

## PREFACE

This report concerns the operation of all Bureau of Reclamation (Reclamation) facilities in the North Platte River Drainage Basin above and including Guernsey Dam as well as the four Inland Lakes near Scottsbluff, Nebraska. This area of the North Platte River Drainage Basin is simply referred to in this report as the Basin.

References to average in this document will refer to the average of the historical record for the years 1972-2001, except for Water Year 2003 information which uses the years 1973-2002. In each coming year this period will be advanced by one year to maintain a running 30-year average.

## INTRODUCTION

The System of dams, reservoirs, and powerplants on the North Platte River (referred to as the "System" in this text) is monitored and in most cases operated and managed from the Wyoming Area Office in Mills, Wyoming. The operation and management of the System is aided by the use of a Programmable Master Supervisory Control, computerized accounting process, extensive Hydromet stations, control crest measurement weirs at gaging stations, SNOTEL stations, and a snowmelt runoff forecasting procedure which is used by the Water Management Branch. The System consists of a number of individual water resource projects that were planned and constructed by Reclamation. The individual projects and features are operated as an integrated system to achieve efficiency and to produce increased multipurpose benefits. The drainage basin which affects the System covers an area from northern Colorado to southeastern Wyoming, encompassing 16,224 square miles. Storage reservoirs affected by the System include four off stream reservoirs known as the Inland Lakes in western Nebraska as shown in figure 21.

Approximately 70 to 80 percent of the annual North Platte River streamflow above Seminoe Dam occurs from snowmelt runoff during the April-July period. Primary water demand is irrigation, and the period of delivery of irrigation water normally extends from May through September. See Figure 20 represents historical watershed runoff above Pathfinder Reservoir from 1906 through 2002. 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 and Nebraska. Major rivers which affect the water supply in the System are the North Platte River in Colorado and Wyoming, and the Medicine Bow, and Sweetwater Rivers in Wyoming.

The System has seven main stem reservoirs, six of which have powerplants with a generating capacity totaling 237.2 megawatts (MW). Table 1 depicts North Platte River Reservoir Data.

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 nearly 3,500 miles of interconnected electrical transmission lines within the System. The power generating facilities are also interconnected with other Federal, public and private power facilities. Power from Reclamation Powerplants is marketed by WAPA.

Table 1 North Platte River Reservoir Data

Reservoir	Dead Storage 1/ Acre-feet (AF)	Active Storage 2/ (AF)	Total Storage (AF)	Minimum Storage (AF)	Minimum Elevation (feet)
Seminole	556	1,016,717	1,017,273	31,670 4/	6239.00 4/
Kortes	151	4,588	4,739	1,666 4/	6092.00 4/
Pathfinder	7	1,016,500	1,016,507	31,405 4/	5746.00 4/
Alcova	91	184,314	184,405	137,610 5/	5479.50 5/
Gray Reef	56	1,744	1,800	56 6/	5312.00 6/
Glendo	11,033	778,369	789,402 3/	63,148	4570.00 7/
Guernsey	0	45,612	45,612	0	4370.00 8/
Total	11,894	3,047,844	3,059,738	265,555	

1/ Storage capacity below elevation of lowest outlet

2/ Total storage minus dead storage

3/ Top of Conservation capacity 517,485 (Elevation 4635.00) with an additional 271,917 AF allocated to Flood Control (elevation 4653.00)

4/ Minimum water surface elevation and capacity required for power generation  
This level is the top of inactive capacity

5/ Content and minimum elevation required for power generation, however water cannot be delivered to Casper Canal when reservoir level is below 5487.00 (153,802), the elevation of the Casper Canal Gate sill

6/ Top of dead capacity — spillway crest

7/ Minimum water surface elevation for power generation

8/ Elevation of the North Spillway Crest

## SYSTEM PLANNING AND CONTROL

The North Platte River storage, power generation, and water delivery facilities are operated for irrigation, hydroelectric power production, and municipal and industrial water supply. The facilities provide year round flows in the section of the river below Kortes Dam known as the Miracle Mile and also below Gray Reef Dam, 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 Wyoming Area Office in Mills, Wyoming. This office collects and analyzes information daily and makes the decisions necessary for successful operation of the System. The water management function involves coordination between Reclamation, the Department of Energy, and many other local, state, and Federal agencies. When water levels rise into the exclusive flood control pool at Glendo Reservoir, the flood control operation of Glendo Dam is directed by the U.S. Army 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). Early in the Water Year an AOP is prepared, reviewed, and presented to the public. AOPs are prepared for reasonable maximum and reasonable minimum conditions of water supply and requirements as well as for the expected runoff conditions. The System is operated to optimize the expected water supply and still allow changes in operation should either reasonable maximum or reasonable minimum water supply conditions occur. This flexibility is the basis of the plan. Reclamation makes use of computer programs to revise and adjust the operating plan each month to reflect changing conditions. A computerized process of forecasting the anticipated water supply also aids the revision process during the months of February, March, April and May. Figure 1 depicts total storage at the end of September for the North Platte Reservoirs. Table 2 depicts A Summary of end of month Reservoir Storage Content for Water Year 2002.

Table 2 Summary of Reservoir Storage Content

Water Year 2002  
End of month

Seminole Reservoir			Pathfinder Reservoir			Alcova Reservoir		
Month	Storage	Record 1/	Month	Storage	Record 1/	Month	Storage	Record 1/
October	577,086		October	453,331		October	157,080	3/
November	543,924		November	472,871		November	156,065	
December	512,106		December	487,110		December	156,313	
January	480,530		January	502,710		January	156,944	
February	446,633		February	523,030		February	156,583	
March	421,463		March	548,400		March	156,493	
April	428,985		April	548,535		April	177,869	
May	403,959	4th lowest	May	550,572		May	179,279	
June	393,009	Lowest	June	467,771		June	179,790	
July	360,610	211d lowest	July	357,395		July	180,669	
August	329,161	rd lowest	August	286,240		August	286,240	
September	298,556	2nd lowest	September	281,618		September	179,547	
Glendo Reservoir			Guernsey Reservoir			Total System 2/		
Month	Storage	Record 1/	Month	Storage	Record 1/	Month	Storage	Record 1/
October	172,766		October	5,876		October	1,372,496	
November	216,198		November	8,554		November	1,404,023	
December	255,908		December	11,049		December	1,428,922	
January	294,017		January	13,191		January	1,453,662	
February	332,707		February	15,243		February	1,480,518	
March	379,536		March	17,634		March	1,529,781	
April	420,410		April	21,571		April	1,603,202	
May	417,323		May	28,260		May	1,585,575	
June	321,083		June	28,260		June	1,396,232	
July	143,030		July	15,939		July	1,063,939	
August	83,275		August	10,413		August	894,165	
September	114,785		September	1,035		September	881,519	

1/ Record is the 30 year period from 1972-2001

2/ Total North Platte system includes storage in Seminole, Kortez, Pathfinder, Alcova, Gray Reef, Glendo and Guernsey Reservoirs

3/ Alcova Reservoir is maintained within either a winter operating range (between contents of 153,802 AF to 158,302 AF) or a summer operating range (between contents of 177,070 AF to 181,943 AF)

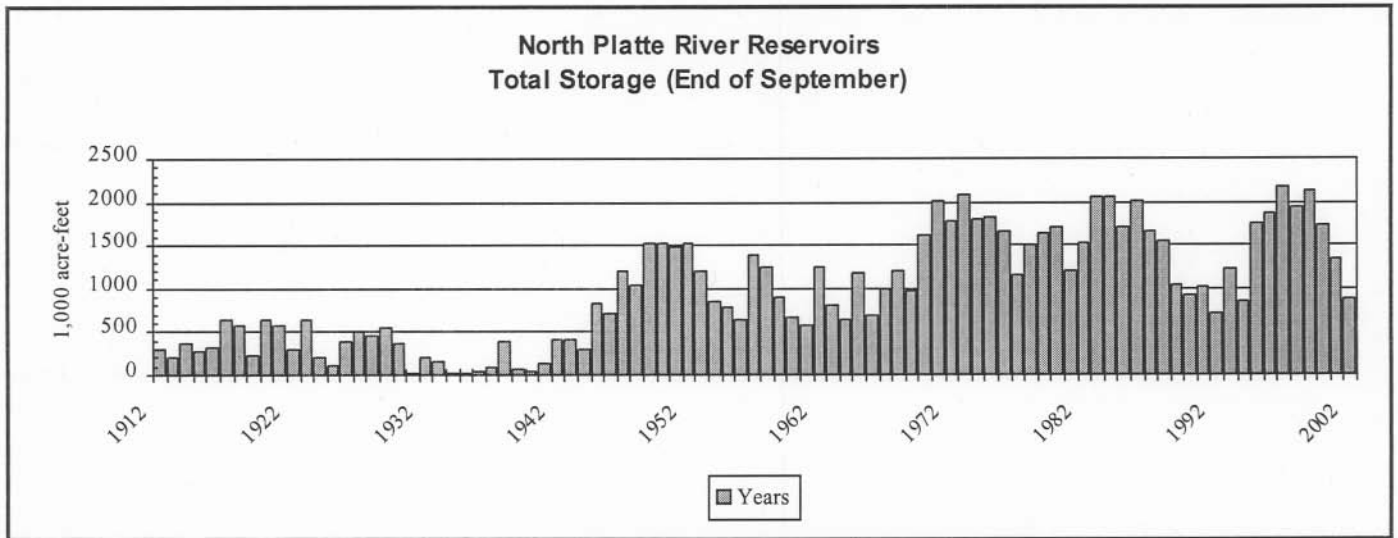


Figure 1 North Platte River Reservoirs – Total Storage (End of September)

### SYSTEM OPERATIONS WATER YEAR 2002 Seminole Reservoir Inflow

Seminole Reservoir inflows were well below average for the entire water year. Only 220,682 AF or 21 percent of the 30 year average entered the system above Seminole Reservoir during the water year which was the lowest Seminole inflow of record since the construction of Seminole Dam in 1939. The monthly inflows ranged from a historical low of 6 percent of average in July, 2002 to a high of only 60 percent in January, 2002. The inflows into Seminole Reservoir for October and November, 2001, were the lowest October and November inflows back to water year 1959. The inflow into Seminole Reservoir for December, 2001, tied the lowest December inflow in the past 30 years which was water year 1977. The inflow into Seminole Reservoir for January, and March 2002, were the 4th lowest January and March Seminole inflow in the past 30 years. The inflow into Seminole Reservoir for April, was the 5th lowest April inflow in the past 30 years. The inflows into Seminole Reservoir for the months of February, and May through September were all the lowest Seminole inflows of record since the construction of Seminole Dam in 1939. The actual April through July inflow totaled 117,900 AF, which is 15 percent of the 30 year average of 772,700 AF and also the lowest April through July inflow of record. The computed Seminole inflow peaked for the water year on April 6, 2002, at only 1,637 cubic feet per second (cfs). Figure 2 depicts a comparison of average, Water Year 2002 and Water Year 2001 monthly inflow.

