



Olivenhain Dam and Reservoir

San Diego
County
Water
Authority

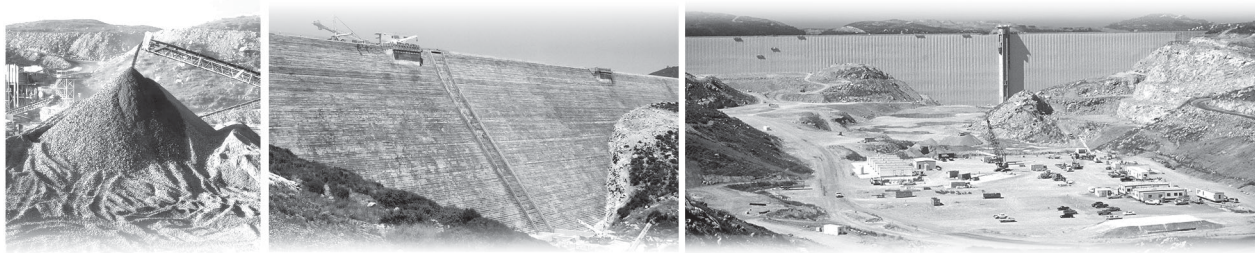
Building Water Reliability Through the Emergency Storage Project

The Olivenhain Dam and Reservoir are part of the Emergency Storage Project, a system of reservoirs, interconnected pipelines and pumping stations designed to make water available to the San Diego region in the event of an interruption in imported water deliveries.

The Water Authority is a public agency serving the San Diego region as a wholesale supplier of water. The Water Authority works through its 23 member agencies to provide a safe, reliable water supply to support the region's economy, job base and quality of life for more than 3 million residents.



San Diego County
Water Authority
Capital Improvement
Program



Investing in Water Reliability

The Olivenhain Dam and Reservoir are important investments for the future reliability of San Diego County's water supply. The dam and reservoir are part of the San Diego County Water Authority's Emergency Storage Project, which will protect the region's



On Aug. 6, 2003, the first water flowed from the Water Authority's Second Aqueduct into the Olivenhain Reservoir.

vibrant economy, job base and quality of life by increasing the amount of water available within the county for use during emergencies. A drought or major earthquake could interrupt San Diego County's water supply for up to six months, and some communities could be without water within three to four days. The Emergency Storage Project will ensure the Water Authority will be able to continue to provide the safe water supply on which the region has come to depend.

The Emergency Storage Project is part of the Water Authority's \$3.1 billion Capital Improvement Program. The Water Authority initiated the CIP in 1989 to make necessary improvements to the pipeline delivery system and increase operational flexibility to supply water throughout the county. As one of the first components of the Emergency Storage Project, the Olivenhain Dam and Reservoir costs totaled approximately \$200 million.

The Olivenhain Reservoir has a storage capacity of 24,000 acre-feet of water — enough water for a year for 50,000 families of four. Of the available water supply, a small amount is dedicated to Olivenhain Municipal Water District's operational use, and the remaining water will be available for emergency use throughout the county. This investment was financed by a unique, cooperative effort between the Water Authority and the Olivenhain Municipal Water District.

An Engineering Marvel

The Olivenhain Dam is an impressive engineering accomplishment. It is the first roller-compacted concrete dam in California, and at 318 feet high, stands taller than any other roller-compacted concrete dam in North America.

Construction of the 2,552-foot-long dam began in 2000 and required 1.4 million cubic yards of roller-compacted concrete. A roller-compacted concrete dam is as strong as a conventional concrete dam and will

Dam/Reservoir Facts

- Height: 318 feet
- Length: 2,552 feet
- 1.4 million cubic yards of roller-compacted concrete
- Cost: \$200 million
- Storage capacity: 24,000 acre-feet
- Surface area: 200 acres

continued

remain operational even in the face of a natural disaster, such as an earthquake. In addition, a roller-compacted concrete dam is less expensive because it can be built in one-third to one-half the time of a conventional concrete dam.

Roller-compacted concrete is placed in layers. The layers are compacted with rollers similar to those used in road building. Interruption of work is minimized to facilitate bonding of the layers. Therefore, crews worked 24 hours a day, six days a week to construct the dam.

In May 2000, the Water Authority completed a \$1.3 million test program. The test program determined the optimum thickness of the roller-compacted concrete and proper mix of materials to build the dam. The test confirmed granite quarried from the canyon at the site could be crushed into various sizes and used as the primary material in building the dam. As a result, rock and sand did not need to be hauled onto the site from outside sources, which saved money and significantly reduced the amount of construction traffic.

From Breaking Ground to Topping Off

In August 2000, the Water Authority awarded the \$8.4 million excavation contract to begin work on the Olivenhain Dam. The contractor blasted and excavated approximately 700,000 cubic yards of material to form the foundation of the dam. October 2001 marked the beginning of the roller-compacted concrete operation, a \$134 million contract. Construction materials and supplies were trucked in Monday through Friday between 7 a.m. and 4 p.m. and stored on-site to accommodate evening and weekend construction work.

In June 2002, construction crews broke the U.S. record by placing 16,057 cubic yards of roller-compacted concrete in two 10-hour shifts. The contractor consistently placed 13,000 to 15,000 cubic yards of roller-compacted concrete every 24 hours. Roller-compacted concrete placement finished on Oct. 31, 2002. A state-of-the-art waterproof polyvinyl chloride membrane liner was then installed on the entire upstream side (water side) of the dam to protect against leaks.

The face (dry side) of the dam was stained with a desert varnish to blend with the natural surroundings of the area. The inlet-outlet control tower stands higher than the top of the dam. The inlet-outlet tower controls the water going in and out of the Olivenhain Reservoir through the Olivenhain Pipeline, which connects to the Second Aqueduct. Fish screens were installed to prevent debris and fish from entering the Water Authority's aqueduct system.

***A photographic online tour of the dam's construction is available at the following address:
<http://www.sdcwa.org/infra/esp-olivenhainphototour.phtml>***

Preserving Our Resources

The 200-acre reservoir is nestled within a spectacular 750-acre open space park and recreational area that surrounds the dam and reservoir. The Elfin Forest Recreational Reserve offers 17 miles of hiking, mountain biking, equestrian trails and viewing points. To acquire the land for the Olivenhain Dam and Reservoir, the Water Authority formed partnerships with the Olivenhain Municipal Water District and the U.S. Department of the Interior, Bureau of Land Management. The reserve is owned by the Water Authority and operated and managed by the Olivenhain Municipal Water District. The wildlife and natural resources on this reserve are all closely monitored and will be preserved for generations to come.

