CITY OF LAGUNA BEACH, CA

Bluebird Lift Station

Average Flow of 1.4 MGD

Reference:

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Project Description

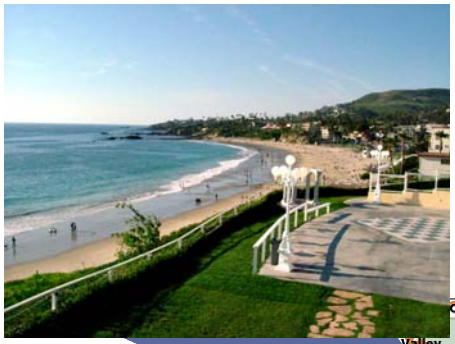
Complaints of hydrogen sulfide odors from their sewer system led the California coastal community of Laguna Beach to investigate such odor control remedies as scrubbers, chemical treatment, pipeline enhancement and the new **ECO$_2$** SuperOxygenation technology. Because of physical constraints and the high cost of chemicals, scrubbers and chemical treatment were not deemed practical or cost effective. In addition, hazardous waste by-products required special handling and expensive disposal.

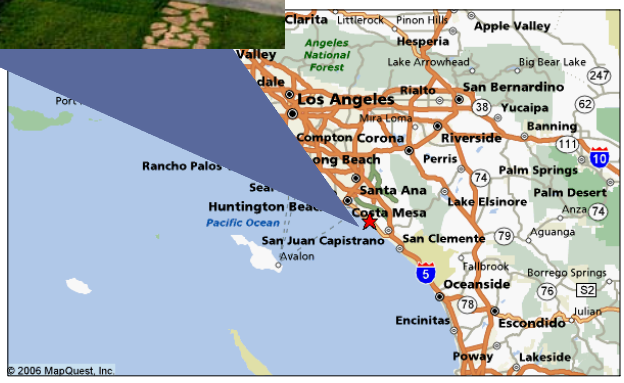
The **ECO$_2$** system offered several valuable advantages including a return on investment of less than four years, increased service life of the North Coast Interceptor pipeline (a result of preventing corrosion due to hydrogen sulfide formation) and the significant reduction of odors between the lift stations. The City elected to install on-site oxygen generation to allow the entire **ECO$_2$** system to be built inside of the existing Bluebird Lift Station, providing an odor control system that is invisible to the surrounding beach community.

The **ECO$_2$** system was designed specifically for Laguna Beach and guarantees an average H_2S level of <5 ppm under design operating conditions. The 17,000 ft. force main handles a maximum flow of 5.4 MGD.

The **ECO$_2$** SuperOxygenation system was installed during the Fall of 2006 and is meeting all design criteria.

Force Main Odor and Corrosion Control - Onsite Oxygen Generation





Laguna Beach, California

The City of Laguna Beach is a unique beach community with over seven miles of beautiful coastal beaches. The City has 24,000 residents and receives over 3 million visitors each year.

The City's pride in its beautiful canyons, coastal hills and beaches necessitated a nearly invisible, yet practical and cost-effective odor control solution for its sewer system.

The **ECO$_2$** SuperOxygenation system combined with on-site oxygen generation guarantees an average of <5 ppm H_2S levels, all within the footprint of the existing Bluebird Lift Station.

