Lake-Effect Drainage

HDPE pipe and filter system support Lake Tahoe water quality project

By Marcus Galindo

Lake Tahoe, the largest alpine lake in North America, is a picture of the wonders of nature, but growing danger from storm runoff has required high-tech, man-made intervention. For the past 50 years, the surrounding community has taken on the task of preserving its water quality, with two rising concerns at the forefront: The lake has become increasingly eutrophic (having an excessive richness of nutrients), and it is losing its clear-blue water clarity.

Restoration Plan

Primary and visible offenders that can be seen potentially compromising this water quality are the storm sewers and various outfalls discharging sediment and pollutants directly into the lake. The area is faced with excessive erosion threats that can be attributed to the development of a popular area, the exposed vulnerability of the watershed after a fire such as the 2007 Angora Fire, and the large amount of sand and gravel used on the roads to make them safer during the alpine winters.

Recently, in the ongoing effort to restore the Lake Tahoe Basin, the federal government joined with California, Nevada and the Tahoe community and embarked on a 10-year, $900-million cleanup effort to implement the Lake Tahoe Restoration Act. As part of the endeavor, the city of South Lake Tahoe, Calif., improved the storm drain infrastructure in an older neighborhood around Al Tahoe Boulevard. Addressing erosion control and water quality was absolutely critical on this site.

Neighborhood Project

The project scope involved filling in an open channel that meandered through the community. The designers utilized a treatment train that was intended to slow down the runoff, promote infiltration and then filter it immediately prior to release into the watershed. The methods selected to mitigate the introduction of sediment and nutrients to the lake were a series of permeable surfaces, perforated corrugated high-density polyethylene (HDPE) conduits, concrete check walls and filtering technology.

On this project, the city worked with Manhard Consulting Ltd., selecting Eagle Corr PE pipe to help convey,

The HDPE pipe proved to be a successful gravity-flow drainage solution with easy handling and speedy installation.

Workers installed nearly 3,000 ft of pipe in the South Lake Tahoe, Calif., neighborhood.

manage and infiltrate runoff from the neighborhood surrounding Al Tahoe Boulevard. The project site was very tight and had a small footprint with various existing utilities, making Eagle Corr PE the ideal gravity-flow drainage solution. Considering the various challenges associated with the tight construction limits, community impact mitigation and utility conflicts, its handling ease and speed of installation were extremely important to the successful installation.

"The ease of handling due to the weight of each stick of HDPE, as well as the bell and spigot joint, made installation efficient and therefore economical," said Linda Burdick of

> "The overall intent of the project was to capture, conduit and treat the storm water runoff before releasing it into the watershed."

Burdick Excavating.

The corrugated exterior of the HDPE pipe provided structural strength, and the smooth interior provided maximum hydraulic efficiency. The superior strength-to-weight ratio and flexible conduit design enabled the pipe to support the loads and associated cover heights. Finally, the dual-wall was easily perforated, which helped facilitate the desire to infiltrate and recharge.

Burdick Excavating installed 80 ft of 12-in. perforated, 225 ft of 15-in. perforated, 1,629 ft of 18-in. perforated and 977 ft of 24-in. perforated PE pipe.

The overall intent of the project was to capture, conduit and treat the storm water runoff before releasing it into the watershed. Two StormFilter systems from Contech Construction Products Inc. were installed to treat the storm water runoff. Specifiers chose this technology because of its two-decade reputation for helping meet the most stringent regulatory requirements for storm water treatment. Using a variety of media, the filters remove the most challenging pollutants—including solids, heavy metals, oil and grease—and nutrients such as phosphorous. The only field-tested filter on the market per TARP and TAPE protocols, it is designed for predicable maintenance intervals of one to three years.

"The StormFilters were set in our excavation by crane and went together flawlessly on a precipice above Lake Tahoe," Burdick said.

Pristine Water

With drainage solutions from Eagle Corr PE and treatment technology from the StormFilter, Lake Tahoe is poised to remain clean and crystal clear for years to come. SWS

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