

US Army Corps
of Engineers



Northwestern Division
Missouri River Region
Reservoir Control Center

Missouri River Main Stem Reservoirs 1999 - 2000 Annual Operating Plan



1999 - 2000



December 1999



David C. Wooster, P.E.

Dave Wooster, Power Production team leader since 1988, retired on September 30, 1999. Dave's dedication and technical expertise in the area of power production have significantly enhanced the operation of the Missouri River Main Stem Reservoir System during the 30-plus years he worked in the Reservoir Control Center. We, the staff of the Reservoir Control Center, thank Dave for his service and dedicate this 1999-2000 Annual Operating Plan to him in recognition of his contributions. We wish him and his wife, Susan, a long and happy retirement.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NORTHWESTERN DIVISION, CORPS OF ENGINEERS
12565 WEST CENTER ROAD
OMAHA, NEBRASKA 68144-3869


This Annual Operating Plan (AOP) for the Missouri River system was prepared by the Corps of Engineers' Reservoir Control Center (RCC), Missouri River Region, Northwestern Division. The plan outlines the operating objectives of the Missouri River main stem reservoirs for the coming year (August 1999 through July 2000). In addition, two sets of 5-year extensions to the AOP, through March 2006, are presented to serve as guides for longer range planning.

Beginning last year the AOP was shortened to include only the plan for future operation. Previous AOP's have included a System description and discussion of the typical operation to meet authorized purposes and a historic summary of the previous year's operation. Although not included in this AOP, they are available as separate reports upon request. To receive a copy of either the "System Description and Operation" or the "Summary of Actual 1998-99 Operations," contact the Reservoir Control Center at 12565 West Center Road, Omaha, Nebraska 68144-3869, phone (402) 697-2676. Both reports are also available at the "Reports and Publications" link on our web site at: www.nwd.usace.army.mil/rcc.

The development of this year's Draft AOP was coordinated with the Missouri River Natural Resources Committee (MRNRC), and the general public. The MRNRC recommendations for the 1999-2000 AOP were discussed at its August 11, 1999 meeting at Pierre, South Dakota, and are shown as Exhibit 1.

The Draft AOP also received review at two fall public meetings held at Pierre, South Dakota, on October 20, 1999 and at Omaha, Nebraska, on October 21, 1999. The primary purpose of these meetings was to present the Draft AOP and receive comments from all concerned. Private citizens and representatives of public and industry interest groups and Missouri River basin states attended the meetings.

The final plan presented in this report is approved as the framework within which the Missouri River Region will schedule detailed daily, weekly, and monthly regulation of the individual main stem reservoirs for the period August 1999 through 2000. No significant changes were made to the draft plan as a result of comments received during the review period. A number of clarifications and word changes were made to the draft to improve readability. The press release announcing the adopted plan for next year is shown on Exhibit 2.


Michael S. Meuleners
Colonel, Corps of Engineers
Deputy Division Engineer

MISSOURI RIVER MAIN STEM RESERVOIRS

Annual Operating Plan 1999 - 2000

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- Exhibit 1 – MRNRC 1999-2000 AOP Recommendations, August 26, 1999
Exhibit 2 – News Release Announcing 2000 AOP, December 15, 1999

ABBREVIATIONS

AOP	-	annual operating plan
ac.ft.	-	acre-feet
AF	-	acre-feet
B	-	Billion
cfs	-	cubic feet per second
COE	-	Corps of Engineers
CY	-	calendar year (January 1 to December 31)
elev	-	elevation
ft	-	feet
FY	-	fiscal year (October 1 to September 30)
GIS	-	Geographic Information System
GWh	-	gigawatt hour
KAF	-	1,000 acre-feet
Kcfs	-	1,000 cubic feet per second
kW	-	kilowatt
kWh	-	kilowatt hour
M	-	million
MAF	-	million acre-feet
MRBA	-	Missouri River Basin Association
MRNRC	-	Missouri River Natural Resources Committee
msl	-	mean sea level
MW	-	megawatt
MWh	-	megawatt hour
plover	-	piping plover
pp	-	powerplant
RCC	-	Reservoir Control Center
RM	-	river mile
tern	-	interior least tern
tw	-	tailwater
USGS	-	United States Geological Survey
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 MAIN STEM RESERVOIRS

Annual Operating Plan 1999 - 2000

I. FOREWORD

This Annual Operating Plan (AOP) presents pertinent information and tentative plans for operating the Missouri River Main Stem Reservoir System (System) for the remainder of 1999 through December 2000 under widely varying water supply conditions. It provides a framework for the development of detailed monthly, weekly, and daily regulation schedules for the System's six individual dams during the upcoming year to serve the Congressionally authorized project purposes. Regulation is directed by the Reservoir Control Center, Missouri River Region, Northwestern Division, U.S. Army Corps of Engineers (Corps). A map of the Missouri River basin is shown on *Plate 1* and the summary of engineering data for the six main stem reservoirs is shown on *Plate 2*.

This plan may require adjustments when substantial departures from expected runoff occur. Results of a 5-year extension to the AOP studies (March 2001-March 2006) will be presented in the Final AOP to serve as a guide for Western Area Power Administration's power marketing activities and those other interests that require information on reservoir conditions for long term planning.

Beginning last year the AOP was shortened to include only the plan for future operation. Previous AOP's have included a System description and discussion of the typical operation to meet authorized purposes and a historic summary of the previous year's operation. Although not included in this AOP, they are available as separate reports upon request. To receive a copy of either the "System Description and Operation" or the "Summary of Actual 1998-99 Operations," contact the Reservoir Control Center at 12565 West Center Road, Omaha, Nebraska 68144-3869, phone (402) 697-2676. Both reports are also available at the "Reports and Publications" link on our web site at: www.nwd-mr.usace.army.mil/rcc.

II. PURPOSE AND SCOPE

Beginning in 1953, projected System operation 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 operation. The Coordinating Committee on Missouri River Main Stem 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 meeting is conducted to take public input on a draft of the Annual Operating Plan, which is typically published in

early October each year. The spring meetings are conducted to update the public on the runoff forecast and projected System operation for the remainder of the year.

The spring public meetings were held in Omaha, Nebraska, on April 6, 1999, in Bismarck, North Dakota, on April 7, 1999 and in Kansas City, Missouri, on April 8, 1999. The attendees were given an update regarding the outlook for 1999 runoff and projected operation for the remainder of 1999. Two fall public meetings on the Draft AOP will be held: one at Pierre, South Dakota, on October 20, 1999, and the other at Omaha, Nebraska, on October 21, 1999.

Pre-draft AOP coordination was conducted with the Missouri River Natural Resources Committee (MRNRC). Its recommendations for the 1999 AOP were discussed at its August 11, 1999, meeting at Pierre, South Dakota, and are shown as Exhibit 1.

III. FUTURE WATER SUPPLY - AUGUST 1999 - DECEMBER 2000

To develop the forecast studies for the 1999-2000 AOP, it was necessary to estimate the appropriate water supplies to the reservoirs for the period August 1999 to December 2000. The period August through February is normally one of relatively low and stable inflows and can be forecast with reasonable reliability. Therefore, a Basic Forecast (most likely for current runoff conditions) of monthly inflows to the river reaches above the six reservoirs and the river reach from Gavins Point to Sioux City was prepared for the period August 1999-February 2000. Forecasts of the Lower Quartile and Lower Decile using 80 percent and Upper Quartile and Upper Decile using 120 percent of the Basic Forecast are also used to give a range of monthly inflows leading up to March 1, 2000, the beginning of next year's runoff season. Inflows to the System after March 1, 2000, are dependent upon many hydrological factors which are impossible to forecast at the time the AOP is prepared. Therefore, in lieu of utilizing forecasted inflows to the Missouri River above Sioux City for the period March 2000-December 2000, inflows were based on analyses of the past water supply records extending from 1898 through 1997. Runoff conditions selected for use in the AOP were the Upper Decile with a runoff of 34.5 MAF having 1 chance in 10 of being exceeded, the Upper Quartile with a runoff of 30.6 MAF having 1 chance in 4 of being exceeded, and the Median (most likely) with a runoff of 24.6 MAF having 1 chance in 2 of being exceeded. The lower range of System inflows used for the analyses in the AOP, the Lower Quartile with a runoff of 19.5 MAF having 1 chance in 4 of occurrence of less runoff and the Lower Decile with a runoff of 15.5 MAF having 1 chance in 10 of occurrence of less runoff, complete the range of inflows into the System.

The range between the AOP forecasts for Lower Decile (15.5 MAF with a 90 percent exceedence) and the Upper Decile (34.5 MAF with a 10 percent exceedence) simulates 80 percent of the historic runoffs. There is still a 20 percent chance that a runoff condition may occur that has not been simulated; i.e., 10 percent chance a runoff event could be lower than the 15.5 MAF (Lower Decile) and a 10 percent chance a runoff event could be greater than the 34.5 MAF (Upper Decile).

The estimated natural flow 1/ at Sioux City, the corresponding post-1949 water use effects, and the net flow 2/ available above Sioux City are shown in **Table I**, where several water supply conditions are quantified for the periods August-December 1999, CY 1999, and CY 2000. The natural water supply for CY 1999 (actual January 1999-July 1999 runoff plus Basic Forecast for the August 1999-December 1999 period) is estimated to total about 31.3 MAF, utilizing the Basic Forecast flows for the forecasted August-December 1999 period.

TABLE I
NATURAL AND GROSS WATER SUPPLY AT SIOUX CITY

	<u>Natural 1/</u>	<u>Post-1949 Depletions</u>	<u>Net 2/</u>
	(Volumes in 1,000 Acre-Feet)		
<u>August-December 1999</u> (Basic Forecast)			
Basic	6,100	+600	6,700
120% Basic	7,400	+600	8,000
80% Basic	4,900	+400	5,300
<u>Calendar Year 1999</u> (January-July Actual; August-December Basic Forecast)			
Basic	31,300	-1,400	29,900
120% Basic	32,600	-1,300	31,300
80% Basic	30,100	-1,600	28,500
<u>Calendar Year 2000</u> (Extended Forecast - Statistical Analysis of Past Records)			
Upper Decile	34,500	-2,000	32,500
Upper Quartile	30,600	-2,000	28,600
Median	24,600	-2,000	22,600
Lower Quartile	19,500	-1,800	17,700
Lower Decile	15,500	-1,800	13,700

1/ The word "natural" is used to designate flows 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 operation prior to 1949. 2/ The word "net" represents the total streamflow before deduction of the post-1949 irrigation, upstream storage, and other use effects.

IV. ANNUAL OPERATING PLAN FOR 1999-2000

A. General. The anticipated operation described in this AOP is designed to meet the operational objectives documented in the current Master Manual. Consideration has been given to all of the authorized project purposes including the needs of endangered species. It incorporates the lessons learned during the 6 consecutive years of drought of the mid-1980's through 1992 as well as the dramatic turnaround in runoff that caused the Great Flood of 1993, the near-record flooding repeated in both 1995 and 1996, and the unprecedented record runoff of 1997 with the first occurrence of coincident heavy plains and mountain snowpacks since the System filled. During CY 1993, the basin

above Sioux City experienced 36.2 MAF of runoff, the sixth highest in 100 years of record, bringing an abrupt end to the 6 consecutive years of the worst drought the basin had experienced since the System first filled to normal operating levels in 1967. This was followed by a near normal year with 23.9 MAF during CY 1994, a near repeat of 1993 with 37.2 MAF for CY 1995 (the third highest runoff since 1898), CY 1996 runoff of 35.6 MAF (the seventh greatest since 1898), and the CY 1997 runoff of 49.0 MAF, which is the greatest since record-keeping began in 1898.

This 1999-2000 AOP, developed for all five runoff scenarios, follows the March 15, July 1, and September 1 water-in-storage (storage) checks contained in the current Missouri River Master Water Control Manual (Master Manual) used to determine navigation flow service level, navigation season length, and the winter multipurpose System releases. Adjusted regulations for fish spawning and endangered species nesting habitat have been adopted for the three scenarios of Median, Lower Quartile, and Lower Decile runoffs with no peaking cycle at Gavins Point Dam as was implemented to conserve water during the recent drought years. For Upper Quartile and Upper Decile, other avenues of conservation and regulation will be considered to try to avoid moving and collecting eggs and/or chicks, as had to be done in 1995, 1996, and 1997.

A reanalysis of the average monthly Gavins Point releases needed to meet navigation service requirements was completed this year. The previous study, completed in 1979, was based on historical data from the period 1954 to 1979. The current study used the Daily Long Range Study (DLRS) model for the period 1950 to 1996. As part of this study the relationship between annual runoff upstream of Sioux City and the average Gavins Point release required for the navigation season was analyzed. The study concluded that generally more water was needed downstream to support navigation during years with below normal upper basin runoff than during years with higher upper basin runoff. Therefore, beginning with the 1999-2000 AOP studies, future regulation studies will use two levels of system release requirements: one for Median, Upper Quartile and Upper Decile runoff scenarios, and another for Lower Quartile and Lower Decile scenarios.

The updated release requirements for full service navigation used in the development of the 1999-2000 AOP are given in *Table II*. Releases required for minimum service navigation support are 6,000 cfs less than the numbers provided in *Table II*.

A final report detailing the procedures used in this study will be available on our Web site around mid-2000. The section of the "Missouri River Main Stem Reservoirs, System Description and Operation" report, formerly the AOP blue pages, dealing with system releases required for navigation support will also be updated on our Web site at that time.

In summary, the Upper Quartile and Upper Decile runoff scenarios follow the Master Manual with much above normal runoff prompting release increases early in the year to evacuate floodwater from the reservoirs. The Median, Lower Quartile, and Lower Decile runoffs follow the System storage checks contained in the Master Manual. In addition, the Median runoff also includes releases that provide a steady to rising lake level in the upper three large reservoirs during the spring fish spawn

period. Similar regulations have resulted in a higher fish reproduction success. Gavins Point releases will not be cycled to conserve water under any of the

TABLE II
GAVINS POINT RELEASES NEEDED TO MEET
NAVIGATION REQUIREMENTS
1950 - 1996
(Discharges in 1,000 cfs)

<u>Runoff</u> <u>Scenario</u>	<u>Month</u>								
	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Average</u>
Median, Upper Quartile, Upper Decile	26.7	28.0	27.9	31.6	33.2	32.6	32.0	31.1	30.4
Lower Quartile, Lower Decile	29.8	31.3	31.2	34.3	34.0	33.5	33.1	31.2	32.3

five studied runoff levels but may be necessary for flood control operations during the endangered species nesting period or should significant drought conditions return.

The lowest runoff scenario presented is Lower Decile. Runoff less than Lower Decile is possible, as was experienced in 1988 (12.4 MAF). One of the operational objectives of the current Master Manual is to provide for water supply requirements in the open Missouri River reaches between the reservoirs and below the System. Recent experience has shown that these water supply requirements are greater than was anticipated during the development of the guidelines documented in the current Master Manual. Also, operation to limit impacts to threatened and endangered species has resulted in higher releases during low runoff periods. Therefore, in order to meet the operational objectives of the current Master Manual, we would need to adjust the water conservation guidelines published in the Master Manual. These water conservation guidelines apply during drought periods and present criteria for season length, service level, minimum navigation season length, and nonnavigation season minimum releases. Recent studies have indicated that to meet the operational objectives of the current Master Manual, adjustments to drought water conservation guidelines would need to occur when total System storage is at or below 52 MAF on July 1. It is important to note that there are many possible combinations of potential adjustments that would result in attainment of the current Master Manual operational objectives. This year's Lower Decile studies do not show a decline of total System storage below the 52 MAF level by July 1, 2000. If future AOP studies indicate a return to significant drought conditions (i.e., 52 MAF - July 1 level or less) we would ask the Missouri River Basin Association (MRBA), the MRNRC, and other interested parties for adjustment recommendations that would best meet the operational objectives of the current Master Manual. We would facilitate discussion by providing studies to the aforementioned groups which outline the effects of the various adjustment

options. If a general agreement on reasonable adjustments cannot be attained, we will determine which adjustments best meet the current Master Manual operational objectives.

Regulation studies developed for the AOP are based on guidelines specified in the current Master Manual. Navigation flow support and winter releases from Gavins Point are determined by the volume of water in storage in the System on specified dates of March 15 and July 1. Intrasystem releases are adjusted to best serve the multiple-purpose functions of the projects with special emphasis placed on regulation for fisheries starting in early April and for endangered species beginning in early May and continuing through August.

Background information available for preparation of the 1999-2000 AOP includes 13 years of operation at Fort Peck Reservoir (1940) by itself plus 46 years of System experience as Fort Randall (1953), Garrison (1955), Gavins Point (1955), Oahe (1962), and Big Bend (1964) have been brought progressively into operation. In addition to the long period of actual regulation experience, many background operational studies for the completed System are available for guidance.

Actual System operation from January 1 to August 1, 1999, and the operating plans for each project for the remainder of 1999 with the Basic Forecast and for CY 2000 using the five alternate levels of estimated runoff described on page 2 are presented on *Plates 3 through 8*, inclusive. An exception is the omission of Big Bend, 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 operations during the period 1953 through 1998.

Plate 9 illustrates for Fort Peck, Garrison, Oahe, and Gavins Point Dams the actual reservoir releases (Regulated Flow) as well as the Missouri River flows (Unregulated Flow) that would have resulted if the reservoirs were not in place during the period January 1998 through July 1999. *Plate 10* presents past and forecasted gross monthly, average power generation, and gross peaking capability for the System.

B. Operating Plans for the Balance of the 1999 Navigation Season. Plans for the remainder of the 1999 navigation season include a continuation of Gavins Point releases in the 38,000 cubic feet per second (cfs) range until the endangered and threatened species leave in late August. Releases will then be increased to 44,000 cfs from September through November to evacuate accumulated flood control storage. The navigation season will be extended by 10 days, closing at the mouth on December 11, 1999, as a further storage evacuation measure. With the exception of Fort Peck, releases from the main stem projects will be above average to evacuate excess flood control storage. This will be the fifth consecutive season that a 10-day extension has been provided as a flood storage evacuation measure. The scheduling of a full 8-month season with a 10-day extension resulted from the July 1, 1999, System storage being at 65.0 MAF, substantially greater than the 59.0 MAF required to provide full service flows for the remainder of the season. The extra storage accumulation occurred because of above normal mountain snow with a delayed melt and much greater than normal runoff both upstream and down. Several times during the spring and summer months System release reductions were required to meet downstream flood control target constraints.

The fall of 1998 brought much above normal runoff into the reservoir system due primarily to high base flows from the record 1997 runoff season. This past year's above normal reservoir storage accumulation began with runoff from an above normal mountain snowpack (112 percent of normal) accompanied by a very small amount of plains snow accumulation. The total runoff for 1999 is expected to be slightly above an Upper Quartile runoff, but there has been a great deal of variability by reach and month in the way the runoff has occurred. January and February were 176 and 159 percent of normal, respectively. March dropped to 122 percent, and April was 100 percent of normal. The reduction during April was due to the lack of a significant plains snowcover, most of which melted during February and March. The months of May, June, and July were all above average, 143, 121, and 135 percent of normal, respectively. This is expected to result in a runoff near 31.3 MAF (124 percent of normal) by the end of the year. Gavins Point releases will be well above average through the remainder of the navigation season in order to evacuate flood control storage prior to the start of the next runoff season on March 1, 2000. The closing dates for ending the 1999 navigation season are December 2 at Sioux City, December 4 at Omaha, December 5 at Nebraska City, December 7 at Kansas City, and December 11 at the mouth of the Missouri River near St. Louis.

Forecasts for the August 1 to December 1 period indicate that 4.1 billion kilowatt hours (kWh) of energy will be generated by the System powerplants, 0.3 billion kWh above normal.

Fort Peck releases are expected to range from 4,500 to 9,000 cfs, for the most likely (Basic Forecast), throughout the remainder of the 1999 navigation season. The Basic Forecast indicates the level of Fort Peck Lake is expected to decline 0.7 feet from elevation 2237.6 feet above mean sea level (msl) to 2236.9 feet msl by the end of the navigation season, 2.0 feet higher than the 1967-1998 long term average.

Garrison releases are expected to range from 18,000 to 28,000 cfs throughout the remainder of the 1999 navigation season. The level of Lake Sakakawea is expected to decline steadily by 5.6 feet from elevation 1847.1 feet msl to 1841.5 feet msl by the end of the navigation season, 3.0 feet above the long term average.

Oahe releases during August through November will be in excess of navigation requirements in order to provide the required backup to System release requirements for flood control storage evacuation. Releases will be adjusted to serve the variable power loads. The releases will achieve the scheduled Fort Randall drawdown to elevation 1337.5 feet msl by the end of the navigation season. The Lake Oahe level will fall steadily by 8.3 feet throughout the period from elevation 1617.0 to elevation 1608.7 feet msl by the close of the navigation season, 6.9 feet higher than the long term average.

Big Bend releases will generally parallel those from Oahe. Lake Sharpe will fluctuate between 1420.0 and 1421.0 feet msl for weekly cycling during high power load periods. Reservoir fluctuations of a foot are expected during the course of most weeks in order to follow peaking power demands.

Storage lost during the week is regained during the succeeding weekend period of lower power demands.

Fort Randall releases will generally parallel those from Gavins Point. Lake Francis Case is expected to fall steadily during the August-through-November period from the 1360.2 feet msl end-of-July elevation to 1337.5 feet msl. This drawdown elevation will provide sufficient capacity to store a reasonably high level of power releases from Oahe and Big Bend during the coming winter season.

Gavins Point releases will be in the range of 38,000 to 44,000 cfs to near 22,000 cfs by the end of the extended navigation season. Lewis and Clark Lake will rise about 2 feet from elevation 1205.2 to near elevation 1207.0 feet msl throughout the remainder of the 1999 navigation season that ends on December 11. The lake level will be maintained near 1207.0 feet msl.

C. Operating Plan for the Winter of 1999-2000. In accordance with guidelines presented in the Master Manual, winter releases from the System are based on the amount of water in storage on September 1. A storage level of 58.0 MAF on this date indicates a release rate will be made to meet full service requirements the following winter and a System storage of 43.0 MAF indicates minimum service releases. Full and minimum service releases call for an average winter Fort Randall release of 15,000 and 5,000 cfs, respectively. The storage on September 1, 1999, based upon the Basic Forecast, would be 63.9 MAF, more than the 58.0 MAF required to provide a full service release of 15,000 cfs from Fort Randall Dam. Therefore, the Fort Randall winter release will be above full service in the range of 19,000 to 20,000 cfs to back up the required Gavins Point release. The Gavins Point release will be maintained at 22,000 cfs, near the 20,000 cfs release rate that is normally the maximum allowable during a winter ice jam flood potential period. In recent years, release rates near 24,000 cfs have been achieved to evacuate accumulated flood control storage without negative flooding impacts. The actual release amount during the winter period may be increased if greater than anticipated plains snowpack or runoff occurs. The higher than normal System release rates will be dependent upon downstream ice conditions and will require increased vigilance to minimize downstream flooding during cold periods. This will be the fifth consecutive winter that the System storage has required an above normal winter release to continue the evacuation of stored floodwaters. It is anticipated that this year's winter release will be adequate to serve all downstream water intakes except for very short periods that may be impacted below rapidly forming ice jams.

For the winter period from the close of the 1999 navigation season on December 11, 1999, until the opening of the 2000 navigation season on April 1, 2000, operations are expected to be as follows:

Fort Peck releases are expected to be near 10,000 cfs before the beginning of the winter period to prevent ice-jam flooding during the winter freeze-in period on the reach of the Missouri River from the dam to the Williston, North Dakota, area. Releases will then be gradually increased to 12,000 cfs for the remainder of the winter period to meet critical winter hydropower demands. Fort Peck Lake with the Basic Forecast is expected to fall steadily by 2.9 feet to the base of the flood control zone at elevation 2234.0 by March 1, the beginning of next year's runoff season. The lake would then rise to

near elevation 2235.2 feet msl by the end of the winter period on March 31, which would be 2.3 feet above normal.

Garrison releases will be adjusted to serve winter power loads and balance System storage. Releases will follow a typical pattern similar to those of previous winters with lower releases early in the winter and increased releases after the threat of flooding diminishes as the Missouri River ice conditions stabilize from the Washburn to Bismarck, North Dakota, area. Releases are scheduled at 20,000 cfs at the time of normal freeze-in in December and likely will have to be reduced for a short period to 18,000 cfs during the freeze-in in the Bismarck area in an attempt to not exceed the target 13-foot stage at the Bismarck gage. Flood stage is 16 feet. Garrison releases are expected to be 19,000 to 20,000 cfs at the beginning of the winter period and gradually increased to 26,000 cfs during the remainder of the winter. Lake Sakakawea is expected to lower from near elevation 1841.5 feet msl to the base of the flood control storage zone at elevation 1837.5 feet msl by March 1, then rise to elevation 1838.4 by March 31, which would be 2.8 feet above normal.

Oahe releases for the winter season will provide backup for the Fort Randall and Gavins Point releases plus fill the recapture space available at Fort Randall 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 between 25,000 and 21,000 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 has been coordinated with the Western Area Power Administration.

The Lake Oahe level is expected to lower gradually from elevation 1608.7 feet msl at the end of the 1999 navigation season to elevation 1607.5 by March 1, then rise to elevation 1608.6 feet msl by the end of March, 2.0 feet above normal.

Lake Sharpe will be maintained in the normal 1420.0 to 1421.0 feet msl range during the winter.

Fort Randall releases will vary from 19,000 to 20,000 cfs, consistent with both the forecasted September 1, 1999, System storage of 63.9 MAF and the need to evacuate stored floodwaters from the System by the beginning of next year's runoff season on March 1, 2000. Lake Francis Case is expected to rise from a low of about 1337.5 feet msl at the end of the 1999 navigation season to near elevation 1350.0, the seasonal base of flood control, by March 1. However, if the plains snowpack flood potential below Oahe is quite low at that time, measures will be taken to raise Lake Francis Case to near elevation 1353.0 by March 1. It is likely that a Lake Francis Case level above elevation 1353 feet msl, to as high as 1355.2, will be reached by the end of the winter period on March 31 if runoff conditions permit. It is anticipated that the level of Lake Francis Case above the White River delta near Chamberlain, South Dakota, will remain at a higher elevation than the lake below the delta from late October through December, due to the damming effect of this delta area.

Gavins Point releases will be reduced gradually beginning in early December to near a winter level ranging from 20,000 to 22,000 cfs, near the 20,000 cfs which is normally the maximum allowable during a winter ice jam flood potential period. It may be necessary to reduce these releases to the 15,000 to 16,000 cfs range if extremely cold temperatures result in significant ice jam problems. These releases should be adequate to maintain water levels necessary during freeze-in for downstream water intakes; releases may be reduced if localized ice bridging would result in a flood threat. Lewis and Clark Lake generally will be near elevation 1207 feet msl until late February when it will be lowered to elevation 1206 feet msl for controlling spring floods, primarily from the Niobrara River and Ponca Creek along the Fort Randall to Gavins Point reach.

System storage, for all runoff conditions, is expected to be near 57.1 MAF by March 1, 2000, the beginning of next year's runoff season. This is the base of the flood control zone and the top of the multipurpose carryover storage zone.

D. Operations During the 2000 Navigation Season. All of the five runoff scenarios studied for this year's AOP follow the guidelines presented in the Master Manual for navigation service flow support and season length. Steady System releases or repetitive daily project patterns will be held from early May at the beginning of the endangered species nesting season to the end of the nesting in late August. All runoff scenarios except Lower Quartile and Lower Decile would provide rising pool levels in the spring fish spawn period.

All five runoff scenarios studied for this year's AOP are based on gradually increasing System releases to provide navigation season flow rates at the mouth of the Missouri near St. Louis by April 1, 2000, the normal navigation season opening date. The corresponding dates at upstream locations are: Sioux City, Iowa, March 23; Omaha, Nebraska, March 25; Nebraska City, Nebraska, March 26; and Kansas City, Missouri, March 28. The studies illustrated on *Plates 3 through 8* and summarized in *Table III* are based on providing greater than full service flows and a full 8-month season extended by 10 days as a reservoir flood storage evacuation measure for both the Upper Quartile and Upper Decile runoff scenarios. The normal runoff scenario characterized by the Median and Lower Quartile studies indicates full service flows with a full 8-month season. Lower Decile would have flows of about 1,100 cfs below full service beginning on July 1 for the remainder of the 8-month season.

**TABLE III
NAVIGATION SERVICE SUPPORT
FOR THE 2000 SEASON**

	Runoff Scenario (MAF)	2000 System Storage		Flow Level Above or Below Full Service (in cfs)		Length of Season (Months)
		March 15 (MAF)	July 1 (MAF)	Spring	Fall	
U.D.	34.5	58.2	63.9	+10,300	+15,500	8 + 10 days
U.Q.	30.6	58.0	63.1	+8,300	+10,500	8 + 10 days

Med	24.6	57.8	61.8	0	0	8
L.Q.	19.5	57.5	59.4	0	0	8
L.D.	15.5	57.5	57.4	0	-1,100	8

Navigation flow support for the 2000 season will be determined by actual reservoir System storage on March 15 and July 1 following the Master Manual guidelines. Gavins Point releases may be quite variable during the 2000 navigation season but, for Median, Lower Quartile, and Lower Decile, are expected to range from 26,700 to 34,000 cfs. For Upper Quartile, release increases result in a range from 35,000 to 42,500 cfs; for the Upper Decile, Gavins Point releases would range from a minimum 37,000 cfs to a maximum 47,500 cfs. Release reductions necessary to minimize downstream flooding are not reflected in these monthly averages but will be instituted as conditions warrant.

Planned storages and releases for the System and individual reservoirs within the System are shown on *Plates 3 through 8*. Ample regulatory storage space exists in the System to control flood inflows under all conditions studied. *Table III* summarizes the navigation service support projected for the 2000 navigation season.

Summary of Reservoir Regulation Activities for Endangered Species and Fish Propagation Enhancement

The 1999-2000 AOP forecast releases from the main stem reservoirs during the 1999 endangered bird nesting season are similar to those in last year's AOP. Releases from Gavins Point will be in the 33,000 to 34,000 cfs range mid-May through August under Median through Lower Decile inflows. Spilling will be required beginning in the spring through fall under Upper Quartile and Upper Decile inflow.

Assuming the System storage starts near 57.1 MAF on March 1, 2000, the 1999-2000 AOP Upper Quartile and Upper Decile inflows would provide System storage increases that would necessitate beginning evacuation of stored water in the spring even before the traditional bird nesting season. The AOP Upper Decile and Upper Quartile plans show that a further increase in System release, involving spills, may be possible beginning in May when birds start to nest. This action could be done to provide safe nesting habitat through August. If an Upper Decile year or greater occurs, the Corps will work closely with the U.S. Fish and Wildlife Service, as was done during 1995 through 1997, to ensure the best possible outcome for the birds without jeopardizing flood control.

Fort Peck releases, which will be in the 6,500 to 10,000 cfs range in April 2000, will be increased to a 9,000 to 14,000 cfs average in May. Some areas of clean sand habitat should still be available from the 1999-2000 winter flows. Should greater than Upper Decile inflows appear likely, project releases may be increased above those flows shown in June or July as the need to evacuate floodwater will be imperative.

The Median, Lower Quartile, and Lower Decile AOP plans show daily releases will be in the 9,500 to 11,000 cfs range from June through August to enhance bird nesting. The Upper Quartile plan

has the June through August release rate averaging 13,000 cfs while the Upper Decile averages 14,000 cfs. Upper Quartile through Lower Decile AOP plans show monthly average releases reduced 500 cfs in July and August to help safeguard young birds. Hourly peaking restrictions of no more than 6 hours of 14,000 cfs will be in place during the nesting season unless inflows are Upper Quartile or greater.

If flood flows enter the Missouri River below the project during nesting, hourly releases will 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. April releases will aid trout spawning below the project. A rising pool in the April-to-May sport fish spawning season will be dependent upon the ever changing daily inflow pattern to the reservoir but appears possible with all AOP plans.

Garrison daily average releases will be increased in May 2000 to prevent birds from nesting on low sandbar areas below the project. The increase will be to 34,000 cfs with the Upper Quartile plan and 26,000 to 24,000 cfs with plans showing Median to Lower Decile. Should Upper Decile or greater inflows appear likely, project releases will be at high levels for birds in mid-May as evacuation of floodwater will be necessary. Hourly peaking will be limited to no more than 30,000 cfs for 6 hours if the daily average release is lower than 28,000 cfs. This will limit peak stages below the project for nesting birds.

A Lake Sakakawea elevation rise in the spring conducive to successful sport fish spawn will be dependent upon the pattern of inflow at the time. A significant establishment of vegetative cover is also a prerequisite. It appears from the current AOP forecast that a near constant or rising pool into critical spawning areas might be possible from April through June with Median or greater inflows. Only very large spring inflows and/or low releases will put water in the vegetative spawning zone during the upcoming year.

Oahe releases in the spring and summer will back up those from Gavins Point. Because Garrison's releases will be adjusted for endangered bird reproduction, this could be a determining factor in whether the Oahe pool rises or falls. If flows into the System are greater than Median, Oahe's elevation in the spring will likely be steady or rising. The Upper Decile plan shows April-May elevations below the 1617.4 feet msl crest reached in 1999. Under all AOP plans, the Oahe pool will fall during the summer.

Fort Randall will be operated to provide for a pool elevation near 1355 during the fish spawn period and not draw the lake below elevation 1337.5 feet msl in the fall for water intakes. At Fort Randall, hourly releases during the 2000 nesting season will be limited to 37,000 cfs, except for Upper Quartile and Upper Decile runoff. Daily average flows may be increased every third day to preserve the capability of sustaining this third-day release later in the summer if conditions turn dry.

Gavins Point will be operated to enhance tern and plover productivity in the Fort Randall to Gavins Point reach as well as below the project. The Gavins Point pool will be operated near 1206 feet msl in the spring and early summer with variations day to day due to rainfall runoff. Greater fluctuations

occur in the river, increasing the risk of nest inundation in the upper end of the Gavins Point pool. Several factors contribute to the increased risk: Gavins Point release restrictions, because there are greater numbers of endangered species nesting below the Gavins Point project which must be preserved; unexpected incremental rainfall runoff between Fort Randall and Gavins Point, which results in sudden pool rises because the Gavins Point project has a smaller storage capacity than the other System reservoirs; the operation of Gavins Point for flood control, which necessitates sudden release reductions to prevent downstream bird losses; and very large release years. All these factors when combined make it difficult and sometimes impossible to prevent inundation of nests in the upper end of Lewis and Clark Lake. The pool will be increased to elevation 1207.0 feet msl following the nesting season. The System support for the 2000 navigation season is summarized in *Table III*.

Included in the 2000 operational plan for Median, Lower Quartile, and Lower Decile runoff is an adjusted release regulation at Gavins Point to increase the release by early May when the birds arrive to provide the System flexibility necessary to meet navigation target flows later in the nesting season when downstream tributary flows begin their normal decline in July and August. An increase followed by more constant flows out of Gavins Point should help minimize taking of nests, eggs, or chicks. Cycling up releases every third day is not planned during the 2000 nesting season, except during downstream flood control operations. The Lower Decile plan shows slightly less than full service navigation flows in July and August. The U.S. Fish and Wildlife Service 1989 Biological Opinion on System operations calls for providing created habitat for the birds below Gavins Point in the summer of 2000 for monthly operating plan releases which average greater than 30,000 cfs but less than 39,000 cfs. The upper three projects will be operated to best meet authorized purposes while enhancing fish reproduction to the extent possible.

Summary of Habitat Activities

The Omaha District is developing a Biological Opinion Implementation Plan, scheduled to be available in November 1999, which will discuss habitat conservation activities to be undertaken in Calendar Year 2000. Habitat conservation measures to be undertaken in future years will be discussed in Omaha District's Long Term Habitat Conservation Plan which will be available in draft form in September 2000.

V. SUMMARY OF RESULTS EXPECTED IN 1999-2000

With System operations in accordance with the 1999-2000 AOP outlined in the preceding pages, the following results can be expected.

A. Flood Control. All runoff scenarios studied will begin next year's runoff season on March 1, 2000, near the desired 57.1 MAF base of annual flood control and multiple use zone. Therefore, the entire System flood control zone will be available to store runoff. The System will be available to significantly reduce peak discharges for all floods that may originate above the System.

In addition, the entire carryover multiple use conservation storage will be filled and available to provide support for all of the other multiple purposes of the System.

B. Water Supply and Water Quality Control. With above normal winter releases being provided for all five 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. It is anticipated that during severe cold spells it will not be necessary to increase Gavins Point releases as was required during the recent drought years to help alleviate water supply problems created by ice jamming downstream. In fact, it may be necessary to reduce releases during periods of downstream ice formation to prevent flooding.

In addition, all minimum water quality and water supply requirements downstream of the System dams will be met under the above normal releases for all flow conditions.

C. Irrigation. Scheduled releases from the System reservoirs will be more than ample to meet the volumes of flow required for irrigation diversions from the Missouri River. Tributary irrigation water usage is fully accounted for in the estimates of water supply.

D. Navigation. Service to navigation in 2000 would be scheduled at full service or greater flow support for the four studies of Lower Quartile, Median, Upper Quartile, and Upper Decile. After July 1 the Lower Decile runoff condition has slightly reduced flow support for the remainder of the 8-month season. Although these studies, as shown in *Table III*, provide a comparison of typical flow support under varying runoff conditions that cover 80 percent of the historic runoff conditions, the actual rate of flow support for the 2000 navigation season will be based on actual System storage on March 15 and July 1, 2000.

