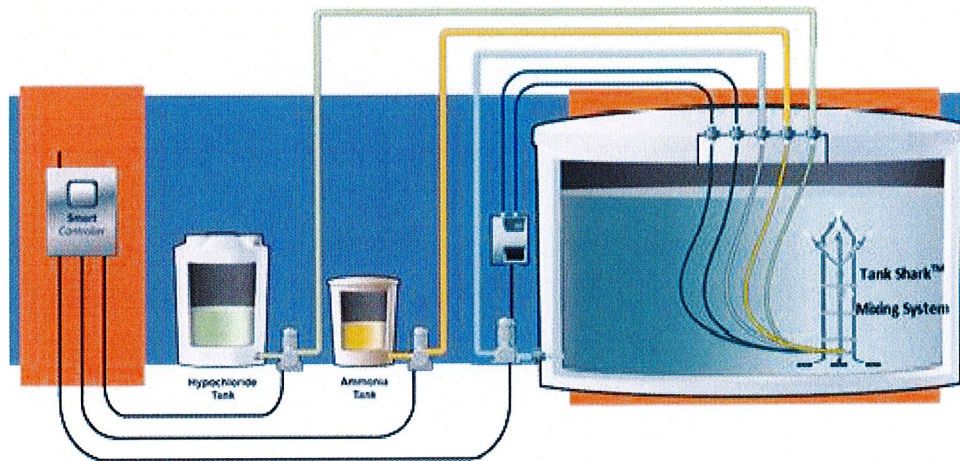


FIRM PROPOSAL
MONOCLOR® RCS
RESIDUAL CONTROL SYSTEM
FOR
COCONUT CREEK, FL
2MG HILTON TANK



July 13, 2021

Jean Dupuis
Deputy Director of Utilities
City of Coconut Creek
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Re: Monoclor® RCS for Hilton GST of Coconut Creek, FL

Encl: Section 1: Scope of Supply

Dear Jean,

Thank you for your interest in PSI (a UGSI Solutions company) which is represented in Florida by Odyssey Manufacturing Co. Enclosed is a “turn-key” proposal to improve the water quality, disinfection operation, and safety at the City of Coconut Creek, Hilton ground storage tank utilizing the proprietary PSI's Monoclor® RCS. As part of our offering, the Tank Shark mixer will be installed with all accessories needed for connecting the existing sodium hypochlorite and ammonium sulfate dosing with the Smart Controller PLC that will automate the Chloramine control. Odyssey Manufacturing is the designated representative and distributor of the Monoclor® RCS from PSI.

Background Information

City of Coconut Creek manages a storage tank located at **4801 Hilton Road, Coconut Creek, FL 33073**. The tank is filled with one main and emptied using an outlet main which is re-pressurized using high service pumps. The facility consists of a 2-million-gallon Ground Storage Tank and a building containing three High Service pumps. There is already a chlorine dosing and ammonia dosing at this facility previously installed by others. There is a Chloramine analyzer from Hach and is under service contract from Hach. At times there are concerns of water stratification under the Florida sun, which may eventually jeopardize the water quality. The existing chloramine management is currently manual.

Design Criteria

Our proposal is based on the following design criteria:

Reservoir Dimensions, h x dia	34'-1" x 100'
Reservoir Liquid Level (maximum), ft	33
Maximum Capacity, gal	2,001,109
Reservoir Type	Circular
Average Flow, MGD	0.5
Disinfectant	Chloramines
Desired Chlorine Residual, ppm	2.5-3.5

Proposed Solution

Odyssey proposes to install a tank mixing system where the water in the Ground Storage Tank is continuously recirculated and continuously sampled. MonoClor RCS will be installed to automate the hypochlorite and ammonia feed to provide optimum self-managed water quality.

Our mixing system is a unitary piece of equipment. The simple unit only consists of patented mixing nozzles, a chemical injection nozzle and piping, sample tubing, and electro polished stainless steel support base and mast. This structure would be lowered into the Ground Storage Tank through the existing hatch. To make a complete and functional system, a pressurized source of motive water, chemical storage tank, and a metering pump is necessary. For this installation, Odyssey proposes to install a water booster pump for the pressurized motive water source which would take a suction on the Ground Storage Tank outlet line and return the water through the tank mixing system at the base of the Ground Storage Tank. The pump would be located inside the newly constructed tank-adjacent Pump Building. The new building already contains 2" pipe penetrations for the booster pump. The booster pump would

be wired from a spare breaker providing 240 VAC from an electrical panel located in the pump room. The pump would have a local VFD control panel and disconnect.

