	48	22	26	55		
REG INFLOW	12718	626	272	349	1110	1630	2339	1126	725	618	729	415	194	224	720	776	865
RELEASE	13293	387	180	232	1071	1537	1309	1230	1230	996	830	402	187	214	1107	1230	1150
STOR CHANGE	-575	239	91	117	39	92	1030	-104	-505	-378	-101	13	6	10	-387	-454	-285
STORAGE	12604	12843	12934	13052	13091	13183	14214	14110	13605	13227	13126	13139	13145	13155	12769	12315	12029
ELEV FTMSL	1817.3	1818.3	1818.6	1819.1	1819.3	1819.6	1823.7	1823.3	1821.3	1819.8	1819.4	1819.5	1819.5	1819.5	1817.9	1816.1	1814.9
DISCH KCFS	19.0	13.0	13.0	13.0	18.0	25.0	22.0	20.0	20.0	16.7	13.5	13.5	13.5	13.5	18.0	20.0	20.0
POWER																	
AVE POWER MW		142	143	143	198	275	246	227	225	186	150	149	150	150	198	217	214
PEAK POW MW		398	399	401	401	403	418	416	409	403	402	402	402	402	396	390	385
ENERGY GWH	1777.4	51.2	24.0	31.0	142.8	204.5	177.1	168.7	167.3	134.2	111.3	53.8	25.1	28.7	147.1	161.3	149.2
--OAHE--																	
NAT INFLOW	1272	217	101	130	188	127	282	138	55	72	6	9	4	5	-111	-22	72
DEPLETION	736	25	12	15	51	76	157	191	128	31	-12	1	0	1	13	19	29
CHAN STOR	-5	29			-24	-34	15	10		17	17				-23	-10	
EVAPORATION	453							29	87	108	94	42	20	23	50		
REG INFLOW	13371	608	270	347	1184	1554	1449	1158	1069	946	771	367	171	195	910	1179	1193
RELEASE	13961	441	276	384	1192	1533	1429	1704	1736	1030	852	236	126	141	948	1022	911
STOR CHANGE	-589	167	-5	-37	-8	22	19	-546	-667	-84	-82	131	45	54	-37	157	283
STORAGE	13189	13356	13351	13314	13306	13327	13347	12800	12133	12049	11967	12099	12144	12198	12161	12317	12600
ELEV FTMSL	1586.6	1587.3	1587.3	1587.1	1587.1	1587.2	1587.3	1584.9	1582.0	1581.6	1581.2	1581.8	1582.0	1582.2	1582.1	1582.8	1584.0
DISCH KCFS	16.1	14.8	19.8	21.5	20.0	24.9	24.0	27.7	28.2	17.3	13.9	7.9	9.1	8.9	15.4	16.6	15.8
POWER																	
AVE POWER MW		171	229	248	231	287	277	317	318	194	155	89	102	100	173	187	179
PEAK POW MW		605	605	604	604	604	605	592	577	575	573	576	577	578	577	581	588
ENERGY GWH	1920.5	61.7	38.5	53.6	166.4	213.6	199.4	235.8	236.4	139.5	115.3	31.9	17.1	19.2	128.7	138.9	124.6
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	13832	441	276	384	1192	1533	1429	1696	1712	999	825	223	120	135	933	1022	911
RELEASE	13832	441	276	384	1192	1533	1429	1696	1712	999	825	223	120	135	933	1022	911
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	16.1	14.8	19.8	21.5	20.0	24.9	24.0	27.6	27.8	16.8	13.4	7.5	8.6	8.5	15.2	16.6	15.8
POWER																	
AVE POWER MW		70	93	101	94	117	112	129	130	82	68	38	44	43	76	82	76
PEAK POW MW		517	509	509	509	509	509	509	509	538	538	538	538	538	538	538	529
ENERGY GWH	800.3	25.3	15.6	21.8	67.5	86.8	81.0	96.1	96.9	58.9	50.4	13.7	7.4	8.3	56.9	60.8	52.9
--FORT RANDALL--																	
NAT INFLOW	430	83	39	50	105	74	141	31	18	-12	-37	-16	-7	-8	-49	-25	43
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	137							10	32	37	26	10	5	5	12		
