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2014-2015 REFERENCE GUIDE

WATER & WASTES DIGEST

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## Village of Deerfield, Ill., Water Reclamation Facility Modifications Project

**T**he Deerfield (Ill.) Water Reclamation Facility had a history of wet weather flow issues. With an average daily flow of 3.5 million gal per day (mgd), the plant could reach more than 27 mgd during wet weather events.

Not equipped to handle such elevated flow, the plant could only pass up to 8 mgd through activated sludge treatment due to the limited capacity of the intermediate screw pumps. The rest of the flow would be sent to excess flow clarifiers, followed by an excess flow storage pond. Neither of these storage options could be completely emptied, thus significantly limiting the storage capabilities of the plant.

The team designed and built a new treatment plant on top of an existing and operating facility, while continuing to meet permit requirements. Designed to address the wet weather capacity issues while simplifying the treatment process, the upgrade included the removal of primary clarifiers, trickling filters and anaerobic digestion. Ultraviolet disinfection replaced chlorination and dechlorination chemicals, while a centrifuge replaced sludge drying beds. A new influent pump station was built and a final clarifier and additional aeration tank were installed.

Construction was carefully planned, allowing the facility to remain operational throughout the project. The

additional aeration tank was built and one-third of the tankage was modified, as two-thirds of the existing tankage handled the treatment process. This was coordinated with construction of the new pumping station, modifications to influent sewers on both sides of a nearby river, and demolition of a trickling filter and clarifier to allow installation of a major pipe.

The design of the new facility addressed the wet weather flow problem by increasing the amount of flow to the aeration tanks and allowing for the complete removal of water from the clarifiers and storage pond.

Additionally, the facility's administration building achieved LEED Silver certification, including using the plant's effluent for heating and cooling. The grounds are also home to nine rain gardens and bioswales, low-maintenance grasses and native plants.

"Construction was a collaborative effort whose success depended on all parties. Coordination and teamwork were evident," said Barbara K. Little, P.E., director of public works and engineering for the village of Deerfield. "Weekly construction meetings were held with the general contractor, engineer and village personnel. Mutual respect was evident at every meeting, even in difficult times. All team members are extremely proud of the work we were able to accomplish for Deerfield and the region." 🌱

Location: Deerfield, Ill.  
 Owner: Village of Deerfield  
 Designer: Strand Associates Inc.  
 Contractor: Joseph J. Henderson & Son Inc.  
 Manufacturers: KSB, Envirex (Evoqua), Centrisys, Kaeser, Ovivo, Trojan Technologies  
 Cost: \$29.45 million  
 Size: 30 gpm