The 2000 navigation season would have full service flow targets for the Median and Lower Quartile runoff scenarios and greater than full service flows for both the Upper Quartile and Upper Decile runoff conditions with a full 8-month season for Median, Lower Quartile and Lower Decile runoff and an 8-month season with 10-day extensions for both Upper Quartile and Upper Decile runoffs. For Lower Decile runoff, reduced flow support would be provided for the remainder of the 8-month navigation season after the July 1 storage check. The anticipated service level and season length for all runoff conditions studied are shown in *Table III*.

E. Power. *Tables IV* and *V* give the estimated monthly System load requirements and hydropower supply of the Eastern Division, P-S MBP, from August 1999 through December 2000. 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.

F. Recreation, Fish and Wildlife. The basic operations 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 controlled river. Special operational adjustments incorporating specific objectives for these purposes will be accomplished whenever possible. 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 and for increasing usage of the regulated reaches of the Missouri River downstream of the reservoirs. Boat ramps that were lowered during the recent drought should be adequate to provide lake access next year even under the Lower Decile runoff scenario.

G. System Storage. If presently anticipated runoff estimates based upon normal precipitation materialize, System storage will total about 57.7 MAF by the close of CY 1999. This year-end storage would be 0.3 MAF less than the 58.0 MAF experienced on December 31, 1998, but 2.0 MAF above the 1967 to 1998 average. Since the System first filled to normal operating levels in 1967, the lowest end-of-December storage was 40.9 MAF in 1990. The previous lowest storage prior to the recent 6 consecutive years of drought was 50.9 MAF in 1981. The end-of-year storages have ranged from a maximum of 60.9 MAF, which occurred in 1975, to the 1990 minimum of 40.9 MAF. Under the five runoff conditions of inflow analyzed for this AOP, the total System storage at the end of next year on December 31, 2000, would be approximately as shown on *Table VI*.

H. Summary of Water Use by Functions. Anticipated water use in CY 1999, under the plan of operation with the Basic Forecast of water supply, is shown in *Table VII*. Actual water use data for CY 1998 are included for information and comparison.

Under the planned operations, estimated water use in CY 2000, which will be subject to reappraisal next year, also is shown in *Table VII* for the various levels of water supply.

VI. TENTATIVE PROJECTION OF OPERATIONS THROUGH MARCH 2006

(Not Completed Until Final Plan is Adopted)

TABLE iv AND

Table v

V:\public\oop99\oopsales.xls

PEAKING CAPABILITY AND SALES AND
ENERGY GENERATION AND SALES

TABLE VI
ANTICIPATED DECEMBER 31, 2000 STORAGE IN MAIN STEM SYSTEM

Water Supply Condition	Total (12/31/00)	Above Minimum Pools 1/	Unfilled Carryover Storage 2/	Total Change CY 2000
(Volumes in 1,000 Acre-Feet)				
Upper Decile	57,700	39,600	0	200
Upper Quartile	57,900	39,800	0	400
Median	57,300	39,200	0	- 400
Lower Quartile	52,500	34,400	4,600	- 5,400
Lower Decile	49,700	31,600	7,400	- 8,200

1/ Net usable storage above 18.1 million-acre-foot System minimum pool level established for power, recreation, irrigation diversions, and other purposes.

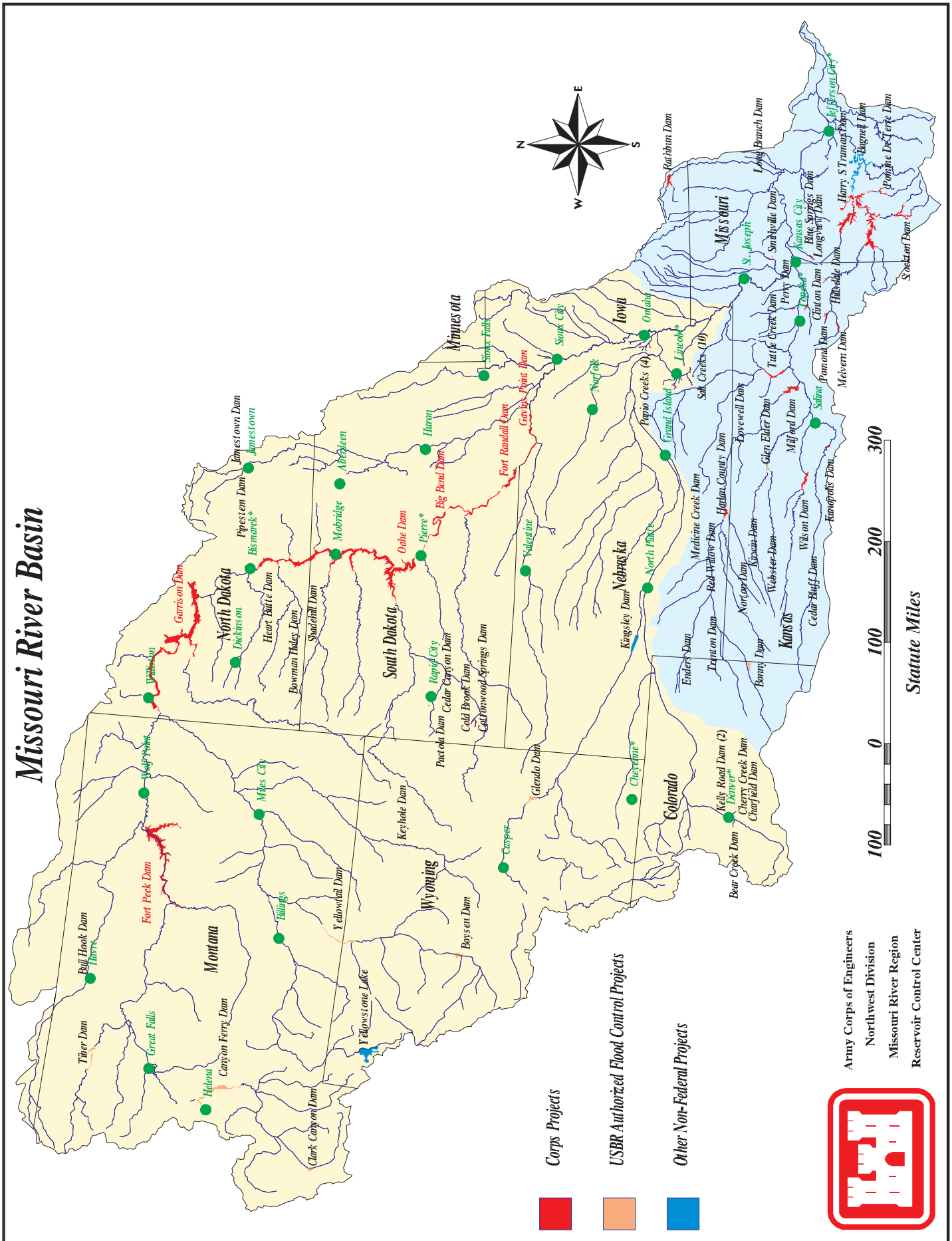
2/ System base of flood control zone containing 57.1 million acre-feet.

TABLE VII
MISSOURI RIVER MAIN STEM
WATER USE FOR CALENDAR YEARS 1998, 1999, AND 2000 ABOVE SIOUX CITY, IOWA
in Million Acre-Feet (MAF)

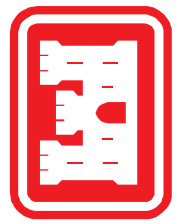
	CY 1998 Actual	CY 1999 Basic Forecast	Forecast for Calendar Year 2000				Lower Quartile	Lower
			Upper Decile	Upper Quartile	Median	Lower Quartile		
<u>Decile</u>								
Upstream Depletions (1)								
Irrigation, Tributary Reservoir Evaporation & Other Uses	1.7	1.8						
Tributary Reservoir Storage Change	-0.2	-0.2						
Total Upstream Depletions	1.5	1.6	2.0	2.0	2.0	1.9	1.8	
Main Stem Reservoir Evaporation (2)	2.3	2.2	1.2	1.4	1.8	2.1	2.0	
Sioux City Flows								
Navigation Season								
Unregulated Flood Inflows Between Gavins Point & Sioux City (3)	0.0	0.0						
Navigation Service Requirement	15.1	15.0	17.6	17.1	15.9	16.3	15.8	
Supplementary Releases								
Endangered Species (4)	0.4	0.0	0.0	0.0	0.7	0.3	0.2	
Flood Evacuation (5)	1.5	6.2	7.5	4.2	0.0	0.0	0.0	
Nonnavigation Season								
Flows	4.3	4.2	4.3	3.9	4.4	4.1	3.8	
Flood Evacuation Releases (6)	2.3	2.3	1.7	1.6	0.2	0.2	0.1	
Main Stem System Storage Change		-1.0	-0.2	0.2	0.4	-0.4	-5.4	
		-8.2						
Total	26.4	31.3	34.5	30.6	24.6	19.5	15.5	
Project Releases								
Fort Peck	6.4	6.1	9.2	8.4	6.7	6.4	6.3	
Garrison	15.9	17.9	21.8	19.8	16.3	16.1	14.9	
Oahe	16.9	20.3	25.0	22.1	18.2	19.2	18.8	
Big Bend	17.2	20.5	24.9	22.1	18.1	19.1	18.7	
Fort Randall	18.2	22.4	26.3	23.1	18.8	19.4	18.8	
Gavins Point	21.6	24.8	28.4	24.9	20.2	20.5	19.9	

- (1) Tributary uses, above the 1949 level of development including agricultural depletions and tributary storage effects.
- (2) Net Evaporation is shown for 2000.
- (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) Increased releases required to maintain navigation release flexibility during the endangered species nesting season.
- (5) 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.
- (6) Releases for flood control storage evacuation in excess of a 15,000 cfs Fort Randall release.

Missouri River Basin



- Corps Projects
- USBR Authorized Flood Control Projects
- Other Non-Federal Projects



Army Corps of Engineers
Northwest Division
Missouri River Region
Reservoir Control Center

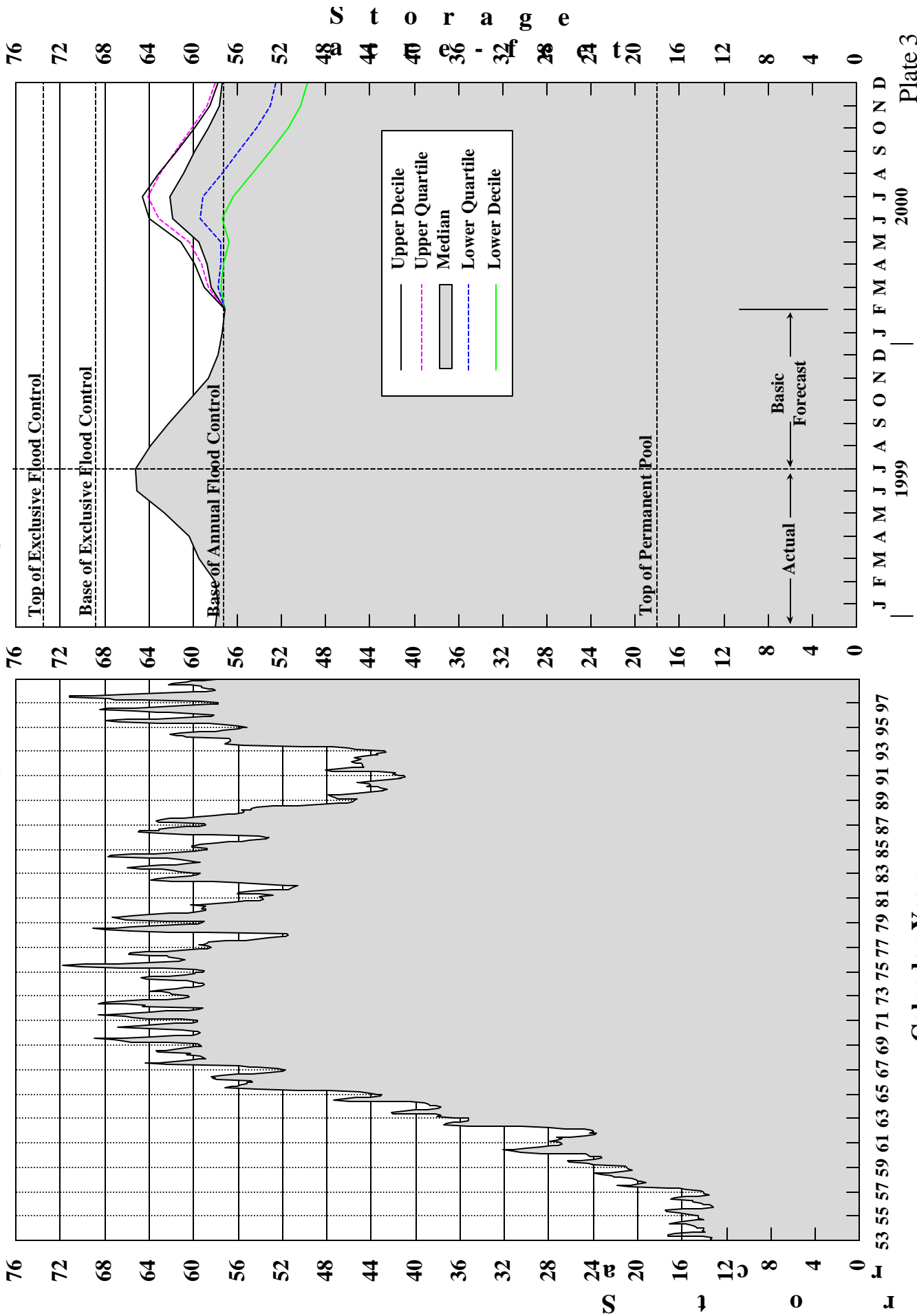
Summary of Engineering Data -- Missouri River Main Stem Reservoirs							
Item No.	Subject	Fort Peck Lake		Garrison Dam - Lake Sakakawea		Oahe Dam - Lake Oahe	
1	Location of Dam	Near Glasgow, Montana		Near Garrison, ND		Near Pierre, SD	
2	River Mile - 1960 Mileage	Mile 1771.5		Mile 1389.9		Mile 1072.3	
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 246,000 acres		1854 msl 380,000 acres		1620 msl 374,000 acres	
27	Max. normal op. pool elev. & area	2246 msl 240,000 acres		1850 msl 364,000 acres		1617 msl 360,000 acres	
28	Base flood control elev & area	2234 msl 212,000 acres		1837.5 msl 307,000 acres		1607.5 msl 312,000 acres	
29	Min. operating pool elev. & area	2160 msl 90,000 acres		1775 msl 128,000 acres		1540 msl 117,000 acres	
Storage allocation & capacity							
30	Exclusive flood control	2250-2246 975,000 a.f.		1854-1850 1,489,000 a.f.		1620-1617 1,102,000 a.f.	
31	Flood control & multiple use	2246-2234 2,717,000 a.f.		1850-1837.5 4,222,000 a.f.		1617-1607.5 3,201,000 a.f.	
32	Carryover multiple use	2234-2160 10,785,000 a.f.		1837.5-1775 13,130,000 a.f.		1607.5-1540 13,461,000 a.f.	
33	Permanent	2160-2030 4,211,000 a.f.		1775-1673 4,980,000 a.f.		1540-1415 5,373,000 a.f.	
34	Gross	2250-2030 18,688,000 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	18,100 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 - 109,250, 2 - 95,000		112,290	
52	Plant capacity in kW	185,250		517,750		786,030	
53	Dependable capacity in kW (9)	181,000		388,000		534,000	
54	Avg. annual energy, million kWh (12)	1,167		2,467		2,896	
55	Initial generation, first and last unit	July 1943 - June 1961		January 1956 - October 1960		April 1962 - June 1963	
56	Estimated cost September 1996 completed project (13)	\$158,428,000		\$299,938,000		\$346,521,000	

Summary of Engineering Data -- Missouri River Main Stem Reservoirs

Big Bend Dam - Lake Sharpe		Fort Randall Dam - Lake Francis Case		Gavins Point Dam - Lewis & Clark Lake		Total	Item No.	Remarks
21 miles upstream Chamberlain, SD		Near Lake Andes, SD		Near Yankton, SD			1	(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.
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		620,000 at elev 1379.3		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	31,000 acres	1,194,000 acres	26	
1422 msl	60,000 acres	1365 msl	95,000 acres	1208 msl	28,000 acres	1,147,000 acres	27	
1420 msl	57,000 acres	1350 msl	77,000 acres	1204.5 msl	24,000 acres	989,000 acres	28	
1415 msl	51,000 acres	1320 msl	38,000 acres	1204.5 msl	24,000 acres	450,000 acres	29	
1423-1422	60,000 a.f.	1375-1365	985,000 a.f.	1210-1208	59,000 a.f.	4,670,000 a.f.	30	
1422-1420	117,000 a.f.	1365-1350	1,309,000 a.f.	1208-1204.5	90,000 a.f.	11,656,000 a.f.	31	
		1350-1320	1,607,000 a.f.			38,983,000 a.f.	32	
1420-1345	1,682,000 a.f.	1320-1240	1,517,000 a.f.	1204.5-1160	321,000 a.f.	18,084,000 a.f.	33	
1423-1345	1,859,000 a.f.	1375-1240	5,418,000 a.f.	1210-1160	470,000 a.f.	73,393,000 a.f.	34	
November 1963		January 1953		August 1955			35	
25 March 1964		24 November 1953		22 December 1955			36	
4,300 a.f.	430 yrs.	18,300 a.f.	250 yrs.	2,600 a.f.	180 yrs.	92,500 a.f.	37	
None (7)		Left Bank		None (7)			38	
		4 - 22' diameter					39	
		1013					40	
		2 - 11' x 23' per conduit, vertical lift, cable suspension					41	
1385 (11)		1229		1180 (11)			42	
		Elev 1375					43	
		32,000 cfs - 128,000 cfs					44	
1351-1355(10)	25,000-100,000 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		2,435,650 kw	52	
497,000		293,000		74,000		1,967,000 kw	53	
1,051		1,849		752		10,182 million kWh	54	
October 1964 - July 1966		March 1954 - January 1956		September 1956 - January 1957		July 1943 - July 1966	55	
							56	
\$107,498,000		\$199,066,000		\$49,617,000		\$1,161,068,000	56	

Corps of Engineers, U.S. Army
Compiled by
Missouri River Division
May 1999

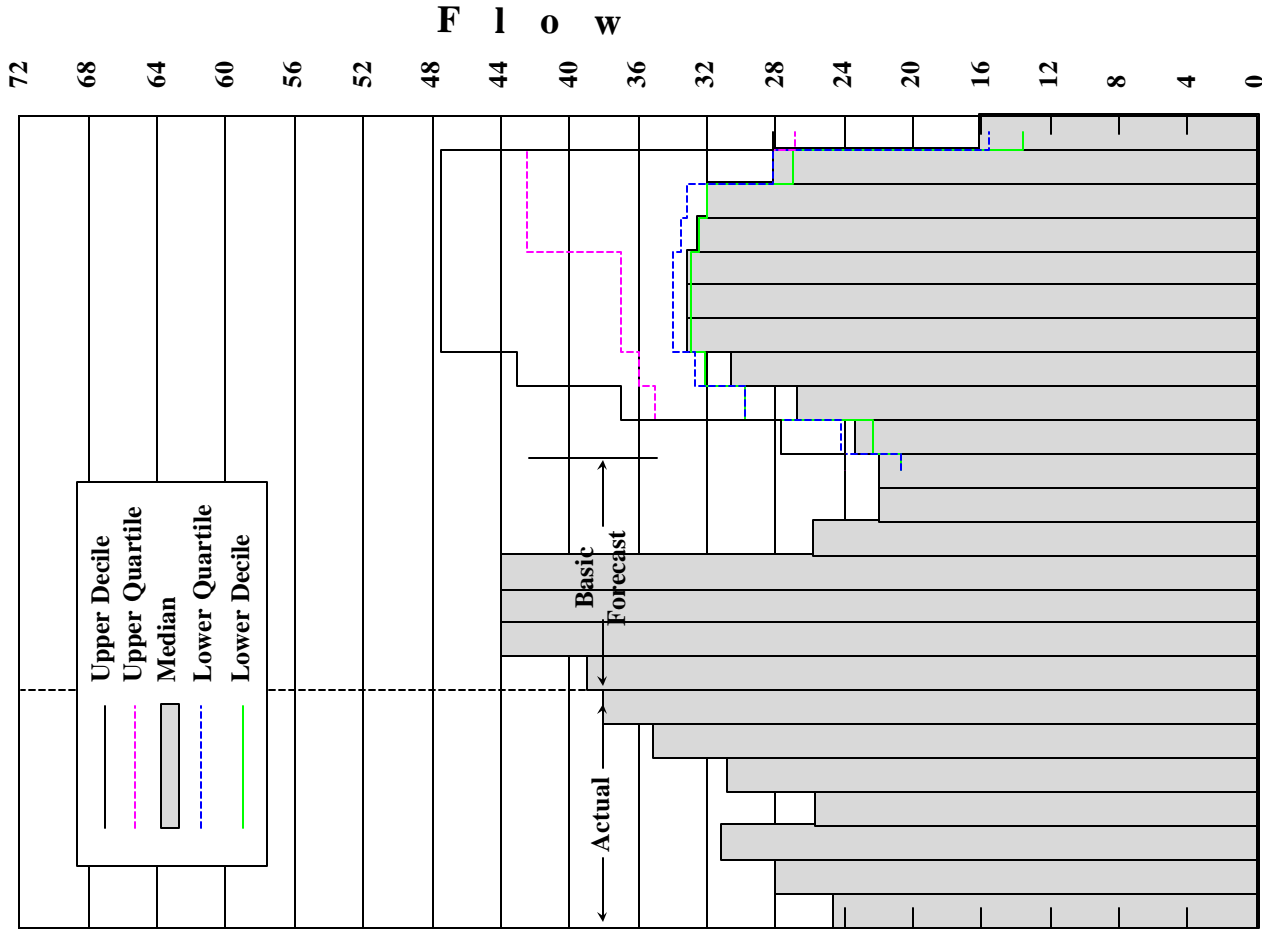
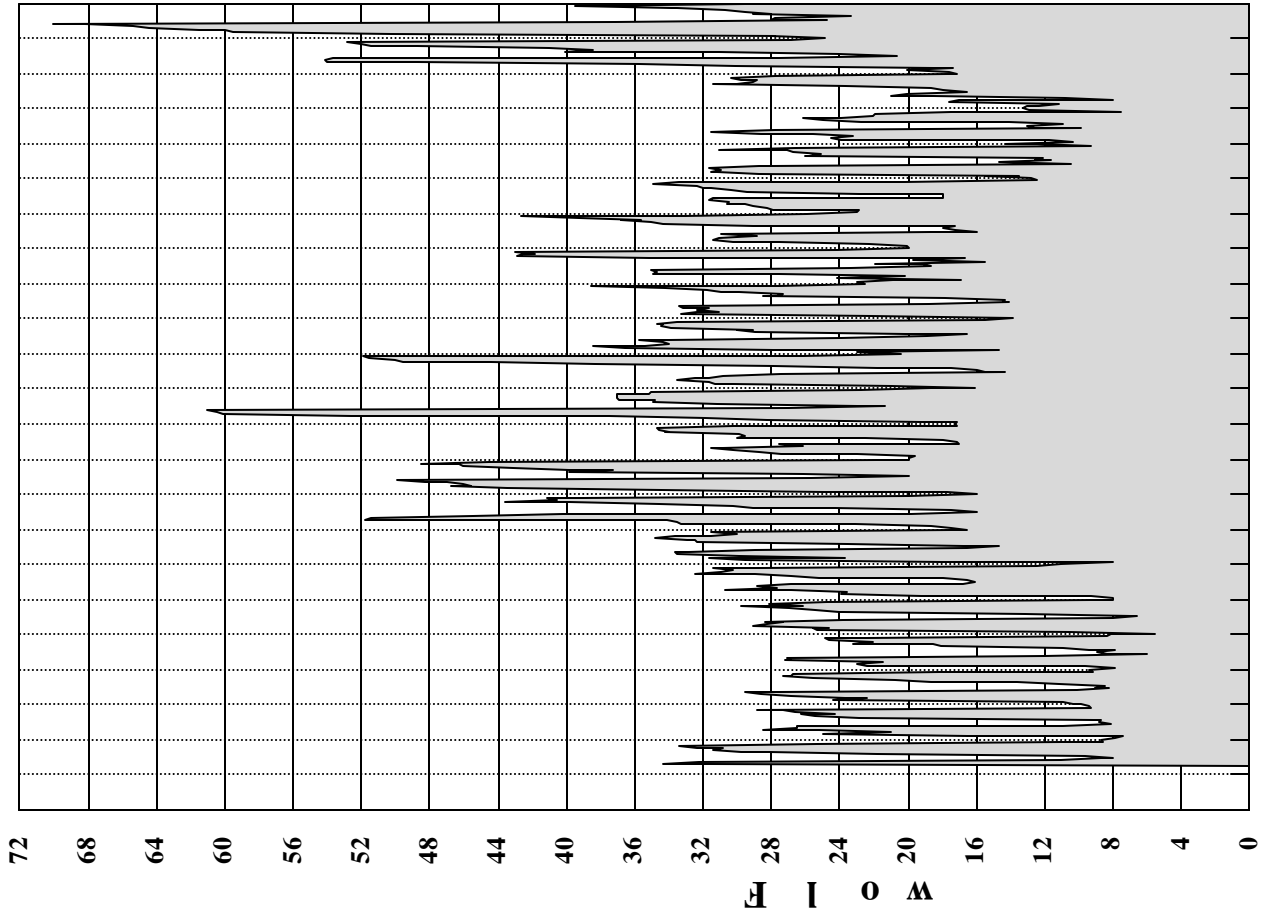
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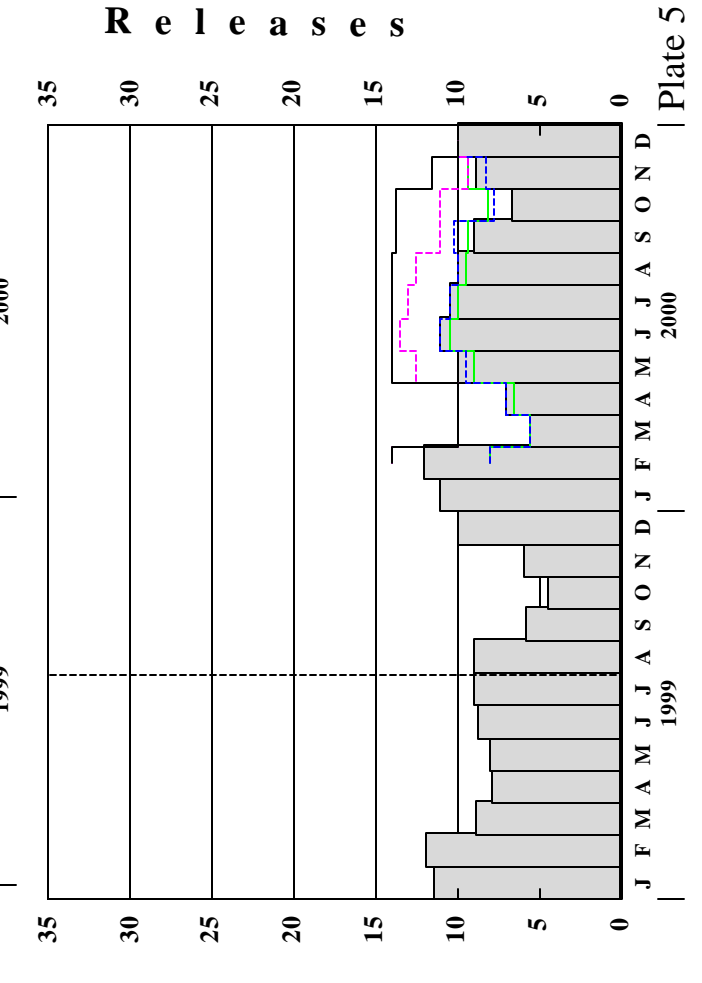
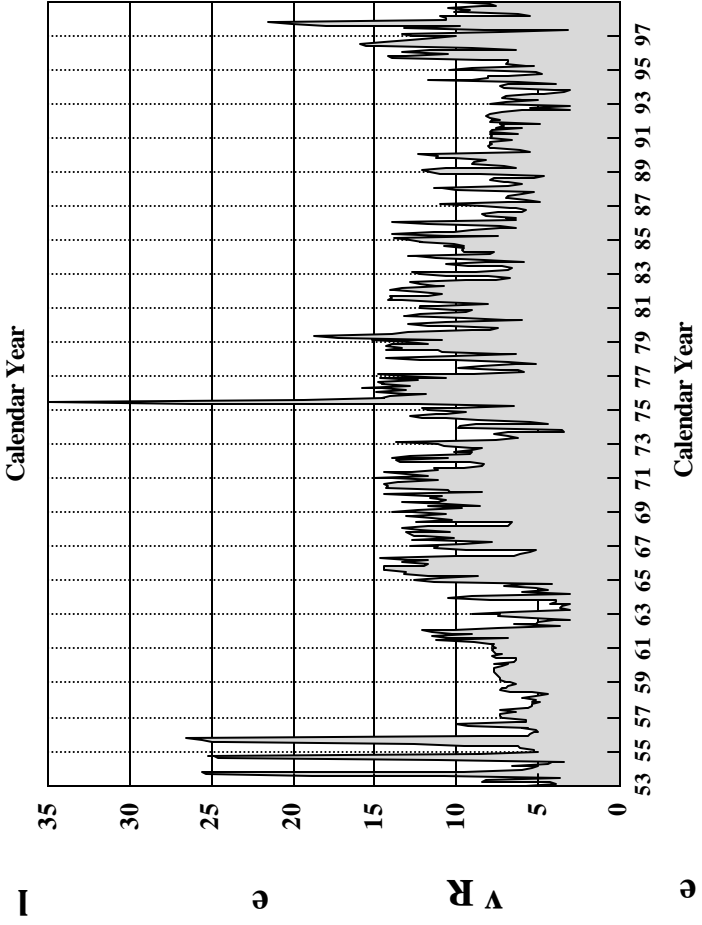
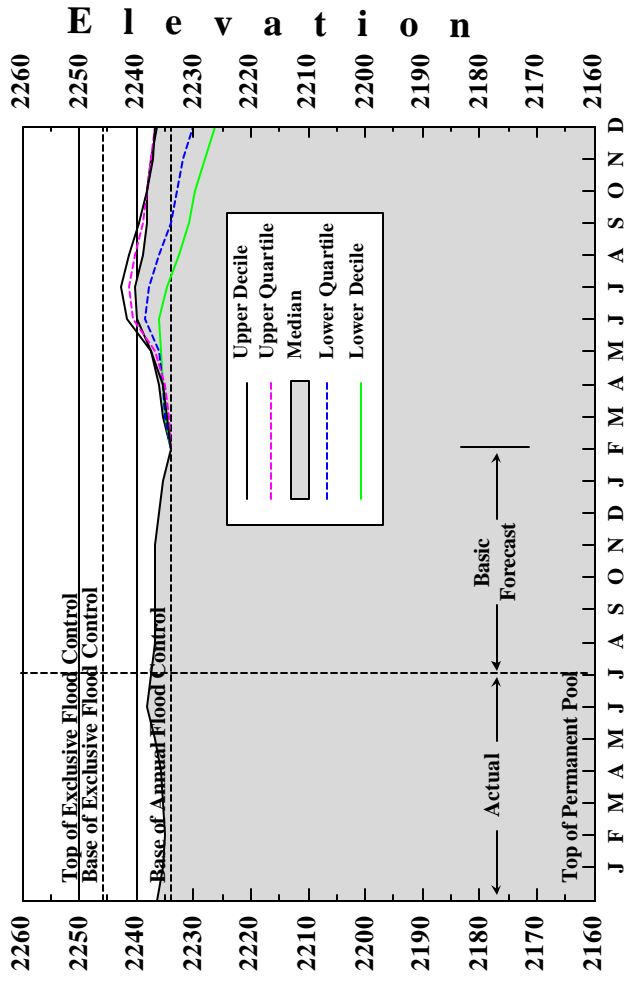
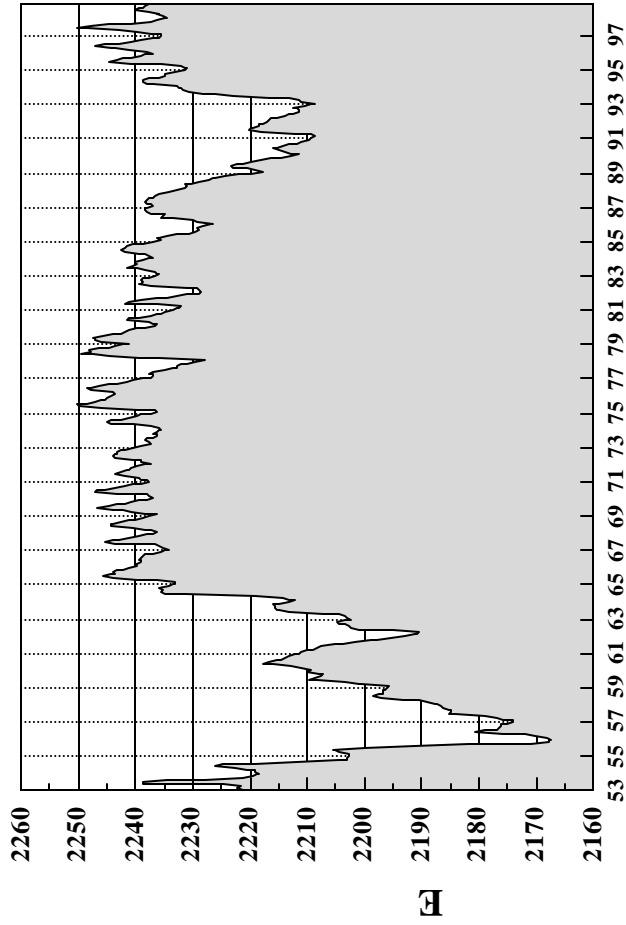
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1999 2000