The Tank Shark vertical booster pump will be located on a 4' x 3' concrete pad just under the 2" piping wall penetrations (in the north east corner of the pump room). The source water connection for the booster pump would be installed underground leading to the Chemical Injection Vault and connected via saddle tap onto the outlet piping of the tank at the easiest access point (TBD). The Vault is located just outside the pump room (on the north side). A valve located on the south side of the GST is positioned on the outlet piping in case the water has to be turned off (perhaps to service the high service pumps). Closing this valve without turning off the vertical booster pump of the RCS will starve the vertical booster pump and may burn it out. Precautions will need to be made to turn off the RCS if the outlet valve ever needs to be closed.

The Smart Controller PLC and the Water Quality Station (WQS) will be installed inside of the pump room on the north wall approximately in the center along the length of the north wall. This location is ideal because of the proximity to the booster pump and the breaker panel. The Smart Controller and WQS will be powered from the breaker panel located approximately in the north-west corner of the pump building on the north wall.

Existing Jesco pump skids are utilized for Sodium Hypochlorite and LAS feed. Both of these will be integrated and controlled by the RCS system via Smart Controller PLC. Next, Odyssey will replace the Ammonia Jesco pumps with new Grundfos pumps due to existing difficulty of controlling the Jesco pumps. Flow measurement is typically not feasible for the Ammonia because this application requires very slow. However, the skid contains a calibration column and the flow rate can be verified at any time. Sample line from the Tank Shark will be connected to a sample booster pump which will be mounted at the existing sample junction box. The existing sample junction box currently contains 5 sample lines none of which are in use anymore. Odyssey will demolish and dispose of the existing decommissioned sample lines. The waste from the Water Quality Station will penetrate the north wall of the pump room and will drain into the existing drain field.

The 2" motive water line and the 3/8" sample line will penetrate the north wall of the pump building and cross the gravel area to the tank's ladder. The 1/2" Sodium Hypochlorite line, and the 3/8" LAS line will be connected from the existing skids to the ladder. All tubing will be inside 2" PVC piping used as secondary containment. Bracket attachments and strut will be used to attach to the right side of the GST ladder to accommodate and secure the piping leading up to the tank hatch. Odyssey will make penetrations through the existing curb of the hatch for all 4 lines. All lines will be connected to the Tank Shark mast assembly, disinfected and lowered down into the tank through the 39" by 39" square hatch.

Description of Mixing System

The Tank Shark system consists of a max transfer eductor nozzle capable of driving an upward flow of reservoir water from the base of the reservoir up to and on top of the warmer stratified layers. The Tank Shark functions to convert the nozzle flow into an upward swell that thoroughly mixes the entire tank volume. The nozzle also has the unique ability to add a rotational characteristic to the upward swell allowing for even greater dispersal or mixing of the stagnated layers.

System Features & Advantages

The Monoclor® RCS is an intelligent, automated disinfectant boosting system that gives operators the ability to set and control residual levels in water storage tanks and key locations in the distribution system. The Monoclor® RCS utilizes advanced water quality sensors, powerful active mixing, an automated chemical feed system, and advanced control algorithm to set and maintain residual levels in water storage tanks and distribution system. The Monoclor® RCS has been tested and validated through extensive laboratory testing and full-scale installations at several utilities over the last 5 years.

Our Monoclor® RCS consists of all equipment essential for a complete system, including:

1. Accurate chemical dosing at the correct ratio
2. Proper mixing to ensure a homogenous water body that will not stratify
3. High energy mixing that ensures instantaneous reaction of introduced chemicals
4. Real-time monitoring and control logic to maintain or achieve equilibrium by responding to dynamic reservoir conditions

The Monoclor® RCS enables operators to:

1. Set and maintain consistent disinfectant levels in storage tanks and key locations in the distribution system
2. Continuously blend disinfectant residual and eliminates thermal and chemical stratification
3. Eliminate costly and labor-intensive manual boosting
4. Quickly counteract adverse water quality changes, such as low residual
5. Optimize and balance disinfectant levels across a water distribution system

The Tank Shark® Mixing System provides adequate mixing energy to maintain a completely homogeneous reservoir using only the motive water passing through the mixing nozzle assembly. The upward force of the flowing water stream mixes colder water from the base of the reservoir with the warmer layers near the top while simultaneously blending any volume of water stratified by residual level. This removes any concerns resulting from aged water or structural damage due to ice. A sample pump continuously draws fluid through a sample line attached to the Tank Shark® system through the water sampling cabinet for analysis directly from the up-swelling stream of reservoir water.

A detailed scope of supply and the firm price for the complete system is listed in Section 1 of this proposal. All pricing is based on our standard system, as outlined in our equipment specifications (available upon request).