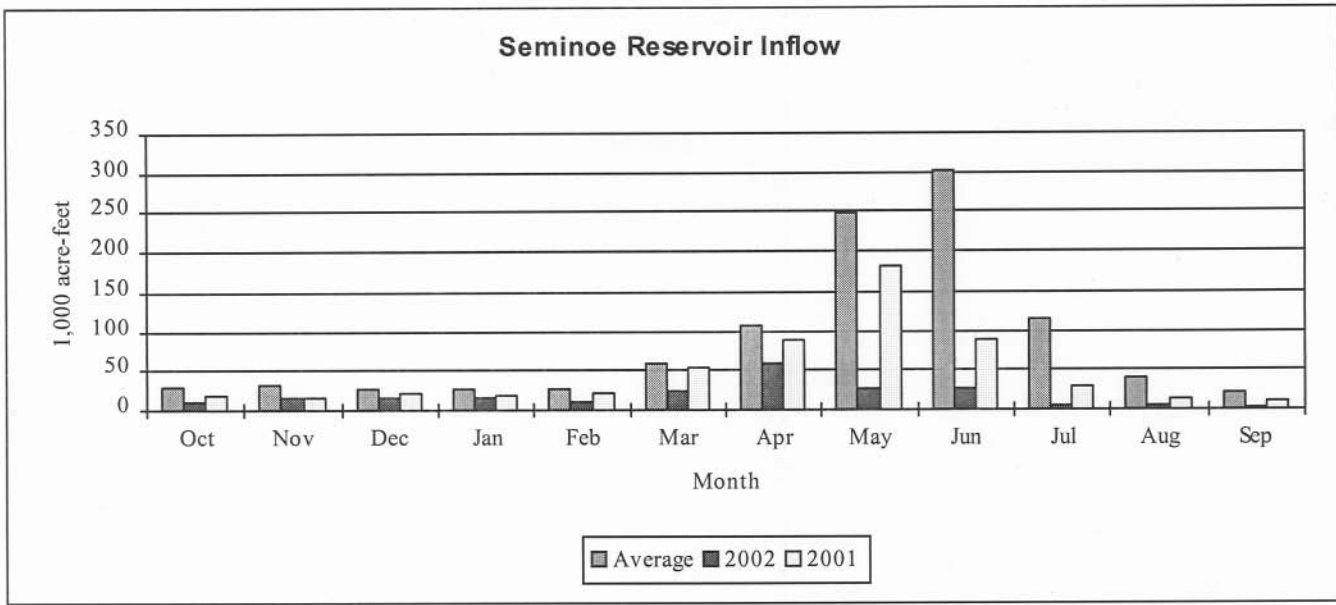


Figure 2 Seminoe Reservoir Inflow

### Seminoe Reservoir Storage and Releases

Seminoe Dam and Reservoir, on the North Platte River, is the main storage facility for the Kendrick Project. Construction of the dam was completed in 1939, providing a storage capacity of 1,017,273 AF. The powerplant contains three electrical generating units with a total capacity of 51 MW at a full release capability of about 4,050 cfs.

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 cfs. Two 60 inch jet flow valves provide a low level river outlet flow capacity of 3,420 cfs.

At the start of Water Year 2002, Seminoe Reservoir had a storage content of 616,175 AF, which was 87 percent of average and 61 percent of capacity. The Seminoe storage content remained below average for the entire water year. The maximum Seminoe Reservoir content was reached on October 1, 2001, at 616,175 AF. At the end of Water Year 2002, Seminoe Reservoir storage content was 298,556 AF, which was 40 percent of average and 29 percent of capacity. See Figure 3 for an end of month storage comparison for the Water Year. Releases averaged near 800 cfs from October, 2001, through May, 2002. At the request of WAPA Loveland Marketing, the daily releases from Seminoe Powerplant were decreased on Sundays and Holidays from October, 2001 through May 2002. The average daily release was increased on days other than Sundays and Holidays to ensure that the monthly AF total release was accommodated. All releases were made through the Seminoe Powerplant, except for April 6, 2002, when testing of the jet-flow valves required a by release. On June 1, 2002 because of the lower than average spring runoff, the Seminoe releases were decreased to approximately 500 cfs and were maintained at that level for the remainder of the Water Year.

Table 3 Seminole Reservoir Hydrologic Data

Water Year 2002

Reservoir Allocations	I Elevation (FT)	Storage (AF)	Storage Allocation (AF)
Top o Inactive and Dead	6239.00	31,670	31,670
Top of Active Conservation	6357.00	1,017,273	985,603
<u>I Crest of Dam (without Camber)</u>	<u>6361.00</u>		

Storage-Elevation Data	I Elevation (FT)	Storage (AF)	Date
Beginning of Water Year	6333.10	616,175	Oct 1,2001
End of Water Year	6302.79	298,556	Sep 30,2002
Annual Low	6302.79	298,556	Sep 30, 2002
Historic Low 1/	6253.30	56,390	Apr 20, 1961
Annual High	6333.10	616,175	Oct 1, 2001
<u>Historic High 1/</u>	<u>6359.29</u>	<u>1,073,050</u>	<u>Jun 20, 1949</u>

1/Daily records for this table are only available from Water Year 1946.

Inflow-Outflow Data	Inflow 2/	Date	Outflow	Date
Annual Total (AF)	220.6	Oct, 2001 - Sep, 2002	508.6	Oct, 2001 - Sep, 2002
Daily Peak (CFS)	1637.0	Apr 6, 2002	903.0 3/	Nov 30, 2001
Daily Minimum (CFS)	2.0	Dec 2, 2001	473.0 3/	Mar 17&Aug 19, 2002
Peak Jet Flow Valve (CFS)			32.0 4/	Apr 9, 2002 4/
Total Jet Flow Valve (CFS)			32.0 4/	Apr 9, 2002 4/

2/Inflows are a computed number 3/Daily peak and minimum are releases to the river. 4/Testing

Month	Inflow		Outflow		Content	
	KAF	% of Avg. 5/	KAF	% of Avg. 5/	KAF	% of Avg. 5/
October	11.6	38	49.4	85	577.1	80
November	16.0	52	47.9	76	543.9	80
December	15.5	56	46.4	62	512.1	81
January	15.5	60	46.1	58	480.5	83
February	10.2	37 6/	43.2	62	446.6	83
March	24.7	43	49.3	58	421.5	83
April	58.1	54	48.2	53	429.0	82
May	26.5	116/	47.1	48	404.0	61
June	26.8	9 6/	32.4	23	393.0	48
July	6.5	6 6/	33.7	31	360.6	44
August	5.7	15 6/	32.9	43	329.2	43
September	3.5	16 6/	32.0	64	298.6	40
Annual	220.6	22	508.6	51		

5/The 30 year average is the period (1972-2001)

6/Historic low since the construction of Seminole Darn in 1939

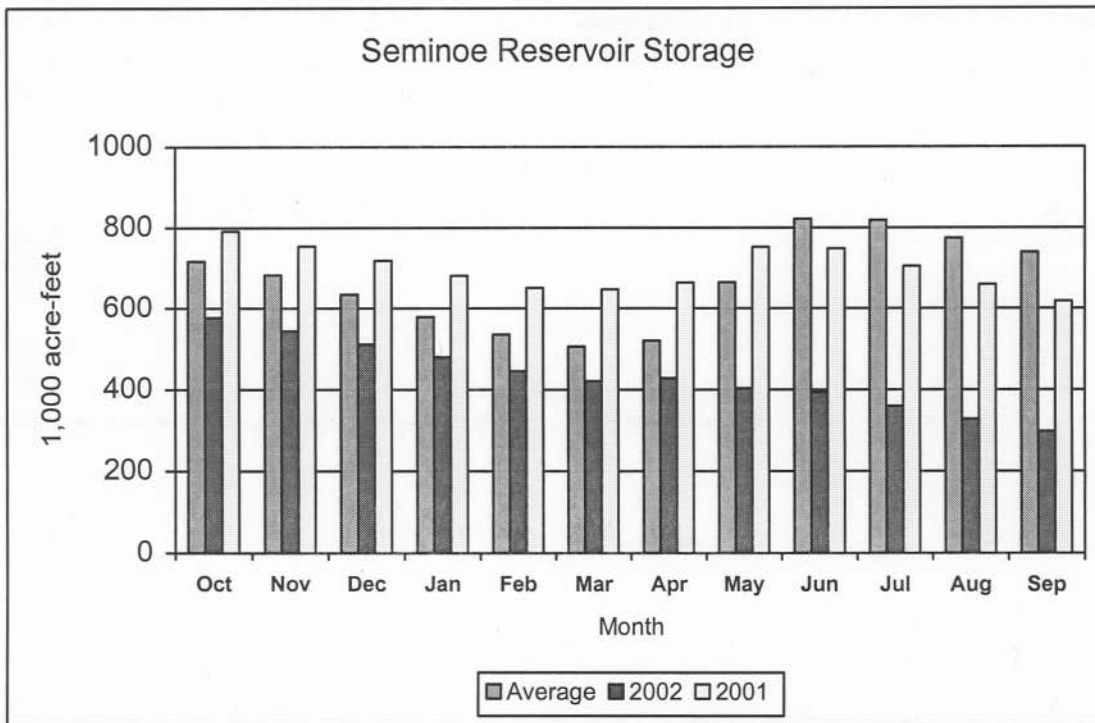


Figure 3 Seminoe Reservoir Storage

### Kortes Reservoir Storage and Releases

Completed in 1951, Kortes Dam, Reservoir, and Powerplant of the Kortes Unit (Pick-Sloan Missouri Basin Project) are located about 2 miles below Seminoe Dam. It was the first unit initiated by the Bureau of Reclamation under the Missouri River Basin Project. Kortes Reservoir provides a maximum storage capacity of 4,739 AF at elevation 6165.7 feet. Kortes Powerplant has three electrical generating units with a total capacity of 36 MW and a release capability of approximately 3,000 cfs. Water released from Seminoe Dam to Pathfinder Reservoir passes through the Kortes turbines to generate power. Maximum benefits are obtained when Kortes Reservoir remains full and the power releases are coordinated with those from Seminoe powerplant to maintain a full reservoir.

The spillway on the right abutment consists of an uncontrolled crest with a concrete-lined tunnel and has a capacity of 50,000 cfs.

Senate Bill 2553 which was passed in the 90th Congress authorized the modification of the operation of Kortes Dam and Powerplant to provide a minimum streamflow of 500 cfs in the North Platte River between Kortes Reservoir and the normal headwaters of Pathfinder Reservoir. The minimum flow permits maintenance of a fishery in a stretch of the North Platte River commonly referred to as the "Miracle Mile".



