

CORONA DEL MAR WATER TREATMENT PHASE 2 UPGRADES & MODIFICATIONS

A sustainable project that incorporated numerous innovations to save money and resources and finished under the guaranteed maximum price

What the innovation is

The Goleta Water District delivers potable water to approximately 80,000 customers. Nearly all of the water is treated at the community's only water treatment plant (WTP) — the Corona del Mar WTP. Built in the 1970s, the plant required significant upgrades and MWH was selected to perform the work. From planning through start up, MWH considered all opportunities to increase efficiency, reduce waste and incorporate environmentally responsible principles. MWH's design features numerous water treatment process changes aimed at reusing existing facilities and materials, limiting chemical usage, reducing process water and saving electricity.

As required by the California Building Standards Commission, the design also had to adhere to the strict building codes of a high seismic zone 4 location. Work included design and construction of several new facilities, including: 1) a multi-purpose, 9,100-sf, laboratory/administration-office/control (LAC) building (targeting LEED®-Gold certification from USGBC) adjacent to the treatment plant, 2) a maintenance-shop building, 3) a generator building to house a new backup generator, and 4) a 4,600-sf chemical building. As modifications were being made to the community's only treatment plant, the facility had to continue operating during the project. Modifications to critical treatment facilities could only be made between November and April when water demand was at a minimum level. As a result, the MWH team developed and implemented a detailed sequential plan to accomplish all upgrades without disrupting the delivery of high quality water to customers.

Why it is innovative

The District used an alternative project delivery method (progressive Design-Build), which allowed the team to be creative and come up with innovative ideas that accomplished the District's goals while saving money. MWH's environmentally friendly approach to green design and construction of the laboratory/administration-office/control (LAG) building is targeted for LEED®-Gold certification. Several innovative ideas were incorporated throughout the project, resulting in many sustainable, cost-saving design and construction components. This was MWH's first WTP designed and built for LEED® certification and, once it achieves certification, it will be one of the first plants in California to receive that honor.

What it changed or replaced

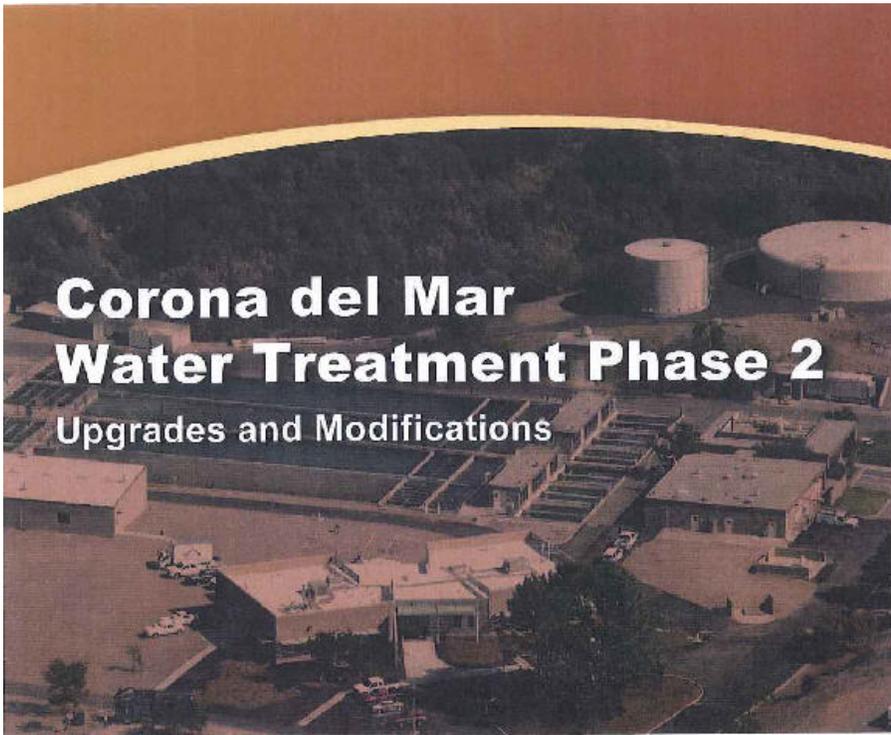
The innovations MWH implemented will save the District approximately \$52,100/yr in energy costs due to a new pumped diffusion flash mix system that improves chemical mixing and coagulation, reducing chemical consumption, as well as reuse of the available hydraulic head to create flocculation and eliminate electrically-driven flocculators. Additionally, a reconfiguration of the existing sedimentation basins improves settling performance and a new, efficient sludge collection system saves 8.2 million gallons of recirculated process water per month. Wastewater and stormwater are treated and used for subsurface irrigation, reducing potable water demand by more than 50 percent and providing the side benefit of pollutant removal from initial stormwater flows. Furthermore, a filter-to-waste addition that utilizes a previously abandoned 75,000-gallon recarbonation chamber as an equalization tank, saves energy by transferring water from the tank directly into the adjacent raw water pipeline using high-efficiency low head pumps.

Where/When it originated and has been/is expected to be used in the future

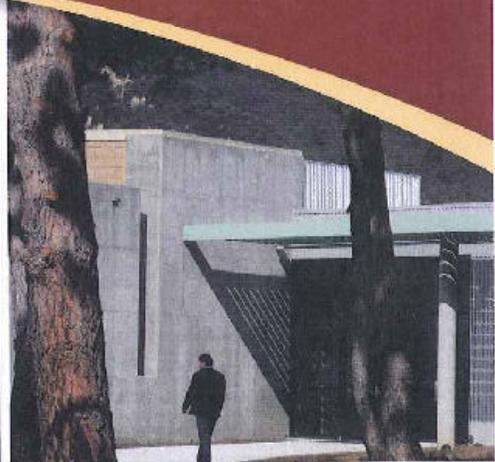
These innovations originated from the District's expressed desire to establish and convey a philosophy to the community regarding the importance of being a responsible steward of the environment and natural resources. This comprehensive approach to the plant upgrade demonstrates a commitment to water conservation, establishes a model for future projects, and sets a new standard for environmentally friendly water and energy efficient projects for all California water agencies. A key fixture for plant tours, the LAC building will teach visitors about environmentally responsible design and construction, as well as water and energy conservation.

Identify each innovation

(1) Materials used are made of highly renewable resources (casework included no added urea-formaldehyde cores with bamboo veneers, counters were made with recycled glass). (2) Natural lighting through skylights and glass lobby walls and 22 solar tube skylights resulted in less electric lighting. (3) All paints and adhesives were low-VOC emitting products and complied with Green Seal Environmental Standard GS-11. (4) Over 25 percent of construction materials used for building contained post-consumer and post-industrial recycled content. (5) Using local manufacturers/suppliers of materials and equipment minimized environmental impacts from shipping. (6) Approximately 75 percent of construction waste was recycled. (7) Integrative approach to building envelope, glazing, daylighting, HVAC system and controls resulted in a building performing over 30 percent better than the state's Title 24 energy code requirements (unusual for a lab). (8) All flush and flow water fixtures demonstrate efficient technologies, reducing potable water consumption by 44 percent over conventional fixtures. (9) Nearly 100 percent of the 35-year-old redwood in the old flocculation basins was re-used in the new basins. (10) Native landscaping was planted and is irrigated with recycled wastewater to conserve water.



Corona del Mar Water Treatment Phase 2 Upgrades and Modifications



MWH built a multi-purpose, 9,100-sf, laboratory/administration-office/control (LAC) building that is currently targeting LEED®-Gold certification from USGBC.



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