



## ST. TAMMANY PARISH

MICHAEL B. COOPER  
PARISH PRESIDENT

**September 22, 2023**

Please find the following addendum to the below mentioned BID.

**Addendum No.:** 1

**Bid#:** 23-3-2

**Project Name:** Cross Gates Water System New Elevated Storage Tanks

**Bid Due Date:** October 18, 2023

### **GENERAL INFORMATION:**

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#### **1. Permits**

- a.** Contractor shall be required to apply for, meet all requirements, obtain, and pay all costs for all required permits.
- b.** St. Tammany Parish Permit information is as follows:
  - i.** Two permits are required, one site work permit for each location.
  - ii.** Contractor must register with St. Tammany Parish.
  - iii.** Traffic and Drainage Impact Fees shall not apply.
  - iv.** Permit fee schedule is available at <http://www.stpgov.org/departments/permits-and-inspections>
  - v.** Other fees and costs shall be paid by Contractor
- c.** LDH authorization has been obtained by Owner.
- d.** St. Tammany Parish Dept. of Environmental Services Letter of No Objection will be obtained by Owner. (includes Engineering and Planning Dept. reviews)

- 2. Delete** Specification Section 13423 “Analysis Instrumentation” and **replace** with Section 13423 “Analysis Instrumentation, Addendum 1”, attached.



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**QUESTIONS & ANSWERS:**

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None.

**ATTACHMENTS:**

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Section 13423 – Analysis Instrumentation, Addendum 1

**<< End of Addendum 1 >>**

## SECTION 13423 - ANALYSIS INSTRUMENTATION

### Addendum 1

#### PART 1 – GENERAL

##### A. SCOPE OF WORK:

1. Furnish all labor, materials, equipment, and appurtenances required to provide monitoring and control equipment at the locations indicated in the plans. New monitoring systems to be complete and operational with all control equipment and accessories as shown and specified.
2. Furnish, install, calibrate, test, adjust, and place into satisfactory operation all sensors and controllers as shown on the Drawings and specified herein.
3. The Drawings and Specifications illustrate and specify functional and general construction requirements of controllers and sensors, and do not necessarily show or specify all components, wiring, piping, and accessories required to make a completely integrated system. Provide all components, piping, wiring, accessories, and labor required for a complete and integrated system.
4. Coordinate with other suppliers for installation of all items specified herein and required to ensure the complete and proper interfacing of all the components and systems.
5. Controllers, modules, sensors, cables, and associated equipment are required for a complete monitoring system for measuring water quality parameters in water and wastewater treatment systems.

#### 1.2 REFERENCES

NEMA: National Electrical Manufacturers Association

ASTM: American Society for Testing and Materials

ANSI: American National Standards Institute

NEC: National Electric Code

#### 1.3 RELATED SECTIONS

15183 – Gauges

11151 – Sodium Hypochlorite Disinfection System

13300 – System Integration

#### 1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Terminals/Controllers, water quality measurement systems shall not be delivered to the site until all product information and system shop drawings for the system have been approved.
- B. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- C. Storage and Handling Requirements:
  - 1. Store and handle materials in accordance with manufacturer's instructions.
  - 2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
  - 3. Store materials in clean, dry area indoors.
  - 4. Protect materials during storage, handling, and installation to prevent damage.
  - 5. Temperature range for storage: 23°F to 149°F.

#### 1.5 SUBMITTALS

- A. Shop drawings which shall include the following:
  - 1. Complete description in sufficient detail to permit an item comparison with the specification.
  - 2. A complete and detailed list of any and all variations to this specification.
  - 3. Manufacturer's complete system specification tailored to this specific project.
  - 4. Dimensions and installation requirements.
  - 5. Mounting bracket / sensor holder installation instructions.
  - 6. Descriptive information including catalog cuts and manufacturers specifications for components.
  - 7. Wiring and control schematics and layouts.
  - 8. Documentation of experience with water analysis equipment design and installation.
  - 9. Manufacturer's Certifications: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
  - 10. Operation and Maintenance Manual information.
  - 11. Manufacturer's recommended accessories and spare parts.
  - 12. Warranty Information.

## 1.6 WARRANTY

- A. The equipment furnished under this section shall be free of defects in material and workmanship, including damages that may be incurred during shipping for a period of 12 months from date of substantial completion.

