

# WASTEWATER SYSTEM IMPROVEMENTS PRELIMINARY ENGINEERING REPORT

FEBRUARY 2020



Prepared for the  
City of John Day, Oregon

**WASTEWATER SYSTEM IMPROVEMENTS**

**PRELIMINARY ENGINEERING REPORT**

**FOR**

**CITY OF JOHN DAY, OREGON**

**2020**



**ANDERSON PERRY & ASSOCIATES, INC.**

**La Grande, Redmond, and Hermiston, Oregon  
Walla Walla, Washington**



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# Chapter 1 - Background

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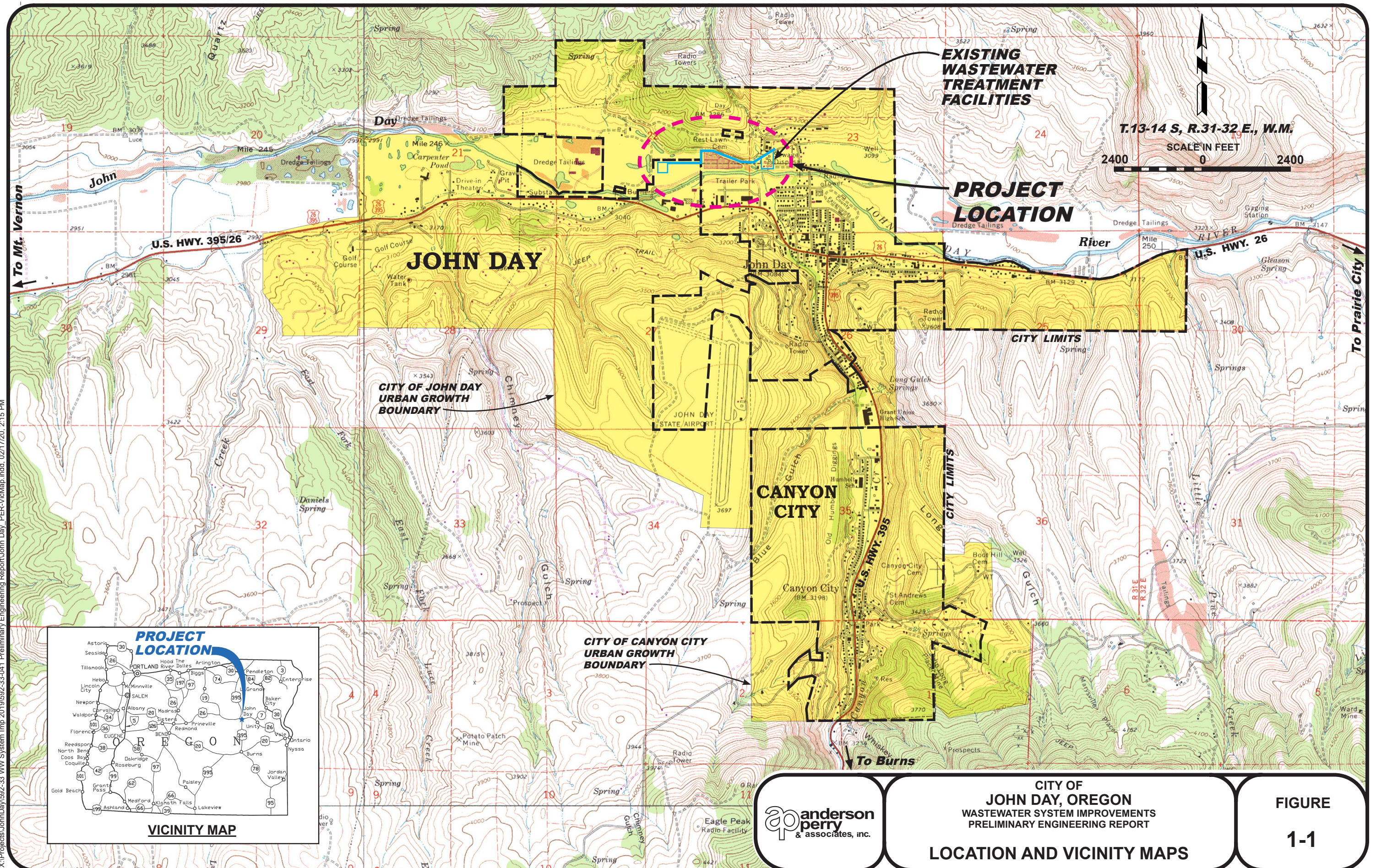
The City of John Day, Oregon, owns and operates a trickling filter wastewater treatment facility (WWTF). Currently, the City's wastewater system serves a population of 2,440 residents and several small commercial establishments in the Cities of John Day and Canyon City. The wastewater collection and treatment system operates under the authority of a Water Pollution Control Facilities (WPCF) Permit issued by the Oregon Department of Environmental Quality (DEQ). The WPCF Permit authorizes the City to discharge disinfected secondary treated effluent on site using percolation ponds. Refer to the City of John Day, Oregon, 2019 Wastewater Facilities Plan (WWFP) Update for more information about the existing WWTF.

Due to aging infrastructure and more stringent current and anticipated future wastewater treatment requirements, the WWFP Update recommended the abandonment of the old WWTF. The City's selected alternative for a new water reclamation facility (WRF) involves the design and construction of a new membrane bioreactor (MBR) mechanical treatment facility with aerobic digestion, coupled with a purple pipe effluent reuse system and continued discharge into the existing percolation ponds, as needed, until a new permit is issued by the DEQ. The MBR components of the new WRF will be obtained via a packaged MBR treatment facility procurement process. Refer to the MBR Procurement Request for Proposals in Appendix A for details on the components to be supplied as a part of the package MBR mechanical treatment facility through the procurement process.

The purpose of this Preliminary Engineering Report is to outline the options considered and the design decisions made for each major process component in this pre-design phase and present the design and performance criteria used in the pre-design of the City of John Day's new WRF. Location and vicinity maps for the proposed facility are shown on Figure 1-1, while a tax lot map for the proposed facility is shown on Figure 1-2.



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CITY OF  
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LOCATION AND VICINITY MAPS

FIGURE  
1-1

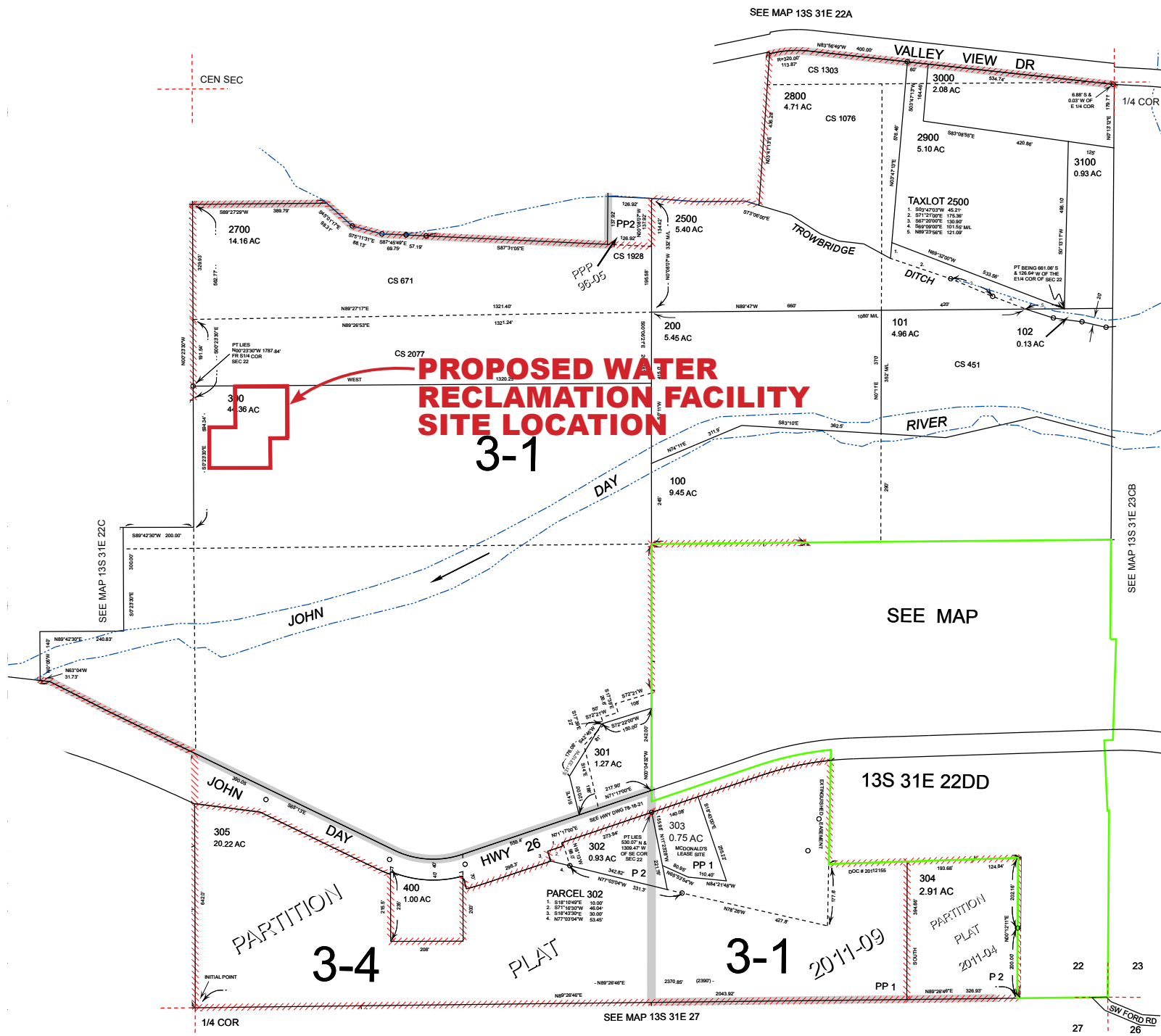


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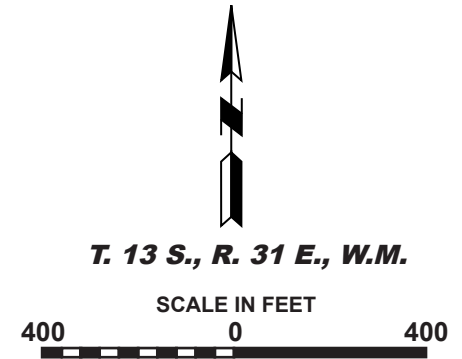
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TAX LOT MAP 13S31E22D

FIGURE  
1-2

# Chapter 2 - Design and Performance Criteria

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## Design Criteria

The design flows for the new water reclamation facility (WRF) were determined in the 2019 Wastewater Facilities Plan (WWFP) Update. These flows are summarized on Table 2-1.

**TABLE 2-1**  
**SUMMARY OF DESIGN FLOWS AND LOADINGS**

Design Parameter	Flow (MGD)	BOD (lbs/day)	TSS (lbs/day)
Average Annual	0.233	471	430
Maximum Month	0.302	610	557
Maximum Day	0.420	-	-
Flood Flow	1.200	-	-

*BOD = biochemical oxygen demand*

*lbs/day = pounds per day*

*MGD = million gallons per day*

*TSS = total suspended solids*

Table 2-1 will be referenced throughout this Report to explain how each major process component was sized for the new WRF. The maximum day flow and the peak hour flow have both been updated based on additional information provided since completion of the WWFP Update. The maximum day flow has been updated to 0.420 MGD instead of 0.660 MGD because the 0.660 MGD flow was a rare occurrence and has since been classified as a flood flow. The peak hour flow was updated to 1.2 MGD instead of 1.05 MGD because a 1.2 MGD flow event occurred after the completion of the WWFP Update.

The use of a membrane bioreactor (MBR) mechanical treatment facility coupled with ultraviolet (UV) disinfection will allow the City of John Day to produce Class A effluent. Refer to Figure 2-1 for the monitoring and treatment requirements of each class of recycled water, along with the beneficial use allowed under Oregon Administrative Rules (OAR) 340-044 for each class.

## Performance Criteria

In addition to the requirements for Class A recycled water, performance criteria were established for the new WRF. These criteria were developed based on typical capabilities of an MBR system and anticipated future requirements. Refer to Table 2-2 for the developed effluent performance criteria.

**TABLE 2-2**  
**WATER RECLAMATION FACILITY EFFLUENT PERFORMANCE CRITERIA**

Monthly BOD <sub>5</sub> (mg/L)	10
Monthly TSS (mg/L)	10
Total Nitrogen (mg/L)	5
Total Phosphorus (mg/L)	1
Average Daily Turbidity (NTU)	Less than 2
No more than 5 NTU 5 percent of the time in one day.	
No more than 10 NTU at any time.	
Median Coliform Organisms (Number of organisms per 100 mL)	Less than 2.2
No sample to exceed 23/100 mL	

*BOD<sub>5</sub> = Five-day biochemical oxygen demand*

*mL = milliliters*

*mg/L = milligrams per liter*

*NTU = nephelometric turbidity unit*

## Solids Disposal Requirements

The disposal of biosolids is controlled by Oregon Administrative Rules (OAR) 340-50. This rule governs land application of biosolids and categorizes biosolids into several classes based on standard of treatment. Each class restricts the method of disposal that can be used. The John Day WRF will produce biosolids that would meet Class B criteria. The City of John Day would initially send all produced biosolids to a landfill. However, the City may later choose to dispose of its biosolids in a different manner compliant with OAR 340-50. If the City anticipates any such changes to its biosolids disposal, the City will first inform the Oregon Department of Environmental Quality of its intent in writing.

## Reliability Criteria

Reliability classifications for wastewater treatment plants are published in Technical Bulletin EPA-430-99-74-001 "Design Criteria for Mechanical, Electric, and Fluid System and Component Reliability," Supplement [sic] to Federal Guidelines: Design, Operation, and Maintenance of Wastewater Treatment Facilities. Reliability classifications are as follows:

Class I. Treatment works which discharge into navigable waters that could be permanently or unacceptably damaged by effluent which was degraded in quality for only a few hours. Examples of Reliability Class I treatment works might be those discharging near drinking water reservoirs, into shellfish waters, or in close proximity to areas used for water contact sports.

Class II. Treatment works which discharge into navigable waters that would not be permanently or unacceptably damaged by short-term effluent quality degradation but could be damaged by continued (on the order of several days) effluent quality degradation. An example of a Reliability Class II treatment works might be one which discharges into recreational waters.

Class III. Treatment works not otherwise classified as Reliability Class I or Class II.



Component requirements for backup or redundancy and for reliability of service are based on the specific reliability class. A general summary of requirements for various treatment units is shown on Table 2-3, modified from Environmental Protection Agency (EPA) Publication 430/9-84-004 (CG-85) to apply to an MBR system. The EPA manuals contain considerably more details to be considered during design of facilities, but, generally, the table summarizes the specific needs to be addressed by providing multiple components, which implies the needs having the greatest cost impact.

Though the City of John Day's WRF will not discharge to Waters of the State, the facility will be constructed with Class II reliability as outlined by the EPA because Class II reliability provides for easier operation and maintenance of the facility.

**TABLE 2-3  
WASTEWATER TREATMENT SYSTEM RELIABILITY CRITERIA**

<b>Features Common to Class I, II, and III</b>			
Trash removal or comminution - Required.			
Grit removal - Required for works that pump or dewater sludge.			
Provisions for removal of settled solids - Required for channels, pump wells, and piping prior to degritting or primary sedimentation.			
Holding basin - When provided in conjunction with Class I reliability, must have adequate capacity for all flows.			
Unit operation bypass - Required unless multiple units are provided and operating unit can handle peak flow; required for comminutors regardless of the number of units.			
<b>Component Backup Features Required</b>	<b>Class I</b>	<b>Class II</b>	<b>Class III</b>
Backup bar screen for mechanically cleaned bar screen	Yes	Yes	Yes
Backup pump	Yes	Yes	Yes
MBR treatment train	Multiple trains	Multiple trains	Single train permissible
Aeration blowers or mechanical aerators	Multiple units	Multiple units	Minimum two
Air diffusers	Multiple sections	Multiple sections	Multiple sections
UV disinfection trains	Multiple trains	Multiple trains	Multiple trains
Electric power system	Sufficient to operate all vital components at peak flow conditions, with critical lighting and ventilation	Same as Class I, except secondary units need not be served if primary treatment and disinfection are provided	Sufficient to operate screening, main pumps, MBR treatment train, and disinfection at peak flow, with critical lighting and ventilation

## Operation of Existing Plant

The new WRF will be constructed at a new site, with a gravity collection system piping wastewater from the existing site as presented on Figures 2-2 through 2-5. During construction of the new facility, the existing wastewater treatment facility (WWTF) will remain operational until the new WRF is

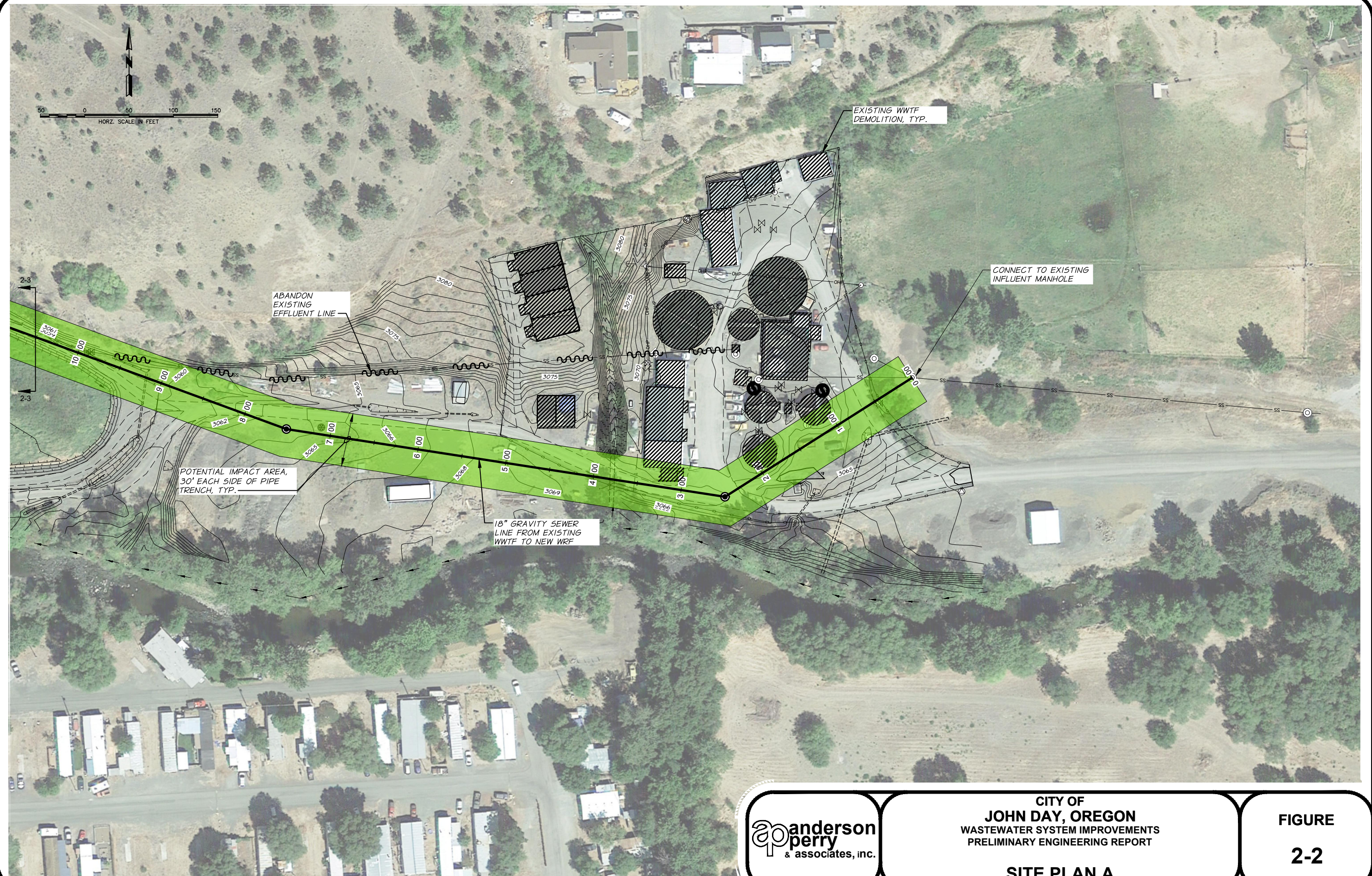
constructed. A new 18-inch gravity sewer line will be constructed from the existing WWTF influent to the WRF site. Once the new WRF is online, the existing WWTF will be decommissioned.

