

SUCCESS STORIES

AQUA-AEROBIC SYSTEMS, INC.



PLANT NAME/LOCATION: TANEYTOWN WWTP/TANEYTOWN, MD

TYPE OF PLANT: Municipal/Domestic

DESIGN DAILY FLOW: 1.65 MGD (6246 m³/day) **PEAK FLOW:** 3.5 MGD (13.249 m³/day)

AQUA-AEROBIC PRODUCTS: Dual-basin AquaSBR[®] System, Dual-basin MixAir[®] System for Aerobic Digesters, SCADA Control System

TANEYTOWN'S NEW PLANT SERVES THE COMMUNITY'S NEEDS FOR 20 YEARS!

In the late 1990s, Taneytown WWTP found itself in need of an upgraded treatment system due to community growth and an aging infrastructure. The original activated sludge system could no longer meet the plant's treatment requirements and was subject to solids washout during high flows and freezing problems in the winter months. Taneytown turned to their consulting engineer, Camp Dresser & McKee, for assistance in planning an upgrade. Since the existing site was on a flood

plain, one of the first issues addressed was the necessary relocation of the plant. This would eliminate past wet weather access problems and plant flooding problems. Another issue addressed was the need for improved biological nutrient removal (BNR)

capabilities in order to support the Chesapeake Bay Nutrient Reduction Strategy to protect the area's freshwater. The engineer first considered expanding the existing process with the Modified Luzack-Ettinger (MLE) Process or A²O process but ultimately chose a dual-basin AquaSBR[®] system (photo to the left). The AquaSBR system offered efficient phosphorus removal and denitrification/nitrification capabilities that could meet more stringent effluent requirements, not to mention

its smaller footprint. A chlorination/dechlorination tank would

immediately follow the SBR system to control disinfection of the effluent and a cascade aeration system would strip out any remaining chlorine or excess sulfur dioxide prior to discharge. To ensure that the new plant would be reliable and energy efficient, with minimal operating personnel, Taneytown also incorporated an Aqua Supervisory Control and Data Acquisition (SCADA) system. The computerized control system would constantly monitor and control various treatment processes *throughout the plant*, as well as the pumps at the pumping station. One of the SCADA system's roles would be to control functions of the AquaSBR system. This would include controlling on/off times for the AquaDDM[®] mixers, and blowers, as well as the opening and closing of influent and effluent valves, and the decanter.



Taneytown's new state-of-the-art 1.65 MGD plant (maximum monthly average daily flow) began its operation in March of 2000. The new plant will efficiently meet the treatment objectives for nitrification, denitrification, and phosphorus removal and serve the needs of the community over its design-life of 20 years.

PRODUCTS

Aqua-Jet®
Surface Aerator

Aqua-Jet II®
Contained Flow Aerator

AquaABF®
Automatic Backwash Filter

MixAir®
Aeration System

AquaDDM®
Direct Drive Mixer-Blender

AquaSBR®
Sequencing Batch Reactor

AquaDisk®
Cloth-Media Filter

AquaDiamond™
Cloth-Media Filter

AquaDrum™
Cloth-Media Filter

ThermoFlo®
Spray Cooler

Aqua EnduraDisc®
Fine Bubble Diffuser

Aqua EnduraTube™
Fine Bubble Diffuser

Aqua CB-12™
Coarse Bubble Diffuser

Aqua CB-24®
Coarse Bubble Diffuser

AquaMB Process™
Multiple-Barrier
Membrane System

MSBR®
Modified Sequencing
Batch Reactor

SERVICES

Process and Mechanical
Engineering

Quality Manufacturing

Aftermarket Sales &
Service

International Expertise

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AQUASBR® SYSTEM PROCESS

The AquaSBR system operates on a simple concept of introducing a quantity of waste to a reactor, treating the waste in an adequate time period, and subsequently discharging a volume of effluent plus waste sludge that is equal to the original volume of waste introduced to the reactor. This "Fill and Draw" principle of operation involves the basic steps of Fill, React, Settle, Decant, and Sludge Waste. The system may be designed to include seven individual phases of operation but the inclusion or duration of any individual phase is based upon specific waste characteristics and effluent objectives.

Where nutrient removal is required, a simple adjustment to the SBR's operating strategies permits nitrification, denitrification, and biological phosphorus removal. Optimum performance is attained when two or more reactors are utilized in a predetermined sequence of operation.

AQUASBR® DESIGN CHARACTERISTICS

Taneytown's dual-basin AquaSBR system was designed for a maximum monthly average daily flow of 1.65 MGD and a peak flow of 3.5 MGD. The combination of the AquaSBR system and chlorination system provides for an excellent effluent quality that far exceeds the old plant's treatment capabilities.

2003 AVERAGE ANNUAL OPERATING DATA

Loading	Design Influent	Avg Influent	Avg Effluent	Permit Effluent
Avg Flow mgd	1.65	1.07	-----	-----
Peak Flow mgd	3.5	2.91	-----	-----
BOD5 mg/l	115	89.6	6.7	10
TSS mg/l	141	83.3	9.9	10
TKN mg/l	23	24.8	1.6	-----
Total N mg/l	-----	-----	2.2	6
Total P mg/l	4	-----	1.2	2

AQUASBR® SYSTEM ADVANTAGES:

- All components retrievable and accessible
- Tolerates variable hydraulic loads
- Controls filamentous growth
- Tolerates variable organic loads
- Provides quiescent settling
- Separation of aeration and mixing
- Lower installation costs
- Return activated sludge pumping eliminated
- Small footprint
- Simple to expand or upgrade
- One company accountability



A typical SCADA system AquaSBR basin detail screen depicting equipment status

AQUA SCADA SYSTEM FEATURES:

- Single point of control for plant-wide monitoring
- Detailed, dynamic graphics depicting equipment status and PLC command status
- Simple, intuitive navigation between screens
- Historical trending and logging of data
- Consolidated alarming for all SCADA accessed areas
- Optional electronic O&M Manual
- Remote access for operations personnel and/or Aqua-Aerobic support
- Upgrade capabilities for existing controls