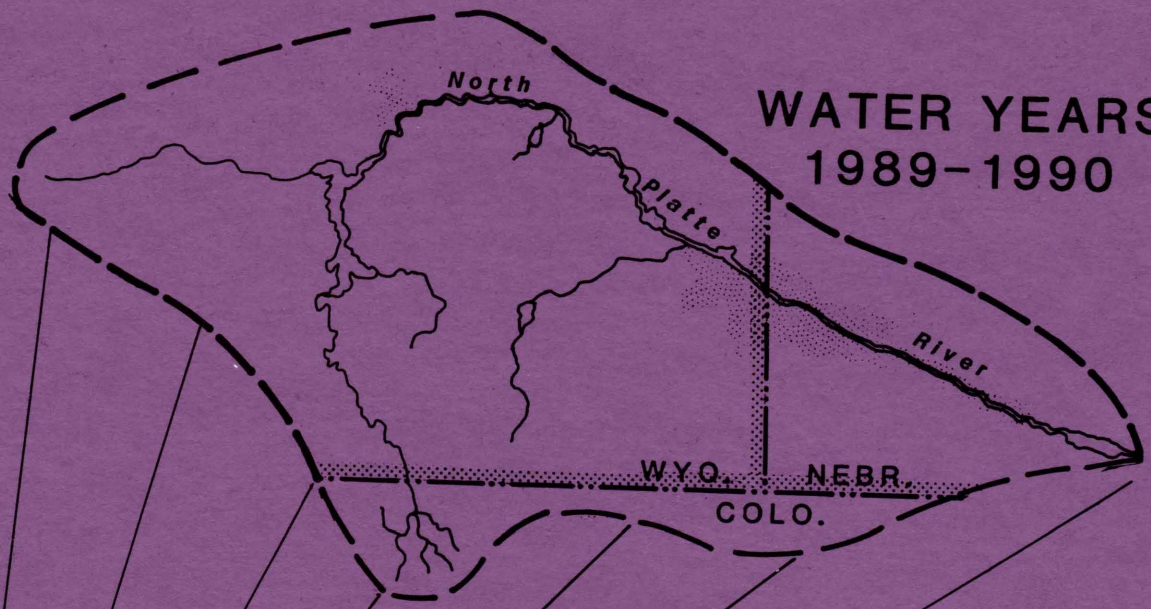
# ANNUAL OPERATING PLANS

## NORTH PLATTE PROJECT




WATER YEARS
1989-1990



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 PROJECT
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This report is to be published in combination with other 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.

The historic record which has been used in the past has been a 20-year period which is updated every 5 years. The most recent period used was for the 20-year period 1966-1985. Starting with the October 1, 1989, Water Supply and Utilization Report, a 30-year average of historic record for the period 1959-1988 was used. The longer record will provide a more representative natural average for comparisons. All references to average in this document will refer to the average of the historical record for the years 1959-1988. In each coming year this period will be advanced by 1 year to maintain a running 30-year average.

Water year 1989 runoff was significantly below average throughout the System, with 47 percent of average runoff for the Seminoe watershed and only 40 percent of average for the river gain between Alcova and Glendo. The North Platte Project has now experienced three consecutive dry years.

Peak inflows to reservoirs within the System in water year 1989 occurred in early June and were below average. The Seminoe inflow was one of the lowest of record for the month of June with only 3 years since 1905 showing a lower June inflow. The average daily inflow for June 1989 was 1,446 cubic feet per second (c.f.s.). This is 25 percent of average inflow of 5,832 c.f.s.

All Seminoe-Kortes water releases generated power with the exception of 2 days when forced spills occurred to allow powerplant maintenance. The maximum turbine release of 2209 c.f.s. occurred on December 29, 1989. Because of the limited North Platte Project water supply, an allocation of water to the various users was established. The amount of water available to each user was updated throughout the irrigation season. The Irrigation Districts cooperated by conserving water whenever possible. Kendrick Project water was loaned to entities of the North Platte Project. Approximately 35,000 acre-feet of Kendrick water was delivered during August and September to 5 irrigation entities. The borrowed water is to be repaid in water year 1990.

Water year precipitation totals for October-September were varied from 79 percent of average on the Seminoe watershed to 102 percent for the Glendo watershed. Significant rainfall occurred on September 20, 1989, with some of the precipitation stations receiving about 2 inches of rain. This one rainfall event caused the precipitation totals for the month of September to be much higher than average and resulted in relatively high total amounts of precipitation for the year.

The total winter precipitation (October-January) for the entire North Platte River system was at 49 percent of average with all of the individual watersheds showing below average precipitation. The third lowest October-January precipitation since 1950 was recorded on the Seminoe watershed and the Pathfinder watershed recorded the lowest October-January precipitation since 1961. The Alcova-Glendo watershed recorded only 1.08 inches of precipitation for the October-January period, which was the lowest on record since 1955. The first significant snowfall of the water year was on November 15, 1988, at Walden, Colorado, with 0.54 inches of precipitation being recorded, which was 78 percent of the monthly average.

The maximum snow-water accumulations for all watersheds on the System occurred during April 1989. The upper watersheds of the North Platte Area, Seminoe and Pathfinder, recorded 17.7 inches and 13.2 inches respectively of snowpack water content during April 1989. This was 91 percent of average for the Seminoe watershed and 94 percent of average for the Pathfinder watershed.

Snow courses for watersheds within the System averaged 52 percent of average snowpack water content on May 1. The June 1 snow-water content for the Seminoe watershed was only 54 percent of average.

Temperatures over the System were above average for October 1988 through mid-November, below average for the last 2 weeks of November and varied for December and January. Temperatures were above average from April through early September at various stations throughout the System. Early season warm weather caused the snowmelt runoff to begin earlier than usual. That, and the absence of late spring snowfall, were both contributing factors to the low inflows for the year. Casper, Wyoming, recorded one of the warmer summers on record with an average daily high temperature of 80 degrees fahrenheit (80°F) from May through August.

For water year 1989, the minimum recorded temperature at Casper, Wyoming, was -29°F, on February 3, 1989, which was a record low for the month of February. The minimum recorded temperature at Walden, Colorado, was -47°F on February 6, 1989, which was the third lowest of record since 1900.

Very warm summer temperatures were recorded over the entire System, with temperatures peaking from May through August. The maximum temperature at Walden, Colorado, was 94°F on July 6, 1989, which tied the record high set in July 1900. The maximum temperature at Casper, Wyoming, was 102°F on July 8, 1989, which was the third highest of record for the month of July.

North Platte Guernsey storage ownership was filled on March 13, 1989. The Inland lakes storage right was filled on April 21, 1989. The Glendo ownership account did not fill. At the beginning of the water year, it contained 141,667 acre-feet of water. The greatest amount of water in the account (148,769 acre-feet) occurred on April 30, 1989. Throughout the water year, 27,653 acre-feet of water accrued to the account. The amount of water in the North Platte Pathfinder storage water ownership account peaked at 605,420 acre-feet on June 15, 1989, which was 411,087 acre-feet below maximum allowable storage ownership. The Kendrick Project storage water ownership account contained 1,093,805 acre-feet of water on October 1, 1988. This amount is 107,873 acre-feet less than the maximum allowable amount. The amount of water in the account declined throughout the water year as depletion occurred due to evaporation and deliveries.

During the May 1989 through September 1989 period, Kendrick Project water users received 87,400 acre-feet of water. North Platte Project water users received 804,700 acre-feet of water and the Glendo Unit water users received 55,300 acre-feet of water from storage and natural flow sources.

Power generation for the North Platte river system for the water year was at 78 percent of average.

# DESCRIPTION OF THE NORTH PLATTE SYSTEM

The System is operated and managed from the Great Plains Region, 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 7.

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 stream reservoirs and four off-stream reservoirs, with six of the storage facilities having powerplants with a generating capacity totaling 193.8 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 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 other federal agencies. When reservoir levels rise into the exclusive flood control pool at Glendo, 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. When necessary, the plan is reviewed and revised during the year as new information or changing conditions occur.

Flexibility is a keynote of the plan. Computer programs are used by Reclamation to develop plans of operation and water supply forecasts.

## WATER YEAR 1989 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 and has a storage capacity of 1,017,273 acre-feet. The powerplant contains 3 electrical generating units with a total installed capacity of 45 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 1989, totaled 772,152 acre-feet, which was below average by 245,121 acre-feet. Transfer of water downstream continued during the winter to generate power and provide space for storage of spring runoff. Turbine releases were scheduled to meet power loads with flows increasing from an average of 792 c.f.s., in October to 1,816 c.f.s. in December. Winter (October-January) inflow to Seminoe remained below average at 70 percent with January inflow at 71 percent of average. Reservoir storage was below the most probable plan by the end of January, standing at 518,707 acre-feet. The January turbine releases averaged 1,729 c.f.s.

Winter (October-January) precipitation on the Seminoe watershed was recorded at 51 percent of average. Two of the watershed stations had no precipitation for the month of January, which set new records for those stations. January precipitation at the Seminoe Dam Weather Station was the lowest on record since 1937. Elk Mountain Weather Station's January precipitation was 27 percent of average, the lowest since 1948. Snow-water content within the Seminoe watershed was 80 percent of average for January.

Snow-water accumulation within the Seminoe watershed was 94 percent of average during February. Turbine releases were increased to a daily average of 1,776 c.f.s. for the month of February. February was a wet month, with precipitation in the Seminoe watershed recorded at 315 percent of average.

March turbine releases were decreased to an average 1,065 c.f.s. March precipitation was 105 percent of average in the Seminoe watershed and the March inflow rapidly increased to 148 percent of average. April 1 snow-water content remained below average at 91 percent.

Turbine releases averaged 1,097 c.f.s., during April. Conditions were extremely dry in April with precipitation of only 46 percent of average. April inflow dropped to 69 percent of average. May 1 snow-water content within the Seminoe watershed was 60 percent of average.

Precipitation within the Seminoe watershed continued to be extremely low for May at 31 percent of average. May inflows continued to drop and were only 33 percent of average. Turbine releases averaged 610 c.f.s. during May. The June 1 snow-water content was 54 percent of average.

Seminoe June precipitation was 45 percent of average and the Seminoe inflow was one of the lowest of record for the month of June with only 3 years since 1905 showing lower inflows. The average daily inflow for June was 1,446 c.f.s. Turbine releases averaged 541 c.f.s.

July turbine releases averaged 525 c.f.s. Total April-July inflow volume from the Seminoe watershed was 278,900 acre-feet, which was 35 percent of average. Precipitation increased a little in July to 81 percent of average.

Turbine releases were increased slightly during August to average 766 c.f.s. Precipitation increased a little in August to 87 percent of average. The August inflow also increased to 58 percent of average.

Precipitation continued to increase for September to 123 percent of average. September inflow also increased to 65 percent of average. Turbine releases were decreased to average 627 c.f.s. for September.

Gross generation for the water year at the Seminoe Powerplant totaled 109,900,000 kilo-watt hours (KWH), this was 76 percent of average.

The end-of-water-year Seminoe reservoir storage of 488,161 acre-feet was 219,939 acre-feet below average and 285,133 acre-feet lower than the reservoir storage at the end of water year 1988.

## 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 Seminoe 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 672 acre-feet was bypassed through the spillway during one day in January and one day in February in order that a contractor could replace 15 Kilovolt electrical cables without interrupting power generation at Seminoe.

Gross generation for the water year totaled 122,400,000 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 a total installed capacity of 48 MW.

Upon entering water year 1989, storage in Pathfinder Reservoir was 494,239 acre-feet, which was 51,739 acre-feet above average.

Kortes to Pathfinder, river gains for October-January were much below average with a loss of 8,494 acre-feet being recorded. Winter transfer of water to Glendo Reservoir for power generation averaged 863 c.f.s. from October through December.

The Sweetwater watershed precipitation was 115 percent of average for the month of July. River gains between Kortes and Pathfinder increased to 84 percent of average for July. Fremont Canyon Powerplant turbine releases for July increased to 2,013 c.f.s. and because of irrigation demands the bypass increased to 530 c.f.s.

Kortes to Pathfinder river gains increased to above average for the month of August at 103 percent. August precipitation was above average at 102 percent. August releases averaged 1,953 c.f.s. through the turbines and 825 c.f.s. through the bypass.

September precipitation was 165 percent of average. Kortes to Pathfinder river gains dropped to 77 percent of average for September. September turbine releases averaged 961 c.f.s. and the bypass release was decreased to 178 c.f.s.

A total of 302,175 acre-feet bypassed the turbines during the water year. Generation totaled 194,100,000 KWH which was 75 percent of average.

Water year ended with 271,635 acre-feet of water in storage in Pathfinder Reservoir, which is 63 percent of average and the lowest end of water year storage since 1977.

February 1 snow-water accumulation for the Sweetwater watershed was 53 percent of average. Precipitation within the watershed was 51 percent of average during the October-January period. January precipitation for the Sweetwater watershed was 27 percent of average with two stations setting record lows. The Lander Weather Station recorded .04 inches of precipitation, which was the lowest of record since 1952. The Pathfinder Dam Weather Station recorded .02 inches of precipitation, which was the 3rd lowest of record, since 1901. A bypass release at Fremont Canyon Powerplant was initiated on January 17, 1989, because Fremont Canyon Unit No. 2 was shutdown to upgrade the unit and Fremont Canyon Unit No. 1 was inoperable. Bypass releases averaged 330 c.f.s. during January.

Precipitation in the Sweetwater watershed during February was 260 percent of average. River gains were above average at 200 percent for February. March 1 snow-water content was 75 percent of average. Bypass release continued and averaged 667 c.f.s. for the month of February.

April 1 snow-water content for the Sweetwater watershed was 94 percent of average. March precipitation was above average at 106 percent. River gains below Kortes were 124 percent of average for March. Bypass releases averaged 177 c.f.s. for the month of March and turbine releases averaged 344 c.f.s., which was 59 percent of average.

May 1 snow-water content dropped sharply to 52 percent of average due to the early warm weather. April precipitation was 26 percent of average for the Sweetwater watershed which was the lowest reading in 88 years of recorded history. River gains below Kortes decreased to 38 percent of average for April.

May precipitation increased sharply to 147 percent of average. River gains below Kortes were 46 percent of average. Bypass releases peaked at 1,366 c.f.s. during May, while turbine releases averaged of 687 c.f.s. but the large bypass was due in part to turbine repairs. Pathfinder Reservoir storage reached a maximum content for the water year of 734,680 acre-feet at elevation 5835.84 feet on April 12, 1989.

June precipitation continued high at 135 percent of average. Kortes to Pathfinder river gains continued to be lower than average for June at only 46 percent. June turbine releases averaged 1,872 c.f.s. and the bypass averaged 170 c.f.s.