The Kortes releases averaged approximately 800 cfs from October, 2001, through May, 2002. At the request of WAPA Loveland Marketing, the daily releases from Kortes Powerplant were decreased on Sundays and Holidays from October, 2001 through May 2002. The average daily release was increased on days other than Sundays and Holidays to ensure that the monthly AF total release was accommodated. On June 1, 2002, because of the lower than average spring runoff, the Kortes releases were decreased to approximately 500 cfs and maintained at that level for the remainder of the Water Year. In Water Year 2002, all releases were made through the Kortes Powerplant except for six occasions when testing required a bypass. Those bypass releases occurred on October 8, 10, 12, and 15th, 2001, March 13, 2002, and April 17, 2002. The highest releases for the Water Year were made on November 9, 2001, with a peak flow of only 881 cfs.

#### Gains to the North Platte River Kortes Dam to Pathfinder Dam

Kortes Dam to Pathfinder Dam river gains were well above average from November, 2001 through March, 2002, with the remaining months being below average during the Water Year. The Kortes to Pathfinder river gains for February 2002, were the 3<sup>rd</sup> highest of record since the completion of Kortes Dam in 1951. The Kortes Dam to Pathfinder Dam river gains ranged from 200 percent in February, 2002 to 22 percent of average in August, 2002. The actual April through July gain was 42,400 AF, which is 41 percent of the 30 year average. Figure 4 depicts a comparison of average, Water Year 2002 and Water Year 2001 monthly river gains.

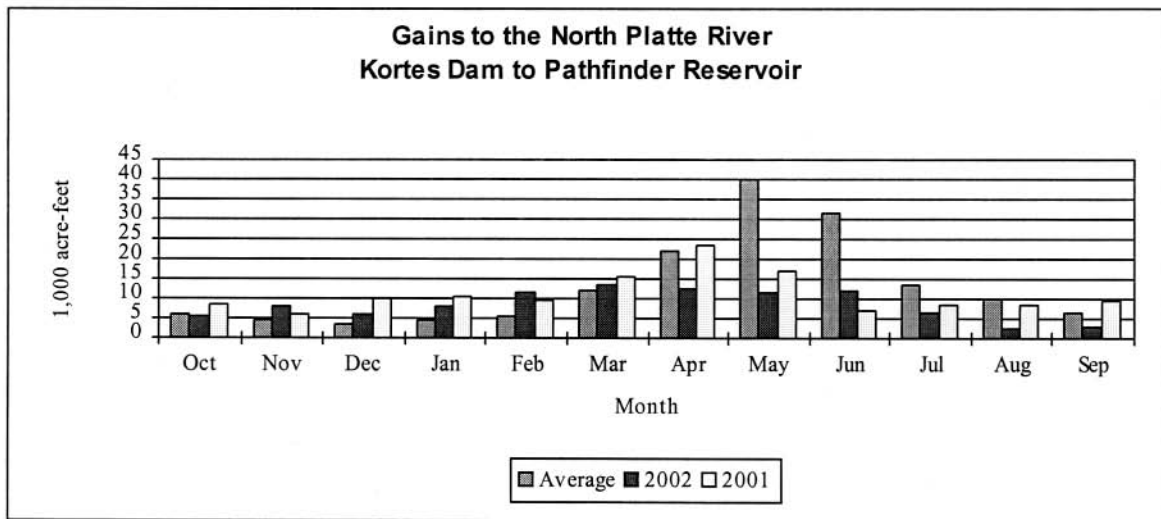


Figure 4 Gains to the North Platte River Kortes Dam to Pathfinder Reservoir

## Pathfinder Reservoir Storage and Releases

Pathfinder Dam and Reservoir, a major storage facility of the North Platte Project, has a total capacity of 1,016,507 AF at elevation 5850.10 feet. Construction of the dam was completed in 1909. Operationally, this structure is a bottleneck in the System with its restricted release capability of approximately 6,000 cfs. The rated capacity of the left abutment outlet works through the two 60-inch jet flow gates is 2,928 cfs at elevation 5850.10 feet. The flow capacity range of the 30-inch jet flow gate is from approximately 50 to 450 cfs. Depending on the elevation of the reservoir, as much as 2,900 cfs can be released through the Fremont Canyon Power conduit and discharged from the Fremont Canyon turbines at the powerplant 3 miles downstream. The uncontrolled spillway is a flat-crested weir of natural rock over the left abutment of the dam and any time the reservoir water surface exceeds 5850.10 feet a spill occurs. The calculated discharge capacity of the spillway is 33,940 cfs at reservoir elevation 5858.10 feet. Fremont Canyon Powerplant, located in the canyon below Pathfinder Dam, has been reconditioned generation to a capacity of 66.8 MWs under full reservoir operating head.

At the end of Water Year 2001, storage in Pathfinder Reservoir was 423,895 AF, which was 76 percent of average and 41 percent of capacity. Pathfinder storage remained below average for the entire Water Year. (See figure 5). The maximum Pathfinder Reservoir content for the Water Year was reached on May 21, 2002, at 553,982 AF. The Water Year ended with 281,618 AF of water in storage in Pathfinder Reservoir, which was 50 percent of average and only 28 percent of capacity. A continual release of water from Pathfinder Reservoir during October was maintained during the gradual drawdown of Alcova Reservoir to its winter operating range. At the request of the Wyoming Game and Fish Department a year round flow was initiated on July 1, 2002 to the river below Pathfinder Dam. A dedication to celebrate the restored year round flows to the North Platte River below Pathfinder Dam was held on August 3, 2002. The dedication was also a celebration to mark the 100<sup>th</sup> anniversary of the Bureau of Reclamation and featured Reclamation's Commissioner, John W. Keys, III, and the Great Plains Regional Director, Maryanne C. Bach as key note speakers for the event.

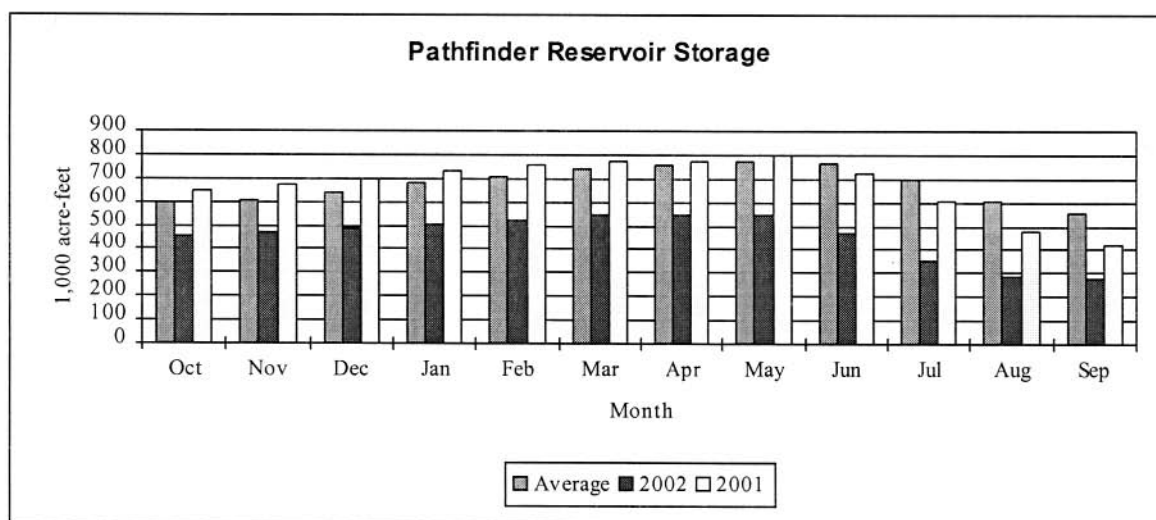


Figure 5 Pathfinder Reservoir Storage

Table 4 Pathfinder Reservoir Hydrologic Data

Water Year 2002

Reservoir Allocations	Elevation (FT)	Storage (AF)	Storage Allocation (AF)					
Top of Inactive and Dead	5746.00	31,405	31,405					
Top of Active Conservation	5850.10	1,016,507	985,102					
Crest of Dam (without Camber)	5858.10							
Storage-Elevation Data	Elevation (FT)	Storage (AF)	Date					
Beginning of Water Year	5813.58	424,220	Oct 1, 2001					
End of Water Year	5798.03	281,618	Sep 30, 2002					
Annual Low	5798.02	281,540	Sep 27, 2002					
Historic Low 1/ 2/	5690.00	0	Sep 9, 1958					
Annual High	5824.21	553,982	May 21, 2002					
Historic High 1/	5853.11	1,083,755	Jul 7, 1983					
1/ the daily records for this table are only available from Water Year 1946								
2/ From September 1958 through January 1959, Pathfinder Reservoir was drained for construction of Fremont Canyon tunnel.								
Inflow-Outflow Data	Inflow	Date	Outflow	Date				
Annual Total (AF)	609,200	Oct, 2001 - Sep, 2002	713,700	Oct, 2001 - Sep, 2002				
Daily Peak (CFS)	1,585	March 13, 2002	2,813	June 27, 2002				
Daily Minimum (CFS)	220	June 18, 2002	0	October 23, 2001				
Peak Jet Flow Valve (CFS)			75 3/	Starting July 1, 2002				
Total Jet Flow Valve (AF)			13,332 3/	Oct, 2001 - Sep, 2002				
3/At the request of the Wyoming Game and Fish Department a flow of 75 cfs will be provided through the Pathfinder Reservoir 30 inch Jet-Flow Valve to the river below Pathfinder Dam.								
Month	Gain from Kortess		Inflow 5/		Outflow		Content	
	KAF	% of Avg. 4/	KAF	% of Avg. 4/	KAF	% of Avg. 4/	KAF	% of Avg. 4/
October	5.6	90	55.0	86	22.8	60	453.3	76
November	7.9	180	55.7	82	35.0	70	472.9	78
December	6.1	174	52.5	67	37.4	81	487.1	76
January	8.0	170	54.2	64	37.6	81	502.7	74
February	11.4	200	54.7	72	33.2	78	523.0	74
March	13.7	114	63.0	65	36.9	57	548.4	74
April	12.4	56	60.6	54	57.3	63	548.5	72
May	11.6	29	58.7	43	50.7	44	550.6	71
June	12.0	38	44.3	26	119.3	73	467.8	61
July	6.4	47	40.1	33	143.6	78	357.4	51
August	2.3	22	35.2	41	102.3	61	286.2	47
September	3.2	48	35.1	62	37.6	39	281.6	50
Annual	100.6	63	609.1	53	713.7	64		

4/ 30 year average is the period (1972-2001)

5/ Inflow include the gain from Kortess Dam to Pathfinder Reservoir.