## RECYCLED WATER QUALITY STANDARDS AND REQUIREMENTS

Recycled Water Classification	Beneficial Use Description	Monitoring Requirements	Treatment Requirements
<b>Non-disinfected</b>	Irrigation for growing fodder, fiber, seed crops not intended for human ingestion, or commercial timber.	Per the facility owner's Water Pollution Control Facilities or National Pollutant Discharge Elimination System Permit.	Must be oxidized wastewater.
<b>Class D</b>	Any beneficial use defined above or for the irrigation of firewood, ornamental nursery stock, Christmas trees, sod, or pasture for animals.	Monitoring for <i>E. coli</i> once per week at a minimum. Recycled water must not exceed a 30-day log mean of 126 <i>E. coli</i> organisms per 100 milliliters (mL) and 406 <i>E. coli</i> organisms per 100 mL in any single sample.	Must be an oxidized and disinfected wastewater that meets the monitoring requirements.
<b>Class C</b>	Any beneficial use defined above or for the irrigation of orchards or vineyards (applied directly to the soil), golf courses, cemeteries, highway medians, or industrial or business campuses; industrial cooling, rock crushing, aggregate washing, mixing concrete, dust control, nonstructural fire fighting using aircraft, street sweeping, or sanitary sewer flushing; water supply source for landscape	Monitoring for total coliform organisms once per week at a minimum. Recycled water must not exceed a median of 23 coliform organisms per 100 mL, based on results of the last seven days that analyses have been completed, and 240 total coliform organisms per 100 mL in any two consecutive samples.	Must be oxidized and disinfected wastewater that meets the monitoring requirements.
<b>Class B</b>	Any beneficial use defined above or for stand-alone fire suppression systems in commercial and residential buildings, non-residential toilet or urinal flushing, or floor drain trap priming; water supply source for restricted recreational impoundments,	Monitoring for total coliform organisms three times per week at a minimum. Recycled water must not exceed 2.2 total coliform organisms per 100 mL, based on results of the last seven days that analyses have been completed, and 23 total coliform organisms per 100 mL in any single sample.	Must be oxidized and disinfected wastewater that meets the monitoring requirements.
<b>Class A</b>	Any beneficial use defined above or for irrigation for any agricultural or horticultural use; landscape irrigation of parks, playgrounds, school yards, residential landscapes, or other landscapes accessible to the public; commercial car washing or fountains when the water is not intended for human consumption; water supply source for nonrestricted recreational impoundments; artificial groundwater recharge by surface infiltration methods or by subsurface injection in accordance with Oregon Administrative Rule (OAR) Chapter 340, Division 44. Direct injection into an underground source of drinking water is prohibited unless allowed by OAR Chapter 340, Division 44.	Monitoring for total coliform organisms must occur once per day at a minimum. Monitoring for turbidity must occur on an hourly basis at a minimum. Before disinfection, unless otherwise approved in writing by the department, the wastewater must be treated with a filtration process, and the turbidity must not exceed an average of 2 nephelometric turbidity units (NTU) within a 24-hour period, 5 NTU more than five percent of the time within a 24-hour period, and 10 NTU at any time. After disinfection, Class A recycled water must not exceed a median of 2.2 total coliform organisms per 100 mL based on results of the last seven days that analyses have been completed, and 23 total coliform organisms per 100 mL in any single sample.	Must be oxidized, filtered, and disinfected wastewater that meets the monitoring requirements.



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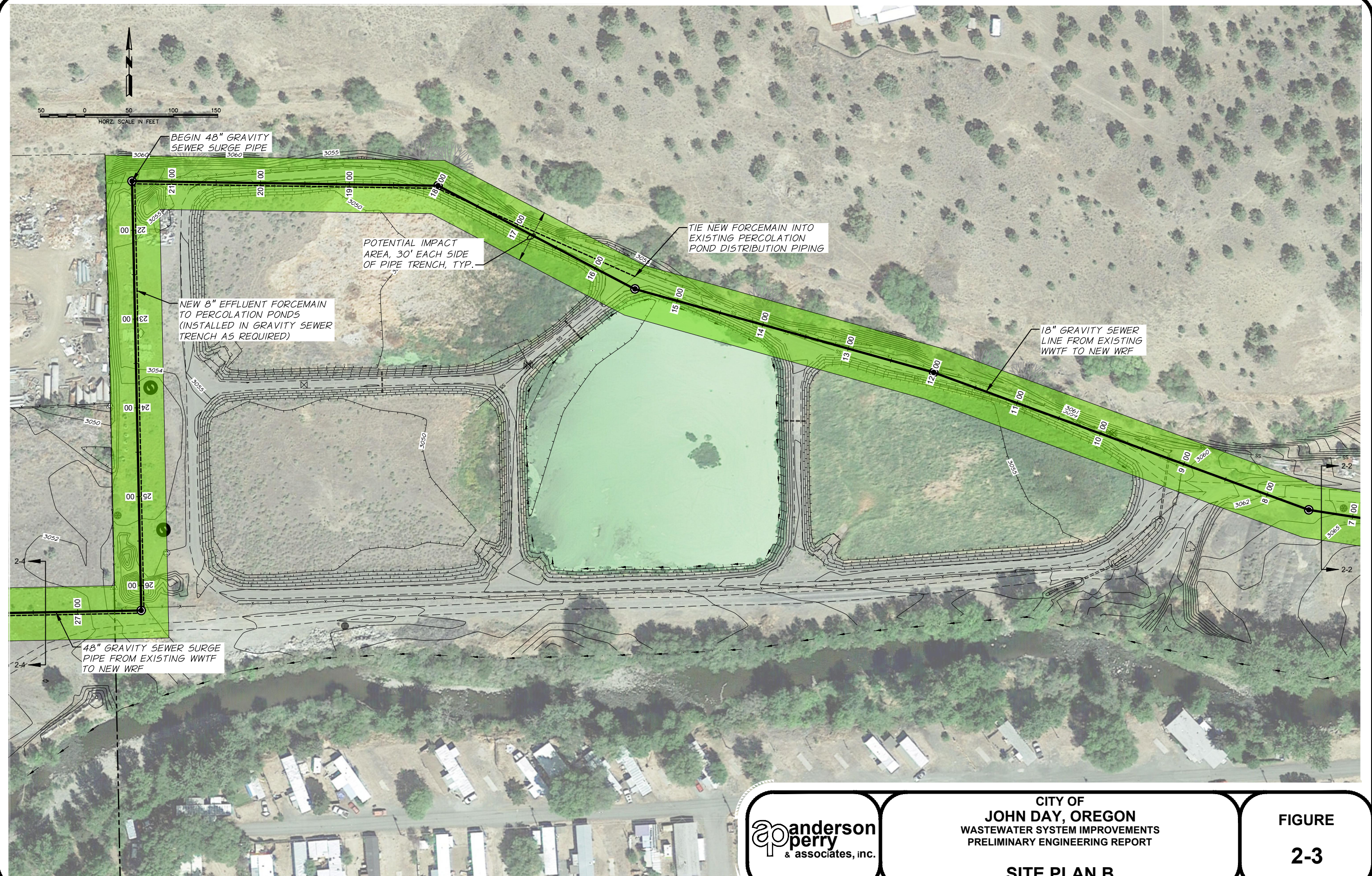
**SITE PLAN A**

**FIGURE**

**2-2**



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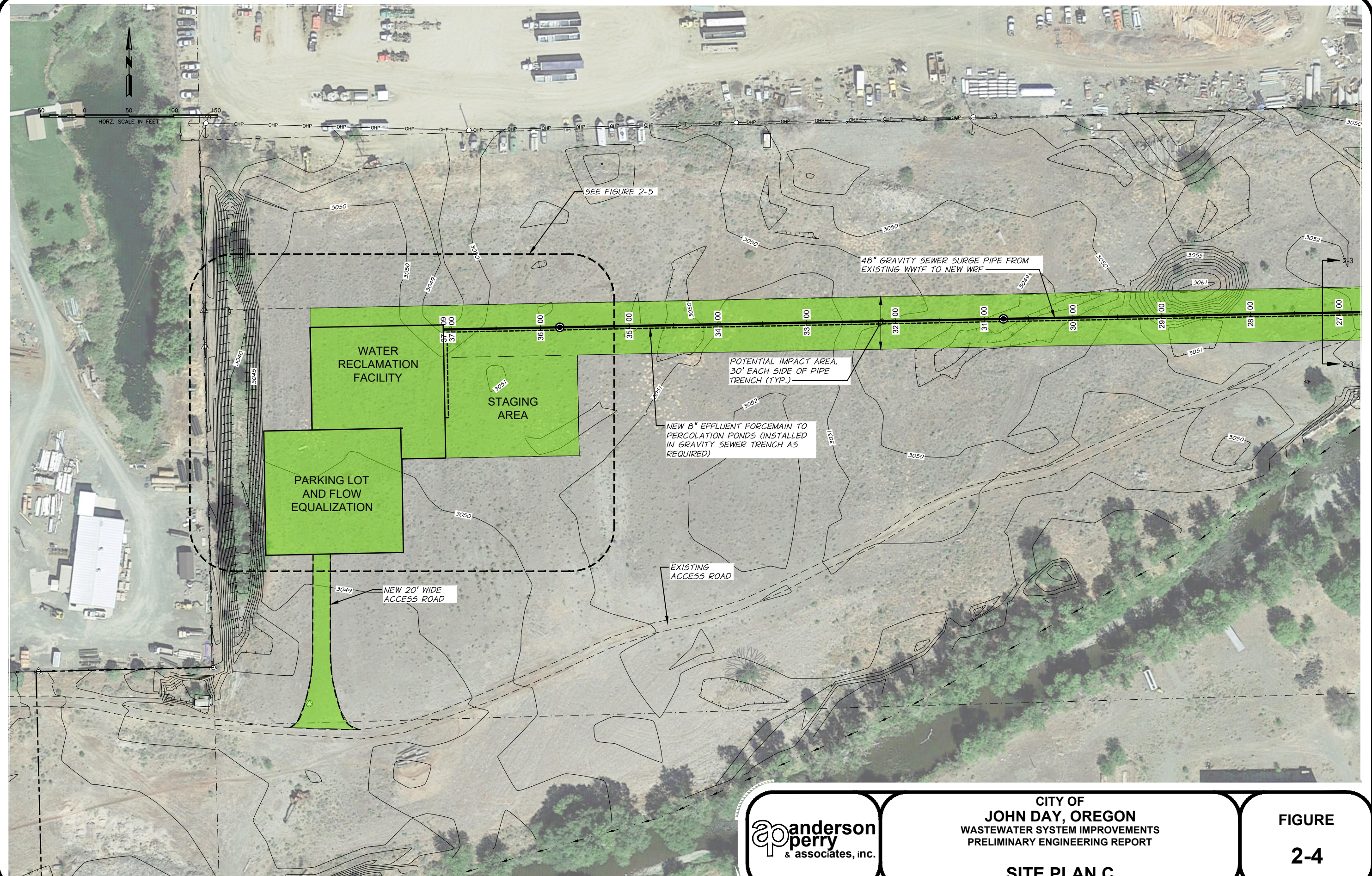
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**SITE PLAN B**

FIGURE  
**2-3**



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**SITE PLAN C**

**FIGURE**  
**2-4**



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**SITE PLAN D**

**FIGURE  
2-5**



# Chapter 3 - Proposed Water Reclamation Facility Description

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## Flow Schematic

The treatment stream and structures specific to the proposed water reclamation facility (WRF) are shown on Figure 3-1 in the Process Flow Diagram, while Figure 3-2 shows the facility's hydraulic profile.

## Headworks and Influent Pumping

Refer to Figure 3-3 for the proposed headworks plan and profile.

### *Flow Equalization*

With the membranes capable of handling up to 0.302 million gallons per day (MGD) of flow, the need to attenuate flows up to maximum daily flow and flows exceeding maximum daily flow (flood flows) were recognized. High flows will be attenuated up to the maximum daily flow of 0.420 million gallons per day (MGD) using oversized influent piping. Flood flows will be conveyed via an overflow weir to the flood pump and then pumped to the enclosed parking lot for temporary storage.

Multiple diameters of oversized pipe were considered to attenuate the maximum daily flow, with a 4-foot diameter pipe recommended. Approximately 1,300 feet of 4-foot diameter pipe is proposed to provide adequate flow attenuation of approximately 0.118 MGD to meet the maximum daily flow requirements. This is the most cost-effective approach considering the other options analyzed, such as a concrete channel or an aboveground storage reservoir.

Flood storage will be required to attenuate the difference between the maximum daily flow and the flood flow (1.200 MGD minus 0.420 MGD, or 104,000 cubic feet [CF]). Flood storage can be accomplished via either constructing a large reservoir or building a concrete wall around the parking lot and using the parking lot for storage. Construction of a separate storage reservoir is cost prohibitive, and these larger flood events are infrequent, so using the parking lot for flood storage is the recommended alternative.

The parking lot for the WRF will be built with a short concrete wall surrounding it to provide enough storage to contain the difference between one day of flood flow at 1.2 MGD and the maximum daily flow of 0.420 MGD. The parking lot will be graded to drain to the corner farthest from the operations building. This corner will have an inlet and outlet pipe in the concrete wall, in addition to a storm line to allow draining storm runoff from the parking lot. The inlet pipe will convey water from the flood pump to the parking lot, while the outlet pipe will convey water by gravity from the parking lot back to the headworks of the WRF. Valving will be provided to prevent stormwater runoff from draining into the WRF. A hydrant connected to the purple pipe network will be provided to permit manual washing of solids from the parking lot as needed. In addition, a manual closure structure will be provided at the vehicle and pedestrian entrances to the WRF parking lot.



Two parking lot wall heights were compared. The two alternatives and their respective dimensions are outlined below.

### **3-foot Wall Height**

- Would require an approximately 35,000 square-foot (SF) parking lot.
- A 120-foot wide by 290-foot long parking lot would provide approximately 70 parking stalls.

### **5-foot Wall Height**

- Would requires an approximately 21,000 SF parking lot.
- A 120-foot wide by 175-foot long parking lot would provide approximately 40 parking stalls.

The 5-foot wall height is recommended because it will reduce the required parking lot area by more than 60 percent while only increasing the amount of required concrete by approximately 20 percent. Forty parking stalls should provide more than adequate parking for the WRF.

### ***Headworks Screening Layout***

Solids screening for the proposed facility could be handled in several ways. Possible alternatives for headworks screening are outlined below. All mechanically cleaned headworks screens will be constructed Type 316 stainless steel.

#### **Alternative 1**

Coarse solids would be removed from the influent using a mechanically cleaned, 6-millimeter (mm) perforation headworks screen sized to screen the maximum daily flow of 0.420 MGD. The overflow channel would be equipped with a manual bar rack to prevent coarse solids from passing through the plant during high flow events. The manual bar rack would be sized to screen the total of the influent pumps, or 0.0454 MGD. This alternative would require implementation of fine solids/coarse grit removal later in the treatment train before the membranes. Fine solids/coarse grit removal could be accomplished via the implementation of screens with 2-mm perforations.

#### **Alternative 2**

Instead of installing and maintaining screens of two different sizes, headworks screening could be accomplished via mechanically cleaned, 2-mm perforation headworks screens. Two redundant screens would be installed in parallel, eliminating the need for a manual bar rack and the separate fine screen. Each screen would be sized to screen the maximum month flow of 0.302 MGD.

Of the two screening alternatives, Alternative 2 is recommended. This alternative would eliminate the need for a manually cleaned bar rack while reducing the variety of required equipment, which, overall, should lower both the capital and maintenance costs of the facility.

## **Headworks Screen Type**

Three types of headworks screen options were considered. These options are outlined below.

### **Ozzy Cup Screen**

An Ozzy cup screen would use a rotating drum consisting of perforated panels to filter out solids. The rotating axis runs perpendicular to the channel. Water flows from the inside of the drum to the outside of the drum through its perforated panels. Refer to Appendix B for more information about the Ozzy cup screen. This screen is typically housed indoors and would require a Class 1, Division 1 building with explosion-proof electrical and corrosion protection on all metal building components. Typical maintenance includes replacing and/or unclogging spray nozzles, lubricating bearings, and inspecting pinion and other moving parts for wear.

Advantages:

- Moving parts are simple, allowing for relatively simple maintenance procedures.
- Relatively inexpensive maintenance.

Disadvantages:

- Requires a screw compactor for solids washing, compacting, and disposal.
- Difficult to provide freeze protection without constructing a building to house the screen.
- Capital cost is much higher than other options without including costs for a headworks building (approximately \$191,400).

### **Perforated Plate Screen**

Uses a track system with perforated plate filter panels that remove solids. The track rotates the filter panels as they capture solids. The panels form a continuous belt on the track system that transports screenings to the discharge location, at which point they are cleaned from the filter panels with a brush and spray nozzles. This screen can be housed outdoors as it is enclosed for odor control. Refer to Appendix C for more information about the perforated plate screen. Freeze protection can be provided by including a Class 1, Division 1 radiant heater located under the front cover of the screen just above the operating floor. The heater would need to be corrosion resistant. Typical maintenance activities include replacing/unclogging wash nozzles, inspecting the brush for wear, and inspecting moving parts for wear.

Advantages:

- Can be rebuilt periodically to extend the screen life.
- Lower maintenance than other alternatives.

Disadvantages:

- Requires a screw compactor for solids washing, compacting, and disposal.
- Capital cost is higher than other options (approximately \$207,000).
- The inclusion of a radiant heater requires additional capital and operation costs.

### **Screw Screen**

A perforated basket captures solids transported via a shaftless auger to the compaction zone where the screenings are washed and compacted. Brushes along the auger help clean the perforated plate and transport solids to the compaction zone. Compacted solids are then bagged or discharged to a dumpster. Refer to Appendix D for more information about screw screens. Freeze protection is typically provided via an insulated jacket and heat tracing. Typical maintenance activities include replacing/unclogging wash nozzles and replacing brushes.

Advantages:

- No screw compactor required.
- Capital cost is lower than other alternatives (typically between approximately \$50,000 and \$100,000).
- Simpler to provide freeze protection.

Disadvantages:

- A deeper headworks structure is required.
- Typical maintenance activities tend to be more frequent than other options.

Of the proposed options, the use of a screw screen is recommended. The reliability of screw screens for smaller treatment facilities has been demonstrated through extensive installations throughout the United States and abroad. The screw screen option should also cost less than the other alternatives throughout its lifecycle. In addition, the screw screen is easier to provide with freeze protection than other options and can function properly should the inlet become completely submerged during high flow events. An automatic sampler will be provided after influent screening to take composite samples of the influent for testing and recording.

### **Metering**

Typically, influent flow rate metering is accomplished at wastewater treatment facilities via an electromagnetic flow meter (mag meter) or a Parshall flume and level sensor combination. Both options have been considered and are outlined as alternatives below.

- Due to the layout of the headworks required to handle peak flood flows, a Parshall flume could not be easily incorporated at the headworks of the WRF without flooding the flume and rendering it useless. However, there is a possibility to locate the flume remotely on the 18-inch gravity sewer influent line before it connects to the 4-foot oversized piping. A 6-inch Parshall flume with an ultrasonic level sensor should be adequate to provide influent

metering. The 6-inch Parshall flume is anticipated to have approximately 11.2 inches of head during the peak hour flow of 1.2 MGD. Locating the flume remotely can cause operational issues, as it is more difficult for the operator to check the flume for obstructions or monitor flow anomalies.

- A mag meter could be more easily located with the headworks. The mag meter would be located on the pipeline running from the influent pumps to the package treatment facility; the influent pumps would be operated by a variable frequency drive (VFD). Locating the mag meter on this pipeline would only measure influent flow rates up to the maximum month flow of 0.302 MGD. Any flows above this would spill over the overflow weir and be pumped to storage. To meter this additional flow, an ultrasonic level sensor would be used to measure the overflow rates. The flow rates measured by the ultrasonic level sensor would then be added to the flow rates measured by the mag meter for the total influent flow rate.

Of the two alternatives, the mag meter is recommended. The ability to locate influent flowmetering at the headworks will improve the ease of recording and reporting flow data and reduce operator time involved with troubleshooting any potential flow anomalies or performing maintenance activities on the metering system.

### ***Influent Pumps***

Three influent pumps and a flood pump will be housed in the headworks. The influent pumps will be capable of pumping at 105 gallons per minute (gpm) each. The influent pumps will be equipped with a VFD and will be flow-paced based on the water level in the influent pump station wetwell. At least one pump will always be in standby should one of the other pumps cease operation. A programmable logic controller (PLC) will record the run time of each pump so the operator can monitor pump use and rotate the lead and lag pumps as necessary. An ultrasonic level sensor will monitor the water level in the influent wetwell and flow-pace the influent pumps based on that water level. In addition to the ultrasonic level sensor, emergency high water level and low water level float switches will be included. A minimum wetwell volume of 70 CF is required to prevent excessive start/stop of the influent pumps. However, 70 CF is not large enough to fit all three influent pumps and their respective equipment, so the wetwell operational volume will be increased to 330 CF.

The influent pump station could use either submersible pumps or centrifugal pumps in a wetwell/drywell setup. Because centrifugal pumps in a wetwell/drywell setup would require additional infrastructure and likely require a confined space permit, the use of submersible pumps is recommended. The submersible pumps would be non-clog pumps capable of passing solids sized up to 3 inches. The submersible pumps would be mounted on rails for easy retrieval from the ground surface for maintenance operations.

