

Twin Rock Pump Station Design-Build, Colorado Springs, Colorado

- Design-build (DB) project successfully delivered seven months ahead of schedule
- Designed and constructed a 160-foot by 62-foot building equipped with four 2,000-hp variable-speed, horizontal split-case pumping units
- Collaborative partnering with the owner and operations staff resulted in project savings of \$5 million
- Won the National Design Build Institute of America (DBIA) Water Quality Systems Award in 2004

The Twin Rock Pumping Station is a \$12.5-million 8,000-hp pump station designed and constructed by CH2M HILL for Colorado Springs Utilities (CSU). The station conveys 68 million gallons per day (mgd) of raw water from the Homestake Reservoir to the Rampart Reservoir. Each of the four 2,000-hp pumps is rated for 15,750 gallons per minute at 340 feet total dynamic head. In addition, the pump station architecture is designed to blend with its mountain surroundings.

Services provided by CH2M HILL on this project included preliminary and final design, architectural services, surveying, photogrammetric mapping, geotechnical investigations, environmental impact documentation, permitting support, public involvement, construction, and start-up services.

Through workshops with CSU and their operations staff, CH2M HILL assisted the utility in evaluating and developing alternative solutions, establishing pump station selection criteria, determining the decision process to guide the team, identifying pump station alternatives, and selecting the best alternative. Through this collaborative process, it was determined that an offsite location would result in projects savings of approximately \$5 million.



The new Twin Rock Pumping Station conforms to CSU specifications and is a showcase facility for its Southern Delivery System. Design specifications required 72 mgd of raw water conveyance, which CH2M HILL's design can deliver with three of the four pumps in service. Completing the project seven months ahead of schedule allowed the new station to transfer an additional 10,000 acre-feet of raw water to the Rampart Reservoir, taking it from 32 to 92 percent full from November to June. The new facility also serves as a good neighbor to local residents in both architectural design and quiet performance. Exceeding all expectations, this project resulted in sole source follow-on work to install a fifth pump.

Quality standards for the Twin Rock Pumping Station also met or exceeded CSU expectations. The pumps are currently operating at higher standards for vibrations than originally specified (approximately 50 percent less than allowable performance standards) and only require approximately 1 hour to start up.

The new pumping station was designed and constructed to be 100 percent remotely operated, requiring only periodic maintenance. Each pump was also designed with adjustable-frequency drives (AFD), allowing speed adjustments from 50 to 110 percent.

With over 60,085 man-hours worked, the project had a zero Recordable Incident Rate and a zero Lost Time Incident Rate. Due to exemplary performance and the development of early trust with the owner, the owner's safety representative discontinued site safety visits.