ECO$_2$

3939 Priority Way South Dr., #400 Indianapolis, IN 46240 317.706.6484 www.eco2tech.com

Project History

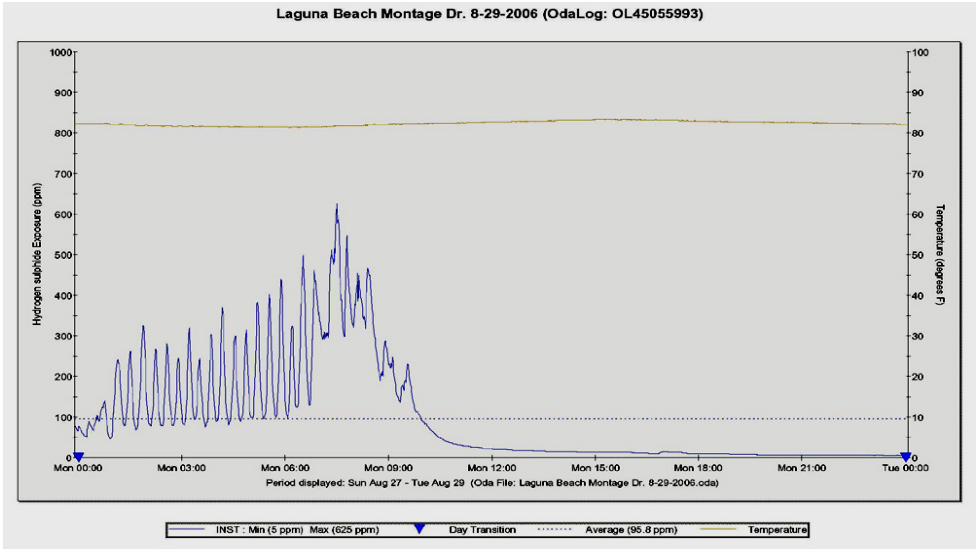
The City of Laguna Beach received complaints of sewer system odors for many years, and in a 2003 engineering study, identified Hydrogen Sulfide as the primary source of the odors, with gas scrubbers as the recommended solution. After soliciting proposals from traditional vendors, the City concluded that scrubbers would triple their chemical budget, be aesthetically unpleasing and leave the City with hazardous waste by-products requiring special handling and disposal.

Staff surveyed nearby wastewater agencies and discovered that Orange County Sanitation District had rigorously tested a new technology—**ECO_2** SuperOxygenation—that virtually eliminated the production of Hydrogen Sulfide. According to OCSD's project manager, the new system worked immediately and provided consistent performance.

With over seven miles of beautiful California beaches, Laguna Beach welcomes over 3 million visitors every year and its residents expect superior services and utility systems that blend in with the architecture and look of the community. Laguna Beach staff and **ECO_2** engineers collaborated to design a nearly invisible odor control solution. The **ECO_2** SuperOxygenation cone, oxygen generation system, and piping, pumps and controls all fit within the existing Bluebird Pump Station. The installation, start-up and testing were completed in the Fall of 2006.

The **ECO_2** SuperOxygenation system has met Laguna Beach's expectations.

- *Return on Investment* of less than four years.
- *An Invisible Installation*, with all equipment fitting within the existing pump station.
- *Minimal Maintenance* that can be absorbed into the current operations budget.
- *Increased Service Life* of the North Coast Interceptor pipeline by reducing the development of corrosive acids in the system.
- *Guaranteed Performance Levels*, reducing H_2S levels from over 300 ppm to <5 ppm. The measured performance of the system is ≤ 2 ppm.



OdaLog showing H_2S levels before and after start-up of **ECO_2** SuperOxygenation System

On-site Oxygen Generation

ECO_2 Cone

TECHNICAL SPECIFICATIONS

Force Main			*ECO_2 System*		
Flow—maximum	5.4	MGD	Cone diameter	4	ft.
Flow—average	1.4	MGD	Cone height	15	ft.
Length of force main	16,896	ft.	Oxygen dissolution rate	1,000	lb./day
Diameter of force main	24 to 30	in.	Sidestream flow	1,000	gpm
			Measured performance—H_2S	≤ 2	ppm

The **ECO_2** SuperOxygenation technology is an innovative, economical and environmentally friendly odor control solution for municipal wastewater systems including Force Main Odor Control, Headworks Odor Control, Primary Clarifier Odor Control and Dissolved Oxygen Discharge Compliance. **ECO_2** technology was featured in the technical program during the 2006 Odor and Air Emissions specialty conference hosted by the Water Environment Federation and Air & Waste Management Association.

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