The flood pump will be capable of pumping at 625 gpm. The flood pump will be operated via float switches in the flood overflow wetwell. Emergency high water level and low water level float switches will be included. A minimum wetwell volume of 210 CF is required to prevent excessive start/stop of the flood pump. The flood overflow wetwell will be upsized so its dimensions match those of the influent pump station wetwell, with a total operational volume of 330 CF. Though the flood pump could be either a submersible pump or centrifugal pump in a wetwell/drywell setup, a submersible pump will be used for the same reasons as those outlined for the influent pumps. The

flood pump will be a non-clog pump capable of passing solids sized up to 3 inches and will also be mounted on a rail for easy retrieval from the ground surface for maintenance operations.

### ***Infiltration and Inflow Reduction***

As shown on Table 2-1, peak flows are significantly higher than the average annual flow, suggesting that infiltration and inflow (I/I) contribute significantly to wastewater flows. In addition to these typical peak flows, the existing wastewater treatment facility (WWTF) saw its highest influent flows on record during April 2019, with an average monthly flow of 0.828 MGD and multiple consecutive days exceeding 1.0 MGD. This average flow equates to approximately 25 million gallons (MG) or 77 acre-feet of water throughout the month of April. The proposed WRF will not have the capacity to treat such extreme flood flows. In addition, more than 16 MG of storage would be required to attenuate these extreme flows. Construction of storage facilities of this magnitude would be cost-prohibitive, so the sources of I/I must be identified and corrected.

An analysis of the existing collection system must be performed to identify areas that contribute to the overall I/I in the system. Based on flow data received from Canyon City, Canyon City contributed a total of 2,195,000 gallons over a 70-day period from February 21, 2019 to May 2, 2019, showing that Canyon City's contribution to the I/I is minimal. In addition, the manhole at S.W. 6th Avenue required sandbagging to keep the lid in place during April 2019, suggesting that the area of significant I/I contribution is likely confined between Inland Drive and S.W. 6th Avenue. This area, consisting of approximately 3,000 feet of pipe and six manholes, would be inspected via visual inspection of the manholes and television inspection of the pipelines to identify components of the collection system that are significantly contributing to the I/I.

Once identified, components of the collection system contributing to I/I can be replaced with new infrastructure to reduce I/I. Reduction of I/I must occur to eliminate the need to construct expensive storage facilities and may lower the amount of storage required for flow equalization at the parking lot and permit either the construction of a smaller parking lot or a similarly sized parking lot with a shorter concrete wall. A reduction in total I/I may also permit the use of a smaller flood pump.

### **Packaged Treatment Facility**

Because a proposer was not yet selected at the time of the writing of this Report, typical components based on the received proposals are outlined in this section. Actual component sizes and process information may be subject to change based on the final selection by the City. Refer to Figure 3-4 for a proposed Packaged Membrane Bioreactor (MBR) Facility Layout Plan and to Appendix A for additional information about the scope of the packaged MBR mechanical treatment facility.

#### ***Membrane Bioreactor Trains***

The biological treatment component of the WRF will use two MBR trains. Each train will have an anaerobic basin, an anoxic basin, an aerobic basin, and a basin to house the membrane cassettes. Return activated sludge (RAS) recycle will allow biological removal of nitrogen from the wastewater. This RAS recycle can be modified seasonally, if nitrogen is required downstream for the hydroponics treatment facility. Each train's tankage will be sized to provide adequate detention times for the average annual flow.

The anaerobic basin will be covered to help control odors. The anaerobic basin will be contained in the same footprint as the anoxic basin and will contain a mixer to prevent solids settling. The anaerobic mixer will be a submersible mechanical mixer designed to provide mixing without introducing air to the water. The mixer will be mounted on rails to facilitate its removal for maintenance without the need to drain the anaerobic basin.

The anoxic basin will be mixed via an identical submersible mechanical mixer system. Each anoxic basin, combined with each anaerobic basin, will have a total volume of approximately 32,800 gallons.

The pre-aeration basin will be aerated via a diffuser system using fine bubble diffusers. Each fine bubble diffuser will be mounted to permit its removal without draining the entire basin. This basin will also be equipped with a dissolved oxygen sensor that will communicate with the blowers to allow for increased or decreased aeration to provide adequate dissolved oxygen levels for the pre-aeration basin. Dissolved oxygen will be maintained in the pre-aeration basin at concentrations between 1 and 3 milligrams per liter (mg/L). Each pre-aeration basin will have a volume of approximately 12,900 gallons.

Each membrane basin will have enough membrane cassettes to treat half of the maximum monthly flow but will have infrastructure in place to permit the installation of additional cassettes, whose installation would allow treatment up to the average annual flow. When one train must be taken offline for maintenance, the online train will be able to receive cassettes from the offline train as needed until the online train's capacity is at average annual flow. The additional infrastructure in place will also allow for simple future expansion of the WRF capacity if needed. Each membrane basin will have a volume of approximately 42,300 gallons. RAS will flow by gravity from the membrane basins back to the anaerobic basins. All basins will have gravity drains to the headworks of the WRF should any basin require draining for maintenance. A chemical clean in place (CIP) system will be included to permit periodic CIP of the membrane units. One common CIP chemical storage tank with two CIP pumps, one duty pump and one standby pump, will be included. The CIP pumps will be sized according to the membrane manufacturer's recommendations.

### ***Feed Forward Pumps***

Feed forward pumps will be used to facilitate wastewater and RAS. Three feed forward pumps with VFDs, each with a capacity of 1,140 gpm, will be provided. Two of these pumps will be duty pumps, with one pump on standby. Two flowmeters will be provided on the feed forward lines to meter the recycle rate and facilitate its adjustment as needed.

### ***Permeate Pumps***

Permeate pumps will be provided to draw treated wastewater through the membrane units and pump to the effluent pump station. There will be three permeate pumps, two duty and one standby. Each permeate pump will have a capacity of 180 gpm. Permeate pumps will be on VFDs. Two permeate pump flowmeters will be provided to meter and allow adjustment of the permeate pumping rate.

### ***Waste Activated Sludge Pumps***

Waste activated sludge pumps will be provided to permit wasting of the activated sludge from the membrane tanks. There will be two sludge discharge pumps with VFDs provided, one duty pump and one standby pump. Each sludge discharge pump will have a capacity of approximately 20 gpm. One flowmeter will be provided on the sludge discharge line to meter and allow for the adjustment of the sludge wasting rate.

### ***Aerobic Digesters***

Aerobic digestion will be used to condition the sludge and produce Class B biosolids. The solids retention time in the digesters will be maintained between 40 and 60 days, depending on the sludge temperature, to meet pathogen reduction requirements of 40 Code of Federal Regulations Part 503. The aerobic digestors will each have a volume of approximately 30,600 gallons and a mixed liquor suspended solids concentration of 30,000 mg/L. Diffusers in the aerobic digesters will be coarse bubble air diffusers. The diffusers will be retrievable to permit their removal without the need to drain the aerobic digester.

### ***Blowers***

One set of blowers will be provided for the system. The blowers will provide aeration for the pre-aeration basin, membrane scour/aeration for the MBR, and aeration for the aerobic digesters. This set of blowers will include four blowers, three duty blowers and one standby blower. These blowers will each have a capacity of 850 standard cubic feet per minute and will be metered with air flowmeters.

### ***Piping Requirements***

All submerged piping will be Type 316 stainless steel. All piping less than 3 inches in diameter will be stainless steel. Aluminum piping will be permitted for piping less than 3 inches as long as it is properly isolated from dissimilar metals. All piping greater than 3 inches in diameter will be either stainless steel or industrial painted ductile iron coated with a 16-mil urethane paint system as approved by the Engineer.

## **Disinfection**

Typically, disinfection is performed either via chlorination or ultraviolet (UV) radiation. Because the principle treatment mechanism at the WRF will be an MBR, effluent total suspended solids will be very low, which is conducive to effective disinfection via UV radiation. In addition, UV radiation is capable of meeting the disinfection requirements for a Class A effluent. For these reasons, disinfection via UV radiation is recommended. To meet reliability requirements, two UV reactors, each capable of disinfecting the maximum monthly flow, will be implemented.

There are different types of UV lamps that have their pros and cons. Currently, it is industry practice to use either low pressure, high intensity UV lamps or medium pressure, high intensity UV lamps. Each alternative is outlined below.

### ***Alternative 1***

Low pressure lamps typically have lower power requirements per lamp (approximately 0.25 kilowatt [kW]) and produce much less heat per lamp than medium pressure lamps. Lower heat output results in lower fouling rates of the quartz sleeves, which in turn lowers cleaning frequency and related maintenance requirements. In addition, low pressure lamps cost less per lamp (approximately \$300) but require more lamps (approximately 12) to achieve required disinfection levels, which in turn increases the amount of space required for a low pressure lamp system. Low pressure lamps typically have much higher life spans than medium pressure lamps, with some lamps warrantied up to 14,000 hours.

### ***Alternative 2***

Medium pressure lamps require much more power per lamp (approximately 4.2 kW) and produce more heat per lamp, resulting in higher fouling rates and higher energy costs than low pressure lamps. Medium pressure lamps require far fewer lamps (approximately two to four) to achieve the same disinfection as that provided by low pressure lamps but cost much more per lamp (approximately \$1,500). Medium pressure lamp applications are typically used when space constraints are an issue. Medium pressure lamps typically have much lower life spans than low pressure lamps, with some lamps warrantied up to 8,000 hours.

Because space constraints are not a concern for the City's WRF, low pressure lamps are recommended to reduce annual operating costs of the UV system. In addition, the lower fouling rate and longer life span of the low pressure lamps will greatly reduce maintenance requirements and associated costs to the City. Refer to Appendix E for an example comparison of one manufacturer's (Aquafine's) low pressure and medium pressure lamps.

In addition to the various types of UV lamps available, three main reactor options were considered and are outlined below.

### **Closed-vessel Reactor**

The closed-vessel UV reactor system is enclosed in a large pipe fitting. UV lamps are contained in quartz sleeves that protect the lamps from water. Automatic wiper rings periodically clean the quartz sleeves to remove scale buildup. Typical maintenance activities include replacing lamps and/or quartz sleeves as needed and inspecting wiper rings for wear. See Appendix F for brochures about different closed-vessel UV reactors.

#### **Advantages:**

- Smaller overall footprint than other reactor options.
- Automatic wiper rings periodically clean the quartz sleeves.
- Typically less expensive than other options (approximately \$125,000 to \$200,000).
- Less risk of operator exposure to UV light than other options.
- Chemical lamp cleaning can be done "in-line."



Disadvantages:

- Must be installed in a dry location (i.e., indoors).
- Less access to internal parts.

### **Open Channel Reactor**

The open channel UV reactor system is contained in a channel open to the atmosphere. UV lamps are contained in quartz sleeves that protect the lamps from water. Automatic wiper rings periodically clean the quartz sleeves to remove scale buildup. Typical maintenance activities include replacing lamps and/or quartz sleeves as needed and inspecting wiper rings for wear. Refer to Appendix G for more information about a package open channel UV reactor.

Advantages:

- Automatic wiper rings periodically clean the quartz sleeves.
- More access to internal parts.

Disadvantages:

- Higher risk of operator exposure to UV light.
- Larger footprint.
- Higher rate of algae growth.
- Moderately more expensive than other options (approximately \$175,000 to \$250,000).

### **Non-contact Reactor**

The non-contact UV reactor system runs water through transparent “activated fluoropolymer” (AFP) tubes that are transparent to UV light. The AFP tubes are surrounded by UV lamps that disinfect the water. Typical maintenance activities include replacing lamps as needed and manually cleaning the AFP tubes periodically. Refer to Appendix H for more information on the non-contact UV reactor.

Advantages:

- UV lamps are not in contact with water.
  - Eliminates the need for quartz sleeves.
  - Easier access to lamps for maintenance.

Disadvantages:

- Much higher capital cost than other options (approximately \$275,000).
- AFP tubes must be cleaned manually.

Among the options outlined above, closed-vessel UV reactors are recommended. The lower capital cost along with the small footprint will provide cost savings to the City. There will be two closed-vessel UV reactors, each sized to disinfect the maximum month flow of 0.302 MGD. Anticipated transmittance for the recycled water is approximately 79 percent. The anticipated required UV dose to meet Class A effluent requirements is 80 millijoule per square centimeter, based on National Water Research Institute guidelines. The two reactors will be housed in the operations building. A mag meter will be placed just before the UV reactors to measure effluent flow rates and permit modification of UV output based on fluctuations in effluent flow rate. A sample port will be provided on the header coming out of the UV reactors to allow grab sampling of the recycled water.

### ***Recycled Water Reservoir***

The recycled water reservoir will be housed next to the operations building. The reservoir will be sized to store a day's worth of flow at the average annual flow rate of 233,000 gallons per day. This storage capacity will be provided to help account for variable usage rates of recycled water once the future purple pipe network is implemented. Flow rates that exceed the storage capacity of the recycled water wetwell will be conveyed via an overflow pipe to the percolation ponds. The reservoir would be a glass fused, bolted steel reservoir to match the City's most recently constructed water reservoirs. It is proposed to be 19 feet tall and 48 feet in diameter.

### ***Effluent Pumps***

The operations building will house three effluent pumps, each capable of pumping 105 gpm. The effluent pumps will be equipped with VFDs and pressure sensors. The effluent pumps will be operated to maintain a consistent pressure in the recycled water pipeline.

### ***Outfall***

Treated and disinfected water will be pumped to the existing percolation ponds located east of the proposed WWTF. Refer to Figures 2-2 through 2-5 for the proposed location of the effluent forcemain. Improvements involving the implementation of a purple pipe network may be implemented in the future as outlined later in this Report.

### ***Solids Handling***

Solids handling equipment will need to be housed indoors to protect it from inclement weather. Solids, once dewatered, will be transported via auger to a dumpster. The dumpster would need to be removed approximately once per week by the local garbage service and taken to the landfill.

### ***Sludge Thickening***

Wasted solids from the MBR process will be sent to the sludge thickening unit in preparation for solids reduction in the aerobic digesters and then solids dewatering. The purpose of sludge thickening is to reduce the amount of tankage required in the aerobic digester. The sludge thickener will be designed to receive solids at a concentration of approximately 1 percent and thicken them to a solids concentration of approximately 3 percent. The sludge thickener will be constructed of Type 316 stainless steel.

Several sludge thickening options are available that can meet the required parameters for the WRF. These different alternatives are outlined below.

### ***Volute Thickener***

Uses a combination of fixed rings, moving rings, and an Archimedean screw. As the screw forces sludge through the rings, water is drained from the sludge. The moving rings are displaced by the Archimedean screw's rotation, providing self-cleaning. Typical maintenance involves inspecting moving parts for wear. The cylinder of rings must be removed and rebuilt approximately every 10 years. Refer to Appendix I for more information about the volute thickener.

Advantages:

- Low power consumption.
- No need for wash water under normal operation.

Disadvantages:

- More moving parts than other thickeners.
- Higher capital cost than other options (approximately \$139,000).

### ***Trident Wave Separator***

Rotating elliptical wheels push the sludge across a table with thin slits that allow water to drain from the sludge while capturing the sludge on the table's surface. Typical maintenance includes inspecting rotating parts for wear and manually cleaning the table after each use. Refer to Appendix J for more information about the Trident wave separator.

Advantages:

- Low power consumption.
- Much lower capital cost than other options (approximately \$50,000).

Disadvantages:

- More moving parts than other thickeners.
- Requires manual cleaning of the table after each use.

### ***Rotary Drum Thickener***

Sludge is fed into a large rotating drum screen that allows water to drain from the sludge, leaving behind thickened solids. Sprayers clean the screen to prevent it from blinding off. Typical maintenance includes inspecting rotating parts for wear and replacing/unclogging spray nozzles as needed. See Appendix K for more information about the rotary drum thickener.

Advantages:

- Very reliable equipment.
- Less maintenance than other thickeners.

Disadvantages:

- Requires wash water.
- Capital cost is somewhat higher than other options (approximately \$130,000).

Of the three sludge thickening options, the rotary drum thickener is recommended. Though the initial capital cost is higher than that of the Trident wave separator, the ease of maintenance and successful experience with past installations are considered worth the initial investment.

### ***Sludge Dewatering***

Solids from the aerobic digesters will be dewatered to reclaim additional water and reduce the volume of solids sent to the landfill for disposal. Sludge dewatering equipment will be designed to receive sludge at a concentration of approximately 1.5 to 2 percent solids and dewater to a solids concentration of approximately 15 to 20 percent solids. Three options for sludge dewatering equipment have been considered and are outlined below.

#### **Volute Dewatering Press**

The volute dewatering press is similar in design to the volute thickener. The only differences are that the diameter of the Archimedean screw's shaft increases toward the end of the shaft to force more water out of the sludge, and wash water is often required. Typical maintenance involves inspecting moving parts for wear and unclogging/replacing spray nozzles as required. The cylinder of rings must be removed and rebuilt approximately every 10 years. Refer to Appendix L for more information about the volute dewatering press.

Advantages:

- Can dewater without thickening if required.
- Low power consumption.

Disadvantages:

- Requires wash water.
- More moving parts than other options.
- More expensive than other options (approximately \$190,000 to \$260,000).

#### **Screw Press**

The screw press is similar in design to the volute dewatering press. The screw press uses an auger inside of a cylindrical screen. The space between the auger and the screen decreases

toward the end of the press to force more water out of the sludge as it travels through the press. Typical maintenance includes inspecting moving parts for wear and unclogging/replacing spray nozzles as required. See Appendix M for more information about the screw press.

Advantages:

- Very reliable equipment.
- Lower capital cost than other options (approximately \$150,000).

Disadvantages:

- Requires wash water.

### **Fan Press**

Sludge is fed into a dewatering channel between two wedge wire filter plates. Pressure increases as more sludge is fed into the press, and the filter plates squeeze the water out of the sludge. Typical maintenance includes replacing seals every few years and unclogging/replacing spray nozzles as required. See Appendix N for more information about the fan press.

Advantages:

- Smaller footprint than other options.

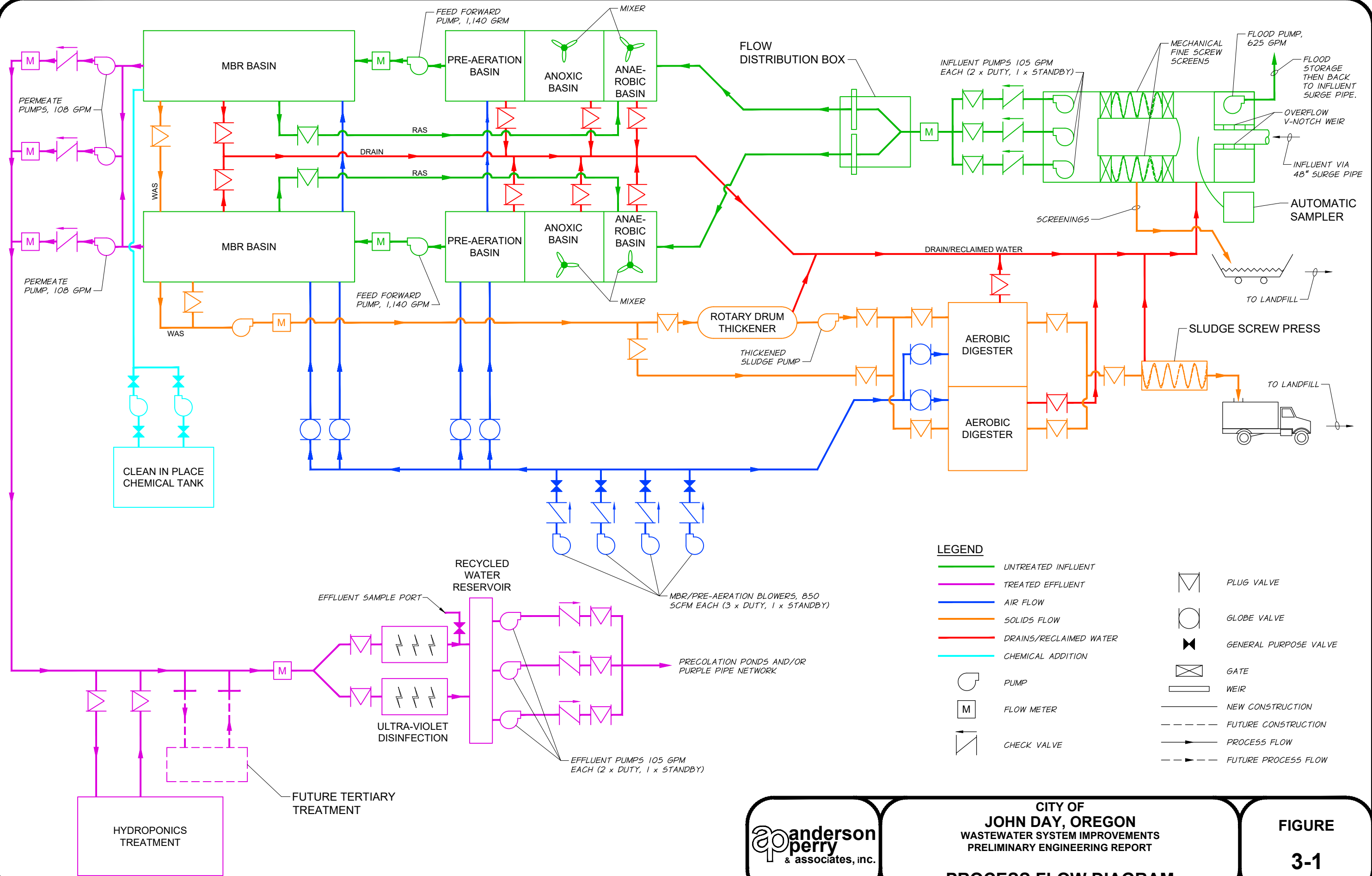
Disadvantages:

- Requires wash water.
- Made of painted steel.
- References from installed equipment indicate a difficulty in maintaining a quality product.