## 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. 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 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 September 20, 1988. The reservoir water surface elevation was lowered to 5487.84 feet by October 31, which is within the normal winter operating range of 5488.0 feet $\pm$ 1 foot. The reservoir was operated in this range until early April when ice conditions permitted Alcova Reservoir to be refilled.

A water surface elevation of 5498.00 feet was reached on May 2 and the reservoir was maintained within 1 foot of that level throughout the summer.

Gray Reef releases averaged 884 c.f.s. during October. The November Gray Reef releases were reduced to 825 c.f.s. A planned winter release of 830 c.f.s. was maintained until February 1, when the release was reduced to 654 c.f.s..

Gray Reef releases were again decreased in March to average 504 c.f.s. for the month. Releases were increased to 1,172 c.f.s. in April and increased again to 1,706 c.f.s in May to move water to Glendo Reservoir for later irrigation deliveries. As irrigation demands continued below Guernsey Reservoir and Glendo Reservoir storage declined, Gray Reef releases were maintained at 1,706 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 4,483 c.f.s. occurred on August 26. By the end of the water year, the Gray Reef releases were down to 986 c.f.s.

Kendrick Project irrigation deliveries from Alcova Reservoir to the Casper Canal, were 125 percent of average during the May-September period. The Kendrick Project ownership account contained 1,093,805 acre-feet on October 1, 1988, which was the greatest amount for the water year. This was 107,873 acre-feet below maximum allowable ownership storage. Kendrick Project ownership contained 907,385 acre-feet of water at the end of the water year, which was 294,293 acre-feet less than the maximum allowable ownership storage.

Alcova Powerplant generated 115,400,000 kilowatt hours of energy during water year 1989. This was below average by 13,500,000 kilowatt hours.

## Glendo Reservoir

Glendo Dam and Reservoir is the main regulation and 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 24 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.

Reservoir storage of 91,854 acre-feet at the beginning of the water year was 71,746 acre-feet below average. January precipitation in the Glendo watershed was low at 11 percent of average. Winter inflows (October-January) were above average at 115 percent. By the end of February, reservoir storage had increased to 381,455 acre-feet. Precipitation in February was high at 207 percent of average for the month.

Releases were increased on March 30 in order to refill Guernsey Reservoir in preparation for summer operation. Inflow was below average at 63 percent however Glendo Reservoir storage continued to increase during March, because of the water being moved down from the upper system for later irrigation delivery. Precipitation in March was 45 percent of average.

The river gains between Alcova and Glendo continued below average during April at 74 percent. Precipitation was 74 percent of average for the month of April.

Releases were adjusted in April and May to meet project water deliveries and to minimize the amount of water stored in Glendo Reservoir. The reservoir reached maximum storage for the year of 463,669 acre-feet (elevation 4630.41 feet) on June 14. Glendo Reservoir remained at this storage level for 2 consecutive days, which was 4.56 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 rapidly decreased in May to less than 1 percent of average.

Precipitation in the Glendo watershed for June was near average at 99 percent. Conditions were dry in the Glendo watershed for July with only 61 percent of average precipitation. River gains were at less than 1 percent of average for June and recorded a loss of 7,640 acre-feet for July.

Precipitation was above average in August at 175 percent. The Alcova to Glendo river gains continued to record a loss, which equaled 9,240 acre-feet for August. River gains sharply increased to 14,538 acre-feet for September, and this was above average at 138 percent. Precipitation increased and was 284 percent of average for September. On September 20, 1989 most of the weather stations received about 2 inches of rain which accounts for the high September readings. Glendo Reservoir releases during July through September were adjusted to meet project water delivery requirements below Guernsey Reservoir.

Reservoir storage reached a low of 63,023 acre-feet (water surface elevation 4569.96 feet) on September 6, 1989. This level encroached upon the minimum level required for power generation. The quantity of water evaporated was in excess of the pool reserved for evaporation which resulted in the evaporation of 6530 acre-feet of water normally reserved for the power head pool. At the end of the water year, Glendo Reservoir contained 98,558 acre-feet of water (water surface elevation 4579.94 feet).

A total of 744,522 acre-feet of water was released through Glendo Powerplant resulting in gross generation of 65,900,000 kwh for the year. This was 20,500,000 kwh below average. A total of 176,670 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 1,000 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 12,199 acre-feet at the beginning of water year 1989 was 599 acre-feet above average. Early October, releases from Guernsey Reservoir averaged 788 c.f.s.

Winter inflows (October-January Glendo-Guernsey river gains) were below average at 85 percent. There was no precipitation in the Guernsey watershed for January. Glendo to Guernsey river gains were average in February and precipitation for February was 241 percent of average.

Glendo to Guernsey March river gains were 79 percent of average. Precipitation for March was 82 percent of average.

Guernsey Reservoir releases were started on April 15 to transfer water to Inland Lakes. Glendo to Guernsey river gains were high again in April at 165 percent of average, and precipitation for the month was 117 percent of average.

The Glendo to Guernsey river gains rapidly decreased to only 22 percent of average for May. Precipitation for May was 116 percent of average. As project water deliveries and inflows decreased releases were cut to 111 c.f.s. by May 31, 1989.

June was a dry month as precipitation was only 58 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 1,499 acre-feet was recorded. Releases from Guernsey Reservoir reached 5,023 c.f.s. by June 30 which drafted the reservoir to 32,820 acre-feet.

The annual "silt run" from the reservoir was initiated on July 8 and continued for 21 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 1135 acre-feet occurred on July 23. Following the "silt run," the reservoir was refilled to 20,677 acre-feet by July 31.

Conditions remained dry between Glendo and Guernsey Reservoirs with a loss of 2,277 acre-feet recorded for August. Precipitation for the Guernsey watershed was at 145 percent of average during August.

The Glendo-Guernsey gain rapidly increased in September to 5,127 acre-feet, and was probably due to return flows from irrigation. Precipitation was 167 percent of average for September.

Guernsey reservoir was virtually emptied on September 27, 1989 to accommodate repair of the North spillway gate. The reservoir content was 568 acre-feet at the end of the irrigation season (September 30). This left the reservoir in a position to begin storing natural inflow.

Gross generation for the water year totaled 16,100,000 kwh which is 66 percent of average.

## 1989 Ownerships

At the end of water year 1989, the North Platte Project ownership contained 21,485 acre-feet of water which is 5 percent of average; the Kendrick ownership contained 907,485 acre-feet of water which is 105 percent of average and the Glendo ownership contained 112,596 acre-feet of water which is 89 percent of average.

During the water year accruals to the Glendo ownership account refilled the evaporation pool and accrued an additional 7,563 acre-feet to the irrigation pool. This was not enough to fill all individual contractors accounts, therefore, one contractor did not receive a full supply.

## Flood Benefits

During the 1989 runoff, no flood events occurred and therefore the Corps of Engineers, Omaha District estimate of flood damages prevented in water year 1989 was zero (table 1).

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

## ANNUAL OPERATING PLAN FOR WATER YEAR 1990

Three operation studies were developed for the system to establish an AOP for water year 1990. 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 1990 has a one-in-ten chance of being less than the reasonable minimum. Statistically, inflows in 1990 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 1990 are summarized numerically in tables 3A, 3B, and 3C and graphically in exhibits 1 through 5.

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 major reservoirs (exclusive of Kortes and Gray Reef) on the North Platte River in Wyoming, totaled 1,038,300 acre-feet at the beginning of the water year. This amount was 74 percent of average.

## MOST PROBABLE CONDITION - WATER YEAR 1990

### Seminoe Reservoir

October through January -- Seminoe Reservoir storage of 488,100 acre-feet, at the beginning of the water year, was 220,000 acre-feet less than the 30-year average. During the October-January period, planned turbine releases from Seminoe Reservoir of 186,200 acre-feet will lower reservoir storage to about 370,300 acre-feet by January 31. These releases are based on a statistically based Seminoe inflow of 73,000 acre-feet and are made to accommodate winter power demands as much as possible.

February through September -- The February releases will average 660 c.f.s. from Seminoe Reservoir. By the end of February, Seminoe Reservoir storage is expected to be about 353,400 acre-feet and will continue to decline through March with average March releases of about 800 c.f.s.. The end of March Seminoe Reservoir storage is expected to be the low for the year at 351,900 acre-feet. Turbine releases will average approximately 840 c.f.s. and 975 c.f.s. in April and May respectively. The total release from the reservoir during the April to September period will be scheduled to contain April-July inflow and meet downstream requirements and system power demands. With most probable inflow, storage will reach 898,600 acre-feet by the end of June. Projected carryover storage of about 730,400 acre-feet at the end of the water year would be 103 percent of average.

### Pathfinder Reservoir

October through January -- At the beginning of the water year, Pathfinder Reservoir storage was 271,600 acre-feet or 63 percent of the 1959-1988 average. Fremont Canyon Powerplant releases will be reduced during October to lower Alcova Reservoir water surface to a winter operating level of 5486$\pm$ 0.5 ft. The winter operating level is set 2 feet lower than previous winters to allow removal and maintenance of the Casper Canal headgate during the winter months. 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 368,200 acre-feet by the end of January.

February through September -- Pathfinder Reservoir storage will reach a maximum of about 384,800 acre-feet by the end of March and be drawn down to a storage content of about 210,400 acre-feet by the end of the water year. River gains between Kortes and Pathfinder Reservoirs, including the Sweetwater River, is estimated at about 93,100 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 151,600 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± 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 ± 1 foot) in Alcova Reservoir. During June through August, water releases will average about 1,900 c.f.s. Fremont Canyon turbine releases will be at or 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 required during the irrigation season.

Alcova Reservoir

October through January -- During October, Alcova Reservoir will be drawn down to a winter storage content of 151,600 acre-feet. From October through January, releases will be maintained at approximately 500 c.f.s. for production of power 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 ± 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 804,900 acre-feet at the end of September which is 396,800 acre-feet from filling. No water will accrue to Kendrick Project storage in water year 1990 under most probable inflow conditions, however, water borrowed from the Kendrick Project in water year 1989 will be paid back in water year 1990. Releases from Alcova Reservoir will be re-regulated in Gray Reef Reservoir.

Gray Reef Reservoir

October through January -- The water releases from Gray Reef will be maintained at approximately 500 c.f.s during this period. This will result in 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 that can 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 increasing to approximately 815 c.f.s. in March and again increasing to approximately 1,155 c.f.s. in the month of April. The May through August releases will average approximately 1,900 c.f.s. and will be decreased to approximately 1,600 c.f.s. in September as project irrigation water is moved downstream.

Glendo and Guernsey Reservoirs

October through January -- Carryover storage of 98,558 acre-feet in Glendo Reservoir on September 30 was 120 percent of average. With North Platte River gains below Alcova Dam estimated to be near normal, Glendo Reservoir storage will increase to about 251,400 acre-feet by the end of January. Guernsey Reservoir was emptied during the last week of water year 1989 to allow for maintenance on the north spillway gate and contained 600 acre-feet of water at the start of water year 1990. Natural inflow will be stored during the winter, which will increase storage to 6,500 acre-feet by January 31.

February through September -- Glendo Reservoir storage will increase to about 292,300 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 1,050,000 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 497,600 acre-feet at the end of June. At this level, it would take approximately 19,885 acre-feet of water to fill the reservoir to the flood pool elevation of 4635.0 ft.

Guernsey Reservoir content will be maintained near 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 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

The North Platte Project storage ownership is expected to be near 264,600 acre-feet (58 percent of average); the Kendrick Project storage ownership is expected to be near 804,900 acre-feet (93 percent of average) and the Glendo storage ownership is expected to be near 124,400 acre-feet (99 percent of average) at the close of water year 1990 under most probable runoff conditions.

## REASONABLE MINIMUM INFLOW CONDITION - WATER YEAR 1990

### Seminoe 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 inflows would be expected to be 64,000 acre-feet for the period which is 9,000 acre-feet less than in the most probable condition. The January 31 reservoir content would be expected to be approximately 361,400 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 Seminoe Reservoir for the months of February and March will be set at an average of 500 c.f.s. April through August Seminoe water releases will be approximately 825 c.f.s. except for the month of July when it will be necessary to increase the flow to 1,790 c.f.s. to increase power production and meet irrigation requirements. September water releases will be reduced to approximately 755 c.f.s. ending the water year with a reservoir content of 396,700 acre-feet (56 percent of average). The maximum end of month content under these conditions will be approximately 551,900 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 7,900 acre-feet for the period which is 1,600 acre feet less than in the most probable condition.

February through September -- Pathfinder Reservoir storage will reach a maximum of about 372,500 acre-feet by the end of February. Starting in March, the reservoir will be drawn down to a storage content of about 227,100 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 151,600 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 ± 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 2,000 c.f.s. during May to 470 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 required during the irrigation season. If reasonable minimum runoff develops, the reservoir content at the end of the water year will be about 207,800 acre-feet or 47 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 ± 1 foot to provide the necessary head for making irrigation deliveries to Casper Canal and for recreational purposes. About 74,000 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 804,900 acre-feet at the end of September with reasonable minimum inflow conditions, which is 396,778 acre-feet from filling. No gains to Kendrick Project storage is anticipated in water year 1990 under reasonable minimum runoff conditions except that water which was borrowed by the North Platte Project in water year 1989 would be paid back in water year 1990.

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 increasing to approximately 815 c.f.s. in March and again increasing to approximately 935 c.f.s. in April. The highest flows from Gray Reef Dam would occur during May at approximately 1,905 c.f.s. The Gray Reef releases would then decrease for the remainder of the water year with flows of approximately 1,715 c.f.s., 1,410 c.f.s., 867 c.f.s., and 330 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 was emptied during the last week of water year 1989 to allow for maintenance on the north spillway gate and contained 568 acre-feet of water at the start of water year 1990. Under the reasonable minimum inflow conditions the natural inflow will be stored during the winter, which will increase the Guernsey reservoir content to 6,400 acre-feet by January 31.

February through September -- Glendo Reservoir storage will increase to about 277,900 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 for the water year will be 369,900 acre-feet at the end of May. At this level, it would take approximately 147,585 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 the Glendo Unit but not to the North Platte Project. The Glendo Unit storage ownership will accrue about 9,600 acre-feet for the year which occurs in March. North Platte Project irrigation deliveries will be curtailed throughout the irrigation season delivering 665,500 acre-feet which is 484,500 acre-feet below the irrigation demand. North Platte Project storage will be totally depleted by the end of August leaving only the natural flow to be delivered in the month of September. The total combined North Platte System reservoir storage would be approximately 323,700 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 71,300 acre-feet and to lower Guernsey Reservoir to 15,000 acre-feet or less.

## Reasonable Minimum Condition Ownerships - WATER YEAR 1990

The North Platte Project storage ownership is expected to be near zero at the close of the water year compared to 264,600 acre-feet in the most probable runoff conditions. The Kendrick Project storage ownership is expected to be near 804,900 acre-feet (93 percent of average) and the Glendo storage ownership is expected to be near 65,800 acre-feet (51 percent of average) at the close of water year 1990 under the reasonable minimum runoff conditions.