REG INFLOW	14045	523	314	433	1293	1598	1558	1699	1683	944	761	197	107	120	869	994	951
RELEASE	14045	232	180	433	1293	1598	1558	1699	1683	1591	1366	197	108	120	716	694	577
STOR CHANGE	0	291	134				0	0	0	-647	-605	0	0	0	153	300	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	2902	2297	2297	2296	2297	2450	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1347.0	1337.5	1337.5	1337.5	1337.5	1340.2	1344.8	1350.0
DISCH KCFS	10.0	7.8	12.9	24.3	21.7	26.0	26.2	27.6	27.4	26.7	22.2	6.6	7.7	7.6	11.6	11.3	10.0
POWER																	
AVE POWER MW		65	109	205	184	219	221	233	231	218	168	49	57	56	86	86	80
PEAK POW MW		351	356	356	356	356	356	356	356	328	284	285	285	285	297	319	339
ENERGY GWH	1389.4	23.3	18.4	44.3	132.4	163.1	159.1	173.3	171.7	156.9	125.1	17.5	9.5	10.7	64.1	64.2	55.8
--GAVINS POINT--																	
NAT INFLOW	1284	88	41	53	123	139	150	85	69	75	107	51	24	27	75	75	102
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	4	-10	-22	5	-8	0	-3	1	1	8	29	-2	0	-8	1	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	15170	325	211	464	1416	1709	1684	1740	1735	1661	1470	268	125	143	769	769	681
RELEASE	15170	325	211	464	1416	1709	1684	1740	1722	1636	1470	268	125	143	769	769	719
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	12.5	10.9	15.2	26.0	23.8	27.8	28.3	28.3	28.0	27.5	23.9	9.0	9.0	9.0	12.5	12.5	12.5
POWER																	
AVE POWER MW		38	53	89	82	95	96	96	96	96	84	32	32	32	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	634.4	13.8	8.9	19.2	58.7	70.4	69.3	71.6	71.3	68.8	62.5	11.6	5.4	6.2	33.0	33.0	30.7
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	977	121	57	73	125	167	91	98	56	49	35	25	11	13	7	21	28
DEPLETION	277	7	3	4	23	36	32	40	38	25	11	7	3	3	14	15	15
REGULATED FLOW AT SIOUX CITY																	
KAF	15870	439	264	533	1518	1840	1743	1798	1740	1660	1494	286	133	152	762	775	732
KCFS		14.8	19.0	29.9	25.5	29.9	29.3	29.2	28.3	27.9	24.3	9.6	9.6	9.6	12.4	12.6	12.7
--TOTAL--																	
NAT INFLOW	18700	1158	540	694	1741	2690	4604	2308	923	642	926	417	195	222	334	439	867
DEPLETION	2755	6	3	4	144	627	1538	1211	353	-171	-124	-163	-76	-87	-201	-183	-127
CHAN STOR	-1	77	-10	-22	-46	-64	25	7	1	37	42	30	-2	-5	-63	-10	2
EVAPORATION	1708							107	334	413	353	158	74	85	184		
STORAGE	41181	41970	42233	42369	42401	42560	43908	43107	41603	40380	39626	39791	39851	39918	39446	39283	39548
SYSTEM POWER																	
AVE POWER MW		549	690	848	882	1110	1059	1108	1105	858	686	419	446	448	682	720	697
PEAK POW MW		2124	2123	2124	2125	2127	2144	2129	2105	2099	2052	2056	2058	2059	2024	2041	2052
ENERGY GWH	7334.9	197.7	115.9	183.2	634.9	826.1	762.2	824.6	822.2	617.7	510.5	150.8	74.9	86.1	507.5	535.5	485.1
DAILY GWH		13.2	16.6	20.4	21.2	26.6	25.4	26.6	26.5	20.6	16.5	10.1	10.7	10.8	16.4	17.3	16.7
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

TIME OF STUDY 13:49:29 STUDY NO 22