Of the three options, the use of a screw press for sludge dewatering is recommended. The screw press's capital cost is most competitive, has fewer maintenance requirements, and is reliable equipment.

Refer to Figure 3-5 for a preliminary floor plan of the solids handling building with the proposed equipment.

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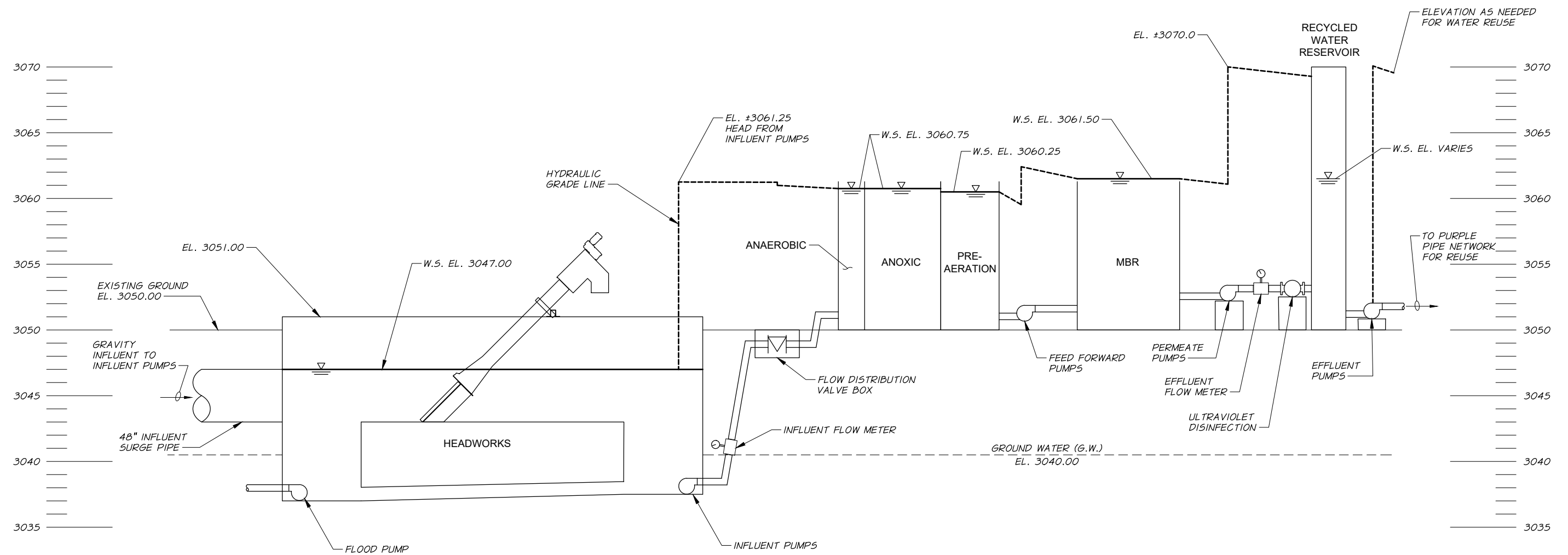


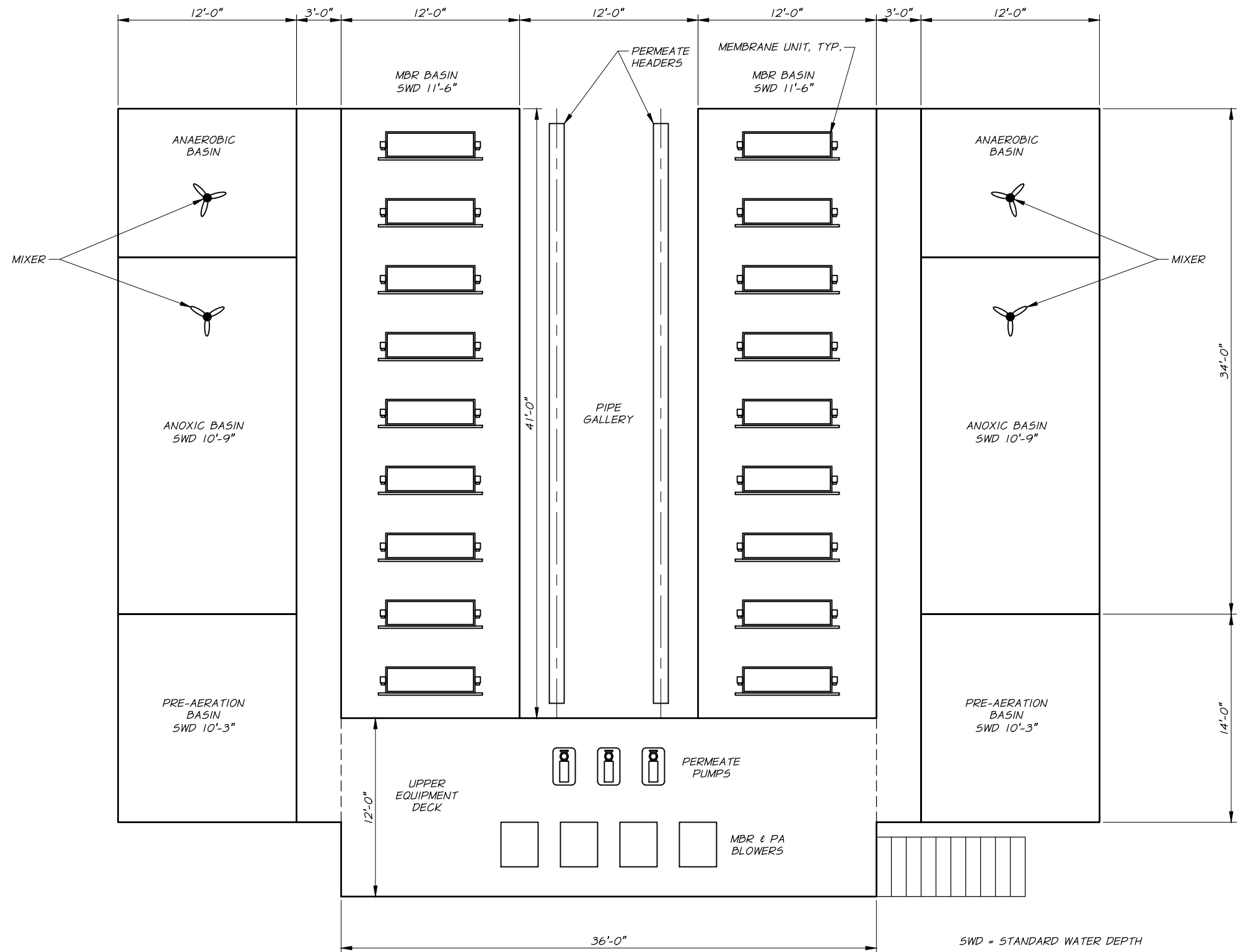
Diagram illustrating the cross-section of a Flood Wetwell structure, showing dimensions and components:

- Dimensions:**
  - Overall width: 6'-0"
  - Overall height: 6'-0"
  - Top section height: 1'-0"
  - Side wall height (left): 3'-0"
  - Side wall height (right): 3'-0"
  - Internal height (left): 5'-0"
  - Internal height (right): 5'-6"
  - Bottom section height: 1'-6"
  - Top section width (left): 2'-0"
  - Top section width (right): 2'-0"
  - Internal width (right): 1'-0"
- Components:**
  - ULTRASONIC LEVEL SENSOR (Left)
  - SCREW SCREEN
  - ULTRASONIC LEVEL SENSOR (Right)
  - TO MBR
  - HIGH LEVEL
  - LOW LEVEL
  - INFLUENT PUMP
  - FLOOD WETWELL DRAIN
  - CONTROL GATE
  - FLOOD PUMP
  - TO EQUALIZATION
  - 48" SURGE PIPE

A horizontal scale bar labeled "SCALE IN FEET" with markings at 4, 0, 4, and 8.



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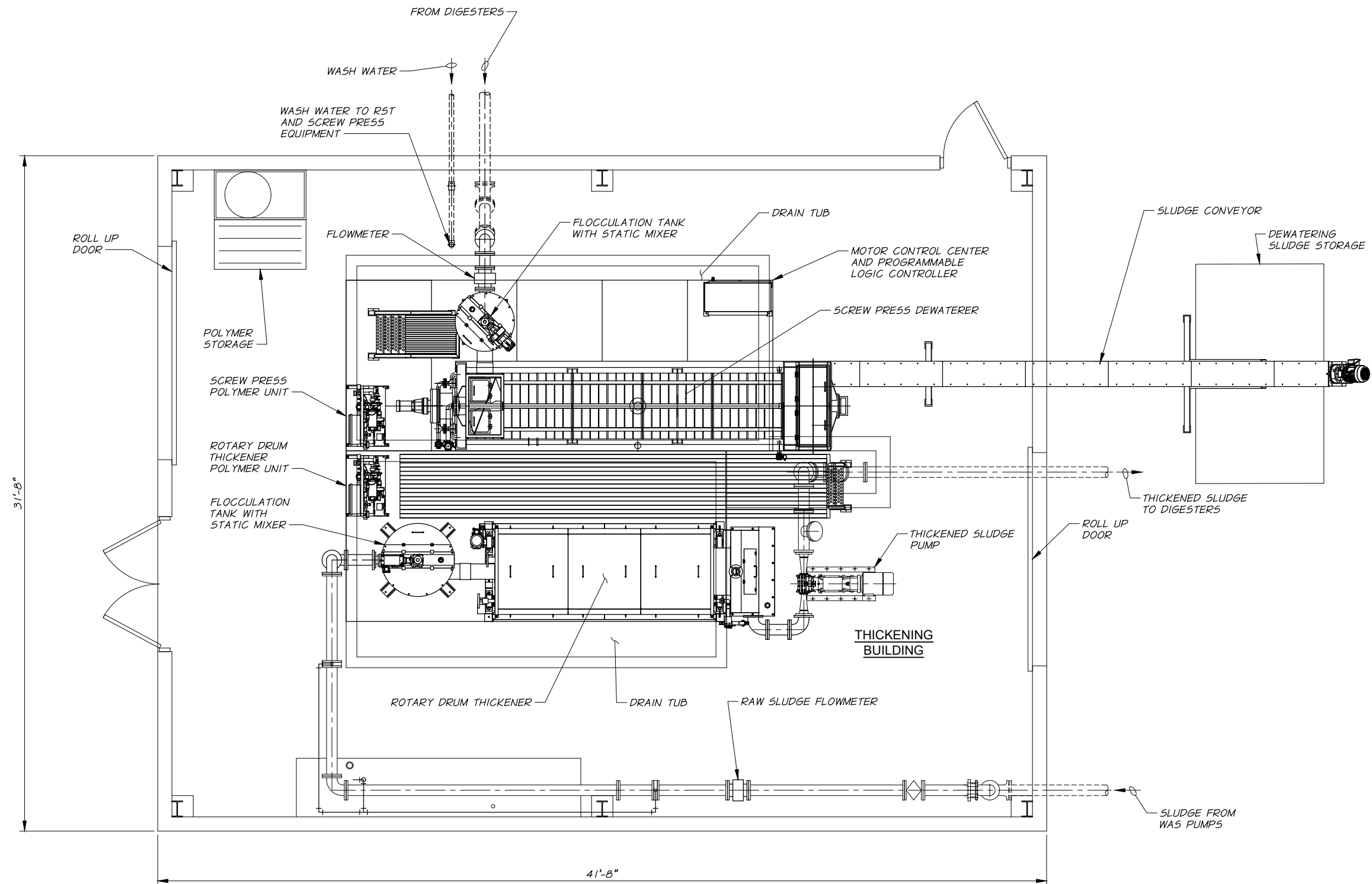
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SCALE IN INCHES

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perry  
& associates, inc.

CITY OF  
**JOHN DAY, OREGON**  
WASTEWATER SYSTEM IMPROVEMENTS  
PRELIMINARY ENGINEERING REPORT  
**PACKAGED MBR FACILITY  
LAYOUT PLAN**

FIGURE  
**3-4**

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CITY OF  
**JOHN DAY, OREGON**  
WASTEWATER SYSTEM IMPROVEMENTS  
PRELIMINARY ENGINEERING REPORT  
**SOLIDS HANDLING FLOOR PLAN**

FIGURE  
**3-5**

# Chapter 4 - Additional Facilities and Site Characteristics

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## Operations Building

An operations building will be provided for the status monitoring and operation of the water reclamation facility (WRF). All process controls and motor control centers (MCC) will be remotely housed in the operations building in the control room. The facility will have a standby power generator to provide continual power in the event the utility feed fails. The operations building will also house a laboratory for sample testing, restrooms, and maintenance facilities for the WRF operator, and an effluent pump room to house the ultraviolet (UV) reactors and the effluent pump station to the purple pipe network. A visitor's center and hydroponics greenhouse will also be included as part of the operations building. See Figure 4-1 for a preliminary floor plan of the operations building.

## Hydroponics Treatment

To help improve the public's perception of wastewater treatment, the City of John Day will include a hydroponic greenhouse as a showcase piece in their new WRF. The hydroponic greenhouse will include a visitor's center that will educate the public on the many potential and/or current uses for the Class A effluent produced by the WRF. The greenhouse will also grow plants that can help remove nutrients from the effluent. The upstream nutrient removal processes in the membrane bioreactor (MBR) trains will be capable of being halted or reduced without impacting the facility's capability to meet its permit requirements should the plants in the greenhouse need more nitrogen for growth.

## Drainage

The site will be constructed outside the 100-year floodplain. Refer to Figure 4-2 for the Flood Insurance Rate Map. In addition, groundwater elevation is noted on the hydraulic profile and will not affect the plant facilities or site drainage.

## Site Security

The site will be secured by a 6-foot chain link fence with three-strand barbed wire around the top. The site will have yard lighting to illuminate each structure at night for security and operation. Yard lighting will be controlled by photocells with switches for manual control by the operator as needed.

## Public Access

The general plant is not designed for public access due to the nature of the equipment and processes being operated. The operation of the facilities will require able-bodied people to work on, in, and around the equipment and structures. The operations building and visitor's center will be Americans with Disabilities Act-compliant for overall public relations.

## Future Effluent Beneficial Use Improvements

Several beneficial uses are approved under Oregon Administrative Rules 340-055 for Class A recycled water. The City intends to develop a purple pipe network that would permit the beneficial use of the Class A recycled water. Some potential uses have been identified and are outlined below.

- Process and log irrigation water at Malheur Lumber.
- Irrigation of City parks and the John Day Golf Club.
- Toilet flushing and fire suppression for a future hotel and other commercial buildings in the City's Innovation Gateway.
- Artificial groundwater recharge by subsurface injection via an underground injection control (UIC) system.

Due to the seasonal and/or inconsistent nature of potential uses of the first three items listed above, implementation of a UIC system is recommended to provide a consistent beneficial use of the recycled water should the demand of other reuse options ever become lower than the recycled water supply. The UIC will consist of a perforated polyvinyl chloride pipe contained in a Stormtech chamber. Refer to Appendix O for additional information about the Stormtech chamber. The invert of the Stormtech chamber will be approximately 5 feet below ground level, while groundwater at this location is approximately 10 feet below ground level. Refer to Figure 4-3 for a site map showing the location of the UIC.

## Operation and Maintenance

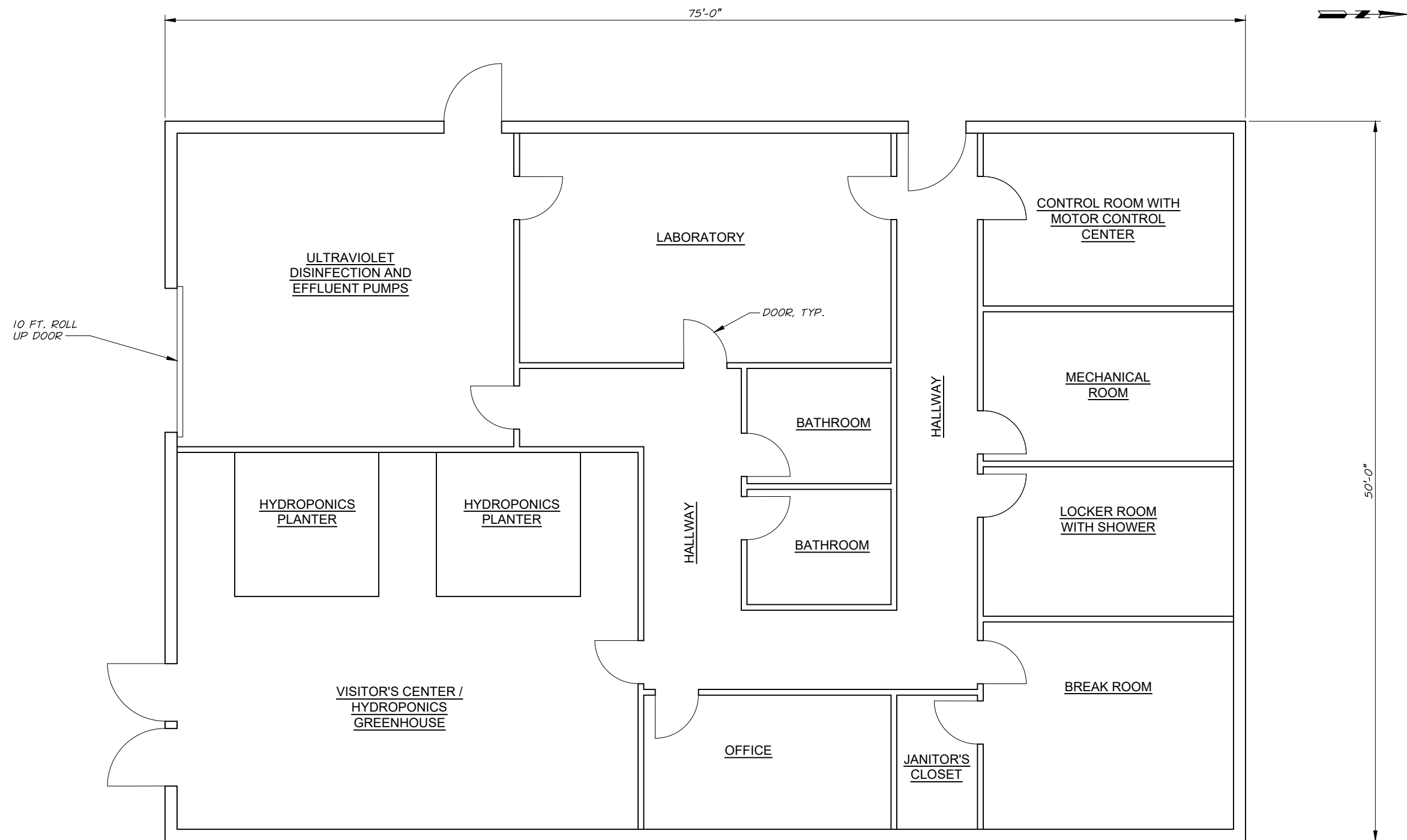
The proposed WRF is anticipated to be a Class III facility, according to OAR 340-049 and will, therefore, require appropriately certified personnel for its operation. Regular operation of the facility will include daily monitoring, sampling as required under the Water Pollution Control Facilities Permit, and facilitating the clean-in-place process of the membrane units as required. The facility will typically be operated at a 5Q recycle rate of wastewater through the anoxic basin, pre-aeration basin, and MBR to facilitate adequate nutrient removal. Typical mixed liquor suspended solids (MLSS) concentrations will range between 11,000 and 13,000 milligrams per liter between the anoxic basin, pre-aeration basin, and MBR. Sludge will periodically be wasted from the MBR tank to maintain the desired MLSS concentration. Wasted sludge will be thickened, conditioned in the aerobic digesters, and then dewatered for landfill disposal.

In addition to regular operation of the facility, regular maintenance will be required. Most equipment maintenance will be performed as recommended by the individual equipment manufacturers or as needed. Typical maintenance activities for major components of the proposed facility are outlined below.

- Screw screen
  - Clean wash nozzles
  - Replace brushes and wash nozzles
  - Lubricate rotating parts

- Pre-aeration basin
  - Replace diffuser heads
- MBR
  - Replace membrane units
  - Replace diffuser heads
- UV Disinfection
  - Clean quartz sleeves
  - Replace UV bulbs
- Rotary Drum Thickener
  - Clean wash nozzles
  - Replace wash nozzles
  - Lubricate rotating parts
- Aerobic Digesters
  - Replace diffuser heads
- Screw Press
  - Clean wash nozzles
  - Replace wash nozzles
  - Lubricate rotating parts
- Pumps
  - Lubricate rotating parts
  - Monitor for wear
- Blowers
  - Lubricate rotating parts
  - Clean blower filters
  - Monitor for wear

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3" 0 3" 6" 9"  
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& associates, inc.