## REASONABLE MAXIMUM INFLOW CONDITION - WATER YEAR 1990

### Seminoe 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. 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 103,300 acre-feet which is 30,300 acre-feet more than the most probable runoff condition. The January 31 reservoir content would approximate 400,500 acre-feet under these conditions.

February through September -- If the winter inflows and the February 1 snowmelt runoff forecast indicate that reasonable maximum conditions exist, then the water releases from Seminoe Reservoir for the month of February will be set at an average of 1,350 c.f.s. and increased to an average of 1,740 c.f.s. for March. Releases during the April through July period will be set at approximately 2,617 c.f.s. while inflows for the same period will be 1,375,400 acre-feet which is 535,900 acre-feet more than the most probable runoff condition. The high inflows may make it necessary to bypass the powerplant with some water during the months of June and July, depending on whether available space is desired in Seminoe or Pathfinder Reservoirs. 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 978,700 acre-feet which will be 138 percent of the 1959-1988 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 10,500 acre-feet for the period which is 1,000 acre feet more than in the most probable condition.

February through September -- Pathfinder Reservoir would fill to a quantity of 982,000 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 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 2,200 c.f.s. in July. The Pathfinder Reservoir end of year storage content is projected to be about 896,600 acre-feet, which will be 207 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 $\pm$ 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 was assumed to be the same as for most probable 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 -- Higher releases will be necessary at Gray Reef Reservoir under reasonable maximum water supply conditions as compared to most probable conditions. Releases are expected to reach at least 575 c.f.s. during June and average 1,924 c.f.s. in July. A reduction in releases will occur in August and September.

Glendo Reservoir

October through January -- Under the reasonable maximum inflow conditions, the Glendo Reservoir content is expected to increase from the starting content of 98,600 acre-feet to an end of January content of 259,800 acre-feet.

February through September -- With reasonable maximum runoff, Glendo Reservoir content will reach a maximum of 497,800 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, and 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 316,300 acre-feet by the end of July and will be near 65,000 acre-feet by the end of the year. This end of year Glendo storage would be 79 percent of average and the total system storage (excluding Kortes and Gray Reef reservoirs) of 2,117,400 acre-feet would be 150 percent of average for the major reservoirs on the North Platte River.

Guernsey Reservoir

October through January -- Guernsey Reservoir was emptied during the last week of water year 1989 to allow for maintenance on the north spillway gate and contained 600 acre-feet of water at the start of water year 1990. Under the reasonable maximum inflow conditions, the natural inflow will be stored during the winter, which will increase the reservoir content to 8,200 acre-feet by January 31.

February through September -- 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 scheduled to complete Glendo drawdown to about 65,000 acre-feet and to lower Guernsey Reservoir to approximately 15,000 acre-feet.

## Reasonable Maximum Condition Ownerships

All storage water ownerships in the North Platte River system will fill during the water year. About 192,200 acre-feet of water, which is excess to the North Platte System ownership deliveries, will be spilled if the reasonable maximum runoff develops in the pattern that was assumed. Irrigation deliveries of 1,050,000 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

TABLE 1

NORTH PLATTE SYSTEM

FLOOD DAMAGE PREVENTED IN 1989[1]

| DAM | Accumulated total prior to 1989 | 1989 | Accumulated total current |
|---|---|---|---|
| Seminoe | $ 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 1989

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

1989 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 | 498.1 | 16.5 | 20.2 | 26.6 | 18.4 | 21.4 | 78.4 | 82.2 | 81.4 | 86.0 | 29.3 | 22.9 | 14.8 |
| TURBINE RELEASE | 742.9 | 48.7 | 60.5 | 111.6 | 106.3 | 98.6 | 65.5 | 65.3 | 37.5 | 32.2 | 32.3 | 47.1 | 37.3 |
| 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 SEMINOE | 40.3 | 4.6 | 2.2 | 1.0 | 1.4 | 0.5 | 1.9 | 3.4 | 4.1 | 5.1 | 7.0 | 5.5 | 3.6 |
| SEMINOE END OF MONTH CONTENT | 773.3 | 736.5 | 694.1 | 608.1 | 518.7 | 440.9 | 451.8 | 465.3 | 505.1 | 553.8 | 543.9 | 514.2 | 488.2 |
| KWH / AF | | 151.0 | 149.9 | 158.1 | 157.5 | 153.6 | 146.8 | 145.8 | 132.4 | 123.9 | 130.9 | 142.4 | 131.1 |
| GENERATION GWH | 109.9 | 7.4 | 9.1 | 17.6 | 16.7 | 15.2 | 9.6 | 9.5 | 5.0 | 4.0 | 4.2 | 6.7 | 4.9 |
| **KORTES RESERVOIR** | | | | | | | | | | | | | |
| INFLOW | 742.8 | 48.7 | 60.5 | 111.6 | 106.3 | 98.6 | 65.5 | 65.3 | 37.5 | 32.2 | 32.3 | 47.0 | 37.3 |
| TURBINE RELEASE | 742.5 | 48.6 | 60.4 | 111.8 | 106.2 | 98.6 | 65.5 | 65.3 | 37.4 | 32.2 | 32.2 | 47.1 | 37.2 |
| 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 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| END OF MONTH CONTENT | 4.6 | 4.7 | 4.7 | 4.5 | 4.6 | 4.7 | 4.7 | 4.6 | 4.7 | 4.7 | 4.7 | 4.6 | 4.7 |
| KWH / AF | | 166.8 | 161.1 | 164.2 | 170.0 | 168.3 | 172.8 | 172.1 | 161.7 | 149.6 | 151.3 | 160.4 | 157.3 |
| GENERATION GWH | 122.4 | 8.1 | 9.7 | 18.4 | 18.0 | 16.6 | 11.3 | 11.2 | 6.0 | 4.8 | 4.9 | 7.6 | 5.8 |
| **PATHFINDER RESERVOIR** | | | | | | | | | | | | | |
| GAIN KORTES TO PATHFINDER | 73.4 | 0.9 | -3.6 | -6.7 | 2.0 | 4.6 | 10.9 | 8.0 | 16.5 | 14.1 | 12.5 | 10.1 | 4.1 |
| TOTAL INFLOW | 815.9 | 49.5 | 56.8 | 105.1 | 108.2 | 103.2 | 76.4 | 73.3 | 53.9 | 46.3 | 44.7 | 57.2 | 41.3 |
| FREMONT CANYON TURBINE WATER | 684.0 | 31.5 | 54.4 | 48.7 | 28.3 | 0.4 | 21.1 | 44.1 | 42.9 | 111.4 | 123.8 | 120.1 | 57.3 |
| BYPASS OR SPILL | 301.2 | 0.0 | 0.0 | 0.0 | 20.3 | 37.0 | 10.9 | 45.8 | 83.4 | 10.1 | 32.6 | 50.7 | 10.4 |
| EVAPORATION AND SEEPAGE | 53.1 | 3.6 | 1.8 | 1.0 | 1.8 | 0.8 | 3.0 | 5.5 | 8.8 | 8.6 | 9.2 | 5.9 | 3.1 |
| END OF MONTH CONTENT | 494.2 | 508.6 | 509.1 | 564.6 | 622.3 | 687.3 | 728.6 | 706.4 | 625.2 | 541.4 | 420.6 | 301.1 | 271.6 |
| KWH / AF | | 294.7 | 302.0 | 328.6 | 298.8 | 300.0 | 292.8 | 329.4 | 296.4 | 277.7 | 272.8 | 258.4 | 257.9 |
| GENERATION FREMONT CANYON | 194.1 | 9.3 | 16.4 | 16.0 | 8.5 | 0.1 | 6.2 | 14.5 | 12.7 | 30.9 | 33.8 | 31.0 | 14.7 |

UNITED STATES BUREAU OF RECLAMATION
GREAT PLAINS REGION
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MILLS, WYOMING

1989 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 | 985.2 | 31.5 | 54.4 | 48.7 | 48.6 | 37.4 | 32.0 | 89.9 | 126.3 | 121.5 | 156.4 | 170.8 | 67.7 |
| RELEASE TO CASPER CANAL | 80.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 17.1 | 17.0 | 22.8 | 15.7 | 7.8 |
| TURBINE RELEASE | 888.1 | 54.4 | 52.5 | 50.6 | 48.8 | 36.2 | 31.2 | 69.8 | 104.5 | 102.1 | 132.0 | 147.1 | 58.9 |
| BYPASS OR SPILL | 7.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.7 | 0.3 |
| EVAPORATION AND SEEPAGE | 9.9 | 0.7 | 0.3 | 0.2 | 0.3 | 0.1 | 0.4 | 0.8 | 1.3 | 1.5 | 1.8 | 1.5 | 1.0 |
| END OF MONTH CONTENT | 179.2 | 155.7 | 157.3 | 155.3 | 154.9 | 156.0 | 156.5 | 175.9 | 179.2 | 180.3 | 179.9 | 179.7 | 179.4 |
| KWH / AF | | 134.9 | 131.3 | 138.1 | 130.3 | 127.2 | 121.8 | 135.1 | 128.4 | 129.9 | 130.9 | 123.8 | 132.2 |
| GENERATION GWH | 115.4 | 7.3 | 6.9 | 7.0 | 6.4 | 4.6 | 3.8 | 9.4 | 13.4 | 13.3 | 17.3 | 18.2 | 7.8 |
| **GLENDO RESERVOIR** | | | | | | | | | | | | | |
| ALCOVA TO GLENDO GAIN | 65.5 | 14.8 | 12.7 | 7.3 | 11.6 | 10.3 | 16.3 | -3.6 | -0.3 | -3.2 | -10.7 | -22.7 | 33.0 |
| TOTAL INFLOW | 960.6 | 69.2 | 65.2 | 57.9 | 60.4 | 46.5 | 47.5 | 66.2 | 104.2 | 98.9 | 121.3 | 131.1 | 92.2 |
| TURBINE RELEASE | 744.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 52.8 | 104.4 | 120.7 | 209.5 | 207.4 | 48.6 |
| BYPASS OR SPILL | 176.7 | 0.5 | 0.5 | 0.5 | 0.4 | 0.5 | 0.6 | 0.0 | 1.5 | 7.7 | 91.4 | 65.4 | 7.7 |
| EVAPORATION AND SEEPAGE | 30.6 | 1.2 | 1.0 | 0.4 | 2.1 | 0.5 | 1.3 | 3.3 | 4.8 | 5.7 | 6.3 | 2.6 | 1.4 |
| END OF MONTH CONTENT | 89.7 | 157.2 | 220.9 | 278.0 | 335.9 | 381.5 | 425.9 | 436.0 | 429.6 | 394.3 | 208.3 | 64.1 | 98.6 |
| KWH / AF | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 70.1 | 107.8 | 104.2 | 103.9 | 96.7 | 66.6 | 53.7 |
| GENERATION GWH | 65.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 5.7 | 10.9 | 12.5 | 20.3 | 13.8 | 2.6 |
| **GUERNSEY RESERVOIR** | | | | | | | | | | | | | |
| GLENDO TO GUERNSEY GAIN | 20.6 | 2.1 | 1.7 | 1.6 | 1.7 | 1.1 | 1.0 | 6.6 | 2.8 | -1.4 | 0.6 | -2.3 | 5.1 |
| TOTAL INFLOW | 941.9 | 2.6 | 2.2 | 2.1 | 2.1 | 1.6 | 2.8 | 59.4 | 108.7 | 127.0 | 301.5 | 270.5 | 61.4 |
| NORTH PLATTE REQUIREMENT | 804.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 111.6 | 106.5 | 257.2 | 265.8 | 63.6 |
| NORTH PLATTE DELIVERY | 804.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 111.6 | 106.5 | 257.2 | 265.8 | 63.6 |
| GLENDO IRRIGATION DELIVERY | 55.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7.8 | 10.7 | 11.5 | 15.9 | 9.4 |
| TOTAL OUTFLOW | 949.4 | 12.9 | 0.3 | 0.1 | 0.2 | 0.2 | 0.4 | 30.7 | 109.1 | 132.0 | 313.1 | 263.9 | 86.5 |
| TURBINE RELEASE | 234.6 | 10.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 25.9 | 46.9 | 41.9 | 18.8 | 58.0 | 32.2 |
| EVAPORATION | 5.4 | 0.1 | 0.1 | 0.0 | 0.2 | 0.0 | 0.1 | 0.7 | 1.0 | 1.1 | 0.6 | 1.1 | 0.4 |
| END OF MONTH CONTENT | 13.8 | 3.5 | 5.2 | 7.1 | 8.7 | 10.1 | 12.4 | 40.5 | 39.1 | 32.8 | 20.7 | 26.1 | 0.6 |
| KWH / AF | | 52.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 74.6 | 72.9 | 68.3 | 65.6 | 69.5 | 63.9 |
| GENERATION GWH | 16.1 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.9 | 3.4 | 2.9 | 1.2 | 4.0 | 2.1 |