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB16	2016										2017					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	5983	214	100	129	521	936	1324	676	299	271	355	175	81	93	255	233	321
DEPLETION	511	-29	-13	-17	65	294	505	275	37	-96	-84	-40	-18	-21	-121	-131	-95
EVAPORATION	422							26	81	101	88	40	19	21	46		
MOD INFLOW	5050	243	113	146	456	642	819	375	181	266	351	174	81	93	330	364	416
RELEASE	5379	149	69	89	446	492	536	553	553	399	307	149	69	79	492	523	472
STOR CHANGE	-328	94	44	56	10	150	283	-178	-373	-133	44	25	12	13	-162	-159	-56
STORAGE	9832	9926	9970	10027	10036	10186	10470	10291	9919	9786	9830	9855	9867	9881	9719	9560	9504
ELEV FTMSL	2206.8	2207.4	2207.6	2208.0	2208.1	2209.0	2210.7	2209.6	2207.3	2206.5	2206.8	2206.9	2207.0	2207.1	2206.1	2205.0	2204.7
DISCH KCFS	8.5	5.0	5.0	5.0	7.5	8.0	9.0	9.0	9.0	6.7	5.0	5.0	5.0	5.0	8.0	8.5	8.5
POWER																	
AVE POWER MW		61	61	61	92	98	111	111	110	82	61	61	61	61	97	103	102
PEAK POW MW		136	136	137	137	138	140	139	136	135	135	136	136	136	135	133	133
ENERGY GWH	795.1	22.0	10.3	13.2	66.1	73.0	80.0	82.8	82.1	58.8	45.3	22.0	10.3	11.7	72.3	76.4	68.8
--GARRISON--																	
NAT INFLOW	9140	452	211	271	710	1303	2723	1334	444	198	482	182	85	97	167	167	315
DEPLETION	1122	-1	-1	-1	12	210	837	687	134	-136	-49	-142	-66	-76	-126	-94	-66
CHAN STOR	0	38			-27	-5	-11			25	18			0	-32	-5	0
EVAPORATION	502							31	97	121	104	47	22	25	54		
REG INFLOW	12895	640	281	361	1117	1579	2411	1169	766	637	752	426	199	227	698	778	853
RELEASE	13283	387	180	232	1101	1537	1309	1230	1230	996	830	402	187	214	1107	1230	1111
STOR CHANGE	-388	253	100	129	16	42	1102	-60	-464	-359	-78	24	11	13	-408	-452	-258
STORAGE	12029	12282	12383	12511	12528	12570	13672	13611	13148	12789	12711	12735	12746	12759	12350	11899	11641
ELEV FTMSL	1814.9	1815.9	1816.3	1816.9	1816.9	1817.1	1821.6	1821.3	1819.5	1818.0	1817.7	1817.8	1817.9	1817.9	1816.2	1814.3	1813.2
DISCH KCFS	20.0	13.0	13.0	13.0	18.5	25.0	22.0	20.0	20.0	16.7	13.5	13.5	13.5	13.5	18.0	20.0	20.0
POWER																	
AVE POWER MW		140	141	141	201	270	242	224	222	184	148	148	148	148	195	214	212
PEAK POW MW		389	391	393	393	394	410	409	402	397	396	396	396	396	390	383	379
ENERGY GWH	1751.7	50.4	23.6	30.5	144.4	201.1	174.3	166.3	165.1	132.5	110.0	53.2	24.8	28.4	145.4	159.3	142.3
--OAHE--																	
NAT INFLOW	1295	221	103	132	192	130	287	141	56	73	6	9	4	5	-113	-23	73
DEPLETION	752	25	12	15	52	77	160	195	132	32	-12	1	0	1	13	19	30
CHAN STOR	0	35			-27	-32	15	10		17	17				-23	-10	
EVAPORATION	440							28	85	105	91	41	19	22	48		
REG INFLOW	13386	617	272	349	1214	1558	1451	1158	1069	949	774	368	172	196	909	1177	1154
RELEASE	13783	379	244	342	1193	1528	1422	1702	1734	1030	852	236	126	141	949	1022	883
STOR CHANGE	-396	238	28	7	21	30	29	-544	-666	-81	-79	132	46	55	-39	156	271