Calendar Year

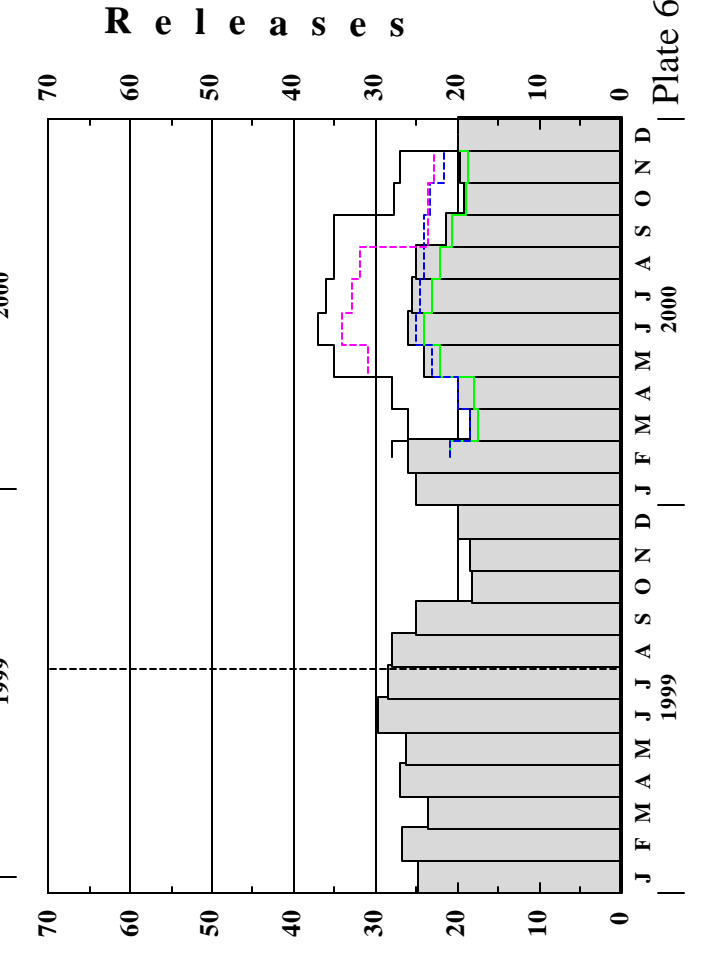
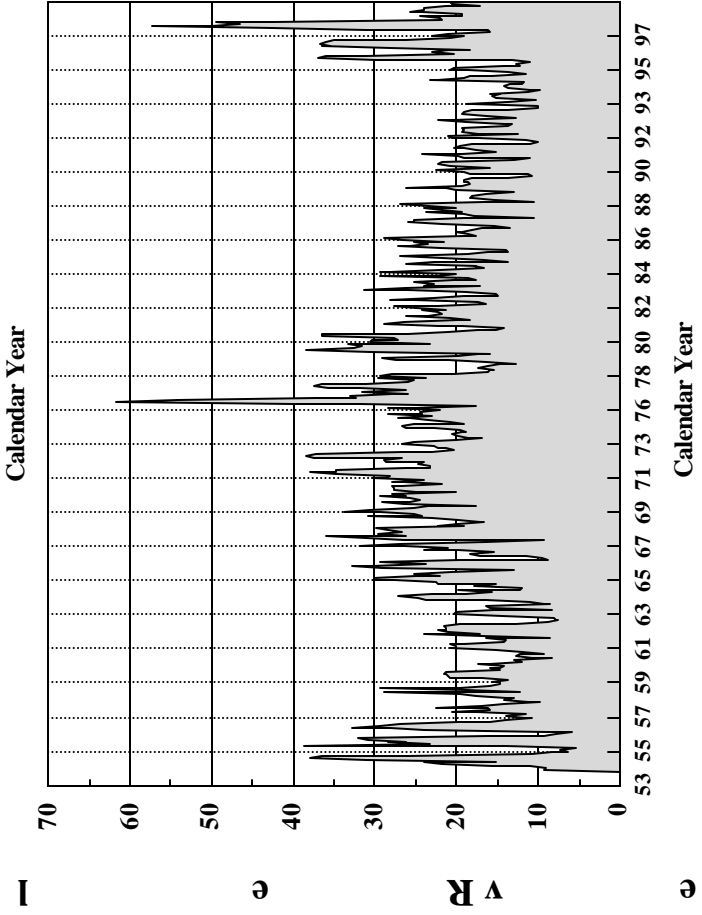
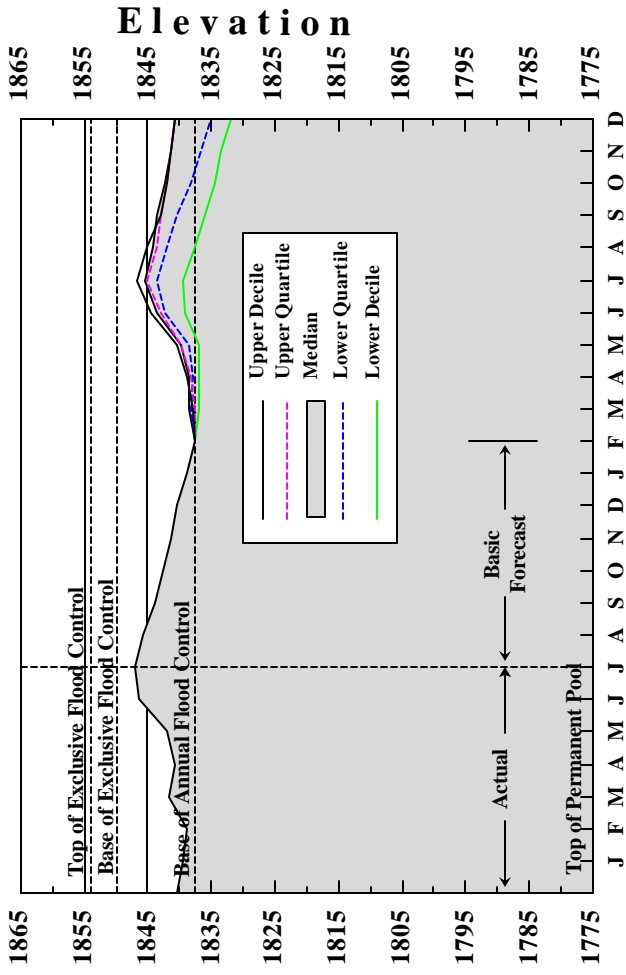
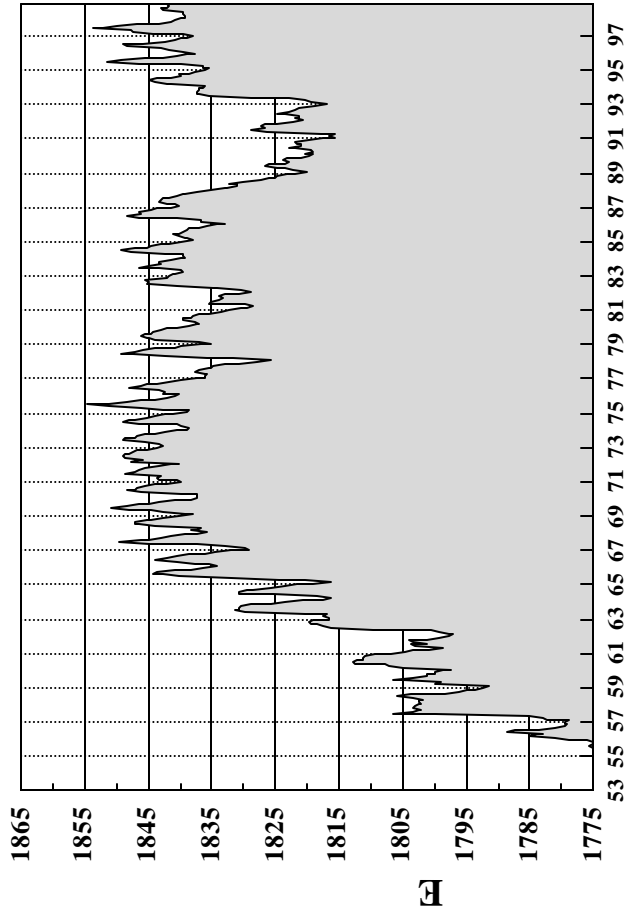
Gavins Point Releases



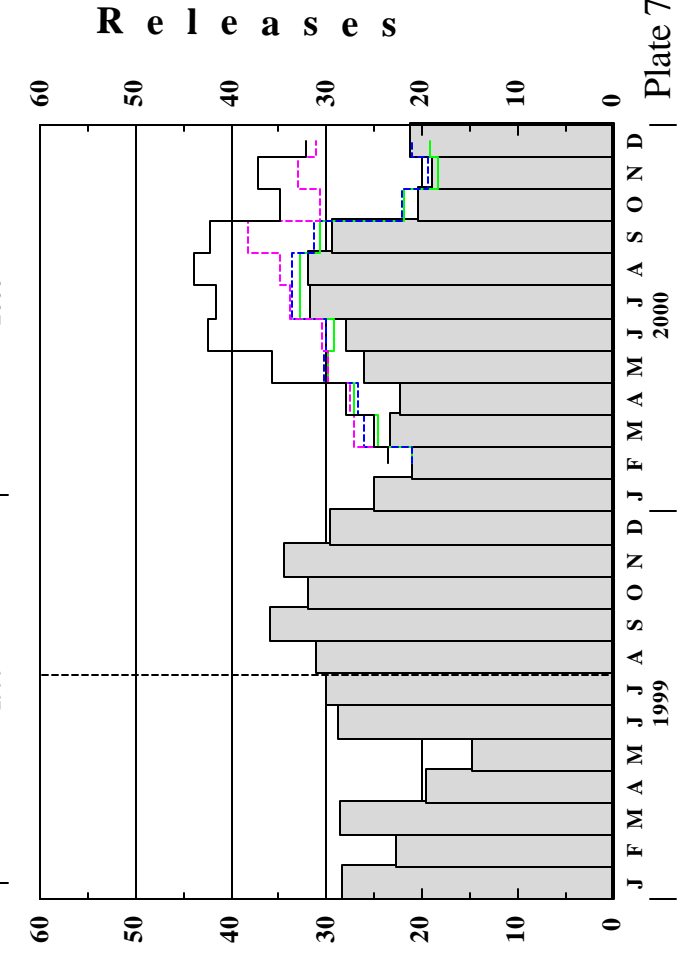
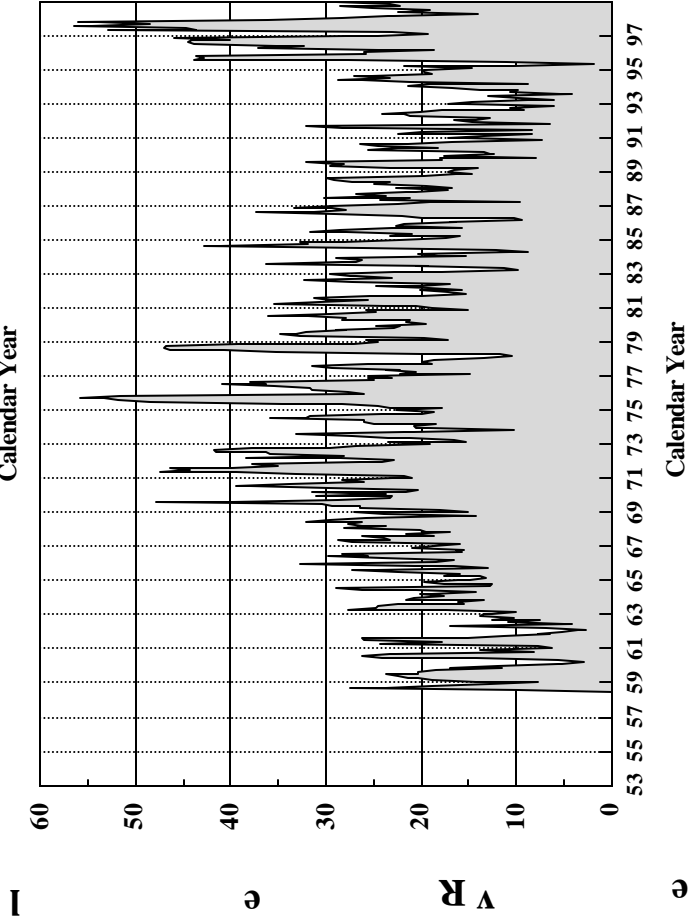
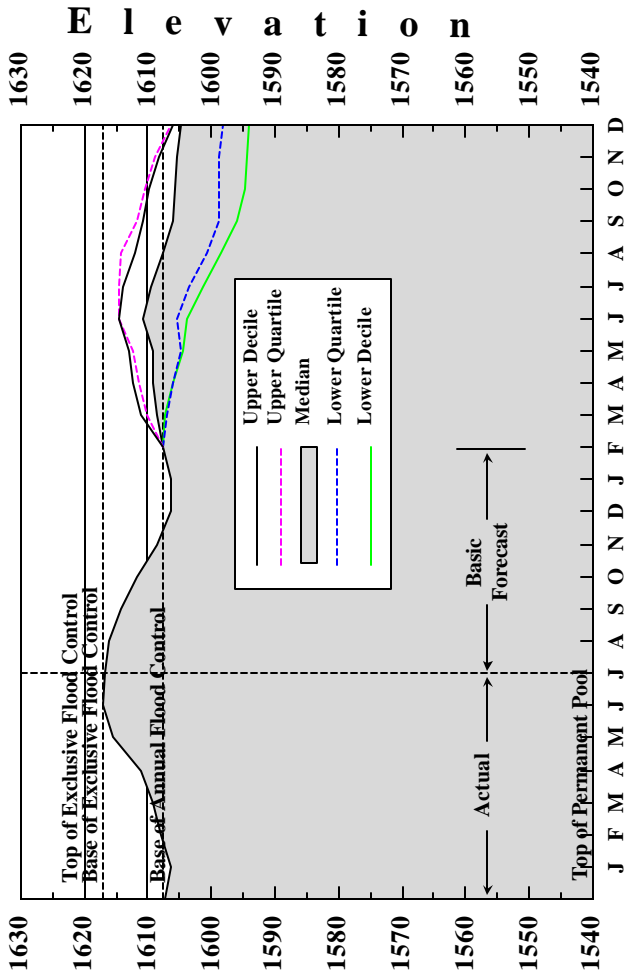
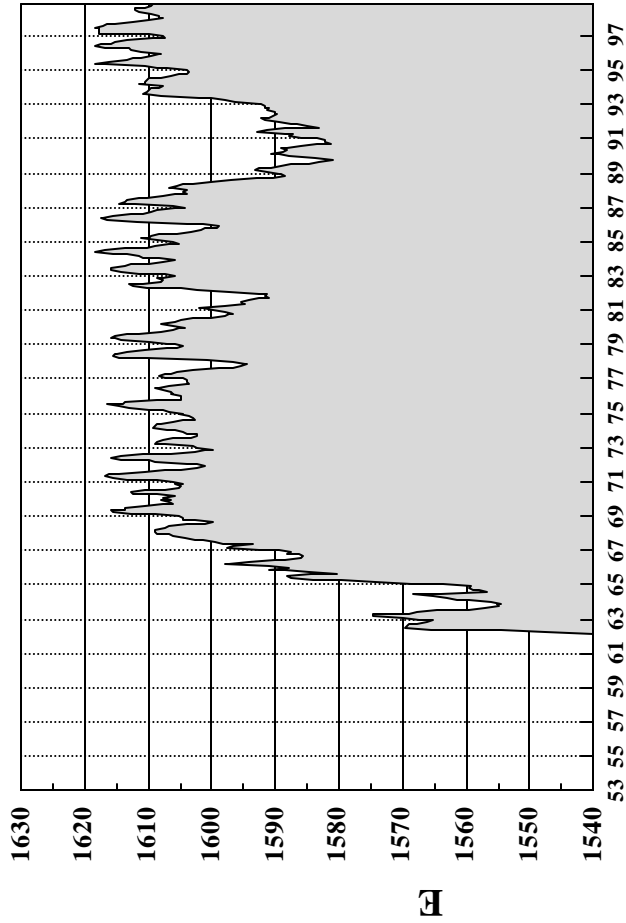
Fort Peck Elevations and Releases



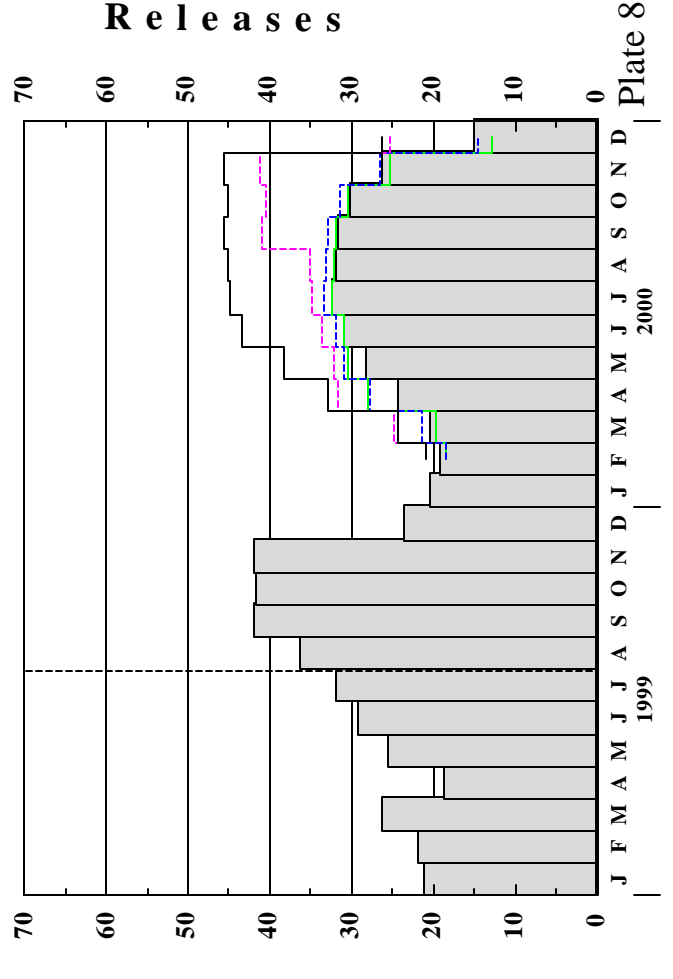
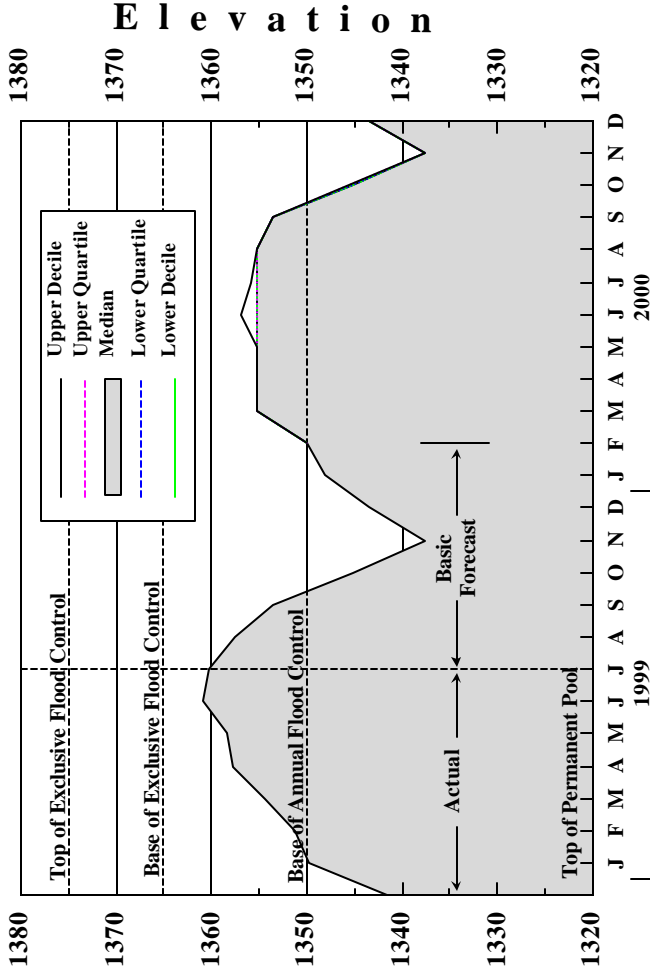
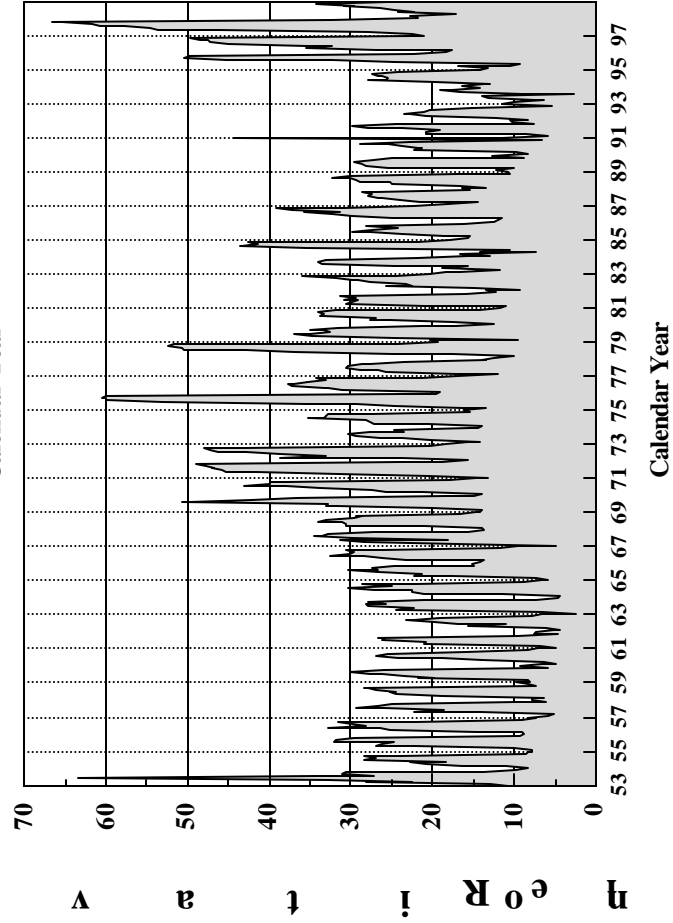
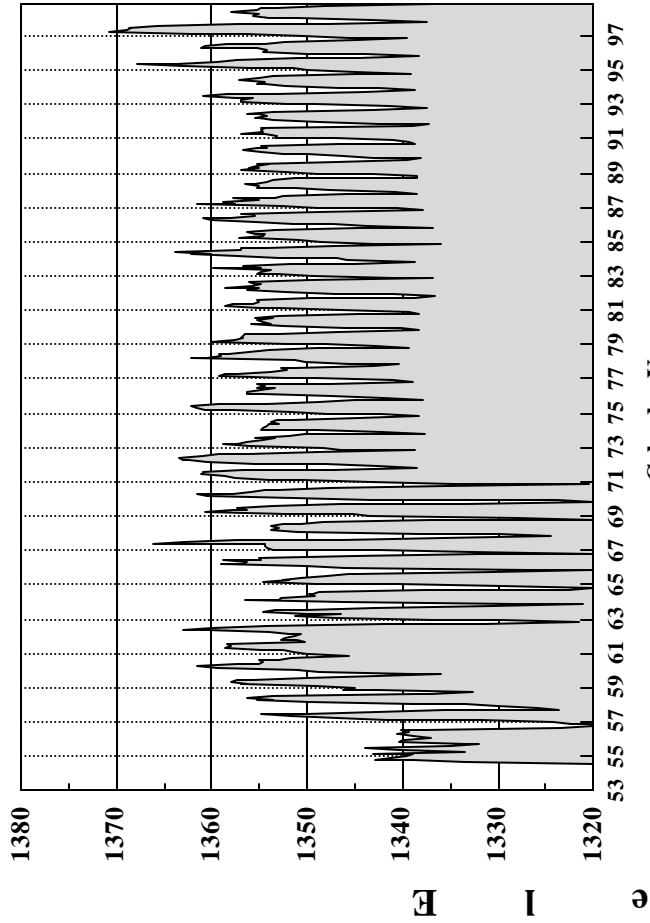
Garrison Elevations and Releases



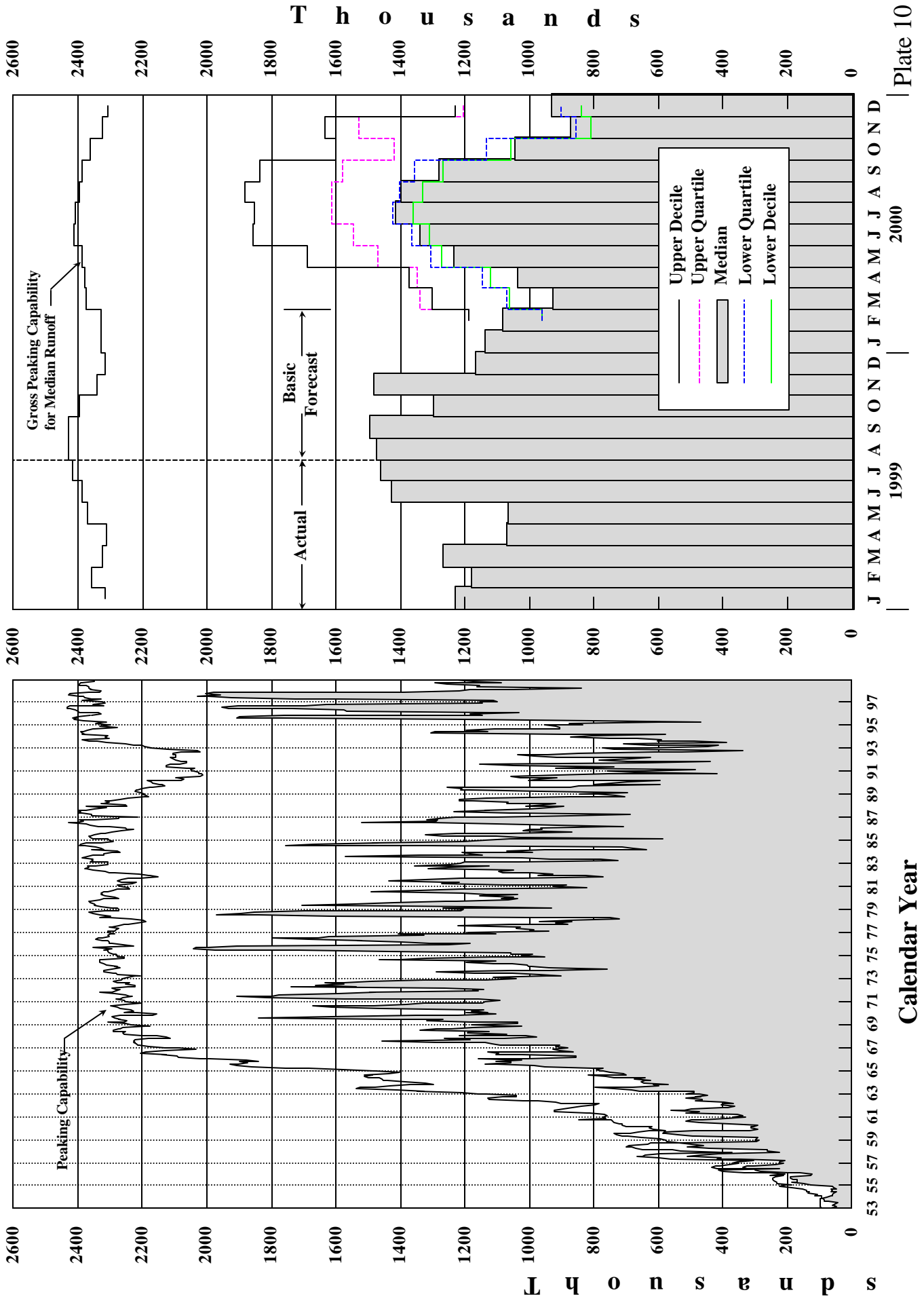
Oahe Elevations and Releases



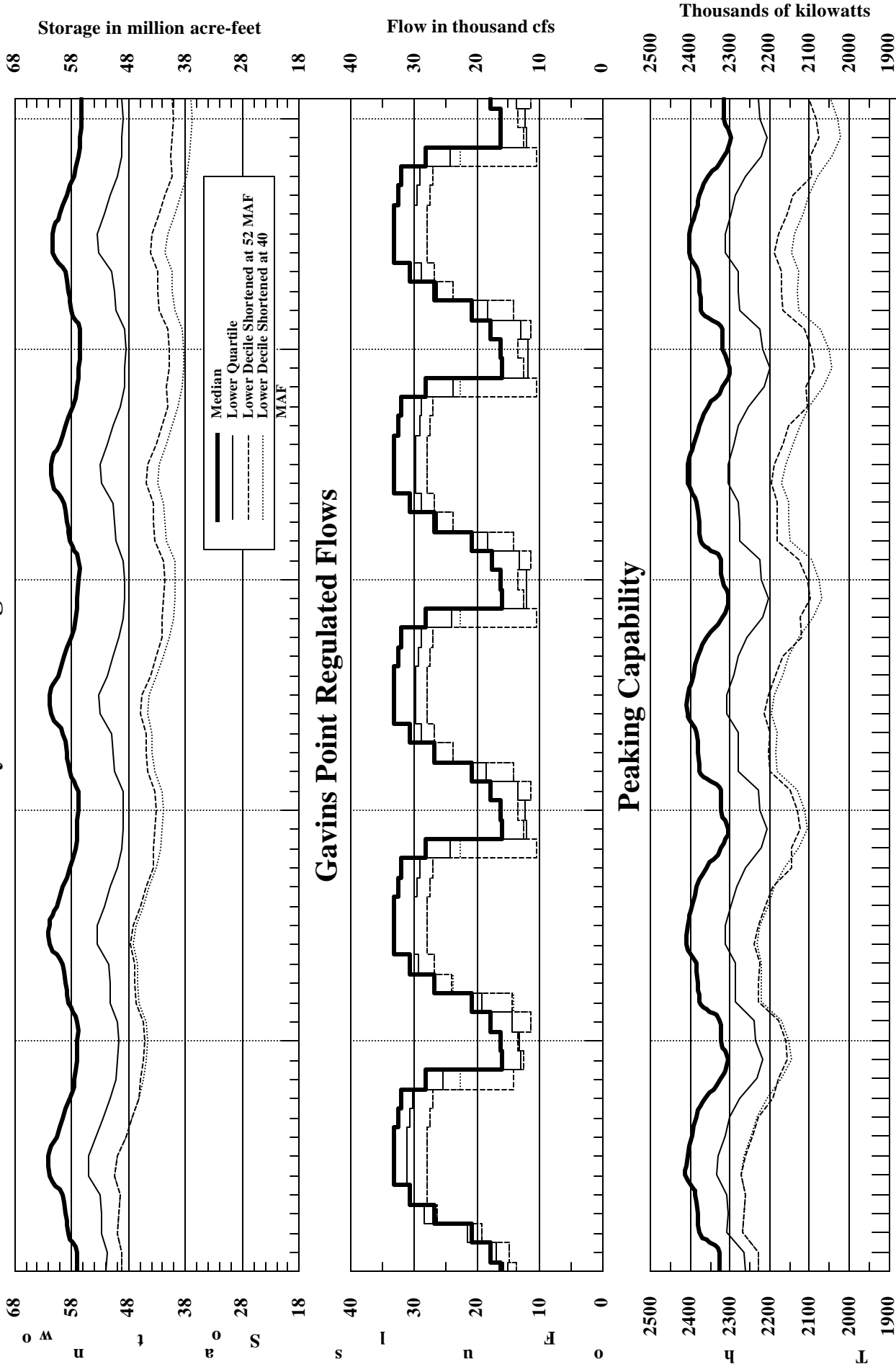
Fort Randall Elevations and Releases



System Gross Capacity and Average Monthly Generation



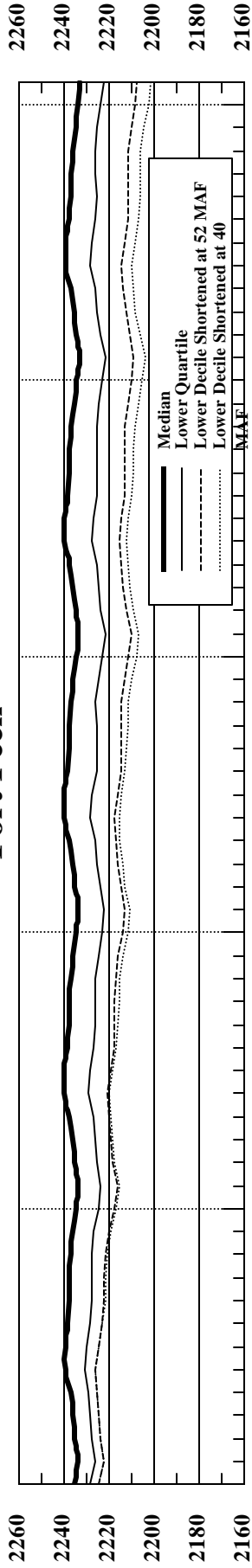
Tentative Five Year Extensions of 1999-2000 AOP System Storage



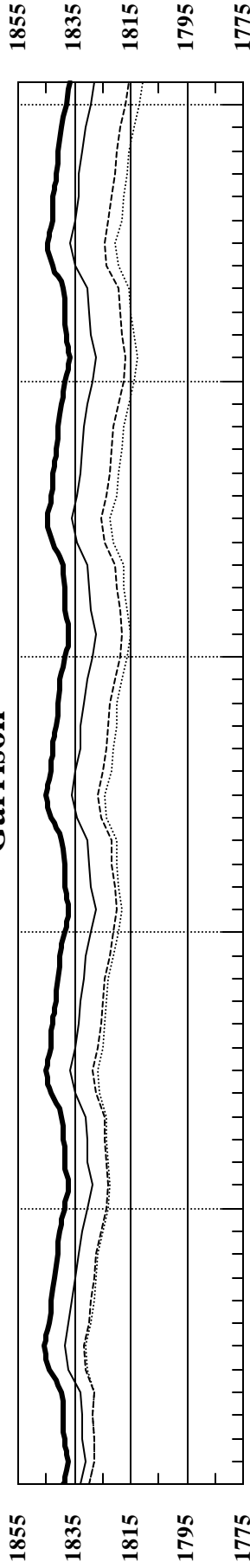
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 2001 2002 2003 2004 2005 2006

Tentative Five Year Extensions of 1999-2000 AOP

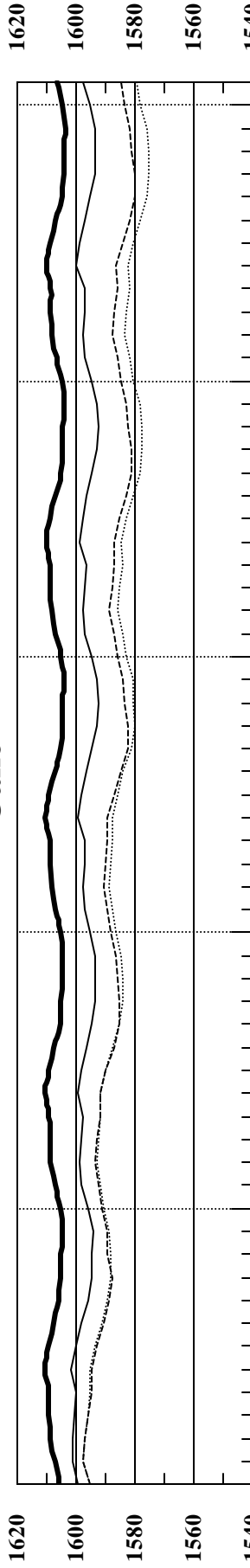
Fort Peck



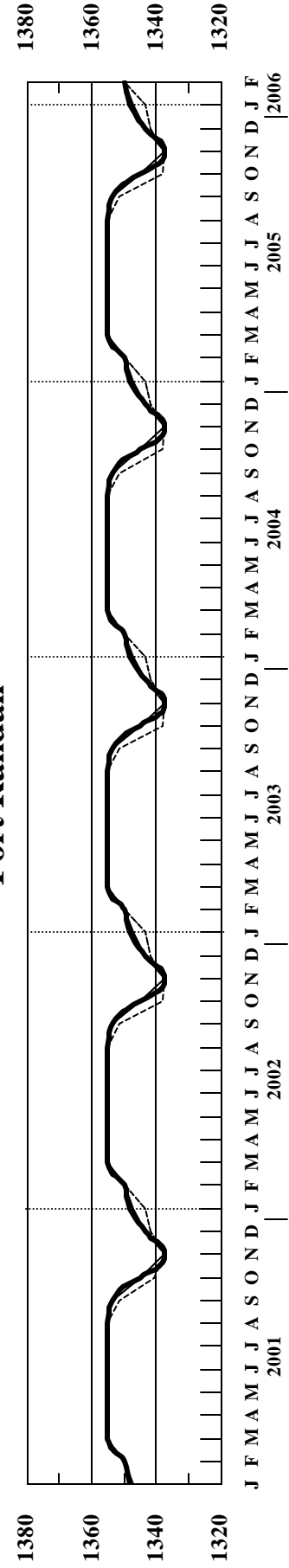
Garrison



Oahe



Fort Randall



Reservoir



Missouri River Natural Resources Committee
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(712) 642-2877 (FAX)
E-mail: mike_levalley@mail.fws.gov

August 26, 1999

Colonel Michael Mueleners
Northwestern Division, Corps of Engineers
12565 W. Center Road
Omaha, NE 68144-3869

Dear Colonel Mueleners:

I am pleased to submit the following recommendations of the Missouri River Natural Resources Committee (MRNRC) for operation of the Missouri River system during 1999/2000. These recommendations were developed with input from our Fish, Wildlife, and Tern and Plover Technical Sections and adopted by our official MRNRC state delegates.

AQUATIC HABITAT AND FISHERY RECOMMENDATIONS

Inter-reservoir and Open River Reaches

- The Corps should release water for fish spawning from Fort Peck Dam and Gavins Point Dam depending on projected runoff. Releases from Fort Peck should be dependent on reservoir surface temperatures (see below) and occur over 30 days with peak flows attained two weeks after releases are begun; Gavins Point releases should begin on May 15, peak near June 1, and end on June 15. These releases would provide spawning triggers and habitats for native fish, maintain and restore sandbar nesting habitat for interior least terns and piping plovers, and, in the Fort Peck reach, promote regeneration of cottonwood trees. Steady to slowly declining releases should be provided the remainder of the year.

--For upper quartile or greater runoff, Fort Peck Dam releases should average 24,000 cubic-feet-per-second (cfs) with a one-day peak of 38,000 cfs at the Wolf Point, Montana stream gage. Below Gavins Point Dam, releases should be 3 feet over the projected August 15 navigation support stage.

--For median or greater runoff, Fort Peck Dam releases should average 18,000 cfs at the Wolf Point gage with a one day peak of 27,500 cfs. Gavins Point Dam releases should be 2.4 feet over the projected August 15 navigation support stage.

--For lower quartile or greater runoff, Fort Peck Dam releases should be made to achieve a target flow of 11,500 cfs between May 11 and June 30 at the Wolf Point gage; after June 30, releases should be adjusted to maintain the instantaneous minimums cited below or a flow of 7,000 cfs at Wolf Point, whichever is greater. The latter flow will maintain riffles and fish-rearing pools. Gavins Point Dam releases should be 1.7 feet over the projected August 15 navigation support stage.

--Below lower quartile runoff, releases from all dams should be as needed to maintain project purposes and conserve water.

- Spawning releases from Fort Peck Dam should be coupled with spillway releases to provide suitable spawning and nursery temperatures for native fish downstream of the Milk River confluence. Increased flows from the dam should be initiated when reservoir surface temperature reaches 18 degrees Celsius. Releases from the powerhouse and spillway should be adjusted to attain a target river temperature of 18 degrees Celsius at the Wolf Point gage. The higher June discharge, coupled with suitable downstream water temperatures, is needed to initiate spawning by adult sturgeon, paddlefish, and other native riverine species and for development and survival of fish eggs, fry, and juveniles.
- Following the June spawning release, Fort Peck Dam powerhouse and spillway releases should be adjusted to attain a river temperature of at least 18 degrees Celsius at the Wolf Point gage through August 20. Suitable water temperature is needed after spawning to ensure hatching and development of larval fish that can grow and recruit into the population.
- The Corps should maintain minimum instantaneous flow releases from each dam to maintain a wetted perimeter, necessary to sustain fish populations. Gavins Point should have a minimum discharge of 9,000 cfs which would provide for downstream water quality and National Scenic Rivers support; Fort Randall should have a minimum release of 9,000 cfs. Fort Peck Dam should have an absolute minimum instantaneous discharge of 7,800 cfs from April 1 through September 30 to ensure basic recruitment of rainbow trout. The recommended absolute minimum instantaneous discharge from Fort Peck Dam from October 1-March 31 is 4,500 cfs. All other dams should have a hourly minimum of 7,500 cfs. Minimum flows need to be maintained out of Big Bend Dam on the weekends to facilitate recreation. During the spawning season (May 15-June 15), a minimum instantaneous discharge of 15,000 cfs should be maintained from Fort Randall Dam. These minimums will be examined by the MRNRC on a case by case basis and refined as new data become available.
- Stable discharges should be maintained from Oahe Dam during April 15-May 31 to prevent stranding and dessication of eggs in Lake Sharpe during spawning by walleye and other species.
- Stable discharges should be maintained from Fort Randall Dam during the spring and summer (May 1-August 20) to prevent stranding and loss of fish, invertebrates, and tern and plover chicks and attracting terns and plovers to low-elevation sandbars. Peaking operations during downstream flood events this past spring and summer caused dramatic swings in river elevations over a 24-hour period impacting both fish and tern and plover production in the reach from the dam to the Niobrara River confluence.
- Spiking of water releases from the dams should be eliminated.
- Navigation support releases from Gavins Point Dam should not exceed full-service targets from August 1 to September 15 to expose sandbars and create shallow-water habitat in the channelized river.