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

TABLE 3A

1990 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 | 1044.9 | 16.1 | 17.3 | 19.6 | 20.0 | 20.3 | 49.5 | 122.8 | 264.0 | 346.2 | 106.5 | 39.2 | 23.4 |
| TURBINE RELEASES | 752.2 | 31.8 | 29.8 | 58.8 | 65.8 | 36.6 | 49.4 | 50.0 | 60.0 | 60.0 | 110.0 | 110.0 | 90.0 |
| 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 | 50.4 | 2.0 | 1.2 | 0.7 | 0.7 | 0.7 | 1.5 | 2.9 | 4.2 | 9.2 | 11.5 | 9.2 | 6.6 |
| SEMINOE END OF MONTH CONTENT | 488.1 | 470.4 | 456.7 | 416.8 | 370.3 | 353.4 | 351.9 | 421.9 | 621.6 | 898.6 | 883.7 | 803.6 | 730.4 |
| KWH / AF | | 325.6 | 324.0 | 322.3 | 317.9 | 314.7 | 313.8 | 317.2 | 329.0 | 344.0 | 349.6 | 347.9 | 344.0 |
| GENERATION GWH | 251.0 | 10.4 | 9.7 | 19.0 | 20.9 | 11.5 | 15.5 | 15.9 | 19.7 | 20.6 | 38.5 | 38.3 | 31.0 |
| **PATHFINDER RESERVOIR** | | | | | | | | | | | | | |
| GAIN KORTES TO PATHFINDER | 127.2 | 1.1 | 3.5 | 2.7 | 2.2 | 3.5 | 7.9 | 17.4 | 32.8 | 28.3 | 14.6 | 8.1 | 5.1 |
| TOTAL INFLOW | 879.4 | 32.9 | 33.3 | 61.5 | 68.0 | 40.1 | 57.3 | 67.4 | 92.8 | 88.3 | 124.6 | 118.1 | 95.1 |
| FREMONT CANYON TURBINE WATER | 911.3 | 4.0 | 29.8 | 30.7 | 30.7 | 27.8 | 50.5 | 97.3 | 134.8 | 132.1 | 136.4 | 134.1 | 103.1 |
| 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 | 29.4 | 1.6 | 1.0 | 0.6 | 0.7 | 0.8 | 1.7 | 3.0 | 3.6 | 4.4 | 4.8 | 4.1 | 3.1 |
| END OF MONTH CONTENT | 271.6 | 298.9 | 301.4 | 331.6 | 368.2 | 379.7 | 384.8 | 352.0 | 306.4 | 258.1 | 241.6 | 221.5 | 210.4 |
| KWH / AF | | 245.5 | 251.0 | 252.6 | 256.0 | 257.9 | 258.6 | 253.5 | 246.9 | 242.2 | 239.0 | 236.4 | 234.2 |
| GENERATION FREMONT CANYON | 222.9 | 1.0 | 7.5 | 7.8 | 7.9 | 7.2 | 13.1 | 24.7 | 33.3 | 32.0 | 32.6 | 31.7 | 24.1 |
| **ALCOVA RESERVOIR** | | | | | | | | | | | | | |
| INFLOW | 911.3 | 4.0 | 29.8 | 30.7 | 30.7 | 27.8 | 50.5 | 97.3 | 134.8 | 132.1 | 136.4 | 134.1 | 103.1 |
| 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 | 828.2 | 31.2 | 29.6 | 30.6 | 30.5 | 27.6 | 50.1 | 68.8 | 118.8 | 113.7 | 116.7 | 115.7 | 94.9 |
| 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 | 179.4 | 151.6 | 151.6 | 151.6 | 151.6 | 151.6 | 151.6 | 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 | 115.1 | 4.3 | 4.0 | 4.2 | 4.2 | 3.8 | 6.8 | 9.5 | 16.6 | 15.9 | 16.3 | 16.2 | 13.3 |

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

TABLE 3A

1990 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GLENDO RESERVOIR** | | | | | | | | | | | | | |
| ALCOVA TO GLENDO GAIN | 222.0 | 10.2 | 10.5 | 5.7 | 7.4 | 14.2 | 16.5 | 41.7 | 72.9 | 28.4 | 2.7 | 1.7 | 10.1 |
| TOTAL INFLOW | 1050.2 | 41.4 | 40.1 | 36.3 | 37.9 | 41.8 | 66.6 | 110.5 | 191.7 | 142.1 | 119.4 | 117.4 | 105.0 |
| TURBINE RELEASE | 896.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 12.9 | 51.9 | 103.4 | 120.4 | 206.8 | 238.5 | 162.5 |
| BYPASS OR SPILL | 159.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 96.6 | 62.4 | 0.0 |
| EVAPORATION AND SEEPAGE | 34.0 | 0.8 | 0.7 | 0.7 | 0.7 | 0.9 | 1.7 | 2.8 | 5.5 | 7.2 | 7.4 | 3.9 | 1.7 |
| END OF MONTH CONTENT | 98.6 | 139.2 | 178.6 | 214.2 | 251.4 | 292.3 | 344.4 | 400.2 | 483.0 | 497.6 | 306.2 | 118.8 | 59.6 |
| KWH / AF | | 65.8 | 74.5 | 82.7 | 89.3 | 94.7 | 101.1 | 105.6 | 111.0 | 114.8 | 107.9 | 86.2 | 59.3 |
| GENERATION GWH | 84.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 5.5 | 11.5 | 13.8 | 22.3 | 20.6 | 9.6 |
| **GUERNSEY** | | | | | | | | | | | | | |
| GLENDO TO GUERNSEY GAIN | 36.7 | 1.7 | 1.5 | 1.6 | 1.1 | 0.6 | 0.1 | 2.7 | 8.4 | 8.8 | 3.3 | 1.8 | 5.1 |
| TOTAL INFLOW | 1092.1 | 1.7 | 1.5 | 1.6 | 1.1 | 0.6 | 13.0 | 54.6 | 111.8 | 129.2 | 306.7 | 302.7 | 167.6 |
| NORTH PLATTE REQUIREMENT | 1050.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 40.0 | 110.0 | 125.0 | 305.0 | 295.0 | 175.0 |
| NORTH PLATTE DELIVERY | 1050.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 40.0 | 110.0 | 125.0 | 305.0 | 295.0 | 175.0 |
| GLENDO IRRIGATION DELIVERY | 28.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 6.0 | 8.0 | 12.0 |
| 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 | 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 DELVRY/TRANSFER | 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 |
| BYPASS | 715.1 | 0.1 | 0.2 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 44.9 | 64.3 | 246.1 | 237.6 | 120.2 |
| TURBINE RELEASE | 364.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 39.6 | 65.1 | 62.7 | 65.0 | 65.4 | 66.8 |
| END OF MONTH CONTENT | 0.6 | 2.3 | 3.8 | 5.4 | 6.5 | 7.1 | 20.1 | 34.7 | 36.5 | 38.7 | 34.4 | 34.1 | 14.7 |
| KWH / AF | | 24.8 | 38.2 | 44.4 | 47.9 | 49.6 | 59.6 | 70.4 | 73.1 | 73.5 | 73.3 | 72.8 | 68.6 |
| GENERATION GWH | 26.4 | 0.0 | 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 | 11.8 | 23.6 | 23.6 | 23.6 | 23.6 | 23.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| N.P. GUERNSEY WATER | 0.0 | 0.0 | 0.0 | 7.0 | 15.1 | 21.6 | 21.6 | 43.2 | 45.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| N.P. GUERNSEY + INLAND LAKES | 0.0 | 11.8 | 23.6 | 30.6 | 38.7 | 45.2 | 45.2 | 43.2 | 45.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| GLENDO OWNERSHIP GAIN | 58.2 | 0.0 | 0.0 | 0.0 | 0.0 | 7.6 | 16.1 | 0.0 | 34.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| KENDRICK OWNERSHIP GAIN | 37.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 37.9 | 0.0 | 0.0 | 0.0 | 0.0 |

TABLE 3A

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

1990 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STORAGE WATER OWNERSHIP ACCOUNTING | | | | | | | | | | | | | |
| EVAPORATION NORTH PLATTE | 41.6 | 0.8 | 0.5 | 0.2 | 0.2 | 0.4 | 1.0 | 2.3 | 4.5 | 9.0 | 11.4 | 7.3 | 4.0 |
| TOTAL DELIVERY NORTH PLATTE | 1091.6 | 0.8 | 0.5 | 0.2 | 0.2 | 0.4 | 1.0 | 42.3 | 114.5 | 134.0 | 316.4 | 302.3 | 179.0 |
| NORTH PLATTE STORAGE (+ A&M) | 21.5 | 49.8 | 82.1 | 111.5 | 142.0 | 172.6 | 229.5 | 371.8 | 563.0 | 840.7 | 651.4 | 399.9 | 264.6 |
| EVAPORATION KENDRICK | 61.4 | 3.4 | 1.9 | 1.3 | 1.5 | 1.5 | 3.3 | 5.6 | 6.5 | 10.0 | 10.8 | 8.8 | 6.8 |
| TOTAL DELIVERY KENDRICK | 135.4 | 3.4 | 1.9 | 1.3 | 1.5 | 1.5 | 3.3 | 5.6 | 21.5 | 27.0 | 28.8 | 25.8 | 13.8 |
| KENDRICK GAIN | 37.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 37.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| KENDRICK STORAGE (INCL CHYN) | 902.4 | 899.0 | 897.1 | 895.8 | 894.4 | 892.9 | 889.6 | 884.0 | 900.4 | 873.3 | 844.6 | 818.8 | 804.9 |
| EVAPORATION GLENDO | 19.7 | 0.8 | 0.8 | 0.6 | 0.6 | 0.7 | 1.0 | 1.4 | 3.3 | 3.1 | 3.2 | 2.4 | 1.8 |
| TOTAL DELIVERY GLENDO | 47.7 | 0.8 | 0.8 | 0.6 | 0.6 | 0.7 | 1.0 | 1.4 | 3.3 | 5.1 | 9.2 | 10.4 | 13.8 |
| GLENDO GAIN | 58.2 | 0.0 | 0.0 | 0.0 | 0.0 | 7.6 | 16.1 | 0.0 | 34.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| GLENDO STORAGE (INCL PP&L) | 113.9 | 113.1 | 112.3 | 111.8 | 111.2 | 118.2 | 133.2 | 131.9 | 163.0 | 157.9 | 148.7 | 138.3 | 124.4 |
| COMBINED OWNERSHIP STORAGE | 1037.8 | 1062.0 | 1091.6 | 1119.1 | 1147.5 | 1183.6 | 1252.3 | 1387.6 | 1626.4 | 1871.9 | 1644.7 | 1356.9 | 1194.0 |
| COMBINED PHYSICAL STORAGE | 1038.3 | 1062.5 | 1092.1 | 1119.6 | 1148.0 | 1184.1 | 1252.8 | 1388.1 | 1626.9 | 1872.4 | 1645.2 | 1357.4 | 1194.5 |

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

TABLE 3B

1990 SYSTEM OPERATING PLAN

REASONABLE MINIMUM 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 | 544.6 | 16.1 | 14.3 | 16.6 | 17.0 | 17.3 | 43.9 | 77.4 | 129.8 | 145.7 | 32.8 | 20.1 | 13.6 |
| TURBINE RELEASES | 599.7 | 31.8 | 29.8 | 58.8 | 65.8 | 27.8 | 30.7 | 50.0 | 50.0 | 50.0 | 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 | 36.3 | 2.0 | 1.2 | 0.7 | 0.7 | 0.7 | 1.5 | 2.8 | 3.6 | 6.5 | 7.1 | 5.5 | 4.0 |
| SEMINOE END OF MONTH CONTENT | 488.1 | 470.4 | 453.7 | 410.8 | 361.4 | 350.2 | 361.8 | 386.5 | 462.6 | 551.9 | 467.6 | 432.1 | 396.7 |
| KWH / AF | | 325.6 | 324.0 | 321.8 | 317.2 | 314.1 | 314.1 | 316.0 | 321.0 | 328.4 | 328.6 | 323.6 | 320.0 |
| GENERATION GWH | 193.2 | 10.4 | 9.7 | 18.9 | 20.9 | 8.7 | 9.6 | 15.8 | 16.0 | 16.4 | 36.2 | 16.2 | 14.4 |
| **PATHFINDER RESERVOIR** | | | | | | | | | | | | | |
| GAIN KORTES TO PATHFINDER | 62.8 | 1.1 | 2.9 | 2.1 | 1.8 | 2.7 | 6.2 | 12.6 | 10.7 | 8.4 | 4.9 | 5.0 | 4.4 |
| TOTAL INFLOW | 662.5 | 32.9 | 32.7 | 60.9 | 67.6 | 30.5 | 36.9 | 62.6 | 60.7 | 58.4 | 114.9 | 55.0 | 49.4 |
| FREMONT CANYON TURBINE WATER | 699.2 | 0.0 | 29.8 | 30.7 | 30.7 | 27.8 | 50.5 | 84.2 | 123.2 | 116.4 | 106.4 | 71.7 | 27.8 |
| 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 | 27.4 | 1.6 | 1.1 | 0.6 | 0.7 | 0.8 | 1.7 | 2.8 | 3.4 | 3.9 | 4.2 | 3.7 | 2.9 |
| END OF MONTH CONTENT | 271.6 | 302.9 | 304.8 | 334.4 | 370.6 | 372.5 | 357.3 | 332.9 | 267.0 | 205.1 | 209.5 | 189.1 | 207.8 |
| KWH / AF | | 245.7 | 251.4 | 253.0 | 256.2 | 257.7 | 257.2 | 251.5 | 244.0 | 237.1 | 233.0 | 231.9 | 231.8 |
| GENERATION FREMONT CANYON | 170.1 | 0.0 | 7.5 | 7.8 | 7.9 | 7.2 | 13.0 | 21.2 | 30.1 | 27.6 | 24.8 | 16.6 | 6.4 |
| **ALCOVA RESERVOIR** | | | | | | | | | | | | | |
| INFLOW | 699.2 | 0.0 | 29.8 | 30.7 | 30.7 | 27.8 | 50.5 | 84.2 | 123.2 | 116.4 | 106.4 | 71.7 | 27.8 |
| 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 | 616.1 | 27.2 | 29.6 | 30.6 | 30.5 | 27.6 | 50.1 | 55.7 | 107.2 | 98.0 | 86.7 | 53.3 | 19.6 |
| 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 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 | 179.4 | 151.6 | 151.6 | 151.6 | 151.6 | 151.6 | 151.6 | 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 | 85.5 | 3.8 | 4.0 | 4.2 | 4.2 | 3.8 | 6.8 | 7.7 | 15.0 | 13.7 | 12.1 | 7.5 | 2.7 |

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

TABLE 3B

1990 SYSTEM OPERATING PLAN

REASONABLE MINIMUM 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 | 87.0 | 10.2 | 8.1 | 5.7 | 5.3 | 8.2 | 12.0 | 12.6 | 18.0 | 1.6 | 0.4 | -2.1 | 7.0 |
| TOTAL INFLOW | 703.1 | 37.4 | 37.7 | 36.3 | 35.8 | 35.8 | 62.1 | 68.3 | 125.2 | 99.6 | 87.1 | 51.2 | 26.6 |
| TURBINE RELEASE | 703.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 19.4 | 48.2 | 97.4 | 128.4 | 207.9 | 181.2 | 20.7 |
| 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 | 27.4 | 0.8 | 0.7 | 0.7 | 0.7 | 0.9 | 1.6 | 2.5 | 4.5 | 5.3 | 5.3 | 2.9 | 1.5 |
| END OF MONTH CONTENT | 98.6 | 135.2 | 172.2 | 207.8 | 242.9 | 277.9 | 319.0 | 336.6 | 359.9 | 325.8 | 199.8 | 66.9 | 71.3 |
| KWH / AF | | 65.3 | 73.4 | 81.3 | 88.3 | 93.1 | 98.3 | 102.2 | 103.8 | 103.4 | 93.4 | 68.9 | 53.5 |
| GENERATION GWH | 63.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.9 | 4.9 | 10.1 | 13.3 | 19.4 | 12.5 | 1.1 |
| **GUERNSEY** | | | | | | | | | | | | | |
| GLENDO TO GUERNSEY GAIN | 15.3 | 1.7 | 1.5 | 1.6 | 1.0 | 1.0 | 0.8 | 0.7 | 2.6 | -0.4 | -0.9 | 2.2 | 3.5 |
| TOTAL INFLOW | 718.5 | 1.7 | 1.5 | 1.6 | 1.0 | 1.0 | 20.2 | 48.9 | 100.0 | 128.0 | 207.0 | 183.4 | 24.2 |
| 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 | 665.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 40.0 | 100.0 | 125.0 | 199.7 | 172.9 | 27.9 |
| GLENDO IRRIGATION DELIVERY | 38.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 9.0 | 12.0 | 14.0 |
| 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 | 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 DELVRY/TRANSFER | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 |
| BYPASS | 365.2 | 0.1 | 0.2 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 35.0 | 65.1 | 143.6 | 119.5 | 0.0 |
| TURBINE RELEASE | 339.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 39.6 | 65.0 | 62.9 | 65.1 | 65.4 | 41.9 |
| END OF MONTH CONTENT | 0.6 | 2.3 | 3.8 | 5.4 | 6.4 | 7.4 | 27.6 | 36.5 | 36.5 | 36.5 | 34.8 | 33.3 | 15.6 |
| KWH / AF | | 24.8 | 38.2 | 44.4 | 47.8 | 49.8 | 63.5 | 72.4 | 73.3 | 73.3 | 73.1 | 72.8 | 68.7 |
| GENERATION GWH | 24.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.9 | 4.8 | 4.6 | 4.8 | 4.8 | 2.9 |
| **GAIN TO STORAGE WATER OWNERSHIP** | | | | | | | | | | | | | |
| INLAND LAKES IN GUER & GLEND | 0.0 | 11.8 | 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 | 7.0 | 12.9 | 21.8 | 24.0 | 24.0 | 34.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| N.P. GUERNSEY + INLAND LAKES | 0.0 | 11.8 | 21.2 | 28.2 | 34.1 | 43.0 | 45.2 | 24.0 | 34.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| GLENDO OWNERSHIP GAIN | 9.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 9.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| KENDRICK OWNERSHIP GAIN | 37.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 37.9 | 0.0 | 0.0 | 0.0 | 0.0 |