STORAGE	12600	12839	12867	12874	12895	12925	12953	12409	11743	11662	11583	11716	11762	11817	11777	11933	12204
ELEV FTMSL	1584.0	1585.1	1585.2	1585.2	1585.3	1585.5	1585.6	1583.2	1580.1	1579.8	1579.4	1580.0	1580.2	1580.5	1580.3	1581.0	1582.3
DISCH KCFS	15.8	12.7	17.5	19.2	20.0	24.9	23.9	27.7	28.2	17.3	13.9	7.9	9.1	8.9	15.4	16.6	15.9
POWER																	
AVE POWER MW		145	200	219	229	283	273	313	314	192	153	88	101	99	171	185	178
PEAK POW MW		593	594	594	595	595	596	583	567	565	563	567	568	569	568	572	578
ENERGY GWH	1875.7	52.3	33.6	47.2	164.7	210.8	196.4	233.1	233.6	137.9	114.0	31.6	16.9	19.0	127.4	137.5	119.5
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	13654	379	244	342	1193	1528	1422	1694	1710	999	825	223	120	135	934	1022	883
RELEASE	13654	379	244	342	1193	1528	1422	1694	1710	999	825	223	120	135	934	1022	883
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	15.8	12.7	17.5	19.2	20.0	24.9	23.9	27.6	27.8	16.8	13.4	7.5	8.6	8.5	15.2	16.6	15.9
POWER																	
AVE POWER MW		60	82	90	94	116	112	129	130	82	68	38	44	43	77	82	76
PEAK POW MW		517	509	509	509	509	509	509	509	538	538	538	538	538	538	538	529
ENERGY GWH	790.1	21.7	13.8	19.4	67.6	86.6	80.6	96.0	96.8	58.9	50.4	13.7	7.4	8.3	57.0	60.8	51.2
--FORT RANDALL--																	
NAT INFLOW	447	87	40	52	108	77	147	32	19	-13	-38	-16	-7	-9	-51	-26	45
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	137							10	32	37	26	10	5	5	12		
REG INFLOW	13884	464	283	393	1297	1596	1557	1698	1682	943	760	197	107	120	868	993	925
RELEASE	13884	173	149	393	1297	1596	1557	1698	1682	1590	1365	197	107	120	715	693	551
STOR CHANGE	0	291	134					0	0	-647	-605	0	0	0	153	300	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	2902	2297	2297	2296	2297	2450	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1347.0	1337.5	1337.5	1337.5	1337.5	1340.2	1344.8	1350.0
DISCH KCFS	10.0	5.8	10.8	22.0	21.8	26.0	26.2	27.6	27.4	26.7	22.2	6.6	7.7	7.6	11.6	11.3	9.9
POWER																	
AVE POWER MW		48	91	186	184	219	221	233	231	218	168	49	57	56	86	86	79
PEAK POW MW		351	356	356	356	356	356	356	356	328	284	285	285	285	297	319	339
ENERGY GWH	1373.3	17.4	15.3	40.2	132.7	163.0	159.0	173.2	171.6	156.8	125.0	17.5	9.5	10.7	64.0	64.1	53.3
--GAVINS POINT--																	
NAT INFLOW	1297	89	42	53	124	140	151	86	70	76	108	52	24	27	76	76	103
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	8	-9	-22	0	-8	0	-3	1	1	8	29	-2	0	-8	1	3
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	15021	270	182	425	1416	1709	1684	1740	1735	1661	1470	268	125	143	769	769	656
RELEASE	15021	270	182	425	1416	1709	1684	1740	1722	1636	1470	268	125	143	769	769	694
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	12.5	9.1	13.1	23.8	23.8	27.8	28.3	28.3	28.0	27.5	23.9	9.0	9.0	9.0	12.5	12.5	12.5
POWER																	