## Alcova and Gray Reef Reservoirs Storage and Releases

Alcova Dam and Reservoir is part of the Kendrick Project. The dam serves as a diversion dam for the Casper Canal and the reservoir as a forebay for the Alcova Powerplant. The dam, located about 10 miles downstream from Pathfinder Dam, was completed in 1938. Reservoir storage capacity is about 184,405 AF at elevation 5500 feet, of which only the top 30,600 AF is active capacity available for irrigation of the Kendrick Project. The powerplant consists of two electrical generating units with a total installed capacity of 36 MW at a full release capability of about 4,100 cfs. The spillway is a concrete lined open channel in the left abutment of the dam controlled by three 25 by 40 foot gates with a capacity of 55,000 cfs at a reservoir level of 5500 feet. 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 the potential for ice damage to the canal gate and boat docks.

The annual drawdown of Alcova Reservoir began on October 2, 2001, and continued through October 25, 2001, when Alcova reached its normal winter operating range of 5488 + one foot. The refill of Alcova Reservoir was initiated on April 1, 2002. The water surface elevation was raised above 5497 feet on April 30, 2002, and the reservoir was maintained within 1 foot of elevation 5498 throughout the summer. There were no bypass releases made at Alcova Reservoir during Water Year 2002.

Gray Reef Dam and Reservoir is part of the Glendo Unit, Oregon Trail Division, Pick-Sloan Missouri Basin Program. The dam which was completed in 1961, is a three-zoned rock and earthfill structure located about 2.5 miles below Alcova Dam. The reservoir has an active capacity of 1,744 AF. Gray Reef Reservoir is operated to reregulate widely fluctuating water releases from the Alcova Powerplant, which provides flows acceptable to irrigation, municipal, industrial, and fish and wildlife interests along the 147 miles of river between Alcova and Glendo Dams.

The Gray Reef releases were maintained at 600 cfs from October 1, 2001 until October 8, 2001. At the request of the Wyoming Game and Fish Department, a series of flushing flows were initiated on October 9, 2001, and continued through October 12, 2001, during which the flows were varied each day from 500 cfs to 4,000 cfs, for the purpose of flushing silt from spawning gravels used by trout. At the completion of the flushing flows, releases from Gray Reef were then set at 600 cfs until May 31, 2002. Releases for the remainder of the Water Year were adjusted to manage upstream inflows from snowmelt runoff and to meet irrigation demands below Guernsey Reservoir. The largest release of water for the Water Year occurred on June 29, 2002 at 2,305 cfs.

River gains from Alcova Dam to Glendo Reservoir were below average the entire Water Year. The actual April through July gain was only 18,300 AF, which was 13 percent of average. The computed daily river gains peaked on March 4, 2002, at 1,537 cfs and the daily computed Glendo inflow peaked on June 30, 2002 at 4,143 cfs. See Figure 6.

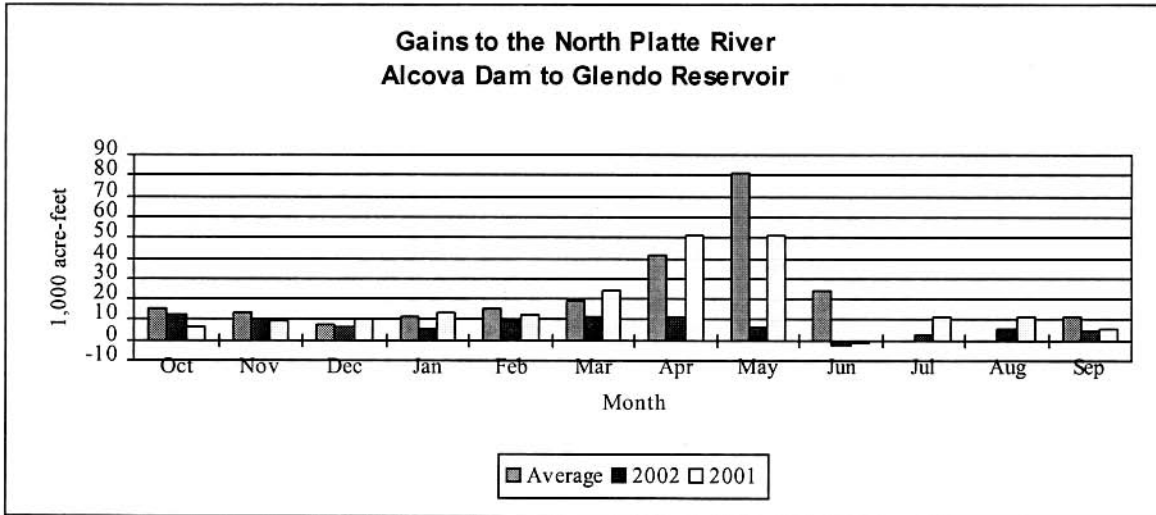


Figure 6 Gains to the North Platte River Alcova Dam to Glendo Reservoir

## Glendo Reservoir Storage and Releases

Glendo Dam and Reservoir is the only storage facility for the Glendo Unit. The reservoir has a storage capacity of 789,402 AF, including 271,917 AF allocated to flood control. Glendo Powerplant consists of 2 electrical generating units, with a total installed capacity of 38 MW. With both generating units operating at capacity and the reservoir water surface at elevation 4635.0 feet, approximately 3,920 cfs can be released through Glendo Powerplant. The reinforced concrete spillway has an ungated ogee crest. The spillway capacity at elevation 4669.0 feet, (6 feet below the crest of the dam), is 10,335 cfs.

The outlet works from Glendo Dam consist of the primary outlet works which discharge at the powerplant, and the low-flow outlet which discharges to the river immediately below the dam. The three primary outlet gates can release a combined discharge of 13,000 cfs with the powerplant shut down. Releases are, however, restricted to 6,600 cfs as a precautionary practice. This precautionary practice is to minimize the potential for damage to the stilling basin and training walls. In order to exceed 6,600 cfs discharge through the primary outlet works, prior approval of the Director, Denver Technical Service Center and of the Great Plains Regional Director, Billings, Montana is required. The low-flow outlet works are operated to maintain a continuous release of approximately 25 cfs. This provides a reliable water source for the downstream wetland area and results in associated fish and wildlife benefits.

Glendo Reservoir storage was 118,126 AF at the beginning of Water Year 2002, which was 120 percent of average but only 23 percent of capacity. Water releases from Glendo Reservoir were initiated on April 29, 2002, in order to refill Guernsey Reservoir in preparation of releases. The reservoir reached a maximum storage for the year of 430,185 AF (elevation 4627.30 feet) on May 13, 2002. At the end of the Water Year, Glendo Reservoir contained 114,785 AF of water (water surface elevation 4583.80 feet) which was 116 percent of average and only 22 percent of capacity. Figure 7 depicts Water Year 2002 and Water Year 2001 end of month reservoir storage compared to average.

Table 5 Glendo Reservoir Hydrologic Data

Water Year 2002

Reservoir Allocations	Elevation (FT)		Storage (AF)		Storage Allocation (AF)
Top of Inactive and Dead	4570.00		63,148		63,148
Top of Active Conservation	4635.00		517,485		454,337
Top of Exclusive Flood Control	4653.00		789,402		271,917
Maximum water surface(surcharge)	4669.00		1,118,653		329,251
Crest of Darn (without Camber)	4675.00				

Storage-Elevation Data	Elevation (FT)		Storage (AF)		Date
Beginning of Water Year	4584.55		118,126		Oct 1, 2001
End of Water Year	4583.80		114,785		Sep 30, 2002
Annual Low	4572.05		69,747		Aug 18, 2002
Historic Low	4548.10		15,140		Sep 28, 1966
Annual High	4627.30		430,185		May 13, 2002
Historic High	4650.94		758,830		May 28, 1973

Inflow-Outflow Data	Inflow	Date	Outflow 1/	Date
Annual Total (AF)	682,500	Oct, 2001 -	659,900	Oct, 2001 - Sep, 2002
Daily Peak (CFS)	4,143	Sep, 2002	7,498	July 30, 2002
Daily Minimum (CFS)	10	June 30, 2002	25 2/	Oct, 2001 - Sep, 2002
Peak Bypass Release (CFS)		March 1, 2002	8277	July 30, 2002
Total Bypass Release (AF)			133,675	Oct, 2001 - Sep, 2002

1/ Includes the daily release of approximately 25 cfs from the low flow outlet works.  
 2/ A low flow outlet works was completed in 1993 and a release of 25 cfs is maintained year round.

Month	Gain from Alcova		Inflow 6/		Outflow		Content	
	KAF	% of Avg. 4/	KAF	% of Avg. 4/	KAF	% of Avg. 4/	KAF	% of Avg. 4/
October	12.1	78	59.2	76	1.8	60 5/	172.8	101
November	10.8	82	45.4	71	1.5	94 5/	216.2	93
December	6.2	78	42.0	77	1.8	95 5/	255.9	90
January	5.3	48	41.0	73	2.2	110 5/	294.0	86
February	9.0	59	41.3	73	1.9	76 5/	334.6	86
March	11.0	58	49.5	63	1.9	6	379.5	88
April	11.0	27	46.5	42	3.9	5	420.4	91
May	6.7	8	40.2	22	39.0	27	417.3	84
June	-4.3	N/A 3/	85.3	50	175.9	92	321.1	68
July	-1.1	N/A 3/	109.0	67	282.1	89	143.0	46
August	2.5	N/A 3/	87.5	59	145.1	47	83.3	56
September	4.4	40	35.6	35	2.8	2	114.8	116
Annual	73.6	32	682.5	54	659.9	53		

3/ Represents a negative number that makes the percentage meaningless

4/ 30 year average is the period (1972-2001)

5/ 8 year average is the period (1994-2001)

6/ Inflow includes the gain from Alcova Dam to Glendo Reservoir.

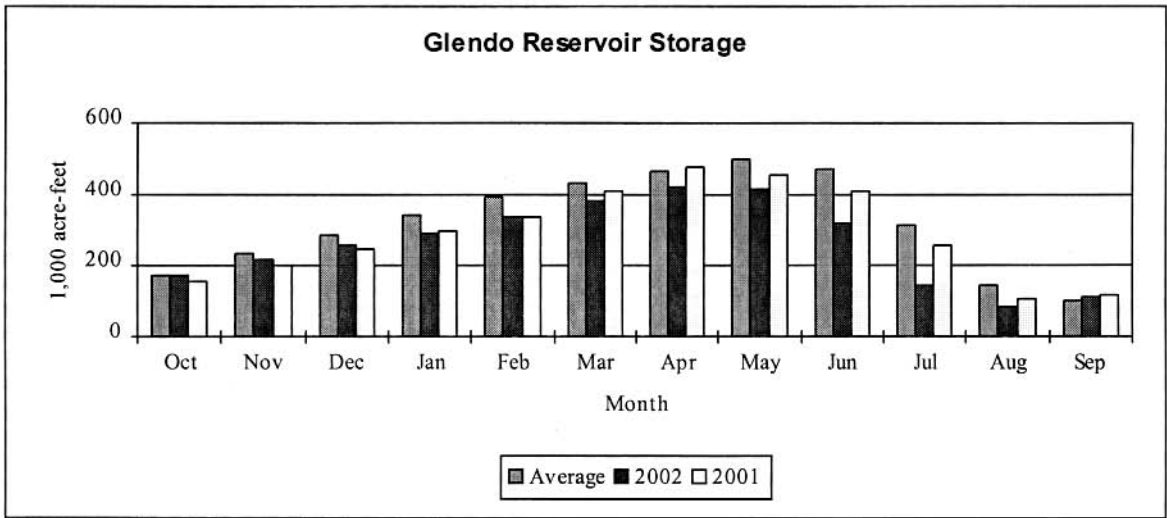


Figure 7 Glendo Reservoir Storage

Gains to the North Platte River Glendo Dam to Guernsey Reservoir

The river gains between Glendo Dam and Guernsey Dam during Water Year 2002, were near or above average for only two months, March, and August, 2002. The actual April through July gain was a negative number and that makes the percentage of average meaningless. On July 30, 2002, daily computed inflow to Guernsey Reservoir peaked at 7,895 cfs. See Figure 8 for the monthly total gains for the Water Year.