UNITED STATES BUREAU OF RECLAMATION
GREAT PLAINS REGION
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MILLS, WYOMING

TABLE 3B

1990 SYSTEM OPERATING PLAN

REASONABLE MINIMUM 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 | 18.7 | 0.8 | 0.5 | 0.2 | 0.2 | 0.3 | 0.9 | 1.9 | 2.9 | 4.2 | 4.0 | 1.7 | 1.1 |
| TOTAL DELIVERY NORTH PLATTE | 684.2 | 0.8 | 0.5 | 0.2 | 0.2 | 0.3 | 0.9 | 41.9 | 102.9 | 129.2 | 203.7 | 174.6 | 29.0 |
| NORTH PLATTE STORAGE (+ A&M) | 21.5 | 49.8 | 76.1 | 101.9 | 126.8 | 155.7 | 208.1 | 269.5 | 289.8 | 315.9 | 149.4 | 0.0 | 0.0 |
| EVAPORATION KENDRICK | 61.4 | 3.4 | 1.9 | 1.3 | 1.5 | 1.5 | 3.3 | 5.6 | 6.5 | 10.0 | 10.8 | 8.8 | 6.8 |
| TOTAL DELIVERY KENDRICK | 135.4 | 3.4 | 1.9 | 1.3 | 1.5 | 1.5 | 3.3 | 5.6 | 21.5 | 27.0 | 28.8 | 25.8 | 13.8 |
| KENDRICK GAIN | 37.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 37.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| KENDRICK STORAGE (INCL CHYN) | 902.4 | 899.0 | 897.1 | 895.8 | 894.4 | 892.9 | 889.6 | 884.0 | 900.4 | 873.3 | 844.6 | 818.8 | 804.9 |
| EVAPORATION GLENDO | 20.0 | 0.8 | 0.8 | 0.6 | 0.6 | 0.7 | 1.0 | 1.3 | 3.1 | 2.8 | 3.5 | 3.0 | 1.8 |
| TOTAL DELIVERY GLENDO | 58.0 | 0.8 | 0.8 | 0.6 | 0.6 | 0.7 | 1.0 | 1.3 | 3.1 | 5.8 | 12.5 | 15.0 | 15.8 |
| GLENDO GAIN | 9.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 9.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| GLENDO STORAGE (INCL PP&L) | 113.9 | 113.1 | 112.3 | 111.8 | 111.2 | 110.6 | 119.1 | 117.8 | 114.8 | 109.0 | 96.5 | 81.6 | 65.8 |
| COMBINED OWNERSHIP STORAGE | 1037.8 | 1061.9 | 1085.6 | 1109.5 | 1132.4 | 1159.1 | 1216.8 | 1271.3 | 1305.0 | 1298.2 | 1090.5 | 900.3 | 870.8 |
| COMBINED PHYSICAL STORAGE | 1038.3 | 1062.4 | 1086.1 | 1110.0 | 1132.9 | 1159.6 | 1217.3 | 1271.8 | 1305.5 | 1298.7 | 1091.0 | 900.8 | 870.8 |

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

TABLE 3C

1990 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 | 1667.0 | 16.1 | 33.3 | 27.7 | 26.2 | 27.7 | 58.8 | 156.7 | 408.5 | 582.6 | 227.6 | 65.0 | 36.8 |
| TURBINE RELEASES | 1122.7 | 31.8 | 29.8 | 58.8 | 65.8 | 75.0 | 107.0 | 155.7 | 160.9 | 155.7 | 160.9 | 61.5 | 59.8 |
| SPILL | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| EVAPORATION SEMINOE | 53.7 | 2.0 | 1.2 | 0.8 | 0.7 | 0.7 | 1.5 | 2.3 | 3.6 | 9.2 | 12.6 | 10.8 | 8.3 |
| SEMINOE END OF MONTH CONTENT | 488.1 | 470.4 | 472.7 | 440.9 | 400.5 | 352.5 | 302.9 | 301.5 | 545.5 | 963.2 | 1017.3 | 1010.0 | 978.7 |
| KWH / AF | | 325.6 | 324.8 | 324.0 | 320.7 | 316.2 | 311.3 | 308.7 | 320.9 | 344.0 | 352.4 | 353.7 | 352.8 |
| GENERATION GWH | 370.1 | 10.4 | 9.7 | 19.0 | 21.1 | 23.7 | 33.3 | 48.1 | 51.6 | 53.6 | 56.7 | 21.8 | 21.1 |
| **PATHFINDER RESERVOIR** | | | | | | | | | | | | | |
| GAIN KORTES TO PATHFINDER | 217.2 | 1.1 | 3.5 | 3.3 | 2.6 | 4.1 | 8.7 | 29.6 | 67.7 | 53.3 | 24.6 | 11.3 | 7.4 |
| TOTAL INFLOW | 1340.0 | 32.9 | 33.3 | 62.1 | 68.4 | 79.1 | 115.7 | 185.4 | 228.6 | 209.0 | 185.5 | 72.8 | 67.2 |
| FREMONT CANYON TURBINE WATER | 660.9 | 0.0 | 29.8 | 30.7 | 30.7 | 30.1 | 30.7 | 57.3 | 45.3 | 52.5 | 138.0 | 105.8 | 110.0 |
| 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 | 67.5 | 1.6 | 1.1 | 0.6 | 0.7 | 0.8 | 2.0 | 4.3 | 6.9 | 11.6 | 15.0 | 13.2 | 9.7 |
| END OF MONTH CONTENT | 271.6 | 302.9 | 305.4 | 336.2 | 373.2 | 421.4 | 504.4 | 628.2 | 804.6 | 949.5 | 982.0 | 935.8 | 883.2 |
| KWH / AF | | 245.7 | 251.4 | 253.1 | 256.4 | 259.8 | 264.9 | 268.1 | 274.5 | 279.3 | 279.7 | 279.7 | 279.5 |
| GENERATION FREMONT CANYON | 180.5 | 0.0 | 7.5 | 7.8 | 7.9 | 7.8 | 8.1 | 15.4 | 12.4 | 14.7 | 38.6 | 29.6 | 30.7 |
| **ALCOVA RESERVOIR** | | | | | | | | | | | | | |
| INFLOW | 660.9 | 0.0 | 29.8 | 30.7 | 30.7 | 30.1 | 30.7 | 57.3 | 45.3 | 52.5 | 138.0 | 105.8 | 110.0 |
| 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 | 577.8 | 27.2 | 29.6 | 30.6 | 30.5 | 29.9 | 30.3 | 28.8 | 29.3 | 34.1 | 118.3 | 87.4 | 101.8 |
| 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 | 179.4 | 151.6 | 151.6 | 151.6 | 151.6 | 151.6 | 151.6 | 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 | 80.4 | 3.8 | 4.0 | 4.2 | 4.2 | 4.1 | 4.1 | 4.0 | 4.1 | 4.8 | 16.6 | 12.2 | 14.3 |

TABLE 3C

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

1990 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 | 428.0 | 10.2 | 15.3 | 6.9 | 13.8 | 14.6 | 20.0 | 47.4 | 191.8 | 74.7 | 9.6 | 8.4 | 15.3 |
| TOTAL INFLOW | 1005.8 | 37.4 | 44.9 | 37.5 | 44.3 | 44.5 | 50.3 | 76.2 | 221.1 | 108.8 | 127.9 | 95.8 | 117.1 |
| TURBINE RELEASE | 855.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 16.3 | 41.9 | 85.3 | 105.3 | 206.3 | 238.8 | 161.3 |
| BYPASS OR SPILL | 150.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 91.9 | 58.6 | 0.0 |
| EVAPORATION AND SEEPAGE | 33.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.9 | 1.7 | 2.6 | 5.4 | 7.3 | 7.4 | 3.9 | 1.7 |
| END OF MONTH CONTENT | 98.6 | 135.2 | 179.4 | 216.2 | 259.8 | 303.4 | 335.7 | 367.4 | 497.8 | 494.1 | 316.3 | 110.9 | 65.0 |
| KWH / AF | | 65.3 | 74.2 | 83.0 | 90.0 | 96.0 | 101.2 | 104.0 | 110.3 | 115.2 | 108.2 | 86.4 | 59.0 |
| GENERATION GWH | 80.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.7 | 4.4 | 9.4 | 12.1 | 22.3 | 20.6 | 9.5 |
| **GUERNSEY** | | | | | | | | | | | | | |
| GLENDO TO GUERNSEY GAIN | 81.7 | 1.7 | 2.1 | 1.8 | 2.0 | 1.2 | 0.0 | 8.5 | 26.7 | 21.7 | 5.9 | 1.6 | 8.5 |
| TOTAL INFLOW | 1087.4 | 1.7 | 2.1 | 1.8 | 2.0 | 1.2 | 16.3 | 50.4 | 112.0 | 127.0 | 304.1 | 299.0 | 169.8 |
| NORTH PLATTE REQUIREMENT | 1050.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 40.0 | 110.0 | 125.0 | 305.0 | 295.0 | 175.0 |
| NORTH PLATTE DELIVERY | 1050.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 40.0 | 110.0 | 125.0 | 305.0 | 295.0 | 175.0 |
| 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 | 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 DELVRY/TRANSFER | 189.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 97.1 | 92.0 | 0.0 |
| BYPASS | 708.8 | 0.1 | 0.2 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 47.0 | 64.1 | 243.5 | 233.1 | 119.1 |
| TURBINE RELEASE | 365.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 39.6 | 65.0 | 62.9 | 65.5 | 65.9 | 66.9 |
| END OF MONTH CONTENT | 0.6 | 2.3 | 4.4 | 6.2 | 8.2 | 9.4 | 25.7 | 36.1 | 36.1 | 36.1 | 31.2 | 31.2 | 15.0 |
| KWH / AF | | 24.8 | 39.4 | 46.6 | 50.4 | 53.6 | 63.5 | 72.2 | 73.2 | 73.2 | 72.7 | 72.2 | 67.9 |
| GENERATION GWH | 26.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.9 | 4.8 | 4.6 | 4.8 | 4.8 | 4.5 |
| **GAIN TO STORAGE WATER OWNERSHIP** | | | | | | | | | | | | | |
| INLAND LAKES IN GUER & GLEND | 0.0 | 11.8 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| N.P. GUERNSEY WATER | 0.0 | 0.0 | 0.0 | 8.4 | 16.2 | 16.2 | 16.2 | 45.2 | 45.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| N.P. GUERNSEY + INLAND LAKES | 0.0 | 11.8 | 29.0 | 37.4 | 45.2 | 45.2 | 45.2 | 45.2 | 45.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| GLENDO OWNERSHIP GAIN | 87.2 | 0.0 | 0.0 | 0.0 | 6.6 | 14.2 | 19.6 | 8.1 | 22.8 | 15.9 | 0.0 | 0.0 | 0.0 |
| KENDRICK OWNERSHIP GAIN | 400.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 37.9 | 316.2 | 46.4 | 0.0 | 0.0 |

UNITED STATES BUREAU OF RECLAMATION
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TABLE 3C

1990 SYSTEM OPERATING PLAN

REASONABLE MAXIMUM WATER SUPPLY CONDITION



WATER IN 1000 ACRE FEET * * * * * * * * * * ENERGY IN G W H

| STORAGE WATER OWNERSHIP ACCOUNTING | INI-SUM | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EVAPORATION NORTH PLATTE | 64.6 | 0.8 | 0.5 | 0.3 | 0.3 | 0.4 | 1.1 | 2.8 | 6.7 | 13.4 | 15.9 | 13.2 | 9.2 |
| TOTAL DELIVERY NORTH PLATTE | 1114.6 | 0.8 | 0.5 | 0.3 | 0.3 | 0.4 | 1.1 | 42.8 | 116.7 | 138.4 | 320.9 | 308.2 | 184.2 |
| NORTH PLATTE STORAGE (+ A&M) | 21.5 | 49.8 | 103.5 | 142.9 | 180.6 | 213.6 | 280.3 | 471.7 | 988.9 | 1062.1 | 1059.6 | 929.7 | 813.5 |
| EVAPORATION KENDRICK | 72.9 | 3.4 | 1.9 | 1.3 | 1.5 | 1.5 | 3.3 | 5.6 | 6.5 | 11.7 | 14.6 | 12.2 | 9.4 |
| TOTAL DELIVERY KENDRICK | 146.9 | 3.4 | 1.9 | 1.3 | 1.5 | 1.5 | 3.3 | 5.6 | 21.5 | 28.7 | 32.6 | 29.2 | 16.4 |
| KENDRICK GAIN | 400.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 37.9 | 316.2 | 46.4 | 0.0 | 0.0 |
| KENDRICK STORAGE (INCL CHYN) | 902.4 | 899.0 | 897.1 | 895.8 | 894.4 | 892.9 | 889.6 | 884.0 | 900.4 | 1187.8 | 1201.7 | 1172.5 | 1156.1 |
| EVAPORATION GLENDO | 26.6 | 0.8 | 0.8 | 0.6 | 0.6 | 0.7 | 1.1 | 1.6 | 3.6 | 4.3 | 6.3 | 3.9 | 2.3 |
| TOTAL DELIVERY GLENDO | 49.7 | 0.8 | 0.8 | 0.6 | 0.6 | 0.7 | 1.1 | 1.6 | 5.6 | 6.3 | 10.3 | 7.9 | 13.4 |
| GLENDO GAIN | 87.2 | 0.0 | 0.0 | 0.0 | 6.6 | 14.2 | 19.6 | 8.1 | 22.8 | 15.9 | 0.0 | 0.0 | 0.0 |
| GLENDO STORAGE (INCL PP&L) | 113.9 | 113.1 | 112.3 | 111.8 | 117.8 | 131.3 | 149.8 | 156.3 | 173.5 | 183.2 | 172.9 | 165.0 | 151.7 |
| COMBINED OWNERSHIP STORAGE | 1037.8 | 1061.9 | 1113.0 | 1150.5 | 1192.8 | 1237.8 | 1319.8 | 1512.0 | 2062.8 | 2433.1 | 2434.2 | 2267.2 | 2121.3 |
| COMBINED PHYSICAL STORAGE | 1038.3 | 1062.4 | 1113.5 | 1151.0 | 1193.3 | 1238.3 | 1320.3 | 1512.5 | 2063.3 | 2622.2 | 2526.2 | 2267.2 | 2121.3 |