CITY OF  
**JOHN DAY, OREGON**  
WASTEWATER SYSTEM IMPROVEMENTS  
PRELIMINARY ENGINEERING REPORT

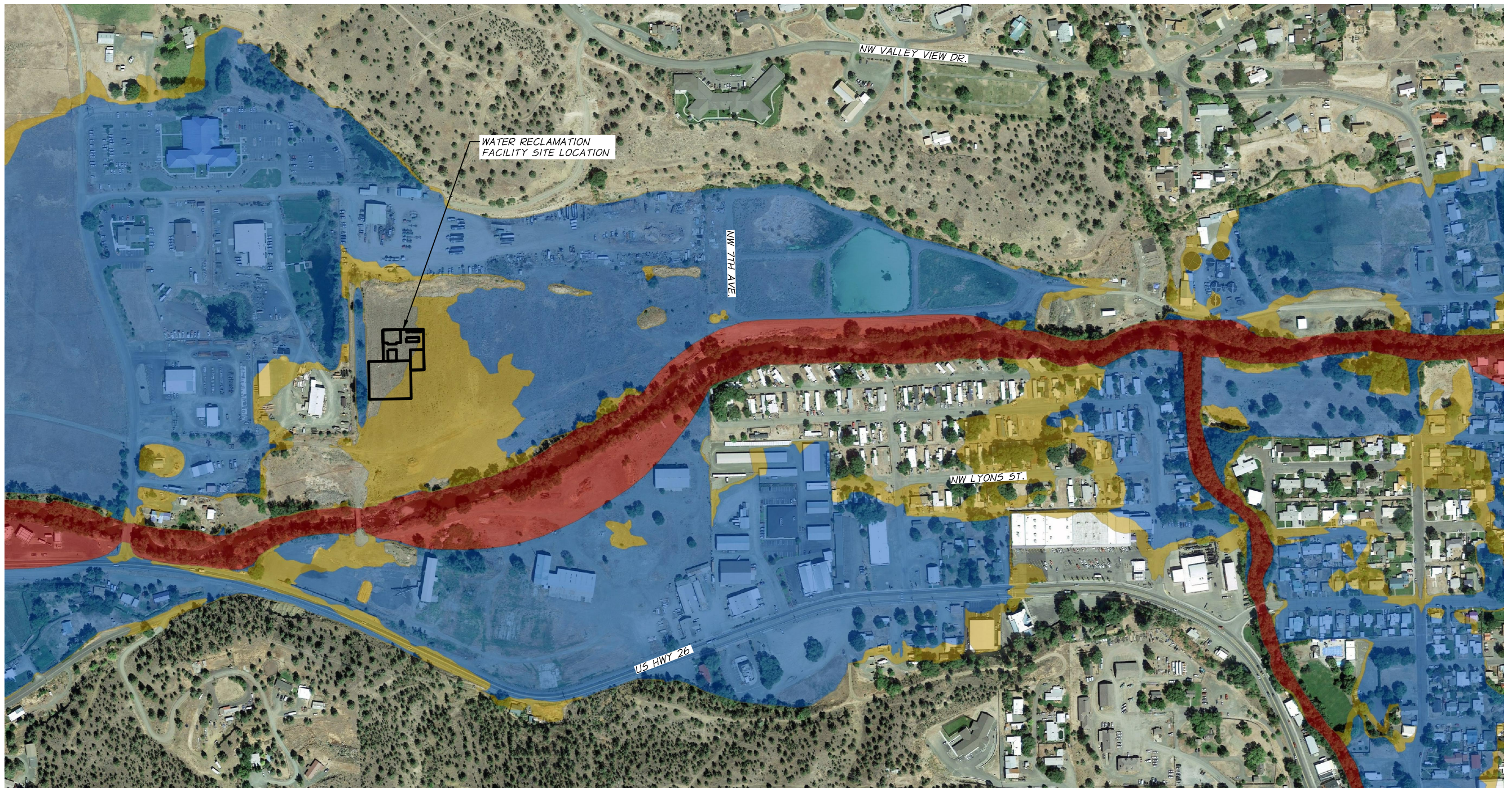
**OPERATIONS BUILDING FLOOR PLAN**

**FIGURE**




**4-1**



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**LEGEND**

-  0.2% (500 YEAR)
-  ZONE AE (100 YEAR)
-  FLOODWAY

200 0 200 400 600  
SCALE IN FEET

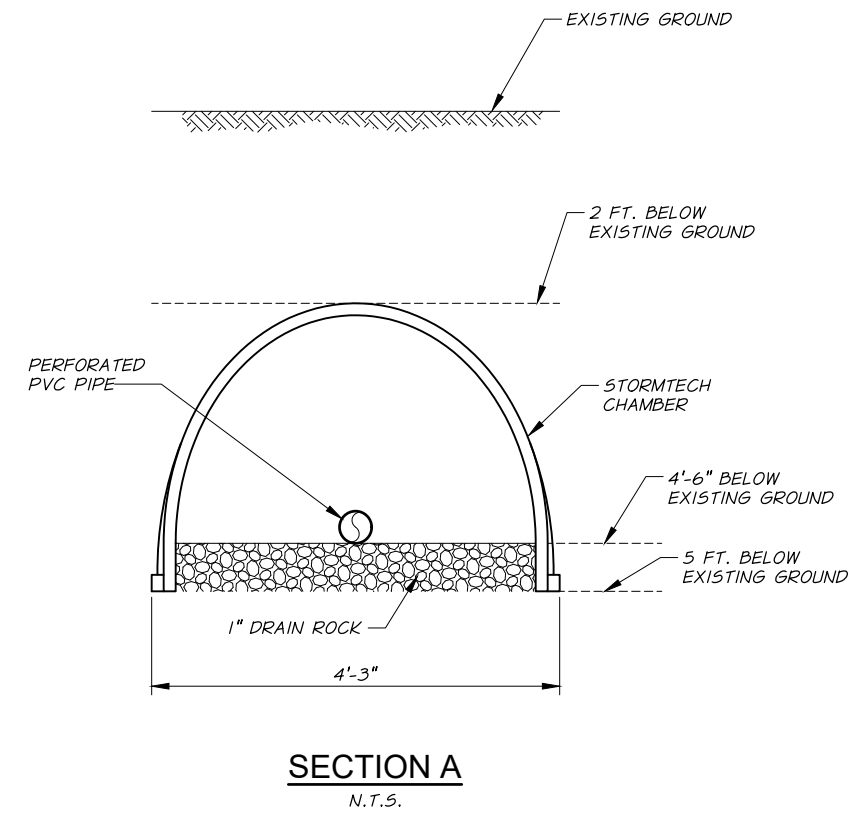
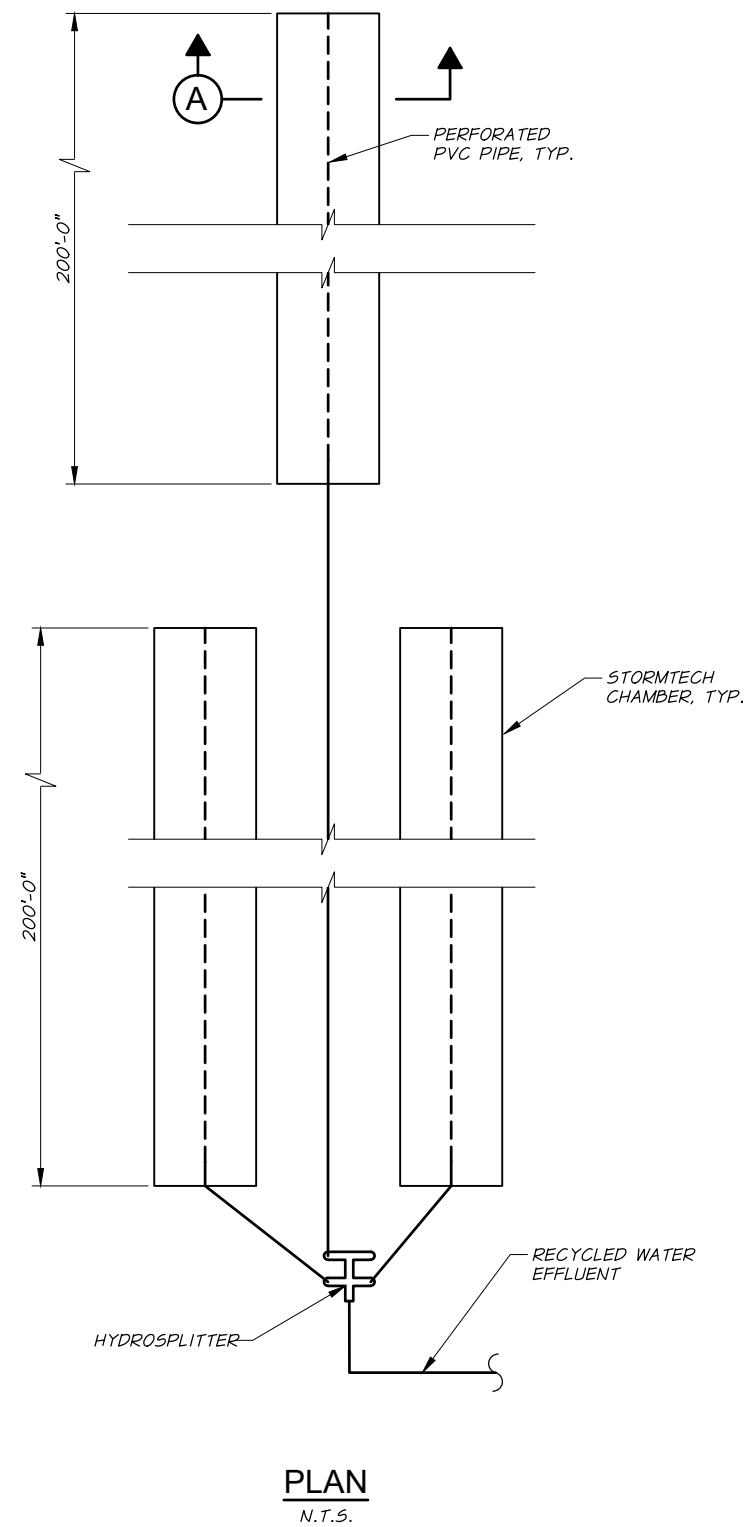
 **anderson  
perry**  
& associates, inc.

CITY OF  
**JOHN DAY, OREGON**  
WASTEWATER SYSTEM IMPROVEMENTS  
PRELIMINARY ENGINEERING REPORT  
**SITE LOCATION ON FLOOD  
INSURANCE RATE MAP**

**FIGURE**  
**4-2**



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perry  
& associates, inc.

CITY OF  
JOHN DAY, OREGON  
WASTEWATER SYSTEM IMPROVEMENTS  
PRELIMINARY ENGINEERING REPORT  
**UNDERGROUND INJECTION  
CONTROL DETAILS**

FIGURE  
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**Package Membrane Bioreactor Facility**  
**Procurement Request for Proposals**

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**REQUEST FOR PROPOSALS**  
**FOR**  
**CITY OF JOHN DAY, OREGON**  
  
**WASTEWATER SYSTEM IMPROVEMENTS - 2019**  
**MEMBRANE BIOREACTOR EQUIPMENT PROCUREMENT**



**ANDERSON PERRY & ASSOCIATES, INC.**  
  
La Grande, Redmond, and Hermiston, Oregon  
Walla Walla, Washington

## **PROPOSING FORMS**

**REQUEST FOR PROPOSALS  
CITY OF JOHN DAY, OREGON  
WASTEWATER SYSTEM IMPROVEMENTS - 2019  
MEMBRANE BIOREACTOR EQUIPMENT PROCUREMENT**

**Introduction**

The City of John Day, Oregon ("Buyer") is soliciting competitive sealed proposals (each a "Proposal," collectively the "Proposals") from qualified proposers (each a "Proposer" and collectively the "Proposers") for (a) the manufacture, supply, and delivery of a package membrane bioreactor system (MBR) (the "Goods") to be implemented in the construction of the new water reclamation facility (the "WRF"), and (b) the Special Services.

Buyer intends to pre-purchase the Goods from the Proposer providing the highest ranked Proposal based on the requirements established in this Request for Proposals (this "RFP") and outlined in the Instructions to Proposers and the General Requirements. It is the intent of this RFP that a Proposer provides a Proposal containing a qualifications statement (as outlined in the Instructions to Proposers), General Layout, a Life Cycle and Annual Cost analysis for the proposed system (as outlined in the Instructions to Proposers), and details outlining the reliability of the proposed system, its ease of operation, and its ease of maintenance.

**Project Overview**

The purpose of the City of John Day Wastewater System Improvements project (the "Project") is to construct a new WRF for the Buyer. The new WRF will treat domestic wastewater from both Buyer and City of Canyon City and will consist of, among other things, the following major components: flow equalization, headworks, influent pumps, the Goods (i.e., the package MBR system), tertiary hydroponics treatment facility, ultraviolet disinfection, effluent pump system, and sludge thickening and dewatering units.

Buyer is issuing this RFP in accordance with Oregon Revised Statutes 279B.060 for the procurement of the Goods and associated Special Services. The Goods include, without limitation, the following major components: grit removal and dewatering as necessary for the proposed membranes; anoxic basins, aeration basins, membrane basins, and other equipment as more particularly described in the General Requirements; aerobic digesters; and all tankage, valving, piping, pumps, electrical and control equipment, and instrumentation equipment as required to treat 0.302 million gallons per day.

**System Design Parameters**

The Goods must be designed to meet Class 2 Reliability standards as outlined in the U.S. Environmental Protection Agency's design manual *EPA-430-99-74-001, Design Criteria for Mechanical, Electric, and Fluid System and Component Reliability*. Additional reliability requirements are outlined in the General Requirements.

The Goods must provide a treated effluent quality meeting the requirements for a Class A effluent as defined by the Oregon Department of Environmental Quality (Oregon Administrative Rules Chapter 340, Division 55).

### **Proposal Opening**

Proposals must be received by Buyer on or before 4:00 p.m., Pacific Time, on Tuesday, November 26, 2019 (the "Closing"), at John Day City Hall located at 450 East Main Street, John Day, Oregon 97845. Proposals will be opened at 4:00 p.m., Pacific Time, on Tuesday, November 26, 2019. Seven copies of the Proposal must be submitted in an envelope marked plainly with the Project title and the name and address of the Proposer. Buyer anticipates sending out a Notice of Intent to Award on December 10, 2019, with a Notice of Award to follow on December 17, 2019. Bid security must be furnished in accordance with the Instructions to Proposers.

### **Additional Information**

The Issuing Office for the Procurement RFP Documents is defined in the Instructions to Proposers. Prospective Proposers may examine the Procurement RFP Documents at the Issuing Office on Mondays through Fridays between the hours of 8:00 a.m. and 5:00 p.m.

Procurement RFP Documents are available at <http://www.andersonperry.com> under the Bid Docs link. The digital Procurement RFP Documents may be downloaded for a non-refundable payment of \$25.00 by inputting QuestCDN eBidDoc Number 6560651 on the website. Assistance with free QuestCDN membership registration, document downloading, and working with the digital Project information may be obtained at QuestCDN.com, at 952-233-1632, or via e-mail at [info@questcdn.com](mailto:info@questcdn.com). The Procurement RFP Documents will be available for download after **October 21, 2019**. No paper sets will be provided for proposing purposes.

Questions regarding the project, or requests for clarification or changes to the project, or protests, must be in writing and directed to:

Anderson Perry & Associates, Inc.  
Attention: Mike Lees, P.E.  
1901 N. Fir Street/P.O. Box 1107  
La Grande, Oregon 97850  
[mlees@andersonperry.com](mailto:mlees@andersonperry.com)

Buyer is an equal opportunity employer. Minority and women-owned businesses are encouraged to bid. Minority and women-owned businesses should indicate they are a minority on the Planholders List. The Project is being funded in part through a Business Oregon - Community Development Block Grant.

Notice of this RFP was first given on the date identified below.

Buyer: **City of John Day, Oregon**

By: **Nick Green**

Title: **City Manager**

Date: **October 23, 2019**

# INSTRUCTIONS TO PROPOSERS FOR PROCUREMENT CONTRACTS

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# INSTRUCTIONS TO PROPOSERS FOR PROCUREMENT CONTRACT

## ARTICLE 1—DEFINED TERMS

1.01 Unless defined elsewhere in these Instructions to Proposers, terms used in these Instructions to Proposers will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Proposers have the meanings indicated below.

A. *Issuing Office*—The office from which the Procurement Request for Proposal (RFP) Documents are to be issued and where the RFP procedures are to be administered. The Issuing Office will be located at the following address:

Anderson Perry & Associates, Inc.  
Mike Lees, P.E.  
1901 N. Fir Street/P.O. Box 1107  
La Grande, Oregon 97850

## ARTICLE 2—PROCUREMENT RFP DOCUMENTS

2.01 Proposer may obtain complete sets of the Procurement RFP Documents, in the number and format stated in the RFP, from the Issuing Office. Proposers must obtain a complete set of the Procurement Contract Documents as listed in the Procurement Agreement.

2.02 Proposer must use a complete set of the Procurement RFP Documents in preparing the Proposal; neither Buyer nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Procurement RFP Documents. Each Proposer assumes full responsibility for errors, omissions, and/or misinterpretations resulting from the use of incomplete sets of Procurement RFP Documents.

2.03 Buyer and Engineer make copies of Procurement RFP Documents available on the above terms only for obtaining Proposals for furnishing Goods and Special Services, and do not authorize or confer a license for any other use.

## ARTICLE 3—QUALIFICATIONS OF PROPOSERS

3.01 Buyer may at any time conduct such investigations as Buyer deems necessary or appropriate to establish the responsibility, qualifications, and financial ability of a Proposer, and after the opening of Proposals may require a Proposer to submit documentation of its qualifications, including but not limited to financial data and documentation of previous experience providing goods and services comparable to the specified Goods and Special Services.

3.02 Proposer is to carefully review those portions of the Bid Form for Procurement Contract (the “Bid Form”) requiring Proposer’s representations and certifications.

3.03 Proposer shall submit a qualifications statement with the Proposal, including, without limitation, financial data and documentation of previous experience providing comparable goods and

services, to demonstrate Proposer's qualifications to furnish the specified Goods and Special Services. The qualifications statement shall include, at a minimum, the following information:

- A. Background information on a minimum of three similar installations requiring biological nutrient removal. Background information shall include the following:
  - 1. Location, design capacity, and year of installation.
  - 2. Summary of a minimum of one year's influent and effluent results.
  - 3. Operator name and phone number.
- B. Company history on projects requiring biological nutrient removal.
- C. Information on support services offered by the Proposer for both process/control and equipment.

#### **ARTICLE 4—SITE VISIT; PRE-PROPOSAL CONFERENCE**

- 4.01 Upon 48 hours' prior notice, Buyer will, during Buyer's regular business hours, accommodate any Proposer that wishes to visit the Point of Destination and the site where the Goods are to be installed and Special Services will be provided, taking into account observable local and site conditions that may affect the delivery, cost, progress, and furnishing of the Goods and Special Services. Arrangements for such a visit may be made through Engineer. Statements made by Buyer and/or the Engineer at any site visit are not binding on Buyer unless confirmed by written Addenda.
- 4.02 A pre-proposal conference will not be held for this procurement.

#### **ARTICLE 5—INTERPRETATIONS AND ADDENDA**

- 5.01 All questions about the meaning or intent of the Procurement RFP Documents are to be submitted to Engineer in writing at:

Anderson Perry & Associates, Inc.  
Attention: Mike Lees, P.E.  
1901 N. Fir Street/P.O. Box 1107  
La Grande, Oregon 97850  
mlees@andersonperry.com

- 5.02 Interpretations or clarifications considered necessary by Engineer in response to such written questions will be issued by Addenda mailed, emailed, or delivered to all parties recorded as having received the Procurement RFP Documents, or will be posted on the website identified in the RFP. Each Proposer is responsible for frequently checking said website until Closing. A Proposer may request in writing a change to the RFP and/or Procurement Contract terms and conditions on or before 10 days prior to the Closing. Requests and/or questions received less than 10 days prior to the Closing will not be answered. Only answers in any Addenda will be binding. Oral statements, interpretations, and clarifications may not be relied upon in the preparation of a Proposal, and will not be binding or legally effective.
- 5.03 Addenda may be issued to clarify, correct, and/or change the Procurement RFP Documents as deemed necessary or appropriate by Buyer or Engineer. No Addenda, with the exception of Addenda withdrawing the RFP or extending the Closing, will be issued less than 48 hours prior to

the Closing (except as justified by a countervailing public interest). All Addenda so issued will become part of the Procurement RFP Documents. Each Proposer submitting a Proposal is responsible for all Addenda/changes to the Procurement RFP Documents and will be considered non-responsive if the Proposal does not reflect those Addenda/changes.

