



## SULFIDE CONTROL WITH CLOEVIS BIOFILM REMOVAL SERVICE

### Project Scope

A major city in Florida had been experiencing chronic hydrogen sulfide ( $H_2S$ ) odor and corrosion problems at a forcemain discharge manhole and further downstream at a lift station, resulting in community complaints and collection system corrosion. Furthermore, the forcemain was located in the median of a busy roadway with no place to store a permanent chemical injection system. USP Technologies (USP) performed a system trial utilizing Cloevis Biofilm Removal Service. The trial quickly reduced  $H_2S$  to desired levels at both control points and eliminated all odor complaints.

### Technology

Cloevis Biofilm Removal Service (Cloevis BRS) is an innovative technology offering that removes the biofilms that adhere to the inner surfaces of wastewater forcemain walls, including the underlying Sulfate Reducing Bacteria (SRB) that produce hydrogen sulfide. As a result, gaseous hydrogen sulfide ( $H_2S$ ) production is eliminated. The treatment requires an initial conditioning period when the biofilm that harbors the SRB's is removed, followed by maintenance treatments that are repeated as monitored lines show signs of SRB reformation.

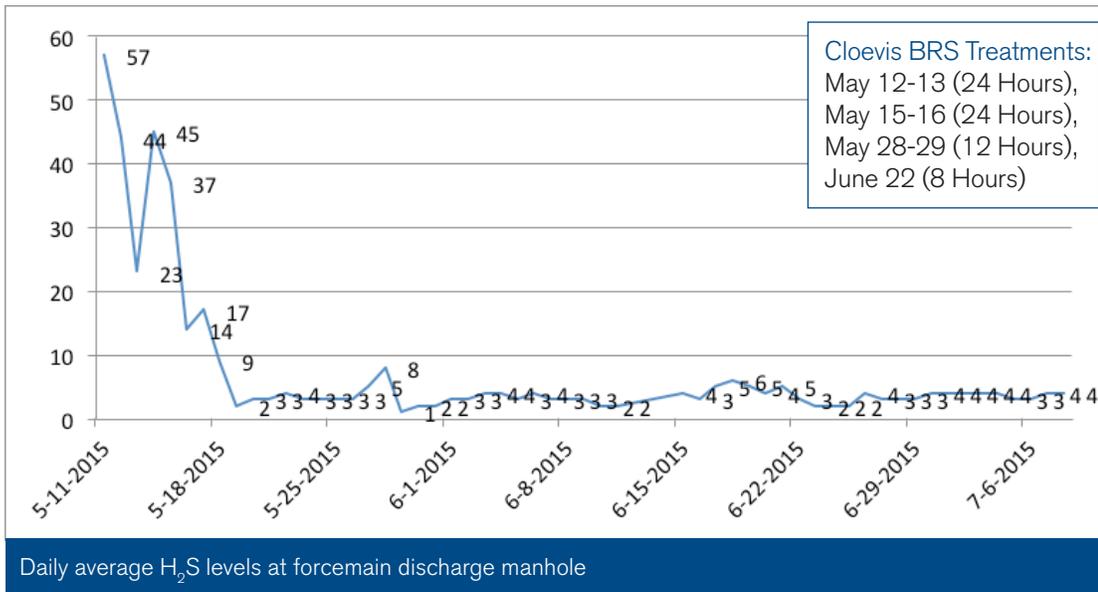
Control of  $H_2S$  has been achieved in wastewater collection systems with the utilization of many different technologies such as oxidation, precipitation, pH adjustments and vapor-phase systems. Cloevis BRS offers the benefits of lower cost, avoidance or minimization of on-site chemical storage, is unaffected by sulfide loading, retention time or oxygen uptake and has no labor/maintenance demand. Other benefits include complete removal of sulfide odors for up to three weeks after treatment cycle and elimination of methane production within the treated segment as well as no downstream adverse impacts due to residual treatment chemicals. In addition, the effective cost of Cloevis BRS is similar to caustic shocking and less than conventional continuous chemical feed alternatives such as nitrate and iron salts.

### Solution

The City's forcemain length is 8,600 feet with a diameter of 8-10 inches and a retention time of 4-6 hours. It has a wastewater flow of 0.128 MGD, and prior to Cloevis BRS treatment, had baseline  $H_2S$  vapor levels at 50-119 ppm and total liquid sulfide levels at 7.8 mg/L at the control location.

The initial conditioning period involved two separate 24-hour treatments which were completed two days apart. Maintenance treatments included one 12-hour treatment after the first 12 days and one 8-hour treatment after an additional 24 days. Ongoing maintenance Cloevis BRS treatments are completed every 3-4 weeks, depending on the rate of biofilm regeneration. Since the initial conditioning period,  $H_2S$  average levels have steadily been at 5 PPM or less at the forcemain discharge manhole and sulfides at the downstream lift station have been greatly reduced. Additionally, odor complaints have ceased at these locations since USP began Cloevis BRS treatment.

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## Turn-Key Scope of Supply

After an initial process assessment has been conducted and it is verified that Cloevis BRS is a best-fit technology solution, USP Technologies will develop a tailored treatment approach to meet the specified control objectives. Cloevis BRS is provided as a monthly service that includes all associated delivery equipment, chemicals, labor and monitoring reports.

Three different delivery options are available depending on situational restraints:

1. Fully mobile systems where no on-site facilities are required except for an injection point dose line. This is beneficial for sensitive areas as there are no chemicals or equipment stored on-site.
2. On-site storage and dosing facilities where chemical precursors are delivered and fully used during each treatment. This is beneficial as treatments are supervised and monitored. In addition, no chemicals are stored or left on-site.
3. Conventional on-site facilities that include non-hazardous chemical storage. This option is ideal for larger lines or secure facilities where non-hazardous chemical storage on-site is not an issue. This limits deliveries and service can be managed remotely.

To verify performance, H<sub>2</sub>S levels are monitored continuously with the use of OdaLog H<sub>2</sub>S dataloggers, and treatments are reapplied when sulfides begin to reappear in the transmission line. Service and compliance reports summarizing program activities are provided at regular intervals to keep customers informed of ongoing program performance.

With Cloevis Biofilm Removal Service, USP Technologies is extending low-profile community sulfide control to protect upstream infrastructure while removing loading into larger interceptor systems. Let us show you how this innovative, new no-capital/no-labor tool can help solve hydrogen sulfide issues within your collection system forcemains and improve your bottom line.

## About USP Technologies

USP Technologies is the leading supplier of peroxygen-based technologies and services for environmental applications. We have been serving the water, wastewater and remediation markets for over 20 years and have offices and field service locations throughout North America. Our consultative approach to problem solving includes application assessment, technology selection and development of a tailored treatment approach. Our full service programs successfully integrate storage and dosing equipment systems, chemical supply, inventory and logistics management, and ongoing field and technical support. This approach provides cost-effective, "hands-off" solutions to our customers. USP Technologies also can provide access to experienced application partners for a turn-key program encompassing engineering, site characterization and technology selection, program implementation, execution and report generation.

## Getting Started

We look forward to supporting your treatment needs, whatever the scale of your requirements. To obtain a streamlined treatment solution tailored to your specific project, give us a call at (877) 346-4262.

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