

SUCCESS STORIES

AQUA-AEROBIC SYSTEMS, INC.



FROM PRETREATMENT... TO REUSE

PLANT NAME/LOCATION: Hume Lake Christian Camp WWTP/Hume, CA

TYPE OF PLANT: Municipal/Resort

DESIGN DAILY FLOW: 0.2 MGD (757 m³/day) **PEAK FLOW:** 0.2 MGD (757 m³/day)

AQUA-AEROBIC PRODUCTS: Dual-basin AquaSBR[®] System, 2-disk AquaDisk[®] Filter

WITH 1500 KIDS COMING TO VISIT EACH WEEK, HUME LAKE CHRISTIAN CAMP NEEDS A RELIABLE WWTP!

Hume Lake Christian Camp, one of the largest church youth camps in the United States, hosts 1500 kids each week in a remote Kings Canyon National Park area in California. The peak season for Hume Lake youth visitors is April through October, but during non-peak times it also hosts weekend conferences and seminars for various business groups.



One of the basins containing AquaSBR system equipment

In the beginning, Hume Lake Christian Camp was a smaller facility that used a primary wastewater treatment process employing an aerated equalization basin with a facultative lagoon. When the Camp gained popularity and needed to expand, this system had to be replaced. In fact, the state of California required the Camp to install an upgraded water and wastewater treatment system that would accommodate their increasing growth.

Hume Lake chose a dual-basin AquaSBR[®] system and 2-disk AquaDisk[®] cloth media filter to meet their treatment needs. The AquaSBR system went on-line in November of 1992, and the AquaDisk filter startup soon followed in January of 1994. A few of the factors treatment managers at Hume Lake considered in choosing the AquaSBR system and AquaDisk filter included

minimum land requirements, lower capital costs, and system flexibility. Another important factor considered was the systems' ability to operate on a totally automatic basis with minimal operator attention and maintenance.



2-disk AquaDisk Filter

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.

DESIGN CHARACTERISTICS

The dual-basin AquaSBR system at Hume Lake has an average, and peak design daily flow of 0.2 mgd (757 m3/day). The 2-disk AquaDisk filter has the capability of handling a flow of 465,000 gpd, requiring only 1 disk at the current flow.



Hume Lake's two SBR basins are located side-by-side with the exception of an aerobic digester basin and blower room inbetween them. Each SBR basin is 36 x 36 x 15.1 feet.

Since the start-up of the AquaSBR system and the AquaDisk filter, the plant has experienced exceptional wastewater treatment results. Effluent BOD5 and TSS levels are well below permit (as shown in the table below) and turbidity levels are less than 2 NTU. The very low NTU effluent level, in fact, meets California's Title 22 effluent requirements for recycle/reuse.

ANNUAL AVERAGE OPERATING DATA

Loading	Design Influent	Current Influent	Current Effluent	Permit Effluent
Avg Flow mgd	0.2	0.12	-----	-----
Peak Flow mgd	0.2	0.14	-----	-----
BOD mg/l	250	360	7	20
TSS mg/l	250	185	6.5	20

AQUASBR® SYSTEM ADVANTAGES:

Lower capital costs, small footprints, system flexibility, and minimal maintenance are the initial reasons Hume Lake Christian Camp chose to install a dual-basin AquaSBR system and 2-disk AquaDisk filter. In addition to these advantages, it has proven to be an efficient and reliable means of wastewater treatment. It ensures Hume Lake plant operators that the highest quality effluent standards will be met now, as well as in the future.

- 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