#### **ARTICLE 6—BID SECURITY**

- 6.01 A Proposal must be accompanied by Bid security made payable to Buyer in an amount of 5 percent of Proposer's maximum Bid price as stated in the "Capital Cost (Bid Price)" line in the Bid Form and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 5.01 of the General Conditions. Such Bid bond will be issued in the form included in the Procurement RFP Documents.
- 6.02 The Bid security of the apparent Successful Proposer will be retained until Buyer awards the Procurement Contract to such Proposer, and such Proposer has executed the Procurement Contract, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Proposer fails to execute and deliver the Procurement Contract and furnish the required contract security within 15 days after the Notice of Award, Buyer may consider Proposer to be in default and annul the Notice of Award, and the Bid security of that Proposer will be forfeited, in whole in the case of a penal sum bid bond, and to the extent of Buyer's damages in the case of a damages-form bond. Such forfeiture will be Buyer's exclusive remedy if Proposer defaults.
- 6.03 The Bid security of other Proposers that Buyer believes to have a reasonable chance of receiving the award may be retained by Buyer until execution of the Procurement Contract, whereupon Bid security furnished by such Proposers will be released.
- 6.04 Bid security of other Proposers that Buyer believes do not have a reasonable chance of receiving the award will be released within 7 days after the Closing.

#### **ARTICLE 7—PROCUREMENT CONTRACT TIMES**

- 7.01 See applicable provisions in the Procurement Agreement.

#### **ARTICLE 8—LIQUIDATED DAMAGES**

- 8.01 Provisions for liquidated damages, such as those for Seller's failure to attain a specified Milestone such as the delivery of the Goods, are set forth in the Procurement Agreement.

#### **ARTICLE 9—SOLICITATION SCHEDULE**

- 9.01 The anticipated schedule for this solicitation is as follows:

RFP Issued	October 21, 2019
Requests/Questions Deadline	November 15, 2019
RFP Protest Deadline	November 19, 2019
Proposal Due Date and Opening	November 26, 2019
Evaluation and Scoring	November 26 - December 6, 2019

Negotiations [if applicable] (approx.)	November 26 - December 6, 2019
Notice of Intent to Award (“NOI”) (approx.)	December 10, 2019
Award Protest Deadline (approx.)	December 17, 2019
Council Approval – Notice of Award (approx.)	December 17, 2019

#### **ARTICLE 10—“OR-EQUAL” ITEMS**

- 10.01 The Procurement Agreement, if awarded, will be based on material and equipment specified in the Procurement RFP Documents without consideration of possible “or-equal” items. Whenever it is specified or described in the Procurement RFP Documents that an “or-equal” item of material or equipment may be furnished or used by Seller if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Procurement Contract. The procedure for submittal of any such application by Seller and consideration by Engineer is set forth in the General Conditions and may be supplemented in the Procurement Specifications.

#### **ARTICLE 11—PREPARATION OF PROPOSAL**

- 11.01 The Bid Form is included with the Procurement RFP Documents. Additional copies of Procurement RFP Documents may be obtained from the Issuing Office.
- 11.02 All blanks on the Bid Form must be completed and the Bid Form must be signed by an individual authorized to act on behalf of the Proposer. Alterations must be initialed by an individual authorized to act on behalf of the Proposer. A Bid price must be indicated for each item in the Bid Form.
- 11.03 Proposer must acknowledge all Addenda by filling in the number and date of each Addendum in the Bid Form and sign where indicated to verify that the Addenda were received. A Proposer that does not acknowledge receipt of all Addenda may be considered non-responsive.
- 11.04 Proposer shall:
- A. Sign the Bid Form as indicated in the Bid Form.
  - B. Include evidence of authority to sign.
  - C. Provide information on the individual to be contacted for any communications regarding the Proposal.
  - D. Provide evidence of the Proposer’s authority and qualification to do business in the locality of the Project, to the extent required, or indicate the ability to obtain such authority and qualification prior to award of the Procurement Contract.
- 11.05 The responsibilities of each Proposer submitting a Proposal are described in the Proposer’s representations and certifications set forth in Article 6 of the Bid Form.

#### **ARTICLE 12—BASIS OF BID; COMPARISON OF PROPOSALS**

- 12.01 The Procurement Contract shall be awarded based on the evaluation criteria listed in descending order of importance as follows:

- A. Life Cycle and annual costs to purchase, operate, and maintain the facility, presented as a series of lump sums as established in the Bid Form.
  - 1. Proposer shall submit a proposal for each line item as set forth on the Bid Form, and shall compute and enter the total of all line items in the space provided on the Bid Form.
  - 2. Discrepancies between the indicated sum of any column of figures and the arithmetically correct sum will be resolved in favor of the arithmetically correct sum.
  - 3. All calculations used in determining costs shall be written and included as part of this Proposal.
- B. Reliability of the System to Meet the Effluent Requirements
- C. Ease of Operation
- D. Ease of Maintenance
- E. At a minimum, the following detailed information shall be provided:
  - 1. Provide a detailed description of the system being proposed for this Project. With the description of the proposed process, provide a basic layout of the proposed system.
  - 2. Develop a detailed materials and equipment list that itemizes the type, size, and model of all materials and equipment for the proposed system. Include manufacturer's cut sheets and operation and maintenance requirements for all of the key components of the proposed system.
  - 3. In conjunction with the Life Cycle Cost Analysis table in the Bid Form, provide a detailed life cycle cost analysis including all the calculations used in determining each of the items included in said analysis. This analysis must include both annual costs and total Life Cycle Costs, assuming a 20-year life cycle for the system.
  - 4. Provide a list of proposed equipment for which the Proposer is willing to allow substitutions based on recommendations by the Engineer. After award, the Engineer may request equipment substitutions with appropriate Bid price adjustment.

#### 12.02 Additional Information

- A. During the review of Proposals, if any questions about a Proposal arise, the Buyer or Engineer may submit questions to the Proposer and request clarification. The Proposer must respond with clarification within 3 days of submission of any questions by Buyer or Engineer.

### ARTICLE 13—SUBMITTAL OF PROPOSAL

- 13.01 Sealed Proposals must be received by Nicholas Green, City Manager, on or before 4:00 p.m., Pacific Time, on Tuesday, November 26, 2019 (the "Closing"), at John Day City Hall located at 450 East Main Street, John Day, Oregon 97845. Misdelayed, late, and/or faxed submittals will be considered non-responsive.
- 13.02 Each Proposer must submit one separate unbound copy of the completed Bid Form, and, if required, the Bid Security and the other documents required to be submitted under the terms of Article 4 of the Bid Form.
- 13.03 A Proposal must be submitted no later than the Closing and at the place indicated in the RFP. Each Proposer must submit the Proposal in an envelope plainly marked with the Project title (and, if

applicable, the designated portion of the Project for which the Proposal is submitted) and the name and address of Proposer. Enclose the Bid security and other documents required to be submitted with the Proposal as listed in the Bid Form. If a Proposal is sent by mail or other delivery system, the sealed envelope containing the Proposal shall be enclosed in a separate package plainly marked on the outside with the notation "PROPOSAL ENCLOSED."

- 13.04 The RFP does not obligate Buyer to award a contract and/or to procure the Goods or Special Services (or any portion thereof). Proposers responding to the RFP do so at their own expense, and Buyer is not responsible for any costs and/or expenses associated with the preparation and/or submission of any Proposal. Failure of Buyer to insist on strict performance will not constitute a waiver of any of the provisions of the RFP or the resulting Procurement Contract, or of any other default of the Proposer. The selected Proposer will meet the highest standards prevalent in the industry or business most closely involved in providing membrane bioreactor systems and related equipment.

#### **ARTICLE 14—MODIFICATION OR WITHDRAWAL OF PROPOSAL**

- 14.01 A Proposal may be modified or withdrawn by a document duly signed in the same manner that a Proposal must be signed and delivered to the place where Proposals are to be submitted prior to the date and time for the receipt of Proposals. Proposals may be modified only as allowed by Oregon Administrative Rules (OAR) 137-047-0440.
- 14.02 Proposals may be withdrawn prior to the scheduled time for the opening only as allowed by OAR 137-047-0440. Without otherwise limiting the generality of the immediately preceding sentence, if, within 24 hours after receipt of Proposals, any Proposer files a duly signed written notice with Buyer and promptly thereafter demonstrates to the reasonable satisfaction of Buyer that there was a material and substantial mistake in the preparation of its Proposal, that Proposer may withdraw its Proposal, and the Bid security will be returned.

#### **ARTICLE 15—EVALUATION OF PROPOSALS**

- 15.01 Buyer will not be responsible for the premature opening or failure to open a Proposal that is not properly addressed and/or identified. Proposals will be opened and recorded. The number of Proposals received and/or the contents of any Proposal will not be disclosed to the public until all Proposals have been evaluated, negotiations completed if required, and a recommendation for award has been published.
- 15.02 Buyer will evaluate all responsive Proposals received. Results from the evaluation will be made available to the public as stated above.

#### **ARTICLE 16—PROPOSALS TO REMAIN SUBJECT TO ACCEPTANCE**

- 16.01 All Proposals will remain subject to acceptance for the period stated in the Bid Form, but Buyer may, in its sole discretion, release any Proposal and return the Bid security prior to the end of this period.

#### **ARTICLE 17—AWARD OF PROCUREMENT CONTRACT**

- 17.01 Notwithstanding anything contained in the RFP to the contrary, if in Buyer's best interest, Buyer reserves the right to, in accordance with Oregon Revised Statutes (ORS) 279B.100, (a) amend

and/or revise the RFP in whole or in part, (b) cancel the RFP, (c) extend the submittal deadline for responses to the RFP, (d) waive minor informalities and errors in such Proposals, and/or (e) reject any or all Proposals for any reason and/or without indicating reasons for rejection, including without limitation, nonconforming, non-responsive, unbalanced, or conditional Proposals. Further, Buyer reserves the right to seek clarification(s) from each Proposer and/or require supplemental information for any Proposer, and/or negotiate with alternate Proposers, if initial contract negotiations are unsuccessful.

- 17.02 Buyer will reject the Proposal of any Proposer that Buyer finds, after reasonable inquiry and evaluation, to not be responsible as described in ORS 279B.110.
- 17.03 In evaluating Proposals, Buyer will consider whether the Proposals comply with the prescribed requirements, and such alternates, unit prices, and other data as may be requested in the Bid Form or may be requested from Proposers prior to a Notice of Award.
- 17.04 If Buyer awards the Procurement Contract, Buyer will award the Procurement Contract to the responsible Proposer whose Proposal Buyer determines in writing is most advantageous to Buyer based on the evaluation process and factors described in Article 12 of these Instruction to Proposers, applicable preferences described in ORS 279A.120 and 279A.125, the outcome of any negotiations (if applicable), and whose Proposal will best serve the interests of Buyer and is in compliance with applicable law. A responsible Proposer means a Proposer who has the capability, in all respects, to fully perform the Procurement Contract requirements, and the integrity and reliability which will ensure good-faith performance. Responsibility will be determined in accordance with the standards set forth in ORS 279B.110 and OAR 137-047-0500. Pricing will be compared among all responsive Proposals submitted. The lowest overall priced Proposal (by total contract price) will receive the full points available. All other Proposal pricing scores will be weighted against the lowest price Proposal (lowest price scores the highest).
- 17.05 Buyer will provide a written Notice of Intent to Award (“NOI”) to all Proposers at least 7 calendar days before the award of a contract, unless Buyer determines that circumstances require prompt execution of the Procurement Contract. Buyer’s award will not be final until the latter of the following: (a) 7 calendar days after the date of the NOI or (b) until Buyer provides written response to all timely filed protests denying the protest(s) and affirming the award.

## **ARTICLE 18—BONDS AND INSURANCE**

- 18.01 Article 5 of the General Conditions and Article 5 of the Supplementary Conditions set forth Buyer’s requirements as to performance and payment bonds and insurance. When the Successful Proposer delivers the signed Procurement Agreement to Buyer, it must be accompanied by such bonds and acceptable evidence of insurance.

## **ARTICLE 19—SIGNING OF PROCUREMENT AGREEMENT**

- 19.01 When Buyer issues a Notice of Award to the successful Proposer, it will be accompanied by the unsigned counterparts of the Procurement Agreement along with the other Procurement Contract Documents identified in the Procurement Agreement. Within 15 days thereafter, successful Proposer must execute and deliver the required number of counterparts of the Procurement Agreement and any bonds and insurance documentation required to be delivered by the Procurement Contract Documents to Buyer. Within 15 days thereafter, Buyer will deliver one fully executed counterpart of the Procurement Agreement to successful Proposer, together



with printed and electronic copies of the Procurement Contract Documents as stated in Paragraph 2.02 of the General Conditions.

- 19.02 The successful Proposer must comply with the Oregon Public Contracting Code (ORS Chapters 279A, 279B, and 279C), including, without limitation, ORS 279A.110, and Buyer's public contracting rules, as all are amended from time to time, in the performance of the contract.

## **ARTICLE 20—PROTESTS**

- 20.01 A Proposer may protest the procurement process or the RFP by delivering a written protest on those matters to Buyer on or before 7 days prior to the Closing. All protests must be in writing and must comply with OAR 137-047-0730. All questions, requests, and/or protests must clearly reference "City of John Day Request for Proposals – Membrane Bioreactor Equipment Procurement" and must be submitted, in writing, either by mail or email to:

Anderson Perry & Associates, Inc.  
Attention: Mike Lees, P.E.  
1901 N. Fir Street/P.O. Box 1107  
La Grande, Oregon 97850  
mlees@andersonperry.com

- 20.02 A Proposer may submit to Buyer a written protest of Buyer's intent to award within 7 days after Buyer's issuance of the NOI. A Proposer may submit a protest of the award only as allowed by, and only in compliance with, OAR 137-047-0740. All protests must clearly reference "City of John Day Request for Proposals – Membrane Bioreactor Equipment Procurement." All award protests must be submitted in writing either by mail or email to Mr. Lees at the addresses identified above.

## **ARTICLE 21—CONFIDENTIAL INFORMATION**

- 21.01 Any Proposal submitted may be subject to public information requests as permitted by Oregon Public Records Law. Buyer will attempt to maintain the confidentiality of materials marked "Confidential" to the extent required under Oregon Public Records Law. If it is necessary to submit trade secrets and/or other confidential information in order to comply with the terms and conditions of the RFP, each Proposer must label any information that it desires to protect from disclosure to third parties as a trade secret under ORS 192.345(2) and/or confidential under ORS 192.355(4) with the following: "This material constitutes a trade secret under ORS 192.345(2) [and/or confidential information under ORS 192.355(4)] and is not to be disclosed except as required by law." Each page containing the trade secret and/or other confidential information must be so marked.
- 21.02 Buyer will take reasonable measures to hold in confidence all such labeled information, but in no event will Buyer be liable for release of any information when required by law or court order to do so, whether pursuant to the Oregon Public Records Law or otherwise, and will also be immune from liability for disclosure or release of information as provided under ORS 646.473(3).
- 21.03 In submitting a Proposal, each Proposer agrees that Buyer may (a) reveal any trade secret and/or other confidential materials contained in the Proposal to Buyer's staff and to any Buyer consultant, and (b) post the Proposal on Buyer's intranet or internal network for purposes related to its evaluation and ranking. By responding to this RFP, each Proposer agrees to defend, indemnify, and hold harmless Buyer and each Buyer officer, employee, representative, and agent

from all costs, damages, and expenses incurred in connection with refusing to disclose any material that the Proposer has designated as a trade secret and/or as confidential information. Any Proposer that designates its entire Proposal as a trade secret may be disqualified.

# BID FORM FOR PROCUREMENT CONTRACT

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# BID FORM FOR PROCUREMENT CONTRACT

Unless defined elsewhere herein, the terms used herein with initial capital letters have the meanings assigned to such terms in the Instructions to Proposers, the General Conditions, and the Supplementary Conditions.

## ARTICLE 1—BUYER AND PROPOSER

1.01 This Proposal is submitted to:

City of John Day, Oregon  
Nick Green, City Manager  
450 East Main Street  
John Day, Oregon 97845

1.02 The undersigned Proposer proposes and agrees, if this Proposal is accepted, to enter into a Procurement Contract with Buyer in the form included in the Procurement Request for Proposal (RFP) Documents, and to furnish the Goods and Special Services as specified or indicated in the Procurement RFP Documents, for the prices and within the times indicated in this Bid, and in accordance with the other terms and conditions of the Procurement RFP Documents.

## ARTICLE 2—BASIS OF BID

2.01 *Life Cycle Cost Analysis*

A. Proposer will furnish the Goods and Special Services in accordance with the Procurement Contract Documents for the Procurement Contract Price shown under capital cost in the table below. Proposer will also provide cost information for, at a minimum, all other items listed in the table below:

1. Life Cycle Cost Analysis

- a. The Capital Cost shown is the total Bid price for the Goods and Special Services outlined in this RFP.
- b. The Operating Cost shown should include the power and chemicals required to operate the system. Power costs should be computed at \$0.12 per kilowatt hour. No labor should be included in this line item. The annual cost should be used to compute a 20-year life cycle at a 4 percent annual rate.
- c. The Maintenance Cost shown should include all supplies and materials needed, including a labor estimate at \$50 per hour. The annual cost should be used to compute a 20-year life cycle at a 4 percent annual rate.
- d. The Equipment Replacement Cost shown should assume a 10-year life expectancy for all rotating parts. It should also include replacement at the published life expectancy for the membranes and diffusers. These costs should be converted to present worth costs over the 20-year evaluation period at a 4 percent annual rate.

Capital Cost (Bid price)	
Operating Cost	
Maintenance Cost	
Equipment Replacement Cost	
<b>Total Life Cycle Cost</b>	

### ARTICLE 3—TIME OF COMPLETION

- 3.01 Proposer agrees that the furnishing of Goods and Special Services will conform to the schedule of Procurement Contract Times set forth in Article 2 of the Procurement Agreement.
- 3.02 Proposer accepts the provisions of the Procurement Agreement as to liquidated damages.

### ARTICLE 4—ATTACHMENTS TO THIS PROPOSAL

- 4.01 The following documents are attached to and made a condition of this Proposal:
- A. Required Bid security in the form prescribed in the Instructions to Proposers.
  - B. Proposal as outlined in the RFP.
  - C. Equipment Data Sheets.
  - D. Required Proposer Qualification Statement with supporting data.
  - E. Proposer's Performance and Payment Bond Statement.

### ARTICLE 5—PROPOSER'S ACKNOWLEDGMENTS

- 5.01 Proposer accepts all terms and conditions of the Instructions to Proposers and the Procurement RFP Documents. This Proposal will remain subject to acceptance for 60 days after the Proposal opening, or for such longer period that Proposer may agree to in writing upon request of Buyer.
- 5.02 Proposer has examined and carefully studied the Procurement RFP Documents, the related data identified in the Procurement RFP Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date

### ARTICLE 6—PROPOSER'S REPRESENTATIONS AND CERTIFICATIONS

- 6.01 *Proposer's Representations*
- A. In submitting this Proposal, Proposer represents that:
    - 1. Proposer has examined and carefully studied the Procurement Contract Documents and accepts and agrees to be bound by the terms and conditions of the Proposal Documents. Proposer is satisfied as to the requested goods involved and that this Proposal is made

according to the provisions and under the terms of the Procurement Contract Documents, which documents are hereby made a part of this Proposal.

2. If required by the Instructions to Proposers to visit the Point of Destination and the site where the Goods are to be installed or Special Services will be provided, or if, in Proposer's judgment, any observable local or site conditions may affect the delivery, cost, progress, or furnishing of the Goods and Special Services, then Proposer has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided (as applicable) and become familiar with and is satisfied as to the observable local and site conditions that may affect delivery, cost, progress, and furnishing of the Goods and Special Services.
3. Proposer is familiar with and is satisfied as to all Laws and Regulations that may affect the cost, progress, and performance of Seller's obligations under the Procurement Contract.
4. Proposer has carefully studied, considered, and correlated the information known to Proposer with respect to the effect of such information on the cost, progress, and performance of Seller's obligations under the Procurement Contract.
5. Proposer has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Proposer has discovered in the Procurement Contract Documents, and the written resolution (if any) thereof by Engineer is acceptable to Proposer.
6. The Procurement Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of Seller's obligations under the Procurement Contract.
7. The submission of a Proposal will constitute an incontrovertible representation by Proposer that Proposer has complied with every requirement of the RFP Requirements, that without exception the Proposal (including all Bid prices) is premised upon furnishing the Goods and Special Services as required by the Procurement Contract Documents.

#### 6.02 *Proposer's Certifications*

##### A. Proposer certifies that:

1. This Proposal is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
2. Proposer has not directly or indirectly induced or solicited any other Proposer to submit a false or sham Proposal;
3. Proposer has not solicited or induced any individual or entity to refrain from proposing; and
4. Proposer has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Procurement Contract. For the purposes of this Paragraph 6.02.A.4:
  - a. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

- b. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Buyer, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition;
  - c. “collusive practice” means a scheme or arrangement between two or more Proposers, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
  - d. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process.
- 5. Proposer has not discriminated and will not discriminate against minority, women, or emerging small business enterprises in obtaining required subcontractors.
- B. Proposer agrees that all of the applicable provisions of Oregon law relating to public contracts (Oregon Revised Statutes Chapter 279A, 279B, and 279C) and Buyer’s public contracting rules are, by this reference, incorporated in and made a part of this Proposal.



