

DIVISION OF WATER QUALITY ODOR CONTROL PLAN 2024

Environmental Quality & Public Works Committee

February 6, 2024

Charles H. Martin, P.E.



LEXINGTON

AGENDA

- Sources of Odor Problems in Sanitary Sewers
- Overview of Current Odor Control Systems
- 2023 Escalation of Complaints / Response- Action Plan
- Questions

Sewer Odors: Sources and Reasons

- **Pipelines** - Long times of travel in an oxygen deficient situation, venting is a risk.
- **Air Release Valves** – design to emit trapped air pockets in pressurized pipelines.
- **Treatment Plants and Pump Stations** – concentrated points of collection and retention.

Distance & Time – sewage treated at either treatment plant travels as far as 7 miles from the flush point to the treatment point. Most sewers designed at 2 ft/sec velocity ... time of travel 5 to 7 hours.

- **Weather**
 - Lack of rainfall reduces flow to minimum when system is designed for the maximum.
 - Fall seems to be the worst time because it's warm in the daytime / cool at night, result is temperature inversions that seem to trap odor at ground level.

AGENDA

- Sources of the Odor Problems in Sanitary Sewers
- **Overview of Current Odor Control Systems**
- 2023 Escalation of Complaints / Response- Action Plan
- Questions

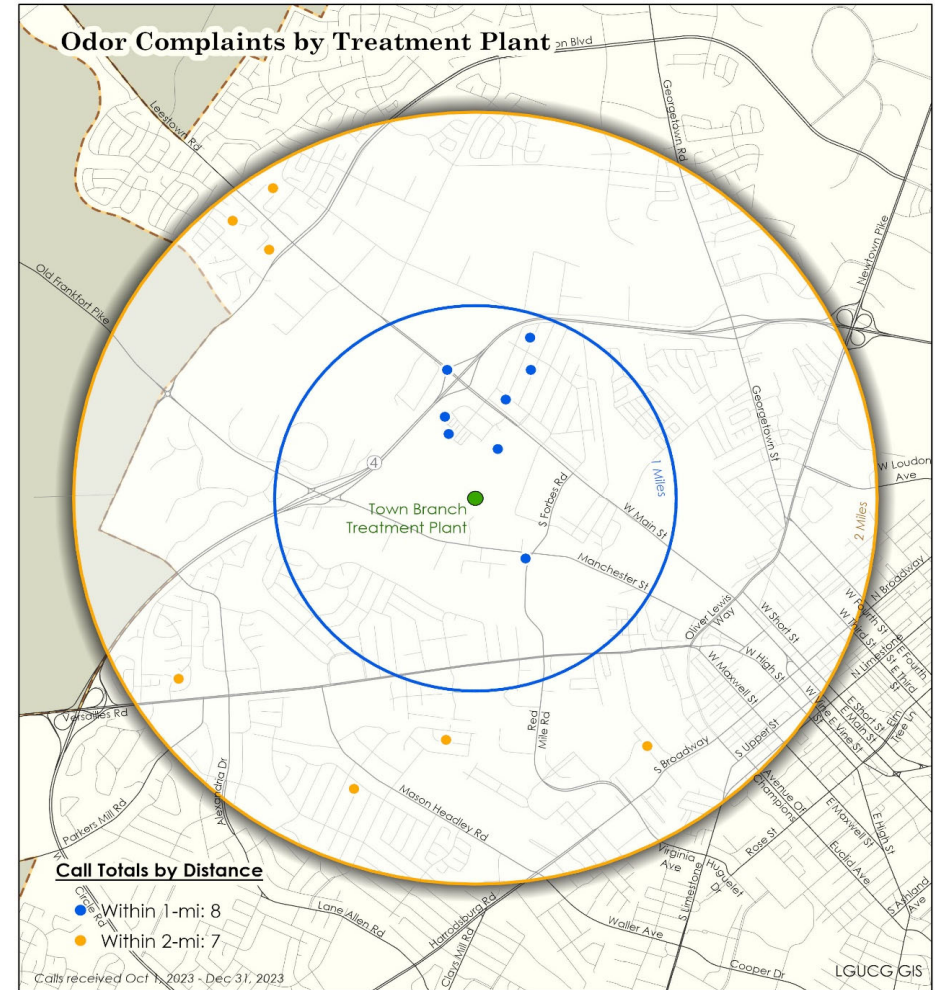
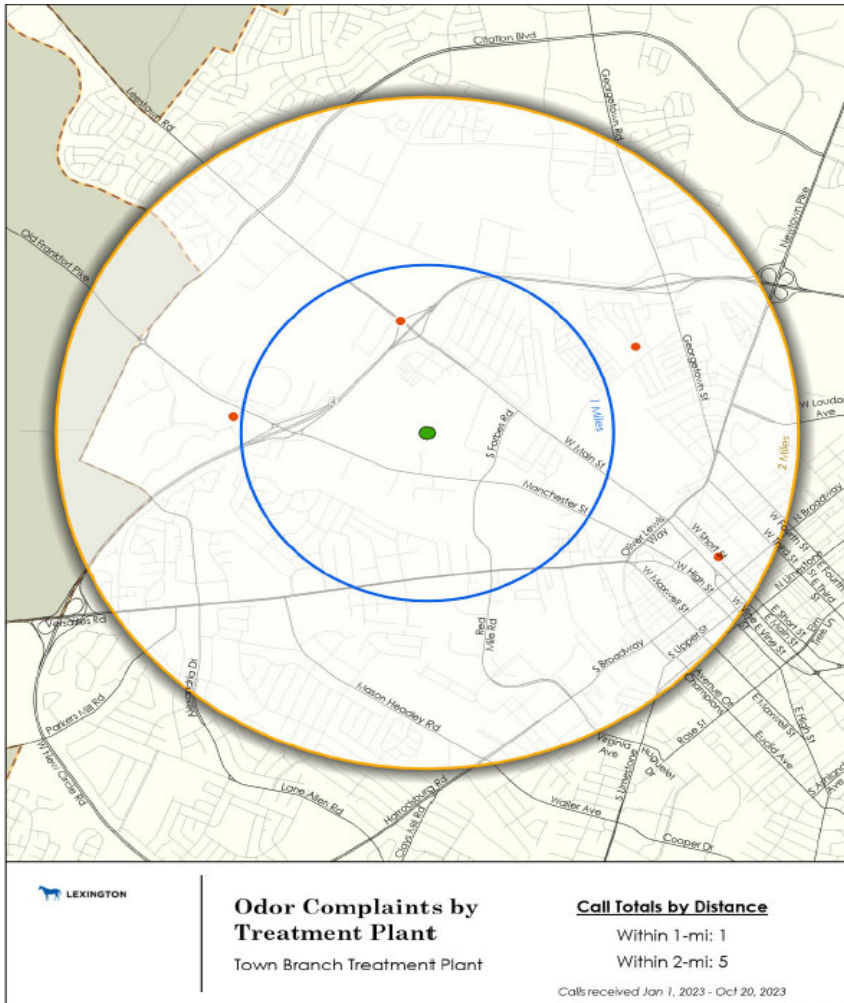
Current Odor Control Strategies

