

BOD & TSS Treatment in an Industrial Wastewater Facility

Wastewater treatment plants processing industrial wastewater are often challenged with high biological oxygen demand (BOD) and total suspended solids (TSS) loadings. Specifically, wastewater byproducts from food and beverage manufacturing require extensive treatment to meet local and federal water quality standards. Increasing the efficiency of biological processes in these wastewater treatment facilities can help decrease BOD and TSS concentrations in plant effluent. *Wastewater Bioaugmentation and Biostimulation*, by Michael Gerardi (2016), states that augmenting appropriate wastewater cultures in a system with high organic loadings can increase bacterial populations, allowing them to digest carbonaceous substrate more rapidly.¹

BioLynceus® bioaugmentation was implemented at a wastewater treatment plant processing beverage manufacturing wastewater. The following paragraphs outline the efficacy and benefits of using ProBiotic Scrubber® II (PBII) to reduce BOD and TSS in an industrial wastewater treatment plant (IWTP).



Figure 1. Case study wastewater treatment system encompassing mechanical, clarifier, and lagoon components.

¹ Gerardi, M. (2016). *Wastewater Bioaugmentation and Biostimulation*. Lancaster, Pennsylvania: DEStech Publications, Inc. Pp.117.

An industrial plant in Oregon processing beverage manufacturing wastewater was struggling with high effluent BOD and TSS concentrations. An average wastewater flow of 0.01 MGD was processed by the system. The facility was not efficiently processing the heavy organic loads produced by the beverage manufacturer. To properly treat the high-strength industrial wastewater, the IWTP discharge was processed a second time at a local wastewater plant. The company's expense for additional treatment depended on the effluent BOD and TSS loadings. Surcharge costs were especially high in the winter months, when the biology in the pretreatment system was least active.

Motivated to reduce its discharge payments to the local utility, IWTP management contacted BioLynceus®. PBII, a diverse biological product, was implemented to enrich the system with live cultures of organotrophic wastewater bacteria and improve process efficiency.

PBII was inoculated at the influent to the mechanical plant and in the wastewater treatment ponds. Additional product was dosed by pump into treatment ponds one, two, and three. After one month of treatment, beginning in May, the plant's discharge surcharges were reduced by 25%. The financial benefits of decreasing BOD and TSS during the first 30 days covered the cost of PBII for an entire year. By December, the total discharge fees paid by the IWTP had been reduced by 73%, and the BOD surcharge had been eliminated. The facility continued to use PBII over the following years, with little to no discharge expenses. The wastewater supervisor wrote in a letter of endorsement, "The consistent results that we have experienced on a whole have been staggering and the savings on our cost a bonus."

BioLynceus® bioaugmentation helped decrease BOD and TSS concentrations in the plant effluent, reducing surcharges associated with further processing of the discharge.