

### Industry Sector Industry Solutions Division

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#### **Siemens Water Technologies to Provide Clarification Technology for Metro Wastewater Reclamation District in Denver**

**Siemens Water Technologies will provide secondary clarification systems for the Metro Wastewater Reclamation District's (MWRD) North Secondary Treatment Complex Improvements Project in Denver. The plant upgrade will include twelve 130 foot diameter Tow-Bro clarifier mechanisms for secondary treatment. The new clarifiers will improve performance over the existing organ pipe type clarifiers – specifically, improved energy dissipation and velocity profile control, improved flocculation, and even sludge withdrawal, particularly important under poor solids settling conditions. The project is scheduled for completion in 2012.**

The Robert W. Hite Treatment Facility serves a population of approximately 1.6 million in the metropolitan Denver area. Improvements to the North Secondary Treatment Complex were needed to replace aging clarifier equipment, increase solids and hydraulic loading capacity, and improve overall treatment performance. The District worked with Carollo Engineers P.C., HydroSims, Inc., and CPE Services using plant specific settling analysis, computational fluid dynamic (CFD) modelling, and full scale stress testing to determine the best solution to meet the plant's final clarification requirements. The engineering firm recommended the Tow-Bro clarifier mechanism. The advantages of the Tow-Bro unit include uniform sludge removal from the secondary clarifier under a wider variety of flow, solids loading, and sludge settling conditions. These advantages provide greater solids and hydraulic loading capacity when compared to the existing hydraulic-removal-type clarifiers.

The clarifier design utilizes a center-feed configuration with peripheral effluent launders. Flow enters the clarifier through a specially designed maze type energy dissipating inlet (EDI). The specific configuration of the maze EDI was designed with the assistance of CFD modelling to determine optimal dimensions. After initial energy dissipation, solids are flocculated and settle to

the tank floor where they are removed uniformly by the Tow-Bro Unitube Header. Concentrated settled sludge is returned to the aeration basin from the clarifier. Clarified effluent flows into an inboard launder and exits the tank. Scum is removed via a ducking skimmer assembly. The treated water then flows to the Metro District's disinfection facilities for further treatment prior to discharge into the South Platte River.

The new clarifier mechanisms will be installed in multiple phases over the next three years. To minimize the impact of construction on plant capacity, Garney Construction, Inc. of Littleton, Colorado will replace three of the 12 clarifiers at a time. The existing clarifiers will remain online until they are replaced with the new Tow-Bro mechanisms.

Further information at: <http://www.siemens.com/water>

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