

# Design/Build Wastewater Treatment Plant

The City of Marissa, Illinois is operating an OMNIFLO® Sequencing Batch Reactor (SBR) at their wastewater treatment facility. In a unique cooperative agreement, Waste Management, Inc. funded the construction of a new wastewater treatment plant for the City of Marissa.

Waste Management, Inc. is the leading provider of comprehensive waste and environmental services in North America. They partner with communities, government and industries to redevelop closed landfill sites into recreational and commercial facilities such as parks, athletic fields, campgrounds and golf courses.

The previous facility in Marissa, included a Rotating Biological Contactor (RBC) process, which is a fixed film wastewater treatment technology. The upgrade and expansion of the Marissa wastewater treatment plant was needed to increase their treatment capacity and to have the ability to pre-treat leachate from the new Waste Management landfill in Marissa. The pre-treated waste from the landfill will then be blended with raw municipal wastewater before receiving final purification at the treatment facility.

Waste Management formed a design / build team with R. Randle Construction, formally Hanks Construction of Freeburg, IL and Thouvenot, Wade and Moerchen Engineers from Swansen, IL.

The OMNIFLO® SBR is a fill and draw, non-steady state activated sludge process in which one or more reactor basins are filled with wastewater during a discrete time period, and then operated in a batch mode. In a single reactor basin, the SBR process accomplishes equalization, aeration and clarification in a

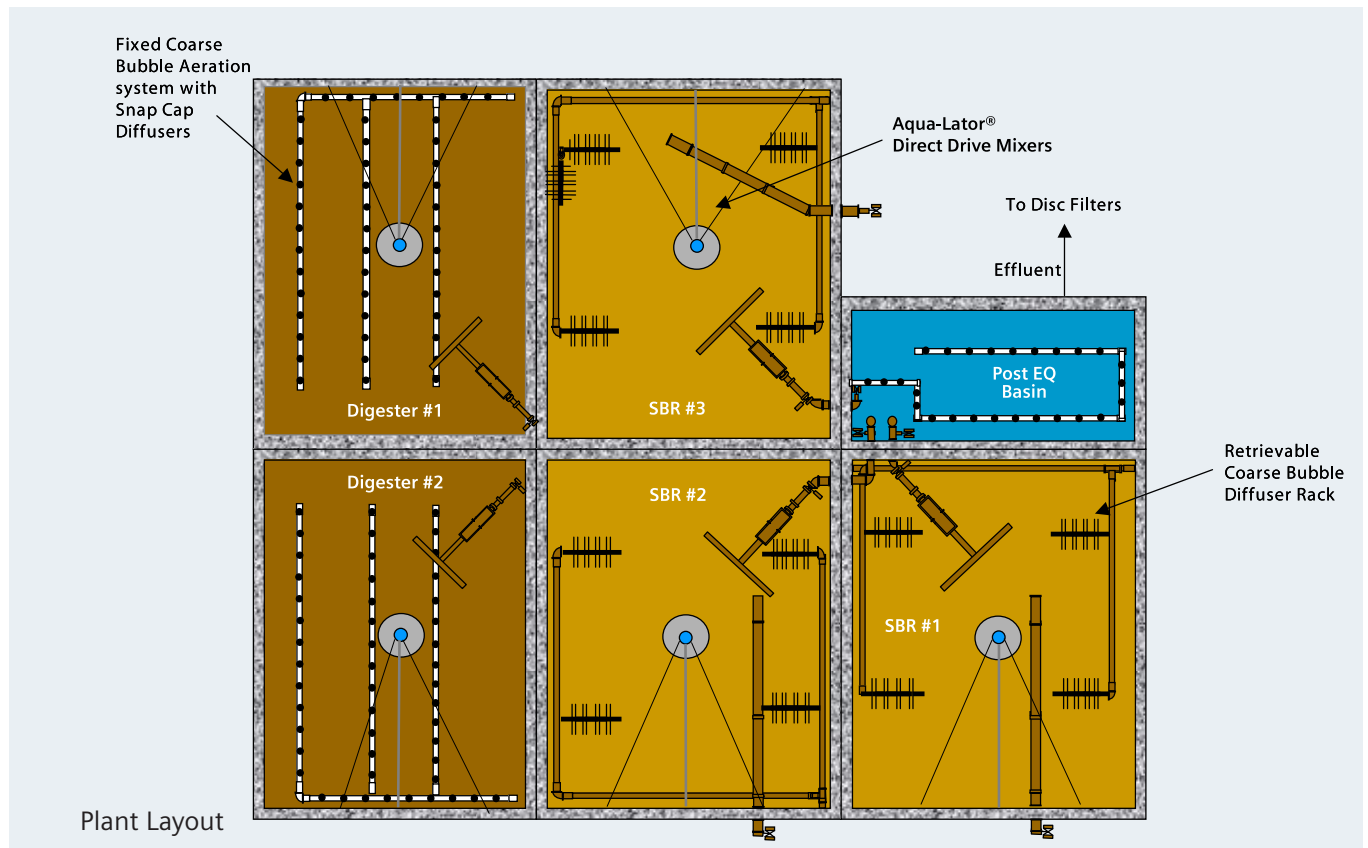


timed sequence. The OMNIFLO® SBR utilizes state-of-the-art equipment and controls to deliver superior performance under the most demanding conditions, while offering important benefits to plant owners and operators. The three-tank OMNIFLO® SBR at Marissa is designed to achieve  $< 5$  BOD,  $< \text{TSS}$ , and  $< 1$   $\text{NH}_3$ . The facility also will include twelve retrievable coarse bubble diffuser assemblies (four per basin), Aqua-Lator® Direct Drive Mixers (one per basin), two digester tanks, a post equalization tank and three discfilters following the SBR process. The discfilters will be used for fine solids removal and assist in consistently achieving a final effluent of less than 1 mg/l of TSS. It was important in the design of this facility that reuse quality effluent was produced along with a small footprint.

The OMNIFLO® SBR meets the State of Illinois wastewater treatment requirements and produces a high-quality effluent with a very low  $\text{NH}_3$  output. The facility was started up in October of 2002.

## Case Study

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Performance Results						
	AVERAGE DAILY FLOW	BOD		TSS		NH <sub>3</sub>
		INFLUENT MG/L	EFFLUENT MG/L	INFLUENT MG/L	EFFLUENT MG/L	EFFLUENT MG/L
<b>DESIGN</b>	590,000 MGD	310	< 10	312	< 12	1.5
<b>ACTUAL</b>	436,000 MGD	112	1.7	147	1.8	0.1

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