- Treatment Plants and Class A Pumping Stations – point source treatment
- Collection System - remote chemical feed systems at structural pumping stations.
- Air Release Valves (ARVs)
 - designed to emit trapped air pockets in pressurized pipelines.
 - Site specific / location by location treatment.

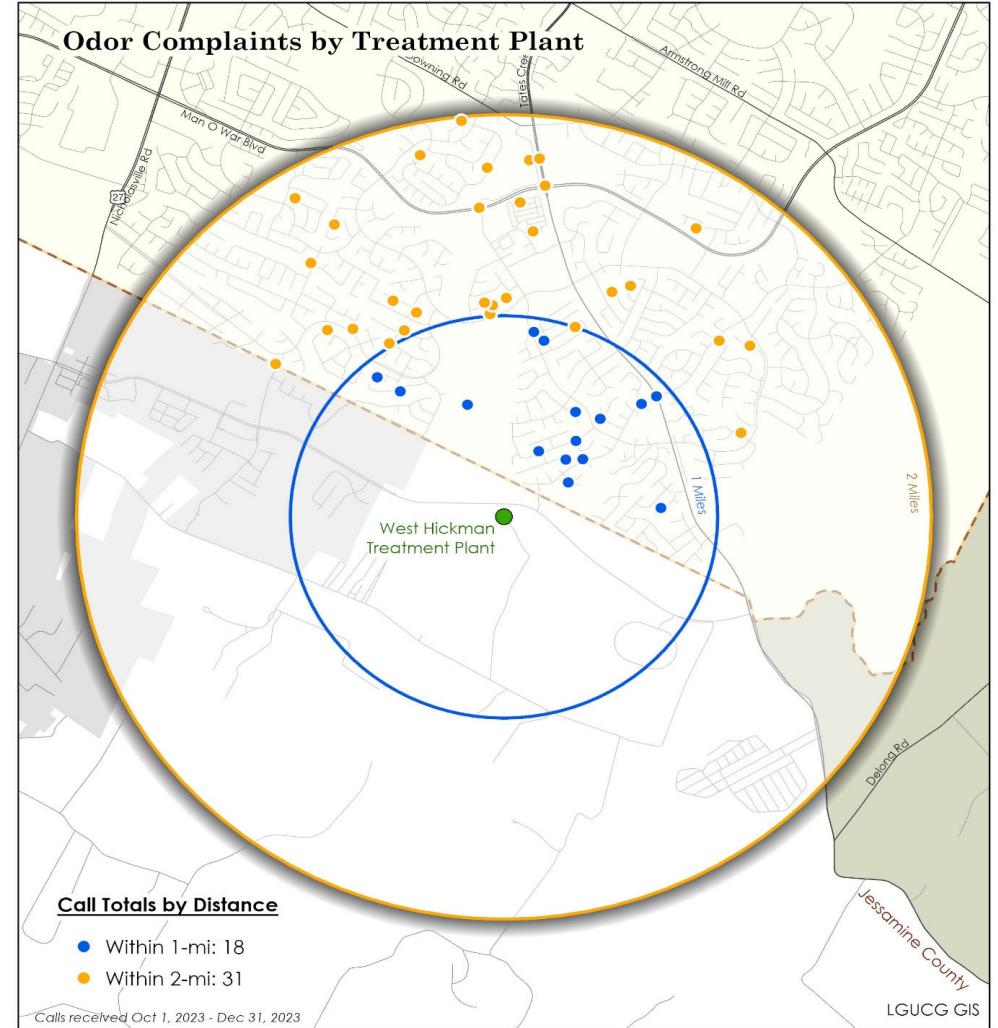
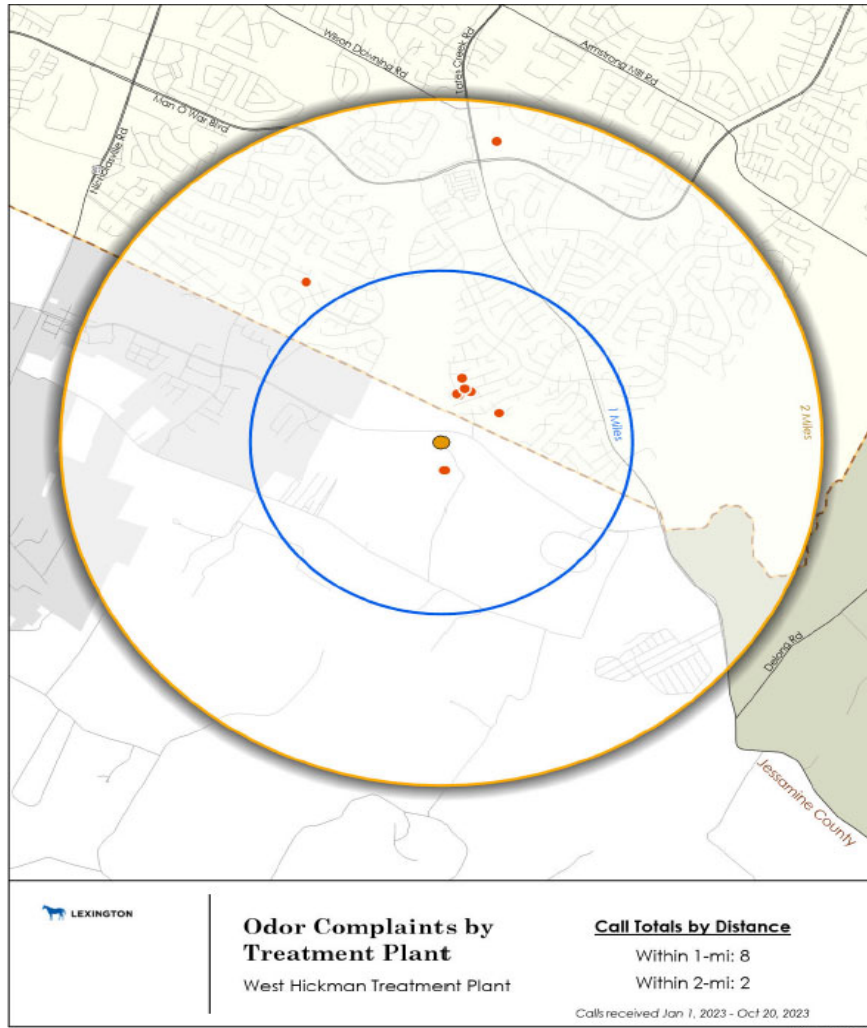
AGENDA