AVE POWER MW		32	46	82	82	95	96	96	96	96	84	32	32	32	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	628.3	11.5	7.7	17.6	58.7	70.4	69.3	71.6	71.3	68.8	62.5	11.6	5.4	6.2	33.0	33.0	29.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1038	129	60	77	134	178	96	104	59	52	37	26	12	14	7	22	30
DEPLETION	280	7	3	4	24	37	32	40	38	25	12	7	3	3	14	15	15
REGULATED FLOW AT SIOUX CITY																	
KAF	15779	392	238	498	1526	1850	1748	1804	1743	1663	1495	287	134	153	762	776	709
KCFS		13.2	17.2	27.9	25.6	30.1	29.4	29.3	28.3	28.0	24.3	9.7	9.7	9.7	12.4	12.6	12.8
--TOTAL--																	
NAT INFLOW	19200	1192	556	715	1789	2764	4728	2373	947	657	950	427	199	227	341	449	887
DEPLETION	2859	3	2	2	162	646	1570	1254	366	-173	-130	-168	-78	-90	-207	-187	-113
CHAN STOR	-1	81	-9	-22	-54	-46	4	7	1	43	43	30	-2	0	-63	-15	3
EVAPORATION	1674							105	328	404	346	155	73	83	180		
STORAGE	39548	40425	40731	40924	40971	41193	42607	41823	40335	39140	38422	38603	38672	38753	38297	38142	38435
SYSTEM POWER																	
AVE POWER MW		487	621	779	881	1082	1055	1106	1103	853	682	415	442	439	671	714	691
PEAK POW MW		2101	2101	2103	2104	2106	2125	2110	2086	2081	2034	2038	2040	2041	2006	2023	2035
ENERGY GWH	7214.2	175.2	104.4	168.2	634.2	804.9	759.6	823.1	820.6	613.8	507.3	149.5	74.3	84.2	499.1	531.1	464.7
DAILY GWH		11.7	14.9	18.7	21.1	26.0	25.3	26.6	26.5	20.5	16.4	10.0	10.6	10.5	16.1	17.1	16.6
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

TIME OF STUDY 13:49:29 STUDY NO 23

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB17	2017												2018			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	6017	216	101	129	524	942	1331	680	301	273	356	176	82	94	256	234	323
DEPLETION	519	-30	-14	-18	65	295	509	283	42	-97	-86	-41	-19	-22	-122	-132	-96
EVAPORATION	384							26	79	99	86	25	12	13	45		
MOD INFLOW	5114	245	114	147	459	647	822	371	180	271	356	191	89	102	333	366	419
RELEASE	5329	149	69	89	446	492	536	553	553	402	277	134	62	79	492	523	472
STOR CHANGE	-216	97	45	58	13	155	286	-182	-374	-131	79	57	27	23	-159	-157	-53
STORAGE	9504	9601	9646	9704	9716	9871	10158	9976	9602	9471	9550	9608	9635	9657	9498	9341	9288
ELEV FTMSL	2204.7	2205.3	2205.6	2206.0	2206.0	2207.0	2208.8	2207.7	2205.3	2204.5	2205.0	2205.3	2205.5	2205.7	2204.6	2203.6	2203.3
DISCH KCFS	8.5	5.0	5.0	5.0	7.5	8.0	9.0	9.0	9.0	6.8	4.5	4.5	4.5	5.0	8.0	8.5	8.5
POWER																	
AVE POWER MW		60	61	61	91	97	110	110	109	82	54	54	55	61	96	102	102
PEAK POW MW		134	134	135	135	136	138	136	134	133	133	134	134	134	133	132	131
ENERGY GWH	780.7	21.8	10.2	13.1	65.5	72.3	79.2	82.0	81.3	58.7	40.4	19.6	9.2	11.6	71.8	75.9	68.3
--GARRISON--																	
NAT INFLOW	9260	457	213	274	720	1320	2759	1351	451	200	488	185	86	98	169	169	319
DEPLETION	1134	-1	-1	-1	6	203	840	722	140	-139	-53	-146	-68	-78	-128	-95	-67
CHAN STOR	0	38			-27	-5	-11			24	24			-5	-33	-5	0
EVAPORATION	462							31	96	119	103	29	14	16	53		