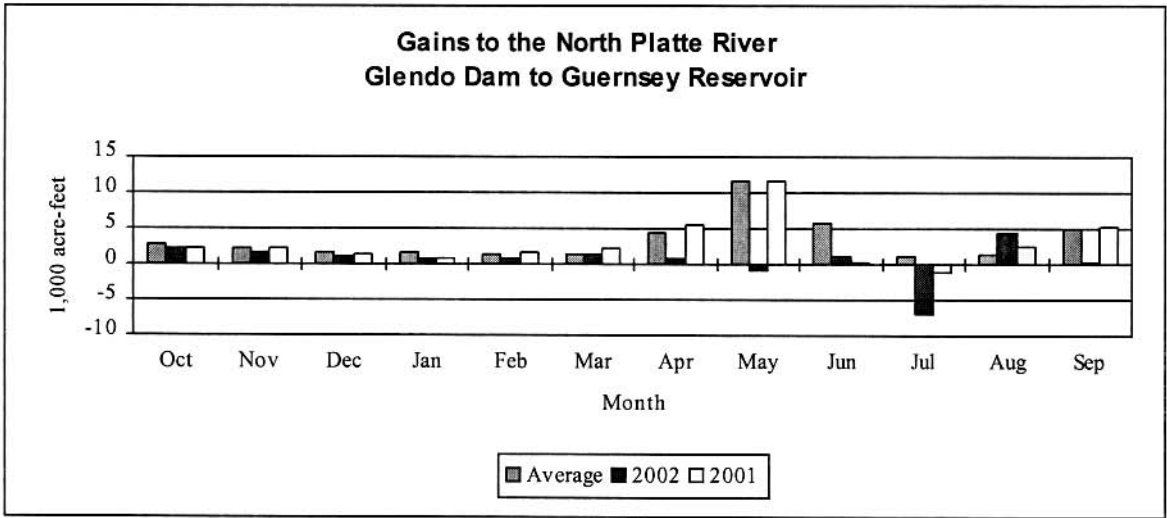


Figure 8 Gains to the North Platte River Glendo Dam to Guernsey Reservoir



## Guernsey Reservoir Storage and Releases

Guernsey Dam located about 25 miles below Glendo Dam, again stores and reregulates 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 of the dam, has two 3.2 MW electrical generating units with a combined release capability of about 1,340 cfs. The windings of both units have been replaced resulting in the rating of 3.2 MW per unit. The north spillway gate, with a capacity of 50,000 cfs at a reservoir level of 4420 feet, is utilized for irrigation releases to supplement the maximum powerplant releases.

The original capacity of the reservoir was 73,800 AF, but this has been greatly reduced by deposition of silt. Utilizing data from the 1980 Sedimentation Survey of Guernsey Reservoir, the March 1982 - Area Capacity Tables and Curves shows about 45,600 AF of available storage.

At the beginning of Water Year 2002, storage in Guernsey Reservoir was drawn down to 2,520 AF. Releases from Guernsey Reservoir were started on May 13, 2002, as water was moved into the Inland Lakes. The annual "silt run" from the reservoir was initiated on July 10 and continued for 19 days. Reservoir storage was reduced to initiate the "silt run" and was maintained at a low level throughout the period. The minimum reservoir content during the "silt run" of 260 AF occurred on July 14, 2002. Following the "silt run," the reservoir was refilled to only 15,939 AF by July 31, 2002. At the end of the irrigation season, September 30, 2002, Guernsey Reservoir contained 1,035 AF. See Figure 9 for Water Year 2002 and Water Year 2001 storage compared to average.

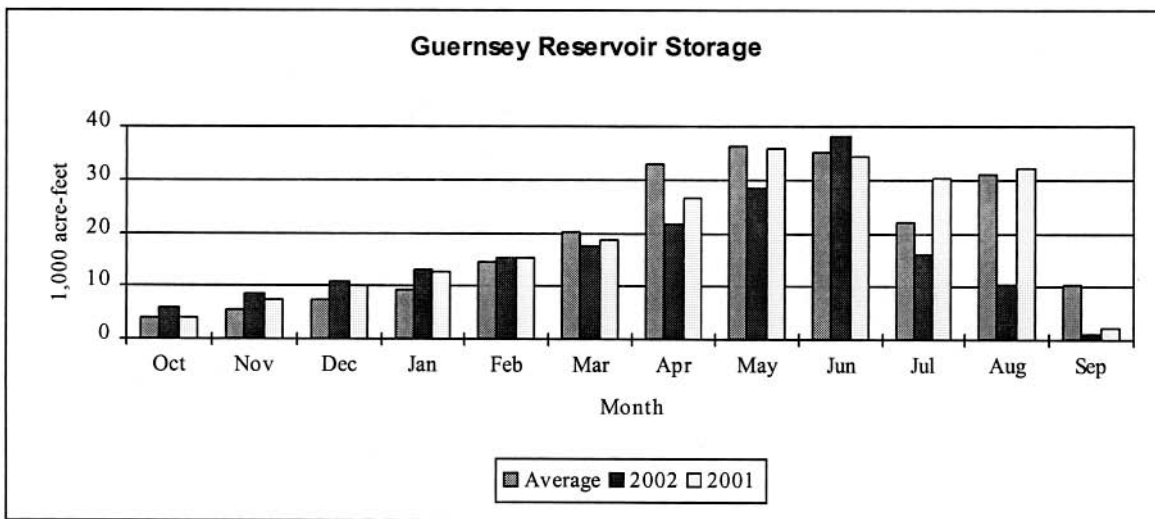


Figure 9 Guernsey Reservoir Storage

## Water Year 2002 Precipitation

Although the precipitation was quite variable from month to month throughout the North Platte River Basin, all watersheds had below average total precipitation for the Water Year.

In the Seminoe watershed, the Spicer, Colorado, weather station recorded the 5th lowest October precipitation in the last 30 years. In the Pathfinder watershed, the Lander, Wyoming weather station recorded the 2nd lowest October precipitation in the last 30 years. In the Glendo watershed, the Casper, Wyoming weather station recorded the 5th lowest October precipitation in the last 30 years.

Precipitation for December was well below average for all watersheds in the North Platte Basin. Precipitation in the Seminoe watershed at the Walden, Colorado weather station, was the lowest precipitation in the last 30 years. The Spicer, Colorado weather station December precipitation tied the 2nd lowest precipitation of record and the Saratoga, Wyoming weather station tied the 2nd lowest precipitation in the last 30 years. Precipitation in the Pathfinder watershed was zero at the Muddy Gap, Wyoming weather station making it the lowest December precipitation of record, and the Lander, Wyoming weather station tied the lowest precipitation in the last 30 years. Precipitation amounts in the Glendo watershed at the Casper and Glenrock, Wyoming weather stations were both the 3rd lowest December precipitation in the last 30 years. Precipitation in the Guernsey watershed at the Glendo Dam, Wyoming weather station was the 2nd lowest of record. For the third time, of record precipitation at the Guernsey Dam, Wyoming weather station was zero for December.

Precipitation for January was well below average for all watersheds in the North Platte Basin. Precipitation in the Pathfinder watershed was zero at the Muddy Gap, Wyoming weather station making it the lowest January precipitation of record, and the Pathfinder Dam, Wyoming weather station tied the 3rd lowest precipitation in the last 30 years. Precipitation amounts in the Glendo watershed at the Casper weather station, tied the 2nd lowest January precipitation of record. Precipitation in the Glendo watershed was zero at the Glenrock, Wyoming weather station making it the lowest January precipitation of record. Precipitation in the Guernsey watershed at the Glendo Dam, Wyoming weather station was the 2nd lowest of record. For the second time, of record January precipitation at the Guernsey Dam, Wyoming weather station was zero.

Precipitation for February was well below average for all watersheds in the North Platte Basin. Precipitation in the Pathfinder watershed at the Pathfinder Dam, Wyoming weather station was the 2nd lowest precipitation in the last 30 years. Precipitation in the Glendo watershed at the Casper, Wyoming weather station was the lowest February precipitation in the last 30 years and has not been this low since 1957.

Precipitation for March was above average for all watersheds in the North Platte Basin except for the Pathfinder watershed. March precipitation in the Seminoe watershed at the Elk Mountain, Wyoming weather station was the highest precipitation in the last 30 years and has not been this high since 1957. Precipitation in the Guernsey watershed at the Guernsey Dam, Wyoming weather station, was the 5th highest March precipitation in the last 30 years.

Precipitation for April was below average for all watersheds in the North Platte Basin. Precipitation in the Seminoe watershed at the Saratoga, Wyoming weather station tied the 2nd lowest April precipitation in the last 30 years. Precipitation in the Seminoe watershed at the Spicer and Walden, Colorado weather stations both recorded the 4th lowest April precipitation in the last 30 years. Precipitation in the Glendo watershed at the Glenrock, Wyoming weather station tied the lowest April precipitation in the last 30 years. Precipitation in the Guernsey watershed at the Guernsey Darn, Wyoming weather station was the lowest April precipitation in the last 30 years and the Glendo Dam, Wyoming weather station was the 2nd lowest April precipitation in the last 30 year.

Precipitation in the Seminoe watershed at the Saratoga, Wyoming and Spicer, Colorado weather stations were the 2nd lowest June precipitation in the last 30 years and the Walden, Colorado weather station tied the 3rd lowest June precipitation in the last 30 years. Precipitation in the Pathfinder watershed at the South Pass, Wyoming weather station recorded the 2nd lowest June precipitation in the last 30 years. Precipitation in the Glendo watershed at the Glenrock, Wyoming weather station was the 3rd lowest June precipitation in the last 30 years.

Precipitation in the Guernsey watershed at the Guernsey Darn, Wyoming weather station tied the 2nd lowest July precipitation in the last 30 years. See Figure 10 for Water Year 2002 and Water Year 2001 Precipitation compared to average.

