

## SECTION 15420

### ELECTRIC LEACHATE PUMP AND PIPING

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES

- A. Summary of work.
- B. Scope
- C. Submittals
- D. Pipe and pipe fittings.
- E. Valves.
- F. Electric leachate pump and controller/enunciator panel
- G. Liquid-level sensors and appurtenances.

##### 1.02 SUMMARY OF WORK

- A. The work to be performed by the Contractor shall conform to the requirements of the Contract, Specifications, Drawings, and other related documents, and include the furnishing of all labor, materials, tools, equipment, plant, and services necessary and therefore incidental thereto to complete the project.
- B. General Description of Work: The work included in the Contract Documents consists of construction of the McCourtney Road Landfill Leachate Pump Improvements and related work. The work consists of the scope under 1.03 SCOPE.
- C. The description of work in this Section is for general information only, and does not limit the responsibility of the Contractor to accomplish the work in strict accordance with the Construction Drawings and Specifications.
- D. Only this one specification is provided for the project. The general specification requirements are shown on the Construction Drawings.

##### 1.03 SCOPE

- A. Work Located Near Pump Station 1:
  - a. Provide a means to collect and store leachate flow during the work period and transport the leachate to the leachate tank system assuming 20 gpm during the period of work (leachate shall not be released to the ground surface or surrounding drainages).
  - b. Drain the leachate force main in preparation of the work and transport the leachate to the tank system.

- c. Remove and stockpile the existing aboveground fiberglass pump enclosure.
- d. Remove two existing surface mounted 40-gpm turbine pumps and one existing surface mounted 500-gpm suction pump and install two vertical 40-gpm submersible pumps and one 80-gpm submersible pump in the existing PS-1 Leachate Sump, including all required control panels, wiring, level sensors, and flow meters for each pump.
- e. Remove three existing pump control panels and replace with them with a duplex pump control panel and one single pump control panel.
- f. Remove all existing heat tracing and pipe insulation on 6-inch PS-1 leachate inflow line and 6-inch PS-1 leachate outflow line and replace with new heat tracing and insulation.
- g. Remove existing wooden pipe supports for PS-1 inflow leachate line and replace with concrete pipe supports.
- h. Re-plumb existing inline flow meter.
- i. Refurbish existing leachate control valve assembly including install of 2-inch flow meter, 6-inch blind flange, and 6-inch outlet gate valve. Remove and replace existing steel float switch hanger.

**B. Work Located Near Pump Station 2:**

- a. Remove the existing pump system and control panels.
- b. Excavate and cut the ends of the existing 12-inch diameter HDPE leachate sump and leak detection riser pipes. Extend the pipes and install new pipe flanges.
- c. Install new wheeled ½-HP submersible pump in leachate riser pipe and install 1.5-inch insulated discharge piping with heat tracer in pipe jacketing. Install all new wiring, level sensor, and flow meter for pump.
- d. Install a new pump control panel.
- e. Slope ground surface at leachate riser area to drain at 2% towards gravel road.

**1.04 SUBMITTALS**

- A. **Product Data:** Provide data on pipe materials, pipe fittings, valves, pumps, valve boxes and accessories. Provide Manufacturers catalog information. Indicate valve data and ratings.
- B. Submit pump and controller cut sheet, and Contractor-developed electrical drawing.
- C. Submit pump curves demonstrating that the provided pumps provide the required flow and head requirements, for approval prior to ordering the pumps.

1.05 PROJECT RECORD DOCUMENTS

- A. Record actual locations of sumps and valves on an original redline set of drawings and provide an as-built set of drawings to the Owner and a scanned Adobe pdf version to the Engineer after completion of the work and prior to final payment.

1.06 OPERATION AND MAINTENANCE DATA

- A. Submit product operation instructions and manuals at contract closeout.
- B. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

1.07 QUALITY ASSURANCE

- A. Valves: Manufacturer's name and pressure rating marked on valve body.
- B. Operate equipment using water to ensure proper function.