Main Stem Reservoirs

- The Corps should implement offset storage (intrasystem regulation) in Fort Peck Lake and Lakes Sakakawea and Oahe. Lake Oahe is the priority for a several foot draw down in the coming water year if offset storage is implemented. Offset storage would expose shorelines and stimulate the growth of shoreline vegetation. Subsequent submergence of this shoreline vegetation would increase natural reproduction of fish in the reservoir and provide cover for fry. Finally, offset storage in Lake Oahe would expose greater amounts of shoreline nesting habitat for interior least terns and piping plovers.
- **Fort Peck Lake**

A maximum reservoir elevation of 2238.3 ft. msl was reached on July 4, 1999. Pool levels next year should be kept below 2240 ft. msl if at all possible to promote growth of shoreline vegetation. A rising, or at least a static pool, is recommended through June to accommodate late spring and early summer spawners and provide rearing cover for young-of-the-year prey and game fish species.

- **Lake Sakakawea**

A. An absolute open-water minimum lake elevation of 1822 ft. msl for drought periods and 1837 ft. msl for all other years is recommended. Below these specified elevations, the following negative circumstances affect the fishery resource or its use: a substantial loss of walleye spawning substrate (gravel/cobble) and coldwater habitat (for chinook salmon and rainbow smelt); critically needed water becomes less available to the Garrison Dam National Fish Hatchery for production; and boat access/recreation use becomes limited.

B. Other than years in which severe drought conditions prevail, a maximum lake elevation window of 1838 to 1846 ft. msl is requested in order to maintain flexibility in annual recommendations and to reduce impacts from wave erosion.

C. The spring water level rise must inundate good spawning substrate (i.e. cobble and/or terrestrial vegetation) by April 15 and continue to rise during spawning-incubation (April-May). A target increase of two-three feet between April 15 and May 15 should be established during a filling cycle. Even during a drawdown cycle or during drought conditions, stabilizing the lake elevation should be attempted during this critical time period.

D. Fish utilization of inundated terrestrial vegetation should be optimized during a filling cycle. When possible, an effort to flood a minimum of three vertical feet of two-year-old terrestrial vegetation should be attempted between April (ice-out) and mid-June. Also following a short-term drawdown, the inundation of four feet (minimum) of one-year-old vegetation (primarily matted smartweed) should be attempted between April and July. Flooding of vegetation from August through February serves no fishery purpose and is not recommended. Short-term peaking of the reservoir is discouraged.

- **Lake Oahe**

A. An absolute open-water minimum lake elevation of 1591 ft. msl for drought periods and 1607 ft. msl for all other years is recommended. Elevations below these minimal levels eliminate a tremendous amount of fish habitat. The upper stretch of Lake Oahe (North Dakota) is characterized by a shallow floodplain and during low water years much of this reach recedes into the original channel.

B. Other than during years of severe drought, a maximum lake elevation window of 1607 to 1616 ft. msl should be established to provide a degree of latitude for making annual recommendations and to a lesser extent reduce the impacts of bank erosion.

C. During a filling cycle, the spring water level rise must inundate favorable spawning substrate (i.e. cobble and/or terrestrial vegetation) by April 15 and continue to rise into June. If a rising pool is not possible during a drawdown cycle or drought conditions, then at least a stable pool must be achieved during this critical time period.

D. Whenever terrestrial vegetation is flooded, it is strongly recommended that a target of inundating a minimum of three vertical feet of two-year-old terrestrial vegetation between April (ice-out) and mid-June be established. Flooding of vegetation from August through February serves no fishery purpose and is not recommended. Also following a short-term drawdown, the inundation of four feet (minimum) of one-year-old vegetation (primarily matted smartweed) should be attempted between April and July. Short-term peaking of the reservoir is discouraged.

- **Lake Francis Case**

A. Reach a water level elevation of 1355 ft. msl by mid-April that remains stable or increases to no more than elevation 1360 ft. msl through June. Any declines in lake elevation from mid-April through June need to be avoided. Elevations greater than 1360 ft. msl restrict recreational boating access and cause shoreline erosion problems.

B. The scheduled fall drawdown needs to continue the normal pattern of not beginning before October 1, again to facilitate recreational boating access.

- **Lewis & Clark Lake**

A. The water elevation should be held at 1206-1207 msl with limited fluctuations during May -July for fish spawning and nursery areas. Water levels during the rest of the year should be held stable as much as possible for recreational purposes and to avoid shoreline damage.

OPERATIONS FOR INTERIOR LEAST TERNS AND PIPING PLOVERS

- The 1998 nesting season verified that Missouri River flows can be managed to restore sandbar nesting habitat and increase the productivity of terns and plovers. Preliminary results for this year indicate another above average year for river-nesting birds with least terns likely to again exceed fledge ratio targets. Even at Gavins Point Dam releases of 38,000 cfs, quality habitat was available in certain areas. Such habitat was virtually nonexistent at this flow prior to 1995. The Corps' forecasts higher than normal releases this fall to evacuate storage. These higher than normal releases (~45,000 cubic-feet-per-second) represent an opportunity to monitor and study how such flows, which are equivalent to about a + 15 kcfs release over the full-service navigation target at Sioux City, Iowa, affect sandbar creation, maintenance, and erosion. Therefore, we recommend that sandbars below Fort Randall Dam and Gavins Point Dam be monitored this fall to determine how flow magnitude, timing, and duration affect sandbar habitat in these reaches.
- The Corps should schedule reservoir releases periodically to recreate interior least tern and piping plover sandbar habitat below Garrison Dam, Fort Randall Dam, and Gavins Point Dam when water supply conditions are favorable. Such releases should coincide with spring releases for fish spawning and be followed by stable to declining flows during the nesting season. If upper quartile runoff occurs next spring, we recommend passing as much of that runoff as possible between May 15 to June 15 to restore and maintain high elevation sandbar habitat. These higher spring flows should then be followed by stable to declining flows during the remainder of the nesting season. For median or lower runoff conditions, we recommend that the May 15-June 15 stage exceed the expected August 15 stage by 20 inches below the aforementioned dams. This is the minimum stage change needed to provide reasonable protection to unfledged birds and nests from summer tributary rises below the dams that are additive to the increased flows for navigation support.
- The Corps should schedule daily operations that make tern and plover production during next year's nesting season the highest operating priority, especially below Garrison, Fort Randall, and Gavins Point dams. The clean, high-elevation habitat created by the high flows in 1997 is rapidly declining, and the coming nesting season may be the last opportunity to meet productivity goals for the river and counter the long-term downward trend in tern and plover numbers that existed prior to 1998. Operations for flood control, navigation, and hydropower peaking should be undertaken with this priority in mind.
- We strongly support the Omaha District's efforts, through the Gavins Point Dam Project Office staff, to develop annual sandbar habitat/flow relationships within tern and plover nesting reaches. The importance of annually monitoring sandbar habitat/flow relationships cannot be understated. The availability of such data on an annual basis will be invaluable in the future if we are to recover tern and plover populations with changing biological and hydrological conditions. We would appreciate receiving these relationships as soon as possible. This will greatly assist future annual management recommendations we make for tern and plovers.

I trust these recommendations will be helpful to your staff in developing the Annual Operating Plan for next year. If you have any questions concerning these recommendations, please contact Gene Zuerlein, incoming MRNRC Chair at 402-471-5555 or our Coordinator, Mike LeValley, at the address or telephone number listed above.

Sincerely,

A handwritten signature in black ink, appearing to read "James C. Riis". The signature is fluid and cursive, with the first name "James" being the most prominent part.

James C. Riis
Immediate Past MRNRC Chair
South Dakota Dept. Game, Fish, and Parks

MRNRC Delegates
MRNRC Ex-Officio Members and
Cooperating Agencies
MRNRC Technical Section Chairs
MRBA Executive Director



News Release

**US Army Corps
of Engineers**
Missouri River Region
Public Affairs Office

12565 West Center Road
Omaha, Nebraska 68144-3869

Contact: Paul Johnston
(402) 697-2552

Phone: (402) 697-2552
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Date: Dec. 15, 1999

FOR IMMEDIATE RELEASE

OMAHA -- The U.S. Army Corps of Engineers announced today its Annual Operating Plan for the Missouri River main stem dams and reservoirs for next year.

"The plan continues to provide good service to all users, both river and lake," said Col. Michael Meuleners, Missouri River Region Deputy Division Engineer. "We are on schedule to evacuate the excess water from the reservoirs. We should start the 2000 runoff season with sufficient capacity to capture next year's runoff to help prevent flooding of farmland along the river and still have plenty of water in storage to meet the needs of water users throughout the basin," he said.

Releases to support navigation will be in accordance with the operational objectives described in the current Master Water Control Manual. No major changes were made to the draft plan as a result of comments received during the review period. Two public meetings were conducted Oct. 20-21 in Pierre, S.D., and Omaha, Neb.

"Releases this winter should be high enough to provide adequate service to downstream municipal intakes," said Colonel Meuleners. "Higher than normal flows will continue all winter as we evacuate water in preparation for next year's runoff."

A number of clarifications and word changes were made to the draft to improve readability. Army Corps officials will distribute the final report late this month.

Annual Operating Plan Released.....2.2.2

Public meetings will be conducted in April 2000 to update the spring runoff outlook and review the operational plans for the remainder of the year. Specific dates and locations will be announced prior to the meetings.

--30--

Daily reservoir and river information is available from the Reservoir Control Center by calling the recorded voice/fax message at (402) 697-2678. It is also available on the water management section of the Northwestern Division homepage at www.nwd.usace.army.mil.

VALUES IN 1000 AF EXCEPT AS INDICATED

2000

	31JUL99	1999	1999	1999	1999	1999	1999	1999	1999	1999
	INI-SUM	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--										
NAT INFLOW	2490	340	345	400	195	91	104	335	315	365
DEPLETION	-680	-77	-122	-35	-23	-11	-12	-141	-179	-81
EVAPORATION	437	89	111	98	44	21	24	51		
MOD INFLOW	2733	328	356	337	173	81	92	425	494	446
RELEASE	3507	553	343	276	134	76	143	615	676	690
STOR CHANGE	-774	-225	13	62	39	4	-50	-190	-182	-244
STORAGE	15780	15555	15568	15629	15669	15673	15623	15433	15250	15006
ELEV FTMSL	2237.6	2236.6	2236.7	2236.9	2237.1	2237.1	2236.9	2236.0	2235.2	2234.0
DISCH KCFS	9.0	9.0	5.8	4.5	4.5	5.5	9.0	10.0	11.0	12.0
POWER										
AVE POWER MW		124	79	62	62	76	123	137	150	163
PEAK POW MW		210	210	210	211	211	210	210	209	208
ENERGY GWH	580.6	91.9	57.0	45.9	22.3	12.7	23.7	101.9	111.7	113.6
--GARRISON--										
NAT INFLOW	2980	700	470	525	205	96	109	255	260	360
DEPLETION	-576	-81	-120	14	-75	-35	-40	-95	-87	-57
CHAN STOR	-30		31	12	0	-10	-34	-10	-10	-10
EVAPORATION	516	108	133	114	51	24	27	58		
REG INFLOW	6518	1227	831	685	363	174	231	897	1014	1097
RELEASE	9689	1722	1488	1118	541	257	301	1230	1537	1496
STOR CHANGE	-3172	-495	-657	-433	-178	-83	-70	-333	-524	-398
STORAGE	21294	20799	20142	19709	19530	19447	19377	19044	18520	18122
ELEV FTMSL	1847.1	1845.7	1843.8	1842.5	1842.0	1841.7	1841.5	1840.5	1838.8	1837.5
DISCH KCFS	28.6	28.0	25.0	18.2	18.2	18.5	19.0	20.0	25.0	26.0
POWER										
AVE POWER MW		361	320	232	231	234	240	253	312	321
PEAK POW MW		502	501	494	492	491	490	487	480	476
ENERGY GWH	1483.8	268.7	230.5	172.4	83.0	39.3	46.1	187.9	232.2	223.7
--GAHE--										
NAT INFLOW	440	80	125	70	33	15	17		10	90
DEPLETION	153	74	19	-4	3	1	1	13	17	29
CHAN STOR	7	2	11	25		-1	-2	-4	-20	-4
EVAPORATION	523	111	138	117	51	24	27	56		
REG INFLOW	9460	1619	1467	1100	520	246	289	1157	1510	1553
RELEASE	12656	1921	2140	1965	957	443	651	1824	1542	1213
STOR CHANGE	-3196	-303	-673	-865	-437	-197	-362	-668	-32	339
STORAGE	22042	21739	21066	20202	19765	19568	19207	18539	18507	18846
ELEV FTMSL	1617.0	1616.2	1614.3	1611.7	1610.4	1609.8	1608.7	1606.5	1606.4	1607.5
DISCH KCFS	30.1	31.2	36.0	32.0	32.2	31.9	41.0	29.7	25.1	21.1
POWER										
AVE POWER MW		420	480	422	421	415	530	382	321	271
PEAK POW MW		751	741	728	721	718	712	701	700	706
ENERGY GWH	2007.4	312.8	345.5	314.2	151.5	69.8	101.8	284.0	239.1	188.9
--BIG BEND--										
EVAPORATION	97	20	25	22	10	5	5	11		
REG INFLOW	12559	1902	2115	1943	947	438	645	1813	1542	1213
RELEASE	12596	1940	2115	1943	947	438	645	1813	1542	1213
STORAGE	1720	1682	1682	1682	1682	1682	1682	1682	1682	1682
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	29.8	31.5	35.5	31.6	31.8	31.6	40.7	29.5	25.1	21.1
POWER										
AVE POWER MW		145	168	154	158	157	201	145	121	101
PEAK POW MW		491	517	538	538	538	538	538	537	529
ENERGY GWH	734.1	107.9	121.2	114.6	57.0	26.4	38.6	107.7	90.3	70.4
--FORT RANDALL--										
NAT INFLOW	270	90	80	10	5	2	3	10	20	50
DEPLETION	34	15	7	1	1	0	1	3	3	3
EVAPORATION	111	26	32	25	10	4	4	10		
REG INFLOW	12720	1988	2156	1928	941	436	642	1810	1559	1260
RELEASE	13589	2230	2501	2565	1246	581	664	1444	1248	1110
STOR CHANGE	-869	-242	-345	-637	-304	-145	-22	366	311	150
STORAGE	3992	3750	3405	2767	2463	2318	2296	2662	2973	3123
ELEV FTMSL	1360.2	1357.5	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1348.0	1350.0
DISCH KCFS	31.9	36.3	42.0	41.7	41.9	41.9	41.9	23.5	20.3	19.3
POWER										
AVE POWER MW		312	335	314	291	278	273	174	158	154
PEAK POW MW		362	346	310	289	278	277	304	324	332
ENERGY GWH	1264.7	231.8	241.3	233.4	104.9	46.8	52.4	129.3	117.4	107.4
--GAVINS POINT--										
NAT INFLOW	1010	225	145	150	73	34	39	120	100	125
DEPLETION	28	10	-5	2	5	2	3	10	1	
CHAN STOR	23	-9	-11	1	0	0	0	34	6	2
EVAPORATION	35	7	9	8	4	2	2	4		
REG INFLOW	14559	2430	2631	2705	1309	611	698	1584	1353	1237
RELEASE	14540	2398	2618	2705	1309	611	698	1584	1353	1263
STOR CHANGE	19	32	13							-26
STORAGE	339	371	384	384	384	384	384	384	384	358
ELEV FTMSL	1205.2	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0
DISCH KCFS	38.0	39.0	44.0	44.0	44.0	44.0	44.0	25.8	22.0	22.0
POWER										
AVE POWER MW		113	114	114	114	114	114	77	74	73
PEAK POW MW		114	114	114	114	114	114	77	77	76
ENERGY GWH	497.8	84.3	82.1	85.1	41.2	19.2	22.0	57.6	55.2	51.1
--GAVINS POINT - SIOUX CITY--										
NAT INFLOW	750	260	130	90	45	21	24	60	35	85
DEPLETION	105	32	20	8	5	2	3	11	12	12
REGULATED FLOW AT SIOUX CITY										
KAF	15185	2626	2728	2787	1349	630	720	1633	1376	1336
KCFS		42.7	45.8	45.3	45.3	45.3	45.3	26.6	22.4	23.2
--TOTAL--										
NAT INFLOW	7940	1695	1295	1245	555	259	296	780	740	1075
DEPLETION	-936	-27	-201	-14	-84	-39	-45	-199	-233	-94
CHAN STOR	-1	-6	31	38	0	-11	-37	21	-24	-12
EVAPORATION	1719	360	448	383	170	78	89	191		
STORAGE	65167	63896	62247	60373	59493	59073	58568	57744	57317	57138
SYSTEM POWER										
AVE POWER MW		1475	1497	1298	1277	1275	1483	1167	1137	1085
PEAK POW MW		2430	2431	2396	2366	2351	2342	2316	2328	2327
ENERGY GWH	6568.4	1097.3	1077.5	965.6	459.8	214.2	284.7	868.4	845.8	755.1
DAILY GWH		35.4	35.9	31.1	30.7	30.6	35.6	28.0	27.3	26.0
	INI-SUM	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

TIME OF STUDY 08:07:56

STUDY NO 2

VALUES IN 1000 AF EXCEPT AS INDICATED

2000

31JUL99	1999									
INI-SUM	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB	
--FORT PECK--										
NAT INFLOW	2988	408	414	480	234	109	125	402	378	438
DEPLETION	-717	-45	-98	-34	-4	-2	-2	-175	-200	-157
EVAPORATION	293	67	84	73	16	7	8	38		
MOD INFLOW	3412	386	428	441	222	104	119	539	578	595
RELEASE	4196	553	462	477	231	125	159	615	769	805
STOR CHANGE	-783	-167	-33	-36	-9	-21	-40	-76	-191	-210
STORAGE	15780	15613	15580	15543	15535	15514	15474	15398	15207	14997
ELEV FTMSL	2237.6	2236.9	2236.7	2236.5	2236.5	2236.4	2236.2	2235.9	2235.0	2234.0
DISCH KCFS	9.0	9.0	7.8	7.8	7.8	9.0	10.0	10.0	12.5	14.0
POWER										
AVE POWER MW		124	106	106	106	123	137	137	170	188
PEAK POW MW		210	210	210	210	210	210	210	209	208
ENERGY GWH	692.1	91.9	76.6	79.2	38.3	20.7	26.3	101.7	126.8	130.6
--GARRISON--										
NAT INFLOW	3576	840	564	630	246	115	131	306	312	432
DEPLETION	-681	-119	-139	24	-77	-36	-41	-118	-104	-71
CHAN STOR	-49		12	0	0	-12	-10	0	-25	-15
EVAPORATION	349	82	101	86	18	8	10	43		
REG INFLOW	8055	1431	1075	997	536	255	312	996	1160	1293
RELEASE	11235	1722	1696	1744	844	394	397	1230	1599	1611
STOR CHANGE	-3180	-291	-621	-747	-308	-139	-85	-234	-439	-317
STORAGE	21294	21003	20383	19635	19327	19189	19104	18869	18431	18114
ELEV FTMSL	1847.1	1846.3	1844.5	1842.3	1841.3	1840.9	1840.6	1839.9	1838.5	1837.5
DISCH KCFS	28.6	28.0	28.5	28.4	28.4	28.4	25.0	20.0	26.0	28.0
POWER										
AVE POWER MW		362	365	360	358	357	314	251	324	345
PEAK POW MW		502	502	493	490	488	487	485	479	476
ENERGY GWH	1717.3	269.1	263.1	267.7	128.9	59.9	60.3	187.1	240.7	240.4
--OAH--										
NAT INFLOW	528	96	150	84	39	18	21		12	108
DEPLETION	153	74	19	-4	3	1	1	13	17	29
CHAN STOR	1	2	-2	1	0	0	13	19	-24	-8
EVAPORATION	356	84	104	88	19	9	10	43		
REG INFLOW	11255	1662	1721	1744	862	402	419	1193	1570	1682
RELEASE	14451	1884	2530	2409	1162	544	762	2233	1576	1349
STOR CHANGE	-3195	-222	-809	-665	-300	-142	-343	-1040	-7	332
STORAGE	22042	21820	21011	20346	20046	19904	19561	18521	18514	18847
ELEV FTMSL	1617.0	1616.4	1614.1	1612.2	1611.3	1610.8	1609.8	1606.5	1606.5	1607.5
DISCH KCFS	30.1	30.6	42.5	39.2	39.1	39.2	48.0	36.3	25.6	23.5
POWER										
AVE POWER MW		413	566	517	512	512	619	468	328	302
PEAK POW MW		752	740	730	726	724	718	700	700	706
ENERGY GWH	2290.3	306.9	407.8	384.6	184.1	85.9	118.9	347.8	244.3	209.9
--BIG BEND--										
EVAPORATION	65	15	19	16	3	2	2	9		
REG INFLOW	14385	1869	2512	2393	1158	542	760	2225	1576	1349
RELEASE	14424	1907	2512	2393	1158	542	760	2226	1576	1349
STORAGE	1720	1682	1682	1682	1682	1682	1682	1681	1681	1681
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	29.8	31.0	42.2	38.9	38.9	39.1	47.9	36.2	25.6	23.5
POWER										
AVE POWER MW		142	200	189	193	194	236	177	124	112
PEAK POW MW		486	517	538	538	538	538	538	538	528
ENERGY GWH	839.6	105.5	143.8	140.7	69.4	32.5	45.3	131.7	92.5	78.2
--FORT RANDALL--										
NAT INFLOW	324	108	96	12	6	3	3	12	24	60
DEPLETION	34	15	7	1	1	0	1	3	3	3
EVAPORATION	76	20	24	18	3	1	2	8		
REG INFLOW	14637	1980	2577	2386	1160	543	760	2227	1597	1406
RELEASE	15506	2182	2962	3024	1467	684	782	1861	1340	1202
STOR CHANGE	-868	-202	-385	-639	-307	-141	-22	366	257	204
STORAGE	3992	3790	3405	2766	2459	2318	2297	2663	2920	3124
ELEV FTMSL	1360.2	1358.0	1353.5	1345.1	1340.3	1337.9	1337.5	1343.5	1347.2	1350.0
DISCH KCFS	31.9	35.5	49.8	49.2	49.3	49.3	49.3	30.3	21.8	20.9
POWER										
AVE POWER MW		306	355	329	299	283	276	223	169	166
PEAK POW MW		364	346	310	288	277	275	304	321	332
ENERGY GWH	1343.0	227.3	255.4	244.7	107.7	47.5	53.1	166.0	125.5	115.8
--GAVINS POINT--										
NAT INFLOW	1212	270	174	180	87	41	46	144	120	150
DEPLETION	28	10	-5	2	5	2	3	10	1	
CHAN STOR	20	-7	-27	1	0	0	0	36	16	2
EVAPORATION	24	5	7	6	1	1	1	3		
REG INFLOW	16686	2430	3107	3197	1547	722	825	2028	1475	1354
RELEASE	16667	2398	3094	3197	1547	722	825	2028	1475	1380
STOR CHANGE	19	32	13							-26
STORAGE	339	371	384	384	384	384	384	384	384	358
ELEV FTMSL	1205.2	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0	
DISCH KCFS	38.0	39.0	52.0	52.0	52.0	52.0	52.0	33.0	24.0	24.0
POWER										
AVE POWER MW		113	114	114	114	114	114	77	78	77
PEAK POW MW		114	114	114	114	114	114	77	77	76
ENERGY GWH	501.4	84.3	81.8	84.7	41.0	19.1	21.9	57.2	57.7	53.7
--GAVINS POINT - SIOUX CITY--										
NAT INFLOW	900	312	156	108	54	25	29	72	42	102
DEPLETION	105	32	20	8	5	2	3	11	12	12
REGULATED FLOW AT SIOUX CITY										
KAF	17462	2678	3230	3297	1596	745	851	2089	1505	1470
KCFS	43.6	54.3	53.6	53.6	53.6	53.6	53.6	34.0	24.5	25.6
--TOTAL--										
NAT INFLOW	9528	2034	1554	1494	666	311	355	936	888	1290
DEPLETION	-1078	-33	-196	-3	-68	-31	-36	-256	-271	-184
CHAN STOR	-29	-5	-17	2	0	-12	2	55	-33	-21
EVAPORATION	1162	272	338	289	60	28	32	143		
STORAGE	65167	64279	62444	60356	59433	58991	58501	57516	57137	57120
SYSTEM POWER										
AVE POWER MW		1458	1706	1615	1582	1582	1697	1333	1193	1190
PEAK POW MW		2429	2429	2395	2366	2351	2343	2314	2325	2327
ENERGY GWH	7383.7	1085.0	1228.5	1201.5	569.4	265.7	325.8	991.6	887.5	828.6
DAILY GWH		35.0	41.0	38.8	38.0	38.0	40.7	32.0	28.6	28.6
INI-SUM	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB	

TIME OF STUDY 08:06:34

STUDY NO 3

VALUES IN 1000 AF EXCEPT AS INDICATED

2000

31JUL99	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999
INI-SUM	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB	
--FORT PECK--										
NAT INFLOW	1992	272	276	320	156	73	83	268	252	292
DEPLETION	-450	-35	-82	-53	-13	-6	-7	-92	-108	-54
EVAPORATION	542	110	138	121	55	26	29	63		
MOD INFLOW	1900	197	220	252	114	53	61	297	360	346
RELEASE	2674	461	280	198	134	69	119	461	492	460
STOR CHANGE	-774	-265	-60	54	-20	-16	-58	-164	-132	-114
STORAGE	15780	15515	15455	15510	15490	15474	15416	15252	15120	15006
ELEV FTMSL	2237.6	2236.4	2236.1	2236.4	2236.3	2236.2	2236.0	2235.2	2234.6	2234.0
DISCH KCFS	9.0	7.5	4.7	3.2	4.5	5.0	7.5	7.5	8.0	8.0
POWER										
AVE POWER MW		103	64	44	62	69	103	103	109	109
PEAK POW MW		210	210	210	210	210	210	209	209	208
ENERGY GWH	442.6	76.6	46.4	32.9	22.2	11.5	19.7	76.3	81.2	75.8
--GARRISON--										
NAT INFLOW	2384	560	376	420	164	77	87	204	208	288
DEPLETION	-505		-117	18	-79	-37	-42	-95	-86	-67
CHAN STOR	9	14	27	14	-12	-5	-24		-5	
EVAPORATION	651	135	168	145	65	30	34	73		
REG INFLOW	4921	900	632	469	300	148	190	687	781	815
RELEASE	8096	1599	958	886	417	222	286	1230	1291	1208
STOR CHANGE	-3174	-699	-326	-417	-117	-74	-96	-543	-510	-393
STORAGE	21294	20595	20269	19852	19735	19661	19566	19023	18512	18120
ELEV FTMSL	1847.1	1845.1	1844.2	1842.9	1842.6	1842.3	1842.1	1840.4	1838.8	1837.5
DISCH KCFS	28.6	26.0	16.1	14.4	14.0	16.0	18.0	20.0	21.0	21.0
POWER										
AVE POWER MW		335	207	184	178	203	228	253	263	260
PEAK POW MW		502	502	496	495	494	492	486	480	476
ENERGY GWH	1242.5	249.4	149.1	137.2	64.2	34.2	43.8	188.1	195.4	181.2
--OAHÉ--										
NAT INFLOW	352	64	100	56	26	12	14		8	72
DEPLETION	153	74	19	-4	3	1	1	13	17	29
CHAN STOR	26	9	36	6	2	-8	-8	-8	-4	
EVAPORATION	656	139	172	146	64	30	34	72		
REG INFLOW	7665	1459	903	806	377	196	257	1137	1278	1251
RELEASE	10863	1967	1648	1458	710	328	519	1621	1397	1216
STOR CHANGE	-3198	-509	-745	-651	-333	-132	-262	-483	-118	35
STORAGE	22042	21533	20788	20137	19804	19672	19410	18927	18809	18844
ELEV FTMSL	1617.0	1615.6	1613.5	1611.5	1610.5	1610.1	1609.3	1607.8	1607.4	1607.5
DISCH KCFS	30.1	32.0	27.7	23.7	23.9	23.6	32.7	26.4	22.7	21.1
POWER										
AVE POWER MW		430	369	313	313	308	425	341	293	273
PEAK POW MW		748	737	727	722	720	716	707	705	706
ENERGY GWH	1726.8	319.8	266.0	233.2	112.8	51.8	81.6	253.9	218.0	189.8
--BIG BEND--										
EVAPORATION	121	25	31	27	12	6	7	14		
REG INFLOW	10742	1943	1617	1431	698	322	512	1606	1397	1216
RELEASE	10779	1981	1617	1431	698	322	512	1606	1397	1216
STORAGE	1720	1682	1682	1682	1682	1682	1682	1682	1682	1682
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	29.8	32.2	27.2	23.3	23.5	23.2	32.3	26.1	22.7	21.1
POWER										
AVE POWER MW		148	129	114	117	116	161	128	110	101
PEAK POW MW		491	517	538	538	538	538	538	538	529
ENERGY GWH	628.4	110.1	92.8	84.8	42.2	19.5	30.9	95.6	82.0	70.5
--FORT RANDALL--										
NAT INFLOW	216	72	64	8	4	2	2	8	16	40
DEPLETION	34	15	7	1	1	0	1	3	3	3
EVAPORATION	139	33	40	31	12	5	5	13		
REG INFLOW	10821	2005	1634	1407	689	318	508	1598	1410	1253
RELEASE	11690	2247	1980	2044	993	463	530	1232	1138	1064
STOR CHANGE	-869	-242	-345	-637	-304	-145	-22	366	272	189
STORAGE	3992	3750	3405	2767	2463	2318	2296	2662	2934	3123
ELEV FTMSL	1360.2	1357.5	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1347.4	1350.0
DISCH KCFS	31.9	36.5	33.3	33.2	33.4	33.4	33.4	20.0	18.5	18.5
POWER										
AVE POWER MW		314	279	264	251	242	239	149	144	148
PEAK POW MW		362	346	310	289	278	277	304	322	332
ENERGY GWH	1127.9	233.5	200.6	196.6	90.2	40.7	45.9	110.6	106.9	102.8
--GAVINS POINT--										
NAT INFLOW	808	180	116	120	58	27	31	96	80	100
DEPLETION	28	10	-5	2	5	2	3	10	1	
CHAN STOR	25	-9	6	0	0	0	0	25	3	
EVAPORATION	44	8	11	10	5	2	2	5		
REG INFLOW	12451	2399	2096	2152	1041	486	555	1338	1219	1164
RELEASE	12432	2367	2083	2152	1041	486	555	1338	1219	1190
STOR CHANGE	19	32	13							-26
STORAGE	339	371	384	384	384	384	384	384	384	358
ELEV FTMSL	1205.2	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0	
DISCH KCFS	38.0	38.5	35.0	35.0	35.0	35.0	35.0	21.8	19.8	20.7
POWER										
AVE POWER MW		113	113	114	114	114	114	74	69	70
PEAK POW MW		114	115	115	115	115	115	77	77	76
ENERGY GWH	487.1	84.3	81.4	84.5	40.9	19.1	21.8	54.8	51.3	49.0
--GAVINS POINT - SIOUX CITY--										
NAT INFLOW	600	208	104	72	36	17	19	48	28	68
DEPLETION	105	32	20	8	5	2	3	11	12	12
REGULATED FLOW AT SIOUX CITY										
KAF	12927	2543	2167	2216	1072	500	572	1375	1235	1246
KCFS	41.4	36.4	36.0	36.0	36.0	36.0	36.0	22.4	20.1	21.7
--TOTAL--										
NAT INFLOW	6352	1356	1036	996	444	207	237	624	592	860
DEPLETION	-635	96	-158	-28	-79	-37	-42	-150	-161	-77
CHAN STOR	59	14	69	21	-11	-12	-33	17	-6	
EVAPORATION	2153	451	560	479	213	98	112	240		
STORAGE	65167	63447	61983	60332	59559	59191	58754	57929	57441	57132
SYSTEM POWER										
AVE POWER MW		1443	1161	1034	1035	1053	1269	1047	988	962
PEAK POW MW		2427	2427	2397	2369	2355	2347	2322	2331	2327
ENERGY GWH	5655.3	1073.7	836.2	769.1	372.5	176.8	243.7	779.2	734.8	669.2
DAILY GWH		34.6	27.9	24.8	24.8	25.3	30.5	25.1	23.7	23.1
INI-SUM	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB	

TIME OF STUDY 08:07:56

STUDY NO 5

VALUES IN 1000 AF EXCEPT AS INDICATED

29FEB00	2000													2001			
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	
--FORT PECK--																	
NAT INFLOW	8901	296	138	178	739	1487	2309	1130	423	351	492	195	91	104	321	276	371
DEPLETION	231	-47	-22	-28	16	320	692	128	-126	-149	-50	-49	-23	-26	-182	-166	-57
EVAPORATION	358							22	70	87	75	34	16	18	38		
MOD INFLOW	8312	343	160	206	723	1167	1617	980	479	413	467	210	98	112	465	442	428
RELEASE	8310	298	139	179	595	769	803	799	769	653	675	272	127	159	615	738	722
STOR CHANGE	2	46	21	27	128	398	814	181	-289	-240	-207	-62	-29	-46	-150	-296	-294
STORAGE	14997	15042	15064	15091	15219	15617	16431	16611	16322	16083	15875	15814	15785	15739	15588	15292	14998
ELEV FTMSL	2234.0	2234.2	2234.3	2234.4	2235.0	2236.9	2240.5	2241.3	2240.1	2239.0	2238.1	2237.8	2237.7	2237.4	2236.8	2235.4	2234.0
DISCH KCFS	14.0	10.0	10.0	10.0	10.0	12.5	13.5	13.0	12.5	11.0	11.0	9.1	9.1	10.0	10.0	12.0	13.0
POWER																	
AVE POWER MW		136	136	136	136	171	185	180	173	152	151	126	126	137	137	164	176
PEAK POW MW		208	209	209	209	210	213	214	213	212	211	211	211	211	210	209	208
ENERGY GWH	1378.2	48.9	22.8	29.4	98.1	127.0	132.9	133.6	128.8	109.1	112.4	45.3	21.1	26.4	102.0	122.0	118.5
--GARRISON--																	
NAT INFLOW	12901	482	225	289	1250	1723	3207	2405	764	522	593	236	110	126	260	316	394
DEPLETION	907	-10	-5	-6	10	112	851	466	47	-104	-1	-86	-40	-46	-113	-103	-66
CHAN STOR	10	40				-25	-10	5	15	0	18	0	18	-8	0	-20	-10
EVAPORATION	408							25	79	99	85	38	18	20	44		
REG INFLOW	19905	828	368	473	1835	2355	3149	2718	1411	1195	1183	573	259	302	944	1137	1172
RELEASE	19906	774	361	464	1666	1906	2023	2029	1968	1405	1452	677	316	365	1230	1660	1611
STOR CHANGE	-1	55	7	9	169	449	1126	689	-556	-210	-269	-103	-56	-63	-286	-523	-438
STORAGE	18114	18169	18176	18185	18353	18802	19929	20618	20061	19851	19582	19479	19423	19359	19074	18551	18112
ELEV FTMSL	1837.5	1837.7	1837.7	1837.7	1838.3	1839.7	1843.1	1845.2	1843.5	1842.9	1842.1	1841.8	1841.6	1841.4	1840.6	1838.9	1837.5
DISCH KCFS	28.0	26.0	26.0	26.0	28.0	31.0	34.0	33.0	32.0	23.6	23.6	22.7	22.7	23.0	20.0	27.0	29.0
POWER																	
AVE POWER MW		320	320	321	345	384	424	419	407	300	299	288	288	291	253	337	358
PEAK POW MW		476	476	477	479	484	497	502	500	496	493	491	491	490	487	481	476
ENERGY GWH	3018.6	115.3	53.8	69.2	248.7	285.8	305.4	312.0	303.1	216.1	222.5	103.5	48.3	55.8	187.9	250.6	240.5
--OAHÉ--																	
NAT INFLOW	3200	460	214	276	394	285	749	246	103	135	85	91	42	48	18	5	49
DEPLETION	527	21	10	13	44	59	111	125	80	20	-6	2	1	1	10	14	23
CHAN STOR	-6	8			-8	-11	-11	4	4	31	3	3		-1	12	-28	-8
EVAPORATION	411							26	81	100	86	38	18	20	42		
REG INFLOW	22162	1220	566	727	2008	2121	2650	2128	1913	1451	1458	731	340	391	1207	1623	1629
RELEASE	22172	887	275	503	1643	1836	1808	2080	2143	2282	1879	911	422	637	1916	1618	1332
STOR CHANGE	-10	333	290	224	365	285	842	48	-231	-831	-422	-180	-82	-245	-709	5	297
STORAGE	18847	19180	19470	19695	20060	20345	21187	21235	21004	20173	19751	19571	19489	19244	18535	18540	18836
ELEV FTMSL	1607.5	1608.6	1609.5	1610.2	1611.3	1612.2	1614.6	1614.7	1614.1	1611.6	1610.4	1609.8	1609.6	1608.8	1606.5	1606.6	1607.5
DISCH KCFS	23.5	29.8	19.8	28.2	27.6	29.9	30.4	33.8	34.9	38.3	30.6	30.6	30.4	40.1	31.2	26.3	24.0
POWER																	
AVE POWER MW		384	258	367	361	392	403	450	463	505	400	399	395	519	401	337	308
PEAK POW MW		712	717	720	726	730	743	744	740	728	721	718	717	713	701	701	706
ENERGY GWH	3509.9	138.4	43.3	79.2	260.2	291.8	289.8	335.1	344.8	363.9	297.6	143.5	66.3	99.6	298.2	250.8	207.2
--BIG BEND--																	
EVAPORATION	77							5	15	19	16	7	3	4	9		
REG INFLOW	22095	887	275	503	1643	1836	1808	2075	2129	2263	1863	903	418	633	1907	1618	1332
RELEASE	22095	887	275	503	1643	1836	1808	2075	2129	2263	1863	903	418	633	1907	1618	1332
STORAGE	1681	1681	1681	1681	1681	1681	1681	1681	1681	1681	1681	1681	1681	1681	1681	1681	1681
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	23.5	29.8	19.8	28.2	27.6	29.9	30.4	33.7	34.6	38.0	30.3	30.4	30.1	39.9	31.0	26.3	24.0
POWER																	
AVE POWER MW		140	93	132	129	140	142	158	162	180	148	151	150	197	152	128	115
PEAK POW MW		510	509	509	509	509	509	509	509	517	538	538	538	538	538	538	528
ENERGY GWH	1274.0	50.3	15.6	28.5	93.0	103.9	102.4	117.5	120.5	129.6	109.8	54.3	25.2	37.9	113.2	95.1	77.2
--FORT RANDALL--																	
NAT INFLOW	1200	142	66	85	239	150	195	89	65	64	38	3	1	1	18	5	39
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	88							6	19	24	19	7	3	3	8		
REG INFLOW	23126	1027	341	587	1878	1977	1991	2140	2160	2297	1882	898	416	630	1915	1620	1368
RELEASE	23125	619	324	587	1878	1977	1991	2140	2160	2441	2488	1223	570	652	1549	1383	1144
STOR CHANGE	0	408	17					0	-144	-607	-325	-154	-22	366	237	224	
STORAGE	3124	3532	3549	3549	3549	3549	3549	3549	3549	3405	2798	2473	2319	2297	2663	2900	3124
ELEV FTMSL	1350.0	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.5	1340.5	1337.9	1337.5	1343.5	1347.0	1350.0
DISCH KCFS	20.9	20.8	23.3	32.9	31.6	32.1	33.5	34.8	35.1	41.0	40.5	41.1	41.1	41.1	25.2	22.5	20.6
POWER																	
AVE POWER MW		171	196	275	264	269	280	291	293	327	310	290	276	271	186	174	164
PEAK POW MW		352	353	353	353	353	353	353	353	346	313	290	278	277	304	320	332
ENERGY GWH	2226.2	61.6	32.9	59.3	190.0	199.9	201.2	216.2	218.1	235.6	230.4	104.4	46.4	52.0	138.6	129.3	110.1
--GAVINS POINT--																	
NAT INFLOW	1899	93	44	56	207	257	237	178	144	114	132	51	24	27	86	89	161
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	0	0	-5	-18	3	-1	-3	-3	-1	-11	1	-1	0	0	30	5	4
EVAPORATION	28							2	5	7	6	3	1	1	3		
REG INFLOW	24882	713	363	625	2083	2214	2202	2275	2288	2542	2613	1264	590	674	1651	1477	1309
RELEASE	24882	713	363	625	2083	2214	2202	2275	2529	2613	1264	590	674	1651	1477	1335	
STOR CHANGE								13	13								-26
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0
DISCH KCFS	24.0	24.0	26.1	35.0	35.0	36.0	37.0	37.0	37.0	42.5	42.5	42.5	42.5	42.5	26.9	24.0	24.0
POWER																	
AVE POWER MW		82	89	112	112	114	114	114	114	114	115	115	115	115	77	78	77
PEAK POW MW		114	114	114	114	114	114	114	114	115	115	115	115	115	77	77	76
ENERGY GWH	901.6	29.5	14.9	24.1	80.4	84.5	81.8	84.5	84.8	82.2	85.2	41.2	19.2	22.0	57.5	57.7	51.8
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	2500	181	85	109	811	406	252	199	148	97	53	21	10	11	24	10	84
DEPLETION	234	6	3	3	19	33	29	35	32	21	8	5	2	3	11	12	12
REGULATED FLOW AT SIOUX CITY																	
KAF	27148	889	444	730	2875	2587	2425	2439	2391	2605	2658	1280	597	683	1664	1475	1407
KCFS		29.9	32.0	40.9	48.3	42.1	40.7	39.7	38.9	43.8	43.2	43.0	43.0	43.0	27.1	24.0	25.3
--TOTAL--																	
NAT INFLOW	30601	1654	772	992	3640												