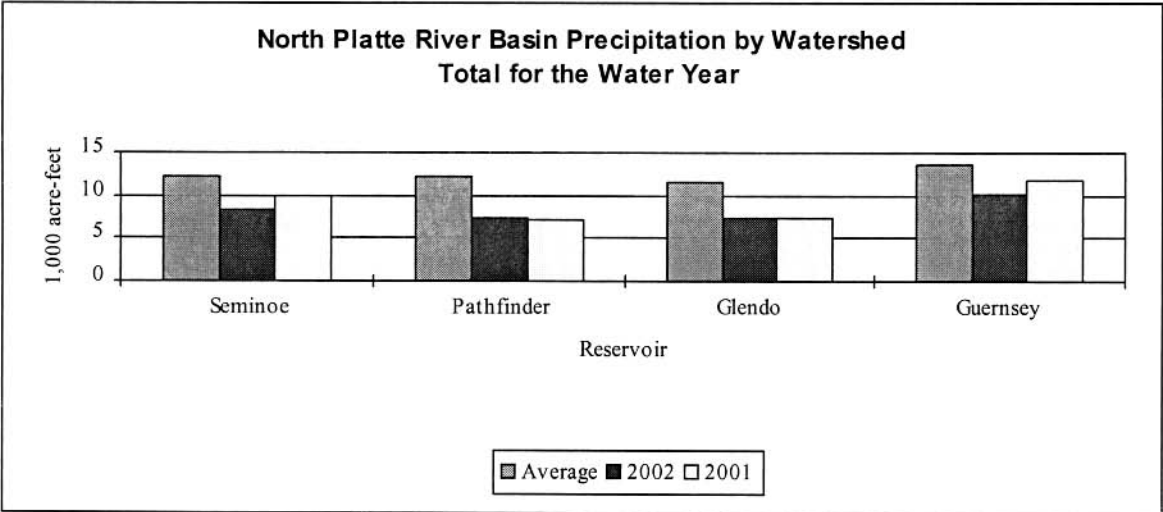


Figure 10 North Platte River Basin Precipitation by Watershed Total for Water Year

## Allocation for water year 2002

Because of low carryover storage, drought conditions and below reasonable minimum snowmelt runoff, an allocation was put into effect on June 3, 2002. The allocation applied to the four Government Districts, (Pathfinder Irrigation District (ID), Goshen ID, Gering-Fort Laramie ID and Northport ID) and to the nine Warren Act Contractors, (Farmers ID, Gering ID, Lingle Water Users Assoc., Hill ID, Rock Ranch I, Central ID, Chimney Rock ID, Browns Creek ID, and Beerline Irrigation Canal Co.) In addition to the allocation, seven Districts entered into a Temporary Water Exchange (Loan)/Replacement Contract with the Bureau of Reclamation. Water loaned to those Districts in water year 2002 was replaced by the Districts in water year 2003 on an acre-foot for acre-foot basis from the first water available to the District, irrespective of existing water supply conditions and the resultant water supply remaining for use by the Districts, following such replacement. The seven districts and the amounts borrowed were Pathfinder ID (40,000 AF), Goshen ID (20,000 AF), Gering-Fort Laramie ID (20,000 AF), Northport ID (10,000 AF), Gering ID (5,000 AF), Brown Creek (1334 AF), and Lingle Water Users Assoc. (414 AF).

At the end of the irrigation season four districts returned 7,524 AF of unused loan water and those Districts were Goshen (6,050 AF), Gering (12 AF), Lingle (382 AF) and Browns Creek (1,080 AF). The remaining 89, 224 AF will be repaid in Water Year 2003.

## Water Year 2002 Ownerships

At the beginning of Water Year 2002, the North Platte Project ownership (includes North Platte Pathfinder and North Platte Guernsey), contained only 196,501 AF of water, which is 45 percent of average. The Kendrick ownership contained 992,355 AF of water, which is 102 percent of average; and the Glendo ownership contained 148,153 AF of water, which is 107 percent of average. No ownerships filled to their permitted amount during water year 2002.

The total amount of water stored at the end of Water Year 2001 in the mainstem reservoirs for use in Water Year 2002 was 1,347,142 AF. This total does not include 31,101 AF of water remaining in the four Inland Lakes in Nebraska.

At the end of Water Year 2002, the North Platte Project ownership (includes North Platte Pathfinder and North Platte Guernsey), contained only 10,870 AF of water which is only 2 percent of average. The Glendo ownership contained 89,893 AF of water which is 65 percent of average. The Kendrick ownership contained 773,926 AF, which is 79 percent of average and the operational/re-regulation water account contained no water. Also stored in the North Platte storage system was 4,924 AF for the City of Cheyenne and 1,906 AF for Pacific Power. See Figure 11 for the last two Water Years ownership carryover compared with average and capacity. Table number 6 shows a summary of ownership for Water Year 2002.

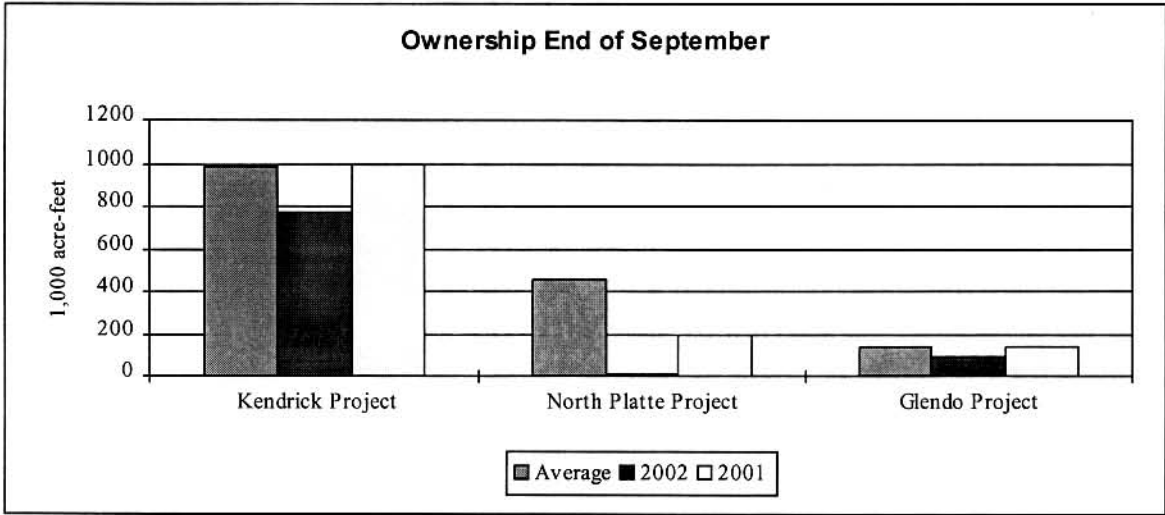


Figure 11 Ownership End of September

Table 6 Summary of North Platte River System Ownership for Water Year 2002

	MONTH	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
PATHFINDER OWNERSHIP															
ACCRUAL <i>N</i>			18208	22131	20006	21267	20259	39262	69743	33811	7342	806	431	6505	259771
EVAPORATION			1562	762	513	602	670	463	2120	4642	6608	4102	460	485	22989
DELIVERY <i>B/I</i>			13 <i>D/</i>	0	0	0	0	2237 <i>E/</i>	0	0	103740	266981	54292	0	427263
OWNERSHIP	196501	213134	234503	253996	274661	294250	330812	398435	427604	324598	54321	0	6020	6020	
KENDRICK OWNERSHIP															
ACCRUAL			0	0	0	0	0	0	0	0	0	0	6444 <i>G/</i>	1080 <i>G/</i>	7524
EVAPORATION			4283	2224	1439	1574	1670	1083	4241	8339	10232	10236	7871	4148	57340
DELIVERY <i>B/</i>			0	0	0	0	0	0	0	10854	18453	115563 <i>E/</i>	18896	4847	168613
OWNERSHIP	992355	988072	985848	984409	982835	981165	980082	975841	956648	927963	802164	781841	773926		
GLENDO OWNERSHIP															
ACCRUAL			13 <i>D/</i>	0	0	0	0	2237 <i>E/</i>	0	0	0	0	0	0	2250
EVAPORATION			1351	359	373	560	472	508	747	2234	3655	4654	3622	1915	20450
DELIVERY & LOSS <i>B/</i>			13 <i>D/</i>	0	0	6	0	0	557	204	2428	16765	8173	11914	40060
OWNERSHIP	148153	146802	146443	146070	145504	145032	146761	145457	143019	136936	115517	103722	89893		
PACIFIC POWER & LIGHT															
ACCRUAL			0	0	0	0	0	0	0	85	16	17	76	0	194
DELIVERY <i>B/</i>			0	0	0	0	0	0	0	0	0	0	0	51	51
EVAPORATION			12	2	2	3	2	2	2	23	30	46	47	29	200
IN STORAGE	1963	1951	1949	1947	1944	1942	1940	1938	2000	1986	1957	1986	1906		
GUERNSEY OWNERSHIP															
ACCRUAL			0	0	6938	5300	9266	11611	55	5831	173	0	1229	3754	44157
EVAPORATION			0	0	45	96	137	144	300	893	785	0	0	133	2533
DELIVERY <i>B/</i>			0	0	0	0	0	0	0	0	36774	0	0	0	36774
OWNERSHIP	0	0	0	6893	12097	21226	32693	32448	37386	0	0	1229	4850		
INLAND LAKES OWNERSHIP															
ACCRUAL			13964	12066	0	0	0	0	11237	187 <i>HI</i>	0	0	0	0	37454
EVAPORATION			64	76	80	70	60	56	124	298	18	0	0	0	846
TRANSFER <i>C/</i>			0	0	0	0	0	0	0	26230	10378	0	0	0	36608
OWNERSHIP	0	13900	25890	25810	25740	25680	25624	36737	10396	0	0	0	0	0	

Summary of North Platte River System Ownership for Water Year 2002 (Continued)

MONTH	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
CITY OF CHEYENNE														
ACCRUAL		551	765	415	1098	357	654	22	1	680	671	701	670	6585
EVAPORATION		17	9	5	7	9	3	42	57	42	48	52	32	323
DELIVERY B/		0	0	0	0	0	0	0	3752	1163	110	56	8	5089
OWNERSHIP	3751	4285	5041	5451	6542	6890	7541	7521	3713	3188	3701	4294	4924	
OPERATIONAL														
ACCRUAL		0	0	0	0	0	0	0	0	0	0	0	0	0
EVAPORATION		67	3	3	6	5	4	5	36	40	7	0	0	176
RELEASED		0	0	0	0	0	0	0	0	2161	1554	0	0	3715
OWNERSHIP	3891	3824	3821	3818	3812	3807	3803	3798	3762	1561	0	0	0	
RE-REGULATION														
ACCRUAL		0	0	0	0	0	0	0	0	0	0	0	0	0
EVAPORATION		0	0	0	1	1	1	0	0	0	0	0	0	3
RELEASED		0	0	0	0	0	0	0	0	525	0	0	0	525
OWNERSHIP	528	528	528	528	527	526	525	525	525	0	0	0	0	
TEMPORARY WATER EXCHANGE(LOAN)														
ACCRUAL											96748	0	0	96748
EVAPORATION											301	932	13	1246
RELEASED											10432	83990	G/ 1080	95502
OWNERSHIP											86015	1093	0	

A/ In 1992 the Wyoming State Engineer granted an exchange which allows Pacific Power to exchange direct flows in the winter months (Oct-Apr) for direct flow in the summer months. During (Oct-Apr).

for direct flow in the summer months. During the winter months some direct flows which are available for storage under Pathfinder storage right are not stored but instead are allowed to Pathfinder's storage right are not stored but instead are allowed to pass downstream for use by Pacific Power. In exchange, starting on May 1 Pacific Power allows some of its available direct flow to pass downstream to Glendo Reservoir to be stored as Pathfinder ownership to make up for the winter direct flows that Pathfinder could have stored but allowed to pass downstream to Pacific Power. The exchange water was returned to Pathfinder at a rate of 26 AF daily starting on May 1, 2002 until August 17, 2002, when the last 15 AF of the exchange water was returned.

