

October 22, 2020

Mr. Justin Murray
City of Ft. Lauderdale
1765 SE 18th St
Fort Lauderdale, FL 33316
Phone: (954) 828-4122
Email: Jmurray@FortLauderdale.gov

**RE: ODOR AND CORROSION CONTROL BIOXIDE® FEED SYSTEMS
CITY OF FORT LAUDERDALE, FL – A, B, AND E REPUMP STATIONS
Evoqua Quote No. 2016-146338-R4**

Dear Mr. Murray,

Thank you for your interest in Evoqua Water Technologies LLC. We are pleased to submit the following proposal for the installation of three Bioxide® Chemical Feed and Storage Systems at the A Repump, B Repump, and E Repump Stations. These proposed feed systems will control odors and corrosion at the George T. Lohmeyer Wastewater Treatment Plant downstream, as well as control corrosion within the treated sections of the collection system.

Bioxide is a calcium nitrate solution containing a minimum of 3.5 pounds of nitrate-oxygen per gallon. Evoqua Water Technologies developed the Bioxide® Process in order to remove existing hydrogen sulfide at feed sites, as well as biochemically prevent the formation of additional hydrogen sulfide along the forcemains downstream of the chemical dosing points.

BACKGROUND

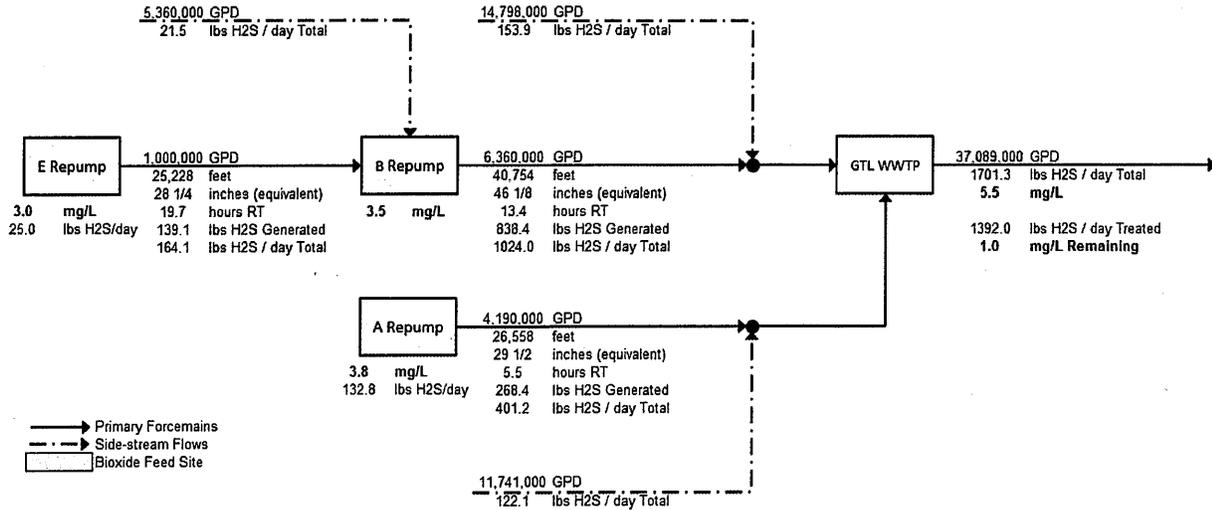


Figure 1 – Simplified line diagram of the collection system upstream of the GTL WWTP

We have investigated the collection system upstream of the GTL WWTP to provide an appropriate odor control solution for reducing sulfide levels at the plant. Using flow rates provided by the City, and grab samples from the GTL WWTP and its upstream lift stations, sulfide generation within the collection system

was modeled and a simplified line diagram is provided in the figure above. Based on the average daily flows and liquid sulfide data compiled in Figure 1, it is estimated to take a total of **2,535 – 2,805 GPD** Bioxide fed among the three upstream lift stations on a typical rain-free day. However, actual dose rates are likely to vary depending on the physical conditions and flow rates of your system.

By using our VersaDose® Advanced Dosing Controllers in this application, Evoqua will be able to implement rain curves which reduce Bioxide® feed rates by a programmed set-point during a high flow event. These high flow events are typically caused by rain and other I&I, which dilutes wastewater and reduces the need for chemical treatment at these times. Based on a historical average of 143 “rain days” per year for the City of Fort Lauderdale, and a chemical feed turndown of 75% of the dose set-point by the VersaDose® Control unit during high flow events, Evoqua anticipates up to 15% of annual chemical savings when compared to operation without any rain compensation.

