

CASE STUDY

Biolac® - Moses Lake, WA



Moses Lake: Great Results and Energy Savings with Biolac®

Overview

The Sand Dunes WWTP is one of two treatment facilities in the Moses Lake area in central Washington State. This wastewater treatment plant is designed to treat 4 MGD of mainly municipal sewage and serves a population of approximately 19,000. It consisted of a lagoon process with static tubes and three 100 hp blowers.

The Larson WWTP is the second plant in the Moses Lake area which was upgraded from a lagoon to a Biolac® Wave Oxidation System in 2002 to meet new Total Nitrogen (TN) limits.

This upgrade was designed for 0.75 MGD of municipal wastewater and it has operated very successfully even in cold weather, providing TN < 8 mg/l consistently.

Challenge

The Dunes plant had operated reasonably well but population growth added demand for more treatment capacity and more stringent limits. The main problem was that the current treatment system had reached the maximum capability and the customer was facing violation of future TN groundwater discharge permits which would require TN < 10 mg/l.

Journey

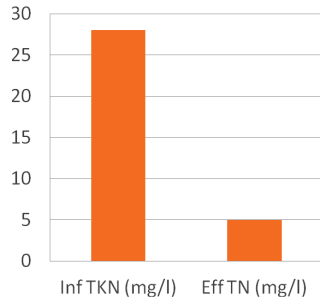
This customer was then left with the task to evaluate other treatment processes and technologies that could best cope with the increase in organic load and performance. The main limiting factor was the lagoon process. The engineer decided to upgrade to an activated sludge process with capability to nitrify and denitrify and therefore able to provide TN reduction.

Discovery

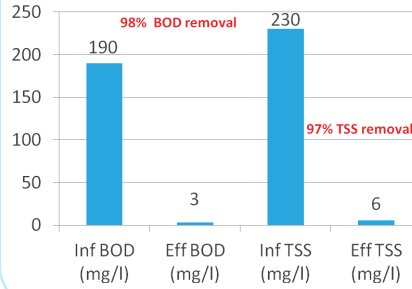
The customer investigated a wide range of treatment processes. The first engineer presented an Oxidation Ditch design for about \$22 million but was quickly rejected as too expensive. Among the options evaluated, an engineer familiar with the system at the Larson plant, presented a similar design based on the Biolac® Wave Oxidation System at an estimated \$9-10 million, which ended up as the most economical option.



Typical Nitrogen Reduction Results



Typical BOD & TSS Removal Efficiency

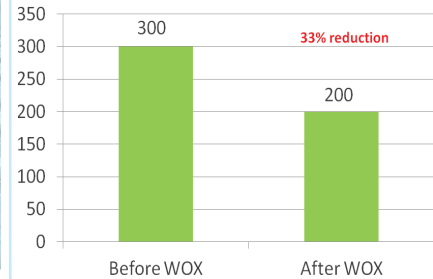


Solution

Based upon customer experience with Parkson, the fact that Biolac® was a lowest cost proven design, and that Biolac® cold temperature TN removal data was available, from the nearby Larson plant and others, the city decided to specify the Biolac® Wave Oxidation System consisting of two basins each with three integral clarifiers.



HP Use



The system also included headwork screens, floating aeration chains with automatic air control valves, blowers, DO system, and PLC controls.

Implementation

The winning contractor and Parkson worked together to plan the installation of the new Biolac® system.

In addition, in order to optimize the space and construction costs, Parkson proposed the use of their new Double Hopper Clarifier.

The construction of the plant took approximately 10 months. During this time Parkson engineers visited the site several times to train the contractor and inspect the installation.

This new feature basically provides an extra 35% of surface area per clarifier which helps reduce the number of clarifiers required and the overall footprint of the system.

The installation went mostly as planned with minimal delays or disruption to the wastewater treatment operation.

The project came in at about \$7 million, which was a considerable savings over the original estimates.

Results

The plant has been in operation since September 2005, and it has shown great

results with BOD and TSS consistently below 6 mg/l and TN below 5 mg/l.

Based on the Biolac® fine bubble Biofuser, the operating horsepower was reduced significantly resulting in estimated yearly energy savings approximately \$65,000.

In 2011, the City of Moses Lakes received two prestigious awards for flawlessly operating their Larson and Dunes wastewater treatment plants, protecting the water quality of Moses Lakes. The awards were presented by the Washington Department of Ecology. ■



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