

Laguna Beach, CA, Benefits from Installation of I-BOx® 6000 Biological Odor Control System

Incorporated in 1927, with a current population of 22,000, the City of Laguna Beach is a small coastal city located in southwest Orange County in Southern California. The City operates a sanitary sewer system with 85.71 miles of gravity sewers, 2,674 manholes, 9.44 miles of force mains, and 25 lift stations.

The City's largest lift station, the Bluebird Southwest Orange County Wastewater Authority (SOCWA) Lift Station, conveys all wastewater flows within the City's service boundaries to the 6.7 MGD Coastal Treatment Plant located in Laguna Niguel - approximately two million gallons of wastewater daily.

The lift station, built in the early 1980s, is owned, operated and maintained by the City. The Bluebird Lift Station is located at the end of Galen Drive at the corner of Calliope and Glenneyre Streets. There is a long history of odor complaints around the lift station, specifically at the "Glenneyre Dip" where odors

emanate from the lift station and manholes in the adjacent street.

"We've purchased several odor control units from IMS now and have had great success with every installation."

Hannah Johnson, Project Manager
City of Laguna Beach

After an I-BOx® biological odor control system was installed in 2016 at SOCWA's nearby Laguna Lift Station, the City received positive feedback from the community about the reduction of nuisance odors. The seamless installation of the I-BOx® biological odor control system

and the positive community response made it an easy decision to install another IMS system at the Bluebird Lift Station. The new I-BOx® 6000 system was preassembled, piped, wired, and factory tested before installation at the site in November 2019.

All of the I-BOx® components – FRP air exhaust fan, FRP odor control vessel, water and nutrient feed panel and nutrient tank, – were mounted together on the low-profile vessel deck for easy operator access and maintenance. The control panel was mounted remotely on a wall next to the I-BOx® system. This once-through system is equipped with a continuously operating fan that pulls the odor-laden air from the wet well and surrounding manholes into the I-BOx® system for treatment prior to release to the atmosphere.

In Stage 1 of the two treatment stages, the system is designed to remove primarily hydrogen sulfide (H₂S) by providing an environment promoting the natural growth of acidophilic, sulfur-oxidizing bacteria. This biological process stage, includes an inert, porous, mineral expanded clay media designed to resist compaction and degradation from the acidic sulfates of the biological oxidation of the hydrogen sulfide. The first stage operates with an independently controlled irrigation system to provide the biological media with adequate moisture to sustain bacterial growth and remove toxic byproducts. A programmed timing sequence controls the irrigation process by actuating a solenoid valve located on the water supply piping. Biological activity is enhanced and sustained as nutrients trickle down over the media. The nutrients, housed in an integrated tank, are dosed into the system by an eductor mounted on the water and nutrient feed panel.

Stage 2 includes a pelletized, high H₂S capacity, carbon media that removes any remaining hydrogen sulfide and other odorous organic compounds and polishes any sharp H₂S spikes that breakthrough from Stage 1. After treatment in the second stage, the stack at the top of the I-BOx® system discharges the cleaned air to the atmosphere.



I-BOx® 6000 at Bluebird Lift Station, City of Laguna Beach

System Design Parameters

IMS delivered the biological odor control system within the City's expectations. Following successful installation of the biological odor control system by the contractor, IMS performed commissioning and operator training. A performance test was conducted on the system using a continuous odor monitor. During the test, the system saw an average H₂S loading of 15 ppm and a peak of 229 ppm at the system inlet and no detectable H₂S at the system outlet. Inlet and outlet gas samples analyzed by an accredited testing laboratory using GC/MS technology also confirmed the system's performance.

The I-BOx[®] 6000 biological OCS solved the odor control problem at the Bluebird SOCWA lift station, providing the City of Laguna Beach with a reliable, efficient, cost-effective, and sustainable odor control technology.

Hannah Johnson, project manager of the City of Laguna Beach, expressed her appreciation of IMS' support over the years, stating "we've purchased several odor control units from IMS now and have had great success with every installation."

Odor Control System Design Information	
Design Air Flow rate	850 cfm
Biological OCS Model	I-BOx [®] 6000
Avg. Inlet H ₂ S Concentration, ppm	50 ppm
Peak Inlet H ₂ S Concentration, ppm	100 ppm
Minimum H ₂ S Removal Efficiency	99.0%*
Biological Odor Control System Dimensions	
Length	8'-6"
Width	6'-0"
Height (SSH)	6'-8"
Shipping Weight (Vessel)	10,000 lbs.
Operating Weight	11,000 lbs.
Nutrient Tank and Metering Pump	
Nutrient Tank Capacity	30 gal
Nutrient Metering Pump Flow Rate	0.2 gpd
Water Feed	
Solenoid Frequency	Every 30 minutes
Solenoid Valve Open Duration	2 minutes
Flow Rate	6 gpm

*The minimum H₂S removal efficiency is 99.0% or an outlet concentration of 0.1 ppm, whichever is greater.