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

C/ Transfer refers to Inland Lakes ownership water which was delivered from storage in Glenda or Guernsey. In May and June, 26230 AF and 10,378 AF were delivered to the Inland Lakes respectively.

D/ Not an actual accrual or delivery but a correction to the ownership record which was made on October 11 and October 18, 2002 to account for delivery of Glendo Temporary service contracts water which taken prior to the end of the Water Year. The correction was also reflected on revised ownership accounting sheet for September 30

E/ Not an actual accrual or delivery but a correction 2,237 AF of water which was not delivered to CNPPID in Water Year 2001. This water will be delivered at the end of Water Year 2002.

F/ 96,748 AF in a Temporary Water Exchange (Loan)/Replacement contract between seven NP I.D.s and the Bureau of Reclamation. The loan water will be repaid in Water Year 2003.

G/ 6,444 AF of loan water was returned on August 30, 2002 and 1,080 AF was returned on September 17, 2002, with the remainder of 89,224 AF to be repaid in WY 2003.

I-1/ Not an actual accrual but a corrections to the ownership which was made on May 2 for 56 AF, May 9 for 97 AF, and May 14 for 35 AF to account for delivery of Glendo Temporary Service Contracts which were used in April 2002 but not reported by the contractors until after May 1, 2002.

Table 7 Actual Reservoir Operations

NORTH PLATTE RIVER ACTUAL RESERVOIR OPERATIONS  
Year Beginning Oct 2002

HYDROLOGY OPERATIONS

Seminole Reservoir Operations		Initial Content 617.8 Kaf						Operating Limits:			Max	1017.3 Kaf,	6357.00 Ft.
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	31.7 Kaf,	6239.02 Ft.
												31.7 Kaf,	6239.02 Ft.
Total Inflow	kaf	11.6	16.0	15.5	15.5	10.2	24.7	58.1	26.5	26.8	6.5	5.7	3.5
Total Inflow	cfs	189.	269.	252.	252.	184.	401.	977.	431.	451.	106.	93.	59.
Turbine Release	kaf	49.4	47.9	46.4	46.1	43.2	49.3	48.2	47.1	32.4	33.7	32.9	32.0
Jetflow Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spillway Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Release	kaf	49.4	47.9	46.4	46.1	43.2	49.3	48.2	47.1	32.4	33.7	32.9	32.0
Total Release	cfs	804.	804.	755.	751.	779.	802.	810.	766.	544.	548.	536.	538.
Evaporation	kaf	2.9	1.3	0.9	1.0	0.9	0.5	2.4	4.4	5.4	5.2	4.2	2.1
End-month content	kaf	577.1	543.9	512.1	480.5	446.6	421.5	429.0	404.0	393.0	360.6	329.2	298.6
End-month elevation	ft	6330.1	6327.5	6324.9	6322.1	6319.0	6316.5	6317.3	6314.8	6313.6	6310.1	6306.5	6302.8
Kortes Reservoir Operations		Initial Content 4.7 Kaf						Operating Limits:			Max	4.8 Kaf,	6142.73 Ft.
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	1.7 Kaf,	6092.73 Ft.
Total Inflow	kaf	49.4	47.9	46.4	46.1	43.2	49.3	48.2	47.1	32.4	33.7	32.9	32.0
Total Inflow	cfs	804.	804.	755.	751.	779.	802.	810.	766.	544.	548.	536.	538.
Turbine Release	kaf	49.4	47.8	46.4	46.1	43.3	49.3	48.2	47.1	32.3	33.6	33.0	31.9
Spillway Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Release	kaf	49.4	47.8	46.4	46.1	43.3	49.3	48.2	47.1	32.3	33.6	33.0	31.9
Total Release	cfs	804.	804.	755.	751.	779.	802.	810.	766.	543.	547.	537.	537.
Pathfinder Reservoir Operations		Initial Content 423.9 Kaf						Operating Limits:			Max	1016.5 Kaf,	5850.10 Ft.
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	31.4 Kaf,	5746.00 Ft.
Sweetwater Inflow	kaf	1.3	2.4	2.4	2.6	1.3	2.4	7.0	3.9	2.8	0.8	0.6	0.8
Kortes-Path Gain	kaf	4.3	5.5	3.7	5.4	10.1	11.3	5.4	7.7	9.2	5.6	1.7	2.4
Inflow from Kortes	kaf	49.4	47.8	46.4	46.1	43.3	49.3	48.2	47.1	32.3	33.6	33.0	31.9
Total Inflow	kaf	55.0	55.7	52.5	54.1	54.7	63.0	60.6	58.7	44.3	40.0	35.3	35.1
Total Inflow	cfs	894.	936.	854.	880.	985.	1025.	1018.	955.	744.	651.	574.	590.
Turbine Release	kaf	22.8	35.0	37.4	37.6	33.2	36.9	57.3	50.5	118.8	139.9	97.7	33.3
Jetflow Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	3.7	4.6	4.3
Spillway Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Release	kaf	22.8	35.0	37.4	37.6	33.2	36.9	57.3	50.6	119.3	143.6	102.3	37.6
Total Release	cfs	371.	588.	608.	611.	599.	600.	963.	825.	2013.	2395.	1738.	704.
Evaporation	kaf	2.8	1.1	0.9	0.9	1.2	0.7	3.2	6.0	7.8	6.8	4.2	2.1
End-month content	kaf	453.3	472.9	487.1	502.7	523.0	548.4	548.5	550.6	467.8	357.4	286.2	281.6
End-month elevation	ft	5816.1	5817.9	5819.0	5820.3	5821.9	5823.8	5823.8	5824.0	5817.4	5806.9	5798.6	5798.0
Alcova Reservoir Operations		Initial Content 180.5 Kaf						Operating Limits:			Max	184.4 Kaf,	5500.00 Ft.
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	145.3 Kaf,	5483.12 Ft.
Total Inflow	kaf	22.8	35.0	37.4	37.6	33.2	36.9	57.3	50.6	119.8	147.3	106.9	41.9
Total Inflow	cfs	371.	588.	608.	611.	599.	600.	963.	825.	2013.	2395.	1738.	704.
Turbine Release	kaf	45.5	35.8	36.9	36.8	33.4	36.9	35.3	37.3	98.9	122.3	85.3	29.9
Spillway Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Casper Canal Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	18.5	18.5	17.2	6.7
Total Release	kaf	45.5	35.8	36.9	36.8	33.4	36.9	35.3	48.2	117.4	140.8	102.5	36.6
Total Release	cfs	740.	602.	600.	598.	601.	600.	593.	784.	1973.	2290.	1667.	615.
Evaporation	kaf	0.6	0.2	0.2	0.2	0.2	0.1	0.6	1.1	1.5	1.6	1.2	0.7
End-month content	kaf	157.1	156.1	156.3	156.9	156.6	156.5	177.9	179.3	179.8	180.7	179.2	179.5
End-month elevation	ft	5488.5	5488.0	5488.1	5488.4	5488.2	5488.2	5497.3	5497.9	5498.1	5498.5	5497.9	5498.0



Actual Reservoir Operations (Continued)

NORTH PLATTE RIVER ACTUAL RESERVOIR OPERATIONS  
Year Beginning Oct 2002

Gray Reef Reservoir Operations		Initial Content						1.7 Kaf		Operating Limits:		Max	1.8	Kaf, 5332.00 Ft.
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	0.0	Kaf, 5306.00 Ft.	
Total Inflow	kaf	45.5	35.8	36.9	36.8	33.4	36.9	35.3	37.3	98.9	122.3	85.3	29.9	
Total Inflow	cfs	740.	602.	600.	598.	601.	600.	593.	607.	1662.	1989.	1317.	502.	
Total Release	kaf	45.5	35.7	36.9	36.9	33.3	36.9	35.7	36.9	98.7	122.2	85.6	29.8	
Total Release	cfs	740.	600.	600.	600.	600.	600.	600.	600.	1659.	1987.	1392.	501.	
Glendo Reservoir Operations		Initial Content						116.3 Kaf		Operating Limits:		Max	789.4	Kaf, 4653.00 Ft.
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	63.2	Kaf, 4570.02 Ft.	
Alcova-Glendo Gain	kaf	12.1	10.8	6.2	5.3	9.0	11.0	11.0	6.7	-4.3	-1.1	2.5	4.4	
Infl from Gray Reef	kaf	45.5	35.7	36.9	36.9	33.3	36.9	35.7	36.9	98.7	122.2	85.6	29.8	
Total Inflow	kaf	57.6	46.5	43.1	42.2	42.3	47.9	46.7	43.6	94.4	121.1	88.1	34.7	
Total Inflow	cfs	937.	781.	701.	686.	762.	779.	785.	709.	1586.	1969.	1433.	583.	
Turbine Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.0	175.9	282.1	145.0	0.0	
Low Flow Release	kaf	1.8	1.5	1.8	2.2	1.9	2.0	3.9	39.0	175.9	282.1	145.0	2.8	
Spillway Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Irrigation Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.5	0.0	0.0	
Total Release	kaf	1.8	1.5	1.8	2.2	1.9	2.0	3.9	39.0	175.9	282.1	145.0	2.8	
Total Release	cfs	29.	25.	29.	36.	34.	33.	66.	634.	2956.	4588.	2358.	47.	
Evaporation	kaf	1.0	0.3	0.5	0.7	0.7	0.7	1.7	4.3	5.7	4.9	2.1	1.3	
End-month content	kaf	172.8	216.2	255.9	294.0	334.6	379.5	420.4	417.3	321.1	143.0	83.3	114.8	
End-month elevation	ft	4595.2	4602.1	4607.7	4612.6	4617.3	4622.2	4626.4	4626.1	4615.8	4589.8	4575.9	4583.8	
Guernsey Reservoir Operations		Initial Content						2.4 Kaf		Operating Limits:		Max	45.6	Kaf, 4419.99 Ft.
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	0.0	Kaf, 4370.00 Ft.	
Glendo-Guerns Gain	kaf	2.2	1.6	1.1	0.7	0.9	1.3	0.7	-0.9	1.0	-6.9	4.5	0.4	
Inflow from Glendo	kaf	1.8	1.5	1.8	2.2	1.9	2.0	3.9	39.0	175.9	282.1	145.0	2.8	
Total Inflow	kaf	4.0	3.1	2.9	2.9	2.8	3.3	4.6	38.1	176.9	275.2	149.5	3.2	
Total Inflow	cfs	65.	52.	47.	47.	50.	54.	77.	620.	2973.	4475.	2431.	54.	
Turbine Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.6	175.7	287.2	154.2	12.2	
Seepage	kaf	0.4	0.3	0.3	0.6	0.7	0.8	0.5	0.0	0.0	0.0	0.0	0.0	
Spillway Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.9	227.0	1.7	0.0	
Total Release	kaf	0.4	0.3	0.3	0.6	0.7	0.8	0.5	30.6	175.7	287.2	154.2	12.2	
Total Release	cfs	6.	5.	5.	10.	13.	13.	8.	498.	2953.	4671.	2508.	205.	
Evaporation	kaf	0.1	0.0	0.1	0.1	0.1	0.1	0.3	0.8	1.2	0.4	0.9	0.4	
End-month content	kaf	5.9	8.6	11.0	13.2	15.2	17.6	21.6	28.3	28.3	15.9	10.4	1.0	
End-month elevation	ft	4395.7	4398.9	4401.2	4403.0	4404.5	4406.1	4408.5	4412.1	4412.1	4404.9	4400.7	4384.1	

