



On-Site Treatability Study for Destruction of Sulfide Melbourne, Florida

Summary

A survey was conducted of total sulfides within Lift Station 23 in Melbourne, Florida's north end sewage collection system. Pretreatment results over two weeks of testing indicated that hydrogen sulfide within the air ranged from 500 ppm to over 1000 ppm. Total sulfides within the wastewater column averaged from 9 mg/L to 12 mg/L over two 24 hour sampling events.

Flows into LS 23 range from 1.5 million gallons per day (MGD) to 2.1 MGD.

The calculated dosage of Ultra-S3/hydrogen peroxide necessary to achieve successful reduction of sulfides to less than 1.5 ppm within the water column and less than 200 ppm within the air was approximately 56 gallons per day (GPD). Actual treatment of the lines coming into LS 23 indicated that the actual dosage would be somewhat higher than this number at approximately 60 GPD.

The following Odalogger graphs depict before and after treatment results using the Ultra-S3 process at LS 23.

Figure 1: LS 23 Sulfide Concentration Before Treatment

Session: 1 (OdaLog: OL45054054)

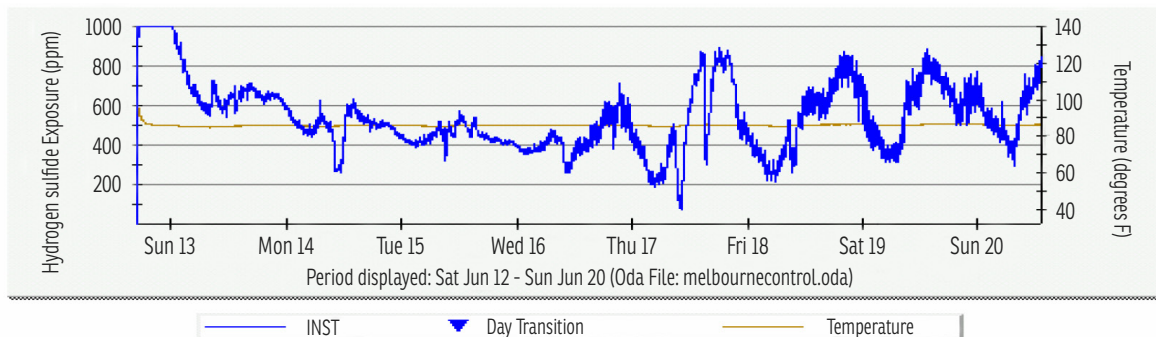
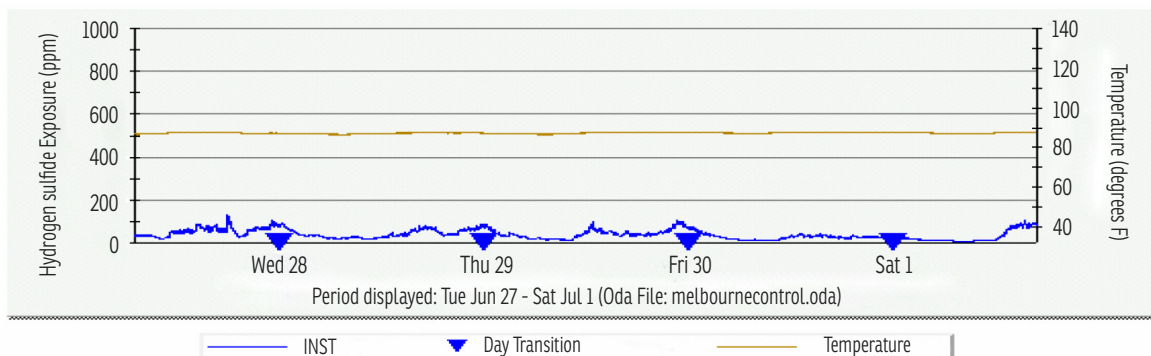


Figure 2: LS 23 Sulfide Concentration After Treatment

Session: 1 (OdaLog: OL45054054)



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Before and after treatment wastewater total sulfide levels are depicted in the following two figures.

Figure 3:

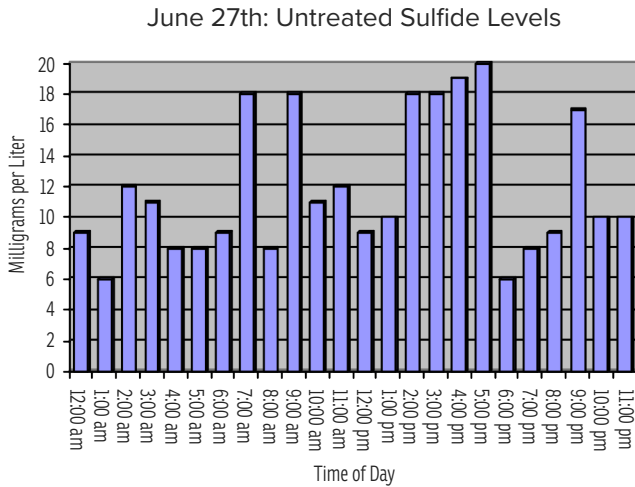
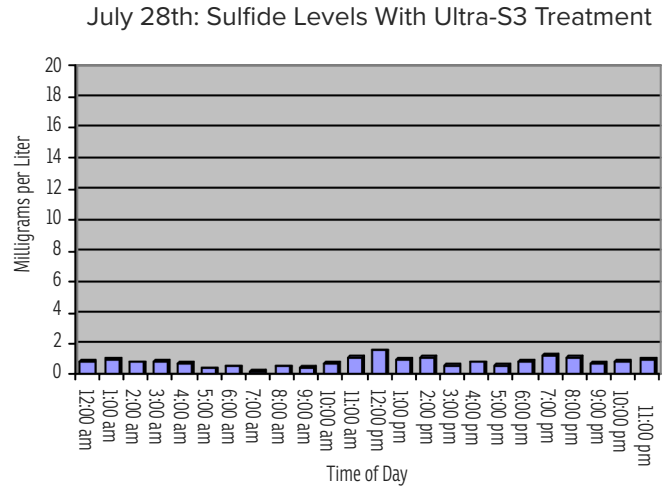


Figure 4:



Conclusions

The following conclusions are noted for the study:

1. LS 23 can be treated using approximately 60 GPD of Ultra-S3 treatment chemicals.
2. Ultra-S3 treatment at LS 23 can meet goals set by Melbourne for treatment efficiency.
3. No grease build-up was noted during the treatment.
4. Given similar sulfide levels at LS 6 and 15, approximately 120 GPD will be needed to treat all three stations.
5. Treatment of sulfides entering each station can be accomplished from the lift station grounds, without infrastructure modifications.
6. It is probable that lower dosages can be used during colder months.

Recommendations

While the objective of the treatments into the various lift stations within the Melbourne system is to reduce odor, it should be pointed out that Melbourne is undoubtedly experiencing significant infrastructure decay due to sulfide related corrosion. The corrosion brought on by sulfides is destroying concrete and metal throughout the system, including the wastewater treatment plant. A professional analysis of the costs associated with sulfide related corrosion at Melbourne will result in an understanding that significant amounts of money is being lost yearly to infrastructure decay, especially at the receiving wastewater plant.