- Sources of the Odor Problems in Sanitary Sewers
- Overview of Current Odor Control Systems
- **2023 Escalation of Complaints / Response- Action Plan**
- Questions

ODOR CONTROL PLAN 2024



ODOR CONTROL PLAN 2024



2023 to Present Odor Control Response

Treatment Plants

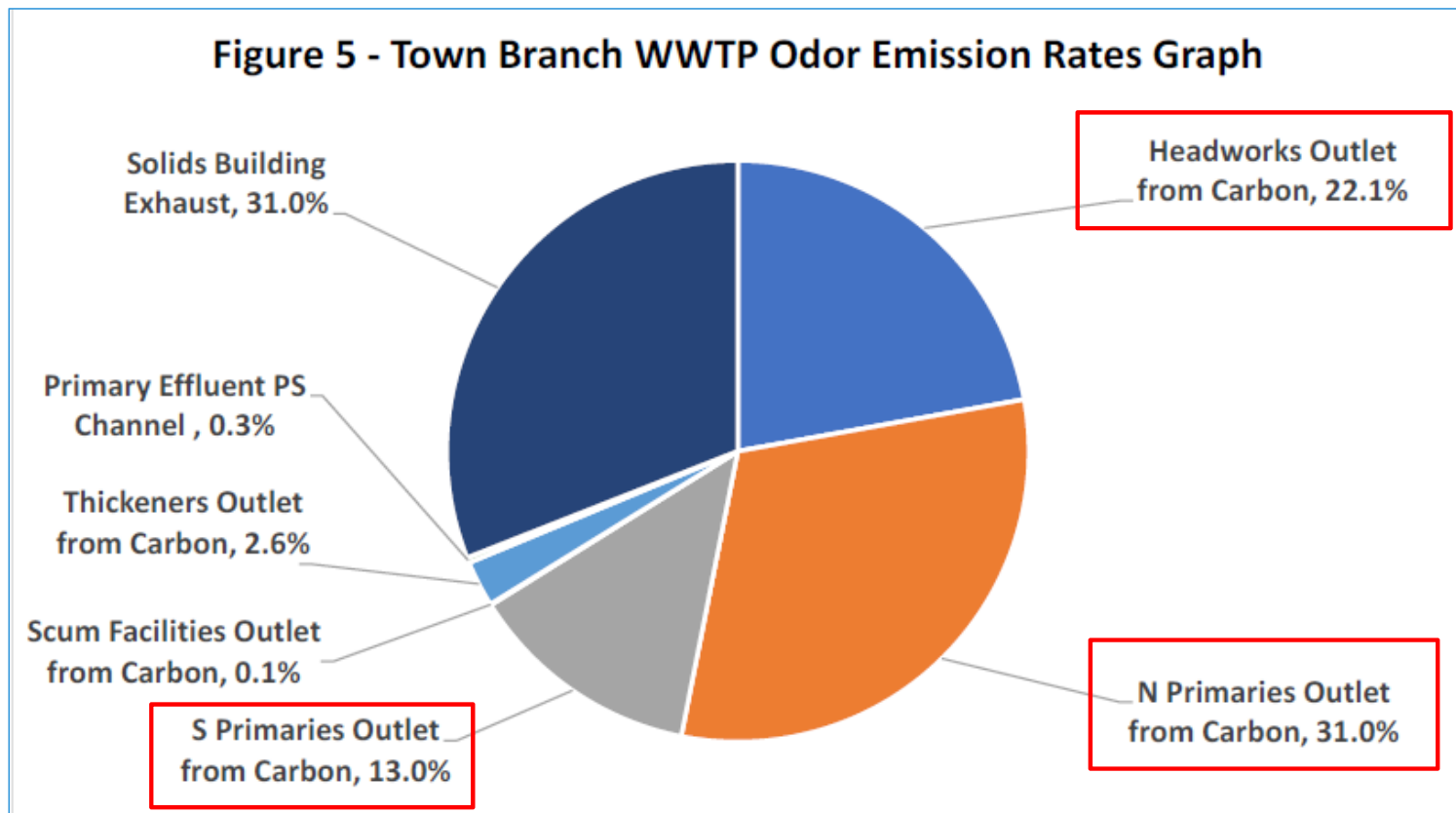
- Regenerated carbon unit at Town Branch north primary.
- Cleaned and rebalanced odor collection for West Hickman Headworks.
- Regenerated ASH tank scrubber at West Hickman.
- Created a unit price contract so that odor monitoring equipment can be installed at high-risk locations.

