BERRENDA MESA WATER DISTRICT

CEC APLRP Project Case Study

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Prepared for

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BERRENDA MESA W.D

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Project 1. Spillway Modification

Site

Berrenda Mesa Water District (BMWD) is located in the southern part of the San Joaquin Valley near Bakersfield. The district receives water from the State Water Project.

Project Description

The district proposed and designed a project that is estimated to curtail 770 kW of peak load. The application for this project was received on October 24, 2001. The project was started January 2002 and fully completed May 2002.

The load curtailment was accomplished by permanently increasing the height of the spillway on the Berrenda Mesa Reservoir. The existing 100 foot-wide spillway was raised 15 inches to accommodate an additional 15 acre-feet of storage capacity. The additional water is stored in the reservoir during the off-peak period and delivered for irrigation during the peak period, thereby reducing the need to pump water during the peak period. One-third (5 inches) of the proposed spillway will be used for storage of water, while the other two-thirds (10 inches) will provide a cushion to avoid spill associated with wind, fetch and operational variations. The average reduction in pumping equates to 30 cubic feet per second, or 770 kW.

Verification

Time-of-use meters were used to verify the peak load reduction, comparing the peak period electrical use of the 2003 season with that of the 2000 season.

Project Results

Summary Category	Results
Total Project Cost	$43,200
Total Grant Payment	$28,080
Actual kW Reduced	770
Grant Payment per kW Reduced	**$36.67**

Photographs

BMWD increased the height of their main reservoir at the head of the district by 15 inches. This increased the storage capacity in the reservoir by 15 AF. This increased storage helped the district to move away from pumping during the peak period.

Spillway height modification

Increased the height of the bank near the inlet from the pumping plant to the reservoir.

Pumping station from the California Aqueduct Coastal branch. The table below shows the pumping plant information.

Number of pumps	Rated HP
3	1500
3	1000
1	900
1	800
2	350

Coastal branch of the California Aqueduct upstream of the pump station.

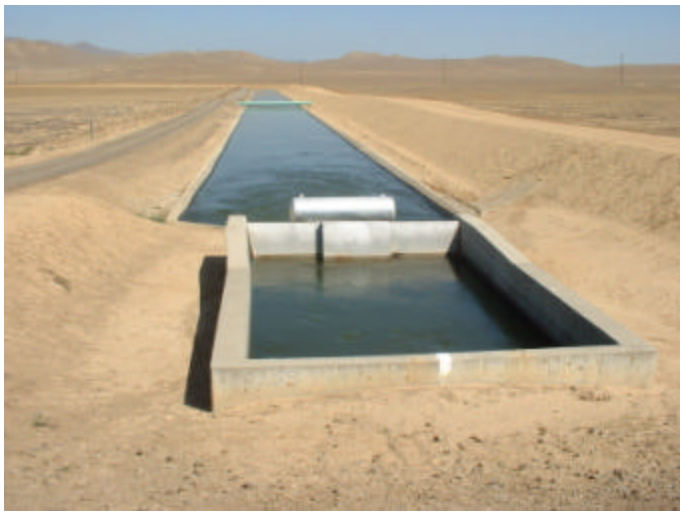
Another view of the pipeline servicing the reservoir. There is over 250' of elevation difference between the pump station and the reservoir.

Pipeline from the pumping plant to the reservoir. The large pipeline to the right is approximately 7' in diameter and is used to supply the reservoir. The smaller pipeline on the left is used to supply some water users from the reservoir. The users receive a supply that has about 60 psi at the turnout.

On the right is the inlet to the reservoir supplied by the large pipeline in the previous image. The pumping station has the capacity to supply over 400cfs to the reservoir.

Open channel from the pipeline inlet and the actual reservoir.

Berrenda Mesa reservoir has a current capacity of about 210 AF.



A Frenchman gate (AVIS type gate) is used at the headworks of the main canal just downstream of the reservoir for automatic downstream control. The remainder of the main canal has manual gates that are used for downstream water level control.

Looking to the east at the outlet from the reservoir to the main canal, the reservoir is set on the side of a mountain. Berrenda Mesa WD is considering expanding the reservoir on this side to move more off peak.