1.08 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing the work of this section with minimum 2 years experience.

1.09 REGULATORY REQUIREMENTS

- A. Perform Work in accordance with State and local plumbing and electrical codes, where applicable.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site.
- B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

## 1.11 ENVIRONMENTAL REQUIREMENTS

- A. Do not install underground piping when bedding are wet or frozen.
- B. Methane may be present in excavations. See Landfill Site Safety requirements.

## PART 2 - PRODUCTS

### 2.01 PIPE FROM DISCHARGE TUBING

- A. PS-2: 1.5-inch SCH 80 PVC, or as approved by the Engineer. Minimum pressure rating shall be 100 psi.
- B. PS-1: Utilize existing piping. If new piping is required, use 3 inch steel pipe as approved by the Engineer. Minimum pressure rating shall be 100 psi.

### 2.02 BALL VALVES

- A. Up to and including 3 inches: 304 or 316 stainless steel one piece body, stainless steel ball, Teflon seats and stuffing box ring, lever handle threaded ends.

### 2.03 CHECK VALVES

- A. Up to and including 3 inch 304 or 316 stainless body with swing disc or spring disc, threaded ends.

### 2.04 PS-1 LEACHATE PUMP SYSTEM

- A. Provide a complete leachate sump pumping system including submersible sump pumps, level controls, and pump control panels as manufactured by EPG Companies, Inc. or approved equal.
- B. Pump and Appurtenances: Provide two (2) primary 40-gpm submersible pumps and motors, EPG Companies, Inc. Sure Pump™ Model VSDPT 8-8 or approved equal for duplex use, and one (1) 80 gpm back-up submersible pump as shown on the Contract Drawings.
  - 1. VSDPT 8-8 Pump and motor performance requirements shall be as follows:
    - a. Fluid pumped landfill leachate
    - b. Flowrate, gpm minimum 40
    - c. Total dynamic head at specified flowrate, ft minimum of 130
    - d. Operating range, gpm 0-55
    - e. Motor size, max. hp 2.0
    - f. Motor type AC Induction
    - g. Motor voltage 230

- h. Motor phase: Three
  - i. Pump discharge, inch NPT 1-1/2"
2. The 80 gpm back-up pump and motor performance requirements shall be as follows:
    - a. Fluid pumped landfill leachate
    - b. Flowrate, gpm minimum of 80
    - c. Total dynamic head at specified flowrate, ft minimum of 150
    - d. Motor size, approx. hp 5.0
    - e. Motor type AC Induction
    - f. Motor voltage 230
    - g. Motor phase: Three
    - h. Pump discharge, inch NPT 3"
  3. Pump and motor materials of construction shall be as follows (80 gpm back-up pump construction specifications shall be submitted for approval as equal):
    - a. All metallic pump components in contact with the pumped fluid stainless steel.
    - b. Pump shaft bearings E-Glide™.
    - c. Impeller seal rings Teflon.
    - d. Check valve housing stainless steel.
    - e. Check valve Stainless steel.
    - f. Check valve seat Teflon.
    - g. Motor-to-pump coupling stainless steel.
    - h. All metallic motor components in contact with pumped fluid Stainless steel.
    - i. Shaft seal, diaphragm, slinger Viton.
    - j. Lead bushing Viton.
    - k. Seal cover Tefzel.
  4. Additional features shall include:
    - a. Pump and motor suitable for installation in either and 18-inch diameter vertical riser pipe or in a leachate sump.
    - b. Motor submersible and hermetically sealed, Franklin motor, or approved equal.
    - c. Motor thermal overload protection in motor windings.
    - d. Motor power cable insulation, no splice, water proof and chemically resistant, EPG Companies, Inc. "CP" or approved equal, of sufficient length to connect motor to control panel with at least 5 feet of slack.
    - e. For the primary pump containing the depth sensor, the pump cable shall contain and integral flow sensor conductors and air tube provided preassembled by EPG. The model cable shall not be spliced.

