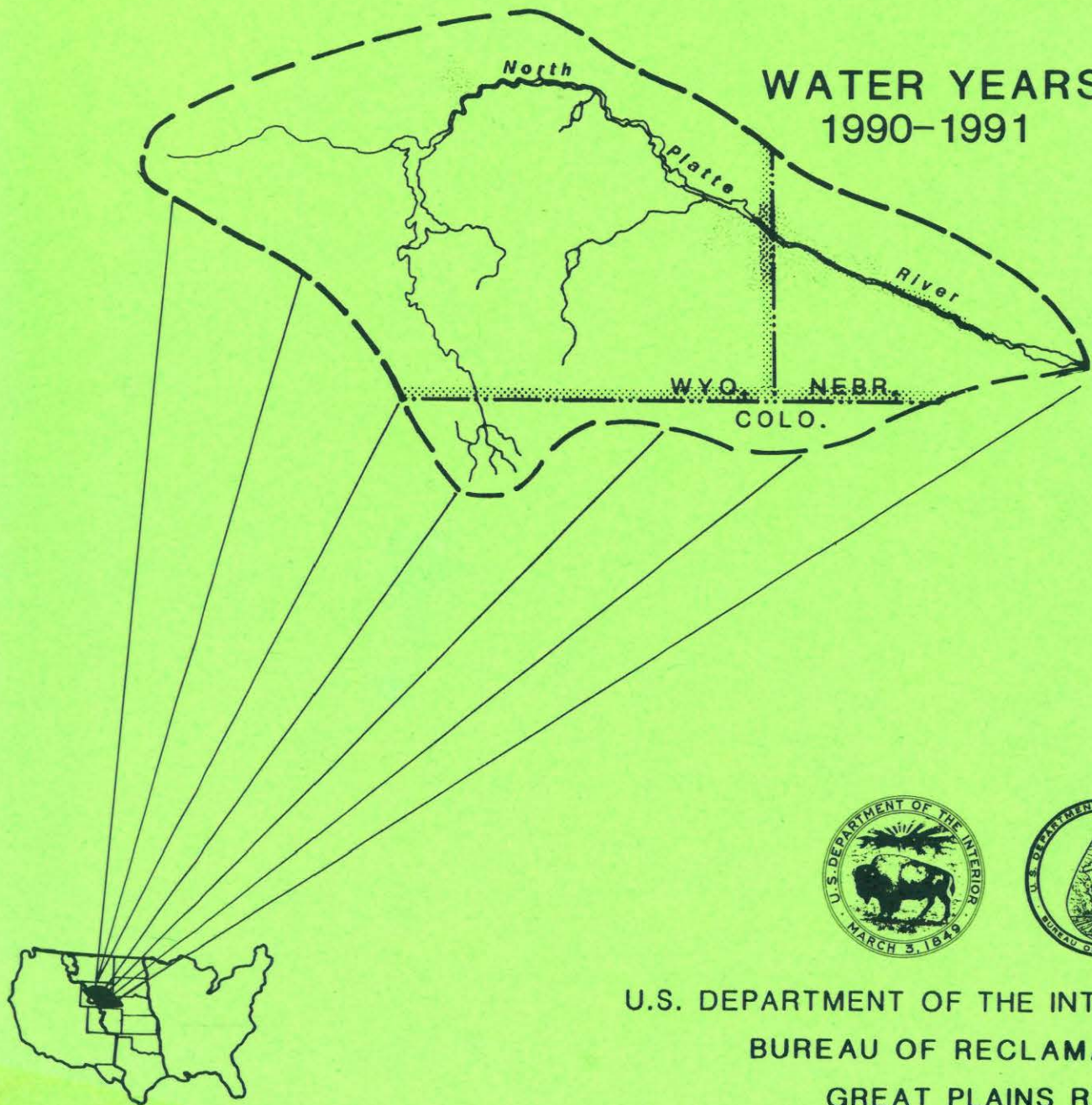


ANNUAL OPERATING PLANS

NORTH PLATTE RIVER AREA

WATER YEARS
1990-1991



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GREAT PLAINS REGION



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GREAT PLAINS REGION
BILLINGS, MONTANA

ANNUAL OPERATING PLANS

NORTH PLATTE RIVER AREA
WYOMING

WATER YEAR--1990
OPERATIONS

WATER YEAR--1991
OUTLOOK

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PREFACE

This report concerns the operation of all Reclamation facilities in the North Platte River Basin above and including Guernsey Dam. This area of the North Platte River Basin is simply referred to in this report as the Basin. This report is to be published in combination with other river Basin reports from the Western Division of the Great Plains Region. The reader is referred elsewhere in the combined report for detailed information on power generation throughout the Western Division.

All references to average in this document will refer to the average of the historical record for the years 1960-1989. In each coming year this period will be advanced by 1 year to maintain a running 30-year average.

HIGHLIGHTS OF 1990 OPERATIONS

Water year 1990 runoff was significantly below average throughout the Basin, with 56 percent of average runoff for the Seminole watershed and approximately 40 percent of average river gain accrual below Alcova. The North Platte Project has now experienced four consecutive dry years.

Peak inflows to reservoirs within the Basin in water year 1990 occurred in mid-June and were below average. The average daily Seminole inflow for June 1990 was 3,279 cubic feet per second (c.f.s.). This is 63 percent of the average inflow of 5,213 c.f.s.

All Seminole-Kortes water releases generated power with the exception of 2 days in May and one day in September when minor bypasses were required to accommodate maintenance. The maximum turbine release of 2,046 c.f.s. occurred on August 30, 1990. Because of the limited North Platte Project water supply, an allocation of water to the various users was established on June 24, 1990, when the first storage water was delivered. The amount of water available to each user was updated throughout the irrigation season. The Irrigation Districts cooperated by conserving water whenever possible and delaying initiation of the irrigation deliveries until late June. Approximately 35,000 acre-feet of Kendrick Project water which was loaned to entities of the North Platte Project in 1989 was repaid in June 1990.

Water year precipitation totals for October-September were varied from 80 percent of average on the Pathfinder watershed to 112 percent for the Guernsey watershed. Significant rainfall occurred throughout the basin on July 20th and 21st

over 1 inch of rain. This one rainfall event caused the precipitation totals for the month of July to be much higher than average. Precipitation throughout the basin for the year was characterized by variation from far below average to far above average in the individual months. For example, the Pathfinder watershed experienced only 12 percent of average precipitation in January and 163 percent of average precipitation in July.

A relatively dry period was experienced from October through January with the entire Basin precipitation at 65 percent of average and all of the individual watersheds showing below average precipitation. Precipitation in July and August was well above average in the Glendo and Guernsey watersheds, providing much needed moisture. Some individual weather stations nearly set monthly records such as Casper with the 2nd highest August precipitation in 30 years and 3rd highest in 50 years. Douglas reported the 2nd highest March precipitation in 30 years and the 3rd highest July precipitation in 30 years.

NORTH PLATTE RIVER BASIN PRECIPITATION BY WATERSHED

Month	SEMINOE WATERSHED		PATHFINDER WATERSHED		GLENDO WATERSHED		GUERNSEY WATERSHED	
	Precip in inches	percent of average	precip in inches	percent of average	precip in inches	percent of average	precip in inches	percent of average
October	.43	41	.60	63	.78	91	.67	79
November	.76	89	.36	53	.30	49	.21	39
December	.60	79	.44	68	.28	62	.10	158
January	.41	59	.09	12	.33	77	.06	18
February	1.46	225	.40	70	.44	92	.58	161
March	1.10	96	.91	105	1.08	99	2.55	345
April	.93	77	1.47	103	1.66	113	2.08	122
May	1.06	75	1.19	65	1.69	80	1.86	76
June	.77	65	.54	47	.43	271	.05	45
July	1.45	114	1.72	212	2.16	182	2.75	171
August	.93	78	.18	28	.94	134	1.86	198
September	1.04	72	1.11	125	.56	58	.74	62
Water Year	10.94	85	9.01	80	10.65	92	15.01	112

The maximum snow-water accumulations for all watersheds in the Basin occurred during April 1990. The upper watersheds of the North Platte Area, Seminoe and Pathfinder, recorded 19.0 inches and 9.9 inches respectively of snowpack water content on April 1, 1990. This was 99 percent of average for the Seminoe watershed and 70 percent of average for the Pathfinder watershed.

Snow courses water content for watersheds within the Basin averaged 58 percent of average May 1. The June 1 snow-water content for the Seminoe watershed, as indicated by automated Snotel stations, was only 46 percent of average.

For water year 1990, the minimum recorded temperature at Casper, Wyoming, was -28°F , on December 23, 1989. The minimum recorded temperature at Walden, Colorado, was -20°F on December 22, 1989.

Very warm summer temperatures were recorded throughout the entire Basin, with temperatures peaking from May through August. The maximum temperature at Walden, Colorado, was 91°F recorded for 3 days from June 30 through July 2, 1990. The maximum temperature at Casper, Wyoming, was 102°F on June 30, 1990.

North Platte Guernsey storage ownership was filled on March 17, 1990. The Inland lakes storage right accrued 42,239 acre-feet of water during the water year which was not enough to fill. The Glendo ownership account also did not fill. At the beginning of the water year, it contained 112,722 acre-feet of water. The greatest amount of water in the account (130,684 acre-feet) occurred on June 5, 1990. Throughout the water year, 29,760 acre-feet of water accrued to the account. The amount of water in the North Platte Pathfinder storage water ownership account peaked at 520,796 acre-feet on June 24, 1990, which was 495,711 acre-feet below maximum allowable storage ownership. The Kendrick Project storage water ownership account contained 907,385 acre-feet of water on October 1, 1989. This amount is 294,293 acre-feet less than the maximum allowable amount. The amount of water in the account was credited with 34,973 acre-feet of water which was returned by North Platte water users who borrowed water in 1989. Otherwise, the balance declined throughout the water year as depletion occurred due to evaporation and deliveries.

During the May 1990 through September 1990 period, Kendrick Project water users received 75,984 acre-feet of water, which is 118 percent of average. North Platte Project water users received 539,665 acre-feet of water from storage and 137,435 acre-feet of natural flow, for a total delivery of 677,100 acre-feet, which is 68 percent of average. The Glendo Unit water users received 16,194 acre-feet of water from storage and natural flow sources.

Power generation for the Reclamation facilities in the Basin for the water year was 492.6 GWH (62 percent of average).

DESCRIPTION OF THE NORTH PLATTE RIVER SYSTEM

The System of dams, reservoirs, and powerplants on the North Platte River (referred to as "The System" in this text) is operated and managed from the North Platte River Projects Office, in Mills, WY. Facilities operation and management utilize a Programmable Master Supervisory Control system, computerized accounting process, extensive Hydromet stations, SNOTEL stations, and a snowmelt runoff forecasting and water scheduling section. The System consists of a number of individual water resource projects that were planned and constructed by the Bureau of Reclamation. The individual projects and features are operated as an integrated system to achieve efficiency and to produce increased multipurpose benefits. The System is located in northern Colorado, southeastern Wyoming, and in western Nebraska as shown on the cover and exhibit 10.

Upstream storage reservoirs are located at high elevations where 70 to 80 percent of the annual streamflow occurs from snowmelt runoff during the April-July period. Primary water use is irrigation, and the period of delivery of irrigation water normally extends from May through September. The System furnishes irrigation water to over 440,000 acres of land in Wyoming and Nebraska.

The System includes the Kendrick Project in Wyoming; the North Platte Project in Wyoming and Nebraska; and the Kortes and Glendo Units of the Pick-Sloan Missouri Basin Program in Wyoming. Major rivers are the North Platte River, in Colorado, Wyoming and Nebraska, and the Medicine Bow, Sweetwater and Laramie Rivers, in Wyoming.

The System has seven main stem reservoirs and four off-stream reservoirs, with six of the storage facilities having powerplants with a generating capacity totaling 232.6 megawatt(MW). The Department of Energy, by Executive order dated October 1, 1977, assumed the responsibility of marketing power from Federal resources and operation and maintenance of Federal transmission facilities.

Western Area Power Administration (WAPA) of the Department of Energy, headquartered in Golden, Colorado, now operates and maintains the 3,500 miles of interconnected electrical transmission lines within the System. The power system is also interconnected with other federal, public, and private power systems. Bulk power from the System is marketed to about 40 preferred customers and results in annual revenues of about 10 million dollars.

SYSTEM PLANNING AND CONTROL

The North Platte River System (System) is operated for irrigation, hydroelectric power production, municipal and industrial water supply, flood control, recreation, fish and wildlife preservation, and other purposes. Each project of the System must be operated under the purposes for which it was authorized and constructed. The objective of an integrated system is to obtain optimum benefits from the individual projects.

The System's integrated operation is planned and coordinated by Reclamation's Water Scheduling Section of the North Platte Projects Office in Mills, Wyoming. This office collects and analyzes information daily and makes the decisions necessary for successful operation of the System. The continuous water management function involves coordination between the Bureau of Reclamation (Reclamation), the Department of Energy, and many other local, state, and federal agencies. When water levels rise into the exclusive flood control pool at Glendo Reservoir, the flood control operation of Glendo Dam is directed by the Corps of Engineers, Omaha District, Omaha, Nebraska.

Experience has proven that proper utilization of the available water resource in a system such as this can be achieved only through careful budgeting of the anticipated water supply. The technical end product of this budgeting process is an Annual Operating Plan (AOP).

The System is operated on a water year basis (October 1 through September 30). The AOP is prepared in December of each year, following the plan's review and necessary public meetings.

AOPs are prepared for reasonable maximum and reasonable minimum conditions of water supply and requirements as well as for the most probable runoff conditions. The System is operated to optimize the most probable water supply and still allow changes in operation should either reasonable maximum or reasonable minimum water supply conditions occur. This flexibility is the keynote of the plan. Reclamation makes full use of computer programs to revise and adjust the AOP to reflect changing conditions. A computerized process of forecasting the anticipated water supply also aids the revision process during late winter and early spring.

WATER YEAR 1990 OPERATIONS

Seminoe Reservoir

Seminoe Dam and Reservoir, on the North Platte River, is the main storage facility for the Kendrick Project. Construction of the dam was completed in 1939, providing a storage capacity of 1,017,273 acre-feet. The powerplant contains 3 electrical generating units with a total installed capacity of 51 MW at a full release capability of about 4,000 c.f.s. The spillway consists of a concrete-lined tunnel through the right abutment controlled by three fixed-wheel gates with a release capability of close to 48,000 c.f.s.

Reservoir storage at the beginning of water year 1990, totaled 488,161 acre-feet, which was 69 percent of average. Transfer of water downstream continued during the winter to generate power while maintaining the minimum required flow in the Miracle Mile. Because of the short water supply, the Seminoe and Kortes releases into the Miracle Mile were kept to the minimum of 500 c.f.s. from October through mid-March, except for the period of mid-December to mid-January, when water releases were increased to about 1,200 c.f.s. to increase power generation. Winter (October to January) inflow to Seminoe was 60 percent of average and increased to 72 percent of average in January. Reservoir storage was near the most probable plan by the end of January, standing at 386,244 acre-feet.

Winter (October to January) precipitation on the Seminoe watershed was recorded at 65 percent of average. Although precipitation in the winter months was below normal, the precipitation events were regularly spaced at about 10-day intervals. Snow-water content within the Seminoe watershed was 86 percent of average for January.

February was a wet month, with precipitation in the Seminoe watershed recorded at 225 percent of average. One of the weather stations, Elk Mountain, recorded the highest February precipitation since 1928. Walden, Colorado received more February precipitation than any year since 1938. Snow-water accumulation within the Seminoe watershed was 88 percent of average at the end of February.

March precipitation was 96 percent of average in the Seminoe watershed and the March inflow remained low at 88 percent of average. April 1 snow-water content reached 99 percent of the average at 19.0 inches. Turbine releases were increased, resulting in an average for March of 840 c.f.s.