This Proposal is offered by:

Proposer:

\_\_\_\_\_  
(typed or printed name of organization)

By:

\_\_\_\_\_  
(individual's signature)

Date:

\_\_\_\_\_  
(date signed)

Name:

\_\_\_\_\_  
(typed or printed)

Title:

\_\_\_\_\_  
(typed or printed)

(If Proposer is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

\_\_\_\_\_  
(individual's signature)

Title:

\_\_\_\_\_  
(typed or printed)

Address for giving notices:

Designated Representative:

Name:

\_\_\_\_\_  
(typed or printed)

Title:

\_\_\_\_\_  
(typed or printed)

Address:

Phone:

Email:

License No.:

Classification:

Limitation:

Circle one: Proposer (is) (is not) a resident of the State of Oregon. If Proposer is a resident of another state, specify state of residency: \_\_\_\_\_.

## BID BOND

Any singular reference to Proposer, Surety, Owner or other party shall be considered plural where applicable.

PROPOSER (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

### PROPOSAL

Bid Due Date:

Description (*Project Name— Include Location*): **City of John Day, Oregon -  
Wastewater System Improvements - Membrane  
Bioreactor Equipment Procurement - 2019**

### BOND

Bond Number:

Date:

Penal sum \_\_\_\_\_ \$ \_\_\_\_\_  
(Words) (Figures)

Surety and Proposer, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

#### PROPOSER

#### SURETY

\_\_\_\_\_  
Proposer's Name and Corporate Seal (Seal) Surety's Name and Corporate Seal (Seal)

By: \_\_\_\_\_  
Signature

By: \_\_\_\_\_  
Signature (Attach Power of Attorney)

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_  
Signature

Attest: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

*Note: Addresses are to be used for giving any required notice.*

*Provide execution by any additional parties, such as joint venturers, if necessary.*

1. Proposer and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Proposer the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Proposer's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Proposer.
2. Default of Proposer shall occur upon the failure of Proposer to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
  - 3.1 Owner accepts Proposer's Bid and Proposer delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
  - 3.2 All Bids are rejected by Owner, or
  - 3.3 Owner fails to issue a Notice of Award to Proposer within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Proposer and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Proposer and within 30 calendar days after receipt by Proposer and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Proposer, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Proposer and Surety and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Proposer and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

## PROPOSER'S PERFORMANCE AND PAYMENT BOND STATEMENT

\_\_\_\_\_, hereinafter referred to as Proposer, is submitting a Proposal to **City of John Day, Oregon**, pursuant to the latter's Request for Proposals for the Project **Wastewater System Improvements - Membrane Bioreactor Equipment Procurement - 2019**.

Proposer certifies that if it is awarded the Contract, Proposer has the financial ability to obtain good and sufficient bonds issued by a surety to the Owner in sums equal to the amount of the Proposal providing for the faithful performance of the Contract and payment of labor and materials.

The surety requested to issue the Performance and Payment Bonds will be

\_\_\_\_\_. Proposer hereby authorizes  
(Surety Company)

\_\_\_\_\_ to disclose any information  
(Surety Company)

to the Owner concerning Proposer's ability to supply Performance and Payment Bonds in the amount of the Contract.

\_\_\_\_\_  
Proposer

\_\_\_\_\_  
By:

## **CONTRACT FORMS**

# AGREEMENT BETWEEN BUYER AND SELLER FOR PROCUREMENT CONTRACT

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# AGREEMENT BETWEEN BUYER AND SELLER FOR PROCUREMENT CONTRACT

This Procurement Agreement is by and between the **City of John Day, Oregon** ("Buyer") and [formal name of entity] ("Seller").

Terms used in this Procurement Agreement have the meanings stated in the General Conditions of the Procurement Contract and the Supplementary Conditions of the Procurement Contract.

Buyer and Seller hereby agree as follows:

## ARTICLE 1—PROCUREMENT CONTRACT

### 1.01 *Goods and Special Services*

- A. Seller shall furnish the Goods and Special Services as specified or indicated in the Procurement Contract Documents. The Goods and Special Services are generally described as follows:
  - 1. The design manufacture and delivery of a package membrane bioreactor (MBR) system (Goods) for the reclamation of the Buyer's domestic wastewater. The Goods shall include the following major components: grit removal and dewatering; anoxic basins, aeration basins, membrane basins, and other equipment as outlined in the General Requirements; aerobic digesters; and all tankage, valving, piping, pumps, electrical equipment, and instrumentation equipment as required to treat the influent wastewater according to the Design Criteria outlined in the General Requirements.
  - 2. Special Services, to include construction oversight and startup training for the Goods. See the General Requirements for more specific information regarding the Special Services.

### 1.02 *The Project*

- A. The Project, of which the Goods and Special Services are a part, is generally described as follows:
  - 1. The construction of a new water reclamation facility (WRF) for the Buyer. The new WRF will treat the domestic wastewater from both the buyer and the City of Canyon City, and will consist of the following major components: flow equalization, headworks, influent pumps, Goods (package MBR system), tertiary hydroponics treatment facility, ultraviolet disinfection, and sludge thickening and dewatering units.

### 1.03 *Engineer*

- A. Buyer has retained Anderson Perry & Associates, Inc. ("Engineer"), to prepare Procurement Contract Documents and act as Buyer's representative. Engineer assumes all duties and responsibilities and has the rights and authority assigned to Engineer in the Procurement Contract Documents in connection with Seller's furnishing of Goods and Special Services.



1.04 Point of Destination

- A. The Point of Destination is designated as:

City of John Day, Oregon - New WRF

**ARTICLE 2—PROCUREMENT CONTRACT TIMES**

2.01 *Time of the Essence*

- A. All time limits for Milestones, including the submittal of Shop Drawings and Samples, the delivery of Goods, and the furnishing of Special Services as stated in the Procurement Contract Documents, are of the essence of the Procurement Contract.

2.02 *Schedule of Procurement Contract Times*

- A. The following schedule sets forth the Procurement Contract Times:

Milestone	Date or Days	Notes
Submit Shop Drawings	120 Days from Notice to Proceed	
Deliver acceptable Goods to Point of Destination	May 1, 2021	Actual delivery date to be coordinated with Construction Contractor, not to occur before May 1, 2021.
Assembly and Installation Training and Oversight	Delivery	
Startup Training	Construction Completion	
Operations and Maintenance Training	Construction Completion	
Readiness for Final Inspection and Acceptance of Goods and Special Services	30 days after Startup	

2.03 *Shop Drawings and Samples*

- A. *Submittal of Shop Drawings and Samples:* Seller shall submit all Shop Drawings and Samples required by the Procurement Contract Documents to Engineer for its review and approval.
- B. *Engineer's Review:* It is the intent of the parties that Engineer will conduct its review of Shop Drawings and Samples and issue its approval, or a denial accompanied by substantive comments regarding information needed to gain approval, within 15 days after Seller's submittal of such Shop Drawings and Samples, or within such longer period that is needed because of the quantity and quality of such submittals. Resubmittals will be limited whenever possible.

2.04 *Liquidated Damages*

- A. Buyer and Seller recognize that time is of the essence as stated in Paragraph 2.01, and that Buyer will suffer financial and other losses if the Goods are not delivered to the Point of

Destination and ready for receipt of delivery by Buyer within the time specified in Paragraph 2.02, plus any extensions thereof allowed in accordance with this Procurement Contract. The parties also recognize that the timely performance of services by others involved in the Project is materially dependent upon Seller's specific compliance with the delivery requirements of Paragraph 2.02. Further, the parties recognize the time, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the loss (whether direct, consequential, or otherwise) suffered by Buyer if complete, acceptable Goods are not delivered on time. Accordingly, instead of requiring any such proof, Buyer and Seller agree that as liquidated damages for delay (but not as a penalty) Seller shall pay Buyer \$2,000 for each day that expires after the time specified in Paragraph 2.02 for delivery of acceptable Goods.

### **ARTICLE 3—PROCUREMENT CONTRACT PRICE**

#### **3.01    *Procurement Contract Price and Total Price***

- A. The Procurement Contract Price is comprised of the Lump Sum set forth in the following paragraphs.
- B. Buyer shall pay Seller a Lump Sum of \$\_\_\_\_\_ for furnishing the Goods and Special Services in accordance with the Procurement Contract Documents.
- C. The Total Price is \$\_\_\_\_\_. Such Total Price is comprised of the Lump Sum amounts.

### **ARTICLE 4—PAYMENT PROCEDURES**

#### **4.01    *Submittal and Processing of Applications for Payment***

- A. Seller shall submit Applications for Payment in accordance with Article 13 of the General Conditions and the following paragraphs. Engineer and Buyer will process such Applications for Payment in accordance with said Article 13.

#### **4.02    *Progress Payments; Final Payment***

- A. Seller may submit an Application for Payment requesting the stated percentage of Procurement Contract Price upon attainment of each of the following Payment Line Items:

<b>Payment Line Item (Lump Sum)</b>	<b>Percentage of Lump Sum</b>
1. Receipt of Approval of Shop Drawings and Samples	10
2. Delivery of Goods to Point of Destination in accordance with the Procurement Contract Documents	75
3. Completion of Startup Training	10
4. Final Payment: Correction of non-conformities, provision of final Operations and Maintenance manuals, submittal of warranties and other final documentation required by the Procurement Contract Documents	5
Total Procurement Contract Price (Lump Sum)	100

- B. Buyer shall pay Seller the amount owed under an Application for Payment within 30 days after Engineer's presentation to Buyer of the Application for Payment and Engineer's recommendation.

#### 4.03 *Interest*

- A. All amounts not paid when due will bear interest as the rate of 6 percent per annum.

### **ARTICLE 5—ASSIGNMENT OF PROCUREMENT CONTRACT**

#### 5.01 *Assignment of Contract*

- A. No assignment by a party hereto of any rights under or interests in the Procurement Contract will be binding on another party hereto without the written consent of the party sought to be bound. Specifically, but without limitation, Procurement Contract payments or other money that may become due, and Procurement Contract payments or other money that are due, may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by Laws and Regulations). Unless specifically stated to the contrary in any written consent to such an assignment, such an assignment will not release or discharge the assignor from any duty or responsibility under the Procurement Contract Documents.

### **ARTICLE 6—PROCUREMENT CONTRACT DOCUMENTS**

#### 6.01 *List of Procurement Contract Documents*

- A. The Procurement Contract Documents consist of the following:
  - 1. This Procurement Agreement.
  - 2. General Conditions of the Procurement Contract.
  - 3. Supplementary Conditions of the Procurement Contract.
  - 4. General Requirements.
  - 5. Process Guarantee Statement.
  - 6. Addenda Numbers \_\_\_\_ to \_\_\_\_, inclusive.
  - 7. Bonds:
    - a. Performance bond (together with power of attorney).
    - b. Payment bond (together with power of attorney).
  - 8. Exhibits to this Procurement Agreement (enumerated as follows):
    - a. Documentation submitted by Seller \_\_\_\_\_ prior to Notice of Award (pages \_\_\_\_ to \_\_\_\_, inclusive); and
    - b. \_\_\_\_\_.
  - 9. The following which may be delivered or issued on or after the Effective Date of the Procurement Contract and are not attached hereto:
    - a. Change Orders;

- b. Change Directives; and
  - c. Field Orders.
- B. The documents listed in Paragraph 6.01.A are attached to this Procurement Agreement (except as expressly noted otherwise above).
- C. There are no Procurement Contract Documents other than those listed above.
- D. The Procurement Contract Documents may only be amended or supplemented as provided in Paragraph 11.01 of the Procurement General Conditions.

## **ARTICLE 7—SELLER’S REPRESENTATIONS AND CERTIFICATIONS**

### **7.01 *Seller’s Representations***

- A. In order to induce Buyer to enter into this Procurement Agreement, Seller makes the following representations:
  - 1. Seller has examined and carefully studied the Procurement Contract Documents.
  - 2. If required by the Instructions to Bidders to visit the Point of Destination and the site where the Goods are to be installed or Special Services will be provided, or if, in Seller’s judgment, any observable local or site conditions may affect the delivery, cost, progress, or furnishing of the Goods and Special Services, then Seller has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided (as applicable) and become familiar with and is satisfied as to the observable local and site conditions that may affect delivery, cost, progress, and furnishing of the Goods and Special Services.
  - 3. Seller is familiar with and is satisfied as to all Laws and Regulations that may affect the cost, progress, and performance of Seller's obligations under the Procurement Contract.
  - 4. Seller has carefully studied, considered, and correlated the information known to Seller with respect to the effect of such information on the cost, progress, and performance of Seller's obligations under the Procurement Contract.
  - 5. Seller has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Seller has discovered in the Procurement Contract Documents, and the written resolution (if any) thereof by Engineer is acceptable to Seller.
  - 6. The Procurement Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of Seller's obligations under the Procurement Contract.
  - 7. Seller’s entry into this Procurement Contract constitutes an incontrovertible representation by Seller that without exception all prices in the Procurement Agreement are premised upon furnishing the Goods and Special Services as required by the Procurement Contract Documents.

### **7.02 *Seller’s Certifications***

- A. Seller certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Procurement Contract. For the purposes of this Paragraph 7.02:

1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Procurement Contract execution;
2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Procurement Contract to the detriment of Buyer, (b) to establish bid or contract prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition;
3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Procurement Contract.

#### **ARTICLE 8—RESERVED**

#### **ARTICLE 9—MUTUAL WAIVER**

##### **9.01 *Mutual Waiver of Consequential Damages***

- A. Buyer and Seller waive against each other, and against the other’s officers, directors, members, partners, employees, agents, consultants, and subcontractors, any and all claims for or entitlement to incidental, indirect, or consequential damages arising out of, resulting from, or related to the Procurement Contract. The terms of this mutual waiver do not apply to or limit any claim by either Buyer or Seller against the other based on any of the following: (a) contribution or indemnification, (b) liquidated damages, (c) costs, losses, or damages attributable to personal or bodily injury, sickness, disease, or death, or to injury to or destruction of the tangible property of others, (d) intentional or reckless wrongful conduct, or (e) rights conferred by any bond provided by Seller under this Procurement Contract.

IN WITNESS WHEREOF, Buyer and Seller have signed this Procurement Agreement. Counterparts have been delivered to Buyer and Seller.

The Effective Date of the Procurement Contract is \_\_\_\_\_.

**City of John Day, Oregon**

**Seller**

\_\_\_\_\_  
(typed or printed name of organization)

By: \_\_\_\_\_  
(individual's signature)

Date: \_\_\_\_\_  
(date signed)

Name: \_\_\_\_\_  
(typed or printed)

Title: \_\_\_\_\_  
(typed or printed)

Attest: \_\_\_\_\_  
(individual's signature)

Title: \_\_\_\_\_  
(typed or printed)

Address for giving notices:

\_\_\_\_\_  
\_\_\_\_\_

Designated Representative:

Name: \_\_\_\_\_  
(typed or printed)

Title: \_\_\_\_\_  
(typed or printed)

Address:

\_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

(If Buyer is a corporation, attach evidence of authority to sign. If Buyer is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

\_\_\_\_\_  
(typed or printed name of organization)

By: \_\_\_\_\_  
(individual's signature)

Date: \_\_\_\_\_  
(date signed)

Name: \_\_\_\_\_  
(typed or printed)

Title: \_\_\_\_\_  
(typed or printed)

(If Seller is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: \_\_\_\_\_  
(individual's signature)

Title: \_\_\_\_\_  
(typed or printed)

Address for giving notices:

\_\_\_\_\_  
\_\_\_\_\_

Designated Representative:

Name: \_\_\_\_\_  
(typed or printed)

Title: \_\_\_\_\_  
(typed or printed)

Address:

\_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

## PERFORMANCE BOND

SELLER (name and address):

SURETY (name and address of principal place of business):

OWNER (name and address):

## PROCUREMENT CONTRACT

Effective Date of the Agreement:

Amount:

**Description (name and location): City of John Day, Oregon - Wastewater System Improvements - Membrane Bioreactor Equipment Procurement - 2019**

BOND

Bond Number:

Date (not earlier than the Effective Date of the Agreement of the Construction Contract):

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Seller, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

**SELLER AS PRINCIPAL**

\_\_\_\_\_  
Seller's Name and Corporate Seal

By: \_\_\_\_\_  
Signature

Print Name \_\_\_\_\_

Title

Attest: \_\_\_\_\_  
Signature

Title

**SURETY**

\_\_\_\_\_  
Surety's Name and Corporate Seal

By: \_\_\_\_\_  
Signature (attach power of attorney)

Print Name

Title

Attest: \_\_\_\_\_  
Signature

Title

*Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Seller, Surety, Owner, or other party shall be considered plural where applicable.*



1. The Seller and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Seller performs the Construction Contract, the Surety and the Seller shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Seller and the Surety that the Owner is considering declaring a Seller Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Seller, and Surety to discuss the Seller's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Seller, and the Surety agree, the Seller shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Seller Default;

3.2 The Owner declares a Seller Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Seller, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the

Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Seller Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Seller under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Seller for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Seller's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Seller.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Seller that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Seller Default or within two years after the Seller ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Seller shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

#### 14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Seller under the Construction Contract after all proper adjustments have been made including allowance for the Seller for any amounts received or to be

received by the Owner in settlement of insurance or other claims for damages to which the Seller is entitled, reduced by all valid and proper payments made to or on behalf of the Seller under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Seller identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Seller Default: Failure of the Seller, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Seller as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Seller.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Seller in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Seller.

16. Modifications to this Bond are as follows:



1. The Seller and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Seller promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Seller shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Seller and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Seller and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
  - 5.1 Claimants who do not have a direct contract with the Seller,
    - 5.1.1 have furnished a written notice of non-payment to the Seller, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
    - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
  - 5.2 Claimants who are employed by or have a direct contract with the Seller have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Seller, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
  - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
  - 7.2 Pay or arrange for payment of any undisputed amounts.
  - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Seller may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Seller under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Seller furnishing and the Owner accepting this Bond, they agree that all funds earned by the Seller in the performance of the Construction Contract are dedicated to satisfy obligations of the Seller and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Seller that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a

Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Seller shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Seller and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

#### 16. Definitions

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Seller or with a subcontractor of the Seller to furnish labor, materials, or equipment

for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Seller and the Seller's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Seller identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Seller as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Seller.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Seller in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Seller.

18. Modifications to this Bond are as follows:

# STANDARD GENERAL CONDITIONS OF THE PROCUREMENT CONTRACT

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## ARTICLE 1—DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Whenever used in the Procurement Bidding Requirements or Procurement Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated, which are applicable to the singular or plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Procurement Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Procurement Contract Documents.
  2. *Application for Payment*—The document prepared by Seller, in a form acceptable to Buyer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Procurement Contract Documents.
  3. *Bid*—An offer or proposal of a prospective Seller submitted on the prescribed form setting forth the prices for the Goods and Special Services to be provided.
  4. *Bidder*—An individual or entity that, as a prospective Seller, submits a Bid to Buyer.
  5. *Buyer*—The individual or entity purchasing the Goods and Special Services.
  6. *Change Directive*—A written directive from Buyer to Seller issued on or after the Effective Date of the Procurement Contract, ordering an addition, deletion, or revision in the Goods and Special Services.
  7. *Change Order*—A document which is signed by Seller and Buyer and authorizes an addition, deletion, or revision to the Procurement Contract Documents or an adjustment in the Procurement Contract Price or the Procurement Contract Times, issued on or after the Effective Date of the Procurement Contract. Change Orders may be the result of mutual agreement by Buyer and Seller, or of resolution of a Claim.
  8. *Claim*—A demand or assertion by Buyer or Seller seeking an adjustment of Procurement Contract Price or Procurement Contract Times, or both, or other relief with respect to the terms of the Procurement Contract. A demand for money or services by a third party is not a Claim.
  9. *Contractor/Assignee*—A construction contractor with which Project Owner enters into a construction contract, and to which Project Owner, as initial Buyer, assigns this Procurement Contract.
  10. *Effective Date of the Procurement Contract*—The date indicated in the Procurement Agreement on which the Procurement Contract becomes effective.
  11. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

12. *Electronic Means*—Electronic mail (e-mail), upload/download from a secure Project website, or other communications methods that allow: the transmission or communication of Electronic Documents; the documentation of transmissions, including sending and receipt; printing of the transmitted Electronic Document by the recipient; the storage and archiving of the Electronic Document by sender and recipient; and the use by recipient of the Electronic Document for purposes permitted by this Procurement Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.
13. *Engineer*—The individual or entity designated as such in the Procurement Agreement.
14. *Field Order*—A written order issued by Engineer which requires minor changes in the Goods or Special Services, but which does not involve a change in the Procurement Contract Price or Procurement Contract Times.
15. *Goods*—The tangible and movable personal property that is described in the Procurement Contract Documents, regardless of whether the property is to be later attached to realty.
16. *Goods and Special Services*—The full scope of materials, equipment, other items, and services to be furnished by Seller, including Goods, as defined herein, and Special Services, if any, as defined herein. This term refers to both the Goods and the Special Services, or to either the Goods or the Special Services, and to any portion of the Goods or the Special Services, as the context requires.
17. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
18. *Milestone*—A principal event specified in the Procurement Contract that Seller must attain by the date or within the number of days indicated, including but not limited to the delivery of the Goods and the furnishing of Special Services.
19. *Notice of Award*—The written notice, by Buyer to a Bidder, of Buyer's acceptance of the Bid.
20. *Point of Destination*—The specific address of the location where delivery of the Goods will be made, as stated in the Procurement Agreement.
21. *Procurement Agreement*—The written instrument, executed by Buyer and Seller, that sets forth the Procurement Contract Price and Procurement Contract Times, identifies the parties and the Engineer, and designates the specific items that are Procurement Contract Documents.
22. *Procurement Bidding Documents*—The Procurement Bidding Requirements and the proposed Procurement Contract Documents (including all Addenda).
23. *Procurement Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and Bid Form with any supplements.
24. *Procurement Contract*—The entire and integrated written agreement between Buyer and Seller concerning the Goods and Special Services.