SUMMARY OF NORTH PLATTE STORAGE OWNERSHIP FOR WATER YEAR 1989 (ACRE-FEET)

| MONTHS | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PATHFINDER OWNERSHIP** | | | | | | | | | | | | | | |
| ACCURAL | | 7357 | 22002 | 23654 | 15926 | 28711 | 88939 | 74202 | 14196 | 0 | 0 | 0 | 0 | 274987 |
| EVAPORATION | | 2474 | 1327 | 692 | 739 | 1404 | 2001 | 4432 | 7297 | 8806 | 8455 | 3825 | 818 | 42270 |
| DELIVERY | | 0 | 0 | 0 | 0 | 0 | 0 | 3056 | 0 | 12814 | 269161 | 234538 | 8299 | 527868 |
| OWNERSHIP | 316736 | 321619 | 342294 | 365256 | 380443 | 407750 | 494688 | 561402 | 568301 | 546681 | 269065 | 30702 | 21585 | |
| **KENDRICK OWNERSHIP** | | | | | | | | | | | | | | |
| ACCURAL | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EVAPORATION | | 6029 | 3148 | 1523 | 806 | 2449 | 3944 | 6821 | 7948 | 8550 | 11787 | 8959 | 5928 | 67892 |
| DELIVERY | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17095 | 16991 | 22826 | 28665 | 32669 | 118246 |
| OWNERSHIP | 1093624 | 1087595 | 1084447 | 1082924 | 1082118 | 1079669 | 1075725 | 1068904 | 1043861 | 1018320 | 983707 | 946083 | 907485 | |
| **GLENDO OWNERSHIP** | | | | | | | | | | | | | | |
| ACCRUAL | | 0 | 0 | 0 | 0 | 0 | 9013 | 5143 | 0 | 0 | 0 | 0 | 13497 | 27653 |
| EVAPORATION | | 1547 | 854 | 378 | 593 | 712 | 738 | 1758 | 4125 | 3496 | 5109 | 4022 | 3288 | 26620 |
| DELIVERY | | | 22 | 502 | 0 | 1 | 0 | 0 | 8 | 50 | 11419 | 8435 | 9718 | 30155 |
| OWNERSHIP | 141718 | 140171 | 139295 | 138415 | 137822 | 137109 | 145384 | 148769 | 144636 | 141090 | 124562 | 112105 | 12596 | |
| **PACIFIC POWER & LIGHT** | | | | | | | | | | | | | | |
| ACCURAL | | 0 | 0 | 500 | 0 | 0 | 0 | 0 | 177 | 191 | 160 | 88 | 220 | 1336 |
| DELIVERY | | 362 | 305 | 281 | 310 | 215 | 268 | 282 | 0 | 0 | 0 | 0 | 0 | 2023 |
| EVAPORATION | | 21 | 6 | 2 | 4 | 4 | 0 | 0 | 0 | 4 | 21 | 28 | 13 | 103 |
| IN STORAGE | 2000 | 1617 | 1306 | 1523 | 1209 | 990 | 722 | 440 | 617 | 804 | 943 | 1003 | 1210 | |

TABLE 4



SUMMARY OF NORTH PLATTE STORAGE OWNERSHIP FOR WATER YEAR 1989 (ACRE-FEET)

| MONTHS | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GUERNSEY OWNERSHIP** | | | | | | | | | | | | | | |
| ACCRUAL | | 0 | 0 | 12497 | 14114 | 11174 | 8351 | 0 | 0 | 0 | 0 | 0 | 0 | 46136 |
| EVAPORATION | | 0 | 0 | 42 | 142 | 211 | 326 | 742 | 777 | 503 | 0 | 0 | 0 | 2743 |
| DELIVERY | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18760 | 24633 | 0 | 0 | 0 | 43393 |
| OWNERSHIP | 0 | 0 | 0 | 12455 | 26427 | 37390 | 45415 | 44673 | 25136 | 0 | 0 | 0 | 0 | |
| **INLAND LAKES OWNERSHIP** | | | | | | | | | | | | | | |
| ACCRUAL | | 13785 | 8297 | 0 | 0 | 0 | 0 | 12033 | 0 | 0 | 0 | 0 | 0 | 34115 |
| EVAPORATION | | 94 | 164 | 66 | 40 | 42 | 38 | 116 | 0 | 0 | 0 | 0 | 0 | 560 |
| OWNERSHIP | 0 | 13691 | 21824 | 14835 | 14195 | 14115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TRANSFER | | 0 | 0 | 7523 | 0 | 0 | 0 | 29088 | 0 | 0 | 0 | 0 | 0 | 36611 |
| **CITY OF CHEYENNE** | | | | | | | | | | | | | | |
| ACCRUAL | | 758 | 634 | 382 | 485 | 335 | 482 | 97 | 2 | 132 | 234 | 620 | 428 | 4589 |
| EVAPORATION | | 17 | 8 | 4 | 0 | 8 | 18 | 38 | 21 | 0 | 0 | 0 | 0 | 114 |
| OWNERSHIP | 2251 | 2992 | 3618 | 3996 | 4479 | 4790 | 5254 | 4721 | 110 | 3 | 202 | 816 | 1137 | |
| TRANSFER | | 0 | 0 | 0 | 2 | 16 | 0 | 592 | 4592 | 239 | 135 | 6 | 107 | 5589 |
| **EXCESS WATER** | | | | | | | | | | | | | | |
| ACCRUAL | | 0 | 0 | 0 | 0 | 0 | 506 | 2134 | 0 | 0 | 0 | 0 | 648 | 3288 |
| EVAPORATION | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11 | 10 | 0 | 0 | 22 |
| OWNERSHIP | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 1276 | 1187 | 980 | 0 | 0 | 455 | |
| RELEASE | | 0 | 0 | 0 | 0 | 0 | 456 | 908 | 88 | 196 | 970 | 0 | 193 | 193 |

## NORTH PLATTE RIVER

## RESERVOIR DATA

(Data in Acre-Feet)

| Reservoir | Dead Storage[1] | Active Storage[2] | Total Storage | Normal Minimum Storage | 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 outlet
2/Total storage minus dead storage
3/An additional 271,917 acre-feet allocated to flood control

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 ($Ft^3/s$) | 20-Year Average[1] (KWH/Acre-ft) | Generation (GWH) | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | 20-year average[1] | water year (1989) |
| Seminoe | 3 | 15,000 | 45,000 | 97-227 | 2,850 | 155.1 | 154.0 | 109.9 |
| Kortes | 3 | 12,000 | 36,000 | 192-204 | 2,700 | 168.6 | 165.1 | 122.5 |
| Fremont Canyon | 2 | 24,000 | 48,000 | 247-363 | 2,200 | 282.7 | 272.7 | 194.2 |
| Alcova | 2 | 18,000 | 36,000 | 153-165 | 2,800 | 132.3 | 136.8 | 115.4 |
| Glendo | 2 | 19,000 | 38,000 | 73-156 | 2,800 | 97.6 | 90.5 | 65.8 |
| Guernsey | 2 | 2,400 | 4,800 | 89-91 | 820 | 69.1 | 25.0 | 15.5 |
| Total | 14 | ----- | 207,800 | ----- | ----- | 905.4 | 844.1 | 623.3 |

1/1966-1985

TABLE 7

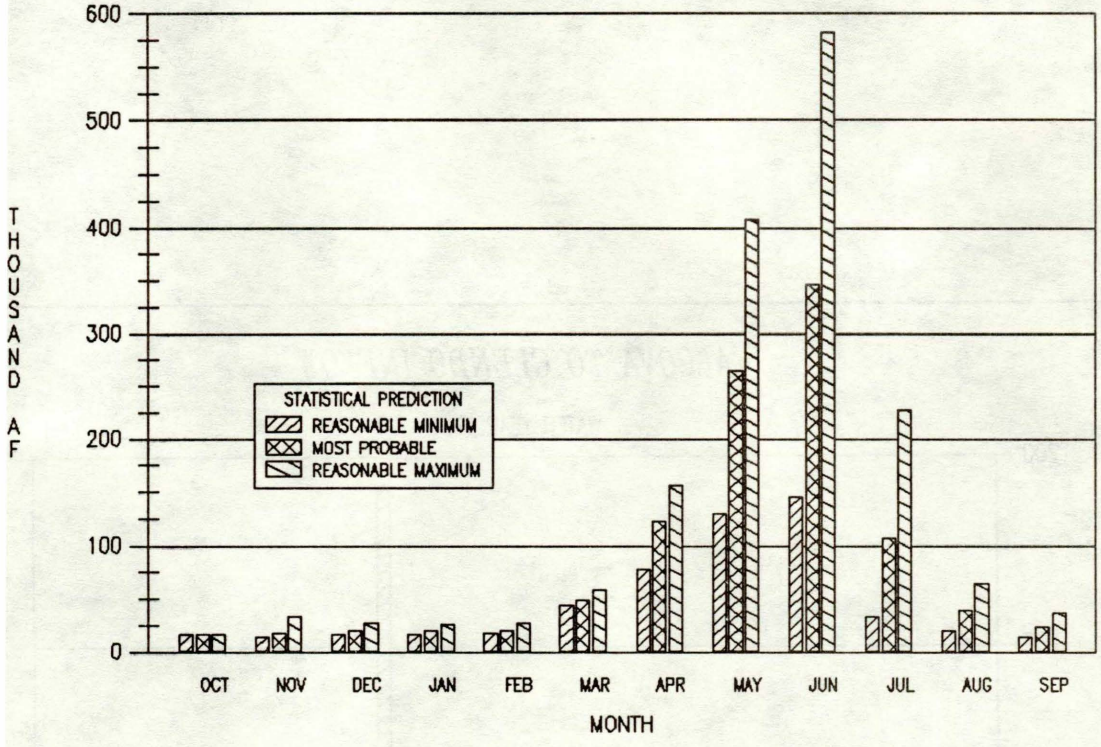
PROPOSED UNIT MAINTENANCE SCHEDULE
NORTH PLATTE RIVER SYSTEM
OCTOBER 1989 THROUGH SEPTEMBER 1990

| FACILITY AND UNIT NO. | SCHEDULED PERIOD | DESCRIPTION OF WORK |
|---|---|---|
| Fremont Unit #2 | 9-18-89 thru 6-1-90 | Unit uprate, minor inspection and other work as required |
| Seminoe Unit #1 | 10-3-89 thru 10-31-89 | Minor Inspection and other work as required |
| Fremont Unit #1 | 10-5-89 thru 11-1-89 | Replace Oil Hoses on Transformer |
| Glendo Unit #1 | 10-20-89 thru 3-29-90 | Penstock, Spiral Case Sand blast, painting, and minor inspection |
| Glendo Unit #2 | 10-20-89 thru 3-29-90 | Penstock, Spiral Case Sand blast, painting, and minor inspection |
| Alcova Unit #1 | 10-30-89 thru 12-14-90 | Minor Inspection and other work as required |
| Seminoe Unit #2 | 11-6-89 thru 12-5-89 | Minor inspection and weld on runner |
| Seminoe Unit #3 | 12-11-89 thru 1-11-90 | Minor Inspection and weld on runner |
| Guernsey Unit #1 | 1-1-90 thru 1-31-90 | Minor Inspection and other work as required |
| Alcova Unit #2 | 1-2-90 thru 2-15-90 | Minor Inspection and other work as required |
| Kortes Unit #2 | 1-17-90 thru 2-27-90 | Minor Inspection and other work as required |
| Guernsey Unit #2 | 2-1-90 thru 2-28-90 | Minor Inspection and other work as required |