C. Spares (Alternative Deduction):

1. Provide one complete (1) spare EPG Companies, Inc. Sure Pump™ Model VSDPT 8-8, including pump cable and level sensor. If a different model is provided for the primary duplex pumps as described above, the submitted model prevails.

D. Well Seal:

1. Provide 8" x 1-1/2" diameter heavy duty EPG Companies tank seals for the VSDPT 8-8 Pumps and a 10" x 3" diameter heavy duty EPG Companies tank seal for the 80 gpm backup pump. Conventional split casing well seal or a similar method of providing a water tight method of inserting the pump, electrical, and control wires into the sump may be supplied with Engineer approval.

E. Pump Motor Control System - Primary, Duplex Pumps

1. Pump control for the primary, duplex VSDCPT 8-8 pumps shall be EPG Companies, Inc. Model L950PT Pump Master™ with LevelMaster™ control panel, or approved equal. The Contractor shall have a licensed electrician design a simple physical float operated control system for the backup 80 gpm pump. The Contractor shall verify appropriate pump controllers for both pump systems. Control panel for the VSDPT 8-8 pumps shall include:
  - a. U.L. listed, 230V, 60Hz, three phase.
  - b. NEMA 4X enclosure,
  - c. Lockable outer door with window, inner door, and stainless steel drip shield.
  - d. Programmed for Lead/Lag Alternating mode.
  - e. Motor start winding or integral electronic controls with Hand-Off-Auto selection..
  - f. EPG LevelMaster® Level Controller.
  - g. Lighting arrestor.
  - h. Corrosion inhibitor.
  - i. Visible alarm light mounted on top of the cabinet.
  - j. 4 channel auto dialer. Dry output circuits (high level, motor overloads).
  - k. Data recording flow rate totalizer for EPG flow meter.
2. L950PT Panel Operation: The pump shall turn on and off as described above: The panel shall have the following enunciator lights:
  - a. Green Solid: Pump ON
  - b. Yellow Solid: High Level Alarm in Leachate Tank
  - c. Red Flashing: High-High Level Alarm in Leachate Tank

- d. Red Flashing: High Level Alarm in Leachate Sump (Pump Trouble).
3. Initial Level Settings for VSDCPT 8-8 pumps: The L950PT control panel shall be initially programmed with the following levels:
    - a. Pump On: 36"
    - b. Pump Off: 16"
    - c. High Level Alarm: 42"  
Both Pumps On: 42"
  4. Initial Level Settings for back-up 80 gpm pump: The Contractor submitted float switch controller for the backup 80 gpm pump shall be operated with liquid level float switches at the following levels:
    - a. Pump On: 48"
    - b. Pump Off: 16"

F. Pump Motor Control System – Backup Pump

1. The Contractor shall have a licensed electrician design a simple physical float operated control system for the backup 80 gpm pump. Control panel for the 80 gpm backup pump shall include:
  - a. U.L. listed, 230V, 60Hz, three phase.
  - b. NEMA 4X enclosure,
  - c. Motor start winding control with Hand-Off-Auto selector switch.
  - d. Lighting arrestor.
  - e. Corrosion inhibitor.
  - f. Visible green colored power on and pump-running lights.

G. Level sensor system for the VSDCPT 8-8 primary pumps shall be EPG Companies, Inc. LevelMaster or approved equal. Sensor system shall include:

1. Submersible pressure transmitter of 316 stainless steel and Viton construction.
2. Operating range of 0 to 15 feet of water with a 4 to 20 mA output signal.
3. Intrinsically safe transmitter circuitry.
4. Shielded single cable with vent tube with chemical resistant polyurethane cable jacket.
5. 3 1/2 digit LED display.
6. Temperature and atmospheric pressure compensation.
7. Minimum of 3 high and 3 low display/alarm/activation set points.

H. Flow Sensor capable of measuring a range of no less than 1 to 280 gpm:

1. EPG Paddlewheel Flow Sensor, Model EP20P04F20F20S, 2", with Sch80 PVC flanged ends, and paddlewheel sensor with 25' lead.