## 1.7 QUALITY ASSURANCE

- A. Furnish universal controllers and sensors by the named manufacturers.
- B. The named manufacturers have been specified to establish the standard of quality and performance of the equipment to be supplied.
- C. The following product certifications are required:
  - 1. EMC: CE compliant for conducted and radiated emissions CISPR 11 (Class A limits), EMC Immunity EN 61326-1 (Industrial limits).
  - 2. Safety: General Purpose UL/CSA 61010-1 with cETLus safety mark.
  - 3. Australian C-TICK and Korean KC Markings
  - 4. NEMA 4X/IP65 Water and Dust Ingress Ratings

## **PART 2 – PRODUCTS**

### 2.1 GENERAL REQUIREMENTS

- A. Provide a chlorine residual and ammonia analyzer monitoring and control system complete with sensors, reagents, controllers, communications, hardware, etc. as indicated on the Drawings and as herein specified.
- B. Sensors and Controller shall be supplied by the same manufacturer.
- C. Monitoring systems shall be designed for complete outdoor installation of sensors and indoor installation of controls, with shelter and/or supplemental cooling or heating, if required by the system's manufacturer.
- D. With the exception of conduit adapters, all wiring and cabling shall be installed in rigid conduit (RNC, Type EPC-80-PVC).

## 2.2 CHLORINE RESIDUAL ANALYZERS

### A. Operational Criteria

1. Operating temperature: 5 to 45 °C (41 to 113 °F)
2. Relative humidity: 0-95%, non-condensing

### B. Sample Requirements

1. Maximum back pressure the chlorine sensor can manage without failure:
  - a. 0.5 bar, no pressure impulses and/or vibrations
2. Temperature: 0 to 45 °C (33 to 113 °F)
3. Temperature compensation range: 5 to 45 °C (41 to 113 °F)
4. Flow: 30-50 L/hr, 40 L/hr - optimal (7.9-13.2 g/hr, 10.6 g/hr - optimal)

### C. Storage Requirements

1. Electrolyte: 15 to 25°C (59 to 77°F)
2. Chlorine sensors: 0 to 50°C (32 to 122°F) dry without electrolyte
3. Panel: -20 to 60°C (-4 to 149°F)

### D. Performance Requirements

1. Measurement range: 0 to 20 ppm chlorine for either free or total chlorine
2. Total Chlorine
  - a. Low Limit Of Detection (LOD): 30 ppb (0.03 ppm) or better
  - b. Limit Of Quantitation (LOQ): 90 ppb (0.09 ppm) or better
  - c. Repeatability/precision: 30 ppb or 3%, whichever is greater
  - d. Response time: ~100 s for 90% change ( $T_{90}$ ) (At a stable T and pH)
  - e. Interference: Chlorine Dioxide, Ozone, and chalk deposits
3. Free Chlorine
  - a. Low Limit Of Detection (LOD): 30 ppb (0.03 ppm) or better
  - b. Limit Of Quantitation (LOQ): 90 ppb (0.09 ppm) or better
  - c. Repeatability/precision: 30 ppb or 3%, whichever is greater
  - d. Response time: ~140 s for 90% change ( $T_{90}$ ) (At a stable T and pH)
  - e. Interference: Monochloramine, Chlorine Dioxide, Ozone, and chalk deposits

4. Drift: <10% with regular calibration (calibration will be weekly to quarterly depending on the application, given stable sample temperature and pH of water sample)
5. Specificity/Selectivity: Non-specific to a certain chlorine form, responds to any chlorine species and other oxidizers as noted in the interference section.
6. Calibration method: Customer has the option to use one (zero or slope) or two-point (zero and slope) calibration. Two-point calibration with chemical zero is recommended for chlorine concentration <0.5 ppm.
7. Verification procedure: One-point process calibration (slope) against a standard reference method.

E. Manufacturers

1. Hach Company, Loveland, CO
  - a. Model CLF10sc Reagentless Free Chlorine Analyzer
  - b. Model CLT10sc Reagentless Total Chlorine Analyzer

F. Analyzer shall consist of:

1. Three-Electrode Amperometric Chlorine sensor
2. Chlorine sensor flow cell with integrated flow sensor
3. pH flow cell with grab sample port
4. Digital gateway for communication between probes and controller
5. Stainless steel panel

## 2.3 AMMONIA MONOCHLORAMINE ANALYZERS

A. Operational Criteria

1. Operating temperature: 5 to 45 °C (41 to 113 °F)
2. Relative humidity: 5-95%, non-condensing

B. Sample Requirements

1. Sample pressure:
  - a. 2.5 – 87 psi
2. Temperature: 5 to 50 °C (41 to 122 °F)
3. Flow: 100-1000 mL/minute

C. Storage Requirements

1. Panel: -20 to 60°C (-4 to 149°F)

#### D. Performance Requirements

1. Measurement range: 0.1 to 10.0 mg/l
2. Total Ammonia
  - a. Low Limit Of Detection (LOD): 0.01 ppm (as N)
  - b. Limit Of Quantitation (LOQ): 2 ppm( as N)
  - c. Repeatability/precision: 3% or 0.01 ppm (as N), whichever is greater
  - d. Response time: Within 5 minutes
3. Communication
  - a. Communication protocol is Modbus RTU. Cabling standard is RS-485.