	VALUES IN 1000 AF EXCEPT AS INDICATED												STUDY NO 6					
	29FEB00	15MAR	2000	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	2001	31DEC	31JAN	28FEB	
	INI-SUM																	
--FORT PECK--																		
NAT INFLOW	7400	264	123	158	628	1210	1851	829	324	319	398	188	88	100	310	261	349	
DEPLETION	224	-15	-7	-9	39	288	613	133	-135	-170	-54	-41	-19	-22	-136	-172	-69	
EVAPORATION	474							29	91	114	99	45	21	24	51			
MOD INFLOW	6702	280	130	168	589	922	1238	667	368	375	353	183	86	98	395	433	418	
RELEASE	6712	179	69	89	417	615	655	646	615	535	414	238	125	159	615	676	666	
STOR CHANGE	-9	101	61	79	172	307	583	21	-247	-160	-61	-55	-39	-61	-220	-243	-248	
STORAGE	15006	15107	15169	15247	15419	15727	16310	16331	16084	15925	15863	15809	15769	15709	15489	15245	14997	
ELEV FTMSL	2234.0	2234.5	2234.8	2235.2	2236.0	2237.4	2240.0	2240.1	2239.0	2238.3	2238.0	2237.8	2237.6	2237.3	2236.3	2235.2	2234.0	
DISCH KCFS	12.0	6.0	5.0	5.0	7.0	10.0	11.0	10.5	10.0	9.0	6.7	8.0	9.0	10.0	10.0	11.0	12.0	
POWER																		
AVE POWER MW		82	68	68	96	137	152	145	138	124	93	110	124	137	137	150	163	
PEAK POW MW		209	209	209	210	211	213	213	212	211	211	211	211	211	210	209	208	
ENERGY GWH	1114.8	29.4	11.5	14.8	68.9	101.9	109.1	108.1	102.8	89.2	69.1	39.6	20.8	26.4	102.0	111.7	109.7	
--GARRISON--																		
NAT INFLOW	11001	469	219	282	853	1423	2958	2066	581	497	454	192	89	102	253	237	326	
DEPLETION	815	-7	-3	-4	13	170	743	462	38	-123	4	-81	-38	-43	-129	-114	-73	
CHAN STOR	0	59	10		-20	-30	-10	5	5	10	22	-12	-10	-10	0	-10	-10	
EVAPORATION	545							33	106	132	114	51	24	27	58			
REG INFLOW	16353	715	302	375	1237	1838	2860	2221	1057	1032	772	447	218	267	939	1018	1056	
RELEASE	16351	595	236	303	1190	1476	1547	1568	1537	1274	1188	575	278	317	1230	1537	1500	
STOR CHANGE	3	120	66	72	47	363	1313	653	-480	-241	-416	-128	-59	-50	-291	-520	-444	
STORAGE	18122	18242	18308	18379	18426	18788	20101	20754	20274	20033	19617	19489	19430	19379	19088	18569	18125	
ELEV FTMSL	1837.5	1837.9	1838.1	1838.4	1838.5	1839.7	1843.7	1845.6	1844.2	1843.5	1842.2	1841.8	1841.6	1841.5	1840.6	1839.0	1837.5	
DISCH KCFS	26.0	20.0	17.0	17.0	20.0	24.0	26.0	25.5	25.0	21.4	19.3	19.3	20.0	20.0	25.0	27.0		
POWER																		
AVE POWER MW		247	211	211	249	299	328	326	320	273	246	245	253	253	253	312	334	
PEAK POW MW		477	478	479	479	484	500	502	502	499	493	492	491	490	487	481	476	
ENERGY GWH	2492.2	89.1	35.5	45.7	178.9	222.3	236.5	242.7	238.3	196.8	182.7	88.0	42.5	48.6	188.0	232.4	224.3	
--OAH--																		
NAT INFLOW	2300	317	148	190	364	236	689	162	33	118	14	5	2	3	-20		40	
DEPLETION	527	21	10	13	44	59	111	125	80	20	-6	2	1	1	10	14	23	
CHAN STOR	-4	24	12		-12	-16	-8	2	2	14	8		-3	0	0	-20	-8	
EVAPORATION	503							32	99	121	104	47	22	25	54			
REG INFLOW	17616	914	386	481	1498	1637	2117	1575	1394	1265	1112	531	255	294	1146	1503	1508	
RELEASE	17618	730	343	358	1335	1603	1666	1958	1970	1756	1261	598	276	259	1302	1236	967	
STOR CHANGE	-1	184	43	123	163	34	452	-383	-576	-491	-149	-66	-21	35	-156	266	541	
STORAGE	18846	19030	19073	19195	19359	19393	19844	19462	18885	18394	18245	18178	18157	18193	18037	18303	18845	
ELEV FTMSL	1607.5	1608.1	1608.3	1608.6	1609.2	1609.3	1610.7	1609.5	1607.7	1606.1	1605.6	1605.4	1605.3	1605.4	1604.9	1605.8	1607.5	
DISCH KCFS	21.1	24.5	24.7	20.1	22.4	26.1	28.0	31.8	32.0	29.5	20.5	20.1	19.9	16.3	21.2	20.1	17.4	
POWER																		
AVE POWER MW		317	319	260	291	339	365	415	414	378	262	257	253	208	270	256	224	
PEAK POW MW		709	710	712	715	715	723	716	707	698	696	695	694	695	692	697	706	
ENERGY GWH	2749.1	114.0	53.6	56.2	209.8	252.0	262.7	308.4	308.0	272.3	195.2	92.4	42.6	40.0	200.6	190.8	150.5	
--BIG BEND--																		
EVAPORATION	103							6	20	25	22	10	5	5	11			
REG INFLOW	17515	730	343	358	1335	1603	1666	1952	1950	1731	1240	588	271	254	1290	1236	967	
RELEASE	17515	730	343	358	1335	1603	1666	1952	1950	1731	1240	588	271	254	1290	1236	967	
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	
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	21.1	24.5	24.7	20.1	22.4	26.1	28.0	31.7	31.7	29.1	20.2	19.8	19.5	16.0	21.0	20.1	17.4	
POWER																		
AVE POWER MW		116	116	94	105	122	131	149	148	138	99	99	98	81	103	98	84	
PEAK POW MW		517	509	509	509	509	509	509	517	538	538	538	538	538	538	537	529	
ENERGY GWH	1009.4	41.9	19.4	20.3	75.6	90.8	94.3	110.5	110.4	99.3	73.6	35.7	16.5	15.5	77.0	72.5	56.1	
--FORT RANDALL--																		
NAT INFLOW	900	122	57	73	115	140	185	74	57	42	2	2	1	1	10		19	
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3	
EVAPORATION	118							8	25	31	25	10	4	4	10			
REG INFLOW	18217	851	399	431	1446	1734	1839	2000	1967	1735	1216	579	268	250	1287	1233	983	
RELEASE	18216	559	265	431	1446	1734	1839	2000	1967	1879	1853	883	413	272	921	922	833	
STOR CHANGE	1	292	134					0	-144	-637	-304	-145	-22	366	311	150		
STORAGE	3123	3415	3549	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2297	2663	2974	3124	
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1348.0	1350.0	
DISCH KCFS	19.3	18.8	19.1	24.1	24.3	28.2	30.9	32.5	32.0	31.6	30.1	29.7	29.7	17.1	15.0	15.0	15.0	
POWER																		
AVE POWER MW		154	160	203	204	236	258	272	267	262	240	223	216	124	112	117	120	
PEAK POW MW		347	353	353	353	353	353	353	353	346	310	289	278	276	304	324	332	
ENERGY GWH	1794.9	55.4	26.8	43.7	146.9	175.7	186.1	202.2	199.0	188.8	178.6	80.4	36.3	23.8	83.0	87.1	80.9	
--GAVINS POINT--																		
NAT INFLOW	1450	92	43	55	148	174	166	86	103	77	122	50	23	27	77	79	127	
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1		
CHAN STOR	8	1	-1	-10	0	-7	-5	-3	1	1	3	1	0	24	4	0		
EVAPORATION	37							2	7	9	8	4	2	2	4			
REG INFLOW	19523	653	308	477	1589	1882	1976	2041	2054	1953	1968	925	432	317	988	1000	960	
RELEASE	19523	653	308	477	1589	1882	1976	2041	2041	1940	1968	925	432	317	988	1000	986	
STOR CHANGE								13	13								-26	
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358	
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0						

TIME OF STUDY 08:06:14

STUDY NO 7

VALUES IN 1000 AF EXCEPT AS INDICATED

	29FEB00	2000										2001					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	6000	242	113	145	525	925	1454	633	263	252	324	167	78	89	295	212	283
DEPLETION	183	-13	-6	-8	31	170	257	104	-32	-82	-49	-8	-4	-4	-77	-79	-19
EVAPORATION	565							35	110	137	118	53	25	28	60		
MOD INFLOW	5252	255	119	153	494	755	1197	494	185	197	255	122	57	65	312	291	302
RELEASE	6788	179	69	89	417	584	655	646	615	606	479	223	111	159	615	676	666
STOR CHANGE	-1536	76	49	63	77	171	542	-152	-430	-408	-223	-101	-54	-93	-303	-385	-364
STORAGE	15006	15082	15131	15194	15272	15443	15985	15833	15403	14995	14771	14670	14616	14522	14220	13834	13470
ELEV FTMSL	2234.0	2234.4	2234.6	2234.9	2235.3	2236.1	2238.6	2237.9	2235.9	2234.0	2232.9	2232.4	2232.2	2231.7	2230.2	2228.3	2226.4
DISCH KCFS	8.0	6.0	5.0	5.0	7.0	9.5	11.0	10.5	10.0	10.2	7.8	7.5	8.0	10.0	10.0	11.0	12.0
POWER																	
AVE POWER MW		82	68	68	96	130	151	144	137	139	106	102	108	135	135	147	159
PEAK POW MW		209	209	209	209	210	212	211	210	208	208	207	207	207	206	204	203
ENERGY GWH	1115.1	29.4	11.5	14.7	68.8	96.6	108.7	107.5	102.0	99.9	78.6	36.6	18.2	25.9	100.1	109.5	107.2
--GARRISON--																	
NAT INFLOW	9400	443	207	266	712	1197	2521	1765	496	417	400	164	76	87	222	165	262
DEPLETION	786	-12	-5	-7	-4	126	500	407	53	-86	50	-55	-25	-29	-62	-43	-22
CHAN STOR	-40	20	10		-20	-25	-15	5	5	-2	23	3	-5	-20	0	-10	-10
EVAPORATION	653							41	130	160	136	60	28	31	67		
REG INFLOW	14709	653	292	362	1113	1630	2661	1967	933	947	716	384	180	224	832	874	940
RELEASE	16569	595	236	303	1190	1414	1488	1506	1476	1428	1433	693	278	317	1230	1537	1444
STOR CHANGE	-1860	58	55	59	-77	216	1173	461	-543	-481	-717	-309	-97	-94	-398	-663	-504
STORAGE	18120	18178	18233	18292	18215	18431	19604	20065	19522	19042	18325	18016	17918	17825	17426	16764	16260
ELEV FTMSL	1837.5	1837.7	1837.9	1838.1	1837.8	1838.5	1842.2	1843.5	1841.9	1840.5	1838.2	1837.2	1836.9	1836.6	1835.2	1833.0	1831.2
DISCH KCFS	21.0	20.0	17.0	17.0	20.0	23.0	25.0	24.5	24.0	24.0	23.3	23.3	20.0	20.0	20.0	25.0	26.0
POWER																	
AVE POWER MW		247	211	211	248	285	313	311	304	303	291	288	246	246	245	301	309
PEAK POW MW		476	477	478	477	479	493	499	492	487	478	474	473	472	467	459	452
ENERGY GWH	2483.6	89.0	35.4	45.6	178.4	211.9	225.7	231.1	226.3	217.9	216.2	103.6	41.4	47.2	182.0	224.2	207.8
--OAHB--																	
NAT INFLOW	1449	154	72	92	229	130	577	102	24	65	9				-35	-6	36
DEPLETION	527	21	10	13	44	59	111	125	80	20	-6	2	1	1	10	14	23
CHAN STOR	-21	4	12		-12	-12	-8	2	2	0	3		14	0	0	-22	-4
EVAPORATION	575							37	112	138	119	54	25	29	62		
REG INFLOW	16895	732	310	383	1363	1473	1945	1449	1309	1335	1332	638	266	288	1123	1495	1453
RELEASE	18801	753	382	469	1595	1856	1788	2064	2064	1864	1361	609	282	260	1289	1178	988
STOR CHANGE	-1906	-22	-72	-86	-232	-382	157	-615	-754	-529	-29	29	-16	28	-166	318	465
STORAGE	18844	18822	18749	18664	18432	18050	18207	17592	16838	16308	16280	16309	16293	16321	16155	16473	16938
ELEV FTMSL	1607.5	1607.5	1607.2	1607.0	1606.2	1604.9	1605.5	1603.4	1600.8	1598.9	1598.8	1598.9	1598.8	1598.9	1598.3	1599.5	1601.1
DISCH KCFS	21.1	25.3	27.5	26.3	26.8	30.2	30.1	33.6	33.6	31.3	22.1	20.5	20.3	16.4	21.0	19.2	17.8
POWER																	
AVE POWER MW		326	354	337	343	384	382	424	418	386	272	252	250	202	258	236	221
PEAK POW MW		706	704	703	699	692	695	684	670	661	660	661	660	661	658	664	672
ENERGY GWH	2851.1	117.4	59.5	72.9	247.1	285.6	274.7	315.3	311.3	277.9	202.5	90.6	42.0	38.8	191.7	175.5	148.4
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	18672	753	382	469	1595	1856	1788	2056	2039	1833	1334	596	276	253	1275	1178	988
RELEASE	18672	753	382	469	1595	1856	1788	2056	2039	1833	1334	596	276	253	1275	1178	988
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
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	21.1	25.3	27.5	26.3	26.8	30.2	30.1	33.4	33.2	30.8	21.7	20.0	19.9	16.0	20.7	19.2	17.8
POWER																	
AVE POWER MW		120	129	123	125	141	141	156	155	146	106	100	100	80	102	93	85
PEAK POW MW		518	510	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1075.3	43.2	21.7	26.6	90.3	105.1	101.3	116.4	115.5	105.1	79.1	36.2	16.8	15.4	76.1	69.3	57.3
--PORT RANDALL--																	
NAT INFLOW	500	68	32	41	64	51	130	26	49	23	1				5	-5	15
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	147							10	32	39	31	12	5	5	13		
REG INFLOW	18945	820	413	509	1655	1898	1906	2054	2042	1810	1303	584	271	248	1264	1170	1000
RELEASE	18944	550	274	492	1655	1898	1906	2054	2042	1954	1940	888	416	270	898	898	811
STOR CHANGE	1	270	139	17	0	0	0	0	-144	-637	-304	-145	-23	366	272	189	
STORAGE	3123	3393	3532	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2296	2662	2934	3123
ELEV FTMSL	1350.0	1353.3	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1347.4	1350.0
DISCH KCFS	18.5	18.5	19.7	27.6	27.8	30.9	32.0	33.4	33.2	32.8	31.5	29.8	30.0	17.0	14.6	14.6	14.6
POWER																	
AVE POWER MW		151	165	231	233	258	268	279	277	272	251	224	218	123	109	114	117
PEAK POW MW		346	352	353	353	353	353	353	353	346	310	289	278	276	304	322	332
ENERGY GWH	1866.9	54.5	27.7	49.8	167.7	192.0	192.8	207.6	206.4	196.2	186.8	80.8	36.6	23.7	81.0	84.6	78.6
--GAVINS POINT--																	
NAT INFLOW	1251	91	43	55	124	138	143	81	80	58	105	47	22	25	70	68	101
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	7		-2	-15	0	-6	-2	-3	0	1	2	3	0	24	5		
EVAPORATION	47							3	9	11	10	5	2	2	5		
REG INFLOW	20041	642	314	532	1773	2011	2023	2091	2104	2006	2035	928	433	314	957	965	912
RELEASE	20041	642	314	532	1773	2011	2023	2091	1993	2035	928	433	314	957	965	938	
STOR CHANGE								13	13								-26
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0
DISCH KCFS	20.7	21.6	22.6	29.8	29.8	32.7	34.0	34.0	34.0	33.5	33.1	31.2	31.2	19.8	15.6	15.7	16.9
POWER																	
AVE POWER MW		74	78	100	100	107	110	110	110	110	110	105	105	70	55	55	59
PEAK POW MW		114	114	114	114	114	114	114	114	115	115	115	115	115	77	77	76
ENERGY GWH	806.5	26.7	13.0	21.6	72.1	79.4	78.9	81.5	81.9	79.1	81.5	37.9	17.7	13.4	40.9	41.2	39.7
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	900	115	54	69	90	174	125	75	56	35	24	13	6	7	13	-3	48
DEPLETION	234	6	3	3	19	33	29	35	32	21	8	5	2	3	11	12	12
REGULATED FLOW AT SIOUX CITY																	
KAF	20707	752	365	598	1844	2152	2119	2131	2115	2007	2051	936	437	318	959	950	974
KCFS		25.3	26.3	33.5	31.0	35.0	35.6	34.7	34.4	33.7	33.4	31.5	31.5	20.1	15.6	15.4	17.5
--TOTAL--																	
NAT INFLOW	19500	1114	520	668	1744	2615	4950	2682	968	850	863	390	182	208	570	431	74

	VALUES IN 1000 AF EXCEPT AS INDICATED														STUDY NO			
	29FEB00	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	
--FORT PECK--																		
NAT INFLOW	5100	234	109	140	515	783	996	439	253	242	320	159	74	85	271	205	275	
DEPLETION	214	-13	-6	-8	31	170	257	107	-29	-84	-53	-5	-2	-3	-70	-69	-10	
EVAPORATION	542							34	107	132	113	50	23	26	56			
MOD INFLOW	4344	247	115	148	484	613	739	298	175	194	260	113	53	61	285	274	285	
RELEASE	6665	179	69	89	387	553	625	615	584	556	498	268	125	159	615	676	666	
STOR CHANGE	-2320	68	46	59	97	60	114	-317	-409	-362	-238	-155	-72	-98	-330	-402	-381	
STORAGE	15006	15074	15120	15178	15276	15335	15449	15132	14723	14362	14124	13969	13897	13799	13469	13067	12685	
ELEV FTMSL	2234.0	2234.4	2234.6	2234.9	2235.3	2235.6	2236.1	2234.6	2232.7	2230.9	2229.8	2229.0	2228.6	2228.1	2226.4	2224.3	2222.2	
DISCH KCFS	8.0	6.0	5.0	5.0	6.5	9.0	10.5	10.0	9.5	9.3	8.1	9.0	9.0	10.0	10.0	11.0	12.0	
POWER																		
AVE POWER MW		82	68	68	89	123	143	136	129	126	109	121	120	133	133	145	157	
PEAK POW MW		209	209	209	209	209	210	209	207	206	205	205	204	204	203	200	198	
ENERGY GWH	1085.2	29.4	11.5	14.7	63.9	91.4	103.3	101.5	96.0	90.9	81.0	43.4	20.2	25.6	98.9	108.0	105.4	
--GARRISON--																		
NAT INFLOW	7299	270	126	162	700	903	2020	1277	361	277	390	161	75	86	108	160	223	
DEPLETION	843	-12	-5	-7	-4	126	500	407	53	-86	50	-55	-25	-29	-40	-23	-7	
CHAN STOR	-41	20	10		-15	-25	-15	5	5	2	12	-9		-10	0	-10	-10	
EVAPORATION	614							39	121	149	127	57	26	30	65			
REG INFLOW	12466	480	211	258	1076	1306	2130	1451	776	772	723	417	199	233	698	849	886	
RELEASE	15289	595	208	268	1071	1353	1428	1414	1353	1225	1163	536	264	317	1230	1476	1388	
STOR CHANGE	-2823	-115	2	-10	5	-47	702	37	-577	-453	-440	-118	-65	-84	-532	-627	-502	
STORAGE	18120	18005	18007	17997	18002	17955	18657	18694	18117	17664	17223	17105	17041	16957	16425	15799	15296	
ELEV FTMSL	1837.5	1837.2	1837.2	1837.1	1837.1	1837.0	1839.2	1839.4	1837.5	1836.0	1834.5	1834.1	1833.9	1833.6	1831.8	1829.6	1827.8	
DISCH KCFS	21.0	20.0	15.0	15.0	18.0	22.0	24.0	23.0	22.0	20.6	18.9	18.0	19.0	20.0	20.0	24.0	25.0	
POWER																		
AVE POWER MW		247	185	185	222	271	297	287	273	253	231	218	230	241	240	283	291	
PEAK POW MW		474	474	474	474	474	482	483	476	470	465	463	462	461	454	446	440	
ENERGY GWH	2253.5	88.9	31.2	40.1	159.9	201.4	213.8	213.4	203.2	182.2	171.6	78.6	38.6	46.3	178.3	210.6	195.4	
--OAH--																		
NAT INFLOW	1049	197	92	118	183	100	215	82	21	64	5	-5	-2	-3	-48	-12	41	
DEPLETION	527	21	10	13	44	59	111	125	80	20	-6	2	1	1	10	14	23	
CHAN STOR	-18	4	20	0	-12	-16	-8	4	4	6	7	4	-5	-5	0	-18	-4	
EVAPORATION	549							36	109	132	113	50	23	27	58			
REG INFLOW	15244	775	310	373	1198	1378	1524	1340	1189	1143	1069	483	233	283	1114	1432	1402	
RELEASE	18139	654	382	483	1619	1841	1737	2014	2013	1835	1347	581	269	240	1177	1062	885	
STOR CHANGE	-2894	121	-72	-110	-421	-463	-213	-674	-824	-692	-278	-98	-36	43	-63	370	517	
STORAGE	18844	18965	18893	18783	18362	17899	17686	17012	16187	15496	15218	15120	15084	15127	15063	15433	15949	
ELEV FTMSL	1607.5	1607.9	1607.7	1607.3	1606.0	1604.4	1603.7	1601.4	1598.4	1595.9	1594.8	1594.4	1594.3	1594.5	1594.2	1595.6	1597.6	
DISCH KCFS	21.1	22.0	27.5	27.1	27.2	29.9	29.2	32.8	32.7	30.8	21.9	19.5	19.4	15.1	19.1	17.3	15.9	
POWER																		
AVE POWER MW		284	355	348	349	380	368	409	403	374	264	235	233	182	230	208	194	
PEAK POW MW		708	707	705	698	690	686	674	659	646	641	639	638	639	638	645	654	
ENERGY GWH	2721.8	102.2	59.6	75.3	251.0	282.7	265.3	304.6	300.1	269.5	196.6	84.5	39.1	34.9	171.0	154.9	130.4	
--BIG BEND--																		
EVAPORATION	129							8	24	31	27	12	6	7	14			
REG INFLOW	18010	654	382	483	1619	1841	1737	2006	1989	1804	1320	568	263	233	1163	1062	885	
RELEASE	18010	654	382	483	1619	1841	1737	2006	1989	1804	1320	568	263	233	1163	1062	885	
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	
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	21.1	22.0	27.5	27.1	27.2	29.9	29.2	32.6	32.3	30.3	21.5	19.1	19.0	14.7	18.9	17.3	15.9	
POWER																		
AVE POWER MW		104	129	127	127	140	137	153	151	144	105	96	95	74	93	84	76	
PEAK POW MW		518	510	509	509	509	509	509	517	538	538	538	538	538	538	538	529	
ENERGY GWH	1036.8	37.4	21.7	27.4	91.7	104.2	98.4	113.6	112.6	103.4	78.3	34.5	16.0	14.2	69.5	62.5	51.4	
--FORT RANDALL--																		
NAT INFLOW	300	55	26	33	43	35	120	13	36	-10	-52	-3	-1	-1		-6	12	
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3	
EVAPORATION	147							10	32	39	31	12	5	5	13			
REG INFLOW	18083	708	407	516	1658	1867	1845	1991	1978	1747	1236	553	257	226	1147	1053	894	
RELEASE	18082	455	251	499	1658	1867	1845	1991	1978	1891	1873	857	402	248	781	781	705	
STOR CHANGE	1	252	157	17			0	0	0	-144	-637	-304	-145	-22	366	272	189	
STORAGE	3123	3375	3532	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2297	2663	2935	3124	
ELEV FTMSL	1350.0	1353.1	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1347.5	1350.0	
DISCH KCFS	18.5	15.3	18.1	27.9	27.9	30.4	31.0	32.4	32.2	31.8	30.5	28.8	28.9	15.6	12.7	12.7	12.7	
POWER																		
AVE POWER MW		125	151	234	233	254	259	271	269	264	243	217	211	114	95	99	102	
PEAK POW MW		345	352	353	353	353	353	353	353	346	310	289	278	276	304	322	332	
ENERGY GWH	1784.6	45.2	25.3	50.5	168.1	189.0	186.7	201.4	200.1	190.0	180.5	78.0	35.4	21.8	70.5	73.7	68.5	
--GAVINS POINT--																		
NAT INFLOW	1200	87	41	52	120	131	138	76	76	55	104	45	21	24	67	65	98	
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1		
CHAN STOR	10	6	-5	-19	0	-5	-1	-3	0	1	2	3	0	25	6			
EVAPORATION	47							3	9	11	10	5	2	2	5			
REG INFLOW	19131	549	286	532	1773	1974	1958	2023	2036	1941	1968	896	418	292	838	845	803	
RELEASE	19131	549	286	532	1773	1974	1958	2023	2023	1928	1968	896	418	292	838	845	829	
STOR CHANGE								13	13								-26	
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358	
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0	
DISCH KCFS	20.7	18.5	20.6	29.8	29.8	32.1												

TIME OF STUDY 08:14:59

STUDY NO 9

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB01	2001										2002						
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	
--FORT PECK--																	
NAT INFLOW	7400	264	123	158	628	1210	1851	829	324	319	398	188	88	100	310	261	349
DEPLETION	446	-14	-7	-8	33	348	670	150	-87	-134	-56	-33	-15	-18	-124	-155	-104
EVAPORATION	470							29	90	113	98	44	21	24	51		
MOD INFLOW	6484	278	130	167	595	862	1181	650	321	340	356	176	82	94	383	416	453
RELEASE	6519	179	69	89	417	615	655	646	615	471	379	183	86	159	615	676	666
STOR CHANGE	-35	100	60	78	178	247	526	5	-294	-131	-23	-7	-3	-65	-232	-260	-213
STORAGE	14997	15096	15157	15234	15413	15660	16186	16191	15897	15766	15743	15735	15732	15667	15435	15175	14961
ELEV FTMSL	2234.0	2234.5	2234.8	2235.1	2235.9	2237.1	2239.5	2239.5	2238.2	2237.6	2237.5	2237.4	2237.1	2236.1	2234.8	2233.8	
DISCH KCFS	12.0	6.0	5.0	5.0	7.0	10.0	11.0	10.5	10.0	7.9	6.2	6.2	6.2	10.0	10.0	11.0	12.0
POWER																	
AVE POWER MW		82	68	68	96	137	151	145	138	109	85	85	85	137	137	150	163
PEAK POW MW		209	209	209	210	211	212	212	211	211	211	211	211	210	210	209	208
ENERGY GWH	1081.6	29.4	11.5	14.8	68.9	101.9	109.0	107.9	102.6	78.4	63.1	30.5	14.2	26.3	101.9	111.6	109.6
--GARRISON--																	
NAT INFLOW	11001	469	219	282	853	1423	2958	2066	581	497	454	192	89	102	253	237	326
DEPLETION	874	-19	-9	-12	-10	226	795	488	60	-112	16	-91	-42	-48	-147	-132	-89
CHAN STOR	0	59	10		-20	-30	-10	5	5	20	17	0	0	-37	0	-10	-10
EVAPORATION	543							33	106	132	114	51	24	27	58		
REG INFLOW	16102	727	307	382	1260	1782	2808	2195	1035	968	720	415	194	245	957	1036	1072
RELEASE	16161	506	236	303	1190	1476	1547	1568	1537	1257	1144	554	258	317	1230	1537	1500
STOR CHANGE	-58	221	71	79	70	307	1261	627	-502	-289	-424	-139	-65	-73	-273	-502	-428
STORAGE	18125	18346	18417	18496	18566	18872	20133	20760	20258	19969	19545	19406	19341	19269	18996	18494	18066
ELEV FTMSL	1837.5	1838.3	1838.5	1838.7	1839.0	1839.9	1843.8	1845.6	1844.1	1843.3	1842.0	1841.6	1841.4	1841.2	1840.3	1838.7	1837.4
DISCH KCFS	27.0	17.0	17.0	17.0	20.0	24.0	26.0	25.5	25.0	21.1	18.6	18.6	18.6	20.0	20.0	25.0	27.0
POWER																	
AVE POWER MW		211	212	212	249	299	329	326	320	270	236	235	235	253	252	312	333
PEAK POW MW		478	479	480	481	485	501	502	502	498	492	491	490	489	486	480	475
ENERGY GWH	2463.5	75.9	35.5	45.8	179.4	222.8	236.6	242.8	238.3	194.1	175.9	84.8	39.5	48.5	187.6	232.0	224.0
--OAHÉ--																	
NAT INFLOW	2300	317	148	190	364	236	689	162	33	118	14	5	2	3	-20		40
DEPLETION	542	21	10	13	44	60	114	129	84	21	-6	2	1	-1	10	15	24
CHAN STOR	0	40			-12	-16	-8	2	2	15	10	-6	0	-6	0	-20	-8
EVAPORATION	503							32	99	121	104	47	22	25	54		
REG INFLOW	17415	841	374	481	1498	1636	2114	1571	1389	1248	1070	510	238	289	1146	1502	1507
RELEASE	17471	733	188	364	1334	1603	1666	1958	1970	1756	1261	598	276	259	1302	1236	967
STOR CHANGE	-56	107	186	117	164	33	449	-387	-581	-508	-191	-87	-38	30	-156	265	540
STORAGE	18845	18953	19139	19255	19419	19452	19901	19514	18933	18425	18234	18147	18109	18139	17984	18249	18789
ELEV FTMSL	1607.5	1607.9	1608.5	1608.8	1609.3	1609.5	1610.8	1609.6	1607.8	1606.2	1605.5	1605.3	1605.1	1605.2	1604.7	1605.6	1607.4
DISCH KCFS	17.4	24.6	13.5	20.4	22.4	26.1	28.0	31.8	32.0	29.5	20.5	20.1	19.9	16.3	21.2	20.1	17.4
POWER																	
AVE POWER MW		318	175	265	292	339	365	415	414	378	262	256	253	208	269	256	224
PEAK POW MW		708	711	713	716	716	724	717	708	699	696	694	693	694	691	696	705
ENERGY GWH	2727.0	114.4	29.5	57.2	209.9	252.2	262.9	308.7	308.3	272.5	195.2	92.3	42.6	40.0	200.4	190.6	150.3
--BIG BEND--																	
EVAPORATION	103							6	20	25	22	10	5	5	11		
REG INFLOW	17368	733	188	364	1334	1603	1666	1952	1950	1731	1240	588	271	254	1290	1236	967
RELEASE	17368	733	188	364	1334	1603	1666	1952	1950	1731	1240	588	271	254	1290	1236	967
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
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	17.4	24.6	13.5	20.4	22.4	26.1	28.0	31.7	31.7	29.1	20.2	19.8	19.5	16.0	21.0	20.1	17.4
POWER																	
AVE POWER MW		116	63	95	105	122	131	149	148	138	99	99	98	81	103	98	84
PEAK POW MW		510	509	509	509	509	509	509	509	517	538	538	538	538	538	537	529
ENERGY GWH	1000.7	41.6	10.6	20.6	75.6	90.8	94.3	110.5	110.4	99.3	73.6	35.7	16.5	15.5	77.0	72.5	56.1
--FORT RANDALL--																	
NAT INFLOW	900	122	57	73	115	140	185	74	57	42	2	2	1	1	10		19
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	118							8	25	31	25	10	4	4	10		
REG INFLOW	18070	854	244	437	1445	1734	1839	2000	1967	1735	1216	579	268	250	1287	1233	983
RELEASE	18071	446	227	437	1445	1734	1839	2000	1967	1879	1853	883	413	272	921	922	833
STOR CHANGE	0	408	17					0	0	-144	-637	-304	-145	-22	366	311	150
STORAGE	3124	3532	3549	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2297	2663	2974	3124
ELEV FTMSL	1350.0	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1348.0	1350.0
DISCH KCFS	15.0	15.0	16.3	24.5	24.3	28.2	30.9	32.5	32.0	31.6	30.1	29.7	29.7	17.1	15.0	15.0	15.0
POWER																	
AVE POWER MW		124	138	205	204	236	258	272	267	262	240	223	216	124	112	117	120
PEAK POW MW		352	353	353	353	353	353	353	353	346	310	289	278	276	304	324	332
ENERGY GWH	1780.9	44.6	23.2	44.3	146.8	175.7	186.1	202.2	199.0	188.8	178.6	80.4	36.3	23.8	83.0	87.1	80.9
--GAVINS POINT--																	
NAT INFLOW	1450	92	43	55	148	174	166	86	103	77	122	50	23	27	77	79	127
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1		-3	-16	0	-7	-5	-3	1	1	3	1	0	24	4	0	
EVAPORATION	37							2	7	9	8	4	2	2	4		
REG INFLOW	19368	539	268	477	1589	1882	1976	2041	2054	1953	1968	925	432	317	988	1000	960
RELEASE	19368	539	268	477	1589	1882	1976	2041	2041	1940	1968	925	432	317	988	1000	986
STOR CHANGE								13	13								-26
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0	
DISCH KCFS	17.8	18.1	19.3	26.7	26.7	30.6	33.2	33.2	33.2	32.6	32.0	31.1	31.1	20.0	16.1	16.3	17.8
POWER																	
AVE POWER MW		63	66	91	91	102	108	108	108	108	107	105	105	70	57	57	62
PEAK POW MW		114	114	114	114	114	114	114	114	115	115	115	115	115	77	77	76
ENERGY GWH	786.0	22.5	11.2	19.6	65.4	75.9	77.6	80.2	80.6	77.7	79.7	37.8	17.6	13.5	42.2	42.7	41.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1550	169	79	102	199	310	224	129	96	60	42	16	7	9	21	5	82
DEPLETION	237	6	3	3	19	34	29	36	32	21	9	5	2	3	11	12	12
REGULATED FLOW AT SIOUX CITY																	
KAF	20681	703	344	575	1769	2158	2171	2134	2105	1979	2001	936	437	323	998	993	1056
KCFS	23.6	24.8	32.2	29.7													