2023 to Present Odor Control Response

Treatment Plants

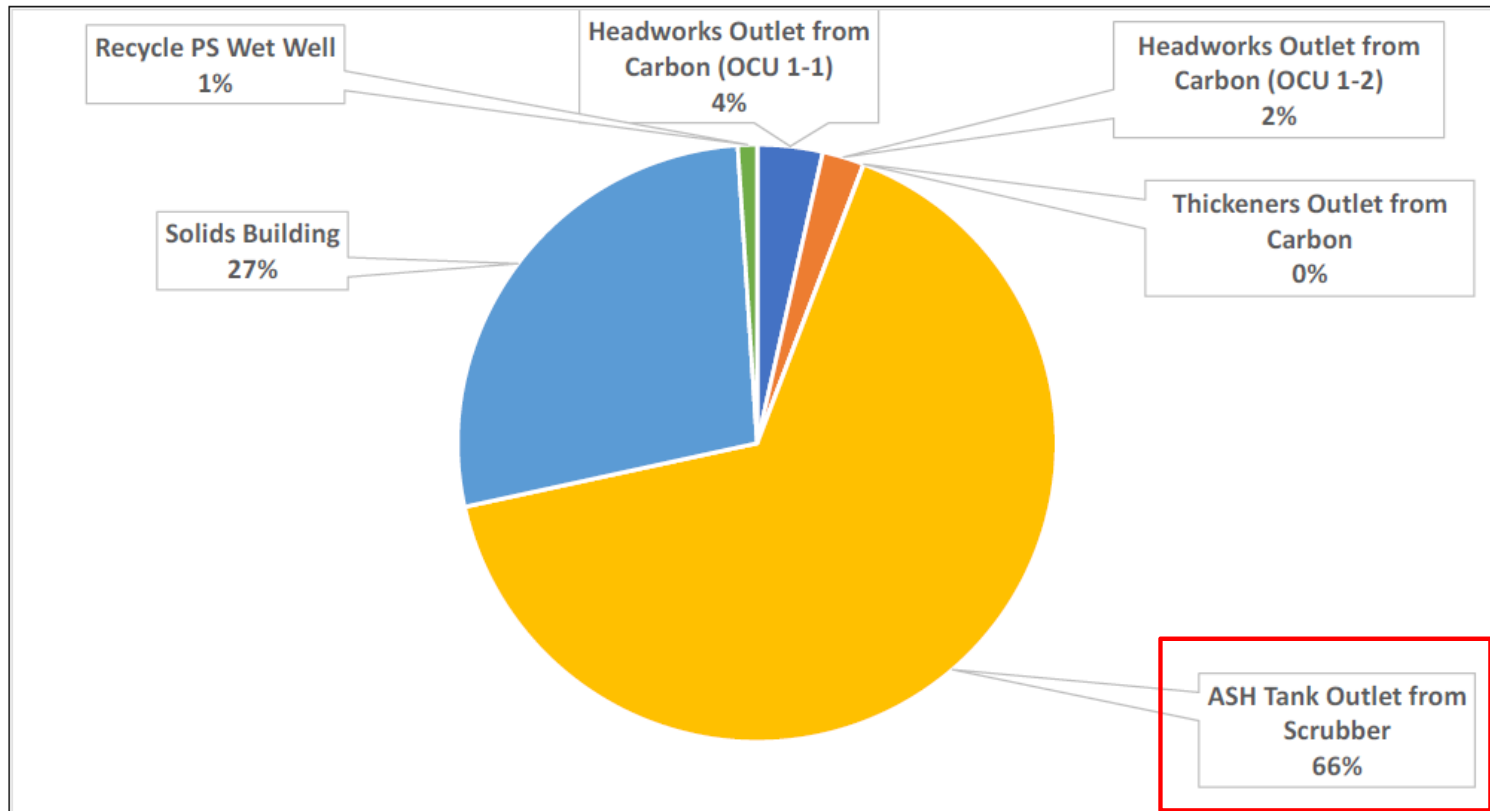
- Emergency purchase order issued by the Mayor to hire Webster Environmental Associates. Outcomes:
 - Conducted sampling for all high odor risk processes to fully assess current performance.
 - Provided recommendations on what equipment need upgraded soonest (best near results).
- Webster data will be used by the Program Management team to accelerate design and construction of improvements.