We look forward to working with you on this project.

SECTION 1

SCOPE OF SUPPLY / Detailed Description of the Equipment

The following equipment and services are included in our scope of supply and work. All equipment will be manufactured in accordance with PSI's standard equipment specifications.

No	Item Description	Qty.
1.	Tank Shark® Mixing System , including: <ul style="list-style-type: none">▪ 30 gpm Maximum Volumetric Flow Rate▪ Dual Motive Water Mixing Nozzle Assembly▪ Chlorine Chemical Line, 500 ft.▪ Chlorine Injection Nozzle Assembly▪ Ammonia Chemical Line, 500 ft.▪ Ammonia Injection Nozzle Assembly▪ Bottom Feed Configuration / Fixed Base▪ Stainless Steel Tethering Assembly▪ Electropolished 304 Stainless Steel Base and Mast Assembly▪ Rotameter (Paddle Wheel) & Transmitter▪ Water Tubing: Reinforced PVC Flexible connection hose to Access Hatch▪ Tank Penetration: Bulkhead fittings in hatch▪ NSF-61 Approved	1
2.	Smart Control Center, SCC1000 <ul style="list-style-type: none">▪ Allen-Bradley MicroLogix 1400 Programmable Logic Controller (PLC)▪ Magelis DT351 7.4" HMI: Color LCD touch screen▪ Communication: Ethernet based access to HMI software from computer or smartphone within same network▪ Remote Monitoring Telemetry▪ Water Quality Station Communication: Two wire twisted cable▪ Chemical Dosing Controller: RS-485 port for chemical feed system communications▪ SCADA: Modbus TCP/IP standard, analog output provided▪ Enclosure: Equal to or greater than Type 4 rating	1
3	Water Quality Station, WQS1000 <ul style="list-style-type: none">▪ Water Connection: 3/8" Push-connect▪ Sampling and Discharge Flow Rate: 10 GPH▪ Connectivity: Modbus RS485 Connection▪ Data Logging: Real-time DAQ on USB flash drive▪ Measurement - Total Chlorine: Amperometric reagent less online sensor, 0-10 PPM measuring range, 0.01 PPM resolution▪ Measurement – ORP Sensor (Platinum Extended Tip)▪ Measurement - Temperature: 32-212° F measuring range, 0.1° F resolution▪ Measurement - pH: 0-14 measuring range, 0.01 resolution▪ Measurement - Water Level (optional): pressure transducer, resolution of 1% maximum scale▪ Enclosure: Equal to or greater than Type 3R rating▪ Sample Recovery Pump	1

- 4 Stainless Steel Vertical Turbine Booster Pump, including:** 1
- 2 HP EPAAct-Efficiency, TEFC Motor
 - NEMA 4X Variable Frequency Drive
 - Local SST disconnect
- 5. Skid MODBUS Controller, including:** 2
- Enables communication of the existing tanks and pump skids to the Smart Control Center
 - Controller – Input/Output: 4 digital inputs, 2 digital outputs, 2 analog inputs, 1 analog output
 - Communication: Modbus RS-485 with Smart Control Center
 - Pump Control Option: Digital Relay, analog (4-20mA), power switch
- 6 Manufacturer’s Services for Installation Inspection, System Start-Up, and Operator Training (3 Days at the Jobsite)** Included
- 7 Design Submittal and Operation & Maintenance Manual as Follows:** Included
- Submittal: Sent Electronically
 - O&M Manual: Sent Electronically
- 8 FCA Factory with Full Freight Allowed to Jobsite, City of Coconut Creek, FL** Included
- 9 Services Provided Hereunder By Odyssey :**
- a) Equipment unloading, installation, startup and installation labor.
 - b) All required SCH80 PVC piping, tubing, strut, brackets and clamps.
 - c) Electrical power to Booster Pump Variable Frequency Drive (230V/1Ph/60Hz for 25A).
 - d) UBS for control panel and Water Quality Station
 - e) All electrical conduit, wiring, electrical material
 - f) All Control and Electrical Wiring to Analyzers
 - g) All Control Wiring and Control Function Programming
 - h) Ground Storage Tank Hatch penetrations or modifications.
 - i) All civil work and concrete pad for vertical booster pump.
 - j) Underground work and trenching (trenching through gravel area and repair)
 - k) Water piping installation from booster pump outlet to tank/reservoir hatch.
 - l) Tank mounted fitting boxes for chemical and sample lines. 2.5” tap for an 18” outlet piping inside chemical injection vault.
 - m) All interconnecting piping materials and accessories, including between metering pumps and the GST, water sampling cabinet/station, and connections at hatch.
 - n) Electrical power installation labor to Water Quality Station and Chemical Feed Skid(s).
 - o) Quantity two (2) Grundfos DDE 6-10 B-PVC/V/C-X-31I003BG 1.5 gph@150 psi to replace existing pumps in the Ammonia skid
 - p) Engineering

- q) Administration
- r) Planning
- s) Mobilization
- t) Building Permit
- u) Electrical Permit
- v) DEP & Broward County Permit
- w) PM

The following pricing breakdown is provided as requested by the utility.

Capital Equipment

(PSI's Monoclor® RCS - Scope Items 1 through 8)

Quoted Price \$87,000

Markup for parts 20%

SUB TOTAL - (Capital Equipment + 20% mark-up)..... \$104,400

Project Design and Preparation Labor

Engineering (design, planning, commissioning/training, manuals –Scope Items 6, 7, p, r, s, t, u, & v)

- Engineering Personnel (building permit 80 hrs @ \$90/hr) \$7,200
- Engineering Personnel (electrical permit 80 hrs @ \$90/hr) \$7,200
- Engineering Personnel (DEP & Broward Co. permit 100 hrs @ \$90/hr) .. \$9,000
- Engineering Personnel (Design, Engineering, O&M, 110 hrs @ \$90/hr)...\$9,900
- Overtime rate for Engineering Personnel (\$90/hr)

Project Installation Phase Labor

(Mobilization, delivery, unloading, installation, trenching, disposal, concrete pad, Management, permanent piping/hose installation labor – Scope Items a, c, f, g, h, i, j, k, n, q, and w)

- Regular time rate for Service Technician (180 hrs @ \$80/hr)\$14,400
- Overtime/emergency rate for service technician (\$80/hr)
- Regular time rate for Service Helper (180 hrs @ \$40/hr)..... \$7,200
- Overtime rate for service helper (\$40/hr)
- Electrician (same rate as service technician ... 220 hrs @ \$80/hr).....\$17,600
- Regular time rate for Day Laborers (\$25/hr)
- Overtime rate for Day Laborers (\$25/hr)
- Engineering Personnel (Admin, mobil. PM 110 hrs @ \$90/hr).....\$9,900

SUB TOTAL (Labor).....\$82,400

Other EQUIPMENT

(Scope Items d and o)

- Quantity two (2) Grundfos pump (\$869ea quoted pricing)
- Quantity one (1) Saddle tap 18" x 2.5" (\$360 listed pricing estimate)
- Quantity one (1) UBS (\$2000 estimate)

Price \$4,098

SUB TOTAL (Other EQUIPMENT + 20% mark-up).....\$4,917.60

Other Materials

(Piping, Misc. Materials, brackets ... -- Scope Items b, e, f, l, and m)

- PPE (on-hand)
- Concrete and rebar
- Piping, Containment Piping, conduit, hose materials (on-hand / used as required)
- Misc. materials, pipe supports, strut, clamps ... (on-hand / used as required)

Price \$22,210

SUB TOTAL (Other Materials + 20% mark-up).....\$26,652

Summarized Pricing

The total price for the project scope items 1 through 9: \$218,369.60

GRAND TOTAL **\$218,369.60**

Warranty

Warranty for all equipment parts and labor is 12 months from startup.

About Odyssey

Odyssey Manufacturing Co. is the largest industrial manufacturer of sodium hypochlorite in the State of Florida. Additionally, we are the distributor for the Tank Shark and Microclor OSHG systems in the State of Florida for PSI. Finally, we are a licensed general and plumbing contractor who specializes in chemical system design, permitting, equipment supply, installation and service work. We have designed, permitted and installed over 2,000 "turn-key" chemical systems in the State of Florida.

We have already installed hypochlorite and ammonia chemical systems for the two Booster Systems for the City of Coconut Creek along with this type of RCS system at the Hillsboro tank. In your area we have also installed one sodium hypochlorite system for the Village of Wellington, two sodium hypochlorite systems for Palm Beach County and OSHG systems for the two Booster Station for the City of Boca Raton. We have installed bleach, ammonia and Tank Shark systems for the two Booster Stations for the Town of Longboat Key and the Booster Station for the City of Punta Gorda. We installed most of the chemical systems at the City of West Palm Beach WTP and for their IBIS Booster Station.

Thanks for your consideration. We look forward to working with you on this project. If we can be of any further assistance, please do not hesitate to contact me, Pavol Plecenik at 954-632-4090 or Pete Kyrkos at 614-477-7329.

Sincerely,



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Cc: Pete Kyrkos, Process Solutions, Inc.
Patrick H. Allman - General Manager, Odyssey