

# SUCCESS STORIES

AQUA-AEROBIC SYSTEMS, INC.



FROM PRETREATMENT... TO REUSE

**PLANT NAME/LOCATION:** Mashantucket Pequot WWTP (Foxwoods Casino)/Ledyard, CT

**TYPE OF PLANT:** Municipal/Resort

**DESIGN DAILY FLOW:** 2.6 MGD (9842 m<sup>3</sup>/day) **PEAK FLOW:** 3.14 MGD (11886 m<sup>3</sup>/day)

**AQUA-AEROBIC PRODUCTS:** 3-basin AquaSBR<sup>®</sup> System, 2 AquaDisk<sup>®</sup> Filters (6-disk)

## FOXWOODS CASINO WASTEWATER TREATMENT SYSTEM EXPANDED AGAIN!

Foxwoods Casino, owned and operated by the Mashantucket Pequot Tribe Council, opened in February of 1992 with a compact 0.2 mgd wastewater treatment system. The success of the casino and resort far exceeded expectations, and the amount of domestic waste necessitated the immediate upgrade of their wastewater treatment system.

Several options for expanding the system were examined including rotating biological contactors (RBC), oxidation ditches, a conventional activated sludge system, and sequencing batch reactors (SBR). It was determined that a dual-basin AquaSBR<sup>®</sup> system would best meet the needs of the project.

The AquaSBR was selected because of its ability to handle high strength, peak hydraulic and organic loadings, while consistently providing high quality effluent mandated by the Mashantucket Pequot Tribe Council. In addition, installing the AquaSBR system would allow the Casino's wastewater treatment system to be expanded with minimal cost or disruption.



AquaSBR basins #1 and #2 are shown. Basin #3 is located adjacent to these two basins. All the basins have covered tanks.

The new 1.0 mgd AquaSBR treatment system went on-line in July of 1993 and had the flexibility to meet future needs as the casino and resort area expanded. At this time, the casino was treating an average of 0.4 mgd.

The casino and resort continued to grow at a fast pace and once again the wastewater treatment system had to be expanded. In 1998, a new

upgraded system would treat an average flow of 2.6 mgd. This upgrade was accomplished by installing a 3rd AquaSBR basin and two 6-disk AquaDisk<sup>®</sup> Filter units.

A future SBR #4 basin has already been constructed for future growth. It is placed adjacent to the SBR #3 basin.



**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

**CONTACT US**

Aqua-Aerobic Systems, Inc.  
6306 N. Alpine Rd.  
Rockford, IL 61111

Phone: 815.654.2501  
Fax: 815.654.2508

www.aqua-aerobic.com

**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.

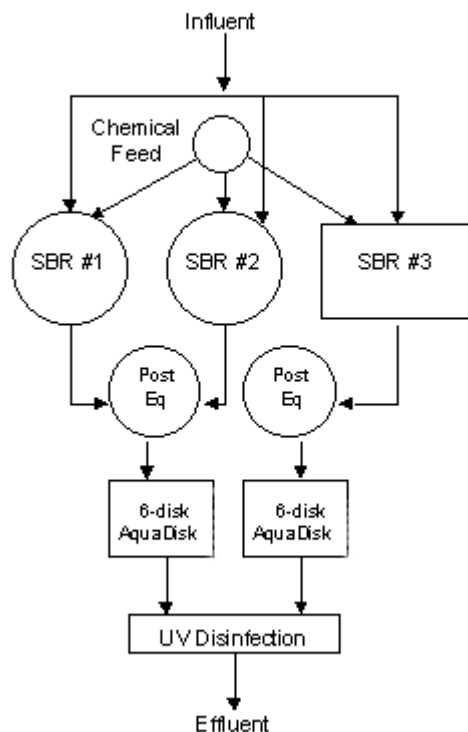
The plant's current average design daily flow is 2.60 mgd (9842 m<sup>3</sup>/day) and the peak design daily flow is 3.14 mgd (11886 m<sup>3</sup>/day).

**AVERAGE OPERATING DATA 7/98-10/00**

Loading	Design Influent	Avg Influent	Avg Effluent	Permit Effluent
<b>Avg Flow mgd</b>	2.60	1.12	-----	-----
<b>Peak Flow mgd</b>	3.14	2.26	-----	-----
<b>BOD5 mg/l</b>	434	249	1.5	5
<b>TSS mg/l</b>	709	414	2.9	5
<b>TKN mg/l</b>	118	50	3.2	9
<b>Total P mg/l</b>	17	14	1.0	3

**DESIGN CHARACTERISTICS**

**Current Process Flow**



**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

The Mashantucket Pequot Tribe chose an AquaSBR system for Foxwoods Casino because it can handle strong peak hydraulic and organic loadings while providing high quality effluent. It also provides expansion with minimal cost and disruption.