Webster Preliminary Findings



Webster Preliminary Findings

Figure 5 – West Hickman WWTP Odor Emission Rates Graph



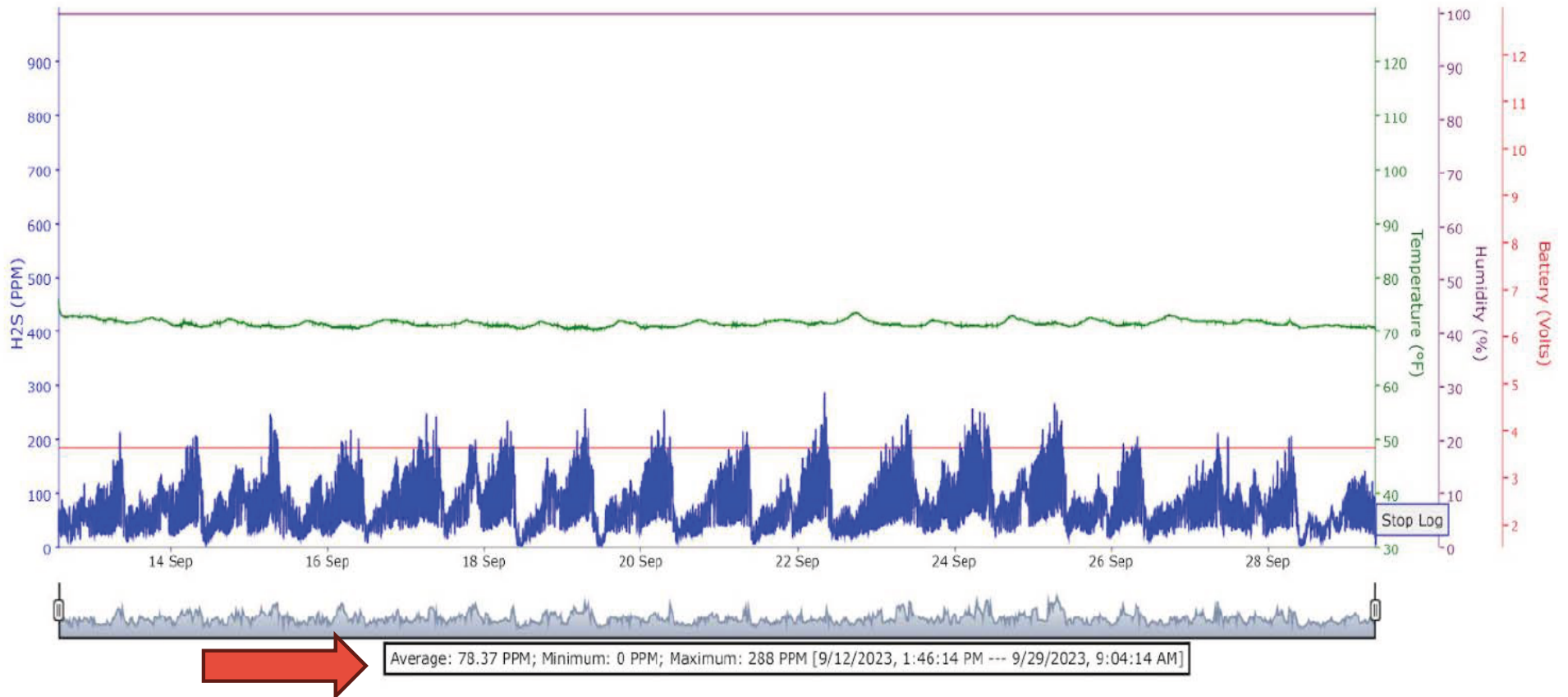
2023 to Present Odor Control Response

Collection System and ARVs

