



AQUA-AEROBIC SYSTEMS, INC.
A Metawater Company

SUCCESS STORIES

PLANT NAME AND LOCATION

MOAB WASTEWATER TREATMENT FACILITY - MOAB, UTAH

DESIGN DAILY FLOW / PEAK FLOW

1.8 MGD (6,814 m³/day) / 2.0 MGD (7,571 m³/day)

AQUA-AEROBIC SOLUTION

AquaSBR® SYSTEM

AquaSBR® REPLACES 60 YEAR OLD TREATMENT PLANT AT MOAB, UT

Located in southeastern Utah, Moab is a popular resort community that is experiencing a boom in residents and annual visitors. Bordered by the Colorado River and the scenic vistas of the Colorado Plateau, Moab is surrounded by National Parks and is a key tourist destination for tens of thousands of travelers from all over the world.

The Moab Water Reclamation Facility (WRF) was initially constructed in the late 1950's to provide primary treatment of domestic wastewater for the Moab area. However, the plant could no longer keep up with the higher flows and loading due to population growth and rising tourism. In addition, with aging infrastructure and the new permit cycle in sight, upgrades to the biological treatment were necessary to ensure full compliance.

After evaluating several processes, Moab selected the AquaSBR® Sequencing Batch Reactor, a true batch system, due to its many process and mechanical capabilities, including the ability to handle varying flows and loads and retrievable equipment such as diffuser racks, mixers and the decanter from the side of the basin. This allows ease of maintenance without dewatering the basins and taking the system offline.

Economically, the system offered reduced construction and operating costs and provided the lowest cost of ownership over the life of the plant as compared to other treatment processes. The flexibility of the advanced control strategy was also an advantage, which allows for simple modifications to adjust the system to accommodate the loading variations.



AquaSBR® System at Moab Water Reclamation Facility - Moab, UT

In 2018, the City of Moab commissioned the new AquaSBR which was a revolutionary change for the entire region with its ability to treat varying loads and flows while producing exceptional effluent quality -- well below permit. Moab WRF Supervisor, Greg Fosse, states, "*This is the first SBR plant in the state of Utah. The numbers it's producing have garnered a lot of attention.*"

The AquaSBR system provides several advantages for plant operators, including on-demand process control and ease of maintenance of retrievable components. Mark Luddington, Moab WRF Assistant Operator, states, "*Working at the new plant is much more operator-friendly. Almost everything is automated.*"

AquaSBR® SYSTEM PROCESS

The plant operates (2) single-basin AquaSBR® systems in 6-hour cycles. This allows for more water to be treated consistently, with an average daily flow ranging from 1.1 – 1.4 gallons per day.

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.

DESIGN CHARACTERISTICS

The dual-basin AquaSBR® system at Moab WRF has an average design daily flow of 1.8 MGD (6,814 m³/day). Since start-up, the plant has experienced effluent levels well below permit (as shown in following table).

Greg Fosse says, “We’re running at just slightly over 99% efficiency on the entire plant on BOD and TSS. Our Total Nitrogen is running between three and four mg/l. We’re pretty much at a point with our effluent discharge quality that we were nominated for Plant of the Year in 2018. We were producing less than minimum reporting limits in less than three months and that’s somewhat unheard of in the industry.”

AVERAGE OPERATING DATA - 2019

LOADING	DESIGN INFLUENT	AVG INFLUENT	PERMIT EFFLUENT	AVG EFFLUENT
Avg Flow mgd	1.8	1.1	--	--
Peak Flow mgd	2.0	1.4	--	--
BOD ₅ mg/l	376	615	25	<5
TSS mg/l	354	548	25	<5
TKN	64	88	--	--
Total P mg/l	9	10	2.5	1.4
Total N	--	--	10	4

AquaSBR® SYSTEM ADVANTAGES

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

CUSTOMER SERVICE

Aqua-Aerobic Systems’ customer service is considered a Partnership, from the design phase through plant start-up and beyond.

“Aqua guaranteed us that if I needed technical support and I called the 24/7 number, I would get a technician. I’ve used that number and I’ve gotten a technician from Aqua every single time I’ve called, so that was key to me when I need help because this was all new to me. I sat over at a 60-year-old plant for 16 years and, all of a sudden, I’m operating the most modern technology on the market today.” - Greg Fosse, Moab WRF Supervisor