Following start-up, Evoqua shall perform a complete optimization of the feed system, incrementally adjusting feed rates until the treatment objectives are met.

TREATMENT OBJECTIVE

Evoqua Water Technologies shall provide odor and corrosion control at the GTL WWTP by feeding Bioxide at the A Repump, B Repump and E Repump Stations. Bioxide shall be injected into the forcemain, and the feed system shall flow-pace using the lift station flow signal. Liquid phase hydrogen sulfide at the GTL WWTP shall be reduced to a level ≤ 1 mg/L while maintaining a nitrate residual under 2 mg/L at the control point.

SCOPE OF SERVICES

1. EQUIPMENT

Evoqua Water Technologies shall provide the following equipment:

- (3) High Density Cross Linked Polyethylene Chemical Storage Tanks, to be installed at the **A, B, and E** Repumps
- (3) Self Contained Dosing Skids with Dosing Pumps
- (3) VersaDose® LT Advanced Dosing Packages – The automation package will be programmed at the factory and can be optimized in the field to functionally control the dose rate from station flow signals.
- (3) Double-Wall Piping Assemblies
- (3) Pressure Transducer Tank Level Indicators with local and internet display
- (2) VaporLink® Remote H₂S Monitoring devices for rotational deployment at the control point every 90 days - Evoqua shall be responsible for the calibration and deployment of the VaporLink® units.
- (1) VaporLink® Antenna Kit which shall consist of:
 - (1) VaporLink® Signal Booster
 - (1) VaporLink® Antenna
- (1) SIM Card
- (3) All necessary piping and fittings for the installation

Evoqua Water Technologies retains ownership of all provided equipment. Evoqua will maintain spare parts for the equipment for emergency replacement.

2. CUSTOMER REQUIREMENTS

- Power – 15A / 120VAC / 1PH (provided within 10' of feed equipment)
- Secure Area – Standard 8' Fencing
- Tanker Access for chemical delivery
- Force Main injection points for chemical feed
- Potable Rinse Water

3. SCHEDULE

Evoqua can begin the program within 6 - 8 weeks of authorization to proceed after Evoqua contract approval and depending on scheduling.

4. PREVENTATIVE MAINTENANCE AND MONITORING SERVICES

As part of the full-service contract, an Evoqua service technician will visit the site on a monthly basis to perform routine maintenance on the dosing equipment, optimize chemical dosing, conduct compliance sampling and provide a written report. The following parameters will be measured:

- 1) Liquid Total Sulfide
- 2) Atmospheric Hydrogen Sulfide
- 3) Temperature
- 4) pH
- 5) Chemical residual
- 6) Chemical pump calibration
- 7) Tank Level

5. PRICE

Pricing is per the City of Tampa Odor and Corrosion Control Agreement, which the City is piggybacking:

BIOXIDE®: \$ 2.35 / gallon. Price includes delivery, Prepaid (PPD).

Equipment and Maintenance: Included in the price of chemical

This price does not include any applicable taxes.

The Terms and Conditions of the City of Tampa Agreement are considered part of this proposal and shall prevail.

Should a purchase order result from this proposal, please return the *entire* proposal, signed where indicated below, and address the order to:

Evoqua Water Technologies LLC
2650 Tallevast Road
Sarasota, FL 34243

Evoqua is committed to providing the highest standard of chemical quality and technical services in the industry. If the above proposal does not meet your application requirements, I would appreciate the opportunity to discuss alternatives with you.

If you have any questions, please do not hesitate to contact me at (951) 326-7415.

Sincerely,

Eric Hansen

Eric C. Hansen
Technical Sales Representative

Evoqua Water Technologies LLC

**RE: ODOR AND CORROSION CONTROL BIOXIDE® FEED SYSTEMS
CITY OF FORT LAUDERDALE, FL – A, B, AND E REPUMP STATIONS
Evoqua Quote No. 2016-146338-R4**

Evoqua will process your order when we receive acceptance of this proposal. Please sign and return this page proposal to municipalservices@evoqua.com or via fax to: (941) 359-7985.

Company Name: _____

This ____ day of _____ Month _____ Year

By: _____

Title: _____

P.O.Number _____