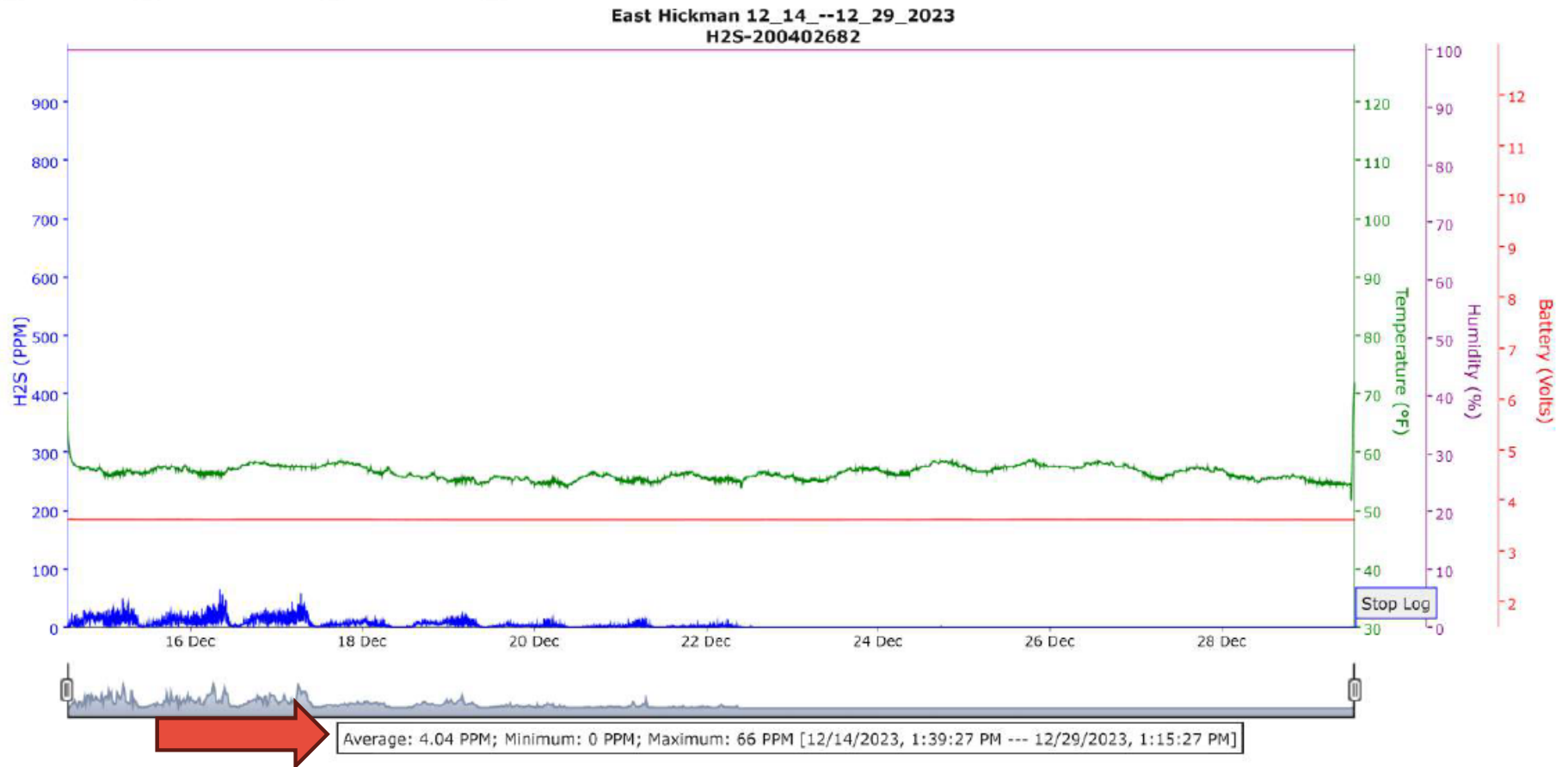
- Increased chemical feed rates at key locations.
- Engaged chemical supply vendor in launching a chemical feed optimization plan.
- Addressed deferred maintenance issues.