I. Breakout Boxes are factory supplied used to connect the power and control cables to the pump controller. The Contractor shall provide the following EPG Breakout Boxes:

1. EPG Breakout Box, Model BJBP525 NEMA 4X non-metallic enclosure for Motor lead, with SureSeal connectors.
2. EPG Breakout Box, Model BJBL625B, NEMA 4X non-metallic enclosure, junction box for level sensors. Includes desiccant dryer, bellows, and SureSeal connectors.
3. EPG Breakout Box, NEMA 4X non-metallic enclosure for flow sensor, with connection terminals.

J. Motor Leads and Cables

1. Motor lead cable (25' without field splices).
2. Level sensor lead cable (25' without field splices).
3. Flow meter cable (25').

~~K. Instrumentation~~

L. Additional appurtenances: For pump installation, the Contractor may provide the methods of connection that he or she chooses as long as the resulting system is water tight, durable, corrosion resistant, and does not use dissimilar metals. PVC fittings shall not be used. Fittings provided by either the pump manufacturer or Contractor to include:

1. Pump vent.
2. EPG Model DH150-15, stainless steel pump discharge cam-lock quick disconnect fitting.
3. Stainless steel pump pull out cable.
4. 1-1/2", 3" stainless steel braided flex hose for pipe.
5. 1-1/2", 3" stainless steel ball valve
6. 1-1/2", 3" stainless steel check valve
7. 1-1/2", 3" stainless steel cam couplings
8. 1-1/2" x 8-inch dia. well seals for alternating pumps.
9. 2" x 10" dia. well seal for backup pump.

## 2.05 PS-2 LEACHATE PUMP SYSTEM

A. Provide a complete leachate sump pumping system including submersible sump pumps, level controls, and pump control panels as manufactured by EPG Companies, Inc. or approved equal.



- B. Pump and Appurtenances: Provide one (1) submersible pump and motor, EPG Companies, Inc. Sure Pump™ Model WSDPT 2-2 or approved equal as shown on the Contract Drawings.
1. WSDPT 2-2 Pump and motor performance requirements shall be as follows:
    - a. Fluid pumped landfill leachate
    - b. Flowrate, gpm minimum of 12
    - c. Total dynamic head at specified flowrate, ft minimum of 35
    - d. Operating range, gpm 0-14
    - e. Motor size, max. hp 0.5
    - f. Motor type AC Induction
    - g. Motor voltage 230
    - h. Motor phase: Three
    - i. Pump discharge, inch NPT 1-½”
  2. Pump and motor materials of construction shall be as follows:
    - a. All metallic pump components in contact with the pumped fluid stainless steel.
    - b. Pump shaft bearings E-Glide™.
    - c. Impeller seal rings Teflon.
    - d. Check valve housing stainless steel.
    - e. Check valve Stainless steel.
    - f. Check valve seat Teflon.
    - g. Motor-to-pump coupling stainless steel.
    - h. All metallic motor components in contact with pumped fluid Stainless steel.
    - i. Shaft seal, diaphragm, slinger Viton.
    - j. Lead bushing Viton.
    - k. Seal cover Tefzel.
  3. Additional features shall include:
    - a. Pump and motor suitable for installation in either and 12-inch diameter vertical riser pipe or in a leachate sump.
    - b. Motor submersible and hermetically sealed, Franklin motor, or approved equal.
    - c. Motor thermal overload protection in motor windings.
    - d. Motor power cable insulation, no splice, water proof and chemically resistant, EPG Companies, Inc. “CP” or approved equal, of sufficient length to connect motor to control panel with at least 5 feet of slack.
- C. Spares:
1. Provide one (1) spare EPG Companies, Inc. Sure Pump™ Model WSDPT 2-2 or approved equal.