REG INFLOW	12993	646	283	364	1133	1603	2444	1152	768	646	739	435	203	234	703	781	858
RELEASE	13272	387	180	232	1101	1445	1309	1230	1230	1009	861	417	194	230	1107	1230	1111
STOR CHANGE	-279	259	103	132	32	158	1135	-78	-462	-363	-122	18	9	4	-404	-449	-253
STORAGE	11641	11900	12003	12136	12168	12326	13461	13383	12921	12558	12436	12454	12463	12467	12064	11615	11362
ELEV FTMSL	1813.2	1814.3	1814.7	1815.3	1815.4	1816.1	1820.7	1820.4	1818.6	1817.1	1816.6	1816.6	1816.7	1816.7	1815.0	1813.1	1812.0
DISCH KCFS	20.0	13.0	13.0	13.0	18.5	23.5	22.0	20.0	20.0	17.0	14.0	14.0	14.0	14.5	18.0	20.0	20.0
POWER																	
AVE POWER MW		138	139	140	198	252	241	222	221	185	152	152	152	157	194	212	210
PEAK POW MW		383	385	387	387	390	407	406	399	393	391	392	392	392	386	379	375
ENERGY GWH	1736.4	49.8	23.4	30.2	142.8	187.5	173.2	165.3	164.1	133.4	113.2	54.7	25.5	30.2	144.1	157.9	141.0
--OAHE--																	
NAT INFLOW	1305	222	104	133	193	130	289	142	57	74	6	9	4	5	-113	-23	74
DEPLETION	765	25	12	15	52	78	163	200	135	32	-13	1	0	1	14	20	30
CHAN STOR	1	36			-28	-25	8	10		16	16			-3	-18	-10	
EVAPORATION	398							27	83	101	88	25	12	14	47		
REG INFLOW	13415	619	272	350	1214	1472	1443	1155	1069	966	807	399	186	218	914	1176	1155
RELEASE	13702	437	252	340	1190	1406	1423	1700	1733	1030	853	226	121	136	950	1022	883
STOR CHANGE	-288	182	20	11	24	66	19	-545	-664	-65	-46	173	65	82	-35	154	272
STORAGE	12204	12386	12406	12416	12441	12507	12526	11981	11316	11252	11205	11379	11443	11525	11490	11644	11916
ELEV FTMSL	1582.3	1583.1	1583.2	1583.2	1583.3	1583.6	1583.7	1581.2	1578.1	1577.8	1577.6	1578.4	1578.7	1579.1	1578.9	1579.7	1580.9
DISCH KCFS	15.9	14.7	18.2	19.0	20.0	22.9	23.9	27.6	28.2	17.3	13.9	7.6	8.7	8.6	15.4	16.6	15.9
POWER																	
AVE POWER MW		166	205	215	225	258	270	309	310	189	152	83	96	94	170	183	176
PEAK POW MW		583	583	583	584	586	586	573	556	555	554	558	560	562	561	565	572
ENERGY GWH	1844.5	59.6	34.4	46.3	162.4	191.9	194.4	230.2	230.7	136.3	112.8	30.0	16.1	18.1	126.5	136.3	118.5
--BIG BEND--																	
EVAPORATION	120							8	24	31	27	8	4	4	14		
REG INFLOW	13582	437	252	340	1190	1406	1423	1692	1709	999	826	218	117	132	936	1022	883
RELEASE	13582	437	252	340	1190	1406	1423	1692	1709	999	826	218	117	132	936	1022	883
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	15.9	14.7	18.2	19.0	20.0	22.9	23.9	27.5	27.8	16.8	13.4	7.3	8.5	8.3	15.2	16.6	15.9
POWER																	
AVE POWER MW		70	85	89	94	107	112	129	130	82	68	37	43	42	77	82	76
PEAK POW MW		517	509	509	509	509	509	509	509	538	538	538	538	538	538	538	529
ENERGY GWH	786.1	25.1	14.3	19.2	67.4	79.6	80.6	95.8	96.8	58.9	50.5	13.4	7.2	8.1	57.0	60.8	51.2
--FORT RANDALL--																	
NAT INFLOW	453	88	41	53	110	78	149	33	19	-13	-39	-16	-7	-9	-52	-26	45
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	129							10	32	37	26	6	3	3	12		