TIME OF STUDY 08:15:00

STUDY NO 11

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB03	2003		2004													
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																
NAT INFLOW	7400	264	123	158	628	1210	1851	829	324	319	398	188	88	100	261	349
DEPLETION	356	-38	-18	-23	-9	342	671	156	-82	-134	-58	-34	-16	-18	-125	-104
EVAPORATION	471							29	91	113	99	44	21	24	51	
MOD INFLOW	6573	302	141	181	637	868	1180	644	315	340	357	177	82	94	384	416
RELEASE	6616	179	69	89	417	553	655	646	615	493	397	238	125	159	615	676
STOR CHANGE	-43	124	72	92	220	315	525	-2	-300	-154	-40	-61	-43	-64	-231	-237
STORAGE	14930	15054	15126	15218	15438	15753	16278	16277	15977	15823	15784	15722	15680	15615	15384	15124
ELEV FTMSL	2233.7	2234.3	2234.6	2235.0	2236.1	2237.5	2239.9	2239.9	2238.5	2237.8	2237.6	2237.4	2237.2	2236.9	2234.6	2233.5
DISCH KCFS	12.0	6.0	5.0	5.0	7.0	9.0	11.0	10.5	10.0	8.3	6.5	8.0	9.0	10.0	11.0	12.0
POWER																
AVE POWER MW		82	68	68	96	123	152	145	138	114	89	110	124	137	137	150
PEAK POW MW		209	209	209	210	211	213	213	212	211	211	211	211	210	210	209
ENERGY GWH	1097.9	29.4	11.5	14.8	68.9	91.8	109.1	108.0	102.7	82.2	66.2	39.6	20.8	26.3	101.8	113.4
--GARRISON--																
NAT INFLOW	11001	469	219	282	853	1423	2958	2066	581	497	454	192	89	102	253	326
DEPLETION	918	-27	-13	-16	-17	233	834	524	75	-113	11	-98	-46	-52	-149	-97
CHAN STOR	0	60	10		-20	-20	-20	5	5	16	18	-15	-10	-10	0	-10
EVAPORATION	540							33	105	131	113	50	23	27	58	
REG INFLOW	16159	735	311	387	1267	1724	2759	2159	1021	989	745	462	227	276	959	1036
RELEASE	16214	506	236	303	1190	1476	1547	1568	1537	1162	1200	581	271	317	1230	1537
STOR CHANGE	-55	229	75	84	77	248	1212	591	-516	-172	-455	-119	-44	-41	-271	-502
STORAGE	18030	18259	18334	18417	18494	18742	19954	20545	20029	19856	19401	19282	19238	19197	18926	18425
ELEV FTMSL	1837.2	1838.0	1838.2	1838.5	1838.7	1839.5	1843.2	1845.0	1843.4	1842.9	1841.6	1841.2	1841.1	1840.9	1840.1	1838.5
DISCH KCFS	27.0	17.0	17.0	17.0	20.0	24.0	26.0	25.5	25.0	19.5	19.5	19.5	19.5	20.0	25.0	27.0
POWER																
AVE POWER MW		211	211	212	249	299	328	325	319	249	247	247	247	253	252	311
PEAK POW MW		477	478	479	480	483	497	502	499	496	491	489	489	488	485	479
ENERGY GWH	2466.4	75.8	35.5	45.7	179.1	222.3	236.1	242.0	237.5	179.0	184.0	88.8	41.4	48.5	187.3	231.7
--OAHÉ--																
NAT INFLOW	2300	317	148	190	364	236	689	162	33	118	14	5	2	3	-20	40
DEPLETION	570	22	10	13	45	62	120	138	90	23	-7	2	1	1	11	25
CHAN STOR	0	40			-12	-16	-8	2	2	22	0	0	0	-2	0	-21
EVAPORATION	500							32	98	120	103	46	22	25	53	
REG INFLOW	17444	840	374	480	1497	1634	2108	1562	1384	1158	1118	538	251	293	1145	1502
RELEASE	17501	733	188	364	1334	1603	1666	1958	1970	1756	1261	598	276	259	1302	1236
STOR CHANGE	-56	107	186	116	163	31	443	-396	-586	-598	-143	-60	-25	34	-156	265
STORAGE	18752	18859	19045	19161	19324	19355	19798	19402	18816	18218	18075	18015	17990	18024	17867	18133
ELEV FTMSL	1607.2	1607.6	1608.2	1608.5	1609.1	1609.1	1610.5	1609.3	1607.4	1605.5	1605.0	1604.8	1604.7	1604.8	1604.3	1605.2
DISCH KCFS	17.4	24.6	13.5	20.4	22.4	26.1	28.0	31.8	32.0	29.5	20.5	20.1	19.9	16.3	21.2	17.3
POWER																
AVE POWER MW		317	175	264	291	339	365	414	414	377	262	256	253	208	269	256
PEAK POW MW		706	709	711	714	715	722	715	706	695	693	692	691	692	689	694
ENERGY GWH	2726.1	114.3	29.4	57.1	209.6	251.9	262.5	308.2	307.7	271.7	194.6	92.1	42.5	39.9	200.0	190.2
--BIG BEND--																
EVAPORATION	103							6	20	25	22	10	5	5	11	
REG INFLOW	17398	733	188	364	1334	1603	1666	1952	1950	1731	1240	588	271	254	1290	1236
RELEASE	17398	733	188	364	1334	1603	1666	1952	1950	1731	1240	588	271	254	1290	1236
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
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
DISCH KCFS	17.4	24.6	13.5	20.4	22.4	26.1	28.0	31.7	31.7	29.1	20.2	19.8	19.5	16.0	21.0	17.3
POWER																
AVE POWER MW		116	63	95	105	122	131	149	148	138	99	99	98	81	103	98
PEAK POW MW		510	509	509	509	509	509	509	509	517	538	538	538	538	538	529
ENERGY GWH	1002.4	41.6	10.6	20.6	75.6	90.8	94.3	110.5	110.4	99.3	73.6	35.7	16.5	15.5	77.0	57.9
--FORT RANDALL--																
NAT INFLOW	900	122	57	73	115	140	185	74	57	42	2	2	1	1	10	19
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3
EVAPORATION	118							8	25	31	25	10	4	4	10	
REG INFLOW	18100	854	244	437	1445	1734	1839	2000	1967	1735	1216	579	268	250	1287	1233
RELEASE	18100	446	227	437	1445	1734	1839	2000	1967	1879	1853	883	413	272	921	922
STOR CHANGE	408	17						0	0	-144	-637	-304	-145	-22	366	311
STORAGE	3124	3532	3549	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2297	2663	2974
ELEV FTMSL	1350.0	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1348.0
DISCH KCFS	15.0	15.0	16.3	24.5	24.3	28.2	30.9	32.5	32.0	31.6	30.1	29.7	29.7	17.1	15.0	15.0
POWER																
AVE POWER MW		124	138	205	204	236	258	272	267	262	240	223	216	124	112	117
PEAK POW MW		352	353	353	353	353	353	353	353	346	310	289	278	276	304	324
ENERGY GWH	1783.8	44.6	23.2	44.3	146.8	175.7	186.1	202.2	199.0	188.8	178.6	80.4	36.3	23.8	83.0	87.1
--GAVINS POINT--																
NAT INFLOW	1450	92	43	55	148	174	166	86	103	77	122	50	23	27	77	127
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1
CHAN STOR	-1		-3	-16	0	-7	-5	-3	1	1	3	1	0	24	4	0
EVAPORATION	37							2	7	9	8	4	2	2	4	
REG INFLOW	19398	539	268	477	1589	1882	1976	2041	2054	1953	1968	925	432	317	988	1000
RELEASE	19398	539	268	477	1589	1882	1976	2041	2041	1940	1968	925	432	317	988	1000
STOR CHANGE								13	13							-26
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	358
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0
DISCH KCFS	17.8	18.1	19.3	26.7	26.7	30.6	33.2	33.2	33.2	32.6	32.0	31.1	31.1	20.0	16.1	17.7
POWER																
AVE POWER MW		63	66	91	91	102	108	108	108	108	107	105	105	70	57	62
PEAK POW MW		114	114	114	114	114	114	114	114	115	115	115	115	115	77	76
ENERGY GWH	787.3	22.5	11.2	19.6	65.4	75.9	77.6	80.2	80.6	77.7	79.7	37.8	17.6	13.5		

TIME OF STUDY 08:15:20

STUDY NO 14

VALUES IN 1000 AF EXCEPT AS INDICATED

	28 FEB01		2001												2002			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	
--FORT PECK--																		
NAT INFLOW	6556	264	123	158	574	1011	1589	692	287	275	354	183	85	98	322	231	309	
DEPLETION	425	2	1	1	53	202	655	131	-67	-115	-45	-30	-14	-16	-110	-135	-89	
EVAPORATION	520							32	100	124	108	49	23	26	56			
MOD INFLOW	5611	262	122	157	521	809	934	529	254	266	291	164	76	87	376	366	398	
RELEASE	6176	134	62	80	417	584	655	646	615	362	304	147	69	143	615	676	666	
STOR CHANGE	-564	128	60	77	104	225	279	-117	-361	-97	-14	16	8	-56	-239	-310	-268	
STORAGE	13470	13598	13658	13735	13840	14065	14344	14227	13866	13769	13755	13772	13779	13723	13484	13174	12906	
ELEV FTMSL	2226.4	2227.1	2227.4	2227.8	2228.3	2229.5	2230.9	2230.3	2228.5	2228.0	2227.9	2228.0	2228.0	2227.7	2226.5	2224.8	2223.4	
DISCH KCFS	12.0	4.5	4.5	4.5	7.0	9.5	11.0	10.5	10.0	6.1	4.9	4.9	4.9	9.0	10.0	11.0	12.0	
POWER																		
AVE POWER MW		60	60	60	93	127	148	141	134	81	66	66	66	120	133	145	157	
PEAK POW MW		203	203	204	204	205	206	206	204	204	204	204	204	204	203	201	199	
ENERGY GWH	996.0	21.6	10.1	13.0	67.3	94.5	106.3	105.0	99.6	58.6	49.2	23.8	11.1	23.0	98.9	108.2	105.8	
--GARRISON--																		
NAT INFLOW	10069	475	221	285	763	1282	2701	1891	532	446	428	175	82	93	238	177	280	
DEPLETION	969	12	5	7	25	185	641	490	55	-106	38	-63	-29	-34	-109	-93	-55	
CHAN STOR	-1	76			-25	-25	-15	5	39	11	0	0	-41	-10	-10	-10		
EVAPORATION	612							38	120	148	127	57	26	30	65			
REG INFLOW	14664	674	279	358	1129	1656	2699	2014	977	805	579	328	153	199	887	936	991	
RELEASE	15358	476	222	286	1190	1414	1488	1506	1476	1190	934	452	211	301	1230	1537	1444	
STOR CHANGE	-694	197	56	72	-61	242	1212	507	-499	-385	-124	-58	-103	-343	-601	-453		
STORAGE	16260	16457	16514	16586	16525	16767	17979	18486	17987	17602	17246	17122	17065	16962	16619	16018	15566	
ELEV FTMSL	1831.2	1831.9	1832.1	1832.4	1832.1	1833.0	1837.1	1838.7	1837.1	1835.8	1834.6	1834.2	1834.0	1833.7	1832.5	1830.4	1828.7	
DISCH KCFS	26.0	16.0	16.0	16.0	20.0	23.0	25.0	24.5	24.0	20.0	15.2	15.2	15.2	19.0	20.0	25.0	26.0	
POWER																		
AVE POWER MW		191	191	192	239	275	303	303	297	245	186	185	184	229	240	296	304	
PEAK POW MW		455	456	457	456	459	474	480	474	469	465	463	463	461	457	449	443	
ENERGY GWH	2242.4	68.7	32.1	41.4	172.0	204.5	218.3	225.1	220.6	176.7	138.1	66.5	31.0	44.1	178.7	220.3	204.3	
--OAH--																		
NAT INFLOW	1761	187	87	112	278	158	701	124	29	-79	11				-42	-7	44	
DEPLETION	542	21	10	13	44	60	114	129	84	21	-6	2	1	-1	10	15	24	
CHAN STOR	-2	42			-17	-13	-9	2	2	17	21	0	0	-17	-5	-23	-4	
EVAPORATION	549							35	108	133	113	51	24	27	58			
REG INFLOW	16027	684	299	385	1407	1499	2066	1469	1315	1133	859	400	187	257	1115	1493	1460	
RELEASE	16739	619	331	431	1485	1695	1574	1879	1873	1687	1180	522	242	217	1134	1025	845	
STOR CHANGE	-712	65	-32	-46	-78	-195	492	-410	-558	-554	-321	-122	-55	40	-19	468	615	
STORAGE	16938	17003	16971	16924	16846	16651	17144	16733	16175	15622	15301	15178	15123	15163	15144	15611	16226	
ELEV FTMSL	1601.1	1601.3	1601.2	1601.1	1600.8	1600.1	1601.8	1600.4	1598.4	1596.3	1595.1	1594.7	1594.4	1594.6	1594.5	1596.3	1598.6	
DISCH KCFS	17.8	20.8	23.8	24.2	25.0	27.6	26.4	30.6	30.5	28.3	19.2	17.6	17.4	13.7	18.4	16.7	15.2	
POWER																		
AVE POWER MW		260	297	301	310	341	329	379	374	345	232	212	210	165	222	202	186	
PEAK POW MW		674	673	672	671	667	676	669	658	648	642	640	639	640	639	648	659	
ENERGY GWH	2487.1	93.4	49.9	65.0	223.3	253.9	236.5	282.1	278.6	248.3	172.9	76.2	35.2	31.6	165.0	150.0	125.1	
--BIG BEND--																		
EVAPORATION	129							8	24	31	27	12	6	7	14			
REG INFLOW	16610	619	331	431	1485	1695	1574	1871	1848	1656	1153	510	236	210	1120	1025	845	
RELEASE	16610	619	331	431	1485	1695	1574	1871	1848	1656	1153	510	236	210	1120	1025	845	
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	
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	17.8	20.8	23.8	24.2	25.0	27.6	26.4	30.4	30.1	27.8	18.8	17.1	17.0	13.3	18.2	16.7	15.2	
POWER																		
AVE POWER MW		99	112	113	117	129	124	142	141	132	92	86	86	67	90	81	73	
PEAK POW MW		518	510	509	509	509	509	509	509	517	538	538	538	538	538	538	529	
ENERGY GWH	956.6	35.5	18.8	24.4	84.1	96.0	89.1	105.9	104.7	94.9	68.5	31.0	14.4	12.9	66.9	60.4	49.1	
--FORT RANDALL--																		
NAT INFLOW	643	88	41	53	82	66	167	33	63	30	2				6	-6	19	
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3	
EVAPORATION	147							10	32	39	31	12	5	5	13			
REG INFLOW	17026	705	371	483	1563	1752	1729	1876	1865	1639	1123	497	231	205	1110	1016	861	
RELEASE	17026	434	234	466	1563	1752	1729	1876	1865	1783	1761	801	376	227	744	744	672	
STOR CHANGE	0	271	138	17				0	0	-144	-637	-304	-145	-22	366	272	189	
STORAGE	3123	3394	3532	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2296	2662	2934	3123	
ELEV FTMSL	1350.0	1353.4	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1347.4	1350.0	
DISCH KCFS	14.6	14.6	16.8	26.1	26.3	28.5	29.1	30.5	30.3	30.0	28.6	26.9	27.1	14.3	12.1	12.1	12.1	
POWER																		
AVE POWER MW		120	141	219	220	239	243	255	254	249	228	203	197	104	90	94	97	
PEAK POW MW		346	352	353	353	353	353	353	353	346	310	289	278	276	304	322	332	
ENERGY GWH	1682.1	43.2	23.7	47.2	158.6	177.5	175.1	189.9	188.8	179.3	169.8	73.1	33.2	20.0	67.2	70.3	65.3	
--GAVINS POINT--																		
NAT INFLOW	1335	98	46	59	132	147	153	87	85	62	112	50	23	27	75	73	107	
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1		
CHAN STOR	4		-4	-18	0	-4	-1	-3	0	1	3	3	0	24	4			
EVAPORATION	47							3	9	11	10	5	2	2	5			
REG INFLOW	18205	533	275	507	1690	1875	1857	1918	1931	1840	1863	845	394	273	808	816	779	
RELEASE	18205	533	275	507	1690	1875	1857	1918	1918	1827	1863	845	394	273	808	816	805	
STOR CHANGE								13	13								-26	
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358	
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0	
DISCH KCFS	16.9	17.9	19.8	28.4	28													

TIME OF STUDY 08:15:21

STUDY NO 15

VALUES IN 1000 AF EXCEPT AS INDICATED

	28 FEB02	2002										2003					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	6613	267	124	160	579	1019	1603	698	289	278	357	185	86	98	325	233	312
DEPLETION	355	-33	-16	-20	12	295	600	138	-63	-115	-47	-30	-14	-16	-111	-136	-89
EVAPORATION	509							31	98	122	106	48	22	26	55		
MOD INFLOW	5749	300	140	180	567	724	1003	529	254	271	298	166	78	89	381	369	401
RELEASE	5980	134	62	80	357	553	655	646	615	348	292	142	66	127	615	676	611
STOR CHANGE	-231	166	77	100	210	171	348	-117	-361	-77	5	25	12	-38	-234	-307	-210
STORAGE	12906	13072	13149	13249	13459	13629	13978	13861	13500	13423	13428	13453	13465	13427	13192	12885	12675
ELEV FTMSL	2223.4	2224.3	2224.7	2225.2	2226.4	2227.2	2229.0	2228.4	2226.6	2226.2	2226.2	2226.3	2226.4	2226.2	2224.9	2223.3	2222.1
DISCH KCFS	12.0	4.5	4.5	4.5	6.0	9.0	11.0	10.5	10.0	5.9	4.8	4.8	4.8	8.0	10.0	11.0	11.0
POWER																	
AVE POWER MW		59	59	60	80	120	147	140	133	78	63	63	63	106	132	144	144
PEAK POW MW		200	201	201	203	203	205	204	203	202	202	202	203	202	201	199	198
ENERGY GWH	958.5	21.3	10.0	12.9	57.3	89.0	105.6	104.4	99.0	56.0	47.0	22.8	10.6	20.4	98.3	107.4	96.4
--GARRISON--																	
NAT INFLOW	10134	478	223	287	768	1290	2718	1903	535	449	431	176	82	94	240	178	282
DEPLETION	927	-10	-5	-6	-4	227	781	486	58	-118	9	-86	-40	-46	-131	-115	-75
CHAN STOR	10	77			-15	-31	-20	5	42	11	0	0	-33	-20	-10	0	
EVAPORATION	597							37	116	144	124	56	26	30	64		
REG INFLOW	14600	699	290	373	1114	1586	2571	2031	981	813	601	347	162	204	902	959	968
RELEASE	14880	476	194	250	1012	1414	1488	1506	1476	1190	897	434	203	301	1230	1476	1333
STOR CHANGE	-280	223	96	123	102	172	1084	524	-495	-377	-296	-87	-40	-98	-328	-517	-365
STORAGE	15566	15789	15884	16007	16109	16281	17364	17889	17394	17016	16721	16634	16593	16496	16168	15651	15286
ELEV FTMSL	1828.7	1829.5	1829.9	1830.3	1830.7	1831.3	1835.0	1836.8	1835.1	1833.8	1832.8	1832.5	1832.4	1832.0	1830.9	1829.0	1827.7
DISCH KCFS	26.0	16.0	14.0	14.0	17.0	23.0	25.0	24.5	24.0	20.0	14.6	14.6	14.6	19.0	20.0	24.0	24.0
POWER																	
AVE POWER MW		188	165	166	201	272	300	299	293	242	176	175	175	227	238	282	279
PEAK POW MW		446	447	449	450	453	467	473	467	462	458	457	457	455	451	444	439
ENERGY GWH	2149.9	67.6	27.7	35.8	144.9	202.4	215.6	222.3	217.9	174.5	131.0	63.1	29.4	43.6	176.9	209.6	187.4
--OAHÉ--																	
NAT INFLOW	1794	190	89	114	283	161	714	127	30	80	11				-43	-7	45
DEPLETION	557	22	10	13	45	61	117	134	87	22	-7	2	1	-1	11	15	24
CHAN STOR	8	44	9		-13	-26	-9	2	2	18	24			-20	-5	-18	
EVAPORATION	538							34	105	130	111	50	23	26	58		
REG INFLOW	15587	688	282	351	1237	1488	2076	1468	1315	1136	828	383	179	254	1114	1435	1354
RELEASE	15873	544	303	408	1405	1625	1503	1810	1802	1620	1113	489	226	200	1072	965	788
STOR CHANGE	-287	144	-21	-57	-168	-137	573	-342	-487	-484	-284	-106	-48	53	42	47	565
STORAGE	16226	16370	16349	16292	16123	15986	16559	16216	15730	15246	14961	14855	14807	14861	14903	15374	15939
ELEV FTMSL	1598.6	1599.1	1599.0	1598.8	1598.2	1597.7	1599.8	1598.5	1596.8	1594.9	1593.8	1593.4	1593.2	1593.4	1593.6	1595.4	1597.5
DISCH KCFS	15.2	18.3	21.8	22.9	23.6	26.4	25.3	29.4	29.3	27.2	18.1	16.4	16.3	12.6	17.4	15.7	14.2
POWER																	
AVE POWER MW		225	269	281	290	323	310	362	357	329	217	197	195	151	208	189	173
PEAK POW MW		662	661	660	657	655	666	659	650	641	636	634	633	634	635	644	654
ENERGY GWH	2336.2	81.0	45.1	60.7	208.5	240.2	223.3	269.0	265.6	236.6	161.8	70.9	32.7	29.0	155.1	140.5	116.1
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	15744	544	303	408	1405	1625	1503	1802	1778	1589	1086	477	221	194	1057	965	788
RELEASE	15744	544	303	408	1405	1625	1503	1802	1778	1589	1086	477	221	194	1057	965	788
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
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	15.2	18.3	21.8	22.9	23.6	26.4	25.3	29.3	28.9	26.7	17.7	16.0	15.9	12.2	17.2	15.7	14.2
POWER																	
AVE POWER MW		87	102	107	111	124	118	137	135	127	87	81	80	62	85	76	68
PEAK POW MW		518	510	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	906.8	31.2	17.2	23.1	79.6	92.1	85.1	102.1	100.7	91.1	64.5	29.0	13.4	11.9	63.2	56.8	45.8
--FORT RANDALL--																	
NAT INFLOW	659	90	42	54	84	67	171	34	65	31	2				7	-7	20
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	147							10	32	39	31	12	5	5	13		
REG INFLOW	16177	632	344	461	1485	1683	1662	1808	1796	1574	1056	464	215	188	1049	955	805
RELEASE	16176	360	207	444	1485	1683	1662	1808	1796	1718	1693	768	360	211	683	683	616
STOR CHANGE	0	272	137	17	0	0	0	0	-144	-637	-304	-145	-22	366	272	189	
STORAGE	3123	3395	3532	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2297	2663	2935	3124
ELEV FTMSL	1350.0	1353.4	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1347.4	1350.0
DISCH KCFS	12.1	12.1	14.9	24.9	25.0	27.4	27.9	29.4	29.2	28.9	27.5	25.8	25.9	13.3	11.1	11.1	11.1
POWER																	
AVE POWER MW		100	125	208	209	229	234	246	245	240	220	195	189	96	83	87	89
PEAK POW MW		346	352	353	353	353	353	353	353	346	310	289	278	276	304	322	332
ENERGY GWH	1599.8	35.8	21.0	45.0	150.8	170.7	168.5	183.1	181.9	172.8	163.4	70.1	31.8	18.5	61.7	64.5	59.9
--GAVINS POINT--																	
NAT INFLOW	1342	98	46	59	133	148	154	87	86	62	112	51	24	27	75	73	108
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	1		-5	-19	0	-5	-1	-3	0	1	3	3	0	24	4		
EVAPORATION	47							3	9	11	10	5	2	2	5		
REG INFLOW	17359	459	248	484	1612	1808	1791	1851	1864	1774	1795	812	379	256	746	755	724
RELEASE	17359	459	248	484	1612	1808	1791	1851	1851	1761	1795	812	379	256	746	755	750
STOR CHANGE								13	13								-26
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0
DISCH KCFS	14.5	15.4	17.8	27.1	27.1	29.4	30.1	30.1	30.1	29.6	29.2	27.3	27.3	16.1	12.1	12.3	13.5
POWER																	
AVE POWER MW		54	62	92	92	99	101	101	101	101	100	95	95	57	43	44	47
PEAK POW MW		114	114	114	114	114	114	114	114	115	115	115	115	115	77	77	76
ENERGY GWH	717.5	19.3	10.4	19.9	66.4	73.8	72.6	75.0	75.3	72.7	74.8	34.1	15.9	10.9	32.1	32.4	31.9
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1160	149	69	89	116	224	161	97	72	45	31	16	7	9	17	-3	61
DEPLETION	239	6	3	3	19	34	29	36	33	21	9	5	2	3	11	12	13
REGULATED FLOW AT SIOUX CITY																	
KAF	18280	602	314	570	1709	1998	1923	1912	1890	1785	1817	823	384	262	752	740	798
KCFS		20.2	22.6	31.9	28.7	32.5	32.3	31.1	30.7	30.0	29.6	27.7	27.7	16.5	12.2	12.0	14.4
--TOTAL--																	
NAT INFLOW	21702	1271	593	762	1963	2909	5521	2946	1077	945	944	427	199	228	621	467	

TIME OF STUDY 08:15:21

STUDY NO 16

	VALUES IN 1000 AF EXCEPT AS INDICATED																	
	28 FEB03 INI-SUM	15MAR	2003 22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	2004 30NOV	31DEC	31JAN	29FEB	
--FORT PECK--																		
NAT INFLOW	6720	271	126	163	588	1036	1629	709	294	282	363	188	88	100	330	237	317	
DEPLETION	365	-33	-16	-20	11	296	604	146	-98	-116	-47	-30	-14	-16	-110	-134	-98	
EVAPORATION	505							31	97	121	106	48	22	26	55			
MOD INFLOW	5850	304	142	183	577	740	1025	532	255	277	304	170	79	90	385	371	415	
RELEASE	5921	134	62	80	357	553	655	646	615	315	265	128	60	127	615	676	633	
STOR CHANGE	-71	171	80	102	220	187	370	-114	-360	-38	40	42	19	-37	-230	-305	-218	
STORAGE	12675	12846	12925	13027	13247	13434	13804	13691	13331	13293	13333	13375	13394	13357	13127	12822	12604	
ELEV FTMSL	2222.1	2223.1	2223.5	2224.1	2225.2	2226.2	2228.1	2227.6	2225.7	2225.5	2225.7	2225.9	2226.0	2225.8	2224.6	2222.9	2221.8	
DISCH KCFS	11.0	4.5	4.5	4.5	6.0	9.0	11.0	10.5	10.0	5.3	4.3	4.3	4.3	8.0	10.0	11.0	11.0	
POWER																		
AVE POWER MW	59	59	59	59	79	119	146	140	133	70	57	57	57	106	132	144	143	
PEAK POW MW	199	200	200	200	201	202	204	204	202	202	202	202	202	202	201	199	198	
ENERGY GWH	946.5	21.2	9.9	12.8	57.0	88.6	105.2	104.1	98.7	50.6	42.5	20.6	9.6	20.4	98.2	107.3	99.7	
--GARRISON--																		
NAT INFLOW	10262	484	226	290	777	1306	2752	1927	542	455	437	179	83	95	243	180	286	
DEPLETION	919	-19	-9	-12	-3	227	791	502	63	-121	5	-89	-42	-47	-132	-114	-81	
CHAN STOR	0	67			-15	-21	-20	5	5	47	10	0		-38	-20	-10		
EVAPORATION	593							36	115	143	124	56	26	30	64			
REG INFLOW	14670	705	297	382	1122	1602	2595	2039	984	796	583	340	159	203	906	960	1000	
RELEASE	14757	446	194	250	1012	1414	1488	1506	1476	1190	741	359	278	317	1230	1476	1381	
STOR CHANGE	-87	258	103	132	110	187	1107	533	-492	-395	-158	-19	-119	-115	-324	-516	-381	
STORAGE	15286	15544	15647	15779	15889	16077	17184	17717	17225	16830	16672	16653	16534	16420	16096	15580	15199	
ELEV FTMSL	1827.7	1828.7	1829.0	1829.5	1829.9	1830.6	1834.4	1836.2	1834.6	1833.2	1832.7	1832.6	1832.2	1831.8	1830.6	1828.8	1827.4	
DISCH KCFS	24.0	15.0	14.0	14.0	17.0	23.0	25.0	24.5	24.0	20.0	12.1	12.1	20.0	20.0	20.0	24.0	24.0	
POWER																		
AVE POWER MW	175	164	165	200	271	298	298	292	241	145	145	239	239	237	281	278	278	
PEAK POW MW	443	444	446	447	450	464	471	465	460	458	457	456	454	450	443	443	438	
ENERGY GWH	2124.8	63.0	27.6	35.6	144.1	201.4	214.7	221.5	217.1	173.9	108.1	52.2	40.2	45.8	176.6	209.3	193.7	
--GAHE--																		
NAT INFLOW	1860	197	92	118	294	167	740	131	31	-83	12				-45	-7	46	
DEPLETION	570	22	10	13	45	62	120	138	90	23	-7	2	1	1	11	15	25	
CHAN STOR	-1	40	4		-13	-26	-9	2	2	18	36		-37	0	0	-18		
EVAPORATION	535							34	105	129	111	49	23	26	57			
REG INFLOW	15511	662	281	355	1247	1493	2099	1468	1314	1139	685	308	217	290	1117	1435	1402	
RELEASE	15600	510	290	396	1369	1590	1477	1789	1780	1600	1092	480	222	197	1059	952	798	
STOR CHANGE	-89	152	-9	-41	-121	-97	622	-321	-466	-462	-407	-172	-5	94	57	483	604	
STORAGE	15939	16091	16081	16041	15919	15822	16444	16124	15658	15196	14789	14617	14613	14706	14764	15247	15850	
ELEV FTMSL	1597.5	1598.1	1598.1	1597.9	1597.5	1597.1	1599.4	1598.2	1596.5	1594.7	1593.1	1592.5	1592.4	1592.8	1593.0	1594.9	1597.2	
DISCH KCFS	14.2	17.1	20.9	22.2	23.0	25.9	24.8	29.1	28.9	26.9	17.8	16.1	16.0	12.4	17.2	15.5	13.9	
POWER																		
AVE POWER MW	210	256	272	281	315	304	357	352	324	213	192	190	148	205	186	168	168	
PEAK POW MW	657	657	656	654	652	663	658	649	640	633	629	629	631	632	641	653	653	
ENERGY GWH	2289.4	75.6	43.0	58.6	202.3	234.1	218.8	265.3	261.9	233.4	158.5	69.2	32.0	28.4	152.8	138.3	117.3	
--BIG BEND--																		
EVAPORATION	129							8	24	31	27	12	6	7	14			
REG INFLOW	15471	510	290	396	1369	1590	1477	1781	1755	1569	1065	468	216	190	1045	952	798	
RELEASE	15471	510	290	396	1369	1590	1477	1781	1755	1569	1065	468	216	190	1045	952	798	
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	
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	14.2	17.1	20.9	22.2	23.0	25.9	24.8	29.0	28.5	26.4	17.3	15.7	15.6	12.0	17.0	15.5	13.9	
POWER																		
AVE POWER MW	81	98	104	108	121	116	136	134	125	85	79	78	61	84	84	75	67	
PEAK POW MW	518	510	509	509	509	509	509	509	517	538	538	538	538	538	538	538	529	
ENERGY GWH	891.1	29.2	16.4	22.4	77.5	90.0	83.6	100.9	99.4	90.0	63.3	28.5	13.2	11.6	62.5	56.1	46.3	
--PORT RANDALL--																		
NAT INFLOW	690	94	44	56	88	70	179	36	68	32	2				7	-7	21	
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3	
EVAPORATION	147							10	32	39	31	12	5	5	13			
REG INFLOW	15934	603	333	451	1453	1651	1644	1789	1776	1555	1035	455	211	184	1036	942	816	
RELEASE	15934	330	197	434	1453	1651	1644	1789	1777	1699	1672	759	356	207	670	670	627	
STOR CHANGE	0	272	136	17				0	0	-144	-637	-304	-145	-22	366	272	189	
STORAGE	3124	3396	3532	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2297	2663	2935	3124	
ELEV FTMSL	1350.0	1353.4	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1347.4	1350.0	
DISCH KCFS	11.1	11.1	14.2	24.3	24.4	26.8	27.6	29.1	28.9	28.6	27.2	25.5	25.6	13.0	10.9	10.9	10.9	
POWER																		
AVE POWER MW	91	119	204	205	225	231	244	242	237	217	192	187	95	82	85	88	88	
PEAK POW MW	346	352	353	353	353	353	353	353	346	310	289	278	276	304	322	332	332	
ENERGY GWH	1576.1	32.9	20.0	44.1	147.6	167.4	166.7	181.2	180.0	171.0	161.5	69.2	31.4	18.2	60.6	63.4	61.0	
--GAVINS POINT--																		
NAT INFLOW	1359	100	47	60	135	150	155	88	87	63	114	51	24	27	76	74	109	
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1		
CHAN STOR	0	0	-6	-20	0	-5	-1	-3	0	1	3	3	0	24	4			
EVAPORATION	47							3	9	11	10	5	2	2	5			
REG INFLOW	17132	430	238	475	1583	1777	1773	1832	1845	1756	1777	803	375	252	735	743	736	
RELEASE	17132	430	238	475	1583	1777	1773	1832	1832	1743	1777	803	375	252	735	743	762	
STOR CHANGE								13	13								-26	
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358	
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0	
DISCH KCFS	13.5	14.5	17.1	26.6	26.6	28.9	29											