Precipitation was varied throughout the Basin during April, with below normal rainfall in the Basin above Seminoe. April

inflow to Seminole dropped to 65 percent of average. Turbine releases averaged 1,490 c.f.s. during April. May 1 snow-water content within the Seminole watershed was 78 percent of average.

Precipitation within the Seminole watershed continued to be below normal for May at 75 percent of average. May inflows remained low and were only 32 percent of average. Turbine releases averaged 1,250 c.f.s. during May. Approximately 107 acre-feet of water was allowed to bypass the turbines on May 3 and 4 to exercised the Seminole spillway gates. The May 1 snow-water content was 78 percent of average.

June precipitation above Seminole was 65 percent of average and the Seminole inflow was 63 percent of average. The daily inflow for June averaged about 3,280 c.f.s. Turbine releases were reduced on June 4 and averaged 520 c.f.s. for the rest of the month.

July turbine releases were held at about 515 c.f.s. for all but the last four days when they were increased. Total April-July inflow volume from the Seminole watershed was 416,700 acre-feet, which was 53 percent of average. Precipitation improved considerably in July to 114 percent of average.

Turbine releases during August averaged 1,465 c.f.s. Precipitation decreased somewhat in August to 78 percent of average. The August inflows remained low at 57 percent of average.

Precipitation remained low in September at 72 percent of average. September inflow also remained low at 65 percent of average. Turbine releases were decreased on September 4 to average 520 c.f.s. for the remainder of the month.

Gross generation for the water year at the Seminole Powerplant totaled 86,400,000 kilo-watt hours (KWH); this was 60 percent of average.

The end-of-water-year Seminole reservoir storage of 432,886 acre-feet was 273,200 acre-feet below average and 55,300 acre-feet lower than the reservoir storage at the end of water year 1989.

Kortes Reservoir

Completed in 1951, Kortes Dam, Reservoir, and Powerplant of the Kortes Unit (A Pick-Sloan Missouri Basin Project) are located about 2 miles below Seminole Dam. This 4,700 acre-foot reservoir serves as the forebay for Kortes Powerplant

which has three electrical generating units with a total installed capacity of 36 MW and a release capability of 2,910 c.f.s.

The spillway on the right abutment consists of an uncontrolled crest with a concrete-lined tunnel and has a capacity of 50,000 c.f.s. A total of 230 acre-feet was bypassed through the spillway on February 15 to allow maintenance workers to seal a leaking bulkhead gate.

Water releases from Kortes Dam were scheduled so as not to interfere with the construction of a new bridge across the North Platte River below Kortes Dam.

Gross generation for the water year totaled 103,900,000 KWH, which is 77 percent of average.

Pathfinder Reservoir

Pathfinder Dam and Reservoir, a major storage facility of the North Platte Project, has a total capacity of 1,016,507 acre-feet. Construction of the dam was completed in 1909. Operationally, this structure is a bottleneck in the system with its restricted release capability of only 5,000 c.f.s. The two jetflow valves can release 2,800 c.f.s., and the Fremont Canyon turbines can normally release 2,200 c.f.s. The uncontrolled spillway is a flat-crested weir of natural rock over the left abutment of the dam. It has an estimated capacity of 65,000 c.f.s., at water surface elevation 5858.10 feet or 8 feet above the spillway crest. Fremont Canyon Powerplant, located in the canyon below Pathfinder Dam, has been reconditioned to a capacity of 66.8 MW under full reservoir operating head.

Upon entering water year 1990, storage in Pathfinder Reservoir was 271,635 acre-feet, which was 167,900 acre-feet below average.

Kortes to Pathfinder river gains for October-January were 93 percent of average. Winter transfer of water to Glendo Reservoir for power generation averaged 500 c.f.s. from October through December.

February 1 snow-water accumulation for the Sweetwater watershed was 74 percent of average. Precipitation within the watershed was 49 percent of average during the October-January period. January precipitation for the Sweetwater watershed was only 12 percent of average. The Lander Weather Station recorded .02 inch of precipitation, which was the lowest of record since 1952. The Pathfinder Dam Weather Station recorded .08 inch of precipitation, which was the 4th

lowest in 30 years.

Precipitation in the Sweetwater watershed during February was 40 percent of average. River gains were above average at 152 percent for February. This was probably due to higher than normal temperatures which caused snowmelt runoff. March 1 snow-water content was 72 percent of average.

March precipitation was above average at 105 percent. River gains below Kortes were 90 percent of average for March. There were no bypass releases for the month of March and turbine releases averaged 605 c.f.s., which was 86 percent of the average March release. April 1 snow-water content for the Sweetwater watershed was 70 percent of average.

April precipitation was 89 percent of average for the Sweetwater watershed and river gains below Kortes decreased to 80 percent of average for April. The snow-water content on May 1 had dropped sharply to 47 percent of average due to the early warm weather.

May precipitation was only 65 percent of average and river gains below Kortes, including the Sweetwater River inflows, were 34 percent of average. Only 2,638 acre-feet of bypass releases were made during May, while turbine releases averaged 960 c.f.s. Pathfinder Reservoir storage reached a maximum content for the water year of 440,292 acre-feet at elevation 5815.04 feet on May 30, 1990.

June precipitation continued low at 47 percent of average. Kortes to Pathfinder river gains continued to be much lower than average for June at only 32 percent. June turbine releases averaged 1,363 c.f.s. and there was no bypass release of water for the month.

The Sweetwater watershed precipitation was 163 percent of average for the month of July. River gains between Kortes and Pathfinder increased to 59 percent of average for July. Fremont Canyon Powerplant turbine releases for July increased to 1,900 c.f.s. Because of the low water supply there were no bypass releases for the month.

Kortes to Pathfinder river gains increased to above average for the month of August at 156 percent of average. August precipitation was low at only 48 percent of average. August releases averaged 2,623 c.f.s. through the turbines and 828 c.f.s. through the bypass during the 19 days in which a bypass release was required.

September precipitation was 125 percent of average. Kortes to Pathfinder river gains dropped to 77 percent of average for September. September turbine releases varied between

314 c.f.s. and 1,464 c.f.s., as necessary to meet irrigation deliveries. There was no bypass of the turbines during September.

A total of 34,640 acre-feet of water bypassed the turbines during the water year. Generation totaled 162,000,000 KWH, which was 63 percent of average.

The water year ended with 227,610 acre-feet of water in storage in Pathfinder Reservoir, which is 52 percent of average and the lowest end of water year storage since 1977.

Alcova and Gray Reef Reservoirs

Alcova Reservoir is part of the Kendrick Project, serving as a diversion dam for the Casper Canal and a forebay for the Alcova Powerplant. The dam, located about 10 miles downstream of Pathfinder Dam, was completed in 1938. Reservoir storage capacity is about 184,400 acre-feet, of which only the top 30,600 acre-feet is active capacity available for irrigation of the Kendrick Project. The powerplant consists of 2 units with a total installed capacity of 36 megawatts. The reservoir is operated within a 2 foot range during summer and winter but at levels 10 feet apart. A higher operating level is maintained during the summer months to provide adequate head on the Casper Canal and accommodate recreation use, while the lower winter operating level reduces potential ice damage to the canal gate and boat docks during the winter.

Gray Reef Dam and Reservoir are part of the Glendo Unit, Oregon Trail Division, Pick-Sloan Missouri Basin Program. The dam is a three-zoned rock and earthfill structure located about 2.5 miles below Alcova Dam and was completed in 1961. The reservoir has an active capacity of 1,744 acre-feet. Gray Reef Dam was constructed to provide a small reservoir to re-regulate releases from Alcova Dam. Re-regulation is required to provide flows acceptable to irrigation, municipal, industrial, and fish and wildlife interests along the 147 miles of river between Alcova and Glendo Dams.

The annual drawdown of Alcova Reservoir began October 5, 1989. The reservoir water surface elevation was lowered to 5486.13 feet by October 31, which was within the winter operating range of 5486.0 feet \pm 1 foot. This reservoir level, which is 2 feet lower than the normal winter reservoir level, was required to allow extended maintenance on the Casper Canal headgate. The reservoir was operated in this range until March 25, when the refill of Alcova Reservoir was initiated.

A water surface elevation of 5498.00 feet was reached on April 28, and the reservoir was maintained within 1 foot of that level throughout the summer.

The Gray Reef release was maintained near 500 c.f.s. from October 1, 1989, through May 14, 1990. This was by far the smallest total volume of water released from Gray Reef during this part of the year since the construction of Gray Reef Dam.

Releases were adjusted as necessary in May to accommodate the final stages of the reconditioning work on generating unit #2 in the Fremont Canyon Powerplant, and then set at 1,000 c.f.s. for the last week of May and were maintained at near 1,000 c.f.s. for June. Releases for the remainder of the water year were adjusted to meet irrigation demands below Guernsey Reservoir. The largest release for the water year of 3,517 c.f.s. occurred on August 22. After September 4, the Gray Reef releases were maintained near 500 c.f.s.

Kendrick Project irrigation deliveries from Alcova Reservoir to the Casper Canal, were 118 percent of average during the May-September period. The Kendrick Project ownership account contained 907,138 acre-feet on October 1, 1989, which was the greatest amount for the water year. This was 294,540 acre-feet below maximum allowable ownership storage. Kendrick Project ownership contained 813,629 acre-feet of water at the end of the water year, which was 388,049 acre-feet less than the maximum allowable ownership storage.

Alcova Powerplant generated 82,300,000 kilowatt hours of energy during water year 1990. This was below average by 46,700,000 kilowatt hours.

Glendo Reservoir

Glendo Dam and Reservoir is the only storage facility for the Glendo Unit. The reservoir has a storage capacity of 789,400 acre-feet, including 271,900 acre-feet allocated to flood control. Glendo Powerplant consists of 2 electrical generating units, with a total installed capacity of 38 megawatts. The uncontrolled spillway, located on the right abutment, has a crest elevation of 4653.00 feet and discharge capacity of about 10,000 c.f.s. at approximately 4669.0 feet.

Reservoir storage of 98,558 acre-feet at the beginning of the water year was 16,400 acre-feet above average. Precipitation in the Glendo watershed was below normal throughout the winter months, with only 49 percent of average in November. Winter inflows (October-January) were near average at 96 percent. By the end of February, reservoir storage had

increased to 304,700 acre-feet, due largely to restorage of water released from upstream reservoirs. Precipitation in February was near normal at 92 percent of average for the month.

Releases were initiated on April 1 in order to transfer Inland Lakes water to Guernsey Reservoir for release to the Inland Lakes. Inflow was below average at 79 percent in March and far below average at only 41 percent in April. Precipitation in March and April was good, at 99 and 113 percent of average, respectively.

In an effort to conserve the short water supply, the irrigators delayed the start of irrigation as long as possible, which resulted in no releases being made from April 29 through June 10. The reservoir reached maximum storage for the year of 431,760 acre-feet (elevation 4627.45 feet) on June 12. This was 7.75 feet below the flood pool. The flood pool consists of the space in the reservoir between elevations 4635.00 feet and 4653.00 feet (271,917 acre-feet).

River gains between Alcova and Glendo Reservoirs decreased in May to 24 percent of average.

Precipitation in the Glendo watershed for June was only 27 percent of average. Several small showers during the month and one substantial rain on July 20 made July a very good month for precipitation, recording 182 percent of average. There were no net gains to the river between Alcova and Glendo during June and July. On the contrary, a net loss of 6,705 acre-feet of water was recorded for June and July.

Precipitation was above average in August at 123 percent. The Alcova to Glendo river gains continued to record a net loss, which equaled 3,816 acre-feet for August. River gains increased to 8,187 acre-feet for September, which was still below average at 73 percent. Precipitation was only 58 percent of average for September.

Reservoir storage reached a low of 66,225 acre-feet (water surface elevation 4570.97 feet) on September 22, 1990. The quantity of water evaporated was in excess of the pool reserved for evaporation which resulted in the evaporation of 4,078 acre-feet of water normally reserved for the power head pool. At the end of the water year, Glendo Reservoir contained 77,271 acre-feet of water (water surface elevation 4574.26 feet). This was 94 percent of the average end of September content.

A total of 602,934 acre-feet of water was released through Glendo Powerplant resulting in gross generation of

48,000,000 kwh for the year. This was 38,600,000 kwh below average. A total of 127,257 acre-feet of water bypassed the Glendo turbines during the year.

Guernsey Reservoir

The reservoir, located about 25 miles below Glendo, again stores and re-regulates the flow of the river prior to delivery of storage water to project lands of the North Platte Project and Glendo Unit. Guernsey Powerplant, located on the right abutment, has two 2.4 megawatt electrical generating units with a release capability of about 1,340 c.f.s. The original capacity of the reservoir was 73,800 acre-feet, but this has been greatly reduced by deposition of silt. Utilizing data from the 1980 Sedimentation Survey of Guernsey Reservoir, the March 1982 capacity tables show about 45,600 acre-feet of available storage.

Guernsey Reservoir storage of 568 acre-feet at the beginning of water year 1990 was about 11,000 acre-feet below average. There were no October releases. Storage of water totaled 2,925 acre-feet at the end of the month.

Winter inflows (October-January) from the Glendo to Guernsey river gains were below average at 59 percent. Except for December, precipitation in the Guernsey watershed was below average, with the total for January at only 18 percent of average. Glendo to Guernsey river gains were average in February and precipitation for February was 161 percent of average.

Glendo to Guernsey March river gains were above average. Precipitation for March was far above average due to substantial rainfall on March 6 and 7. A total of 2.45 inches of rain was recorded at Glendo after that event.

Guernsey Reservoir releases were started on April 15 to transfer water to Inland Lakes. There were no net gains to the river between Glendo and Guernsey in April. Precipitation for the month was 122 percent of average.

The Glendo to Guernsey river gains rapidly decreased to only 21 percent of average for May. Precipitation for May was 76 percent of average. Because of the anticipated water shortage, no releases were made from Guernsey during May.

June was a dry month as precipitation was only 45 percent of average. There were no river gains in the river reach between Glendo and Guernsey for the month of June. Instead, a loss of 5,389 acre-feet was recorded. Releases from

Guernsey were not initiated until June 11, at which time there was 37,345 acre-feet of water in storage. Water releases were increased to 5,370 c.f.s. by June 30, which drafted the reservoir to 31,695 acre-feet.

The annual "silt run" from the reservoir was initiated on July 9 and continued for 20 days. Reservoir storage was reduced to 2,565 acre-feet to initiate the "silt run" and was maintained at a low level throughout the period. The minimum reservoir content of 664 acre-feet occurred on July 25. Following the "silt run," the reservoir was refilled to 23,474 acre-feet by July 31.

River gain between Glendo and Guernsey Reservoirs totaled 4,195 acre-feet for August. Precipitation for the Guernsey watershed was 198 percent of average during August.

The Glendo to Guernsey river gain in September was 4,867 acre-feet, which is 83 percent of average. Precipitation was only 62 percent of average for September.

Guernsey Reservoir contained 11,165 acre-feet at the end of the irrigation season (September 30), which was being temporarily stored for later delivery to the Inland Lakes.

Gross generation for the water year totaled 10,000,000 kwh which is 41 percent of average.

1990 Ownerships

At the end of water year 1990, the North Platte Project ownership contained 17,393 acre-feet of water which is 4 percent of average; the Kendrick ownership contained 813,629 acre-feet of water which is 94 percent of average and the Glendo ownership contained 101,495 acre-feet of water which is 78 percent of average.

During the water year the Glendo ownership account accrued 29,760 acre-feet, which refilled the evaporation pool and accrued an additional 9,670 acre-feet to the irrigation pool. This was not enough to fill all individual contractors accounts; therefore, one contractor, Central Nebraska Public Power and Irrigation District, did not receive a full supply.

A 1989 water loan of 34,973 acre-feet was repaid from the North Platte Ownership to the Kendrick Ownership in June of 1990. No loans of water took place in water year 1990.

In both 1989 and 1990 the evaporation from Glendo Reservoir has been greater than the 20,090 acre-feet which is set aside for that purpose; therefore, the power pool of Glendo is now

depleted by a total of 10,518 acre-feet (6,530 acre-feet for 1989 and 3,988 acre-feet for 1990). The power pool will be restored the next time all other Glendo ownerships fill.

Flood Benefits

During the 1990 runoff, no flood events occurred and therefore the Corps of Engineers, Omaha District estimate of flood damages prevented in water year 1990 was zero (table 1).

Since construction, the System has prevented flood damages totaling \$44,126,500.00.

ANNUAL OPERATING PLAN FOR WATER YEAR 1991

Three operation studies were developed for the system to establish an AOP for water year 1991. Each of the studies conformed to the established operating criteria but used different inflow conditions and different demand conditions.

The three inflow conditions were determined from a probability analysis of historic inflows and were labeled reasonable minimum, reasonable maximum, and most probable. Reservoir inflow during water year 1991 has a one-in-ten chance of being less than the reasonable minimum. Statistically, inflows in 1991 will have an eight-in-ten chance of falling between the two extremes. The most probable inflow is based on long-term averages and approximates a 50 percent chance of occurrence. The three studies for water year 1991 are summarized numerically in tables 3A, 3B, and 3C and graphically in exhibits 1 through 8.

The AOP, as developed and reflected in the three studies, provides the flexibility to adjust operations as conditions change during the water year. Forecasts of the April-July reservoir inflow will be made at the beginning of each month for February through May. Projected operating schedules will be adjusted, as required, throughout the water year as changes occur in the forecasted inflows, irrigation demands, maintenance schedules, and power loads.

The carryover storage in mainstem reservoirs (including Kortès and Gray Reef) on the North Platte River in Wyoming, totaled 934,707 acre-feet at the beginning of the water year. This amount was 65 percent of average.

MOST PROBABLE CONDITION - WATER YEAR 1991

Seminole Reservoir

October through January -- Seminole Reservoir storage of 432,900 acre-feet, at the beginning of the water year, was 273,200 acre-feet less than the 30-year average. During the October-January period, planned turbine releases from Seminole Reservoir of 174,400 acre-feet will lower reservoir storage to about 354,500 acre-feet by January 31. These releases are based on a statistically based Seminole inflow of 100,200 acre-feet and are made to accommodate winter power demands as much as possible.

February through September -- The February releases will average 500 c.f.s. from Seminole Reservoir. By the end of February, Seminole Reservoir storage is expected to be about 348,400 acre-feet, the lowest end of month level for the year. The average March releases will be about 520 c.f.s., and the end of March Seminole Reservoir storage is expected to be 367,000 acre-feet. Turbine releases will average approximately 1,210 c.f.s. and 1,710 c.f.s. in April and May, respectively. The total release from the reservoir during the April to September period will be scheduled to provide storage space for the April-July inflow and meet downstream requirements and system power demands. With most probable inflow, storage will reach 752,900 acre-feet by the end of June. Projected carryover storage of about 518,200 acre-feet at the end of the water year would be 73 percent of average.

Pathfinder Reservoir

October through January -- At the beginning of the water year, Pathfinder Reservoir storage was 227,600 acre-feet or 52 percent of the 1960-1989 average. Fremont Canyon Powerplant releases will be reduced during October to lower Alcova Reservoir water surface to a winter operating level of 5488± 1.0 ft. After the Alcova drawdown, releases from Pathfinder Reservoir will be adjusted to meet required Gray Reef Reservoir releases and maintain the desired operating level in Alcova Reservoir. Pathfinder Reservoir storage is projected to be about 314,100 acre-feet by the end of January.

February through September -- Pathfinder Reservoir storage will reach a maximum of about 324,400 acre-feet by the end of March and be drawn down to a storage content of about 228,600 acre-feet by the end of the water year. River gains between Kortes and Pathfinder Reservoirs, including the Sweetwater River, is estimated at about 87,600 acre-feet for

the April-July period under most probable inflow conditions.

Fremont Canyon Powerplant releases in February and March will be scheduled to maintain a 156,000 acre-feet content in Alcova Reservoir. In April, these releases will be coordinated with Alcova releases to refill Alcova Reservoir to its normal summer operating level of 5498 \pm 1 foot.

During April through September, Fremont Canyon power releases will be scheduled to meet downstream irrigation deliveries and maintain a storage content of about 179,400 acre-feet (5498 \pm 1 foot) in Alcova Reservoir. During June through August, water releases will average between 2,200 and 2,300 c.f.s. Fremont Canyon turbine releases will be near capacity and, although no bypass releases are scheduled during this period, recent years have shown that due to changing conditions in the system a bypass of some magnitude is usually required during the irrigation season.

Alcova Reservoir

October through January -- During October, Alcova Reservoir will be drawn down to a winter storage content of 156,000 acre-feet. From October through January, releases will be maintained at approximately 500 c.f.s. for production of power maintenance, of fishery flows, pollution abatement, and transfer of water to Glendo Reservoir in preparation for meeting downstream irrigation demands during the coming irrigation season.

February through September -- Alcova Reservoir will remain at the winter operating level through March. During April, the reservoir will be refilled to water surface elevation 5,498 feet (179,400 acre-feet). This level will be maintained within \pm 1 foot to provide the necessary water surface elevation to make irrigation deliveries to Casper Canal and for recreational purposes. About 74,000 acre-feet of water are scheduled to be delivered during the May-September period to meet Kendrick Project irrigation requirements. Kendrick Project ownership storage is expected to be at 680,500 acre-feet at the end of September which is 521,200 acre-feet from filling. No water will accrue to Kendrick Project storage in water year 1991 under most probable inflow conditions. Releases from Alcova Reservoir will be re-regulated in Gray Reef Reservoir.

Gray Reef Reservoir

October through January -- The water releases from Gray Reef Dam will be maintained at approximately 500 c.f.s during this period. This will result in a winter river level similar to last year, which was the lowest winter river level since the

year 1959 when Glendo Reservoir was constructed. These below average winter flows are the result of a limited amount of North Platte ownership water available to be moved to Glendo Reservoir. The 30-year average flow below Gray Reef ranges between 800 c.f.s. and 1,100 c.f.s. for the months of October through January.

February through September -- Releases from Gray Reef Reservoir will average about 500 c.f.s. during February and March and increase to approximately 1,155 c.f.s. in the month of April. The May through August releases will average approximately 2,200 to 2,300 c.f.s. and will be decreased to approximately 2,100 c.f.s. in September as project irrigation water is moved downstream.

Glendo and Guernsey Reservoirs

October through January -- Carryover storage of 77,300 acre-feet in Glendo Reservoir on September 30 was 94 percent of average. With restorage of North Platte Project water released from Alcova and with North Platte River gains below Alcova Dam estimated to be near normal (35,000 acre-feet), Glendo Reservoir storage will increase to about 229,500 acre-feet by the end of January. Guernsey Reservoir contained 11,165 acre-feet of water at the start of water year 1991. This water is to be transferred to the Inland Lakes during the first part of October. Natural inflow will be stored during the winter, which will increase storage to 7,700 acre-feet by January 31.

February through September -- Glendo Reservoir storage will increase to about 270,500 acre-feet by the end of February. During late March and April releases from Glendo Reservoir will be scheduled to refill Guernsey Reservoir. Releases from Glendo Reservoir during the April through September period will be based upon meeting a full irrigation demand of 1,065,000 acre-feet for the North Platte Project and 28,000 acre-feet for the Glendo Unit. Maximum Glendo Reservoir storage for the water year will be 443,600 acre-feet at the end of June. At this level, it would take approximately 73,885 acre-feet of water to fill the reservoir to the flood pool elevation of 4635.0 ft.

Guernsey Reservoir content will be maintained near 35,000 acre-feet during mid-April through June. Provision is made in the plan for a possible silt run in July, which will require close coordination of Glendo and Guernsey release schedules as Guernsey is drawn down to about 1,000 acre-feet in July and refilled to about 35,000 acre-feet in August. During September, releases will be scheduled to complete Glendo drawdown to about 65,000 acre-feet and to lower Guernsey Reservoir to approximately 15,000 acre-feet.

Most Probable Condition Ownerships

At the close of water year 1991 the North Platte Project storage ownership is expected to be near 240,300 acre-feet (53 percent of average); the Kendrick Project storage ownership is expected to be near 680,600 acre-feet (78 percent of average) and the Glendo storage ownership is expected to be near 85,400 acre-feet (66 percent of average) under most probable runoff conditions.

REASONABLE MINIMUM INFLOW CONDITION - WATER YEAR 1991

Seminole Reservoir

October through January -- Water releases for this period under a reasonable minimum inflow condition would be nearly the same as in the most probable condition. Under this condition inflows would be expected to be 88,000 acre-feet for the period which is 12,200 acre-feet less than in the most probable condition. The January 31 reservoir content would be expected to be approximately 341,600 acre-feet under these conditions.

February through September -- If the winter inflows and the February 1 snowmelt runoff forecast indicate that reasonable minimum conditions exist then the water releases from Seminole Reservoir for the months of February and March will be set at the minimum of 500 c.f.s. April through August Seminole water releases will be approximately 825 c.f.s. except for the months of June and July when it will be necessary to increase the flow to meet irrigation requirements which will provide increased power production. The June release is expected to average approximately 1,370 c.f.s. and the July release about 1,790 c.f.s. September water releases will be reduced to approximately 755 c.f.s. ending the water year with a reservoir content of 351,000 acre-feet (50 percent of average). The maximum end of month content under these conditions will be approximately 504,900 acre-feet at the end of June.

Pathfinder Reservoir

October through January -- Water releases for this period under a reasonable minimum inflow condition would be the same as in the most probable condition. Under this condition gains to the river between Kortes Dam and Pathfinder Reservoir would be expected to be 14,300 acre-feet for the period.

February through September -- Pathfinder Reservoir storage will reach a maximum of about 321,900 acre-feet by the end of

March. Starting in April, the reservoir will be drawn down to a storage content of about 137,500 acre-feet by the end of the water year. River gains between Kortes Dam and Pathfinder Reservoir, including the Sweetwater River, are estimated at about 36,600 acre-feet for the April-July period under reasonable minimum inflow conditions.

Fremont Canyon Powerplant releases in February and March will be scheduled to maintain 156,000 acre-feet content in Alcova Reservoir. In April, these releases will be coordinated with Alcova releases to refill Alcova Reservoir to its normal summer operating level of 5498 ft \pm 1 foot (179,400 acre-feet) by the end of April.

During April through September, Fremont Canyon power releases will be scheduled to meet downstream irrigation deliveries and maintain a storage content of 179,400 acre-feet in Alcova Reservoir. Summer releases will range from 2,166 c.f.s. during May to 1,010 c.f.s. during September. Fremont Canyon turbine releases will be at or near capacity at times and although no bypass releases are scheduled during this period, recent years have shown that due to changing conditions in the system a bypass of some magnitude is usually required during the irrigation season. If reasonable minimum runoff develops, the reservoir content at the end of the water year will be about 137,500 acre-feet or 31 percent of average.

Alcova Reservoir

October through January -- Operation of Alcova Reservoir would be the same as under the most probable condition.

February through September -- Alcova Reservoir will remain at the normal winter operating level through March. During April, the reservoir will be refilled to water surface elevation 5498 feet (179,400 acre-feet). This level will be maintained within \pm 1 foot to provide the necessary head for making irrigation deliveries to Casper Canal and for recreational purposes. About 84,000 acre-feet are scheduled to be delivered during the May-September period to meet Kendrick Project irrigation requirements. Kendrick Project ownership storage is expected to be at 670,800 acre-feet at the end of September with reasonable minimum inflow conditions, which is 530,878 acre-feet from filling. No gain to Kendrick Project storage is anticipated in water year 1991 under reasonable minimum runoff conditions.

Gray Reef Reservoir

October through January -- Operation of Gray Reef Reservoir would be the same as under the most probable condition.

February through September -- Releases from Gray Reef Reservoir will average about 500 c.f.s. during February and March, and increase to approximately 1,160 c.f.s. in April. The highest flows from Gray Reef Dam would occur during May at approximately 1,875 c.f.s. The Gray Reef releases would then decrease for the remainder of the water year with flows of approximately 1,780 c.f.s., 1,505 c.f.s., 830 c.f.s., and 840 c.f.s. respectively for the months of June, July, August, and September. These predicted flows could be redistributed if the irrigators adjust their use of water to conserve water for irrigation in August and September.

Glendo and Guernsey Reservoirs

October through January -- Guernsey Reservoir contained 11,165 acre-feet of water at the start of water year 1991. This water will be transferred to the Inland Lakes during the first part of October. Under the reasonable minimum inflow conditions the natural inflow will be stored during the winter, which will increase the Guernsey reservoir content to 8,100 acre-feet by January 31. Glendo Reservoir content will increase from the carryover storage of 77,300 acre-feet to a January 31 content of 219,200 acre-feet.

February through September -- Glendo Reservoir storage will increase to about 254,300 acre-feet by the end of February. During late March and April releases from Glendo Reservoir will be scheduled to refill Guernsey Reservoir. Maximum end of month Glendo Reservoir storage during the water year will be 341,800 acre-feet at the end of May. At this level, it would take approximately 175,685 acre-feet of water to fill the reservoir to the flood pool elevation of 4635 ft.

The operation of Glendo and Guernsey Reservoirs will be based upon making essentially full irrigation deliveries to most of the Glendo Unit but not to the North Platte Project. The Glendo Unit storage ownership does not accrue any water under these conditions. North Platte Project irrigation deliveries will be curtailed throughout the irrigation season delivering 740,400 acre-feet which is 409,600 acre-feet below the irrigation demand. North Platte Project storage will be totally depleted well before the end of irrigation season, leaving only the natural flow to be delivered unless extreme conservation measures are taken by the irrigators, as was done in water year 1990. The total combined North Platte System reservoir storage would be approximately 272,400 acre-feet less by the end of the water year under reasonable minimum water supply conditions than under the most probable conditions.

Guernsey Reservoir content will be maintained near 35,000 acre-feet during mid-April through June. Provision is

made in the plan for a possible silt run in July, which will require close coordination of Glendo and Guernsey release schedules as Guernsey is drawn down to about 1,000 acre-feet in July and refilled in August. During September, releases will be scheduled to complete Glendo drawdown to about 65,100 acre-feet and to lower Guernsey Reservoir to less than 100 acre-feet. This is done because under this scenario North Platte Project storage water is essentially used up and there is no water remaining at the end of the year for later transfer to the Inland Lakes.

Reasonable Minimum Condition Ownerships - WATER YEAR 1991

The North Platte Project storage ownership is expected to be near zero at the close of the water year compared to 240,300 acre-feet in the most probable runoff conditions. The Kendrick Project storage ownership is expected to be near 670,800 acre-feet (93 percent of average) and the Glendo storage ownership is expected to be near 62,800 acre-feet (48 percent of average) at the close of water year 1991 under the reasonable minimum runoff conditions.

REASONABLE MAXIMUM INFLOW CONDITION - WATER YEAR 1991

Seminoe Reservoir

October through January -- Water releases for this period under a reasonable maximum inflow condition would be nearly the same as in the most probable condition. Although inflows to Seminoe Reservoir would be higher under these conditions no change in winter operations would be made until it was evident that the inflow quantities being experienced were showing a trend towards the reasonable maximum inflows for the water year. October through January inflows under this condition will be 123,100 acre-feet which is 22,900 acre-feet more than the most probable runoff condition. The January 31 reservoir content would approximate 376,600 acre-feet under these conditions.

February through September -- If the winter inflows and the February 1 and March 1 snowmelt runoff forecasts indicate that reasonable maximum conditions exist, then the water releases from Seminoe Reservoir for the month of March will be set at an average of 975 c.f.s. and increased to an average of 2,215 c.f.s. for April. Releases during May will be set at approximately 2,070 c.f.s., and increased to about 2,620 c.f.s. in June and July. Inflows for the April through July period will be 1,375,400 acre-feet which is 588,900 acre-feet more than the most probable runoff condition. The high inflows would make it necessary to bypass the powerplant

with some water during the months of April through July, to avoid a spill when Seminoe Reservoir fills in June. When possible the reservoir content is expected to be maintained at or below 967,300 acre-feet to allow space for a flood event in the watershed. This plan of operation would result in an end of year carryover storage of 952,300 acre-feet which would be 135 percent of the 1960-1989 average.

Pathfinder Reservoir

October through January -- Water releases for this period under a reasonable maximum inflow condition would be the same as in the most probable condition. Under this condition, gains between Kortes Dam and Pathfinder Reservoir would be expected to be 10,900 acre-feet for the period, which is 4,300 acre-feet less than in the most probable condition. This is based on the statistical analysis of 50 years of historic data which indicates that for this watershed the years of highest April-July runoff also have the lowest October through January runoff.

February through September -- Pathfinder Reservoir would fill to a quantity of 845,800 acre-feet in July and although no bypass of water is planned at Pathfinder, recent years have shown that due to changing conditions in the system a bypass of some magnitude is usually required during the irrigation season. If a flood event should occur which would require evacuating water from Pathfinder, the maximum combined releases passing Pathfinder Dam would be regulated in the 5,000 to 6,000 c.f.s. range to minimize flood flows through the city of Casper.

Water releases from Fremont Canyon Powerplant will range from 500 c.f.s. in February and March to near 2,000 c.f.s. in July. The Pathfinder Reservoir end of year storage content is projected to be about 755,200 acre-feet, which will be 172 percent of average.

Alcova Reservoir

October through January -- Operation of Alcova Reservoir would be the same as under the most probable condition.

February through September -- Alcova Reservoir will remain at the winter operating level through March. During April the reservoir will be refilled to water surface elevation 5498 feet (179,400 acre-feet). This level will be maintained within ± 1 foot to provide the necessary head for making irrigation deliveries to Casper Canal and for recreational purposes. Water delivered through the Casper Canal to the Kendrick Project for irrigation is estimated to be 64,000 acre-feet for the irrigation season.

Gray Reef Reservoir

October through January -- Operation of Gray Reef Reservoir would be the same as under the most probable condition.

February through September -- Higher releases will be necessary at Gray Reef Reservoir under reasonable maximum water supply conditions than compared to most probable conditions. Releases are expected to reach at least 1,410 c.f.s. during June and average 1,710 c.f.s. in July. A reduction in releases will occur in August and September.

Glendo and Guernsey Reservoirs

October through January -- Guernsey Reservoir contained 11,165 acre-feet of water at the start of water year 1991. This water will be transferred to the Inland Lakes during the first part of October. Under the reasonable maximum inflow conditions, the natural inflow will be stored during the winter, which will increase the reservoir content to 10,300 acre-feet by January 31. Glendo Reservoir content is expected to increase from the starting content of 77,300 acre-feet to an end of January content of 242,500 acre-feet.

February through September -- Guernsey Reservoir content will be maintained between 35,000 and 40,000 acre-feet during mid-April through June. Provision is made in the plan for a possible silt run in July, which will require close coordination of Glendo and Guernsey release schedules as Guernsey is drawn down to about 1,000 acre-feet in July and refilled in August. During September releases will be scheduled to complete Glendo drawdown to about 65,000 acre-feet and to lower Guernsey Reservoir to approximately 15,000 acre-feet.

With reasonable maximum runoff, Glendo Reservoir content will reach a maximum of 517,500 acre-feet in May. In the case of an extreme runoff event, the use of the flood pool would be dictated by the pattern and magnitude of flow conditions that develop below Guernsey Reservoir. However, the use of the Glendo flood pool is restricted to regulating unforecasted rainfall floods. The planned use of the flood pool for regulation of the anticipated snowmelt runoff is not permitted. The operating plan shown assumes no downstream flow restrictions and normal irrigation deliveries. Glendo storage is projected to decrease to about 261,000 acre-feet by the end of July and will be near 65,000 acre-feet by the end of September. This end of year Glendo storage would be 79 percent of average and the total system storage (excluding Kortes and Gray Reef reservoirs) of 1,967,300 acre-feet would be 137 percent of average for the major reservoirs on the North Platte River.

Reasonable Maximum Condition Ownerships

All storage water ownerships in the North Platte River system will fill during the water year, except for the Glendo ownership which is limited in the amount of water which it may accrue in any given year. About 140,000 acre-feet of water, which is excess to the North Platte System ownerships and deliveries, will be spilled if the reasonable maximum runoff develops in the pattern that was assumed. Irrigation deliveries of 1,000,000 acre-feet are projected for the North Platte River Project during April through September and irrigation deliveries of 23,000 acre-feet are projected for the Glendo Unit.

APPENDIX A - TABLES

NORTH PLATTE SYSTEM
FLOOD DAMAGE PREVENTED IN 1990¹

<u>Dam</u>	Accumulated total <u>prior to 1990</u>	<u>1990</u>	Accumulated total <u>current</u>
Seminole	\$ 9,837,000	\$ 0	\$ 9,837,000
Pathfinder	4,752,100	0	4,752,100
Alcova	193,100	0	193,100
Glendo	28,905,300	0	28,905,300
Guernsey	439,000	0	439,000
Total	\$44,126,500	0	\$44,126,500

1/Corps of Engineer's data as revised October 1990

UNITED STATES BUREAU OF RECLAMATION
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MILLS, WYOMING

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1990 ACTUAL SYSTEM OPERATIONS

	WATER IN 1000 ACRE FEET		*	*	*	*	*	*	*	*	*	ENERGY IN G W H				
	INI-SUM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP			
SEMINOE RESERVOIR																
INFLOW	592.8	16.1	20.1	15.8	18.6	20.7	47.4	76.7	77.8	195.1	67.1	22.6	14.8			
TURBINE RELEASE	615.3	31.8	31.2	60.8	41.8	28.4	51.7	88.8	77.1	35.6	38.9	90.1	39.1			
BYPASS OR SPILL	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0			
EVAPORATION SEMINOE	32.6	3.6	1.8	0.5	1.0	0.9	1.5	2.1	2.4	5.0	5.4	5.3	3.1			
SEMINOE END OF MONTH CONTENT	488.2	468.8	456.0	410.5	386.2	377.7	371.9	357.6	355.8	510.3	533.2	460.4	432.9			
KWH / AF		132.0	132.9	149.3	140.4	119.3	135.2	142.2	138.8	126.6	136.7	156.6	139.7			
GENERATION GWH	86.4	4.2	4.1	9.1	5.9	3.4	7.0	12.6	10.7	4.5	5.3	14.1	5.5			
KORTES RESERVOIR																
INFLOW	615.4	31.8	31.2	60.8	41.8	28.4	51.7	88.8	77.2	35.6	38.9	90.1	39.1			
TURBINE RELEASE	614.6	31.8	31.2	60.8	41.8	28.1	51.7	88.9	77.1	35.6	38.9	90.2	38.5			
BYPASS OR SPILL	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3			
EVAPORATION AND SEEPAGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
END OF MONTH CONTENT	4.7	4.7	4.7	4.7	4.6	4.7	4.7	4.7	4.7	4.7	4.6	4.5	4.7			
KWH / AF		156.0	157.4	175.9	174.5	160.3	165.3	176.0	172.8	155.0	159.5	176.1	166.6			
GENERATION GWH	103.9	5.0	4.9	10.7	7.3	4.5	8.6	15.6	13.3	5.5	6.2	15.9	6.4			
PATHFINDER RESERVOIR																
GAIN KORTES TO PATHFINDER	84.4	1.1	-1.8	3.1	2.4	3.8	8.2	17.0	12.3	9.7	8.9	15.6	4.1			
TOTAL INFLOW	699.2	32.9	29.4	63.9	44.2	32.2	59.9	105.8	89.3	45.3	47.7	105.7	42.9			
FREMONT CANYON TURBINE WATER	674.9	4.0	29.9	31.2	31.2	27.8	37.2	52.4	58.9	81.1	116.8	161.3	43.1			
BYPASS OR SPILL	34.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	31.2	0.0			
EVAPORATION AND SEEPAGE	34.2	2.5	1.4	0.4	0.5	0.9	1.4	2.4	4.7	6.9	5.7	4.4	3.0			
END OF MONTH CONTENT	271.6	297.7	295.7	328.1	340.5	343.9	365.2	416.3	439.4	396.7	321.9	230.8	227.6			
KWH / AF		440.7	310.5	282.9	290.8	255.6	272.0	268.4	265.3	268.9	248.0	232.6	247.9			
GENERATION FREMONT CANYON	174.6	1.8	9.1	8.8	9.0	7.1	10.1	14.1	15.6	21.8	29.0	37.5	10.7			

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1990 ACTUAL SYSTEM OPERATIONS

WATER IN 1000 ACRE FEET				*	*	*	*	*	*	*	*	ENERGY IN G W H				
	INI-SUM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP			
ALCOVA RESERVOIR																
INFLOW	709.3	4.4	30.0	31.0	31.2	27.8	37.2	52.4	61.6	81.1	116.8	192.5	43.3			
RELEASE TO CASPER CANAL	76.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	10.6	19.7	20.1	14.6	11.2			
TURBINE RELEASE	623.3	31.2	30.0	30.7	30.9	28.1	30.6	29.2	50.6	59.5	94.2	175.6	32.7			
BYPASS OR SPILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
EVAPORATION AND SEEPAGE	9.5	0.8	0.4	0.0	0.7	0.2	0.3	0.6	1.0	1.6	1.5	1.4	1.0			
END OF MONTH CONTENT	179.4	151.9	151.4	151.8	151.4	150.9	157.1	179.6	179.0	179.3	180.3	181.2	179.6			
KWH / AF		146.4	139.8	136.1	141.9	125.0	123.3	124.8	133.3	136.2	131.4	127.7	133.7			
GENERATION GWH	82.3	4.6	4.2	4.2	4.4	3.5	3.8	3.6	6.7	8.1	12.4	22.4	4.4			
GLENDO RESERVOIR																
ALCOVA TO GLENDO GAIN	108.3	10.2	13.6	9.0	14.3	10.2	15.4	16.0	21.9	-1.9	-4.8	-3.8	8.2			
TOTAL INFLOW	737.2	48.4	43.5	37.7	44.6	37.6	48.5	48.1	69.1	62.9	78.6	174.3	43.9			
TURBINE RELEASE	603.0	0.0	0.0	0.0	0.0	0.0	0.0	46.3	0.0	76.8	213.7	212.7	53.5			
BYPASS OR SPILL	127.5	0.9	0.1	0.1	0.2	0.1	0.2	1.1	0.9	8.9	78.1	35.5	1.4			
EVAPORATION AND SEEPAGE	28.0	1.3	0.8	0.3	0.9	0.9	2.3	3.3	3.8	6.0	4.4	2.4	1.6			
END OF MONTH CONTENT	98.6	144.8	187.4	224.7	268.2	304.7	350.7	348.1	412.5	383.8	166.1	89.8	77.3			
KWH / AF		0.0	0.0	0.0	0.0	0.0	0.0	77.5	0.0	94.4	92.0	69.4	54.3			
GENERATION GWH	48.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	7.2	19.5	14.8	2.9			
GUERNSEY RESERVOIR																
GLENDO TO GUERNSEY GAIN	16.1	1.7	1.3	1.1	1.1	1.0	1.5	-0.3	2.6	-5.4	2.4	4.2	4.9			
TOTAL INFLOW	746.3	2.6	1.4	1.2	1.3	1.1	1.7	47.1	3.5	80.2	294.1	252.4	59.7			
NORTH PLATTE REQUIREMENT	1150.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	150.0	175.0	305.0	305.0	175.0			
NORTH PLATTE DELIVERY	677.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.2	284.1	241.9	90.9			
GLENDO IRRIGATION DELIVERY	59.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	15.7	16.6	17.3			
TOTAL OUTFLOW	729.3	0.1	0.1	0.1	0.1	0.1	0.1	19.9	0.5	83.8	301.8	244.9	77.8			
TURBINE RELEASE	161.4	0.0	0.0	0.0	0.0	0.0	0.0	15.4	0.0	32.3	17.1	54.7	41.9			
EVAPORATION	6.3	0.1	0.1	0.0	0.1	0.1	0.2	0.7	1.2	1.7	0.5	1.1	0.5			
END OF MONTH CONTENT	0.6	2.9	4.1	5.1	6.2	7.1	8.5	35.1	36.9	31.7	23.5	29.8	11.2			
KWH / AF		0.0	0.0	0.0	0.0	0.0	0.0	66.1	0.0	71.1	66.7	70.1	62.1			
GENERATION GWH	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	2.3	1.2	3.8	2.6			

UNITED STATES BUREAU OF RECLAMATION
GREAT PLAINS REGION
NORTH PLATTE RIVER PROJECTS
MILLS, WYOMING

1991 SYSTEM OPERATING PLAN

MOST PROBABLE WATER SUPPLY CONDITION

WATER IN 1000 ACRE FEET

* * * * *

ENERGY IN G W H

INI-SUM OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

SEMINOE AND KORTES RESERVOIRS

INFLOW	1021.1	29.2	27.7	23.3	20.0	22.3	52.2	115.0	247.3	324.4	99.8	37.3	22.6
TURBINE RELEASES	892.4	30.8	82.0	30.8	30.8	27.8	32.0	72.0	105.4	108.6	130.3	139.3	102.6
SPILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EVAPORATION SEMINOE	43.4	1.8	1.1	0.6	0.6	0.7	1.5	2.9	3.9	8.0	9.7	7.5	5.1
SEMINOE END OF MONTH CONTENT	432.9	429.5	374.1	366.0	354.5	348.4	367.0	407.2	545.1	752.9	712.8	603.3	518.2
KWH / AF		321.7	318.8	315.5	314.6	313.7	314.3	317.3	325.3	337.6	342.0	338.5	332.0
GENERATION GWH	293.9	9.9	26.1	9.7	9.7	8.7	10.1	22.8	34.3	36.7	44.6	47.2	34.1

PATHFINDER RESERVOIR

GAIN KORTES TO PATHFINDER	123.9	5.9	3.5	2.7	2.2	3.5	8.2	16.4	30.9	26.6	13.7	6.6	3.7
TOTAL INFLOW	1016.3	36.7	85.5	33.5	33.0	31.3	40.2	88.4	136.3	135.2	144.0	145.9	106.3
FREMONT CANYON TURBINE WATER	987.9	7.0	29.9	30.8	30.9	27.9	31.1	147.0	147.0	143.3	135.5	129.1	128.4
SPILL OR BYPASS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EVAPORATION PATHFINDER	27.6	1.5	1.0	0.6	0.6	0.7	1.5	2.5	3.0	4.0	4.6	4.3	3.3
END OF MONTH CONTENT	227.6	255.9	310.4	312.6	314.1	316.8	324.4	263.3	249.7	237.6	241.5	254.0	228.6
KWH / AF		240.8	249.3	252.1	252.3	252.5	253.1	246.4	239.6	238.1	237.5	238.7	237.8
GENERATION FREMONT CANYON	238.8	1.7	7.5	7.8	7.8	7.1	7.9	36.2	35.2	34.1	32.2	30.8	30.5

ALCOVA RESERVOIR

INFLOW	987.9	7.0	29.9	30.8	30.9	27.9	31.1	147.0	147.0	143.3	135.5	129.1	128.4
RELEASE TO CASPER CANAL	74.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	17.0	18.0	17.0	7.0
TURBINE RELEASE	905.0	30.0	29.7	30.7	30.7	27.7	30.7	122.9	131.0	124.9	115.8	110.7	120.2
SPILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EVAPORATION ALCOVA	9.1	0.6	0.2	0.1	0.2	0.2	0.4	0.7	1.0	1.4	1.7	1.4	1.2
END OF MONTH CONTENT	179.6	156.0	156.0	156.0	156.0	156.0	156.0	179.4	179.4	179.4	179.4	179.4	179.4
KWH / AF		138.0	136.0	136.0	136.0	136.0	136.0	138.0	140.0	140.0	140.0	140.0	140.0
GENERATION GWH	125.8	4.1	4.0	4.2	4.2	3.8	4.2	17.0	18.3	17.5	16.2	15.5	16.8

TABLE 3A
PAGE 2 OF 3

MOST PROBABLE WATER SUPPLY CONDITION

[illegible]

UNITED STATES BUREAU OF RECLAMATION
GREAT PLAINS REGION
NORTH PLATTE RIVER PROJECTS
MILLS, WYOMING

TABLE 3A
PAGE 3 OF 3

1991 SYSTEM OPERATING PLAN

MOST PROBABLE WATER SUPPLY CONDITION

WATER IN 1000 ACRE FEET

* * * * *

ENERGY IN G W H

INI-SUM

OCT

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SEP

STORAGE WATER OWNERSHIP ACCOUNTING

EVAPORATION NORTH PLATTE	42.0	0.8	0.5	0.3	0.3	0.4	1.1	2.5	4.7	9.2	11.2	7.2	3.8
TOTAL DELIVERY NORTH PLATTE	1106.9	15.8	0.5	0.3	0.3	0.4	1.1	42.5	114.7	134.2	316.2	302.1	178.8
NORTH PLATTE STORAGE (+ A&M)	17.4	49.8	92.6	125.6	156.0	196.2	261.7	385.2	592.5	837.7	639.4	381.4	240.3
EVAPORATION KENDRICK	53.9	3.1	1.7	1.1	1.3	1.3	3.0	5.0	5.8	8.7	9.3	7.7	5.9
TOTAL DELIVERY KENDRICK	127.8	3.1	1.7	1.1	1.3	1.3	3.0	5.0	20.8	25.7	27.3	24.6	12.9
KENDRICK GAIN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KENDRICK STORAGE (INCL CHYN)	808.4	805.3	803.6	802.5	801.2	799.8	796.9	791.8	771.1	745.4	718.1	693.5	680.6
EVAPORATION GLENDO	17.0	0.8	0.7	0.5	0.5	0.6	0.9	1.1	2.9	2.6	2.7	2.1	1.6
TOTAL DELIVERY GLENDO	45.0	0.8	0.7	0.5	0.5	0.6	0.9	1.1	2.9	4.6	8.7	10.1	13.6
GLENDO GAIN	28.1	0.0	0.0	0.0	0.0	0.0	8.5	0.0	19.6	0.0	0.0	0.0	0.0
GLENDO STORAGE (INCL PP&L)	102.5	101.7	101.0	100.4	99.9	99.3	107.0	105.8	122.5	117.9	109.1	99.1	85.4
COMBINED OWNERSHIP STORAGE	928.3	956.9	997.1	1028.5	1057.1	1095.4	1165.5	1282.9	1486.0	1701.0	1466.7	1173.9	1006.3
COMBINED PHYSICAL STORAGE	928.6	957.2	997.4	1028.8	1057.4	1095.7	1165.8	1283.2	1486.0	1701.0	1466.7	1173.9	1006.3

UNITED STATES BUREAU OF RECLAMATION
GREAT PLAINS REGION
NORTH PLATTE RIVER PROJECTS
MILLS, WYOMING

TABLE 3B
PAGE 1 OF 3

1991 SYSTEM OPERATING PLAN

REASONABLE MINIMUM WATER SUPPLY CONDITION

WATER IN 1000 ACRE FEET

* * * * *

ENERGY IN G W H

INI-SUM

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SEMINOE AND KORTES RESERVOIRS

INFLOW	572.1	26.2	23.4	20.6	17.8	20.8	43.9	77.4	129.8	145.7	32.8	20.1	13.6
TURBINE RELEASES	620.1	31.8	82.0	30.7	30.7	27.8	30.7	50.0	50.0	81.4	110.0	50.0	45.0
SPILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EVAPORATION SEMINOE	33.8	1.8	1.0	0.6	0.6	0.6	1.5	2.7	3.5	6.1	6.6	5.1	3.7
SEMINOE END OF MONTH CONTENT	432.9	425.5	365.8	355.1	341.6	334.0	345.7	370.4	446.7	504.9	421.1	386.1	351.0
KWH / AF		321.5	318.1	314.6	313.4	312.3	312.5	314.3	319.4	325.2	324.0	318.9	315.4
GENERATION GWH	197.9	10.2	26.1	9.7	9.6	8.7	9.6	15.7	16.0	26.5	35.6	16.0	14.2

PATHFINDER RESERVOIR

GAIN KORTES TO PATHFINDER	70.0	5.9	3.5	2.7	2.2	3.5	6.2	12.6	10.7	8.4	4.9	5.0	4.4
TOTAL INFLOW	690.1	37.7	85.5	33.4	32.9	31.3	36.9	62.6	60.7	89.8	114.9	55.0	49.4
FREMONT CANYON TURBINE WATER	756.3	7.0	29.9	30.8	30.9	27.9	31.1	93.2	133.2	126.4	114.3	71.5	60.1
SPILL OR BYPASS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EVAPORATION PATHFINDER	24.0	1.5	1.0	0.6	0.6	0.7	1.5	2.6	2.9	3.3	3.7	3.2	2.4
END OF MONTH CONTENT	227.6	256.9	311.4	313.5	314.9	317.6	321.9	288.8	213.3	173.4	170.3	150.6	137.5
KWH / AF		240.9	249.4	252.3	252.4	252.6	253.0	247.5	239.1	231.1	228.1	226.5	223.9
GENERATION FREMONT CANYON	179.8	1.7	7.5	7.8	7.8	7.1	7.9	23.1	31.9	29.2	26.1	16.2	13.5

ALCOVA RESERVOIR

INFLOW	756.3	7.0	29.9	30.8	30.9	27.9	31.1	93.2	133.2	126.4	114.3	71.5	60.1
RELEASE TO CASPER CANAL	84.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.0	19.0	20.0	19.0	9.0
TURBINE RELEASE	663.4	30.0	29.7	30.7	30.7	27.7	30.7	69.1	115.2	106.0	92.6	51.1	49.9
SPILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EVAPORATION ALCOVA	9.1	0.6	0.2	0.1	0.2	0.2	0.4	0.7	1.0	1.4	1.7	1.4	1.2
END OF MONTH CONTENT	179.6	156.0	156.0	156.0	156.0	156.0	156.0	179.4	179.4	179.4	179.4	179.4	179.4
KWH / AF		138.0	136.0	136.0	136.0	136.0	136.0	138.0	140.0	140.0	140.0	140.0	140.0
GENERATION GWH	92.1	4.1	4.0	4.2	4.2	3.8	4.2	9.5	16.1	14.8	13.0	7.2	7.0

TABLE 3B
PAGE 2 OF 3

REASONABLE MINIMUM WATER SUPPLY CONDITION

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UNITED STATES BUREAU OF RECLAMATION
GREAT PLAINS REGION
NORTH PLATTE RIVER PROJECTS
MILLS, WYOMING

TABLE 3B
PAGE 3 OF 3

1991 SYSTEM OPERATING PLAN

REASONABLE MINIMUM WATER SUPPLY CONDITION

WATER IN 1000 ACRE FEET

* * * * *

ENERGY IN G W H

INI-SUM

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STORAGE WATER OWNERSHIP ACCOUNTING

EVAPORATION NORTH PLATTE	22.0	0.8	0.5	0.2	0.2	0.4	1.0	2.1	3.3	5.0	4.9	2.5	1.1
TOTAL DELIVERY NORTH PLATTE	762.4	15.8	0.5	0.2	0.2	0.4	1.0	42.1	103.3	130.0	204.6	175.4	88.9
NORTH PLATTE STORAGE (+ A&M)	17.4	45.6	82.0	112.3	138.4	171.6	233.6	294.8	353.0	378.3	210.8	60.7	0.2
EVAPORATION KENDRICK	53.5	3.1	1.7	1.1	1.3	1.3	3.0	5.0	5.8	8.6	9.2	7.6	5.8
TOTAL DELIVERY KENDRICK	137.5	3.1	1.7	1.1	1.3	1.3	3.0	5.0	22.8	27.6	29.2	26.6	14.8
KENDRICK GAIN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KENDRICK STORAGE (INCL CHYN)	808.4	805.3	803.6	802.5	801.2	799.8	796.9	791.8	769.1	741.5	712.2	685.6	670.8
EVAPORATION GLENDO	17.5	0.8	0.7	0.5	0.5	0.6	0.9	1.1	2.7	2.4	3.0	2.5	1.8
TOTAL DELIVERY GLENDO	39.6	0.8	0.7	0.5	0.5	0.6	0.9	1.1	2.7	5.4	8.0	9.5	8.9
GLENDO GAIN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GLENDO STORAGE (INCL PP&L)	102.5	101.7	101.0	100.4	99.9	99.3	98.4	97.3	94.6	89.2	81.3	71.8	62.8
COMBINED OWNERSHIP STORAGE	928.3	952.7	986.5	1015.3	1039.5	1070.8	1128.9	1184.0	1216.7	1208.9	1004.3	818.1	733.9
COMBINED PHYSICAL STORAGE	928.6	953.0	986.8	1015.5	1039.8	1071.1	1129.2	1184.3	1216.7	1208.9	1004.3	818.1	733.9

UNITED STATES BUREAU OF RECLAMATION
GREAT PLAINS REGION
NORTH PLATTE RIVER PROJECTS
MILLS, WYOMING

1991 SYSTEM OPERATING PLAN

REASONABLE MAXIMUM WATER SUPPLY CONDITION

WATER IN 1000 ACRE FEET

* * * * *

ENERGY IN G W H

INI-SUM OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

SEMINOE AND KORTES RESERVOIRS

INFLOW	1686.8	35.9	33.3	27.7	26.2	27.7	58.8	156.7	408.5	582.6	227.6	65.0	36.8
TURBINE RELEASES	986.7	31.8	82.0	30.7	30.7	27.8	60.0	131.8	127.3	155.7	160.9	90.0	58.0
SPILL	125.9	0.0	0.0	0.0	0.0	0.0	0.0	24.0	33.6	14.5	53.8	0.0	0.0
EVAPORATION SEMINOE	55.0	1.9	1.1	0.7	0.6	0.7	1.6	2.8	4.1	9.8	12.9	10.7	8.1
SEMINOE END OF MONTH CONTENT	432.9	435.1	385.4	381.7	376.6	375.8	373.0	371.2	614.7	1017.3	1017.3	981.6	952.3
KWH / AF		322.0	319.6	316.9	316.5	316.2	316.0	315.8	327.0	346.2	354.0	353.0	352.0
GENERATION GWH	329.9	10.2	26.2	9.7	9.7	8.8	19.0	41.6	41.6	53.9	57.0	31.8	20.4

PATHFINDER RESERVOIR

GAIN KORTES TO PATHFINDER	214.1	7.5	1.5	1.0	-0.5	2.0	8.7	29.6	67.7	53.3	24.6	11.3	7.4
TOTAL INFLOW	1326.6	39.3	83.5	31.7	30.2	29.8	68.7	185.3	228.6	223.5	239.3	101.3	65.4
FREMONT CANYON TURBINE WATER	742.8	7.0	29.9	30.8	30.9	27.9	31.1	69.0	55.8	100.4	122.7	138.6	98.7
SPILL OR BYPASS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EVAPORATION PATHFINDER	56.4	1.5	1.0	0.6	0.6	0.7	1.5	3.2	5.4	9.3	12.6	11.5	8.5
END OF MONTH CONTENT	227.6	258.5	311.0	311.4	310.1	311.3	347.4	460.5	627.8	741.7	845.8	797.0	755.2
KWH / AF		241.0	249.5	252.1	252.1	252.1	253.9	256.3	263.6	272.9	278.7	279.1	277.7
GENERATION FREMONT CANYON	199.8	1.7	7.5	7.8	7.8	7.0	7.9	17.7	14.7	27.4	34.2	38.7	27.4

ALCOVA RESERVOIR

INFLOW	742.8	7.0	29.9	30.8	30.9	27.9	31.1	69.0	55.8	100.4	122.7	138.6	98.7
RELEASE TO CASPER CANAL	64.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	15.0	16.0	15.0	5.0
TURBINE RELEASE	669.9	30.0	29.7	30.7	30.7	27.7	30.7	44.9	41.8	84.0	105.0	122.2	92.5
SPILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EVAPORATION ALCOVA	9.1	0.6	0.2	0.1	0.2	0.2	0.4	0.7	1.0	1.4	1.7	1.4	1.2
END OF MONTH CONTENT	179.6	156.0	156.0	156.0	156.0	156.0	156.0	179.4	179.4	179.4	179.4	179.4	179.4
KWH / AF		138.0	136.0	136.0	136.0	136.0	136.0	138.0	140.0	140.0	140.0	140.0	140.0
GENERATION GWH	93.2	4.1	4.0	4.2	4.2	3.8	4.2	6.2	5.9	11.8	14.7	17.1	13.0

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MILLS, WYOMING

TABLE 3C
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1991 SYSTEM OPERATING PLAN

REASONABLE MAXIMUM WATER SUPPLY CONDITION

	WATER IN 1000 ACRE FEET				* * * *	* * * *	* * * *	ENERGY IN G W H						
	INI-SUM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
GLENDO RESERVOIR														
ALCOVA TO GLENDO GAIN	434.0	16.2	15.3	6.9	13.8	14.6	20.0	47.4	191.8	74.7	9.6	8.4	15.3	
TOTAL INFLOW	1103.9	46.2	45.0	37.6	44.5	42.3	50.7	92.3	233.6	158.7	114.6	130.6	107.8	
TURBINE RELEASE	920.5	5.0	0.1	0.1	0.1	0.1	12.7	43.5	77.1	189.9	215.0	229.9	147.0	
BYPASS OR SPILL	163.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.5	68.8	52.2	0.0	
EVAPORATION AND SEEPAGE	32.3	0.8	0.7	0.7	0.7	0.9	1.6	2.6	5.5	7.0	6.6	3.5	1.7	
END OF MONTH CONTENT	77.3	117.7	161.9	198.8	242.5	283.9	320.3	366.5	517.5	436.8	261.0	106.1	65.2	
KWH / AF		61.1	70.4	79.2	87.6	93.5	98.8	103.4	111.0	113.8	103.8	79.9	58.3	
GENERATION GWH	85.6	0.3	0.0	0.0	0.0	0.0	1.3	4.5	8.6	21.6	22.3	18.4	8.6	
GUERNSEY														
GLENDO TO GUERNSEY GAIN	82.9	2.9	2.1	1.8	2.0	1.2	0.0	8.5	26.7	21.7	5.9	1.6	8.5	
TOTAL INFLOW	1166.9	7.9	2.2	1.9	2.1	1.3	12.7	52.0	103.8	254.1	289.7	283.7	155.5	
NORTH PLATTE REQUIREMENT	1000.0	15.0	0.0	0.0	0.0	0.0	0.0	40.0	100.0	110.0	290.0	280.0	165.0	
NORTH PLATTE DELIVERY	1000.0	15.0	0.0	0.0	0.0	0.0	0.0	40.0	100.0	110.0	290.0	280.0	165.0	
GLENDO IRRIGATION DELIVERY	23.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	4.0	4.0	11.0	
SEEP, OWN. SPILL, & EVAP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EXCESS WATER SPILL	140.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	140.0	0.0	0.0	0.0	
EXCESS WATER DELVRY/TRANSFER	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	
BYPASS	786.4	0.1	0.2	0.3	0.4	0.3	0.3	0.4	37.2	189.6	229.3	218.9	109.4	
TURBINE RELEASE	378.1	14.9	0.0	0.0	0.0	0.0	0.0	39.6	64.8	62.4	64.7	65.1	66.6	
END OF MONTH CONTENT	11.2	4.1	6.3	8.2	10.3	11.6	24.3	36.3	38.1	40.2	35.9	35.6	15.1	
KWH / AF		51.3	46.4	50.5	54.5	57.0	64.0	72.1	73.4	73.8	73.6	73.2	69.2	
GENERATION GWH	27.2	0.8	0.0	0.0	0.0	0.0	0.0	2.8	4.8	4.6	4.8	4.8	4.6	
GAIN TO STORAGE WATER OWNERSHIP														
INLAND LAKES IN GUER & GLEND	0.0	4.0	21.2	21.2	21.2	21.2	21.2	0.0	0.0	0.0	0.0	0.0	0.0	
N.P. GUERNSEY WATER	0.0	0.0	0.0	8.4	23.8	24.0	24.0	45.2	45.2	0.0	0.0	0.0	0.0	
N.P. GUERNSEY + INLAND LAKES	0.0	4.0	21.2	29.6	45.0	45.2	45.2	45.2	45.2	0.0	0.0	0.0	0.0	
GLENDO OWNERSHIP GAIN	60.0	0.0	0.0	0.0	0.0	14.0	19.6	8.1	18.3	0.0	0.0	0.0	0.0	
KENDRICK OWNERSHIP GAIN	459.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	459.2	0.0	0.0	0.0	

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1991 SYSTEM OPERATING PLAN

TABLE 3C
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REASONABLE MAXIMUM WATER SUPPLY CONDITION

WATER IN 1000 ACRE FEET

* * * * *

ENERGY IN G W H

INI-SUM

OCT

NOV

DEC

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

STORAGE WATER OWNERSHIP ACCOUNTING

EVAPORATION NORTH PLATTE	63.3	0.8	0.5	0.3	0.3	0.5	1.2	2.9	7.0	13.8	15.6	12.3	8.1
TOTAL DELIVERY NORTH PLATTE	1063.3	15.8	0.5	0.3	0.3	0.5	1.2	42.9	107.0	123.8	305.6	292.3	173.1
NORTH PLATTE STORAGE (+ A&M)	17.4	64.1	115.8	152.9	194.1	225.1	291.8	483.1	1052.8	1062.1	1024.2	818.3	713.2
EVAPORATION KENDRICK	69.1	3.1	1.7	1.1	1.3	1.3	3.0	5.0	5.8	11.2	14.5	11.9	9.2
TOTAL DELIVERY KENDRICK	133.1	3.1	1.7	1.1	1.3	1.3	3.0	5.0	18.8	26.2	30.5	26.9	14.2
KENDRICK GAIN	459.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	459.2	0.0	0.0	0.0
KENDRICK STORAGE (INCL CHYN)	808.4	805.3	803.6	802.5	801.2	799.8	796.9	791.8	773.1	1206.1	1175.6	1148.7	1134.4
EVAPORATION GLENDO	19.7	0.8	0.7	0.5	0.5	0.6	1.0	1.4	3.1	2.6	3.6	2.8	2.1
TOTAL DELIVERY GLENDO	42.8	0.8	0.7	0.5	0.5	0.6	1.0	1.4	5.1	4.6	7.6	6.9	13.1
GLENDO GAIN	60.0	0.0	0.0	0.0	0.0	14.0	19.6	8.1	18.3	0.0	0.0	0.0	0.0
GLENDO STORAGE (INCL PP&L)	102.5	101.7	101.0	100.4	99.9	113.3	131.9	138.6	151.8	147.2	139.6	132.8	119.7
COMBINED OWNERSHIP STORAGE	928.3	971.1	1020.4	1055.8	1095.2	1138.3	1220.6	1413.6	1977.6	2415.5	2339.4	2099.7	1967.3
COMBINED PHYSICAL STORAGE	928.6	971.4	1020.7	1056.1	1095.5	1138.6	1220.9	1413.8	1977.6	2415.4	2339.4	2099.6	1967.3

SUMMARY OF NORTH PLATTE RIVER SYSTEM OWNERSHIPS FOR WATER YEAR 1990 (ACRE-FEET)

MONTHS	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
PATHFINDER OWNERSHIP														
ACCURAL		23390	16151	33599	18314	20778	58777	96305	89620	155925	0	0	6911	519770
EVAPORATION		696	219	469	196	500	1032	1712	3453	7341	6158	3049	911	25736
DELIVERY *		0	0	0	0	0	0	0	0	34793	220746	197510	45177	498226
OWNERSHIP	21585	44279	60211	93341	171459	131737	189482	284075	370242	484033	257129	56570	17393	
KENDRICK OWNERSHIP														
ACCURAL		0	0	0	0	2909	0	0	0	34793**	0	180	0	37882
EVAPORATION		5863	1287	2465	861	1919	3568	4450	5236	8300	8325	8111	5369	55754
DELIVERY *		0	0	0	0	0	0	65	10581	19721	20133	14597	10887	75984
OWNERSHIP	907485	901622	900335	897870	897009	897999	894431	889916	874099	880871	852413	829885	813629	
GLENDO OWNERSHIP														
ACCRUAL		0	0	0	0	0	6459	0	22309	630	0	0	1022	29760
EVAPORATION		1695	749	256	476	515	1493	2129	2776	3362	3664	3598	3365	24078
DELIVERY & LOSS *		7	0	502	500	0	0	0	0	17	1937	7068	6163	16194
OWNERSHIP	112596	110894	110145	109387	108411	107896	112862	110733	130266	126257	120656	109990	101484	
PACIFIC POWER & LIGHT														
ACCURAL		0	0	500	500	0	0	0	150	99	67	121	160	
DELIVERY *		207	312	272	312	240	271	187	0	0	0	0	0	
EVAPORATION		7	1	0	1	2	1	0	0	1	2	15	20	50
INSTORAGE	1210	996	683	911	1098	856	584	397	547	645	710	816	956	

* Amounts shown as delivery are storage water only. Natural flow which was delivered is not shown in this table.

**This delivery is the repayment of water which had been borrowed in 1989 to the Kendrick Project

SUMMARY OF NORTH PLATTE STORAGE OWNERSHIP FOR WATER YEAR 1990 (ACRE-FEET)

MONTHS	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
GUERNSEY OWNERSHIP														
ACCRUAL		0	0	10047	15226	11108	9962	0	0	0	0	0	0	46343
EVAPORATION		0	0	27	84	217	661	909	1250	1687	69	0	0	4904
DELIVERY *		0	0	0	0	0	0	0	0	27492	13947	0	0	41437
OWNERSHIP	0	0	0	10020	25162	36053	45354	44445	43195	14016	0	0	0	
INLAND LAKES OWNERSHIP														
ACCRUAL		11801	14753	0	0	0	0	15685	0	0	0	0	0	42239
EVAPORATION		86	142	26	17	26	84	97	64	40	0	0	0	582
OWNERSHIP	0	11715	26326	11273	11256	11230	11146	6857	6793	0	0	0	0	
TRANSFER		0	0	15027	0	0	0	19877	0	6753	0	0	0	41657
CITY OF CHEYENNE														
ACCRUAL		896	535	418	797	559	670	116	0	0	0	554	317	4862
EVAPORATION		1	2	6	1	7	19	30	30	0	6	0	0	102
OWNERSHIP	1137	2024	2557	2969	3765	4317	4968	5054	1427	33	136	690	1007	
DELIVERY		0	0	0	0	0	0	0	3597	1427	109	0	0	5133
EXCESS WATER														
ACCRUAL		0	0	0	0	0	429	0	2087	0	0	0	227	2743
USED (REGULATION)		0	0	0	0	0	0	0	0	745	68	0	0	813
EVAPORATION		16	10	1	0	1	0	0	16	35	8	0	0	87
OWNERSHIP	455	439	429	428	428	427	856	856	2927	2147	0	0	227	
TRANSFER TO OWNERSHIP		0	0	0	0	0	0	0	0	0	2071	0	0	2071

* Amounts shown as delivery are storage water only. Natural flow which was delivered is not shown in this table.

** This delivery is the repayment of water which had been borrowed in 1989 to the Kendrick Project.

NORTH PLATTE RIVER

RESERVOIR DATA

Reservoir	Dead Storage ¹	Active Storage ²	Total Storage	Normal Minimum Storage	(Data in Acre-Feet)
					Limitation on normal minimum storage
Seminoe	556	1,016,717	1,017,273	31,670	Minimum elevation for power generation
Kortes	151	4,588	4,739	1,666	Minimum elevation for power generation
Pathfinder	7	1,016,500	1,016,507	31,405	Minimum elevation for power generation
Alcova	91	184,314	184,405	153,802	Minimum elevation for power generation
Gray Reef	56	1,744	1,800	56	Lowest outlet elevation
Glendo	11,033	506,452	517,485 ³	63,148	Minimum elevation for power generation
Guernsey	0	45,612	45,612	0	Lowest outlet elevation
Total	11,894	2,775,927	2,787,821	281,747	

¹/Storage capacity below elevation of lowest outlet²/Total storage minus dead storage³/An additional 271,917 acre-feet allocated to flood control

TABLE 6

NORTH PLATTE RIVER
POWERPLANT DATA

Powerplant	Number of Units	Capacity each Unit (KW)	Total installed Capacity (KW)	Normal operating Head (Ft)	Output at rated Head (Ft ³ /s)	30 Year Average ¹ (GWH)	Generation (GWH)	
							Percent of average ¹	Water Year (1990)
Seminole	3	17,000	51,000	97-227	4,050	143.9	60%	86.4
Kortes	3	12,000	36,000	192-204	2,910	158.0	66%	103.9
Fremont Canyon	2	33,400	66,800	247-363	3,080	257.8	63%	162.0
Alcova	2	18,000	36,000	153-165	4,100	129.0	64%	82.3
Glendo	2	19,000	38,000	73-156	3,400	86.6	55%	48.0
Guernsey	2	2,400	4,800	89-91	1,340	24.2	41%	24.2
Total	14	-----	232,600	-----	-----	799.5	62%	492.6

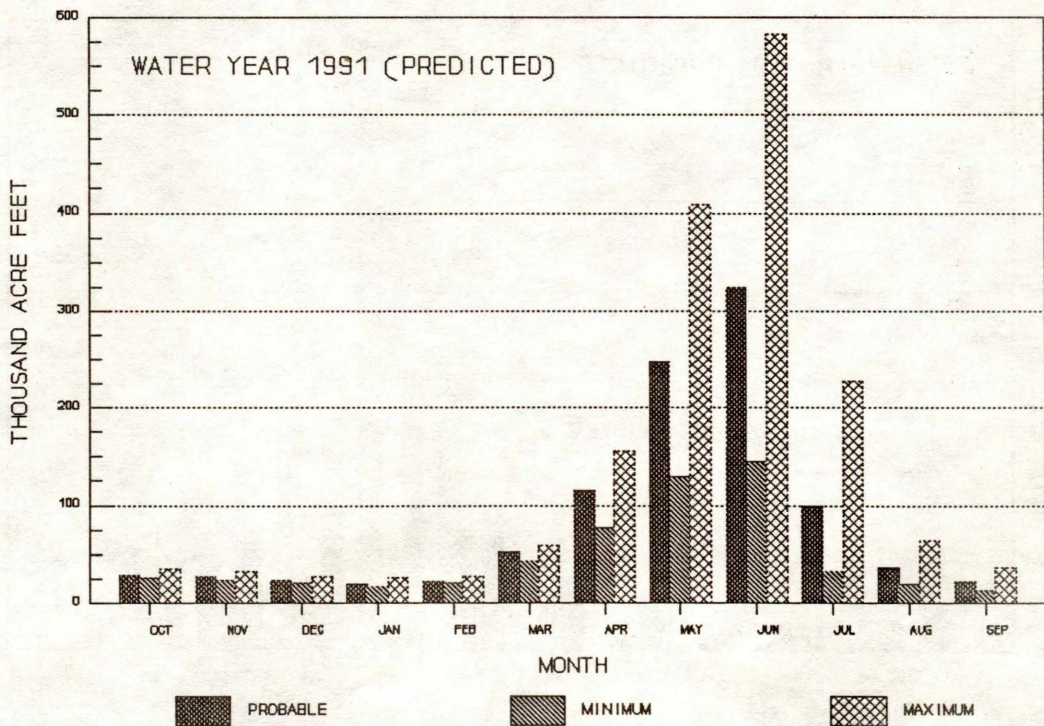
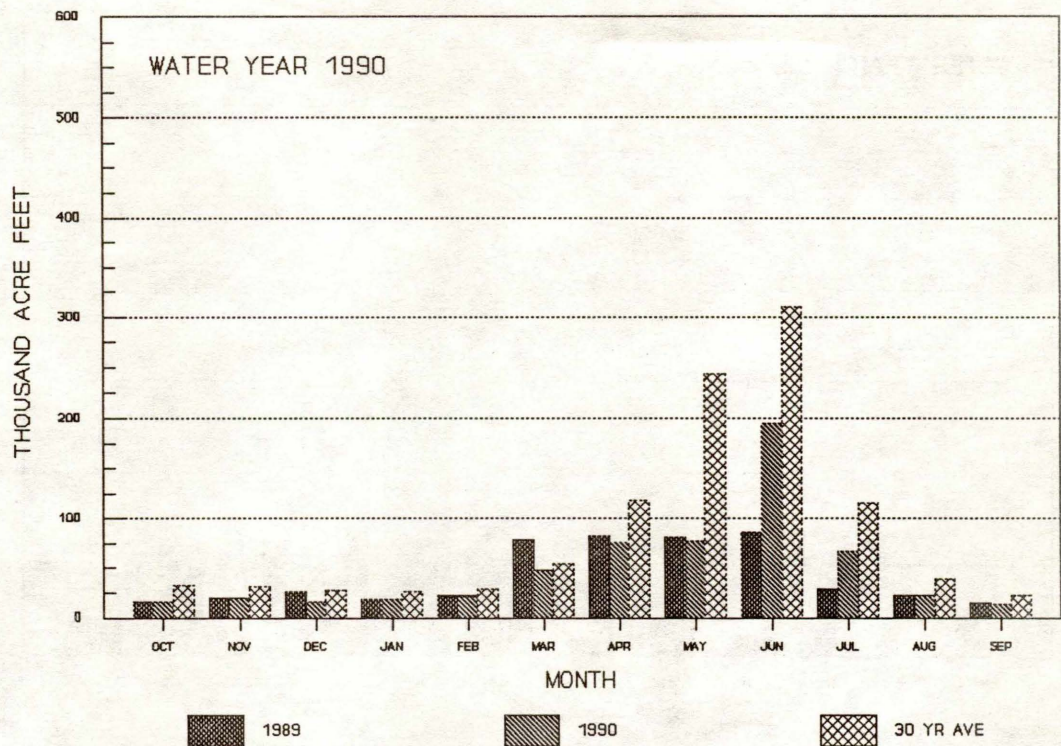
TABLE 7

PROPOSED UNIT MAINTENANCE SCHEDULE
NORTH PLATTE RIVER SYSTEM
OCTOBER 1990 THROUGH SEPTEMBER 1991

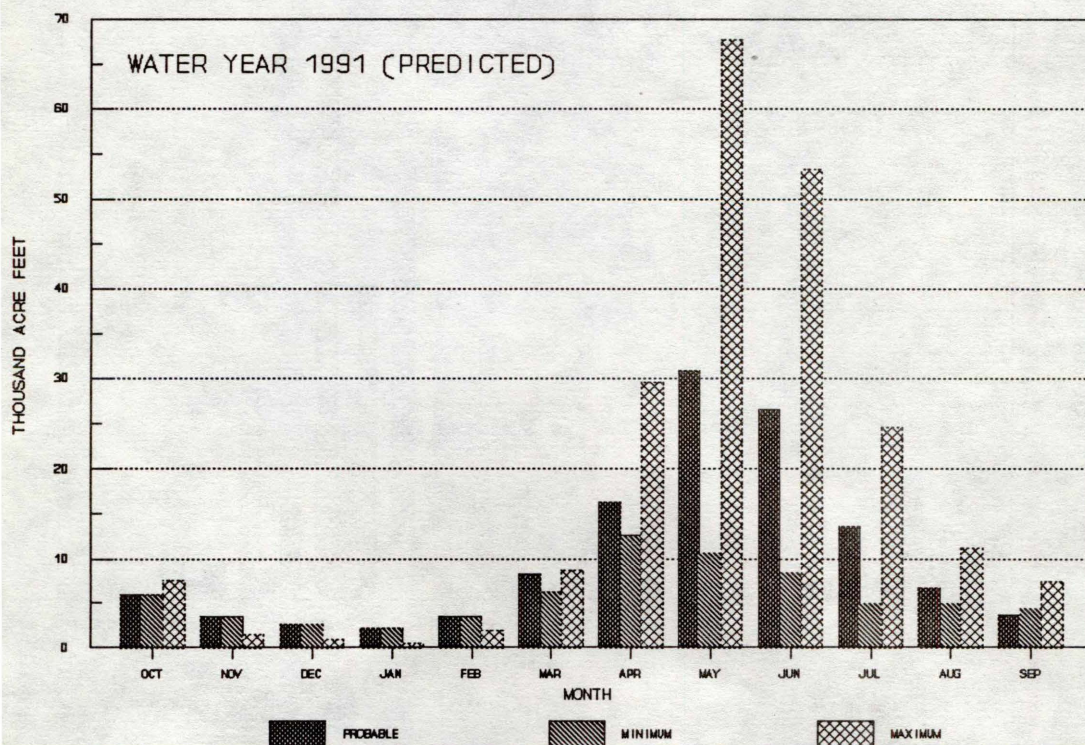
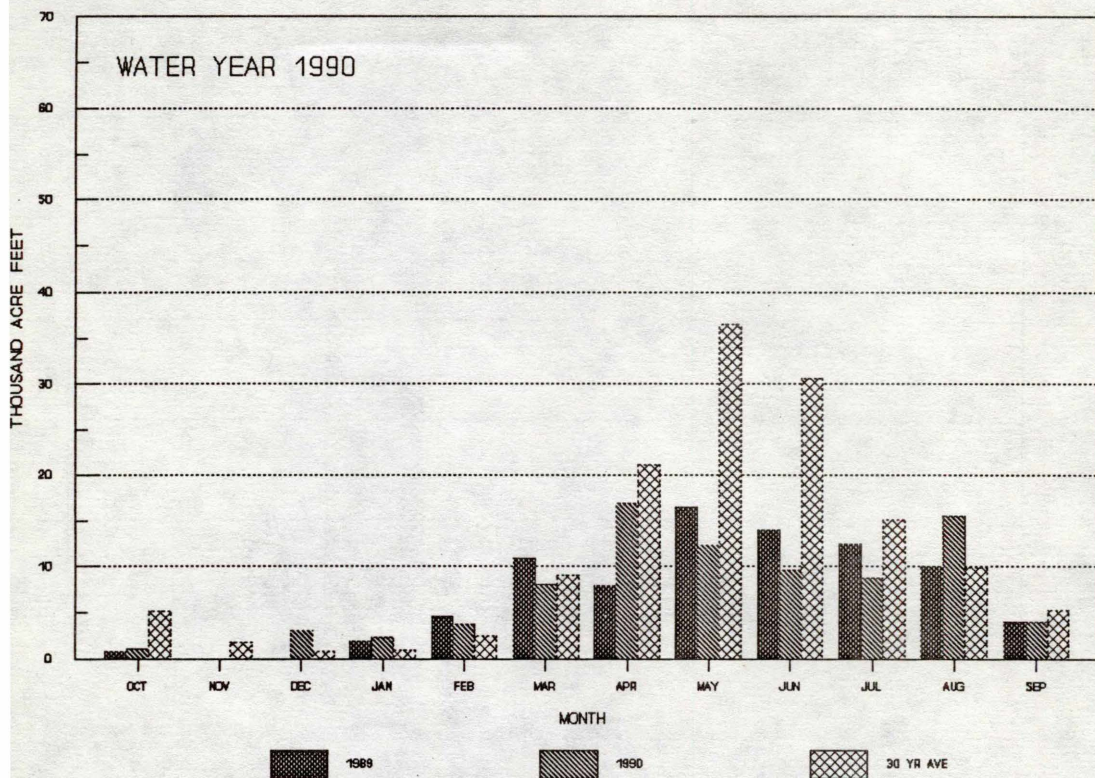
<u>FACILITY AND UNIT NO.</u>	<u>SCHEDULED PERIOD</u>	<u>DESCRIPTION OF WORK</u>
Kortes Unit #1	10-1-90 thru 10-31-90	Minor inspection and other work as required
Alcova Units 1&2	10-3-90 thru 10-3-90	Check tailrace
Alcova Units 1&2	10-22-90 thru 10-26-90	Pump out tailrace to replace flapper valve
Kortes Unit #3	11-5-90 thru 12-5-90	Minor inspection and other work as required
Glendo Unit #1	11-5-90 thru 12-14-90	Minor inspection and other work as required
Fremont Unit #1	11-5-90 thru 12-19-90	Minor Inspection and other work as required
Glendo Unit #2	12-3-90 thru 1-18-91	Minor inspection and other work as required
Kortes Unit #2	12-10-90 thru 1-9-91	Minor inspection and other work as required
Alcova Unit #1	1-2-91 thru 2-14-91	Minor inspection and other work as required
Guernsey Unit #1	1-2-91 thru 1-31-91	Minor inspection and other work as required
Seminoe Unit #1	1-14-91 thru 2-27-91	Minor inspection and other work as required
Guernsey Unit #2	2-4-91 thru 3-4-91	Minor inspection and other work as required
Alcova Unit #2	2-20-91 thru 4-3-91	Minor inspection and other work as required
Seminoe Unit #2	3-5-91 thru 4-17-91	Minor inspection and other work as required
Seminoe Unit #3	4-23-91 thru 6-6-91	Minor inspection and other work as required

APPENDIX B - EXHIBITS

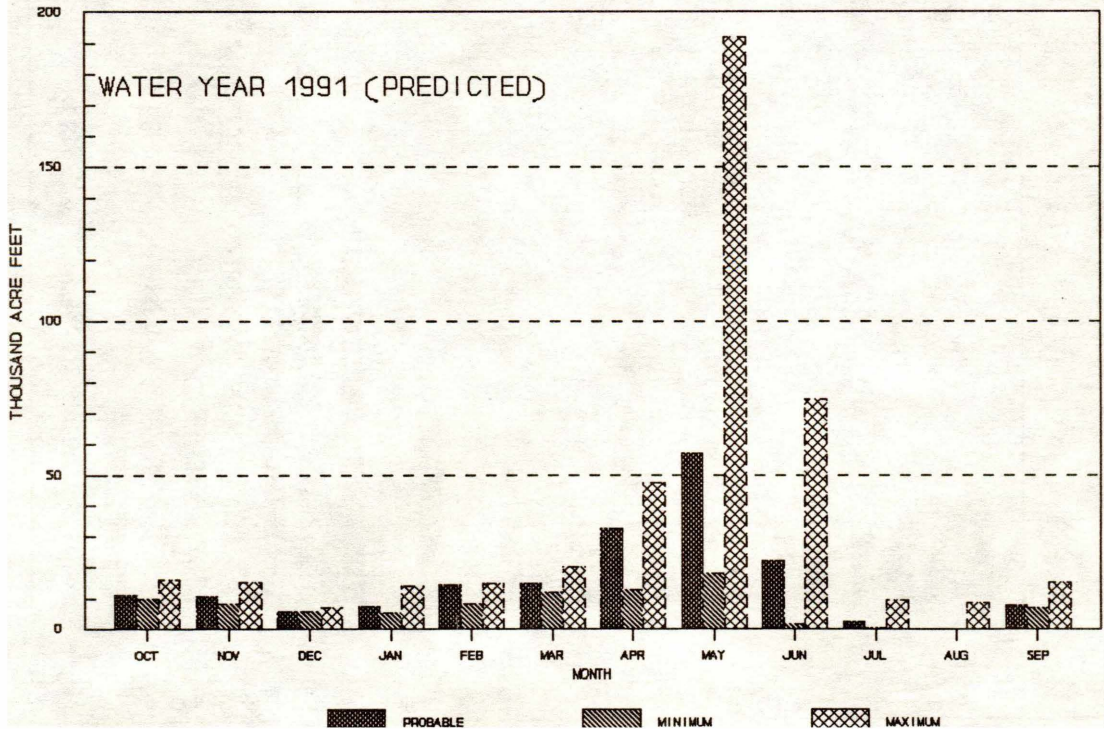
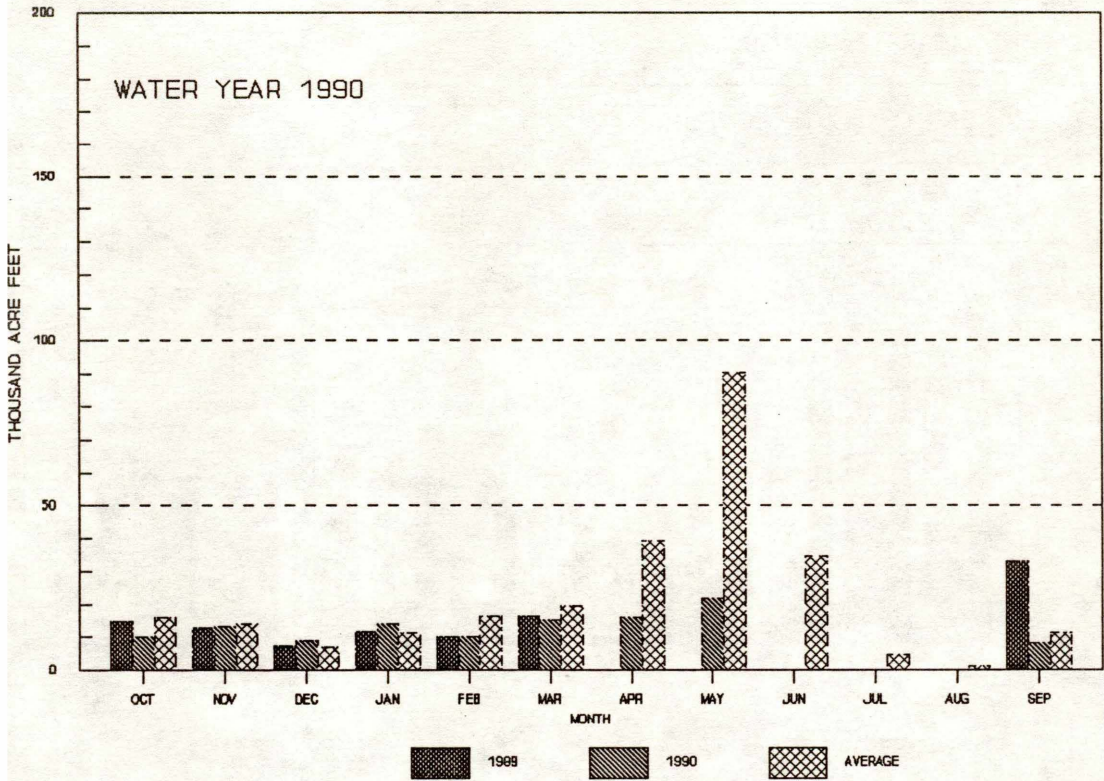
SEMINOE RESERVOIR INFLOW



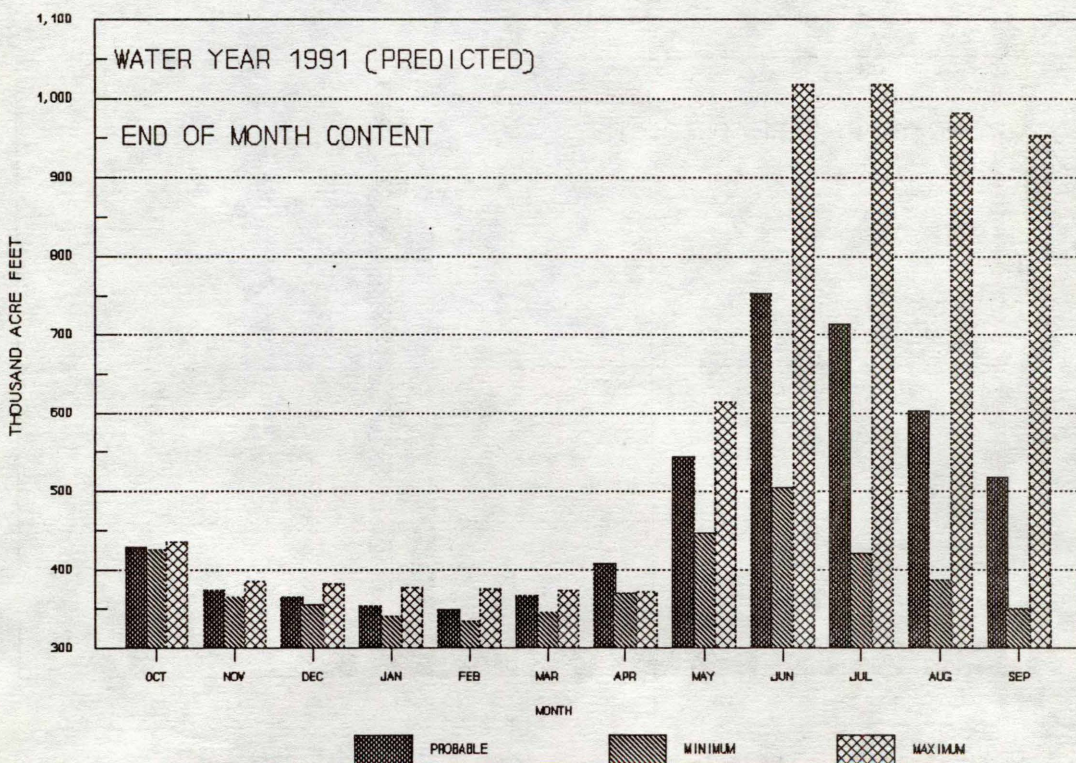
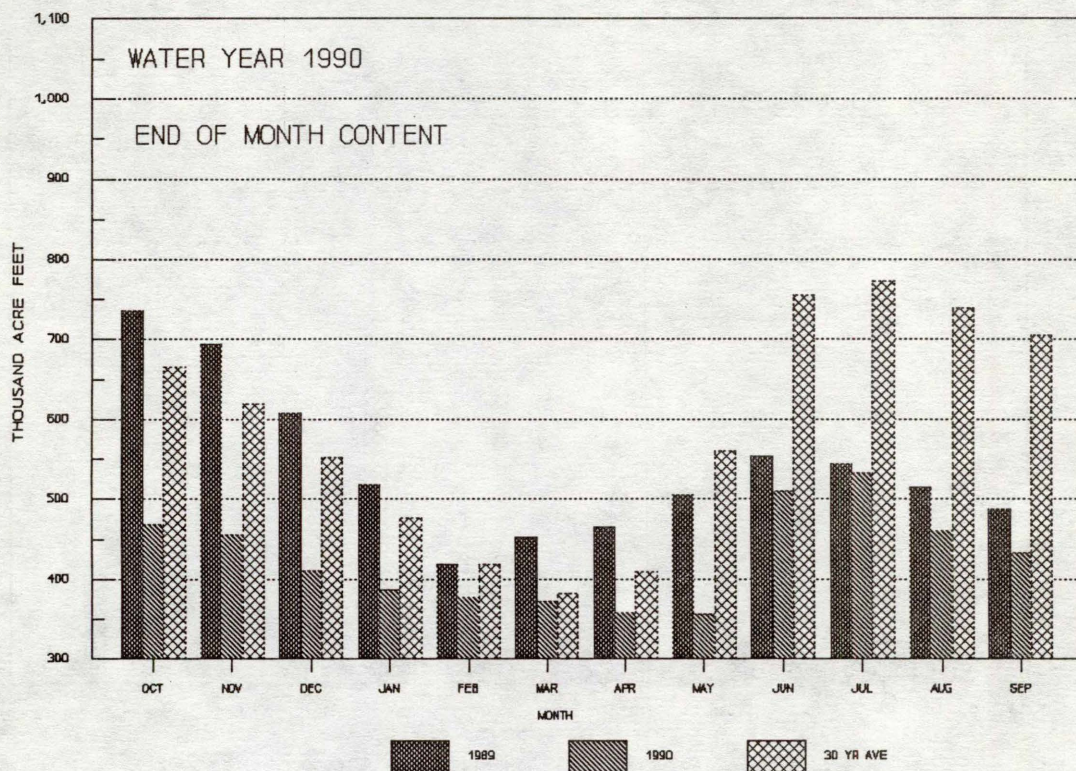
KORTES TO PATHFINDER INFLOW