REG INFLOW	13826	524	293	391	1296	1475	1560	1697	1681	943	760	195	106	119	868	993	925
RELEASE	13826	232	159	391	1296	1475	1560	1697	1681	1590	1365	195	107	119	715	693	551
STOR CHANGE	0	291	134		0	0		0	0	-647	-605	0	0	0	153	300	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	2902	2297	2297	2297	2297	2450	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1347.0	1337.5	1337.5	1337.5	1337.5	1340.2	1344.8	1350.0
DISCH KCFS	9.9	7.8	11.4	21.9	21.8	24.0	26.2	27.6	27.3	26.7	22.2	6.6	7.7	7.5	11.6	11.3	9.9
POWER																	
AVE POWER MW		65	97	185	184	203	221	233	231	218	168	48	56	55	86	86	79
PEAK POW MW		351	356	356	356	356	356	356	356	328	284	285	285	285	297	319	339
ENERGY GWH	1367.5	23.3	16.2	40.0	132.6	150.7	159.3	173.1	171.5	156.8	125.0	17.3	9.5	10.6	64.0	64.1	53.3
--GAVINS POINT--																	
NAT INFLOW	1303	90	42	54	125	141	152	87	71	76	108	52	24	27	76	76	103
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	4	-7	-20	0	-4	-4	-3	0	1	8	29	-2	0	-8	1	3
EVAPORATION	41							3	8	11	10	3	1	1	5		
REG INFLOW	14972	326	194	425	1416	1593	1684	1740	1735	1661	1470	268	125	143	769	769	656
RELEASE	14972	326	194	425	1416	1593	1684	1740	1722	1636	1470	268	125	143	769	769	694
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	12.5	11.0	13.9	23.8	23.8	25.9	28.3	28.3	28.0	27.5	23.9	9.0	9.0	9.0	12.5	12.5	12.5
POWER																	
AVE POWER MW		38	49	82	82	88	96	96	96	96	84	32	32	32	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	626.5	13.8	8.2	17.6	58.7	65.8	69.3	71.6	71.3	68.8	62.5	11.6	5.4	6.2	33.0	33.0	29.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1062	132	62	79	136	182	99	106	61	53	38	27	12	14	8	23	30
DEPLETION	283	7	3	4	24	37	32	40	39	26	12	7	3	3	14	15	16
REGULATED FLOW AT SIOUX CITY																	
KAF	15751	451	252	500	1528	1738	1751	1806	1744	1663	1496	288	134	154	763	777	708
KCFS		15.2	18.1	28.0	25.7	28.3	29.4	29.4	28.4	28.0	24.3	9.7	9.7	9.7	12.4	12.6	12.8
--TOTAL--																	
NAT INFLOW	19400	1205	562	722	1808	2793	4779	2399	960	663	957	431	201	230	344	453	894
DEPLETION	2895	2	1	1	156	641	1580	1302	381	-176	-137	-173	-81	-92	-209	-188	-114
CHAN STOR	-1	78	-7	-20	-55	-35	-8	7	0	41	47	30	-2	-8	-58	-15	3
EVAPORATION	1535							104	322	397	340	96	45	52	178		
STORAGE	38435	39265	39566	39767	39837	40216	41657	40851	39364	38184	37489	37738	37839	37947	37502	37351	37653
SYSTEM POWER																	
AVE POWER MW		537	635	771	874	1005	1050	1100	1096	851	678	407	434	442	667	710	687
PEAK POW MW		2082	2082	2084	2086	2091	2110	2095	2069	2064	2018	2024	2026	2028	1993	2010	2022
ENERGY GWH	7141.7	193.4	106.7	166.5	629.4	747.8	756.0	818.1	815.6	612.9	504.4	146.5	72.9	84.8	496.5	528.0	462.0
DAILY GWH		12.9	15.2	18.5	21.0	24.1	25.2	26.4	26.3	20.4	16.3	9.8	10.4	10.6	16.0	17.0	16.5
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB