

THE OKLAHOMA CITY WATER UTILITIES TRUST

**APPROVAL SHEET
ADDENDUM NO. 1**

**PROJECT NO. SC-1001-3
Draper Lift Station**

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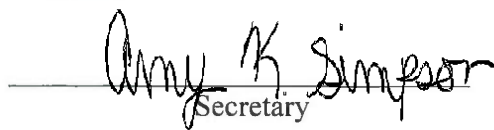


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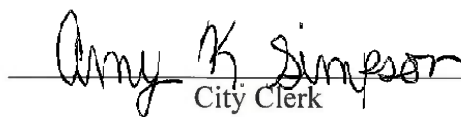
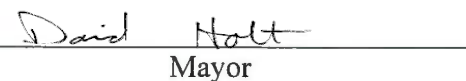


APPROVED by the Trustees and signed by the Chairman of the Oklahoma City Water Utilities Trust this 13th day of April, 2021.

ATTEST:


Secretary
CHAIRMAN

CONCURRED by the Council and signed by the Mayor of the City of Oklahoma City this 27th day of April, 2021.


City Clerk
Mayor

Date: March 16, 2021
From: City of Oklahoma City Public Works
To: Prospective Bidders
RE: Addendum No. 1

This Addendum forms a part of the contract documents and modifies the Bid Documents. Items in this Addendum take precedence over the original bidding documents and previously issued addenda.

The Bidder shall acknowledge receipt of this Addendum. Failure to do so may result in the bid not being opened.

This addendum consists of 20 pages of Specifications and Special Provisions, 13 pages of a Lagoon Closure Plan, and 2 pages of responses to questions posted to BidSync for a total of 36 pages.

Addendum No. 1 consists of the following:

- 1. Specifications and Speical Provisions**
 - a. Revised: Page STNP 4
 - b. Revised: Pages SPT 1 – SPT 19
- 2. Lagoon Closure Plan**
- 3. Answers to questions posted to BidSync**

Question 1 on Overall Bid

1. Is there a pre-bid?
2. What are the required bidding documents?
3. Is this project Tax Exempt?
4. Is the permit to be paid for by the contractor if so has it been submitted and what is the amount of it and impact fees. (Submitted: Mar 5, 2021 7:54:59 AM CST)

Answer to Question 1:

1. No
2. Please refer to the *REQUIRED DOCUMENTS FOR THIS BID* on page RD1 of the Specifications and Special Provisions.
3. No
4. The ODEQ Permit to Construct and Lagoon Closure Permit have been obtained and paid for. The Contractor will be responsible for all building and stormwater permits through the City of Oklahoma City – standard rates will apply.

Question 2 on Overall Bid

is there a set date in which work will begin? (Submitted: Mar 8, 2021 9:09:06 AM CST)

Answer to Question 2:

Construction Start Date will be no later than April 26th, 2021.

Question 3 on Overall Bid

It appears much more time is needed. Pumps take more than 120 days to acquire. Valves can be more than 120 days. (Submitted: Mar 9, 2021 9:05:19 AM CST)

Answer to Question 3:

Construction Duration can be adjusted to accommodate long-lead items once exact lead time is known, and Contractor has provided proof of order. Procurement for long-lead items should be started as soon as possible.

Question 4 on Overall Bid

Is the lagoon decommissioning by GC or by the Owner? Quantities are needed to quantify sludge removal and liquids to de-water. (Submitted: Mar 12, 2021 12:55:28 PM CST)

Answer to Question 4:

The decommissioning plan has been developed and approved. The GC is responsible for performing the decommissioning. Please refer to the attached Lagoon Closure Plan.

Please revise your bid documents to reflect these changes.

limits set in the Oklahoma Competitive Bidding Act, 61 O.S. (1991) Section 121.)

“Change Order” shall mean a modification of a lump sum contract or a contract bid on a unit price basis where a unit price has not been established for a particular item or items of work. The change order may authorize an addition, deletion or revision in the work or an adjustment of the contract price or the contract time. However, the cumulative amount of change orders shall not exceed the limit established by State law. No change order shall become effective until it has first been approved by the Trust.

11. **Pre-Work Conference.** The Trust shall hold a pre-work conference. The Contractor or his designee must attend the conference. The Contractor's superintendent and subcontractor(s) may attend. The General Manager or his designee and any consultant for the project and a representative of the Field Services Division will attend for the Trust. The conference will be at a time and place established by the General Manager.

12. **Contractor's Responsibility for the Work.** Until formal written acceptance by the Trust, the work shall be under the charge and care of the Contractor. The Contractor shall take every necessary precaution to prevent injury or damage to the work or any part thereof by the action of the elements or any other cause whatsoever, whether arising from the execution or non-execution of the work. The Contractor shall at his own expense rebuild, repair, restore, and make good all injuries or damage to any portion of the work occasioned by any of the forgoing causes before formal acceptance of the work by the Trust.

13. **Inspection.** The General Manager and his representatives and the consulting architect and his representatives or consulting engineer and his representatives shall at all times have access to the work. Contractor will provide proper and safe access for inspection. The Trust may maintain inspectors on the job site for the purpose of inspecting materials, workmanship and conditions of work and equipment. Contractor shall notify the Trust Inspector twenty-four (24) hours prior to pouring concrete and at any other times required in the Special Provisions. Contractor shall notify the Trust Inspector twenty-four (24) hours prior to performing work relating to exposing, supporting, adjusting, connecting or relocating waterlines. ~~The phone number for Field Services is 297-3571. The Field Services office is open between 7:30 a.m. and 4:30 p.m., Monday through Friday.~~

In addition to the above inspections, the Contractor shall provide proper and safe access for all inspections required by City of Oklahoma City Ordinances and Technical Codes and any other inspections required by Federal or State laws or regulations.

It is the Contractor's responsibility to arrange for and have conducted any and all inspections required by the City of Oklahoma City's Building, Plumbing, Electrical, Mechanical, Fire, and Zoning Codes and to comply with all the provisions of said Codes.

14. **Testing.** The General Manager will provide a test schedule for the work and shall designate which samples must be taken or tests be conducted and which must be taken or conducted in the presence of an inspector. The General Manager may require such additional tests as he deems necessary to the proper construction of the project. All tests will be made in accordance with the appropriate specifications. The Contractor shall provide such facilities as the General Manager or

SPECIAL PROVISIONS – TECHNICAL

Project No. SC-1001-3
Draper Lift Station
Draper Water Treatment Plant

SUBMERSIBLE NON-CLOG PUMP STATION

PART 1 – GENERAL

1.1 CONTRACTOR FURNISHINGS AND SUBMITTALS

- A. The contractor shall furnish concrete wet well and valve vault complete with concertor pumps, controls, piping, valves, and accessories specified herein and shown on the plans, or an approved equal.
- B. The pumps shall be designed and furnished to conform to the Hydraulic Institute and specifications for Wastewater Pumps and shall comply with all local and state sanitary and safety regulations.
- C. Information required in shop drawing submittals:
 - 1. Data sheet filled in.
 - 2. Performance curve showing expected performance at design point. Curve will show head, capacity, efficiency, and horsepower.
 - 3. Drawings of the proposed equipment giving general dimensions sufficient to determine how the equipment is to be supported and if it will fit within the space available.
 - 4. Any additional information such as descriptive literature, manufacturer's specifications, and other data to demonstrate compliance with these specifications.

1.2 WARRANTY

The pump manufacturer shall provide a standard five-year warranty for the pump and motor. The warranty period shall be one-year from date of successful certified start up. Start Up report shall demonstrate proper installation as well as demonstrate a vibration level that is acceptable as outlined in HI Standards vibration Requirements.

PART 2 - PRODUCTS

2.1 SUBMERSIBLE PUMPS

A. NONCLOG PUMP

Pumps shall be Concertor manufactured by Flygt a Xylem Brand, or an approved equal. All pumps shall be equipped with 10HP submersible electric motors, iron 4 inch discharge connection and The motor horsepower shall be adequate so that the pump is non-overloading throughout the entire pump performance curve from shut-off through run-out. The motor shall be able to operate non-connected for operation on a 460 volt, 3 phase, 60 hertz. The pump shall be supplied with mating cast submerged without damage while pumping under load. The motor shall be a variable pole motor at 60Hz. The pump be capable of delivering flows listed in the table below with all pumps running.

B. PUMP DESIGN

Each pump shall be supplied with a mating cast iron 4 inch discharge connection. The pump shall be automatically and firmly connected to the discharge connection, guided by no less than two guide bars extending from the top of the station to the discharge connection. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact. There shall be no need for personnel to enter the wet-well.

No portion of the pump shall bear directly on the sump floor. Each pump shall be fitted with 20 feet of stainless steel lifting chain or cable. The working load of the lifting system shall be 50% greater than the pump unit weight. Starting method: Speed ramp up at reduced current. All devices to soft start the pump via reduced voltage shall be incorporated within the pump/motor housing. These same devices shall also provide for a “soft stop” of the pumping element.

Single-stage close-coupled submersible centrifugal pump with of semi open multi vane impeller designed to transport wastewater with fibrous materials and heavy sludge. It shall be submersible up to 65 feet (20m) according IEC 60034 and protection class IP 68.

The impeller blades shall be self-cleaning upon each rotation as they pass across a sharp relief groove in the Insert ring cast integrally into pump volute’s replaceable bottom wear plate and shall keep the impeller blades clear of debris. The impeller shall move axially upwards on its shaft to allow larger debris to pass through and immediately return to normal operating position.

The pump shall be operated by a synchronous motor and an integrated control system and be capable to run at constant power at any point of the performance field without being overloaded. Motor shall utilize a permanent magnet rotor to maintain synchronous speed and maintain level IE-4 premium efficiency standards. The motor shall withstand at least 60 starts per hour.

The cooling system shall provide sufficient cooling to run the pump at continuous pump duty in a liquid temperature of up to 104°F (40°C). Operational restrictions at temperatures below 104°F (40°C) or the demand of auxiliary cooling systems like fans or blowers are not acceptable.

Stator shall be insulated with class H trickle impregnated insulation rated at 356°F (180°C)

C. INTEGRATED PUMP CONTROL SYSTEM

An integrated pump control system installed in the pump/motor housing shall ramp up the speed at start-up of the pump to reduce the start-up current and secure that the direction of the impeller rotation is always correct. There shall be no need for any human intervention to ensure that the impeller is rotating in the correct direction within the volute. The control system that is integrated within the pump/motor housing shall be encapsulated to protect it against moisture ingress, and vibrations. Motor, pump and control system shall be designed and produced by the same manufacturer.

The integral control system mounted within the pump/motor housing shall be capable of adjusting the motor/impeller speed so that the pump can safely operate without overloading anywhere within the pumps' operating envelope.

The pump shall incorporate a "pump-cleaning" function to remove debris from the impeller. The cleaning function shall be initiated when the integral control system senses an increase in current draw due to debris in the pump. The cleaning function shall consist of forced stopping, reversal and forward runs timed to allow for debris to fall from the impeller. After cleaning cycle is complete, the pump shall resume to automatic operation. If the pump impeller/volute does not clear itself after the programmed number of attempts, the control will initiate an alarm to notify that the pump inlet / volute is blocked by large debris.

D. PUMP CABLE

The motor shall be equipped with 50 feet of shielded submersible cable. The shield within the cable shall allow for a control panel mounted interface component to communicate both ways with the integrally mounted control unit within the pump/motor housing. The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The outer jacket of the cable shall be oil resistant chlorinated polyethylene rubber. The cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.

E. MOTOR PROTECTION

The integrated control system shall continuously monitor the leakage sensor in the stator housing and the temperature of the motor. If the motor temperature is too high, the pump shall be capable of operating at a reduced speed until the high temperature conditions are normalized.

The operator shall be able to modify the setting of the control system to decide if the active leakage signal shall stop or not stop the pump. External trips or overload devices for motor protection shall not be required.

F. BEARINGS

The shaft shall rotate on two bearings. The motor bearings shall be sealed and permanently grease lubricated with high temperature grease. The upper motor bearing shall be a single row ball bearing to handle radial loads. The lower bearing shall be a double row angular contact ball bearing to handle the thrust and radial forces. Single row lower bearings are not acceptable. The

minimum L10 bearing life shall be 50,000 hours at any usable portion of the pump performance field.

G. MOTOR SEALING

The cable entry shall be threaded and sealed by a field replaceable grommet. A nylon clamp shall secure a strain relief function. Epoxies, silicones, or other secondary sealing systems shall not be considered acceptable.

The shaft shall be sealed by two seals in a tandem arrangement, incorporated into a single unit assembly. The seals shall require neither maintenance nor adjustment and shall be capable of operating bi-directionally without damage or loss of seal function. The seal unit shall be designed as Plug-in unit which can be replaced without any special tools. The upper seal rotating surface shall include vanes etched into the seal surface to push any potential seal leakage back towards the pump volute.

Shaft seal face material of construction:

- Pump side: - Corrosion and abrasion resistant Tungsten carbide
- Motor side: - Corrosion and abrasion resistant Tungsten carbide

H. PUMP CONSTRUCTION

Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. The lifting handle shall be of stainless steel. All exposed nuts or bolts shall be AISI type 316 stainless steel construction.

Machined surfaces shall incorporate **metal-to-metal contact** between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile or optional Viton rubber O-rings. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.

Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

I. COATING

All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be blasted and surface oils and debris removed for proper coating adhesion before coating. All wet surfaces are to be coated with two-pack oxirane ester Duasolid 50. The total layer thickness should be at least 120 microns. Zink dust primer shall not be used.

J. IMPELLER

Due to the presence of sand and or grit the impeller shall be of Hard-Iron ASTM A-532 Alloy III A 25% chrome cast iron, semi-open, multi-vane, back swept, screw-shaped, non-clog design. The impeller leading edges shall be mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction. The leading edges of the

impeller shall be hardened to Rc 60 not surface hardened, heat treated or plated and shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The screwshape of the impeller inlet shall provide an inducing effect for the handling of up to 5% sludge and rag-laden wastewater. The impeller to volute clearance shall be readily adjustable by the means of a single trim screw. The impeller shall be locked to the shaft, held by an impeller bolt.

K. VOLUTE

The pump volute shall be a single piece gray cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified. The volute shall have a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide trash release pathways and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed. Due to the presence of sand or grit the insert ring shall be cast of Hard-Iron ASTM A-532 Alloy III A 25% chrome cast iron and provide effective sealing between the multi-vane semi-open impeller and the volute housing.

L. PUMP SHAFT

Pump and motor shaft shall be the same unit. The pump shaft is an extension of the motor shaft. Couplings shall not be acceptable. The pump shaft shall be stainless steel – ASTM A479 S43100-T.

The use of shaft sleeves of different material than the shaft shall not be acceptable.

M. STANDARD PUMP FACTORY TEST

Following tests shall be done on each pump prior to shipment:

- Minimum 3-point hydraulic performance test
- No-Leak seal integrity test
- Electrical integrity test

2.2 SUBMERSIBLE TRANSDUCER

- A. MJK Expert 3400 Level Transmitter with operating range of 0-10 feet. Measurement accuracy better than ± 0.1 % FS @ 50-85 °F, and better than ± 0.2 % FS @ full temp. range. Output voltage 2-wire 4 - 20 mA. Temperature range 5 °F to 105 °F.

Instrumentation and Control System Specification

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section.

1.2 SUMMARY

- A. It is the intent of this specification to provide a pump control and monitoring system for a pump station. All components specified or required for a complete, operable system shall be included.

1.4 DEFINITIONS

- A. LCD: Liquid Crystal Display
- B. LED: Light Emitting Diode
- C. COM: Communications
- D. LAN: Local Area Network
- E. PVC: Poly Vinyl Chloride
- F. CMF: Central Monitoring Facility

1.5 SUBMITTALS

- A. General: Submit items in this Article according to the Conditions of the Contract
- B. Product Data for monitoring and control equipment shall include physical dimensions and data on features, components, ratings, and performance. Include wiring diagram and elevation views of the front display panel/keypad where applicable.
- C. Shop Drawings detailing dimensions, components, location and identification of field connections, arrangement of components and operational characteristics.
- D. Wiring Diagrams detailing the installation of the equipment and differentiating between factory-installed and field-installed wiring.

1.6 QUALITY ASSURANCE

- A. Electrical Component Standard: Provide components that comply with NFPA 70 and that are listed and labelled by UL where applicable.
- B. Listing and Labelling: Provide products specified in this Section that are listed and labelled.
 - 1. The Terms “Listed” and “Labelled”: As defined in the “National Electrical Code”, Article 100.
 - 2. Listing and Labelling Agency Qualifications: A “Nationally Recognized Testing Laboratory” (NRTL) as defined in OSHA Regulation 1910.7.

1.7 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.
- B. Warranty Period: Two (2) Years from the date of Substantial Completion and Acceptance unless otherwise indicated in other sections of this specification.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to the following:
 - 1. Pump Control Equipment:
 - a. Multitrode
 - b. Flygt
 - c. Products of other manufacturers assembled to provide all specified functions, including reliability equal to or exceeding that of the manufacturer listed in (a) above.
 - 2. The pump controller shall be Multitrode Multismart Model MSU3PC2, MSU3MP2 or equal.

2.2 PUMP CONTROL EQUIPMENT

The pump controller shall provide user ready automatic control of pumps with an intuitive HMI interface. The pump controller shall contain pre-designed operational parameters that are selected and configured via the user interface (HMI). The minimum features available in the pump controller shall include:

- A. Pump control of up to 6 pumps; including pump grouping and pump alternation.
- B. Intelligent Hand-Off-Auto Control:
 - Hand mode (semi-automatic, non-maintained manual mode), the pump switches off at the deactivation set point and then resets to Auto mode for the next pump run cycle.
 - Hand mode (fully manual, maintained mode). To pump beyond the off (deactivation) set point, the Hand-Off-Auto button must be held down by the user for failsafe control.
- C. Level set point adjustment for pump activation, deactivation and station level alarms.
- D. Level device input capability shall include: 4-20mA analog signal, conductive probe or floats.
- E. Redundant level device input capability with automatic input fault control (input device switching).
- F. Selectable charge (fill) or discharge (empty) modes.
- G. Pre-configured station optimization features shall include:
 - Maximum pump off time
 - Maximum pumps to run

- Maximum starts per hour
 - Inter-pump start and stop time delays
 - Maximum pump run time
 - Blocked pump detection
 - Well washer control capability
 - Well clean out control capability
 - Pump operation control (profile programming) capability
- H. “Locked level” alarm function to indicate a level device fault.
- User-defined % change within a specified time period
 - Different set point values for low use or high use time periods (user defined)
- I. Pump alternation modes shall include:
- Fixed lead pump assignment
 - Normal alternation
 - User defined alternation using N:1 ratio
 - Run most efficient pump using N:1 ratio
 - Alternation by the number of hours run or the number of starts within a specified time period
- J. Pump decommissioning modes shall include:
- Decommissioned pump is automatically removed from the pump controller.
 - Internal remote monitoring data tag shall flag the decommissioned status of a pump
- K. Up to (6) unique user defined profiles of set points shall be available to control pumps during specific site conditions or events. Features shall include:
- Automatic profile change based on date and time
 - Profile selection option from SCADA (remote control), digital input, logic tag or local display HMI
- L. A datalogger for user-defined faults and events shall include:
- Recording of up to 50,000 events to internal flash memory
 - Download capability of up to 10,000,000 events by writing directly to an SD card or USB
 - FTP data transfer and download data capability of event and fault logs in the form of a (csv) file for Microsoft Excel analysis
- M. 3-phase supply voltage monitoring and supply fault management for the following conditions:
- Under-voltage
 - Over-voltage
 - Phase fail
 - Phase rotation

- N. Monitoring of dc power supply, battery voltage, and internal controller temperature
- O. Energy, power and pump efficiency monitoring: (Available on Multismart Model# MSU3MP2)
 - kW, kVA, power factor, kWhr, KVAH calculation for each pump
 - pump efficiency calculation (gallons per kWhr) for each pump
- P. Motor protection features: (Available on Multismart Model# MSU3MP2)
 - 3-phase current monitoring for each pump
 - Over- and under-current trip
 - Ground/earth fault
 - Current phase imbalance fault
 - I²T fault
 - Insulation resistance testing for motor windings
- Q. Flow measurement: (when enabled with software key)
 - Calculated flow via liquid level draw down data
- R. VFD speed control capability. (when enabled with software key)
- S. Fault module capability as follows:
 - Pump hold out function
 - Automatic restart function after fault condition is no longer present
 - Manual reset of fault required (if user intervention of fault reset is selected)
- T. Remote control via remote telemetry monitoring to include the following:

(when enabled with software key)

 - Changing the mode of pumps (hand/off/auto operations)
 - Reset of pump faults and station faults
 - Changing pump and alarm set points
 - Changing operational profiles
- U. Security
 - User defined password management for access to programming areas in the controller
 - Automatic data logging of personnel who have entered the programming areas
 - Automatic logging of all unsuccessful login attempts with a date and time stamp
 - Digital input option for controlled access to programming areas
- V. SD and USB type access ports shall be available for the following operations:
 - Firmware upgrades
 - Save and load pump controller configuration
 - Download data logs
 - Export or import MODBUS and DNP3 points list

Advanced Programming Functions

The pump controller shall have the option of interfacing with IEC61131-3 and IEC61499 compliant PLC programming languages to enhance functionality or interact with the pump controller.

The pump controller shall have the option of using a simple logic engine to enhance functionality or interact with the pump controller.

Input /Output Characteristics

The pump controller inputs and outputs shall be modular and shall be expandable.

Available I/O types shall include:

- A. Digital inputs (voltage free input), also configurable as counters
- B. Digital outputs (240V, 5A resistive)
- C. Analog inputs (10bit)
- D. Analog outputs (10bit)

User defined digital inputs

Digital Inputs shall be configurable based on specific pump sensor arrangements:

- A. Seal sensor (conductive)
- B. PTC Thermistor
- C. Flygt FLS & CLS
- D. Conductive probe (for liquid level sensing)

Dedicated pump monitoring inputs (Available on Multismart Model# MSU3MP2)

The pump controller shall provide support for the following pump monitoring inputs:

- A. Insulation resistance test (IRT) with user selectable test voltage up to 1000VDC
- B. 3-phase current monitoring, derived from external current transformer devices with a 0.5% input resolution tolerance

User interface

The pump controller shall include a graphical user interface (HMI) display for configuration settings, control operations, and advanced programming. The following display characteristics shall be provided:

Status indication

The following parameters shall be displayed on the main screen:

- A. Liquid level in percentage, meters, feet or other custom defined units
- B. Set points for pump control and alarms
- C. Pump status (running or stopped)
- D. Pump availability
- E. Pump fault indication

- F. 3-phase voltage supply values
- G. Date and time indication
- H. User configurable options to display pump information and station status

Information screens

The following parameters shall be available via a user key press from the main screen:

- A. Hours Run accumulators for each pump and the pump station with the following information:
 - minutes run for last pump cycle
 - total minutes (hourly)
 - total hours today, total hours yesterday
 - total hours this week, total hours last week
 - total accumulated hours
- B. Pump Start accumulators for each pump & the station with the following comparisons
 - pump starts this hour, pump starts last hour
 - pump starts today, pump starts yesterday
 - pump starts this week, pump starts last week
 - total accumulated pump starts
- C. Flow values (when enabled with software key)
 - station inflow rate
 - pump flow rate
 - total station volume
 - overflow data (including overflow start time, duration, estimated volume)
- D. Power and Efficiency (Available on Multismart Model# MSU3MP2)
 - pump efficiency in gallons or litres per KWHr - or KVAh
 - power in kW, KVA
 - power factor
 - energy accumulators per pump in KWHr and KVAH
- E. Insulation resistance value for each pump motor in (Ohms)
(Available on Multismart Model# MSU3MP2)
- F. I/O Status
 - Digital I/O status and accumulated values
 - Analog I/O status and values in (mA) or scaled values
 - 3-phase voltage, frequency, phase angle, power factor
- G. Database viewer to review all statistics, data information and available tags in real time

Control Functions

The pump controller display interface shall be capable of performing the following control operations:

- A. Pump control mode for each pump (Hand-Off-Auto)
- B. Pump fault reset
- C. Level alarm reset

Fault screen

The main screen shall include a Fault button which takes the user to a Fault screen and allows them to check all current and unacknowledged alarms.

The fault screen will provide fault details along with a date and time stamp for each fault occurrence.

A fault reset option shall be presented to the user when alarms can be acknowledged or reset.

History screen

The main screen shall include a History button which takes the user to a History screen which allows them to view the following information:

- A. Viewing of all faults and events
- B. Information filtering capability

Configuration screens

The user configuration screens shall provide capability to change pump control settings as follows:

- A. Setup Wizard function to configure the pump controller settings by user input to specific questions
- B. Set point programming of alarms and pump activation/deactivation.
- C. Enable or disable alarms
- D. Set alternation mode for pumps
- E. Configure I/O as follows:
 - Assign primary/backup level to any input, e.g. 4-20mA or conductive probe
 - Assign pre-defined or user-defined faults to any digital input
 - Zero and span analog inputs
 - Configure digital output source
 - Configure analog output source
- F. Configure faults as follows:
 - display the fault to the local screen only
 - manual reset (local) or remote reset operation before pump becomes available
 - auto-restart (after fault condition clears) with configurable restart time

- auto-restart user-selectable number of times within time window before locking out
 - customized text for fault and event name
- G. Configure station optimization parameters
- H. Configure supply protection
- Under and over voltage alarm points
 - Volts phase imbalance and volts phase rotation set points
 - DC supply alarm set point
- I. Configure motor protection (Available on Multismart Model# MSU3MP2)
- Under current set points
 - Over current set points
 - Ground/earth fault set points
 - Phase failure set points
- J. Configure communications ports, speeds and addresses.

Configuration program backup, restore and firmware upgrades

The pump controller configuration interface shall allow the user to save and restore pump controller configurations onto a portable SD card or USB storage device.

The pump controller shall allow for the import of DNP3 and Modbus point lists and custom logic scripts via the SD or USB ports.

The pump controller configuration interface shall allow the user to backup system log files, alarm and event log files, and custom scripts via the SD or USB ports.

Firmware upgrades shall be possible by using a firmware upgrade file on a portable SD card or USB storage device.

Communications

Physical

The pump controller shall include the following data communication ports:

- A. (2) Ethernet ports (10Mbit/s)
- B. (2) RS232 ports (115kBit/s)
- C. (2) RS485 ports (115kBit/s)
- D. (1) USB device port
- E. (1) SD card port

Communication Types

The pump controller shall support the following communication types:

- A. TCP/IP

- B. UDP
- C. RS232
- D. RS485
- E. Private radio over RS232
- F. PSTN
- G. Wireless LAN
- H. Cellular data
- I. Cellular voice

Communication Protocols (Available with software key)

The pump controller shall support DNP3 (master & slave, level 2 compliant), including:

- A. Change of state reporting
- B. Native date/time and quality stamps for each data point
- C. Event buffering for different classes of data
- D. Support for multiple masters and slaves to be configured on the unit
- E. DNP Security (for securing communications between master station and RTU)

The pump controller shall support Modbus (master & slave) including:

- A. Modbus TCP
- B. Modbus RTU
- C. Modbus ASCII
- D. Support for multiple masters and slaves

Performance and Environmental Characteristics

The pump controller shall meet the following performance and environmental characteristics:

- A. Central Processing Unit Speed: 566MHz
- B. Central Processing Unit RAM Size: 256MByte
- C. Central Processing Unit Flash Memory Size: 64MByte
- D. Real Time Clock
- E. Working temperature -10°C to +60°C
- F. Storage temperature -40°C to +90°C
- G. Humidity 5% to 95% (non-condensing)
- H. IP Rating Controller Base Unit: IP20, NEMA 1
- I. Display Interface IP65, NEMA 4

Warranty

The pump controller shall be provided with a 5-year limited manufacturer's warranty.

2.3 BACKUP CONTROL SYSTEM (Level Control Relays):

- A. **Description:** The backup control system shall consist of one or more level sensing relays. The Backup Level Control Relays shall be Multitrode MTR, MTRA, SAFE-TL or equal.
- B. **Specifications:** The level sensing relays shall be supplied with the following specifications:
 - 1. The relay shall accept 2 or 3 level inputs from a conductive level probe or ball floats
 - 2. All settings shall be dip switch programmable from the front panel and shall be as follows:
 - a. Conductive probe sensitivity adjustment.
 - b. Activation Delays.
 - c. Charge/Discharge selection. (MTR-3 model only)
 - d. Alarm Delay. (MTRA-3 model only)
 - e. Alarm Output Flashing/Steady. (MTRA-3 model only)
 - 3. Output Contact Rating: 250VAC, 5 Amps Resistive, 2 Amps Inductive
- C. **Mounting and Installation:** DIN Rail or 2 x #6 screws Base Mount

2.4 LEVEL SENSING EQUIPMENT (Conductive Type Probe):

- A. **Description:** A Multi-Stage Level Sensing Device designed to detect liquid level at specified intervals in tanks or sumps and interface with an electronic controller for pump control and liquid level display. The Level Sensing Equipment shall be a MultiTrode Probe or equal.
- B. **Construction:** Where the level sensing technique utilizes a sensing device inserted into the liquid, all cavities within each sensor unit assembly shall be PVC injected to seal the unit and prevent any moisture from entering the sensor assembly. Where a sensor unit consists of a multi-sensored probe, each sensor on the probe shall be rotated 90 degrees horizontally from the previous sensor along the probe length to eliminate tracking between sensors. Level sensing probes shall be pressure injected with an epoxy resin at final assembly to encapsulate all internal components and connections, thereby creating a rigid, sealed, homogeneous unit.
- C. **Cable:** The flexible cable used for the Level Sensing Probe shall be comprised of PVC/PVC multi-conductor construction with a common oversheath that is water and oil resistant. The multi-conductor cable shall be identified with numbering and text along the entire length of the outer sheath at required intervals. Individual conductors of the multi-conductor cable shall be numbered and colored for easy identification, as well as connection to the pump controls. Cables shall be secured to the top of probe bodies by synthetic rubber compression fittings for strain relief. Flexible cables shall be rated to physically support the combined weight of the level sensing probe and any suspended cable connected to the probe.
- D. **Mounting and Installation:** Mounting connections shall be stainless steel. The mounting assembly for probes shall include a device available to maintenance personnel to clean the level sensing probe at desired maintenance intervals.

- E. Failsafe Functionality:** Two wires shall be run across the length of the probe, one red and one black. Each wire shall connect to each other on the bottom of the probe. When used with a MultiSmart Pump Controller or Safe Smart Relay, the connection of these wires to the designated inputs on the controls will provide fail-safe functionality (monitoring for the probe).

2.5 CONTROL PANEL CONSTRUCTION AND ASSEMBLY

A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to the following:

1. Control Panel Equipment:
 - a. Multitrode
 - b. Square D
 - c. Products of other manufacturers assembled to provide all specified functions, including reliability equal to or exceeding that of the manufacturers listed above.

B. General Requirements:

1. Control Panels shall be manufactured in accordance with ISO 9000-2001 specifications and shall be so constructed for the application of a UL Listing Label by an approved UL Control Panel Assembly Facility.
2. All electrical connections shall be properly inspected and torqued in compliance with ISO specifications. External connections to the control panel shall be by way of numbered terminal blocks.
3. Control Panels shall be properly checked and load tested with power applied. A control panel test log shall be supplied with the control panel.
4. Control Panels shall be supplied from a UL approved control panel assembly facility with all of the required labels properly attached.

C. Control Panel Enclosure Environmental Rating:

1. Control Panel Enclosure rating shall be specified in accordance with the project requirements or the contract drawings as either NEMA 3R, 12, 4 (Painted Steel) or 4X (Stainless Steel).

D. Control Panel Enclosure Specific Construction Requirements:

1. Enclosure shall be sized according to physical and functional device requirements.
2. Enclosure seams shall be continuously welded and ground smooth.
3. Enclosure door opening flange trough shall exclude liquids and contaminants.
4. Enclosure shall include an integral body grounding stud and sub-panel mounting studs.
5. Enclosure shall be wall mounted, unless otherwise specified.
6. Enclosure door shall have hidden hinges for a clean, aesthetic appearance.
7. Enclosure door opening angle shall be standard, full access, 135 degree opening radius.
8. Enclosure door shall be interchangeable and removable by pulling a captive hinge pin.
9. Enclosure door shall have a high-impact thermoplastic data pocket mounted on the inner side of the enclosure door.
10. Enclosure door shall have a seamless, foam-in-place, one-piece gasket to provide an oil-tight, dust-tight seal against contaminants.
11. Enclosure shall have a three-point latching system with a zinc die-cast handle that is painted with black textured polyester powder paint.
12. Enclosure handles shall be capable of being padlocked.
13. Steel sub-panel shall be white.
14. When enclosure cut-outs for instruments and other devices are required, holes shall be cut, punched, or drilled and finished with rounded edges.
15. A door stiffener shall be used where applicable to prevent door deflection under instrument loading or operation.

E. Instrument Location Requirements:

1. Instruments or control devices designated for sub-panel (back) mounting shall be located in a manner that will allow for maintenance and adjustment.
2. Instrument mounting height shall not exceed 6'-6" to the top of the instrument and shall not be lower than 3'-0" to the bottom of the instrument (unless otherwise specified).

F. Wiring Requirements:

1. Wiring for AC and DC control circuits shall be Type SIS or Type MTW stranded copper and shall be sized for the applied voltage and current. Unless otherwise noted, control circuit wiring shall not be smaller than No. 16 AWG.
2. Cable wiring for analog signal circuits shall be twisted, shielded pairs of stranded copper conductors that shall not be smaller than No. 20 AWG.
3. Wiring for special signalling equipment such as communications, digital data, and multiplexed signals shall be provided by the equipment supplier.
4. Wiring shall be numbered and marked at each termination point.
5. Terminal blocks for internal or external wiring shall be DIN rail mounted, individual screw compression type terminals with machine printed labels.

G. Nameplate Requirements:

1. Nameplates are defined as inscribed, plastic plates mounted above or near a panel face mounted component. Unless otherwise noted, nameplates shall be engraved, rigid, laminated plastic with an adhesive back. Nameplate color shall be white with black letters.
2. Component Labels are defined as printed, vinyl labels mounted above, below or near a sub-panel (back) mounted component for identification. Printed vinyl labels shall be white in color with black letters and an adhesive back.

H. Grounding:

1. Control Panel enclosure shall be properly grounded in accordance with the National Electrical Code and local code requirements.
2. Each analog signal loop shall only have its shield wire connected to ground at a single point for the loop. Shields shall be grounded at control panels where signals are input to the receiving device and not at the source of the transmitting device.

I. Electrical Transient (Surge) Protection:

1. All electrical and electronic components of the Control Panel shall be protected against damage due to electrical transients induced in interconnecting lines from lightning discharges and surges in nearby electrical systems.
2. The transient surge protector shall be rated for 25kA per phase or larger.

J. Circuit Breakers:

1. Power Circuit Breakers shall be thermal magnetic type designed for AC current with a minimum interrupting capacity of 15,000 amperes.
2. Control Circuit Breakers shall be in accordance with section UL 489 with a minimum interrupting capacity of 10,000 amperes.

K. Control Power Transformers:

1. Control Power Transformers required to provide control system and accessory power shall be machine tool type control transformers with epoxy encapsulated coils or resin impregnated coils, high quality silicon steel laminations, copper magnet wire, moulded-in terminals and 55° C rise (Class 10 insulation system).

L. Voltage/Phase Monitor:

1. The voltage-phase monitor shall continually measure the voltage of each of the three phases of the incoming power to the equipment and provide protection for three phase motors, as well as sensitive electronics, etc. The phase monitor shall sense the following conditions: under- and over-voltage, voltage unbalance, phase loss and phase reversal.

M. Control Relays:

1. Control relays shall be square base type, 120VAC or 12VDC (based on design schematic).
2. Control relays shall be 4PDT (4 Pole, Double Throw) with normally closed/normally open contacts rated at 120VAC, 5 amps minimum.
3. Control relays shall include an integrated test button and relay energized flag indicator.

N. Full Voltage Magnetic Motor Controller:

1. The motor controller shall be a NEMA rated, full voltage, non-reversing, across the line contactor and overload relay combination.
2. The motor overload relay shall be an ambient compensated type with inverse-time-current characteristic and shall be provided with heaters or sensors in each phase matched to nameplate full load current of the specific motor to which it connects .

P. GFCI Convenience Receptacle:

1. There shall be a 120VAC, 15 Amp GFCI rated convenience receptacle mounted on the dead front swing door of the control panel. Receptacle circuit shall be protected by a thermal magnetic circuit breaker.

Q. Enclosure Condensation Heater:

1. There shall be a 120VAC, 50 watt enclosure heater inside the control panel.
2. The heater shall be a silicone rubber, insulated strip type enclosure heater.
3. The heater shall be Chromalox Model #SL-B-2-5-55P, or approved equal.

R. Local Alarm (Flashing Light):

1. There shall be a Flashing Alarm Light mounted on top of the control panel enclosure for local alarm indication. The flashing alarm light shall be supplied according to the following specifications:
 - a. UL Recognized for use with UL NEMA Type 3R, 4, 4X, 12 & 13 Enclosures.
 - b. Shatter Resistant Lexan globe, U.V. Stabilized and Flame Retardant.
2. The Flashing Alarm Light shall be by Ingram Products, or approved equal.

PART 3 - EXECUTION

3.1 Installation

- A. Install and mount control equipment according to manufacturer's written instructions.
- B. Install wiring between control devices as specified by Manufacture.
- C. Identify components along with power and control wiring according to manufacturer's written instructions.

END OF SECTION



SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT
Governor

May 31 2019

Chris Browning, General Manager
Oklahoma City Water Utilities Trust
420 West Main, Suite 500
Oklahoma City, Oklahoma 73102

Re: Wastewater Lagoon Closure Plan and Residual Disposal – Approved
OCWUT Project No. SC-1001-2
Draper Lake Water Treatment Plant
Men's First Step Onsite Sewer System
Draper Lake Ranger Station Onsite Sewer System
Facility No. W-20903
OPDES Permit No. N/A

Dear Mr. Browning:

On December 4, 2018, the Department of Environmental Quality (DEQ) received a wastewater lagoon closure plan for the Men's First Step Onsite Sewer System and the Draper Lake Ranger Station Onsite Sewer System. The OCWUT is providing sanitary sewer service to this area and the lagoons will no longer be needed. Also, the OCWUT plans to utilize a portion of the lime residuals produced at the Draper Water Treatment Plant (WTP) as fill material for the lagoons. The closure plan describes the following activities to close the wastewater treatment lagoons:

- The lagoons will be dewatered by pumping the liquid into the sanitary sewer system once it is constructed.
- Once the lagoons are dry, the sludge and synthetic liner in the lagoons will be removed and disposed of at the nearby solid waste landfill. The sludge will be tested and must meet applicable criteria for fecal coliform, toxicity characteristic leaching procedure (TCLP), and paint filter liquid test prior to landfilling.
- Excess material from the WTP Clearwell project, which includes some of the lime residuals and the dike material, will be used to return the lagoon sites to grade.
- Re-vegetate the surface over the former lagoon cells to prevent erosion.
- Submit a Certificate of Closure to DEQ.

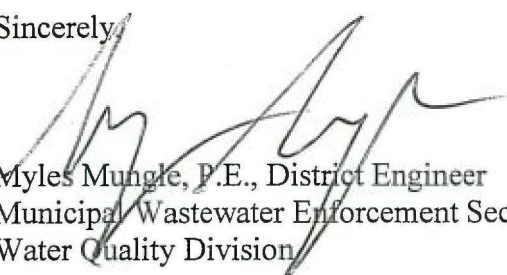
The schedule in the closure plan states these activities will begin once the sanitary sewer system has been constructed. The plan anticipates closure to be completed six (6) months after the lagoons are taken out of service. After reviewing the lagoon closure plan, DEQ finds the plan to be approvable.



Oklahoma City Water Utilities Trust
Wastewater Lagoon Closure Plan and Residual Disposal – Approved
OCWUT Project No. SC-1001-2
Facility No. W-20903
May 31, 2019
Page 2 of 2

Should you have any questions concerning this matter, please contact me at (405) 702-8121 or write to me at the letterhead address. Thank you for your cooperation.

Sincerely,



Myles Mungle, P.E., District Engineer
Municipal Wastewater Enforcement Section
Water Quality Division

MM/BFC/MBM/GC/md TA/CG

cc: ✓ Sam Samandi, P.E., Engineering Manager, OCWUT
J. Dustin Seagraves, P.E., Water Quality Superintendent, OCWUT
Connie Schlitter, Executive Director, OKC Metro Alliance Inc., 1940 Linwood Blvd.,
Oklahoma City, OK 73106
Hannah Elder, ECLS, Oklahoma City DEQ Office
Travis Mensik, Regional Manager, ECLS, DEQ
Nichols Huber, Program Manager II, ECLS, DEQ



THE CITY OF
OKLAHOMA
CITY

420 W. MAIN
STREET

OKLAHOMA CITY,
OKLAHOMA
73102

LAGOON CLOSURE PLAN

THE OKLAHOMA CITY WATER UTILITIES TRUST

SC-1001-2: LAKE STANLEY DRAPER WASTEWATER COLLECTION SYSTEM

NOVEMBER 2018



SUBMITTED BY:



ENGINEERING | SURVEYING | PLANNING

SMITH ROBERTS BALDISCHWILER, LLC

Consulting Engineers – Certificate of Authorization No. 3949

100 N.E. 5TH STREET | OKLAHOMA CITY, OK 73104 | 405.840.7094

SRB PROJECT #115132 TASK ORDER #17-003

PROJECT NO. SC-1001-2

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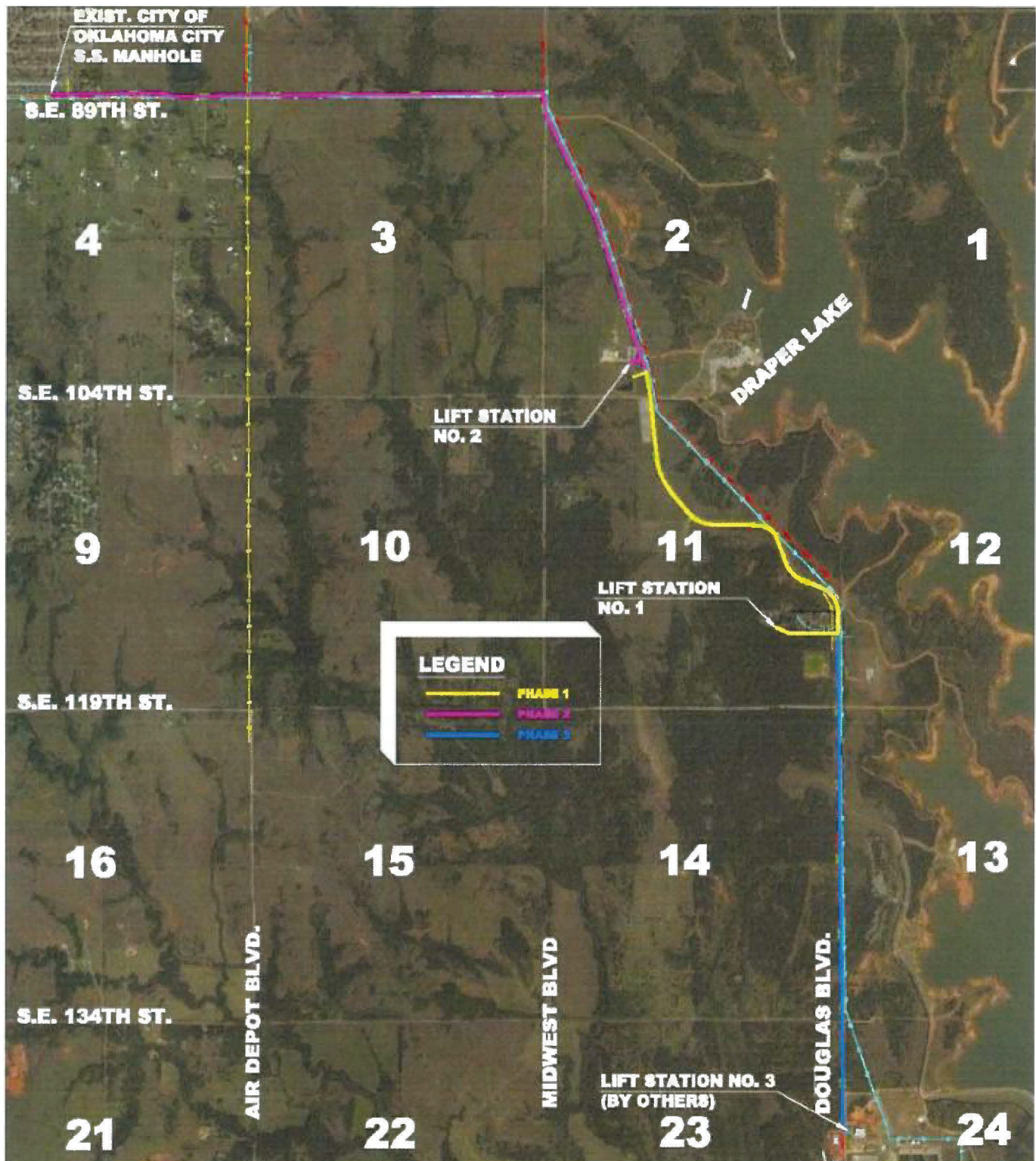
ADDITIONAL REQUIREMENTS

APPENDIX A- GRADING PLAN SHEETS



I. Executive Summary

The Oklahoma City Water Utilities Trust has engaged Smith Roberts Baldischwiler, LLC (SRB) to design project SC-1001; a sanitary sewer force main to serve areas along the west side of Draper Lake. The goal of the project is to provide sanitary sewer service to the facilities at the Draper Lake Water Treatment Plant, Draper Ranger Station, Draper Marina, and the Men's FirStep facility located at S.E. 119th and E. Stanley Draper Dr. while also eliminating two existing sewage lagoons located along the route. The current plan is to construct the proposed system in three phases (See Location Map, page 2) which will facilitate the continual use of the northern most lagoon near the Ranger Station until which time that Phase II is completed, and the lagoon can be taken out of service. In order to achieve the project goal, the proposed collection system will require 3 lift stations in order to collect from the Draper Lake Water Treatment Plant to the existing Oklahoma City sanitary sewer collection system. The lift stations will be located at the water treatment plant, the Men's FirStep property, and the Draper Ranger Station. The lift station to be located at the Draper Lake Water Treatment Plant will be constructed under a separate contract and will serve as the connection point with Phase 3 of the force main construction.



Stanley Draper Lake Wastewater Improvement Program Figure 1



II. General Information

A. Record Owners with Continuing Management Responsibility of the Ranger Station Lagoon

The following are the record owners of the property that will have the responsibility of continuing management of the facility.

Name and Title Chris Browning, General Manager
Organization..... OKC Water Utility Trust (OCWUT)
Address420 W. Main Suite 500, Oklahoma City, OK 73102
Telephone(405) 297-3348

B. Record Owners with Continuing Management Responsibility of the Men's FirStep Lagoon

The following are the record owners of the property that will have the responsibility of continuing management of the facility.

Name and Title Connie Schlitter, Executive Director
Organization..... Oklahoma City Metro Alliance Inc.
Address1940 Linwood Blvd., Oklahoma City, OK 73106
Telephone (405) 568-4469

III. Closure Activities

A. Time Schedule

A schedule of the proposed closure activities is as follows:

ACTION	DATE
Begin Closure Activities	Ninety (90) days after the submission of a closure plan.
Complete Closure Activities	Within six (6) months of taking the lagoon out of service.

B. Wastewater

The wastewater from the lagoon will be disposed of at the existing Oklahoma City sanitary sewer collection system. It will be directed into the lift station which will pump the wastewater through the force main to the collection system.



C. Sludge

It has been determined that removal is necessary for future development due to the presence of a synthetic liner. The sludge will be tested by a DEQ-certified laboratory. Testing will include a fecal coliform test, toxicity characteristic leaching procedure (TCLP), and paint filter test. Additional testing may be required by the landfill. The sludge and the liner will be sent to a municipal landfill upon the approval of a sludge disposition plan by the DEQ.

D. Final Grading and Erosion Control

Excess material from the Lake Stanley Draper Water Treatment Plant Clearwell project, and the excavated dike material will be used to fill the lagoons. The City will provide access to this material. The lagoons will be filled and graded per Oklahoma City standard specifications section 201.04 construction methods the entire surface layer shall be compacted to not less than 95% of standard proctor density (per ASTM D698-00a). The proposed grade can be seen in the attached design plans. Once the lagoons are returned to existing grade, seed or mulch will be used to help re-establish vegetation to prevent erosion per Oklahoma City standard specifications section 985.

E. Prevention of Discharge

In accordance with *OAC 252:619-5-1(d)*, *Under no circumstance may wastewater or sludge be:*

- (1) discharged to the waters of the State;*
- (2) allowed to flow or be carried to adjacent properties; or*
- (3) be disposed at any site not permitted by DEQ for that purpose.*

An Affidavit of No Discharge (AND) will be completed and an appropriate representative of DEQ will be asked to confirm the cessation of the ability to discharge and endorse the AND. The completed AND will be submitted to DEQ in order to close the OPDES Permit.

IV. Additional Requirements

A. Characterization

A chemical analysis of representative sample(s) of the contents of the lagoon will be provided upon request in accordance with *OAC 252:619-5-1(e)*. If deemed necessary, continuing monitoring, sampling, and reporting will be done. This will be the responsibility of the owners identified in II.A above.

B. Class B Pathogen Reduction

If requested by the DEQ, the sludge will be tested by a DEQ-certified laboratory for Class B pathogen reduction, pursuant to 40 CFR §503.32(b)(2), as follows:



40 CFR §503.32(b)(2) Class B—Alternative 1. (i) Seven Representative samples of the sewage sludge that is used or disposed shall be collected.

(ii) The geometric mean of the density of fecal coliform in the samples collected in paragraph (b)(2)(i) of this section shall be less than either 2,000,000 Most Probable Number per gram of total solids (dry weight basis) or 2,000,000 Colony Forming Units per gram of total solids (dry weight basis).

If the testing confirms Class B pathogen reduction, the biosolids will be removed and disposed to a municipal landfill. If the initial testing indicates that Class B pathogen reduction has not been attained, the sludge will be allowed to air dry for a minimum of 90 days total drying time, pursuant to 40 CFR §503.32(b)(3), Appendix B, Section A.2, as follows:

2. Air drying—Sewage sludge is dried on sand beds or on paved or unpaved basins. The sewage sludge dries for a minimum of three months. During two of the three months, the ambient average daily temperature is above zero degrees Celsius.

Vector attraction reduction will be done upon request of the DEQ. If vector attraction reduction is required, it will be accomplished at the landfill by covering by the end of the operating day pursuant to 40 CFR §503.33(b)(11).

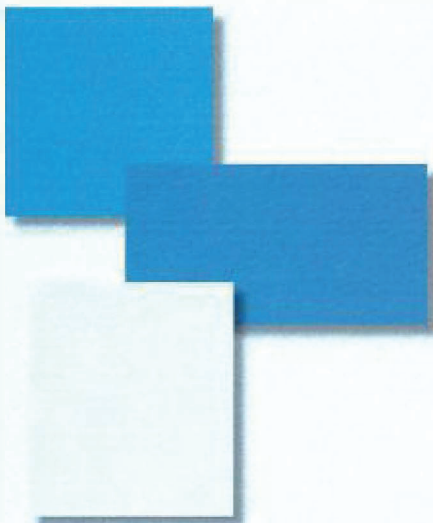
C. Certificate of Closure

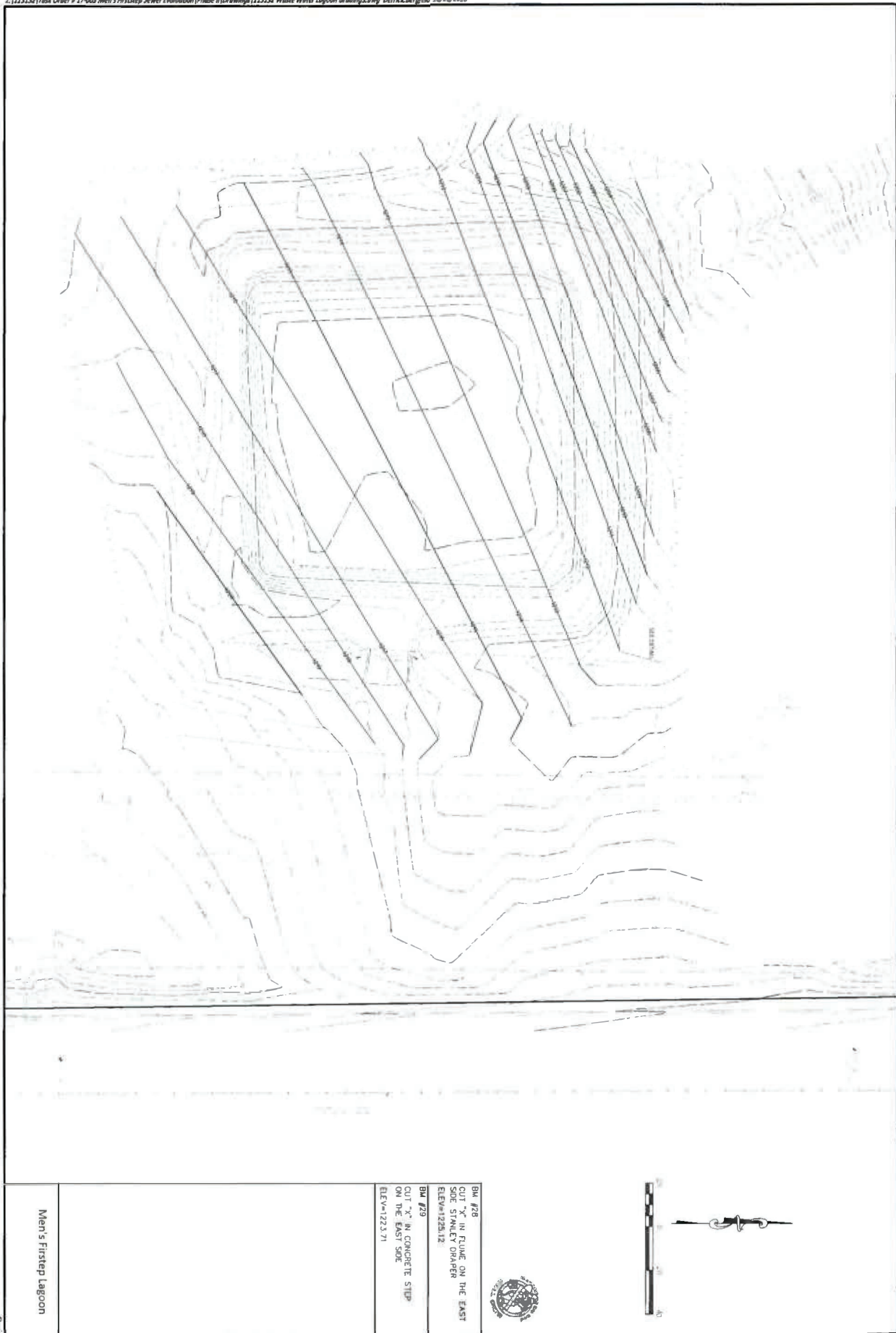
A Certificate of Closure will be submitted to DEQ within forty-five (45) days of lagoon closure completion. It will certify that the lagoon was closed in accordance with the approved closure plan.



APPENDIX A

GRADING PLAN SHEETS





Men's Firststep Lagoon	SC-1001-2 SANITARY SEWER FORCE MAIN E STANLEY DRAPER DR. FROM SE 89TH ST TO SE 104TH ST. CITY OF OKLAHOMA CITY WASTE WATER LAGOON AT MEN'S FIRSTSTEP	BU #28 CUT 3" IN FLOW ON THE EAST SIDE STANLEY DRAPER ELEVATION 1231.2 BU #29 CUT 3" IN CONCRETE STEP ON THE EAST SIDE ELEVATION 1223.71		PROJ 115132 DATE 10/05/18 DRAWN BY: HHH DESIGNED BY: HHH CHECKED BY: GJM	SHEET NO. 44 TOTAL SHEETS 44	
				SCALE: HORIZ. 1"=300' VERT. 1"=10' 44 44	CITY OF OKLAHOMA CITY DEPARTMENT OF PUBLIC WORKS DIVISION OF PLANNING (APPROVED BY ALTERNATE ENGINEER: DATE 10/26/2018 BY: GJM)	