D. Riser Seal:

1. Provide Real Environmental Inc., 2100 Series LCRS Quick Seal.

E. Pump Motor Control System

1. Pump control for the WSDPT 2-2 pump shall be EPG Companies, Inc. Model L925PT Pump Master™ with LevelMaster™ control panel, or approved equal. Contractor shall verify appropriate control panel for pump system. Control panel shall include:
  - a. U.L. listed, 230V, 60Hz, three phase.
  - b. NEMA 4X enclosure,
  - c. Lockable outer door with window, inner door, and stainless steel drip shield.
  - d. Programmed for automatic start/stop/high level alarm.
  - e. Motor start winding control with Hand-Off-Auto selector switch.
  - f. LevelMaster® Level Controller.
  - g. Lighting arrestor.
  - h. Corrosion inhibitor.
  - i. Visible alarm light mounted on top of the cabinet.
  - j. Data recording flow rate totalizer for EPG flow meter.
2. Panel Operation: The pump shall turn on and off as described above: The panel shall have the following enunciator lights:
  - a. Green Solid: Pump ON
  - b. Yellow Solid: High Level Alarm in Leachate Tank
  - c. Red Flashing: High-High Level Alarm in Leachate Tank
  - d. Red Flashing: High Level Alarm in Leachate Sump (Pump Trouble).
3. Initial Level Settings: The L925PT control panel shall be initially programmed with the following levels:
  - a. Pump On: 9”
  - b. Pump Off: 6”
  - c. High Level Alarm: 12”

F. Level sensor system shall be EPG Companies, Inc. LevelMaster or approved equal. Sensor system shall include:

1. Submersible pressure transmitter of 316 stainless steel and Viton construction.
2. Operating range of 0 to 15 feet of water with a 4 to 20 mA output signal
3. Intrinsically safe transmitter circuitry
4. Shielded single cable with vent tube with chemical resistant polyurethane cable jacket

5. 3 1/2 digit LED display
6. Temperature and atmospheric pressure compensation
7. Minimum of 3 high and 3 low display/alarm/activation set points.

G. Flow Sensor capable of measuring a range of no less than 1 to 170 gpm:

1. EPG Paddlewheel Flow Sensor, Model EP15S04M15M15S, 1.5", stainless steel flow spool, with MNPT ends, and paddlewheel sensor with 25' lead.

H. Breakout Boxes are factory supplied used to connect the power and control cables to the pump controller. The Contractor shall provide the following EPG Breakout Boxes:

1. EPG Breakout Box, Model BJBP500 NEMA 4X non-metallic enclosure for Motor lead, with SureSeal connectors.
2. EPG Breakout Box, Model BJBL600B, NEMA 4X non-metallic enclosure, junction box for level sensors. Includes desiccant dryer, bellows, and SureSeal connectors.
3. EPG Breakout Box, NEMA 4X non-metallic enclosure for flow sensor, with connection terminals.

I. Motor Leads and Cables

1. Motor lead cable (75' without field splices).
2. Level sensor lead cable (100' without field splices).
3. Flow meter cable (75').

~~J. Instrumentation~~

K. Additional appurtenances: For pump installation, the Contractor may provide the methods of connection that he or she chooses as long as the resulting system is water tight, durable, corrosion resistant, and does not use dissimilar metals. PVC fittings shall not be used. Fittings provided by either the pump manufacturer or Contractor to include:

1. Pump vent.
2. EPG Model DH150-15, stainless steel pump discharge cam-lock quick disconnect fitting.
3. Stainless steel pump pull out cable.
4. 1-1/2" stainless steel braided flex hose for pipe.
5. 1-1/2" stainless steel ball valve
6. 1-1/2" stainless steel check valve
7. 1-1/2" stainless steel cam couplings

8. 2" stainless steel mail cap, fitting and dust cap for back-up stinger pipe.
9. 1-1/2" x 8-inch well seal for pump.
10. 2" x 8" well seal for stinger pipe.
11. Either stainless steel, SDR 11 HDPE, Class

#### 2.06 VALVE BOXES

- A. Valve boxes shall be Christy type G-5, 12-inch nominal diameter valve box.

