

Project Highlights

- The development had to address the public runoff through the site, which experiences heavy flooding.
- The Up-Flo Filter offered about a 25 percent cost savings
- The rules regarding the installation of filtration systems in California, meant they had to meet a set of stringent specifications for the removal of a mix of pollutants, including metals, bacteria and oils.



The Up-Flo Filter has a higher flow through capacity than traditional sand filters, making it a smaller and more economical alternative for stormwater treatment.

"The Up-Flo® Filter offered about a 25 percent cost savings over the other unit, a cost reduction made possible by the Up-Flo's high treatment efficiency in a small footprint."

The Up-Flo Filter keeps development runoff from impacting the Century-old Catholic Burial Ground



The Good Shepherd Cemetery just outside of Los Angeles is undergoing a major expansion. The operators of the century-old Catholic burial ground have scoped out a long-term plan to add hundreds of new grave sites, new mausoleum buildings, a garage, a maintenance yard, parking spaces and a variety of aesthetic improvements.

The first phase of the project was completed in late 2008. It features a pair of new buildings, upgraded offices, new landscaping measures, and the installation of a large white cross marking the location of the corner of Talbot Avenue and Beach Boulevard.

To move ahead with construction, project owner the Diocese of Orange had to solve a host of issues dealing with public runoff through the site. The area itself has experienced flooding problems over the years, with nearby roads and yards flooding during heavy rains that overwhelmed local drains. The water management plan will eventually include a whole new public drainage system to control the public runoff flowing through as well as additional runoff emanating from the cemetery site.

Along with controlling the runoff from the site, the owners needed to – for the first time – create a system to treat the runoff. The state of California had tightened its rules regarding the installation of filtration systems in new projects, so the Diocese had to meet a set of stringent specifications for the removal of a variety of pollutants, including metals, bacteria and oils.

"This was a whole new plan that had to be

engineered, and local authorities wanted to make sure it would work as a long-term solution," said Joe Truxaw, president of Joseph C. Truxaw & Associates, Inc., of Orange, Calif., the engineering firm that oversees work on the project.

While the system chosen for the site needed to perform to specifications, the owner and contractor had made cost savings a priority in the selection process. So, after the city of Huntington Beach initially approved a plan that included a radial cartridge filter, Truxaw & Associates convinced the city to consider an alternative, more cost-effective solution – the Up-Flo® Filter, designed by Hydro International and supplied locally by Kristar Enterprises.

The Up-Flo Filter, based on upflow filtration technology developed at the University of Alabama, incorporates multiple elements of a treatment train – screening, sedimentation and high-rate filtration – in a compact modular device. It has been used successfully in a variety of areas, as far away as New Zealand, and as close by as two other sites within a short drive – the Camp Pendleton Marine base near Oceanside, Calif., and the Spirit Soledad Crossing retail project in Santa Clarita, Calif.

"My gut feel is it's a much simpler system than what was specified, and that has benefits," Truxaw said. "It's less expensive initially, and it looks like it will be a lot less expensive to maintain in the long run."

Truxaw said the Up-Flo Filter offered about a 25 percent cost savings over the other unit, a cost reduction made possible by the Up-Flo's high treatment efficiency in a small footprint.

Up-Flo® Filter

Controlling and Treating Site Runoff

Case Study

Stormwater



The filter met the stringent specifications for the removal of a mix of pollutants, including metals, bacteria and oils.



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The Huntington Beach Public Works and Environmental Water Quality Departments raised questions about differences in the Up-Flo Filter's design – incorporating treatment and diversion structures in a single structure – and its performance in other settings. The City Engineers signed on, and the system was installed in the fall of 2008.

“We realized they’d need some convincing with the Up-Flo,” Truxaw said. “The city eventually decided they liked it.”

The Up-Flo Filter uses a sedimentation sump and screening system to pretreat stormwater runoff before it flows up through the filter media where final filtration occurs. A high-capacity siphoning bypass safeguards against upstream ponding or flooding during high-flow events. The siphon also serves as a floatables baffle to prevent the escape of floatable trash.

Upflow technology sends flow in an upward direction, countering gravitational forces to fluidize the media and allow the entire depth of the media bed to be utilized. This results in extended run times before clogging. In contrast, the media in down-flow, or radial-flow, filters is compressed at shallow depths, reducing their flow rates and treatment capacity.

The differences in design between the first specified unit and the Up-Flo Filter helped to sell both the engineer and Huntington Beach environmental officials on the long-term benefits the Up-Flo offered. The first unit consisted of two structures, with treatment being conducted in one and water being bypassed into a second unit. The Up-Flo Filter com-

bins these processes into one unit, creating a more streamlined system that has fewer parts to malfunction and needs less regular maintenance. “The simplicity of the system really appealed to us,” Truxaw said.

The California regulations require stormwater to be treated on the first flush, removing up to 80 percent of all total suspended solids. Independent laboratory tests from a variety of sources, including the highly regarded New Jersey Corporation for Advanced Technology, have verified the Up-Flo Filter's ability to remove pollutants under a variety of conditions.

The site contractors, Van Diest Brothers Construction, installed the first Up-Flo Filter during the initial phase of construction. Two or more systems are planned in the second and third phases, which are expected to be undertaken sometime in the next decade.

“Based on the information received from the manufacturer, we’re confident the Up-Flo solution will provide all the protection the city is looking for – at a very reasonable price,” Truxaw said.