#### E. Manufacturers

1. Hach Company, Loveland, CO
  - a. Model 5500 sc Ammonia Monochloramine Analyzer

## 2.4 EQUIPMENT

A The CLF10 and CLT10 will work with Hach sc model controllers only. The amperometric cell of the sensor consists of:

2. Gold cathode
3. Stainless steel counter electrode
4. Silver/silver chloride reference electrode
5. pH buffered electrolyte
6. Sensor membrane to filter chlorine species selectively and to provide interface between the electrochemical cell and the sample

A. Wetted materials as follows:

1. Chlorine Measuring Cell: PVC
2. Chlorine Sensor Body: PVC
3. Chlorine Sensor Flow Cell: Acrylic
4. Optional pH Sensor Flow Cell: PVC

B. The sensor interface to the controller is through a digital gateway.

C. The chlorine sensor automatically compensates for temperature utilizing an embedded temperature sensor.



- D. The electrolyte provides internal, buffered pH compensation in the range of 4-9 pH units.
- E. The sensor includes proprietary Cal Watch self-diagnostic technology.
- F. The panel assembly includes a flow cell that integrates a flow meter and control valve.
- G. Temperature and pH levels will be transmitted to the controller from the CLT10sc analyzer.

## 2.5 COMPONENTS

### A. Standard equipment:

- 1. Stainless Steel Mounting Panel
- 2. Chlorine Sensor with Membrane and Electrolyte
- 3. Chlorine Sensor flow cell
- 4. Flow meter with control valve
- 5. Digital gateway to sc controller with cable
- 6. User Manual

### B. Dimensions

- 1. Sensor
  - a. Length: 7.68 in. (195 mm)
  - b. Diameter: 0.98 in. (25 mm)
- 2. Panel
  - a. Length: 19.0 in. (482.6 mm)
  - b. Width: 19.5 in. (495.3 mm)
  - c. Depth: 5.95 in. (151.2 mm)
- 3. Gateway to Controller cable: 3 ft. (1 m) (minimum)

### C. Weight

- 1. Panel and empty panel-mounted components: approximately 12 lbs. (5.5 kg)
- 2. Complete panel with pH sensor: approximately 20 lbs. (9.1 kg)

## 2.6 ACCESSORIES

### A. Required

- 1. Hach Controller – sc4500 Digital Controller
  - a. Controller is microprocessor-based and is housed in an IP65 enclosure
  - b. Controller is a modular system consisting of:

- 1) Display Module
- 2) Probe Module
- 3) Controller has two connections for Hach digital Sensors.
- c. Communication.
  - 1) Communication protocol is Modbus RTU.
  - 2) Cabling standard is RS-485.
2. pH sensor
- B. Optional
  1. Acidification unit
  2. Sample conditioning kit

## **PART 3 – EXECUTION**

### 3.1 Preparation

- A. Clearances
  3. The pre-assembled analyzer panel must be mounted to allow clearance for sensor removal and routine maintenance.
- C. Mounting
  1. Wall or panel mounted
- D. Sample Inlet (order with English or Metric Fittings)
  1. English Fittings
    - a. Speed-fit fitting – ¼ in OD Tube
  2. Metric Fittings
    - a. Speed-fit fitting – 6 mm OD Tube
- E. Sample Outlet (order with English or Metric Fittings)
  1. English Fittings
    - a. Speed-fit fitting – ½ in OD
  2. Metric Fittings
    - a. Speed-fit fitting – 12 mm OD

### 3.2 Installation

- A. Contractor will install the analyzer in strict accordance with the manufacturer's instructions and recommendation.
- B. Manufacturer's representative will include a half-day of start-up service by a factory-trained technician, if requested.
  1. Contractor will schedule a date and time for start-up.
  2. Contractor will require the following people to be present during the start-up procedure.

- a. General contractor
- b. Electrical contractor
- c. Hach Company factory trained representative
- d. Owner's personnel
- e. Engineer

### 3.3 Manufacturer's Service and Start-Up

- A. Contractor will include the manufacturer's services to perform start-up on instrument to include basic operational training and certification of performance of the instrument.
- B. Contractor will include a manufacturer's Service Agreement that covers all the manufacturer's recommended preventative maintenance, regularly scheduled calibration and any necessary repairs beginning from the time of equipment startup through to end user acceptance / plant turnover and the first 12 months of end-user operation post turnover.
- C. Items A and B are to be performed by manufacturer's factory-trained service personnel. Field service and factory repair by personnel not employed by the manufacturer is not allowed.
- D. Use of manufacturer's service parts and reagents is required. Third-party parts and reagents are not approved for use.
- E. The Contractor shall provide the following minimum manufacturer's representative service requirements:
  - 1. 4 hours on site for start-up and testing.
  - 2. 4 hours on site for operator training.

**END OF SECTION**