#### 2.07 PUMP PANEL STAND

- A. The pump control panel stand legs shall be constructed with 4" x 6" nominal dimension pressure-treated posts.
- B. The pump control panel backer board shall be 5/8 inch ACX plywood, painted with two coats of gray latex paint (including the edges).
- C. Fasteners shall be 3 to 4-inch stainless steel (or other corrosion resistant material) screws.

### **PART 3 - EXECUTION**

#### 3.01 EXAMINATION

- A. The Contractor shall retain the services of a licensed electrician to locate the circuit breaker panel near the existing transformer and verify that there is adequate amperage to install the pump.
- B. The Contractor shall design provide and assemble the miscellaneous fittings needed to assemble and install the pump, drip pipe cables, check valve, ball valves, cam locks complete in place and ready to use.

#### 3.02 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. [Bevel plain end pipe.]
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

#### 3.03 DESIGN BUILD ELECTRICAL AND CONTROLS COORDINATION

- A. The Contractor's Electrician shall design any required modifications to the existing electrical panel to supply power to the panels described in this specification.

- B. The design shall include a telemetry that is compatible with the EPG pump panel, and provides stability and reliability for the distance from the existing phone line to the new control panel.
- C. The Contractor's Electrician shall design the PS-1 80 gpm back-up pump control system described in this specification.

### 3.04 GENERAL INSTALLATION

- A. The Contractor shall retain a licensed contractor to verify existing circuit breaker and if needed, install a properly sized circuit breaker in the electrical service located near the existing transformer and verify existing buried electrical conduit to the control panel for the pump.
- B. Coordinate with other electrical and controls work. The panels shall be grounded as required by local and national electrical codes.
- C. Install barbed fitting on pump outlets and attach flexible drop pipe using 2 stainless-steel hose clamps. Affix stainless-steel safety cable to connection point on pump. Connect electrical cable to pump using water proof connections. Affix safety cable, and electrical and control cable to drop pipe using heavy duty nylon wire ties. Trim off excess wire tie. Install pump so that it sits upright in the bottom of the sump.
- D. General
  - 1. Install in accordance with manufacturer's instructions.
  - 2. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
  - 3. Route piping in orderly manner and maintain gradient.
  - 4. Group piping whenever practical at common elevations.
  - 5. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
  - 6. Provide clearance for installation of insulation and access to valves and fittings.
  - 7. Provide access where valves and fittings are not exposed.
  - 8. Provide support for utility meters.
  - 9. Excavate and backfill in accordance with General Notes for work of this Section.
  - 10. Install valves with stems upright or horizontal, not inverted.

### 3.05 SPECIFICATIONS ON DRAWINGS

- A. The contractor shall coordinate the work described in this Section with general specifications shown on the drawings, included but not limited to the work described in Article 1.03 – Scope above.

### 3.06 PANEL STANDS

- A. The panel stands shall be plumb and square.
- B. The Contractor may apply Unistrut cross members and fitting as needed.

### 3.07 APPLICATION

- A. Use grooved mechanical couplings and fasteners only in accessible locations.
- B. Install unions downstream of valves and at equipment or apparatus connections.
- C. Install gate or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- D. Install ball valves for throttling, bypass, or manual flow control services.
- F. Provide spring loaded check valves on discharge of water pumps.

### 3.08 PUMP ELECTRICAL AND CONTROL CABLES

- A. The Factory provided pump electrical and control cables must not be spliced or cut.
- B. The Cables may be run loose up from the sump to the top of the slope, but must be protected from degradation by sun and displacement by wind.
- C. To prevent landfill gas from migrating through conduits, the end of the conduit near the sump and panel must end and loose cables run from the conduit to the connection (breakout boxes) on the panel.

### 3.09 PUMP INSTALLATION

- A. For this installation, the pumps shall be inserted vertically into the PS-1 leachate sump. The PS-2 pump will be placed in sump riser in a horizontal configuration.
- B. The PS-1 Pump shall be inserted so that the bottom is suspended 2 inches above the bottom of the sump. The PS-2 pump shall be inserted so the entire pump is approximately 2 feet past the bend at the bottom of the riser pipe (to ensure pump is in the sump).
- C. A coil of pump power and control cable with enough slack to remove pump shall be left adjacent to the PS-2 sump. The coil shall hung on the side of the sump in a neat coil.