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STUDY NO 17

VALUES IN 1000 AF EXCEPT AS INDICATED

	29 FEB04		2004						2005									
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	
--FORT PECK--																		
NAT INFLOW	6751	272	127	163	591	1041	1636	712	295	284	365	188	88	100	332	238	318	
DEPLETION	377	-33	-16	-20	11	297	608	153	-54	-116	-50	-32	-15	-17	-113	-137	-90	
EVAPORATION	503							31	96	120	105	48	22	26	55			
MOD INFLOW	5871	306	143	183	580	744	1028	528	253	280	310	172	80	92	390	375	408	
RELEASE	5895	134	62	80	357	584	655	646	615	301	253	122	57	127	615	676	611	
STOR CHANGE	-24	172	80	103	223	160	373	-117	-362	-21	57	49	23	-35	-225	-301	-203	
STORAGE	12604	12776	12856	12960	13183	13342	13716	13598	13236	13215	13274	13321	13345	13309	13084	12783	12580	
ELEV FTMSL	2221.8	2222.7	2223.1	2223.7	2224.9	2225.7	2227.7	2227.1	2225.2	2225.1	2225.4	2225.6	2225.8	2225.6	2224.4	2222.7	2221.6	
DISCH KCF5	11.0	4.5	4.5	4.5	6.0	9.5	11.0	10.5	10.0	5.1	4.1	4.1	4.1	8.0	10.0	11.0	11.0	
POWER																		
AVE POWER MW	59	59	59	79	125	146	140	132	67	54	55	55	106	132	144	143		
PEAK POW MW	199	199	200	201	202	204	203	201	201	201	202	202	202	200	199	198		
ENERGY GWH	941.2	21.2	9.9	12.8	57.0	93.4	105.1	103.9	98.6	48.2	40.5	19.6	9.2	20.3	98.1	107.2	96.2	
--GARRISON--																		
NAT INFLOW	10290	485	226	291	779	1310	2760	1932	543	456	438	179	84	95	243	181	287	
DEPLETION	942	-18	-9	-11	-2	228	802	519	69	-123	-93	-43	-50	-135	-116	-76		
CHAN STOR	0	67			-15	-36	-15	5	50	10	0	0	-40	-20	-10	0		
EVAPORATION	592							36	115	142	123	56	26	30	64			
REG INFLOW	14651	705	297	382	1123	1630	2597	2027	979	787	577	339	158	203	909	963	974	
RELEASE	14681	446	194	250	1012	1414	1488	1506	1476	1190	722	349	278	317	1230	1476	1333	
STOR CHANGE	-29	259	103	133	111	216	1110	521	-497	-403	-145	-11	-120	-114	-321	-513	-359	
STORAGE	15199	15458	15561	15694	15805	16021	17130	17651	17154	16752	16607	16596	16477	16362	16042	15529	15170	
ELEV FTMSL	1827.4	1828.3	1828.7	1829.2	1829.6	1830.4	1834.2	1836.0	1834.3	1832.9	1832.4	1832.4	1832.0	1831.6	1830.4	1828.6	1827.3	
DISCH KCF5	24.0	15.0	14.0	14.0	17.0	23.0	25.0	24.5	24.0	20.0	11.7	11.7	20.0	20.0	20.0	24.0	24.0	
POWER																		
AVE POWER MW	175	164	164	200	270	298	297	291	241	141	141	239	238	237	281	278		
PEAK POW MW	442	443	445	446	449	464	470	464	459	457	457	455	454	449	443	438		
ENERGY GWH	2110.9	62.9	27.5	35.5	143.8	201.1	214.5	221.2	216.8	173.6	105.2	50.8	40.1	45.7	176.3	209.0	186.8	
--OAH--																		
NAT INFLOW	1877	199	93	119	297	168	747	132	31	84	12				-45	-7	47	
DEPLETION	585	22	10	13	46	64	123	143	93	23	-8	2	-1	1	11	16	25	
CHAN STOR	-1	40	4		-13	-27	-9	2	2	18	37	0	-38	0	0	-18		
EVAPORATION	534							34	105	129	110	49	23	26	57			
REG INFLOW	15438	663	281	356	1249	1492	2103	1464	1311	1140	669	298	216	290	1117	1434	1355	
RELEASE	15468	503	286	392	1356	1583	1468	1782	1773	1594	1086	477	221	194	1047	940	765	
STOR CHANGE	-30	160	-5	-36	-107	-91	635	-319	-462	-454	-418	-178	-5	96	70	494	590	
STORAGE	15850	16010	16004	15968	15862	15771	16406	16087	15625	15171	14753	14575	14570	14666	14736	15230	15820	
ELEV FTMSL	1597.2	1597.8	1597.8	1597.6	1597.2	1596.9	1599.2	1598.1	1596.4	1594.6	1593.0	1592.3	1592.3	1592.9	1594.9	1597.1		
DISCH KCF5	13.9	16.9	20.6	22.0	22.8	25.7	24.7	29.0	28.8	26.8	17.7	16.0	15.9	12.2	17.0	15.3	13.8	
POWER																		
AVE POWER MW	207	252	268	278	313	302	355	351	323	212	191	189	146	203	183	167		
PEAK POW MW	655	655	655	653	651	663	657	648	640	632	628	628	630	632	641	652		
ENERGY GWH	2268.2	74.5	42.4	57.9	200.1	232.9	217.2	264.2	260.8	232.4	157.5	68.7	31.7	28.0	151.0	136.4	112.4	
--BIG BEND--																		
EVAPORATION	129							8	24	31	27	12	6	7	14			
REG INFLOW	15339	503	286	392	1356	1583	1468	1775	1749	1563	1059	465	215	188	1033	940	765	
RELEASE	15339	503	286	392	1356	1583	1468	1775	1749	1563	1059	465	215	188	1033	940	765	
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	
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 KCF5	13.9	16.9	20.6	22.0	22.8	25.7	24.7	28.9	28.4	26.3	17.2	15.6	15.5	11.8	16.8	15.3	13.8	
POWER																		
AVE POWER MW	80	97	103	107	120	115	135	133	125	85	79	78	60	83	74	66		
PEAK POW MW	517	510	509	509	509	509	509	509	517	538	538	538	538	538	538	529		
ENERGY GWH	883.5	28.8	16.3	22.2	76.8	89.6	83.1	100.5	99.1	89.7	62.9	28.3	13.1	11.5	61.8	55.4	44.4	
--PORT RANDALL--																		
NAT INFLOW	696	95	44	57	89	71	181	36	68	32	2				7	-7	21	
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3	
EVAPORATION	147							10	32	39	31	12	5	5	13			
REG INFLOW	15808	597	330	448	1441	1645	1637	1783	1770	1549	1029	452	209	182	1024	930	783	
RELEASE	15808	324	194	431	1441	1645	1637	1783	1770	1693	1666	756	354	204	658	658	594	
STOR CHANGE	0	272	136	17	0	0	0	0	-144	-637	-304	-145	-22	366	272	189		
STORAGE	3124	3396	3532	3549	3549	3549	3549	3549	3405	2768	2464	2319	2297	2663	2935	3124		
ELEV FTMSL	1350.0	1353.4	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1347.4	1350.0	
DISCH KCF5	10.9	10.9	14.0	24.1	24.2	26.7	27.5	29.0	28.8	28.5	27.1	25.4	25.5	12.9	10.7	10.7	10.7	
POWER																		
AVE POWER MW	90	117	203	203	224	230	243	241	237	216	192	186	94	80	84	86		
PEAK POW MW	346	352	353	353	353	353	353	353	346	310	289	278	276	304	322	332		
ENERGY GWH	1563.9	32.3	19.7	43.7	146.4	166.8	166.0	180.6	179.4	170.4	160.9	69.0	31.3	18.0	59.5	62.2	57.8	
--GAVINS POINT--																		
NAT INFLOW	1362	100	47	60	135	150	156	88	87	63	114	51	24	27	76	75	110	
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1		
CHAN STOR	0		-6	-20	0	-5	-1	-3	0	1	3	3	0	24	4			
EVAPORATION	47							3	9	11	10	5	2	2	5			
REG INFLOW	17009	424	235	471	1571	1771	1767	1826	1839	1751	1771	800	373	250	723	732	704	
RELEASE	17009	424	235	471	1571	1771	1767	1826	1826	1738	1771	800	373	250	723	732	730	
STOR CHANGE								13	13								-26	
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358	
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0	
DISCH KCF5	13.2	14.3																

TIME OF STUDY 08:15:22

STUDY NO 18

VALUES IN 1000 AF EXCEPT AS INDICATED

	28 FEB05	2005					2006					2006					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	7022	283	132	170	615	1083	1702	741	307	295	379	196	91	104	345	248	331
DEPLETION	388	-34	-16	-20	11	298	612	160	-50	-116	-52	-32	-15	-17	-114	-137	-90
EVAPORATION	507							31	97	121	106	48	22	26	55		
MOD INFLOW	6127	317	148	190	604	785	1090	550	260	290	325	179	84	96	404	385	421
RELEASE	5993	134	62	80	357	584	655	646	615	341	286	139	65	127	615	676	611
STOR CHANGE	135	183	85	110	247	201	435	-96	-355	-51	39	41	19	-31	-211	-291	-190
STORAGE	12580	12763	12848	12958	13205	13406	13842	13746	13391	13340	13379	13420	13439	13407	13196	12905	12715
ELEV FTMSL	2221.6	2222.6	2223.1	2223.7	2225.0	2226.1	2228.3	2227.8	2226.0	2225.7	2225.9	2226.1	2226.2	2226.1	2225.0	2223.4	2222.4
DISCH KCFS	11.0	4.5	4.5	4.5	6.0	9.5	11.0	10.5	10.0	5.7	4.7	4.7	4.7	8.0	10.0	11.0	11.0
POWER																	
AVE POWER MW	59	59	59	79	126	146	140	133	76	62	62	62	62	106	132	144	144
PEAK POW MW	199	199	200	201	202	204	204	202	202	202	202	202	202	202	201	199	198
ENERGY GWH	958.6	21.2	9.9	12.8	57.0	93.5	105.3	104.1	98.8	54.8	46.0	22.3	10.4	20.4	98.3	107.5	96.5
--GARRISON--																	
NAT INFLOW	10598	500	233	300	803	1349	2842	1990	559	470	451	185	86	98	251	186	295
DEPLETION	1033	-19	-9	-11	-2	227	811	534	74	-126	-5	-97	-45	-51	-108	-89	-51
CHAN STOR	0	67			-15	-36	-15	5	43	11				-34	-20	-10	0
EVAPORATION	597							37	116	144	124	56	26	30	64		
REG INFLOW	14960	720	304	391	1147	1670	2670	2070	989	836	629	363	170	213	889	941	957
RELEASE	14795	446	194	250	1012	1414	1488	1506	1476	1190	758	367	278	317	1230	1537	1333
STOR CHANGE	165	274	110	142	135	256	1183	564	-487	-354	-129	-3	-108	-104	-340	-596	-376
STORAGE	15170	15444	15554	15695	15830	16086	17269	17833	17346	16992	16863	16860	16751	16647	16307	15711	15335
ELEV FTMSL	1827.3	1828.3	1828.7	1829.2	1829.7	1830.6	1834.7	1836.6	1835.0	1833.8	1833.3	1833.3	1832.9	1832.6	1831.4	1829.3	1827.9
DISCH KCFS	24.0	15.0	14.0	14.0	17.0	23.0	25.0	24.5	24.0	20.0	12.3	12.3	20.0	20.0	20.0	25.0	24.0
POWER																	
AVE POWER MW	175	164	164	200	271	299	298	293	242	149	149	149	240	240	239	294	279
PEAK POW MW	442	443	445	447	450	465	472	466	462	460	460	460	459	457	453	445	440
ENERGY GWH	2134.8	62.9	27.5	35.5	143.9	201.3	214.9	222.0	217.7	174.4	111.0	53.6	40.4	46.0	177.5	218.8	187.6
--OAH--																	
NAT INFLOW	2048	217	101	130	324	183	815	144	34	-92	13				-49	-8	51
DEPLETION	597	22	10	13	46	65	126	147	96	24	-8	2	1	1	11	16	25
CHAN STOR	-1	40	4		-13	-26	-9	2	2	18	35		-35	0	0	-23	4
EVAPORATION	538							34	106	130	111	50	23	26	58		
REG INFLOW	15707	681	290	367	1276	1506	2168	1471	1310	1146	702	315	219	290	1112	1490	1363
RELEASE	15538	622	160	367	1341	1576	1460	1793	1782	1606	1102	484	224	199	1071	966	785
STOR CHANGE	169	59	129	0	-65	-70	708	-321	-472	-461	-400	-169	-5	91	42	525	578
STORAGE	15820	15879	16008	16009	15944	15874	16582	16260	15788	15328	14928	14759	14754	14845	14886	15411	15989
ELEV FTMSL	1597.1	1597.3	1597.8	1597.8	1597.5	1597.3	1599.9	1598.7	1597.0	1595.2	1593.7	1593.0	1593.0	1593.4	1593.5	1595.6	1597.7
DISCH KCFS	13.8	20.9	11.5	20.5	22.5	25.6	24.5	29.2	29.0	27.0	17.9	16.3	16.1	12.6	17.4	15.7	14.1
POWER																	
AVE POWER MW	255	141	251	275	312	301	358	353	326	215	195	193	150	208	189	172	
PEAK POW MW	653	655	655	654	653	666	660	651	643	635	632	632	634	634	645	655	
ENERGY GWH	2284.4	91.8	23.8	54.3	198.2	232.3	216.7	266.7	262.9	234.9	160.3	70.1	32.3	28.9	154.9	140.6	115.8
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	15409	622	160	367	1341	1576	1460	1785	1757	1575	1075	472	218	193	1056	966	785
RELEASE	15409	622	160	367	1341	1576	1460	1785	1757	1575	1075	472	218	193	1056	966	785
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
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	13.8	20.9	11.5	20.5	22.5	25.6	24.5	29.0	28.6	26.5	17.5	15.9	15.7	12.2	17.2	15.7	14.1
POWER																	
AVE POWER MW	98	54	96	106	120	115	136	134	125	86	80	79	61	85	76	68	
PEAK POW MW	510	509	509	509	509	509	509	509	517	538	538	538	538	538	538	538	529
ENERGY GWH	887.4	35.3	9.1	20.8	76.0	89.3	82.7	101.1	99.5	90.3	63.8	28.7	13.3	11.8	63.2	56.9	45.6
--FORT RANDALL--																	
NAT INFLOW	779	106	49	64	100	79	203	41	76	36	2				8	-8	23
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	147							10	32	39	31	12	5	5	13		
REG INFLOW	15961	727	209	429	1437	1646	1651	1798	1787	1565	1045	459	213	187	1049	955	805
RELEASE	15961	318	192	429	1437	1646	1651	1798	1787	1709	1682	763	358	209	683	683	616
STOR CHANGE	0	408	17		0	0	0	0	-144	-637	-304	-145	-22	366	272	189	
STORAGE	3124	3532	3549	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2297	2663	2935	3124
ELEV FTMSL	1350.0	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1343.5	1347.4	1350.0
DISCH KCFS	10.7	10.7	13.8	24.0	24.1	26.8	27.7	29.2	29.1	28.7	27.4	25.6	25.8	13.2	11.1	11.1	11.1
POWER																	
AVE POWER MW	89	117	202	203	224	232	245	243	239	218	193	188	96	83	87	89	
PEAK POW MW	352	353	353	353	353	353	353	353	346	310	289	278	276	304	322	332	
ENERGY GWH	1578.8	31.9	19.6	43.6	146.0	167.0	167.4	182.1	181.0	172.0	162.3	69.6	31.6	18.4	61.7	64.5	59.9
--GAVINS POINT--																	
NAT INFLOW	1401	103	48	62	139	155	160	91	89	65	117	53	25	28	78	77	113
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-2		-6	-20	0	-5	-2	-3	0	1	3	3	0	24	4		
EVAPORATION	47							3	9	11	10	5	2	2	5		
REG INFLOW	17200	421	234	471	1571	1777	1785	1845	1858	1768	1789	809	378	256	749	759	729
RELEASE	17200	421	234	471	1571	1777	1785	1845	1845	1755	1789	809	378	256	749	759	755
STOR CHANGE								13	13								-26
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0
DISCH KCFS	13.1																

TIME OF STUDY 08:35:05

NAVIGATION SEASON SHORTENED AT 52 MAF ON JULY 1
VALUES IN 1000 AF EXCEPT AS INDICATED

STUDY NO 19

	28FEB01	2001										2002						
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	
--FORT PECK--																		
NAT INFLOW	5435	250	116	150	549	834	1061	468	270	258	341	169	79	90	289	218	293	
DEPLETION	393	8	4	5	80	242	376	163	-52	-100	-32	-21	-10	-11	-88	-107	-65	
EVAPORATION	487							30	94	117	102	46	21	24	53			
MOD INFLOW	4555	242	113	145	469	592	685	275	228	241	271	144	67	77	324	325	358	
RELEASE	5600	119	56	71	298	430	536	553	528	387	306	149	97	143	615	676	611	
STOR CHANGE	-1045	123	57	73	171	162	149	-279	-325	-146	-35	-5	-30	-66	-291	-351	-253	
STORAGE	12685	12808	12865	12938	13110	13271	13421	13142	12817	12671	12636	12631	12601	12535	12244	11893	11640	
ELEV FTMSL	2222.2	2222.9	2223.2	2223.6	2224.5	2225.4	2226.2	2224.7	2222.9	2222.1	2221.9	2221.9	2221.7	2221.4	2219.8	2217.8	2216.3	
DISCH KCFS	12.0	4.0	4.0	4.0	5.0	7.0	9.0	9.0	9.0	6.5	5.0	5.0	7.0	9.0	10.0	11.0	11.0	
POWER																		
AVE POWER MW	52	53	53	66	92	119	119	118	85	65	65	91	117	129	141	140		
PEAK POW MW	199	199	200	201	201	202	201	199	198	198	198	198	198	197	196	193	191	
ENERGY GWH	883.5	18.9	8.8	11.4	47.5	68.8	85.8	88.5	87.9	61.3	48.4	23.5	15.3	22.5	96.2	104.9	94.0	
--GARRISON--																		
NAT INFLOW	8026	297	138	178	770	993	2221	1404	397	305	429	177	83	94	119	176	245	
DEPLETION	962	24	11	15	49	218	678	460	47	-111	19	-78	-36	-41	-121	-105	-67	
CHAN STOR	10	83			-10	-21	-21			26	16	0	-21	-21	-10	-10	0	
EVAPORATION	565							35	110	137	118	53	25	28	60			
REG INFLOW	12109	474	183	235	1008	1185	2058	1463	794	692	613	350	171	230	784	947	923	
RELEASE	13395	446	167	214	893	1261	1250	1291	1291	947	832	446	264	317	1230	1353	1194	
STOR CHANGE	-1286	28	16	21	116	-76	808	171	-497	-255	-218	-96	-93	-88	-445	-406	-271	
STORAGE	15296	15324	15340	15361	15477	15401	16209	16380	15883	15628	15410	15313	15220	15132	14687	14281	14010	
ELEV FTMSL	1827.8	1827.9	1827.9	1828.0	1828.4	1828.1	1831.0	1831.6	1829.9	1829.0	1828.2	1827.8	1827.5	1827.1	1825.5	1823.9	1822.9	
DISCH KCFS	25.0	15.0	12.0	12.0	15.0	20.5	21.0	21.0	21.0	15.9	13.5	15.0	19.0	20.0	20.0	22.0	21.5	
POWER																		
AVE POWER MW	175	140	140	175	239	246	249	248	187	158	175	220	231	230	250	242		
PEAK POW MW	440	440	440	442	441	452	454	447	444	441	440	440	438	437	431	425	422	
ENERGY GWH	1884.2	62.9	23.5	30.3	126.1	177.5	177.4	185.4	184.7	134.8	117.9	62.9	37.0	44.4	171.0	185.8	162.6	
--OAHÉ--																		
NAT INFLOW	1184	223	104	134	206	113	242	92	24	-72	6	-6	-3	-3	-54	-13	47	
DEPLETION	542	21	10	13	44	60	114	129	84	21	-6	2	1	1	10	15	24	
CHAN STOR	14	44	13		-13	-25	-2			24	11	-7	-19	-5	0	-10	2	
EVAPORATION	502							32	98	120	103	47	22	25	55			
REG INFLOW	13550	692	274	335	1041	1289	1375	1223	1134	902	752	386	219	284	1111	1315	1219	
RELEASE	14870	568	331	414	1405	1571	1415	1708	1702	1372	957	340	100	140	1022	869	957	
STOR CHANGE	-1320	124	-57	-79	-364	-282	-40	-485	-568	-471	-205	46	120	143	89	447	262	
STORAGE	15949	16073	16016	15937	15574	15292	15252	14767	14199	13729	13523	13569	13689	13832	13921	14367	14629	
ELEV FTMSL	1597.6	1598.0	1597.8	1597.5	1596.2	1595.1	1594.9	1593.1	1590.8	1588.9	1588.0	1588.2	1588.7	1589.3	1589.7	1591.5	1592.5	
DISCH KCFS	15.9	19.1	23.8	23.2	23.6	25.5	23.8	27.8	27.7	23.1	15.6	11.4	7.2	8.8	16.6	14.1	17.2	
POWER																		
AVE POWER MW	234	291	283	287	308	286	332	327	270	181	133	84	104	194	166	204		
PEAK POW MW	657	656	654	647	642	641	632	621	611	607	608	611	614	615	624	630		
ENERGY GWH	2142.7	84.1	49.0	61.1	206.6	229.3	206.0	246.8	243.2	194.1	134.8	47.8	14.1	19.9	144.7	123.8	137.4	
--BIG BEND--																		
EVAPORATION	129							8	24	31	27	12	6	7	14			
REG INFLOW	14741	568	331	414	1405	1571	1415	1700	1677	1341	930	328	94	134	1008	869	957	
RELEASE	14741	568	331	414	1405	1571	1415	1700	1677	1341	930	328	94	134	1008	869	957	
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	
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	19.1	23.8	23.2	23.6	25.5	23.8	27.6	27.3	22.5	15.1	11.0	6.8	8.4	16.4	14.1	17.2	
POWER																		
AVE POWER MW	90	112	108	111	120	111	129	128	107	76	56	34	43	82	70	83		
PEAK POW MW	518	510	509	509	509	509	509	509	523	538	538	538	538	538	538	538	529	
ENERGY GWH	850.7	32.5	18.8	23.4	79.6	89.0	80.2	96.3	95.0	77.1	56.4	20.1	5.8	8.2	60.8	52.1	55.6	
--FORT RANDALL--																		
NAT INFLOW	366	67	31	40	52	42	146	16	44	-12	-62	-3	-1	-2		-7	15	
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3	
EVAPORATION	142							10	32	39	29	11	5	5	13			
REG INFLOW	14885	633	361	453	1453	1604	1549	1688	1675	1284	838	313	88	126	992	859	969	
RELEASE	14885	378	209	436	1453	1604	1549	1688	1675	1599	1569	520	88	126	719	769	505	
STOR CHANGE	-1	255	153	17			0	0	-315	-730	-207	0	0	273	90	464		
STORAGE	3124	3379	3532	3549	3549	3549	3549	3549	3549	3234	2503	2297	2297	2296	2569	2659	3123	
ELEV FTMSL	1350.0	1353.2	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1351.4	1341.0	1337.5	1337.5	1337.5	1342.1	1343.5	1350.0	
DISCH KCFS	12.7	12.7	15.0	24.4	24.4	26.1	26.0	27.5	27.2	26.9	25.5	17.5	6.3	8.0	11.7	12.5	9.1	
POWER																		
AVE POWER MW	104	126	205	205	219	218	230	228	222	198	128	46	58	87	95	72		
PEAK POW MW	345	352	353	353	353	353	353	353	338	292	276	276	276	298	304	332		
ENERGY GWH	1467.8	37.6	21.1	44.2	147.6	162.7	157.2	171.2	169.8	159.7	147.6	46.2	7.7	11.2	64.6	70.9	48.4	
--GAVINS POINT--																		
NAT INFLOW	1229	89	42	53	123	134	141	78	78	56	107	46	21	25	69	67	100	
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1		
CHAN STOR	6		-4	-18	0	-3	0	-3	0	1	3	15	21	-3	-7	-1	6	
EVAPORATION	47							3	9	11	10	5	2	2	5			
REG INFLOW	15960	467	246	471	1571	1716	1666	1722	1735	1649	1666	571	126	143	766	833	612	
RELEASE	15960	467	246	471	1571	1716	1666	1722	1722	1636	1666	571	126	143	766	833	638	
STOR CHANGE								13	13								-26	
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358	
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0	
DISCH KCFS	14.9	15.7	17.7	26.4	26.4	27.9												

TIME OF STUDY 08:35:06

NAVIGATION SEASON SHORTENED AT 52 MAF ON JULY 1

STUDY NO 20

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB02	2002											2003					
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	
--FORT PECK--																	
NAT INFLOW	5615	258	120	155	567	862	1097	483	279	266	352	175	81	93	298	226	303
DEPLETION	355	-20	-9	-12	56	296	528	133	-60	-115	-49	-32	-15	-17	-112	-130	-86
EVAPORATION	470							29	90	113	98	45	21	24	51		
MOD INFLOW	4790	278	130	167	511	566	569	321	249	268	303	162	76	86	359	356	389
RELEASE	5393	119	56	71	298	430	506	523	523	344	289	149	97	143	615	676	555
STOR CHANGE	-602	159	74	95	213	136	63	-201	-273	-75	14	13	-22	-56	-256	-320	-166
STORAGE	11640	11799	11874	11969	12183	12318	12381	12180	11907	11831	11845	11859	11837	11780	11525	11204	11038
ELEV FTMSL	2216.3	2217.2	2217.7	2218.2	2219.4	2220.2	2220.5	2219.4	2217.9	2217.4	2217.5	2217.6	2217.5	2217.1	2215.7	2213.8	2212.8
DISCH KCFS	11.0	4.0	4.0	4.0	5.0	7.0	8.5	8.5	8.5	5.8	4.7	5.0	7.0	9.0	10.0	11.0	10.0
POWER																	
AVE POWER MW	51	51	51	64	90	110	110	109	74	60	64	89	115	127	138	125	
PEAK POW MW	192	193	194	195	196	197	195	193	192	193	193	193	192	190	188	186	
ENERGY GWH	832.9	18.4	8.6	11.1	46.4	67.3	79.1	81.6	81.1	53.2	44.7	23.0	15.0	22.0	94.4	102.9	84.0
--GARRISON--																	
NAT INFLOW	8444	312	146	187	810	1045	2337	1477	418	320	451	187	87	99	125	185	258
DEPLETION	906	-15	-7	-9	5	216	750	470	52	-114	15	-83	-39	-44	-121	-104	-66
CHAN STOR	11	74			-11	-21	-16	0	28	11	-3	-21	-21	-10	-11	11	
EVAPORATION	543							34	106	131	113	51	24	27	58		
REG INFLOW	12398	521	208	268	1092	1238	2077	1496	783	675	623	364	178	238	792	955	890
RELEASE	13116	446	167	214	893	1230	1260	1261	1261	952	800	387	236	301	1230	1353	1166
STOR CHANGE	-718	74	42	54	199	9	827	236	-477	-277	-178	-24	-58	-63	-438	-398	-276
STORAGE	14010	14084	14126	14180	14379	14388	15245	15481	15003	14726	14548	14525	14467	14404	13966	13568	13292
ELEV FTMSL	1822.9	1823.2	1823.3	1823.6	1824.3	1824.4	1827.6	1828.4	1826.7	1825.6	1825.0	1824.9	1824.7	1824.4	1822.7	1821.2	1820.1
DISCH KCFS	21.5	15.0	12.0	12.0	15.0	20.0	20.5	20.5	20.5	16.0	13.0	13.0	17.0	19.0	20.0	22.0	21.0
POWER																	
AVE POWER MW	169	136	136	170	227	235	238	237	184	149	149	194	216	226	245	232	
PEAK POW MW	423	423	424	427	427	439	442	435	432	429	429	429	428	427	421	415	411
ENERGY GWH	1804.2	60.9	22.8	29.4	122.5	168.7	169.1	177.1	176.6	132.6	111.0	53.6	32.5	41.4	167.8	182.3	155.8
--OAHÉ--																	
NAT INFLOW	1263	238	111	143	220	120	259	99	25	77	6	-6	-3	-3	-58	-14	50
DEPLETION	557	22	10	13	45	61	117	134	87	22	-7	2	1	1	11	15	24
CHAN STOR	2	30	14		-14	-23	-2		22	15		-20	-10	-5	-10	5	
EVAPORATION	481							30	94	115	99	45	21	24	53		
REG INFLOW	13343	692	281	344	1054	1266	1360	1195	1105	914	729	335	192	264	1103	1314	1197
RELEASE	14078	361	262	370	1255	1492	1400	1705	1697	1372	799	269	116	138	1022	863	956
STOR CHANGE	-734	331	19	-26	-201	-227	-41	-510	-592	-458	-70	66	76	125	81	451	241
STORAGE	14629	14961	14980	14954	14753	14527	14486	13976	13384	12926	12856	12922	12997	13123	13204	13654	13895
ELEV FTMSL	1592.5	1593.8	1593.9	1593.8	1593.0	1592.1	1591.9	1589.9	1587.4	1585.5	1585.2	1585.5	1585.8	1586.3	1586.7	1588.6	1589.6
DISCH KCFS	17.2	12.1	18.9	20.7	21.1	24.3	23.5	27.7	27.6	23.1	13.0	9.0	8.4	8.7	16.6	14.0	17.2
POWER																	
AVE POWER MW	145	226	248	252	288	279	326	320	264	149	103	96	100	191	163	201	
PEAK POW MW	636	636	636	632	628	627	617	604	594	592	594	595	598	600	610	615	
ENERGY GWH	1991.8	52.2	37.9	53.5	181.2	214.3	200.5	242.2	238.0	190.4	110.6	37.3	16.2	19.2	142.2	121.0	135.0
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	13949	361	262	370	1255	1492	1400	1697	1672	1341	772	257	111	132	1008	863	956
RELEASE	13949	361	262	370	1255	1492	1400	1697	1672	1341	772	257	111	132	1008	863	956
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
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	17.2	12.1	18.9	20.7	21.1	24.3	23.5	27.6	27.2	22.5	12.6	8.6	8.0	8.3	16.4	14.0	17.2
POWER																	
AVE POWER MW	57	88	97	99	114	110	129	127	107	63	44	40	42	82	70	83	
PEAK POW MW	518	510	509	509	509	509	509	509	523	538	538	538	538	538	538	538	
ENERGY GWH	805.2	20.7	14.9	20.9	71.1	84.5	79.3	96.1	94.7	77.1	47.2	15.7	6.8	8.1	60.8	51.8	55.5
--FORT RANDALL--																	
NAT INFLOW	404	74	35	44	58	47	161	18	48	-13	-69	-4	-2	-2	-8	16	
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	
EVAPORATION	141							10	32	39	28	10	5	5	13		
REG INFLOW	14127	434	296	413	1309	1530	1549	1687	1674	1283	669	242	104	124	992	852	969
RELEASE	14127	170	151	396	1309	1530	1549	1687	1674	1598	1568	281	104	124	719	762	505
STOR CHANGE	0	264	145	17				0	0	-315	-898	-39	0	0	273	90	464
STORAGE	3123	3387	3532	3549	3549	3549	3549	3549	3549	3234	2335	2296	2296	2296	2569	2659	3123
ELEV FTMSL	1350.0	1353.3	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1351.4	1338.2	1337.5	1337.5	1337.5	1342.1	1343.5	1350.0
DISCH KCFS	9.1	5.7	10.9	22.2	22.0	24.9	26.0	27.4	27.2	26.9	25.5	9.4	7.5	7.8	11.7	12.4	9.1
POWER																	
AVE POWER MW	47	91	186	185	209	218	230	228	222	196	69	55	57	87	95	72	
PEAK POW MW	345	352	353	353	353	353	353	353	338	279	276	276	276	298	304	332	
ENERGY GWH	1392.7	17.0	15.4	40.3	133.1	155.4	157.2	171.1	169.7	159.6	145.7	24.9	9.2	10.9	64.6	70.3	48.4
--GAVINS POINT--																	
NAT INFLOW	1242	90	42	54	124	136	143	79	79	57	108	47	22	25	69	67	101
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	7	-10	-22	0	-6	-2	-3	0	1	3	30	4	-1	-7	-1	6
EVAPORATION	47							3	9	11	10	5	2	2	5		
REG INFLOW	15208	267	183	429	1428	1642	1666	1722	1735	1649	1666	348	125	143	766	827	613
RELEASE	15208	267	183	429	1428	1642	1666	1722	1722	1636	1666	348	125	143	766	827	639
STOR CHANGE								13	13								-26
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0
DISCH KCFS	11.5	9.0	13.2	24.0	24.0	26.7	28.0	28.0	28.0	27.5	27.1	11.7	9.0	9.0	12.5	13.5	11.5

TIME OF STUDY 08:35:06

NAVIGATION SEASON SHORTENED AT 52 MAF ON JULY 1

STUDY NO 21

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB03	2003										2004							
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB		
--FORT PECK--																		
NAT INFLOW	5748	264	123	158	580	882	1123	495	285	273	361	179	83	95	305	231	310	
DEPLETION	366	-20	-9	-12	56	297	532	141	-56	-115	-49	-32	-15	-17	-111	-128	-95	
EVAPORATION	457							28	88	109	96	43	20	23	50			
MOD INFLOW	4925	285	133	171	524	585	591	326	253	279	314	167	78	89	366	359	405	
RELEASE	5363	119	56	71	298	430	506	523	326	274	132	97	143	615	676	575		
STOR CHANGE	-438	166	77	99	226	155	85	-197	-269	-47	41	35	-19	-54	-249	-317	-170	
STORAGE	11038	11203	11281	11380	11606	11761	11846	11649	11380	11333	11374	11409	11389	11336	11087	10770	10599	
ELEV FTMSL	2212.8	2213.8	2214.3	2214.8	2216.1	2217.0	2217.5	2216.4	2214.8	2214.6	2214.8	2215.0	2214.9	2214.6	2213.1	2211.2	2210.2	
DISCH KCFS	10.0	4.0	4.0	4.0	5.0	7.0	8.5	8.5	8.5	5.5	4.4	4.4	7.0	9.0	10.0	11.0	10.0	
POWER																		
AVE POWER MW		50	50	51	63	89	108	108	108	69	56	56	88	113	125	137	123	
PEAK POW MW		188	188	189	191	192	193	191	189	189	189	189	189	189	187	184	183	
ENERGY GWH	817.0	18.1	8.5	10.9	45.6	66.3	78.0	80.5	80.0	49.8	41.8	20.3	14.8	21.8	93.2	101.6	85.9	
--GARRISON--																		
NAT INFLOW	8762	324	151	194	840	1084	2425	1533	433	332	468	194	90	103	130	192	268	
DEPLETION	920	-15	-7	-9	6	216	760	486	58	-117	11	-86	-40	-46	-121	-104	-73	
CHAN STOR	0	64			-11	-21	-16	0		32	11		-27	-21	-11	-11	11	
EVAPORATION	531							33	103	128	111	50	23	26	57			
REG INFLOW	12675	522	214	275	1121	1277	2155	1537	795	679	631	362	177	244	798	962	927	
RELEASE	13210	417	167	214	893	1261	1220	1261	1261	952	835	404	236	301	1230	1353	1208	
STOR CHANGE	-535	105	47	60	228	17	935	276	-466	-273	-204	-42	-59	-57	-431	-391	-281	
STORAGE	13292	13397	13444	13504	13733	13749	14685	14961	14495	14222	14018	13976	13917	13860	13429	13037	12756	
ELEV FTMSL	1820.1	1820.5	1820.7	1820.9	1821.8	1821.9	1825.5	1826.5	1824.8	1823.7	1822.9	1822.8	1822.5	1822.3	1820.6	1819.0	1817.9	
DISCH KCFS	21.0	14.0	12.0	12.0	15.0	20.5	20.5	20.5	20.5	16.0	13.6	13.6	17.0	19.0	20.0	22.0	21.0	
POWER																		
AVE POWER MW		155	133	133	167	228	231	235	234	182	154	153	191	213	222	241	228	
PEAK POW MW		413	413	414	418	418	431	435	428	425	422	421	420	419	413	407	403	
ENERGY GWH	1790.1	55.8	22.4	28.8	120.4	169.9	166.5	174.8	174.4	130.9	114.2	55.1	32.1	40.8	165.4	179.6	159.0	
--OAHÉ--																		
NAT INFLOW	1323	249	116	149	231	126	271	103	26	81	7	-7	-3	-3	-61	-15	52	
DEPLETION	570	22	10	13	45	62	120	138	90	23	-7	2	1	1	11	15	25	
CHAN STOR	0	33	9		-14	-26				22	12		-17	-10	-5	-10	5	
EVAPORATION	464							29	90	111	96	43	20	23	51			
REG INFLOW	13499	677	282	351	1064	1299	1371	1196	1106	922	766	353	195	264	1102	1313	1240	
RELEASE	14048	355	256	362	1238	1490	1387	1704	1693	1374	804	270	116	138	1022	864	973	
STOR CHANGE	-549	322	26	-12	-173	-191	-16	-508	-587	-453	-38	82	78	126	80	448	266	
STORAGE	13895	14217	14242	14231	14058	13866	13850	13342	12755	12303	12265	12347	12425	12551	12631	13079	13345	
ELEV FTMSL	1589.6	1590.9	1591.0	1590.9	1590.2	1589.4	1589.4	1587.3	1584.7	1582.7	1582.5	1582.9	1583.3	1583.8	1584.2	1586.1	1587.3	
DISCH KCFS	17.2	11.9	18.5	20.3	20.8	24.2	23.3	27.7	27.5	23.1	13.1	9.1	8.4	8.7	16.6	14.1	16.9	
POWER																		
AVE POWER MW		141	218	239	244	283	272	321	314	261	147	102	95	99	188	161	195	
PEAK POW MW		621	622	622	618	614	614	603	590	579	578	580	582	585	587	597	603	
ENERGY GWH	1957.4	50.6	36.6	51.6	176.0	210.6	195.8	238.5	233.8	187.6	109.5	36.9	15.9	18.9	140.1	119.5	135.6	
--BIG BEND--																		
EVAPORATION	129							8	24	31	27	12	6	7	14			
REG INFLOW	13919	355	256	362	1238	1490	1387	1696	1668	1343	777	258	111	131	1008	864	973	
RELEASE	13919	355	256	362	1238	1490	1387	1696	1668	1343	777	258	111	131	1008	864	973	
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	
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	17.2	11.9	18.5	20.3	20.8	24.2	23.3	27.6	27.1	22.6	12.6	8.7	8.0	8.3	16.4	14.1	16.9	
POWER																		
AVE POWER MW		57	87	95	97	113	109	129	127	107	64	44	40	42	82	70	81	
PEAK POW MW		518	510	509	509	509	509	509	509	523	538	538	538	538	538	538	529	
ENERGY GWH	803.5	20.3	14.5	20.5	70.1	84.4	78.6	96.1	94.5	77.2	47.5	15.8	6.8	8.1	60.8	51.8	56.5	
--FORT RANDALL--																		
NAT INFLOW	433	80	37	48	62	50	174	19	52	-15	-75	-4	-2	-2	-9	17		
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3		
EVAPORATION	141							10	32	39	28	10	5	5	13			
REG INFLOW	14127	434	293	409	1296	1531	1549	1687	1674	1283	668	244	104	124	992	852	987	
RELEASE	14127	170	148	392	1296	1531	1549	1687	1674	1598	1568	281	104	124	719	762	523	
STOR CHANGE	0	264	144	17				0	0	-315	-900	-37	0	0	273	90	464	
STORAGE	3123	3388	3532	3549	3549	3549	3549	3549	3549	3234	2334	2297	2296	2296	2569	2659	3123	
ELEV FTMSL	1350.0	1353.3	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1351.4	1338.2	1337.5	1337.5	1337.5	1342.1	1343.5	1350.0	
DISCH KCFS	9.1	5.7	10.7	22.0	21.8	24.9	26.0	27.4	27.2	26.9	25.5	9.4	7.5	7.8	11.7	12.4	9.1	
POWER																		
AVE POWER MW		47	90	185	183	209	218	230	228	222	196	69	55	57	87	95	72	
PEAK POW MW		345	352	353	353	353	353	353	353	338	278	276	276	276	298	304	332	
ENERGY GWH	1392.5	17.0	15.1	39.9	131.8	155.4	157.2	171.1	169.7	159.6	145.7	24.8	9.2	10.9	64.6	70.3	50.1	
--GAVINS POINT--																		
NAT INFLOW	1246	91	42	54	125	136	143	79	79	57	108	47	22	25	70	68	101	
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1		
CHAN STOR	-1	7	-10	-22	0	-6	-2	-3	0	1	3	30	4	-1	-7	-1	6	
EVAPORATION	47							3	9	11	10	5	2	2	5			
REG INFLOW	15211	267	181	425	1416	1642	1666	1722	1735	1649	1666	348	125	143	767	828	631	
RELEASE	15211	267	181	425	1416	1642	1666	1722	1722	1636	1666	348	125	143	767	828	657	
STOR CHANGE								13	13								-26	
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358	
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0	
DISCH KCFS	11.5	9.0	13.1	23.8	23.8	26.7	28.0	28.0	28.0	2								