# APPENDIX B - EXHIBITS

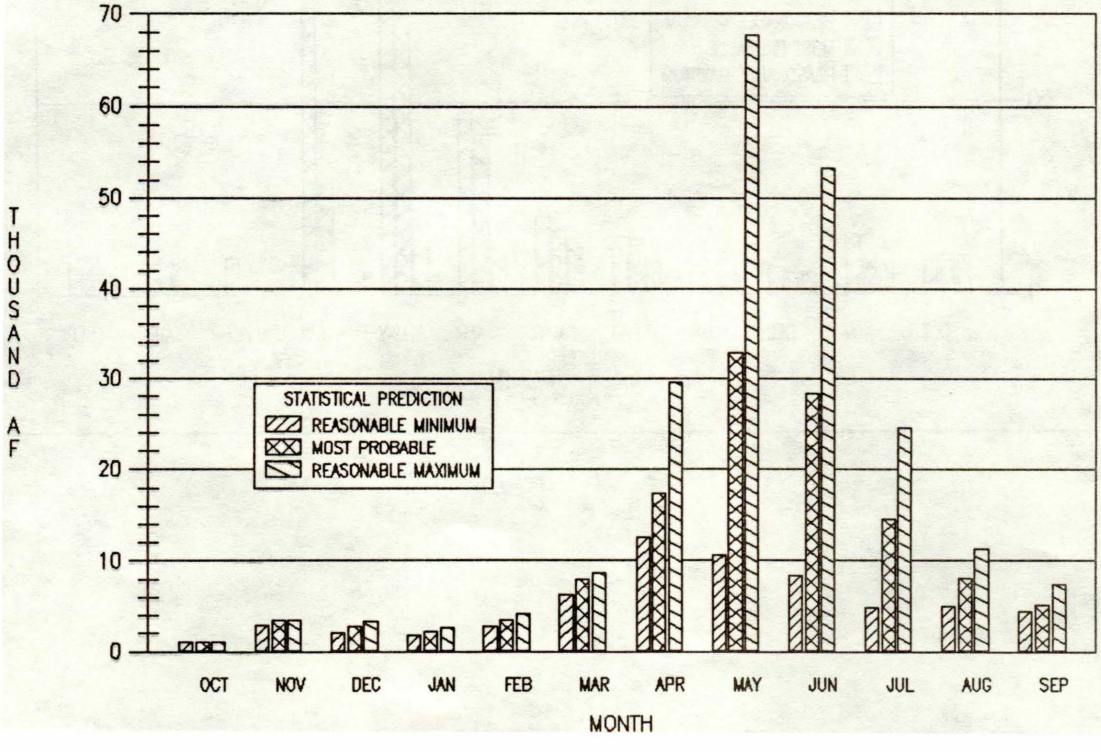
## *SEMINOE RESERVOIR INFLOW*

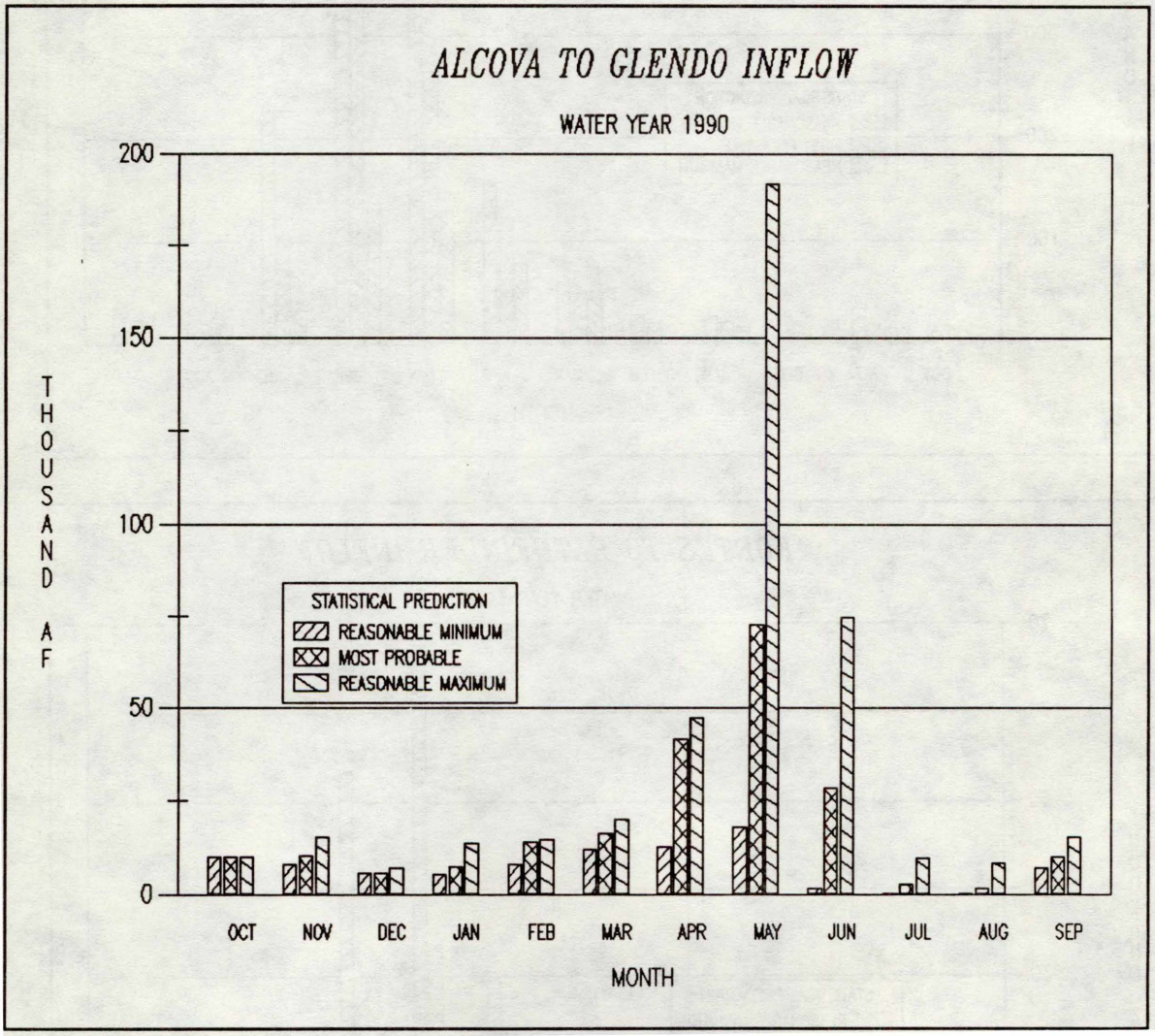
WATER YEAR 1990




## *KORTES TO PATHFINDER INFLOW*

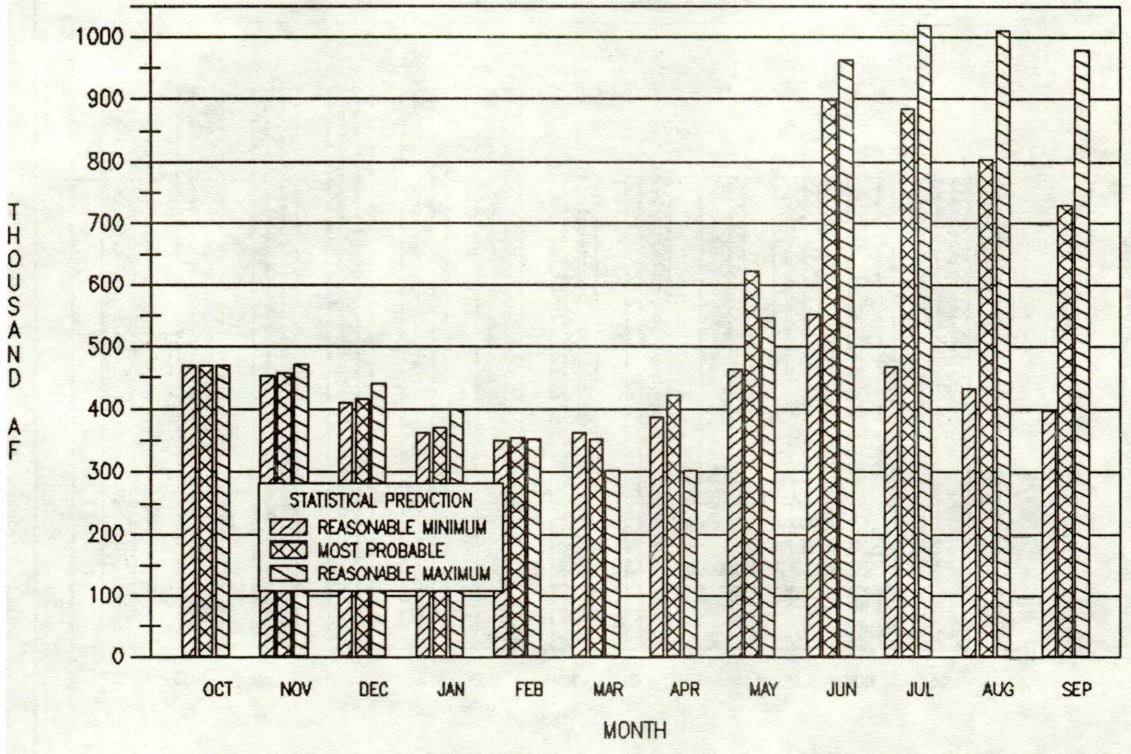
WATER YEAR 1990




ALCOVA TO GLENDO INFLOW
WATER YEAR 1990
200
150
100
50
0
THOUSAND AF
STATISTICAL PREDICTION
REASONABLE MINIMUM
MOST PROBABLE
REASONABLE MAXIMUM
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
MONTH