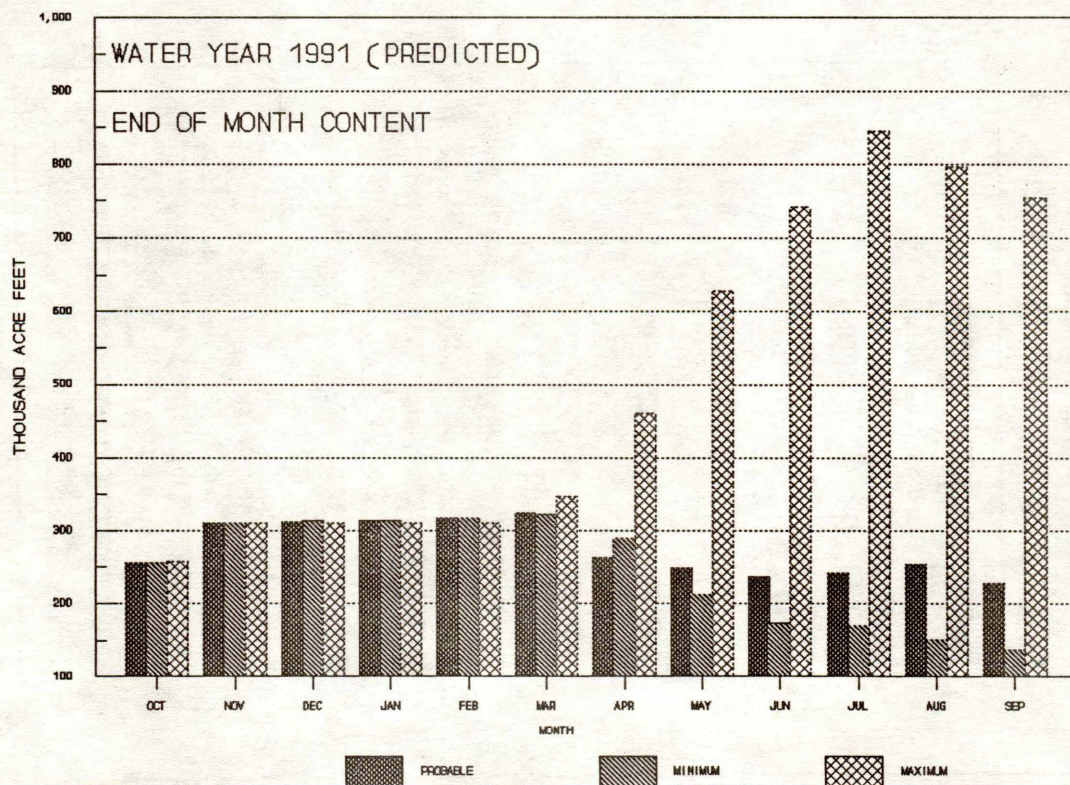
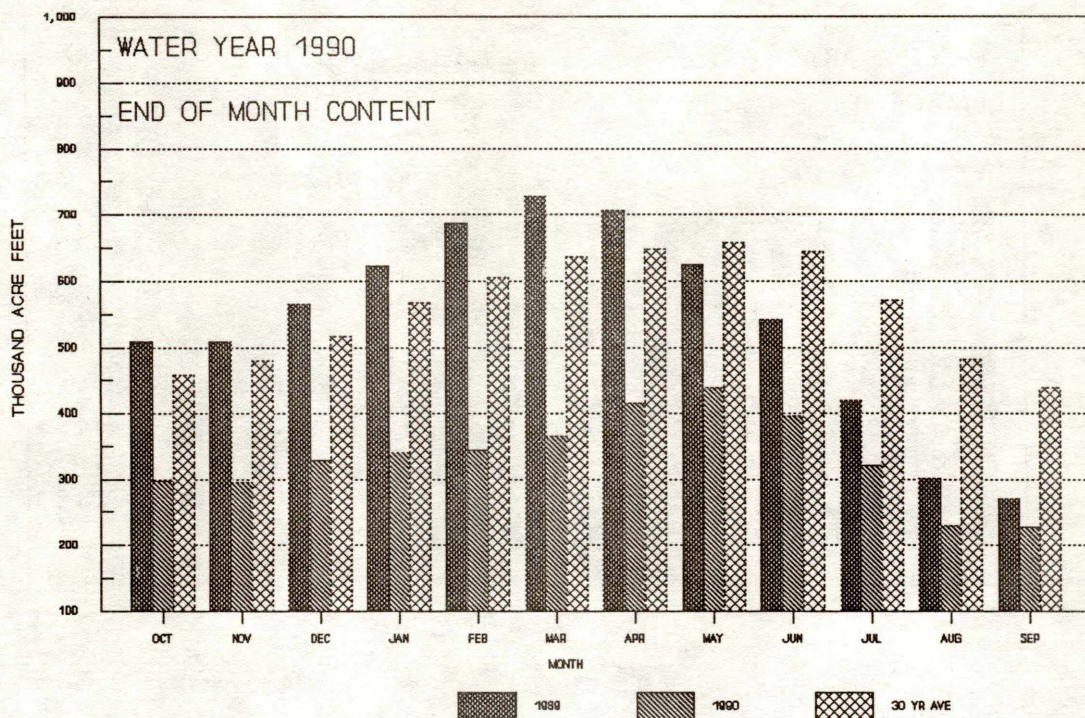
GLENDON RESERVOIR INFLOW



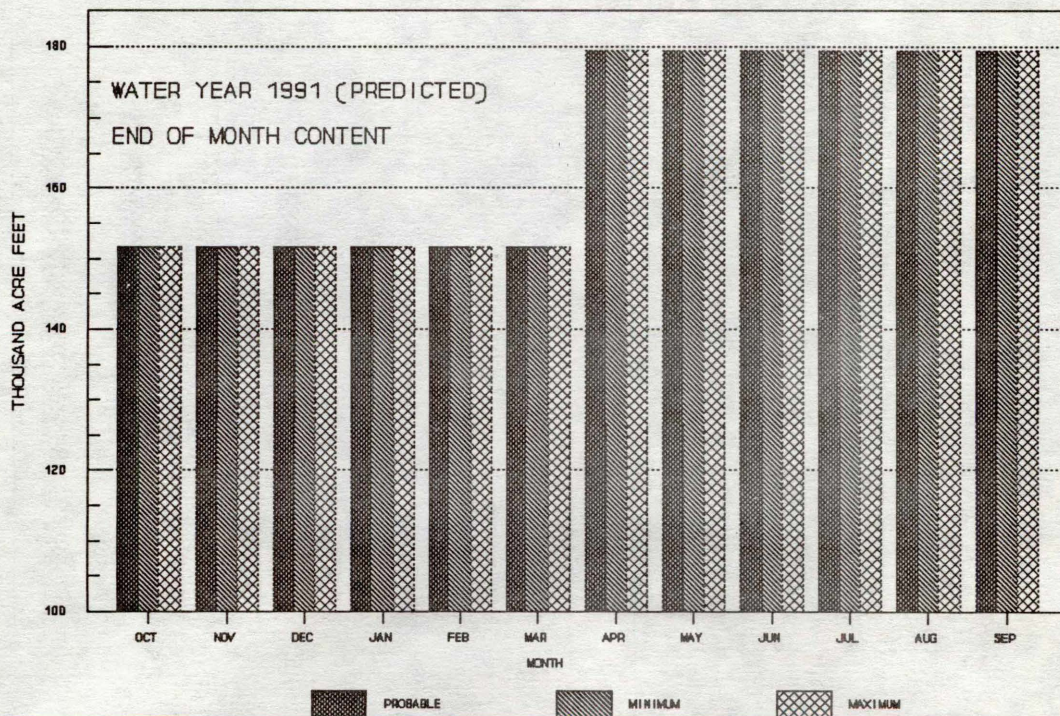
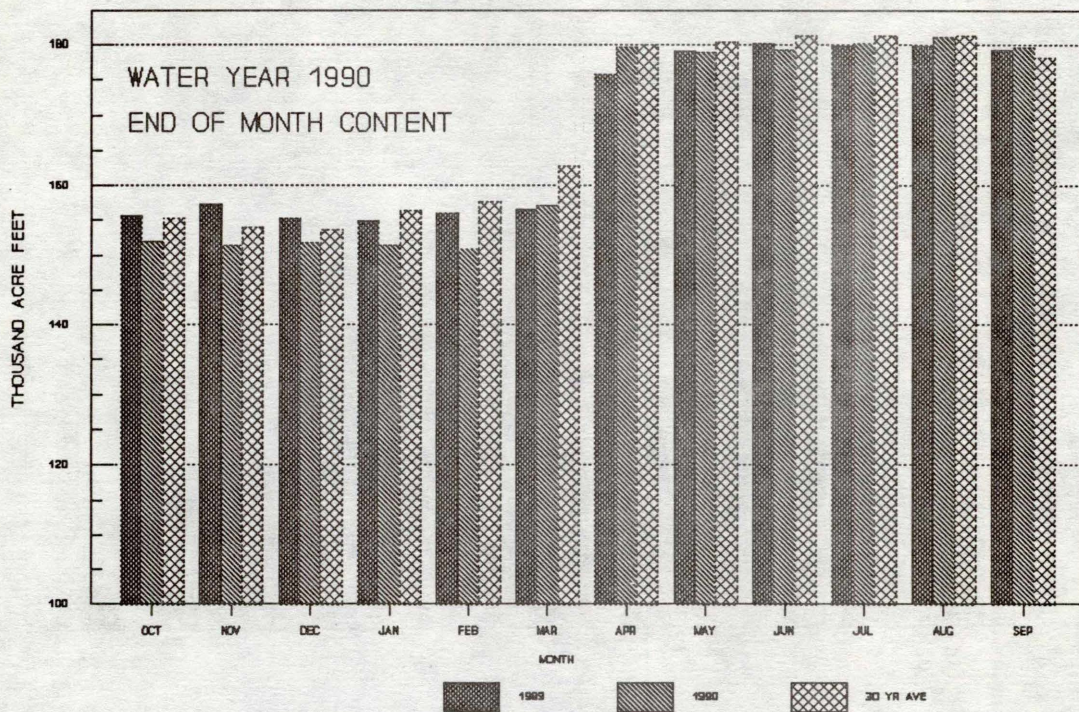
SEMINOE RESERVOIR STORAGE



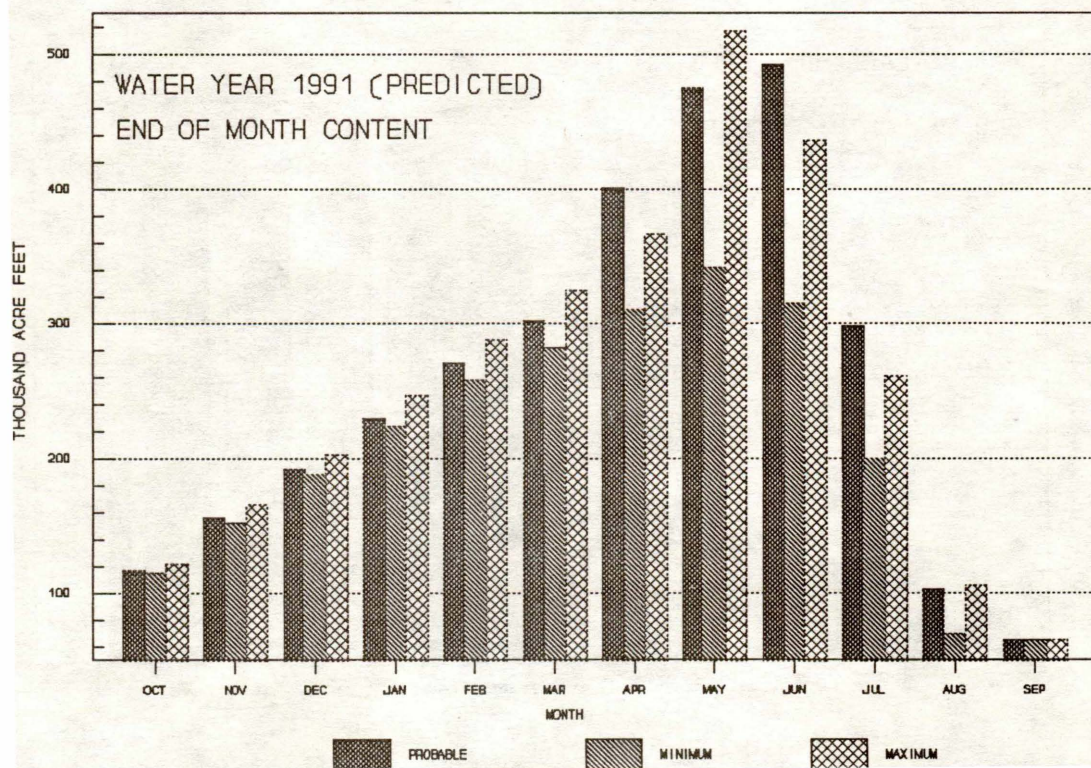
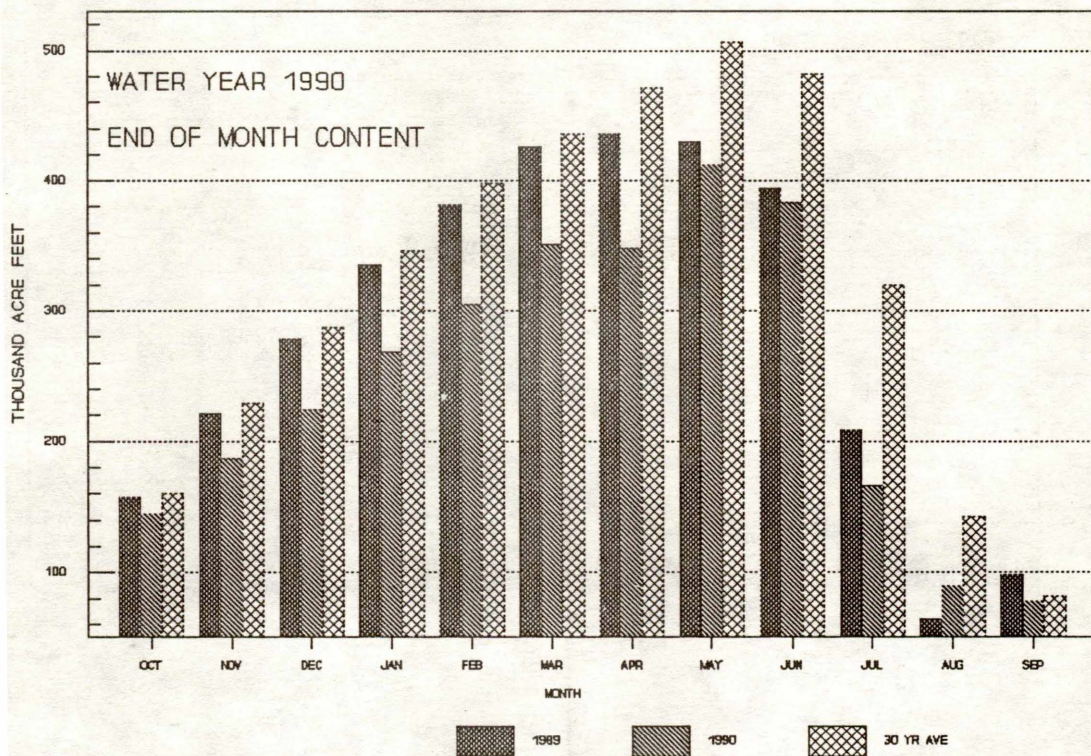
PATHFINDER RESERVOIR STORAGE



ALCOVA RESERVOIR STORAGE



GLEND0 RESERVOIR STORAGE



GUERNSEY RESERVOIR STORAGE