Chemical Optimization Preliminary Outcomes

H2S-200402682_9_12_2023, 1_46_14 PM --- 9_29_2023, 9_04_14 AM east hickman

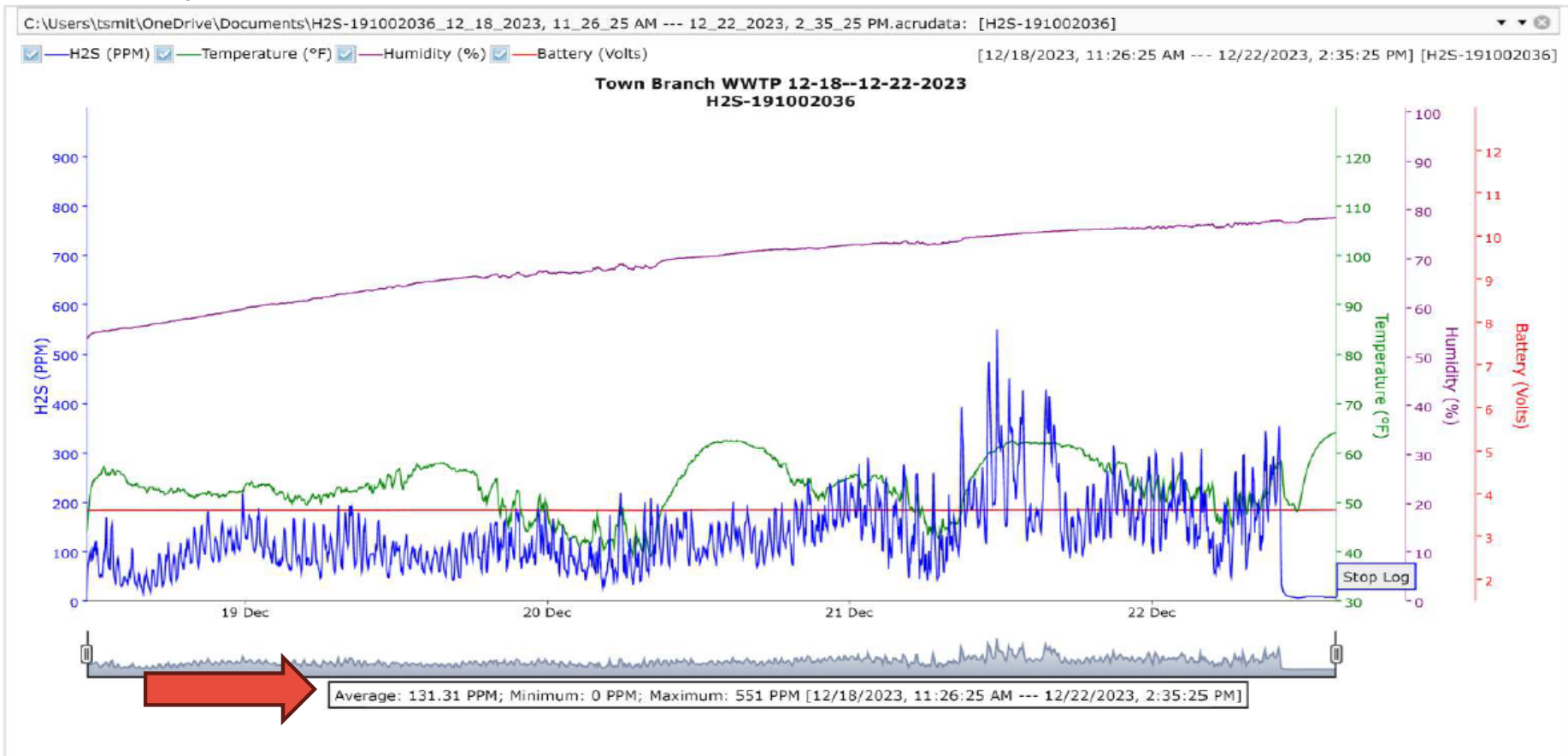


Chemical Optimization Preliminary Outcomes



Chemical Optimization Preliminary Outcomes

Exhibit K-1 Graph:



Deferred Maintenance Preliminary Outcomes

Junction Chamber Behind Veterans Park Elementary



Next Steps

Execute long-term contract with Odor Control Program Management team to:

- Design and construct the treatment plant equipment improvements highlighted in prior slides.
- Direct the optimization of chemical feeds (or other solutions) intended to:
 - Mitigate point source odors in the collection system, and
 - Limit odor loadings at the treatment plants
- Plan and execute collection system investigations, including smoke testing, to identify and correct indirect odor sources.
- Assist Water Quality in providing progress reports to interested parties.



QUESTIONS