- D. A well seal shall be provided so that the pump-insertion point (including cables and drop pipe is water tight.

### 3.10 FUNCTION TESTING

- A. The Contractor shall test the function of the pump and ensure that it is working properly. The Owner shall only be requested to observe operation after the Contractor has tested the system corrected any deficiencies and is satisfied that the pump and control panel function as required.
- B. Potable water shall be used for the function testing.
- C. The Contractor shall perform the following tests:
  - 1. Demonstrate that the pump turns on and off at the set points described.
  - 2. Disconnect the power to the pump and verify that the high level alarm works properly and the reconnect the pump (or a similar method determined by the Contractor).
  - 3. Pump enough water through the pump so that the entire line is full of water then charge the line to 30 to 50 psi and pressure test the line. The pressure shall not drop more than 2 psi in 30 minutes. Before and during the test inspect all fittings for leaks.
  - 4. Repeat the above test in the presence of the Owner.

### 3.11 PROGRAMMING AND INSTRUCTION

- A. A technician, trained by the pump panel manufacturer shall verify the initial setting and provide no less than four hours of onsite training for the landfill staff. This work may be performed concurrently with start-up testing.

## **PART 4 – MEASUREMENT AND PAYMENT**

### 4.01 MEASUREMENT AND PAYMENT

- A. General: Payment will include all labor, materials, equipment, taxes, shipping charges, superintendence and incidentals to install the work complete in place.
- B. Installation of Leachate Pumps: Purchase and installation of the leachate sump pumps, control panels and appurtenances, testing and training, complete in-place will be on a lump-sum basis as described in the Base Bid Package under Pump Station 1; “Install 2, 40-gpm pumps and flow meter”, “Provide 1, spare 40-gpm pump complete (alternate deductive)”, “Install duplex pump control panel”, “Install 1 80-gpm pump and flow

meter”, and “Install 1 simplex pump control panel”, and under Pump Station 2; “Install ½-HP pump, flow meter, and 1.5 inch insulated discharge piping with heat tracer”, “Provide 1 spare ½-HP pump complete”, and “Remove 2 pump control panels and plywood and replace with 1 simplex pump panel on new plywood”.

- C. Any conduit and wire required for leachate collection pump systems are incidental to the installation of the leachate pumps and shall be included in the bid price for the pump systems.
- D. Measurement and Payment for Mobilization shall be under the lump sum bid item “Mobilization” in the Base Bid Package.
- E. Measurement and Payment for leachate management shall be under the lump sum bid item “Leachate Management” in the Base Bid Package.
- F. Measurement and Payment for pump removal and pump enclosure removal at Pump Station 1 shall be under the lump sum bid item “Remove 3 pumps, 3 pump control panels, and remove and stockpile fiberglass pump enclosure” in the Base Bid Package.
- G. Measurement and Payment for Pump Station 1 leachate inflow line improvements shall be under the lump sum bid items “Remove heat tracing, pipe insulation and replace with new, on 6-inch leachate inflow line”, “Remove existing wood pipe supports for 6-inch leachate inflow line and replace with concrete supports”, “Replumb existing inline flow meter for 6-inch leachate inflow line”, and “Refurbish existing leachate control valve assembly” in the Base Bid Package.
- H. Measurement and Payment for work on the leachate risers at Pump Station 2 shall be under the lump sum bid items “Excavate and cut ends of 12-inch leachate and leachate leak det. riser pipes and install new sections and flanges” and “Slope ground surface at leachate riser are to drain at 2% towards gravel road” in the Base Bid Package.
- I. Any work not specifically described in a bid item shall be included in the bid item most appropriate for the work in the Contractor’s proposal. No additional payment will be made for unassigned work.

**END OF SECTION**