TIME OF STUDY 08:35:07

NAVIGATION SEASON SHORTENED AT 52 MAF ON JULY 1
VALUES IN 1000 AF EXCEPT AS INDICATED

STUDY NO 23

	28FEB05				2005							2006						
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	
--FORT PECK--																		
NAT INFLOW	5961	274	128	164	602	915	1164	513	296	283	374	185	86	99	317	240	321	
DEPLETION	389	-20	-9	-12	55	299	540	155	-47	-116	-54	-34	-16	-18	-114	-131	-88	
EVAPORATION	444							27	85	106	93	42	20	22	49			
MOD INFLOW	5128	294	137	176	547	616	624	331	258	293	335	177	82	94	382	371	409	
RELEASE	5333	119	56	71	298	430	506	523	523	321	270	131	97	143	615	676	555	
STOR CHANGE	-206	175	82	105	249	186	118	-192	-264	-29	65	46	-15	-49	-232	-305	-146	
STORAGE	10371	10546	10628	10733	10983	11168	11286	11095	10830	10802	10867	10913	10898	10850	10617	10312	10166	
ELEV FTMSL	2208.8	2209.9	2210.4	2211.0	2212.5	2213.6	2214.3	2213.2	2211.6	2211.4	2211.8	2212.1	2212.0	2211.7	2210.3	2208.4	2207.5	
DISCH KCFS	10.0	4.0	4.0	4.0	5.0	7.0	8.5	8.5	8.5	5.4	4.4	4.4	7.0	9.0	10.0	11.0	10.0	
POWER																		
AVE POWER MW	49	49	50	62	88	107	107	106	67	55	55	87	112	124	135	122		
PEAK POW MW	182	183	184	186	187	188	187	185	184	185	185	185	185	183	180	179		
ENERGY GWH	800.2	17.7	8.3	10.7	44.8	65.1	76.8	79.3	78.7	48.3	40.6	19.7	14.6	21.5	91.9	100.2	81.8	
--GARRISON--																		
NAT INFLOW	9293	344	160	206	891	1150	2572	1626	460	353	496	205	96	109	137	204	284	
DEPLETION	1019	-14	-7	-8	7	216	780	518	69	-123	2	-94	-44	-50	-103	-83	-48	
CHAN STOR	0	65			-11	-21	-16	0	33	11	0	-28	-21	-11	-11	11		
EVAPORATION	519							32	101	125	108	49	23	26	56			
REG INFLOW	13089	542	222	286	1171	1343	2282	1599	813	705	666	380	186	255	789	953	898	
RELEASE	13333	387	167	214	893	1261	1250	1291	1291	952	924	447	222	286	1230	1353	1166	
STOR CHANGE	-245	155	56	72	278	82	1032	308	-478	-247	-258	-67	-36	-31	-441	-400	-268	
STORAGE	12474	12629	12685	12756	13035	13117	14149	14457	13979	13731	13473	13406	13370	13339	12898	12498	12230	
ELEV FTMSL	1816.7	1817.4	1817.6	1817.9	1819.0	1819.4	1823.4	1824.6	1822.8	1821.8	1820.8	1820.5	1820.4	1820.3	1818.5	1816.8	1815.7	
DISCH KCFS	21.0	13.0	12.0	12.0	15.0	20.5	21.0	21.0	21.0	16.0	15.0	15.0	16.0	18.0	20.0	22.0	21.0	
POWER																		
AVE POWER MW	141	130	131	164	224	233	237	237	179	167	167	177	199	219	238	225		
PEAK POW MW	401	402	403	407	409	424	424	428	421	418	414	413	412	412	405	399	395	
ENERGY GWH	1779.1	50.7	21.9	28.2	118.0	166.8	167.9	176.6	176.2	129.1	124.6	60.0	29.7	38.2	163.0	176.9	151.1	
--OAH--																		
NAT INFLOW	1429	269	125	161	249	136	293	112	29	87	7	-7	-3	-4	-65	-16	56	
DEPLETION	597	22	10	13	46	65	126	147	96	24	-8	2	1	1	11	16	25	
CHAN STOR	0	39	5		-15	-27	-2		25	5		-5	-10	-10	-10	5		
EVAPORATION	447							28	87	106	92	42	20	23	49			
REG INFLOW	13719	672	286	362	1081	1305	1414	1228	1137	934	853	397	194	248	1094	1311	1202	
RELEASE	13969	346	251	356	1230	1483	1365	1702	1686	1375	811	271	116	138	1022	865	952	
STOR CHANGE	-251	327	35	6	-149	-178	49	-474	-549	-441	41	126	77	110	72	445	250	
STORAGE	13055	13382	13417	13424	13275	13097	13146	12672	12123	11682	11724	11850	11927	12038	12110	12555	12805	
ELEV FTMSL	1586.0	1587.4	1587.6	1587.6	1587.0	1586.2	1586.4	1584.4	1581.9	1579.9	1580.1	1580.6	1581.0	1581.5	1581.8	1583.8	1584.9	
DISCH KCFS	17.2	11.6	18.1	19.9	20.7	24.1	22.9	27.7	27.4	23.1	13.2	9.1	8.4	8.7	16.6	14.1	17.1	
POWER																		
AVE POWER MW	134	209	230	238	277	263	315	308	256	146	101	93	97	186	159	195		
PEAK POW MW	604	605	605	601	598	599	588	575	564	565	568	570	573	575	585	591		
ENERGY GWH	1913.9	48.2	35.1	49.8	171.6	205.8	189.3	234.2	228.9	184.6	108.7	36.4	15.7	18.7	138.2	118.0	130.9	
--BIG BEND--																		
EVAPORATION	129						8	24	31	27	12	6	7	14				
REG INFLOW	13840	346	251	356	1230	1483	1365	1694	1661	1344	784	258	111	131	1008	865	952	
RELEASE	13840	346	251	356	1230	1483	1365	1694	1661	1344	784	258	111	131	1008	865	952	
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	
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	17.2	11.6	18.1	19.9	20.7	24.1	22.9	27.6	27.0	22.6	12.8	8.7	8.0	8.3	16.4	14.1	17.1	
POWER																		
AVE POWER MW	55	85	93	97	113	107	129	126	107	64	44	40	42	82	70	82		
PEAK POW MW	518	510	509	509	509	509	509	509	523	538	538	538	538	538	538	538	529	
ENERGY GWH	799.1	19.8	14.2	20.2	69.7	84.0	77.3	95.9	94.1	77.3	47.9	15.9	6.8	8.1	60.8	51.9	55.3	
--FORT RANDALL--																		
NAT INFLOW	489	90	42	54	70	56	195	21	59	-16	-84	-4	-2	-2	-10	20		
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3		
EVAPORATION	141							10	32	39	28	10	5	5	13			
REG INFLOW	14104	434	292	409	1296	1530	1548	1687	1674	1283	667	244	104	123	992	852	969	
RELEASE	14104	170	148	392	1296	1530	1548	1687	1674	1598	1567	281	104	123	719	762	505	
STOR CHANGE	0	265	144	17				0	0	-315	-900	-37	0	0	273	90	464	
STORAGE	3123	3388	3532	3549	3549	3549	3549	3549	3549	3234	2334	2297	2296	2569	2659	3123		
ELEV FTMSL	1350.0	1353.3	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1351.4	1338.2	1337.5	1337.5	1342.1	1343.5	1350.0		
DISCH KCFS	9.1	5.7	10.7	22.0	21.8	24.9	26.0	27.4	27.2	26.9	25.5	9.4	7.5	7.8	11.7	12.4	9.1	
POWER																		
AVE POWER MW	47	90	184	183	209	218	230	228	222	196	69	55	57	87	95	72		
PEAK POW MW	345	352	353	353	353	353	353	353	338	278	276	276	276	298	304	332		
ENERGY GWH	1390.3	17.0	15.1	39.8	131.8	155.3	157.1	171.1	169.7	159.6	145.6	24.8	9.2	10.9	64.6	70.3	48.4	
--GAVINS POINT--																		
NAT INFLOW	1252	91	42	55	125	137	144	79	79	57	109	47	22	25	70	68	102	
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1		
CHAN STOR	-1	7	-10	-22	0	-6	-2	-3	0	1	3	30	4	-1	-7	-1	6	
EVAPORATION	47							3	9	11	10	5	2	2	5			
REG INFLOW	15195	268	181	425	1416	1642	1666	1722	1735	1649	1666	348	125	143	767	828	614	
RELEASE	15195	268	181	425	1416	1642	1666	1722	1722	1636	1666	348	125	143	767	828	640	
STOR CHANGE								13	13								-26	
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358	
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0		
DISCH KCFS	11.5	9.0	13.1	23.8	23.8	26.7	28.0	28.0										

TIME OF STUDY 08:40:16

NAVIGATION SEASON SHORTENED AT 40 MAF ON JULY 1
VALUES IN 1000 AF EXCEPT AS INDICATED

STUDY NO 25

	28FEB02		2002							2003							
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	5615	258	120	155	567	862	1097	483	279	266	352	175	81	93	298	226	303
DEPLETION	355	-20	-9	-12	56	296	528	133	-60	-115	-49	-32	-15	-17	-112	-130	-86
EVAPORATION	463							28	89	112	97	44	20	23	50		
MOD INFLOW	4797	278	130	167	511	566	569	322	250	269	304	163	76	87	360	356	389
RELEASE	5592	119	56	71	298	430	506	523	523	452	379	149	97	143	615	676	555
STOR CHANGE	-795	159	74	95	213	136	63	-201	-273	-182	-75	14	-21	-56	-255	-320	-166
STORAGE	11485	11645	11719	11814	12028	12163	12227	12025	11753	11570	11495	11509	11488	11432	11177	10857	10690
ELEV FTMSL	2215.4	2216.4	2216.8	2217.3	2218.5	2219.3	2219.7	2218.5	2217.0	2215.9	2215.5	2215.6	2215.5	2215.1	2213.7	2211.8	2210.7
DISCH KCFS	11.0	4.0	4.0	4.0	5.0	7.0	8.5	8.5	8.5	7.6	6.2	5.0	7.0	9.0	10.0	11.0	10.0
POWER																	
AVE POWER MW	51	51	51	64	90	109	109	109	109	96	78	63	89	114	126	137	124
PEAK POW MW	191	192	192	194	195	195	194	192	191	190	190	190	190	189	187	185	184
ENERGY GWH	857.7	18.3	8.6	11.0	46.2	67.0	78.8	81.3	80.8	69.5	58.2	22.8	14.9	21.8	93.4	101.9	83.1
--GARRISON--																	
NAT INFLOW	8444	312	146	187	810	1045	2337	1477	418	320	451	187	87	99	125	185	258
DEPLETION	906	-15	-7	-9	5	216	750	470	52	-114	15	-83	-39	-44	-121	-104	-66
CHAN STOR	11	74			-11	-21	-16	0		10	15	12	-21	-21	-11	-11	11
EVAPORATION	533							33	103	128	111	50	23	27	57		
REG INFLOW	12607	521	208	268	1092	1238	2077	1497	785	767	719	380	178	239	793	955	890
RELEASE	13576	446	167	214	893	1291	1309	1353	1353	929	882	427	236	301	1230	1353	1194
STOR CHANGE	-969	75	42	54	199	-53	768	144	-567	-161	-163	-47	-58	-63	-437	-398	-304
STORAGE	13836	13911	13953	14006	14206	14153	14921	15065	14497	14336	14173	14127	14069	14006	13569	13171	12867
ELEV FTMSL	1822.2	1822.5	1822.7	1822.9	1823.7	1823.4	1826.4	1826.9	1824.8	1824.2	1823.5	1823.3	1823.1	1822.9	1821.2	1819.6	1818.3
DISCH KCFS	21.5	15.0	12.0	12.0	15.0	21.0	22.0	22.0	22.0	15.6	14.3	14.3	17.0	19.0	20.0	22.0	21.5
POWER																	
AVE POWER MW	168	135	135	169	237	250	253	252	178	163	162	192	214	223	242	242	235
PEAK POW MW	420	421	421	424	424	434	436	428	426	424	423	422	422	415	409	405	405
ENERGY GWH	1850.4	60.6	22.7	29.2	122.0	176.1	180.0	188.2	187.2	127.8	121.0	58.4	32.2	41.0	166.0	180.3	157.7
--OAHN--																	
NAT INFLOW	1263	238	111	143	220	120	259	99	25	77	6	-6	-3	-3	-58	-14	50
DEPLETION	557	22	10	13	45	61	117	134	87	22	-7	2	1	1	11	15	24
CHAN STOR	-1	30	14		-14	-28	-5			31	6	0	-13	-10	-5	-10	2
EVAPORATION	478							31	94	116	98	44	21	24	51		
REG INFLOW	13803	692	281	344	1054	1322	1446	1287	1196	899	803	375	199	264	1104	1314	1223
RELEASE	14796	361	259	366	1243	1493	1400	1705	1697	1544	1059	434	201	193	1016	870	956
STOR CHANGE	-993	332	22	-22	-189	-170	46	-417	-501	-645	-256	-59	-2	71	88	444	266
STORAGE	14452	14784	14806	14783	14595	14424	14470	14053	13552	12907	12651	12592	12590	12661	12749	13193	13459
ELEV FTMSL	1591.8	1593.1	1593.2	1593.1	1592.4	1591.7	1591.9	1590.2	1588.1	1585.4	1584.3	1584.0	1584.0	1584.3	1584.7	1586.6	1587.8
DISCH KCFS	17.2	12.1	18.7	20.5	20.9	24.3	23.5	27.7	27.6	25.9	17.2	14.6	14.5	12.2	16.5	14.1	17.2
POWER																	
AVE POWER MW	144	223	245	248	287	278	326	321	298	196	166	164	138	188	162	199	199
PEAK POW MW	633	633	632	629	626	626	618	608	593	587	586	586	588	590	600	606	606
ENERGY GWH	2083.9	52.0	37.4	52.8	178.9	213.7	200.3	242.4	238.7	214.4	145.8	59.6	27.5	26.6	139.7	120.5	133.6
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	14667	361	259	366	1243	1493	1400	1697	1672	1513	1032	422	195	187	1002	870	956
RELEASE	14667	361	259	366	1243	1493	1400	1697	1672	1513	1032	422	195	187	1002	870	956
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
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	17.2	12.1	18.7	20.5	20.9	24.3	23.5	27.6	27.2	25.4	16.8	14.2	14.0	11.8	16.3	14.1	17.2
POWER																	
AVE POWER MW	57	88	96	98	114	110	129	127	121	82	71	71	59	81	70	83	83
PEAK POW MW	518	510	509	509	509	509	509	509	517	538	538	538	538	538	538	538	529
ENERGY GWH	846.4	20.6	14.7	20.7	70.4	84.6	79.3	96.1	94.7	86.8	61.3	25.7	11.9	11.4	60.4	52.1	55.5
--FORT RANDALL--																	
NAT INFLOW	404	74	35	44	58	47	161	18	48	-13	-69	-4	-2	-2	-8	16	16
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	147							10	32	39	31	12	5	5	13		
REG INFLOW	14845	433	293	410	1297	1531	1549	1687	1674	1454	931	406	188	179	986	859	969
RELEASE	14845	170	149	393	1297	1531	1549	1687	1674	1598	1568	710	333	201	713	769	505
STOR CHANGE	-1	264	144	17				0	0	-144	-637	-304	-145	-22	273	90	464
STORAGE	3124	3388	3532	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2296	2569	2659	3123
ELEV FTMSL	1350.0	1353.3	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1342.1	1343.5	1350.0
DISCH KCFS	9.1	5.7	10.7	22.0	21.8	24.9	26.0	27.4	27.2	26.9	25.5	23.9	24.0	12.7	11.6	12.5	9.1
POWER																	
AVE POWER MW	47	90	185	183	209	218	230	228	224	204	180	175	92	86	95	72	72
PEAK POW MW	345	352	353	353	353	353	353	353	346	310	289	278	276	298	304	332	332
ENERGY GWH	1465.2	17.0	15.1	39.9	131.9	155.4	157.2	171.1	169.7	161.0	151.5	64.8	29.4	17.7	64.1	70.9	48.4
--GAVINS POINT--																	
NAT INFLOW	1242	90	42	54	124	136	143	79	79	57	108	47	22	25	69	67	101
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	7	-10	-22	0	-6	-2	-3	0	1	3	3	0	21	2	-2	6
EVAPORATION	47							3	9	11	10	5	2	2	5		
REG INFLOW	15926	267	181	425	1416	1642	1666	1722	1735	1649	1666	750	350	242	769	833	613
RELEASE	15926	267	181	425	1416	1642	1666	1722	1722	1636	1666	750	350	242	769	833	639
STOR CHANGE								13	13								-26
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0
DISCH KCFS	11.5	9.0	13.1	23.8	23.8	26.7	28.0	28.0	28.0	27.5	27.1	25.2	25.2	15.3	12.5	13.5	11.5
POWER																	
AVE POWER MW	31	45	81	81	91	95	95	96	95	94	88	88	54	44	48	41	41
PEAK POW MW	114	114	114	114	114	114	114	114	114	115	115	115	115	77	77	76	76
ENERGY GWH	664.2	11.3	7.6	17.6	58.6	67.6	68.5	70.8	71.1	68.3	70.0	31.6	14.7	10.4	33.1	35.7	27.3
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	730	48	23	29	102	191	141	63	29	20	18	13	6	7	13	-7	35
DEPLETION	239	6	3	3	19	34	29	36	33	21	9	5	2	3	11	12	13
REGULATED FLOW AT SIOUX CITY																	
KAF	16417	309	201	451	1499	1799	1778	1749	1718	1635	1675	757	353	246	771	814	661
KCFS	10.4	14.5	25.2	25.2	29.3	29.9	28.4	27.9	27.5	27.2	25.5	25.5	15.5	12.5	13.2	11.9	
--TOTAL--																	
NAT INFLOW	17698	1020	476	612	1881	2401	4138	2219	878	727	866	411	192	219	447</		

TIME OF STUDY 08:40:16

NAVIGATION SEASON SHORTENED AT 40 MAF ON JULY 1
VALUES IN 1000 AF EXCEPT AS INDICATED

STUDY NO 26

	28FEB03		2003					2004											
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB		
--FORT PECK--																			
NAT INFLOW	5748	264	123	158	580	882	1123	495	285	273	361	179	83	95	305	231	310		
DEPLETION	366	-20	-9	-12	56	297	532	141	-56	-115	-49	-32	-15	-17	-111	-128	-95		
EVAPORATION	446							27	86	107	93	42	20	22	48				
MOD INFLOW	4936	285	133	171	524	585	591	327	255	281	317	168	79	90	368	359	405		
RELEASE	5577	119	56	71	298	430	506	523	523	421	353	171	97	143	615	676	575		
STOR CHANGE	-641	166	77	99	226	155	85	-196	-267	-140	-37	-3	-19	-53	-247	-317	-170		
STORAGE	10690	10856	10933	11032	11259	11413	11499	11302	11035	10895	10859	10856	10837	10784	10537	10220	10049		
ELEV FTMSL	2210.7	2211.7	2212.2	2212.8	2214.1	2215.0	2215.5	2214.4	2212.8	2212.0	2211.8	2211.7	2211.6	2211.3	2209.8	2207.9	2206.8		
DISCH KCFS	10.0	4.0	4.0	4.0	5.0	7.0	8.5	8.5	8.5	7.1	5.7	5.7	7.0	9.0	10.0	11.0	10.0		
POWER																			
AVE POWER MW		50	50	50	63	88	107	107	106	88	72	72	87	112	123	134	121		
PEAK POW MW		185	186	186	188	189	190	188	186	185	185	185	185	184	182	180	178		
ENERGY GWH	838.7	17.9	8.4	10.8	45.2	65.6	77.3	79.7	79.2	63.5	53.2	25.7	14.6	21.4	91.7	99.9	84.4		
--GARRISON--																			
NAT INFLOW	8762	324	151	194	840	1084	2425	1533	433	332	468	194	90	103	130	192	268		
DEPLETION	920	-15	-7	-9	6	216	760	486	58	-117	11	-86	-40	-46	-121	-104	-73		
CHAN STOR	0	65			-11	-21	-16	0		15	14	0	-13	-21	-11	-11	11		
EVAPORATION	516							32	100	124	108	49	23	26	55				
REG INFLOW	12903	522	214	275	1121	1277	2155	1538	798	761	717	402	192	245	800	962	927		
RELEASE	13684	417	167	214	893	1291	1309	1353	1353	968	919	445	236	301	1230	1353	1237		
STOR CHANGE	-781	106	47	60	228	-14	846	185	-555	-207	-202	-43	-44	-57	-430	-391	-310		
STORAGE	12867	12973	13020	13080	13309	13294	14140	14325	13770	13563	13361	13318	13274	13217	12787	12396	12086		
ELEV FTMSL	1818.3	1818.8	1819.0	1819.2	1820.1	1820.1	1823.4	1824.1	1822.0	1821.1	1820.3	1820.2	1820.0	1819.8	1818.0	1816.4	1815.1		
DISCH KCFS	21.5	14.0	12.0	12.0	15.0	21.0	22.0	22.0	22.0	16.3	14.9	14.9	17.0	19.0	20.0	22.0	21.5		
POWER																			
AVE POWER MW		153	132	132	165	231	245	248	247	181	166	165	188	209	218	237	229		
PEAK POW MW		406	407	408	411	411	424	426	418	415	412	412	411	410	404	398	393		
ENERGY GWH	1824.6	55.1	22.1	28.5	119.0	171.9	176.2	184.6	183.7	130.6	123.4	59.5	31.5	40.1	162.5	176.4	159.6		
--OAHÉ--																			
NAT INFLOW	1323	249	116	149	231	126	271	103	26	81	7	-7	-3	-3	-61	-15	52		
DEPLETION	570	22	10	13	45	62	120	138	90	23	-7	2	1	1	11	15	25		
CHAN STOR	-1	36	10		-14	-29	-5			29	7		-11	-10	-5	-10	3		
EVAPORATION	453							29	89	109	93	42	19	22	49				
REG INFLOW	13983	680	282	351	1064	1326	1455	1289	1199	945	847	395	202	265	1104	1312	1266		
RELEASE	14784	355	256	362	1238	1490	1387	1704	1693	1546	1065	434	201	193	1016	864	979		
STOR CHANGE	-801	325	26	-12	-173	-163	68	-415	-494	-601	-218	-39	2	71	88	448	287		
STORAGE	13459	13784	13810	13798	13625	13462	13530	13115	12621	12020	11802	11762	11764	11835	11923	12371	12658		
ELEV FTMSL	1587.8	1589.1	1589.2	1589.2	1588.4	1587.8	1588.0	1586.3	1584.1	1581.4	1580.4	1580.2	1580.2	1580.6	1581.0	1583.0	1584.3		
DISCH KCFS	17.2	11.9	18.5	20.3	20.8	24.2	23.3	27.7	27.5	26.0	17.3	14.6	14.5	12.2	16.5	14.1	17.0		
POWER																			
AVE POWER MW		139	215	237	242	280	270	318	313	291	193	162	160	135	184	158	192		
PEAK POW MW		613	613	613	609	606	607	598	587	572	567	566	566	568	570	581	588		
ENERGY GWH	2035.8	50.1	36.2	51.1	174.2	208.6	194.1	236.9	232.7	209.6	143.3	58.3	26.9	26.0	136.6	117.2	134.0		
--BIG BEND--																			
EVAPORATION	129							8	24	31	27	12	6	7	14				
REG INFLOW	14655	355	256	362	1238	1490	1387	1696	1668	1515	1038	422	195	187	1002	864	979		
RELEASE	14655	355	256	362	1238	1490	1387	1696	1668	1515	1038	422	195	187	1002	864	979		
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682		
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	17.2	11.9	18.5	20.3	20.8	24.2	23.3	27.6	27.1	25.5	16.9	14.2	14.0	11.8	16.3	14.1	17.0		
POWER																			
AVE POWER MW		57	87	95	97	113	109	129	127	121	83	71	71	59	81	70	82		
PEAK POW MW		518	510	509	509	509	509	509	509	517	538	538	538	538	538	538	529		
ENERGY GWH	845.7	20.3	14.5	20.5	70.1	84.4	78.6	96.1	94.5	86.9	61.7	25.7	11.9	11.4	60.4	51.8	56.8		
--FORT RANDALL--																			
NAT INFLOW	433	80	37	48	62	50	174	19	52	-15	-75	-4	-2	-2		-9	17		
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3		
EVAPORATION	147							10	32	39	31	12	5	5	13				
REG INFLOW	14861	434	293	409	1296	1531	1549	1687	1674	1454	931	406	188	179	986	852	993		
RELEASE	14861	170	148	392	1296	1531	1549	1687	1674	1598	1568	710	333	201	713	762	529		
STOR CHANGE	0	264	144	17				0	0	-144	-637	-304	-145	-22	273	90	464		
STORAGE	3123	3388	3532	3549	3549	3549	3549	3549	3405	2768	2464	2319	2296	2569	2659	3123			
ELEV FTMSL	1350.0	1353.3	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1342.1	1343.5	1350.0		
DISCH KCFS	9.1	5.7	10.7	22.0	21.8	24.9	26.0	27.4	27.2	26.9	25.5	23.9	24.0	12.7	11.6	12.4	9.2		
POWER																			
AVE POWER MW		47	90	185	183	209	218	230	228	224	204	180	175	92	86	95	73		
PEAK POW MW		345	352	353	353	353	353	353	353	346	310	289	278	276	298	304	332		
ENERGY GWH	1466.7	17.0	15.1	39.9	131.8	155.4	157.2	171.1	169.7	161.0	151.5	64.8	29.4	17.7	64.1	70.3	50.7		
--GAVINS POINT--																			
NAT INFLOW	1246	91	42	54	125	136	143	79	79	57	108	47	22	25	70	68	101		
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1			
CHAN STOR	-1	7	-10	-22	0	-6	-2	-3	0	1	3	3	0	21	2	-1	6		
EVAPORATION	47							3	9	11	10	5	2	2	5				
REG INFLOW	15946	267	181	425	1416	1642	1666	1722	1735	1649	1666	750	350	242	770	828	636		
RELEASE	15946	267	181	425	1416	1642	1666	1722	1722	1636	1666	750	350	242	770	828	662		
STOR CHANGE								13	13								-26		
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358		
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0		
DISCH KCFS	11.5	9.0	13.1	23.8	23.8	26.7	28.0</												

TIME OF STUDY 08:40:17

NAVIGATION SEASON SHORTENED AT 40 MAF ON JULY 1
VALUES IN 1000 AF EXCEPT AS INDICATED

STUDY NO 27

	29FEB04		2004				2005											
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	
--FORT PECK--																		
NAT INFLOW	5919	272	127	163	598	909	1156	509	294	281	371	184	86	98	314	238	319	
DEPLETION	378	-20	-9	-12	55	298	536	148	-52	-115	-52	-34	-16	-18	-113	-131	-87	
EVAPORATION	436							27	84	105	91	41	19	22	47			
MOD INFLOW	5105	292	136	175	543	611	620	334	262	291	332	176	82	94	380	369	406	
RELEASE	5533	119	56	71	298	430	506	523	523	410	345	167	97	143	615	676	555	
STOR CHANGE	-428	173	81	104	245	181	114	-188	-260	-119	-13	10	-15	-49	-235	-307	-149	
STORAGE	10049	10223	10304	10408	10653	10834	10948	10760	10499	10380	10368	10377	10362	10314	10078	9771	9622	
ELEV FTMSL	2206.8	2207.9	2208.4	2209.0	2210.5	2211.6	2212.3	2211.2	2209.6	2208.9	2208.8	2208.8	2208.8	2208.5	2207.0	2205.1	2204.1	
DISCH KCFS	10.0	4.0	4.0	4.0	5.0	7.0	8.5	8.5	8.5	6.9	5.6	5.6	7.0	9.0	10.0	11.0	10.0	
POWER																		
AVE POWER MW	49	49	49	62	87	106	105	105	85	69	69	86	110	122	132	120	120	
PEAK POW MW	180	180	181	183	185	186	184	182	181	181	181	181	181	181	179	176	175	
ENERGY GWH	819.4	17.6	8.2	10.6	44.4	64.5	76.0	78.5	78.0	60.9	51.1	24.7	14.4	21.1	90.4	98.5	80.4	
--GARRISON--																		
NAT INFLOW	9185	340	158	204	881	1136	2542	1607	454	349	491	203	95	108	136	201	281	
DEPLETION	941	-14	-6	-8	7	217	770	503	63	-120	6	-90	-42	-48	-124	-105	-68	
CHAN STOR	0	65			-11	-22	-16	0		17	14	0	-15	-22	-11	-11	11	
EVAPORATION	505							31	98	122	105	47	22	25	54			
REG INFLOW	13273	538	220	283	1161	1328	2262	1595	816	775	738	412	197	252	810	971	915	
RELEASE	13792	387	167	214	893	1291	1309	1353	1353	1040	987	478	243	301	1230	1353	1194	
STOR CHANGE	-519	151	54	69	268	37	952	243	-537	-265	-249	-66	-46	-49	-420	-381	-279	
STORAGE	12086	12237	12291	12360	12628	12665	13617	13860	13323	13058	12809	12743	12697	12647	12228	11846	11568	
ELEV FTMSL	1815.1	1815.7	1816.0	1816.3	1817.4	1817.5	1821.4	1822.3	1820.2	1819.1	1818.1	1817.8	1817.6	1817.4	1815.7	1814.1	1812.9	
DISCH KCFS	21.5	13.0	12.0	12.0	15.0	21.0	22.0	22.0	22.0	17.5	16.1	16.1	17.5	19.0	20.0	22.0	21.5	
POWER																		
AVE POWER MW	139	129	129	162	227	241	245	244	192	175	175	175	190	206	215	233	226	
PEAK POW MW	395	396	397	401	402	416	419	412	408	404	403	403	402	401	395	389	385	
ENERGY GWH	1809.9	50.1	21.7	27.9	116.6	168.7	173.4	182.2	181.4	138.3	130.5	62.9	31.9	39.5	159.8	173.5	151.6	
--QAHE--																		
NAT INFLOW	1408	265	123	159	245	134	288	110	28	86	7	-7	-3	-3	-64	-16	56	
DEPLETION	585	22	10	13	46	64	123	143	93	23	-8	2	1	1	11	16	25	
CHAN STOR	0	42	5		-15	-30	-5			23	7		-8	-5	-10		3	
EVAPORATION	434							28	86	104	89	40	19	21	47			
REG INFLOW	14181	672	285	360	1077	1332	1469	1292	1202	1022	921	430	213	268	1103	1310	1228	
RELEASE	14713	348	252	357	1232	1484	1369	1702	1688	1547	1071	434	201	193	1016	865	953	
STOR CHANGE	-532	324	32	2	-155	-152	100	-410	-486	-525	-150	-5	12	75	87	445	274	
STORAGE	12658	12982	13015	13017	12862	12710	12810	12400	11914	11389	11239	11234	11246	11321	11408	11852	12127	
ELEV FTMSL	1584.3	1585.7	1585.9	1585.9	1585.2	1584.5	1585.0	1583.1	1580.9	1578.5	1577.7	1577.7	1577.8	1578.1	1578.5	1580.7	1581.9	
DISCH KCFS	17.0	11.7	18.2	20.0	20.7	24.1	23.0	27.7	27.5	26.0	17.4	14.6	14.5	12.2	16.5	14.1	17.2	
POWER																		
AVE POWER MW	134	208	229	236	274	261	312	306	286	190	159	158	133	181	155	191	191	
PEAK POW MW	595	596	596	592	589	591	581	570	557	553	553	553	555	555	557	569	575	
ENERGY GWH	1990.2	48.1	34.9	49.5	170.1	203.8	188.1	232.3	227.7	205.8	141.6	57.4	26.5	25.6	134.6	115.7	128.6	
--BIG BEND--																		
EVAPORATION	129							8	24	31	27	12	6	7	14			
REG INFLOW	14584	348	252	357	1232	1484	1369	1694	1663	1516	1044	422	195	187	1002	865	953	
RELEASE	14584	348	252	357	1232	1484	1369	1694	1663	1516	1044	422	195	187	1002	865	953	
STORAGE	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	
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	11.7	18.2	20.0	20.7	24.1	23.0	27.6	27.1	25.5	17.0	14.2	14.0	11.8	16.3	14.1	17.2	
POWER																		
AVE POWER MW	55	85	94	97	113	108	129	127	121	83	71	71	60	81	70	82	82	
PEAK POW MW	518	510	509	509	509	509	509	509	517	538	538	538	538	538	538	538	529	
ENERGY GWH	841.7	19.9	14.3	20.2	69.8	84.0	77.6	95.9	94.2	87.0	62.0	25.7	11.9	11.4	60.4	51.9	55.3	
--FORT RANDALL--																		
NAT INFLOW	476	88	41	53	68	55	191	21	57	-16	-82	-4	-2	-2	-10	19	19	
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3	
EVAPORATION	147							10	32	39	31	12	5	5	13			
REG INFLOW	14833	434	292	409	1296	1530	1548	1687	1674	1454	930	405	188	179	986	852	969	
RELEASE	14833	170	148	392	1296	1530	1548	1687	1674	1598	1567	709	333	201	713	762	505	
STOR CHANGE	0	265	144	17				0	0	-144	-637	-304	-145	-22	273	90	464	
STORAGE	3123	3388	3532	3549	3549	3549	3549	3549	3549	3405	2768	2464	2319	2296	2569	2659	3123	
ELEV FTMSL	1350.0	1353.3	1355.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.1	1340.4	1337.9	1337.5	1342.1	1343.5	1350.0	
DISCH KCFS	9.2	5.7	10.7	22.0	21.8	24.9	26.0	27.4	27.2	26.9	25.5	23.8	24.0	12.7	11.6	12.4	9.1	
POWER																		
AVE POWER MW	47	90	184	183	209	218	230	228	224	204	180	175	92	86	95	72	72	
PEAK POW MW	345	352	353	353	353	353	353	353	346	310	289	278	276	298	304	332	332	
ENERGY GWH	1464.0	17.0	15.1	39.8	131.8	155.3	157.1	171.1	169.7	161.0	151.4	64.8	29.4	17.7	64.1	70.3	48.4	
--GAVINS POINT--																		
NAT INFLOW	1252	91	42	55	125	137	144	79	79	57	109	47	22	25	70	68	102	
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1		
CHAN STOR	-1	7	-10	-22	0	-6	-2	-3	0	1	3	3	0	21	2	-1	6	
EVAPORATION	47							3	9	11	10	5	2	2	5			
REG INFLOW	15924	268	181	425	1416	1642	1666	1722	1735	1649	1666	750	350	242	770	828	614	
RELEASE	15924	268	181	425	1416	1642	1666	1722	1722	1636	1666	750	350	242	770	828	640	
STOR CHANGE								13	13								-26	
STORAGE	358	358	358	358	358	358	358	358	371	384	384	384	384	384	384	384	358	
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1207.0	1206.0	
DISCH KCFS	11.5	9.0	13.1	23.8	23.8	26.7	28.0	28.0	28.0	27.5	27.1	25.2	25.2	15.3	12.5	13.5	11.5	
POWER																		
AVE POWER MW	32	46	81	81	91	95	95	96	95	94	88	88	54	44	48	41	41	
PEAK POW MW	114	114	114	114	114	114	114	114	115	115	115	115	115	77	77	76	76	
ENERGY GWH	664.2	11.4	7.6	17.6	58.6	67.6	68.5	70.8	71.1	68.3	70.0	31.6	14.7	10.4	33.1	35.5	27.3	
--GAVINS POINT - SIOUX CITY--																		
NAT INFLOW	862	57	27	34	121	225	166	74	34	23	22	15	7	8	16	-8	41	
DEPLETION	247	6	3	4	20	34	30	36	34	22	9	6	3	3	12	13	13	
REGULATED FLOW AT SIOUX CITY																		
KAF	16539	319	205	456	1517	1833	1802	1760	1722	1637	1679	759	354	248	774	807	668	
KCFS	10.7	14.8	25.5	25.5	29.8	30.3	28.6	28.0	27.5	27.3	25.5	25.5	15.6	12.6	13.1	12.0		
--TOTAL--																		
NAT INFLOW	19102	1112	519	667	2038	2596	4487	2400	946	780	918	438	204	234	472	47		