



NEBULA™ MultiStage Biofilm System Industrial Pretreatment

High Strength Industrial Wastewater Treatment

The Challenge

The Village of Reeseville, Wisconsin receives process wastewater from a local cheese manufacturer, Specialty Cheese. Reeseville's existing aerated lagoon system was not designed to handle high strength cheese process wastewater. The Village's engineer, Kunkel Engineering Group evaluated installing an industrial pretreatment system to reduce the organic strength of the process wastewater from the Specialty Cheese plant prior to discharge into the lagoon system.

The Solution

Aquarius Technologies provided a pretreatment system solution to meet the treatment objectives without the need for sludge handling. The Nebula MultiStage Biofilm System is installed in a series of treatment stages to provide attached and suspended biological growth. The process is based on microbial food chains where the microbes consume the wastewater contaminants in the early stages of the process are subsequently consumed by the higher developed and organized microbes in the latter stages. The fixed media provides high surface loading rates and a place for the microbes to attach and grow in each of the treatment stages.

The Nebula MultiStage Biofilm System utilizes Quantaer™ fine bubble disc aeration providing:

- High oxygen transfer efficiency for delivering dissolved oxygen for the microbial respiration and growth
- Effective media scouring for biofilm thickness control
- Mixing and wastewater distribution within the media racks



Reeseville, Wisconsin Nebula MultiStage Pretreatment System



Specialty Cheese operates a dissolved air flotation (DAF) unit to remove fats, oils, and grease (FOG) and some solids prior to discharge of process wastewater to a conveyance system and transfer of wastewater to the Reeseville Wastewater Treatment Plant. The dedicated conveyance system from Specialty Cheese discharges into the Nebula MultiStage Biofilm pretreatment system where the organic strength is reduced prior to discharge into the existing lagoon system.

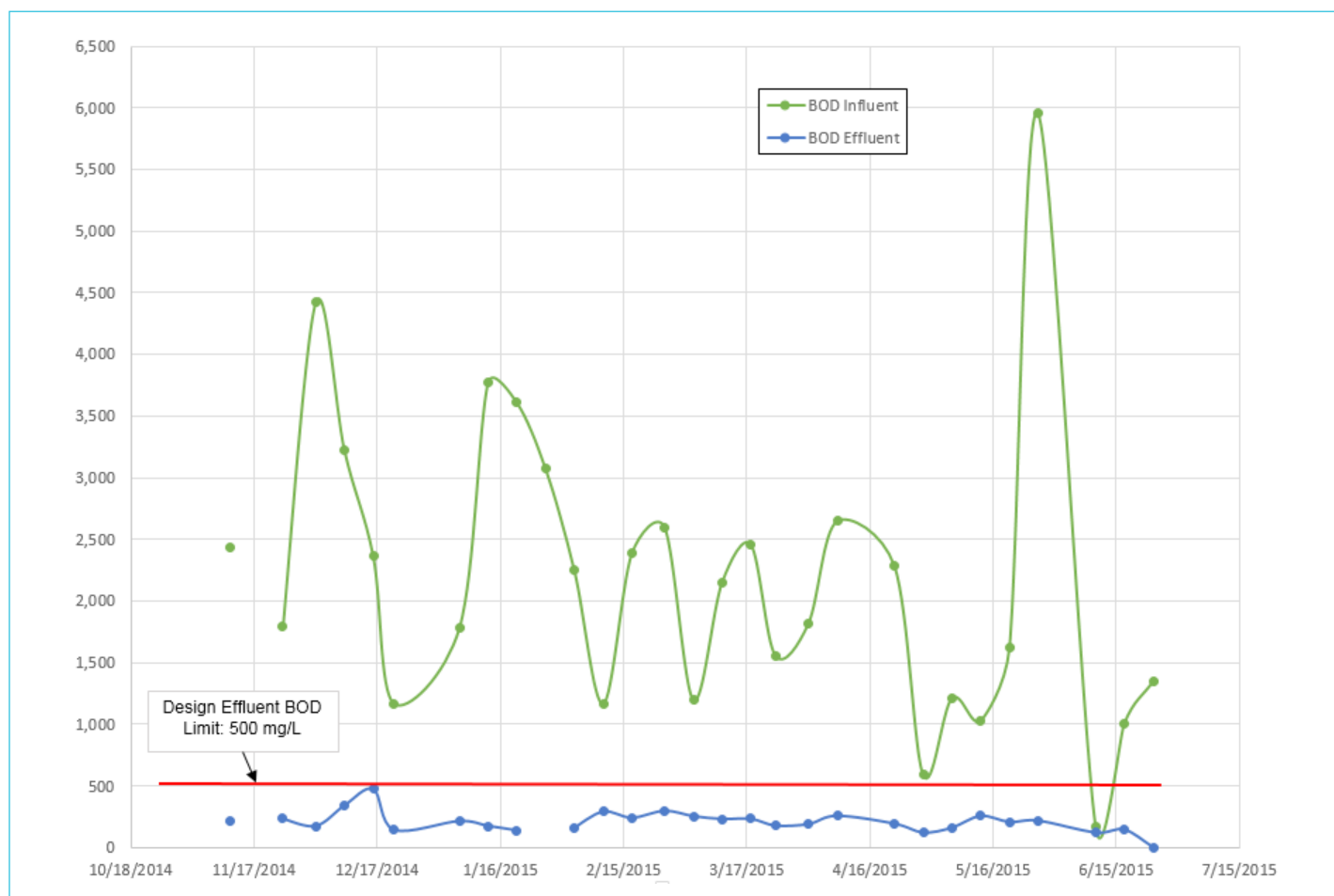
The Nebula MultiStage Biofilm pretreatment system is designed for a flow of 30,000 gallons per day with the following characteristics:

PARAMETER	INFLUENT TO THE PROCESS	EFFLUENT FROM THE PROCESS
BOD5	4,500 mg/L	<500 mg/L
Suspended Solids (TSS)	500 mg/L	<300 mg/L
Fats, Oils, and Grease (FOG)	100 mg/L	<60 mg/L



Nebula MultiStage Pretreatment System provides process stability during variable flows and loadings.

The **Nebula Biofilm** pretreatment system began operation in 2014. Preliminary performance data indicates over 90 percent BOD5 removal is achieved.



The Nebula MultiStage Biofilm System solution provided the Village of Reeseville the best life cycle cost with an easy-to-operate pretreatment system, reduction in organic strength of the cheese process wastewater without creating excess biological sludge. Contact Aquarius to learn how a Nebula MultiStage Biofilm System can solve your industrial wastewater pretreatment needs.

CASE STUDY

NEBULA MULTISTAGE BIOFILM SYSTEM INDUSTRIAL PRETREATMENT