Flood Benefits

Because of the existence of dams on the North Platte River, The Corps of Engineers, Omaha District, estimates that in Water Year 2002 flood damages of \$851,200.00 were prevented. Table 8 is a breakdown by Dam of flood damage prevented by Dams.

Table 8 Flood Damage Prevented by Dams

On the North Platte River System 1/

DAMS	WATER YEAR 2002	PRIOR TO 2002	ACCUMULATED TOTAL
SEMINOE	\$0	\$27,642,800	\$27,642,800
PATHFINDER	\$0	\$8,760,200	\$8,760,200
ALCOVA	\$0	\$477,500	\$477,500
GLENDO	\$851,200	\$61,691,100	\$62,542,300
GUERNSEY	\$0	\$439,000	\$439,000
<b>TOTAL</b>	<b>\$851,200</b>	<b>\$99,010,600</b>	<b>\$99,861,800</b>

1/This data is received from the Army Corps of Engineers Omaha District Office and is revised every October. The period of assessment is 1970 through 2002 except for Glendo Dam, which is 1965 through 2002.

Power generation was below average for all powerplants on the North Platte River Basin in Water Year 2002. See Table 9 for a breakdown of generation by powerplant.

Table 9 Power Generation Water Year 2002

<u>Powerplant</u>	<u>Gross generation(Giga-watt Hours)</u>	<u>% of average</u> 1/
Seminoe	120.1	81
Kortes	123.9	80
Fremont Canyon	260.8	99
Alcova	118.8	91
Glendo	72.6	81
Guernsey	<u>20.3</u>	90
Total Basin	716.5	89

1/ 30 year average (1971-2000).

The table 10 is a data sheet that shows the number of generation units at each powerplant, their capacity and output at rated head.

Table 10 North Platte River Powerplant Data

Powerplant	Number of Units	Capacity Each Unit (kw)	Total 2/ Installed Capacity (kw)	Normal Operating Head (feet)	Output At rated Head (cfs)	30 year Average 1/ (kw)
Seminoe	3	17,000	51,000	97-227	4,050	147,900
Kortes	3	12,000	36,000	192-204	2,910	155,200
Fremont Canyon	2	33,400	66,800	247-363	3,080	261,900
Alcova	2	19,500	39,000	153-165	4,100	129,800
Glendo	2	19,000	38,000	73-156	3,400	89,400
Guernsey	2	3,200	6,400	89-91	1,340	22,200
Total	14	---	237,200	---	---	806,400

1/1972-2001

2/Installed capacity from Monthly Report of Power Operations-Powerplant (Form PO&M 59)

## Glossary

Annual Operating Plan(AOP) - An annual publication which is prepared, reviewed, and presented to the public, with a summary of the actual operations and outlook for the coming Water Year.

Acre-Foot(AF) - A measure of volume of water equal to an area of 1 acre covered with water 1 foot deep. (43,560 cubic feet)

Basin - The watershed from which overland runoff flows into the North Platte River. When used alone in this report it refers to the North Platte River Drainage Basin upstream of Guernsey Dam.

Bypass - That amount of water released from a reservoir other than through the powerplant for those reservoirs which have a powerplant connected to them.

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

Evaporation pool - A volume of water set aside in the accounting process from which reservoir evaporation is subtracted as it occurs. (Used in Glendo storage accounting).

Flood pool - A physical space in the reservoir which is to be occupied only by water from flood events. In Glendo Reservoir, the volume between reservoir elevations 4635.0 feet and 4653.0 feet is reserved exclusively for flood control.

Gains - Water which enters a river in a defined reach from a source other than an upstream release. When flow released into a reach is greater than the river flow exiting the lower end of the reach, the net gain is negative (loss of water in the reach).

Head - The difference in elevation between the reservoir water surface and the power generating turbines at a powerplant which is connected to a reservoir.

Hydromet - Computer software designed for the acquisition, processing, storage and retrieval of hydrological and meteorological data which is gathered via satellite from remote sites.

Inflow - As used in this report is any water which enters a reservoir irrespective of whether it originated in the reach or was released from an upstream storage reservoir.

## Glossary(continued)

Inland Lakes - A series of four off-stream storage reservoirs on the Interstate Canal system in Nebraska which are used to store and re-release irrigation water. (Lake Alice, Lake Minatare, Little Lake Alice, and Lake Winters Creek)

Megawatt(MW) - one million watts

Natural flow - River flow which has originated from a source other than reservoir storage.

Power pool - That space in a reservoir which must be full in order to efficiently generate electrical power through an associated turbine generator

Precipitation - A deposit on the earth of hail, mist, rain, sleet, or snow.

Runoff - That part of precipitation on the Basin which appears as flow in the North Platte River.

Silt Run - The name given to the practice of flushing silt from Guernsey Reservoir into the North Platte River downstream where the silt laden water is diverted by irrigators. The silt tends to settle in the slower moving water of canals and laterals helping to seal the wetted perimeter and reduce seepage losses.

SNOTEL - Snowpack telemetry network. A network of Natural Resources Conservation Service automated sites which continually monitor snowpack and weather conditions and transmit data to a data retrieval center in Portland, Oregon.

System - As used in the report the System includes all storage, delivery, and power generating facilities on the mainstem of the North Platte River in Wyoming.

Water Year - October 1 through September 30

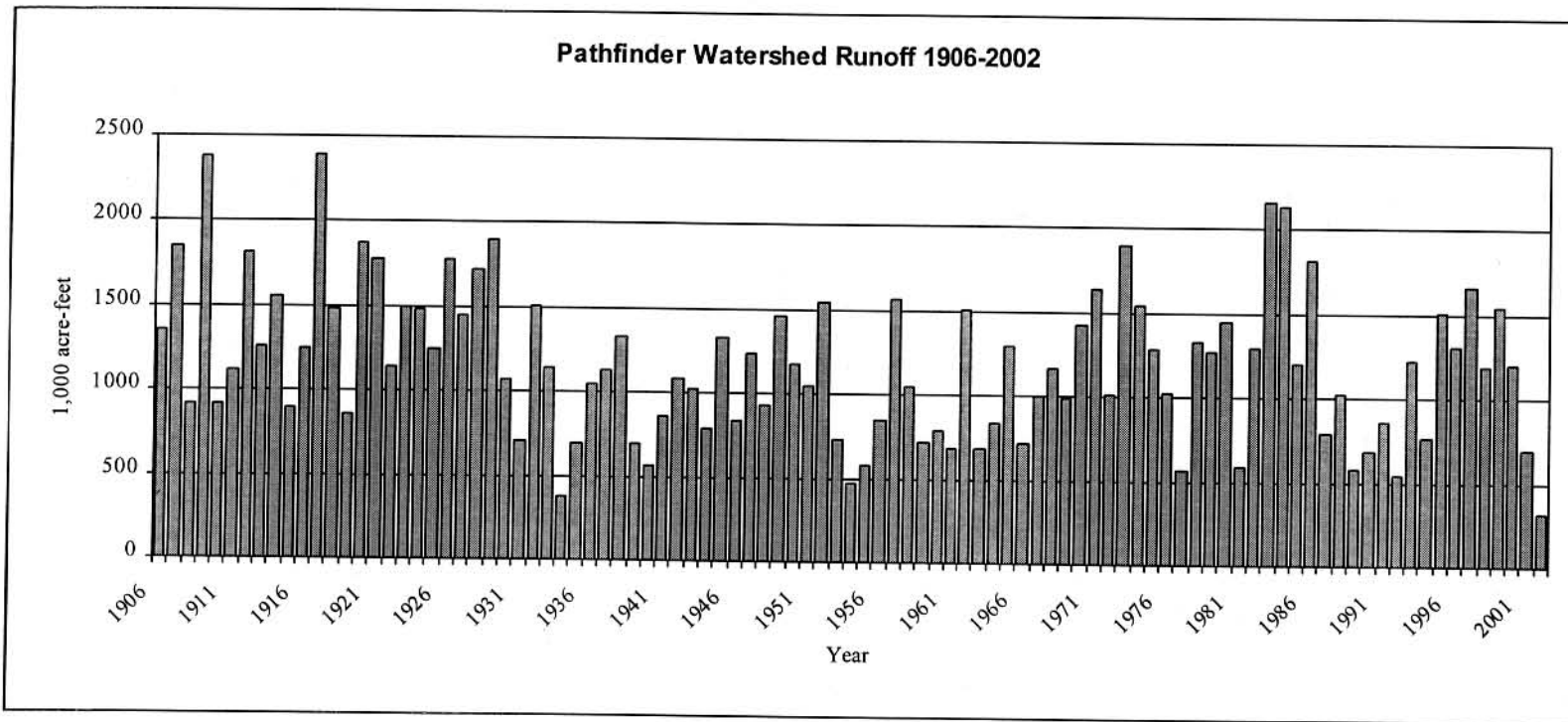


Figure 20 Pathfinder Watershed Runoff 1906-2002