Case Study - SAM

Location: Half Moon Bay, California
Client: Sewer Authority Mid-Coastside (SAM)
Type of Plant: Municipal, with variable industrial discharge.
Size: 15 MGD (57 MLD)
Location of Sensors: Influent, after grit tanks and in the effluent of the primary clarifier.
Problem Statement: Variable industrial loading leading to treatment performance issues.
Outcome: Estimated $50,000 in savings and 80% reduction in manual sampling.

Problem Statement and Facility Overview:

The Sewer Authority Mid-Coastside (SAM) in Half Moon Bay, California was experiencing abnormally high Biochemical Oxygen Demand (BOD) levels in its influent (1100 - 1900 mg/L). With a plant capacity of 15MGD, and a small catchment of only 27,000 people, these BOD levels from local industries caused effluent issues. Since BOD test results take 5+ days after sampling the facility has relied on COD sampling to identify periods of high influent loading. Manual COD sampling and analysis requires operator time and availability meaning that samples are taken randomly or on timed rounds. The variable nature if influent means that it was difficult to catch events and act on them with operational changes.

Initial Findings and Deployment:

SAM has been using SENTRY™ sensors for reliable real-time monitoring of influent conditions and Biomass Health at the facility. Two sensors were installed: in influent, after grit tanks (SAM01) and in the effluent of the primary clarifier (SAM02). Insight from the SENTRY™ data includes a detailed profile of organic loading as estimated COD in real-time. This has allowed the facility to reduce sampling by 80% and make operational changes because they are now addressing the incoming organics and toxic events. The operations team can fine tune their process decisions during upset events to maintain a stable effluent quality. Over the longer term they plan to identify loading trends which will allow them to prepare for reoccurring events.

The sensors continue to be a monitoring tool at the influent of the facility, and a second system has been procured for the pumping station to take even earlier action.

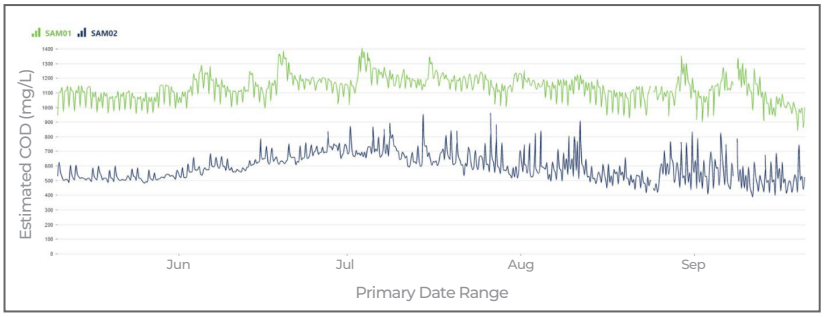

Figure 1: SENTRY™ dashboard with real-time estimated COD (mg/l) values from the influent (SAM01) and primary clarifier effluent (SAM02) sensors.

Results and Values:

- Estimated yearly savings in the range of $42,988.76 to $64,483.14
- Effective management of downstream treatment units with 80% fewer manual samples
- Potential for further optimization in aerobic and anaerobic treatment

The immediate and quantifiable value of using SENTRY™ for monitoring the influent and primary effluent of the facility is avoiding the cost of routine COD analyses. These costs include the collection, preparation, and analysis of individual samples, the disposal of toxic reagents used in the procedure and the QA/QC needs to assure management that laboratory procedures meet quality standards.

Next Steps:

The facility will be testing its action plan of using the two layers of SENTRY™ defense with sensor in the pumping station to protect and optimize its treatment process from highly variable influent fluctuations and toxic events.

The SAM team is exploring the addition of a third SENTRY™ system further into the process to contribute to a feed-forward aeration control process. The goal is less time spent over aerating and fewer instances of under-aerating, allowing the facility to save on energy costs and ensure better quality effluent.