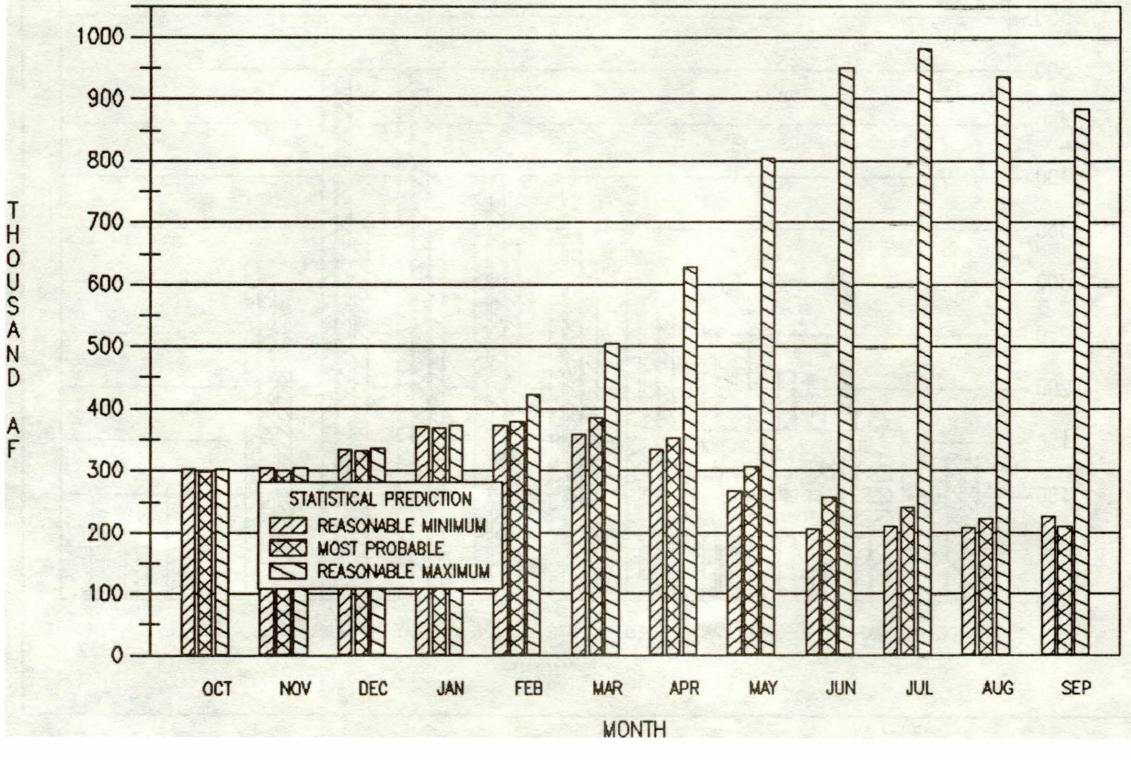
## *SEMINOE RESERVOIR*

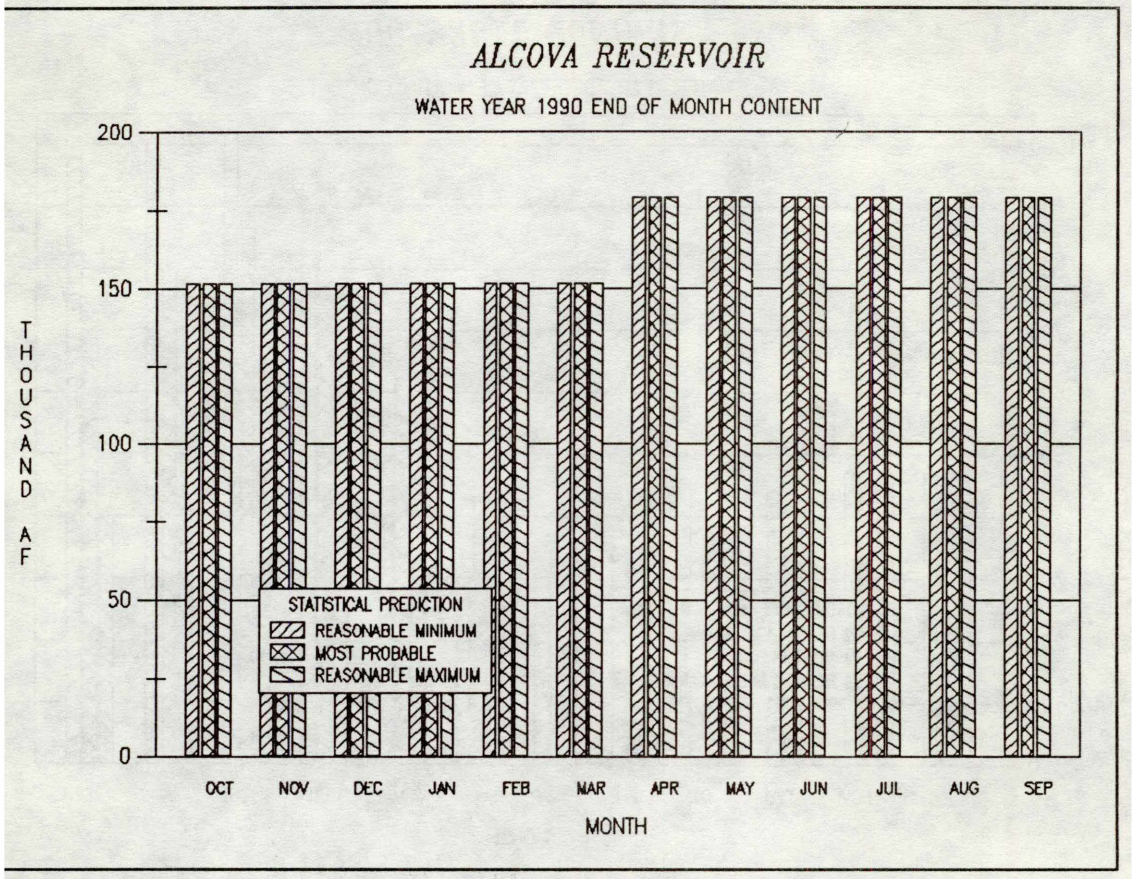
WATER YEAR 1990 END OF MONTH CONTENT

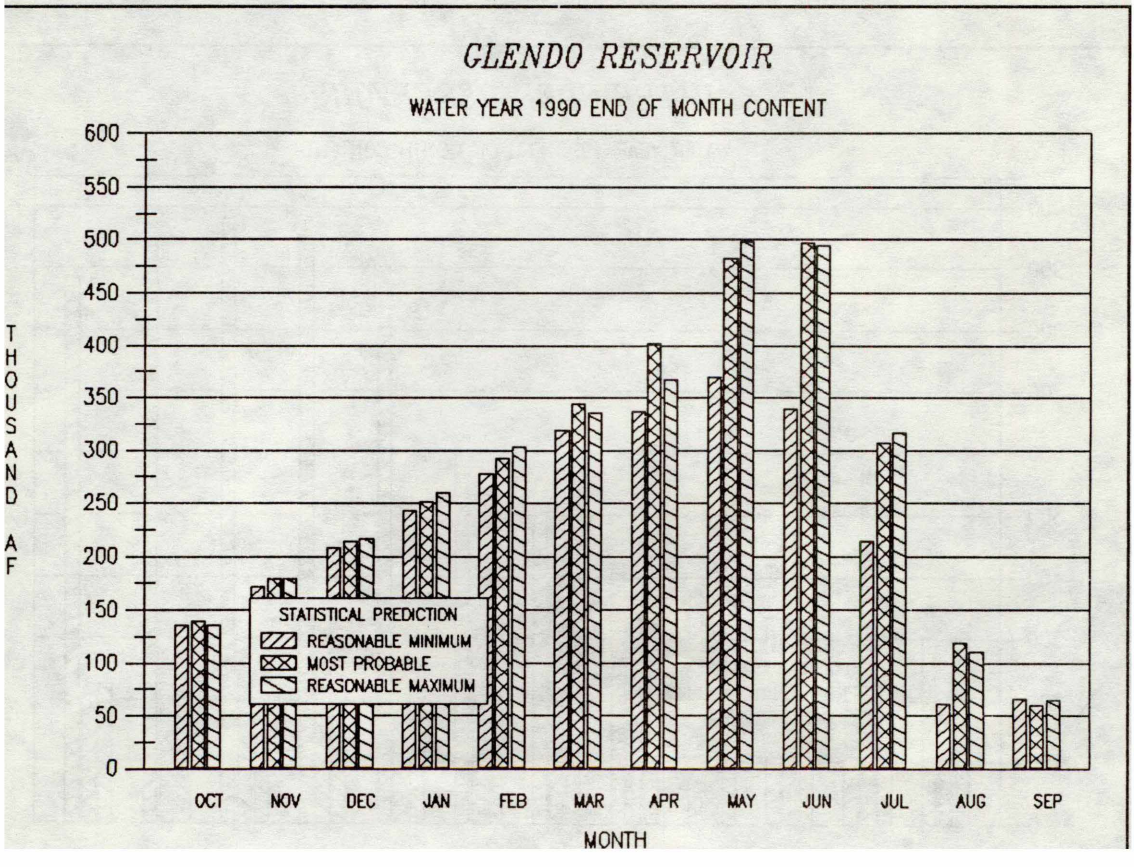


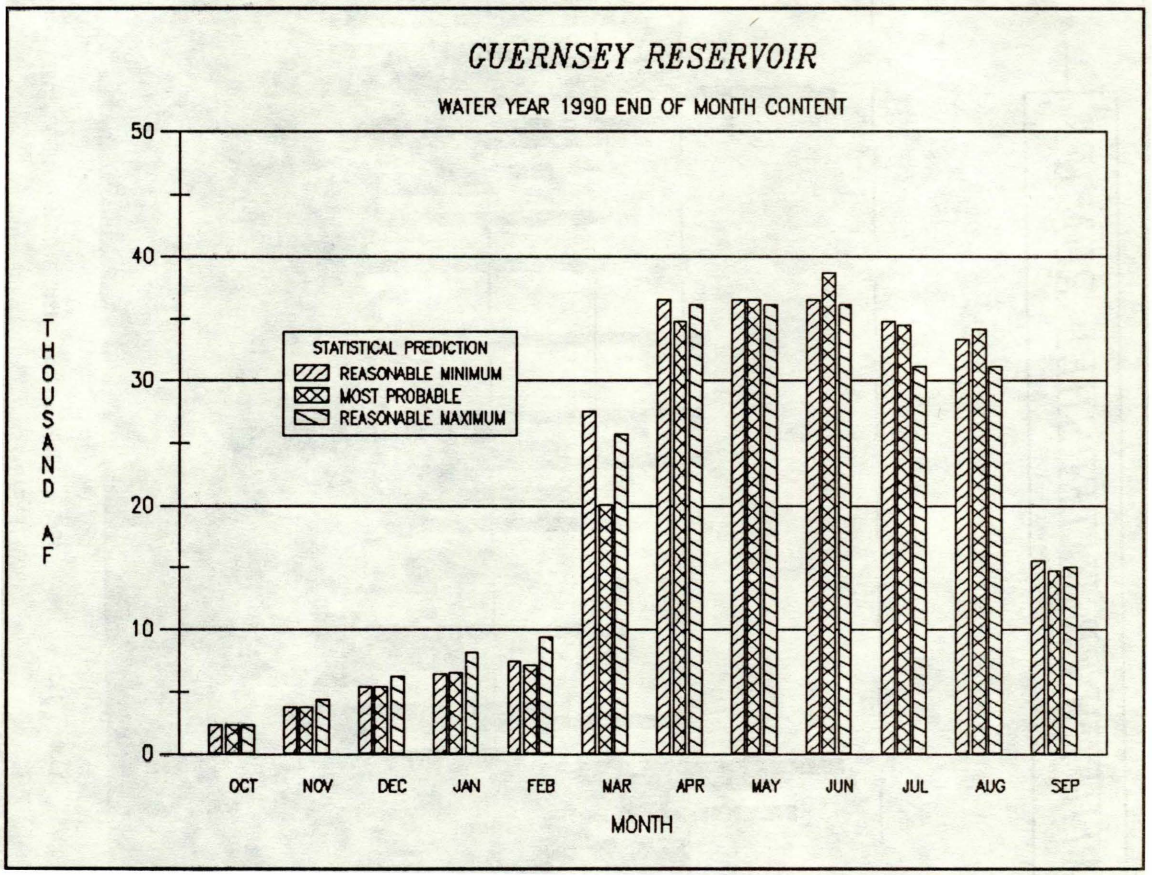

## *PATHFINDER RESERVOIR*

WATER YEAR 1990 END OF MONTH CONTENT




ALCOVA RESERVOIR
WATER YEAR 1990 END OF MONTH CONTENT
THOUSAND AF
200
150
100
50
0
STATISTICAL PREDICTION
REASONABLE MINIMUM
MOST PROBABLE
REASONABLE MAXIMUM
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
MONTH


GLENDO RESERVOIR
WATER YEAR 1990 END OF MONTH CONTENT
THOUSAND AF
600
550
500
450
400
350
300
250
200
150
100
50
0
STATISTICAL PREDICTION
REASONABLE MINIMUM
MOST PROBABLE
REASONABLE MAXIMUM
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
MONTH


GUERNSEY RESERVOIR
WATER YEAR 1990 END OF MONTH CONTENT
THOUSAND AF
50
40
30
20
10
0
STATISTICAL PREDICTION
REASONABLE MINIMUM
MOST PROBABLE
REASONABLE MAXIMUM
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
MONTH

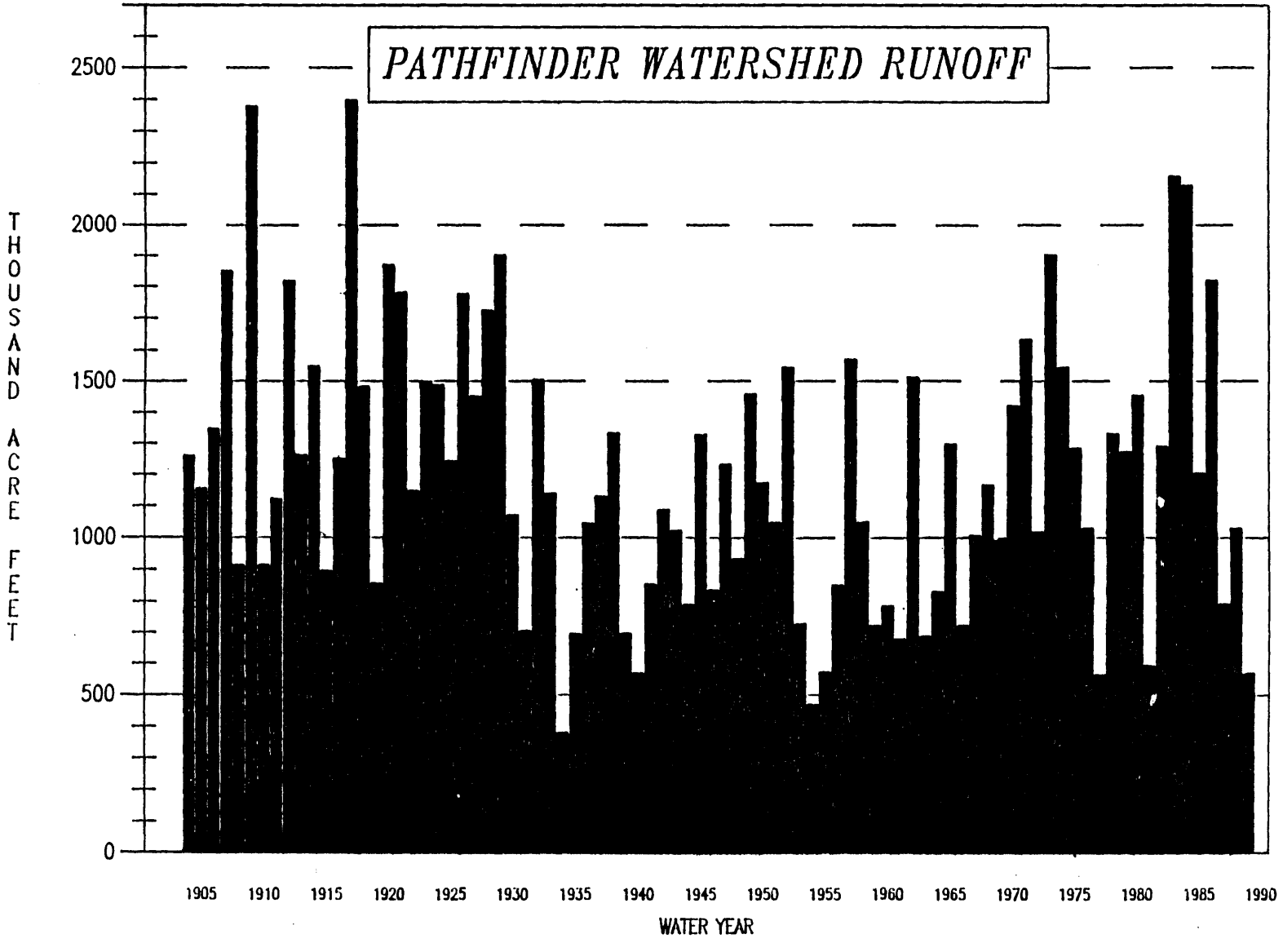

PATHFINDER WATERSHED RUNOFF
THOUSAND ACRE FEET
2500
2000
1500
1000
500
0
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
WATER YEAR

EXHIBIT 6

GRAY REEF RESERVOIR

ALCOVA RESERVOIR

PATHFINDER RESERVOIR

KORTES RESERVOIR

SEMINOE RESERVOIR

CASPER-ALCOVA I.D.
KENDRICK PROJECT

Proposed Deer Creek Reservoir

GLENDO RESERVOIR

GUERNSEY RESERVOIR

WHALEN DIVERSION DAM

TRI-STATE DAM

PATHFINDER I.D.
N.P. PROJECT

LAKE ALICE

LITTLE LAKE ALICE

LAKE WINTERS CREEK

LAKE MINATARE

NORTHPORT I.D.
N.P. PROJECT

GOSHEN I.D.
N.P. PROJECT

GERING-FT. LARAMIE I.D.
N.P. PROJECT

Proposed Teeters Reservoir
Corn Creek Project

N.

WYOMING
NEBRASKA
COLORADO

SPECIAL MASTER'S NATURAL SECTIONS OF THE RIVER BASIN

① NORTH PARK, COLORADO
② COLO.-WY. LINE TO PATHFINDER DAM
③ PATHFINDER DAM TO WHALEN, WY.
④ WHALEN, WY. TO THE TRI-STATE DAM IN NEBR.
⑤ TRI-STATE DAM TO KINGSLEY RESERVOIR

Seminoe Reservoir (Kendrick Project)
Wyoming Permit No. 4552 R for 1,026,360 a-f Date 12-1-1931
Current Capacity: 1,017,273 a-f

Kortes Reservoir (Pick-Sloan Missouri Basin Program)
Wyoming Permit No. 5580 R for 4,640 a-f Date 9-11-1933
Current capacity: 4,739 a-f

Pathfinder Reservoir (North Platte Project)
Wyoming Permit No. 609 R for 1,070,000 a-f Date 12-6-1904
Current capacity: 1,016,507 a-f

Alcova Reservoir (Kendrick Project)
Wyoming Permit No. 4630 R for 184,295 a-f Date 4-25-1936
Current capacity: 184,405 a-f

Gray Reef Reservoir (Pick-Sloan Missouri Basin Program)
Wyoming Permit No. 6489 R Date 8-12-1959
Current capacity: 1,800 a-f

Glendo Reservoir (Pick-Sloan Missouri Basin Program)
Wyoming Permit No. 5998 R for 800,000 a-f Date 8-30-1951
Current capacity: 789,402 a-f

Guernsey Reservoir (North Platte Project)
Wyoming Permit No. 3905 R for 71,040 a-f Date 4-20-1923
Current capacity: 45,612 a-f

Lake Alice (North Platte Project)
Current capacity: 11,015 a-f

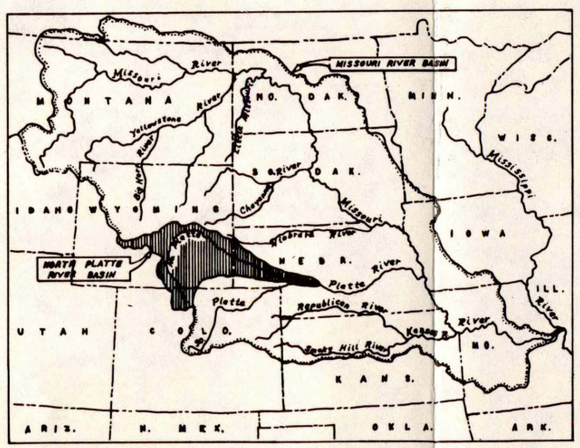
Little Lake Alice (North Platte Project)

Lake Winters Creek (North Platte Project)
Current capacity: 2,964 a-f

Lake Minatare (North Platte Project)
Current capacity: 60,776 a-f

REFERENCE DRAWINGS

NORTH PLATTE RIVER AREA IRRIGATION.....20-703-5198




LEGEND

IRRIGATED LANDS

SCALE OF MILES

10 0 10 20 30 40

| | |
|---|---|
| 5-23-88 703 D.W. | ADDED SPEC. MASTER'S NUMBERS & PROPOSED DEER CREEK RES. & CORN CREEK PROJECT |

ALWAYS THINK SAFETY

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

# NORTH PLATTE RIVER BASIN

DESIGNED _____ FIELD APPROVAL _____
DRAWN C.C. TECHNICAL APPROVAL _____
CHECKED _____ APPROVED _____

CASPER, WYOMING MARCH 31, 1987 | 20-703-5199