25. *Procurement Contract Documents*—Those items so designated in the Procurement Agreement, and which together comprise the Procurement Contract. Shop Drawings and other Seller submittals are not Procurement Contract Documents, even if accepted, reviewed, or approved by Engineer or Buyer.
26. *Procurement Contract Price*—The money that Buyer has agreed to pay Seller for furnishing the Goods and Special Services in accordance with the Procurement Contract Documents.
27. *Procurement Contract Times*—The times stated in the Procurement Agreement by which the Goods must be delivered, Special Services must be furnished, and other Milestones must be attained.
28. *Procurement Drawings*—That part of the Procurement Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Goods and Special Services to be furnished by Seller. Shop Drawings and other Seller submittals are not Procurement Drawings as so defined.
29. *Procurement Specifications*—That part of the Procurement Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the furnishing of the Goods and Special Services, and certain administrative requirements and procedural matters applicable thereto.
30. *Project*—The total undertaking to be accomplished for Project Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Goods and Special Services are a part.
31. *Project Owner*—The entity that has retained (or will retain) engineers, contractors, and others for the planning, study, design, construction, testing, commissioning, and start-up of facilities and improvements. As of the Effective Date of the Procurement Contract, the Project Owner is the Buyer.
32. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Goods and Special Services and which establish the standards by which such portion of the Goods and Special Services will be judged.
33. *Schedule of Submittals*—A schedule, prepared and maintained by Seller, of required Submittals and the time requirements for Engineer's review of the Submittals.
34. *Seller*—The individual or entity furnishing the Goods and Special Services.
35. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Seller and submitted by Seller to illustrate some portion of the Goods and Special Services. Shop Drawings, whether approved or not, are not Procurement Drawings and are not Procurement Contract Documents.
36. *Special Services*—Services to be performed by Seller (or its agents or subcontractors) in association with the Goods to be furnished by Seller, as required by the Procurement Contract Documents.
37. *Submittal*—A written or graphic document, prepared by or for Seller, which the Procurement Contract Documents require Seller to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals

may include Shop Drawings and Samples; schedules; product data; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or site quality-control testing and inspections; warranties and certifications; suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; record documents; and other such documents required by the Procurement Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Procurement Contract Documents. Change proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

- 38. *Successful Bidder*—The Bidder whose Bid the Buyer accepts, and to which Buyer makes an award of the Procurement Contract.
- 39. *Supplementary Conditions*—The part of the Procurement Contract that amends or supplements these General Conditions.
- 40. *Unit Price Goods and Special Services*—Goods and Special Services to be paid for on the basis of unit prices (if any).

## 1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B and 1.02.C are not defined, but have the indicated meanings when used in the Bidding Requirements or Procurement Contract Documents.
- B. *Intent of Certain Terms or Adjectives*
  - 1. The Procurement Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Goods and Special Services. It is intended that such exercise of professional judgment, action, or determination will be commercially reasonable and will be solely to evaluate, in general, the Goods and Special Services for compliance with the requirements of and information in the Procurement Contract Documents and conformance with the design concept of the completed Project as a functioning whole, as shown or indicated in the Procurement Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective will not be effective to assign to Engineer any duty or authority to supervise or direct the furnishing of Goods or Special Services or any duty or authority to undertake responsibility contrary to any other provision of the Procurement Contract Documents.
  - 2. The word “non-conforming” when modifying the words “Goods and Special Services,” “Goods,” or “Special Services,” refers to Goods and Special Services that are unsatisfactory, faulty, or deficient in that they:
    - a. do not conform to or comply with the requirements of the Procurement Contract Documents;
    - b. do not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Procurement Contract Documents; or

- c. in the case of Special Services, have not been completed.
- 3. The word “receipt” when referring to the Goods, means the physical taking and possession by the Buyer under the conditions specified in Paragraph 9.02.B.2.
- 4. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- 5. The word “furnish,” when used in connection with the Goods and Special Services means to supply and deliver said Goods to the Point of Destination (or some other specified location) and to perform said Special Services fully, all in accordance with the Procurement Contract Documents.
- C. *Procurement Contract Price or Procurement Contract Times:* References to a change in “Procurement Contract Price or Procurement Contract Times” or “Procurement Contract Times or Procurement Contract Price” or similar, indicate that such change applies to (1) Procurement Contract Price, (2) Procurement Contract Times, or (3) both Procurement Contract Price and Procurement Contract Times, as warranted, even if the term “or both” is not expressed.
- D. Unless stated otherwise in the Procurement Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Procurement Contract Documents in accordance with such recognized meaning.

## ARTICLE 2—PRELIMINARY MATTERS

### 2.01 *Delivery of Bonds and Evidence of Insurance*

- A. When Seller delivers the executed counterparts of the Procurement Agreement to Buyer, the Seller also shall deliver to Buyer the performance bond and payment bond (if the Procurement Contract requires Seller to furnish such bonds).
- B. *Evidence of Seller’s Insurance:* When Seller delivers the signed counterparts of the Procurement Agreement to Buyer, the Seller also shall deliver to Buyer, with copies to each additional insured (as identified in the Procurement Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Seller in accordance with Article 5. Evidence of insurance to be obtained at a later date, such as insurance relating to transit or storage of the Goods, will be provided to Buyer at the time of such insurance is obtained.
- C. *Evidence of Buyer’s Insurance:* After receipt of the signed counterparts of the Procurement Agreement and all required bonds and insurance documentation, Buyer shall promptly deliver to Seller, with copies to each additional insured (as identified in the Procurement Contract), certificates and other evidence of insurance (if any) required to be provided by Buyer.

### 2.02 *Copies of Documents*

- A. Buyer shall furnish to Seller four printed copies of the Procurement Contract (including one fully executed counterpart of the Procurement Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

### 2.03 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Procurement Contract, the Buyer, Seller, and Engineer may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Procurement Contract does not establish protocols for Electronic Means, then Buyer, Seller, and Engineer shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

### 2.04 *Preliminary Schedules*

- A. Within 15 days after the Effective Date of the Procurement Contract, Seller shall submit to Buyer and Engineer for timely review:
  - 1. a progress schedule of activities, consistent with the Procurement Contract Times, including at a minimum, Shop Drawing and Sample submittals, tests, and deliveries as required by the Procurement Contract Documents.
    - a. The progress schedule will be acceptable to Buyer and Engineer if it provides an orderly progression of the Submittals, tests, and deliveries to completion within the specified Milestones of the Procurement Contract Times.
    - b. Such acceptance will not impose on Buyer or Engineer responsibility for the progress schedule, for sequencing, scheduling, or progress of Seller's performance of its obligations under the Procurement Contract, nor interfere with or relieve Seller from Seller's full responsibility therefor.
    - c. Such acceptance will not be deemed as an acknowledgment of the reasonableness and attainability of the schedule.
  - 2. a preliminary schedule of Submittals.
- B. No progress payment will be made to Seller until an acceptable progress schedule and acceptable schedule of Submittals are submitted to Buyer and Engineer (and other conditions applicable to progress payments are met).

### 2.05 *Preliminary Conference*

- A. Within 20 days after the Procurement Contract Times start to run, a conference attended by Seller, Buyer, Engineer and others as appropriate will be held to establish a working understanding among the parties as to the Goods and Special Services and to discuss the schedules referred to in Paragraph 2.04.A, procedures for handling Shop Drawings and other Submittals, processing Applications for Payment, and maintaining required records.

### 2.06 *Safety*

- A. Buyer and Seller shall comply with all applicable Laws and Regulations relating to the safety of persons or property, and to the protection of persons or property from damage, injury, or loss.

- B. When Seller's personnel, or the personnel of any subcontractor to Seller, are present at the Point of Destination or any work area or site controlled by Buyer, the Seller shall be responsible for the compliance by such personnel with any applicable requirements of Buyer's safety programs that are made known to Seller.
- C. If Buyer or its representatives visit the Seller's manufacturing or storage facilities, for testing, inspection, or other purposes, Seller shall inform Buyer in advance of any safety preparations, standards, or programs with which Buyer and its representatives must comply.

## **ARTICLE 3—PROCUREMENT CONTRACT DOCUMENTS**

### **3.01    *Intent***

- A. The Procurement Contract Documents are complementary; what is called for by one is as binding as if called for by all.
- B. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Procurement Contract Documents or from prevailing custom or trade usage as being required to produce or furnish the indicated Goods and Special Services will be provided, whether or not specifically called for, at no additional cost to Buyer.
- C. Unless otherwise stated in the Procurement Contract Documents, if there is a discrepancy between the electronic or digital versions of the Procurement Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version will govern.
- D. The Procurement Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Procurement Contract Documents, as provided in Paragraph 3.04.
- F. Any provision or part of the Procurement Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Buyer and Seller.

### **3.02    *Reference Standards***

- A. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws and Regulations, whether such reference be specific or by implication, means the standard, specification, manual, code, or Laws and Regulations in effect at the time of opening of Bids (or on the Effective Date of the Procurement Agreement if there were no Bids), except as may be otherwise specifically stated in the Procurement Contract Documents.
- B. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a supplier, will be effective to change the duties or responsibilities of Buyer, Seller, or Engineer from those set forth in the part of the Procurement Contract Documents prepared by or for Engineer. No such provision or instruction will be effective to assign to Buyer or Engineer any duty or authority to supervise or direct the performance of Seller's obligations, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Procurement Contract Documents prepared by or for Engineer.

### 3.03 *Reporting and Resolving Discrepancies*

#### A. *Reporting Discrepancies*

1. *Seller's Review of Procurement Contract Documents:* If, before or during the performance of Seller's obligations, Seller discovers any conflict, error, ambiguity, or discrepancy within the Procurement Contract Documents, or between the Procurement Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any supplier to Seller, then Seller shall promptly report it to Engineer (or if the Procurement Contract is assigned, then directly to Contractor/Assignee) in writing. Seller shall not proceed with the Goods and Special Services affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer (or if the Procurement Contract is assigned, then by Contractor/Assignee) or by an amendment or supplement to the Procurement Contract Documents issued pursuant to Article 11.
2. Seller shall not be liable to Buyer or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Procurement Contract Documents unless Seller had actual knowledge thereof.

#### B. *Resolving Discrepancies:* Except as may be otherwise specifically stated in the Procurement Contract Documents, the provisions of the Procurement Contract Documents will take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Procurement Contract Documents and:

1. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Procurement Contract Documents); or
2. the provisions of any Laws or Regulations applicable to the furnishing of the Goods and Special Services (unless such an interpretation of the provisions of the Procurement Contract Documents would result in violation of such Law or Regulation).

### 3.04 *Requirements of the Procurement Drawings and Procurement Specifications*

- A. During the performance of Seller's obligations and until final payment, Seller and Buyer shall submit to the Engineer all matters in question concerning the requirements of the Procurement Drawings and Procurement Specifications (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Goods and Special Services, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Procurement Drawings and Procurement Specifications, and judge of the acceptability of the Goods and Special Services thereunder.
  1. After assignment (if any) Seller shall submit such matters directly to Contractor/Assignee for response or administration, and the Procurement Contract provisions in Paragraphs 3.04.B and C will not apply.
- B. Engineer will issue with reasonable promptness a written clarification, interpretation, or decision on the issue submitted, and if necessary, initiate an amendment or supplement to the Procurement Drawings or Procurement Specifications. Engineer's written clarification, interpretation, or decision will be consistent with the overall intent of the Procurement Contract Documents, and will be final and binding on Seller and Buyer. If either Buyer or Seller believes that a written clarification or interpretation justifies an adjustment in the



Procurement Contract Price or Procurement Contract Times, either may make a Claim for such adjustment as provided in Article 12.

- C. If a submitted matter in question concerns terms and conditions of the Procurement Contract Documents that do not involve (1) the performance or acceptability of the Goods and Services, (2) the design (as set forth in the Procurement Drawings, Procurement Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Buyer and Seller that Engineer is unable to provide a decision or interpretation.

### 3.05 *Reuse of Documents*

- A. Seller and its subcontractors and suppliers shall not:
  - 1. have or acquire any title to or ownership rights in any of the Procurement Drawings, Procurement Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Procurement Drawings, Procurement Specifications, other documents, or copies thereof, on extensions of the Project or any other project, without written consent of Buyer and Engineer and specific written verification or adaptation by Engineer; or
  - 2. have or acquire any title or ownership rights in any other Procurement Contract Documents, reuse any such Procurement Contract Documents for any purpose without Buyer's express written consent, or violate any copyrights pertaining to such Procurement Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Procurement Contract. Nothing herein precludes Seller from retaining copies of the Procurement Contract Documents for record purposes.

## **ARTICLE 4—COMMENCEMENT AND SCHEDULE**

### 4.01 *Commencement of Procurement Contract Times*

- A. The Procurement Contract Times will commence to run on the Effective Date of the Procurement Contract.

### 4.02 *Continuing Performance*

- A. Seller shall adhere to the progress schedule established in accordance with Paragraph 2.04.A., as duly adjusted, and the Goods will be delivered and the Special Services furnished within the Procurement Contract Times.
- B. Seller shall carry on furnishing of the Goods and Special Services and adhere to the progress schedule during all disputes or disagreements with Buyer. No furnishing of Goods and Special Services will be delayed or postponed pending resolution of any disputes or disagreements, except as expressly permitted herein, or as Buyer and Seller may otherwise agree in writing.

### 4.03 *Adjustments to Progress Schedule*

- A. The progress schedule established in accordance with Paragraph 2.04 may be adjusted from time to time as provided below.

1. Seller shall submit to Buyer for acceptance (to the extent indicated in Paragraph 2.04) proposed adjustments in the progress schedule that will not result in changing the Procurement Contract Times. Such adjustments will comply with any applicable provisions of the Procurement Specifications.
2. Proposed adjustments in the progress schedule that will change the Procurement Contract Times must be submitted in accordance with the requirements of Article 11. Adjustments in Procurement Contract Times may only be made by a Change Order.

#### 4.04 Delays

- A. If Buyer, Engineer, or anyone for whom Buyer is responsible, delays, disrupts, or interferes with Seller's performance or progress, then Seller shall be entitled to an equitable adjustment in Procurement Contract Price or Procurement Contract Times.
- B. Seller shall not be entitled to an adjustment in Procurement Contract Price or Procurement Contract Times for delay, disruption, or interference caused by or within the control of Seller or anyone for whom Seller is responsible.
- C. If Seller's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Buyer, Seller, and those for which they are responsible, then Seller shall be entitled to an equitable adjustment in Procurement Contract Times. Such an adjustment will be Seller's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Procurement Contract Times under this paragraph include but are not limited to the following:
  1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
  2. abnormal weather conditions;
  3. inspection delays by governmental authorities, and custom delays;
  4. international shipping delays;
  5. acts or failures to act of third-party entities; and
  6. acts of war or terrorism.
- D. *Adjustments of Procurement Contract Times or Procurement Contract Price—General Provisions:* Seller's entitlement to an adjustment of Procurement Contract Times or Procurement Contract Price is limited as follows:
  1. Seller's entitlement to an adjustment of the Procurement Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of Seller's obligations, as of the time of the delay, disruption, or interference.
  2. Seller shall not be entitled to an adjustment in Procurement Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Seller. Such a concurrent delay by Seller does not preclude an adjustment of Procurement Contract Times to which Seller is otherwise entitled.

3. Adjustments of Procurement Contract Times or Procurement Contract Price are subject to the provisions of Articles 11 and 12.
- E. Each Seller request seeking a delay-related increase in Procurement Contract Times or Procurement Contract Price must be supplemented by supporting data that sets forth in detail the following: (1) the circumstances that form the basis for the requested adjustment; (2) the date upon which each cause of delay, disruption, or interference began to affect Seller's progress; (3) the date upon which each cause of delay, disruption, or interference ceased to affect Seller's progress; (4) the number of days' increase in Procurement Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and (5) the impact on Procurement Contract Price. Seller shall also furnish such additional supporting documentation as Buyer or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion.

## **ARTICLE 5—BONDS AND INSURANCE**

### **5.01 *Performance, Payment, and Other Bonds***

- A. Seller shall furnish a performance bond and a payment bond, each in an amount at least equal to the Procurement Contract Price, as security for the faithful performance and payment of Seller's obligations under the Procurement Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 9.04, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Procurement Contract.
- B. Seller shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Procurement Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Buyer prior to execution of the Procurement Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- D. Seller shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Seller is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Seller shall promptly notify Buyer and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements of this Procurement Contract.

- F. If Seller has failed to obtain a required bond, Buyer may exercise Buyer's termination rights under Article 14.
- G. Upon request to Buyer from any subcontractor, supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of Seller's obligations, Buyer shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Seller from any subcontractor, supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of Seller's obligations, Seller shall provide a copy of the payment bond to such person or entity.

#### 5.02 *Insurance*

- A. Seller shall provide insurance of the types and coverages and in the amounts stipulated in the Supplementary Conditions.
- B. Failure of Buyer to demand certificates of insurance or other evidence of Seller's full compliance with these insurance requirements or failure of Buyer to identify a deficiency in compliance from the evidence provided will not be construed as a waiver of Seller's obligation to maintain such insurance.
- C. Upon assignment of this Procurement Contract, Seller shall name the Contractor/Assignee as an additional insured and comply with the written request of Contractor/Assignee to provide evidence of insurance.
- D. Buyer does not represent that insurance coverage and limits established in this Procurement Contract necessarily will be adequate to protect Seller.
- E. The insurance and insurance limits required herein will not be deemed as a limitation on Seller's liability under the indemnities and other rights granted to Buyer in the Procurement Contract.

#### 5.03 *Surety or Insurance Companies*

- A. All bonds and insurance required by the Procurement Contract Documents to be purchased and maintained by Buyer or Seller shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies must also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

### **ARTICLE 6—LICENSES AND FEES**

#### 6.01 *Intellectual Property and License Fees*

- A. Except to the extent stated elsewhere in the Procurement Contract Documents, Seller is not transferring any patent rights, copyrights, or other intellectual property rights for the Goods delivered.
- B. To the extent Seller is manufacturing to Buyer's design, Buyer retains all patent rights, copyrights, and other intellectual property rights in such design.
- C. If an invention, design, process, product, or device is specified in the Procurement Contract Documents for incorporation in the Goods or for the performance of Special Services, and if, to the actual knowledge of Buyer or Engineer, its use is subject to patent rights, copyrights,

or other intellectual property rights calling for the payment of a license fee or royalty to others, then the existence of such rights and payment obligations will be disclosed to Seller in the Procurement Contract Documents.

- D. Seller shall pay all license fees and royalties and assume all costs incident to the use or the furnishing of the Goods, unless specified otherwise by the Procurement Contract Documents.

#### 6.02 *Seller's Infringement*

- A. Subject to Paragraph 6.01, to the fullest extent permitted by Laws and Regulations, Seller shall indemnify and hold harmless Buyer, Engineer, and their officers, directors, members, partners, employees, agents, consultants, contractors, and subcontractors, from and against all claims, costs, losses, damages, and judgments (including but not limited to all reasonable fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement or alleged infringement of any patent, copyright, or other intellectual property right by any of the Goods as delivered or Special Services as performed.
- B. Buyer will promptly notify Seller in writing of any claim, suit, or threat of suit by a third party for any infringement or alleged infringement of any patent, copyright, or other intellectual property right with respect to the Goods as delivered or Special Services as performed.
- C. Seller shall promptly defend or settle the claim or suit. Seller shall have control over such claim or suit, bear all expenses, and satisfy any adverse judgment.
  - 1. If Seller fails to defend such suit or claim after written notice by Buyer, Seller will be bound, in any subsequent suit or claim against Seller by Buyer, by any factual determination in the prior suit or claim.
  - 2. If Buyer fails to provide Seller the opportunity to defend such suit or claim, Buyer shall be barred from any remedy against Seller for such suit or claim.
- D. If a determination is made that Seller has infringed upon the intellectual property rights of another, Seller may, at Seller's own expense, obtain the necessary licenses for Buyer's benefit, or replace the Goods and provide related design and construction, consistent with the requirements of the Procurement Contract Documents, to avoid the infringement.

#### 6.03 *Buyer's Infringement*

- A. Subject to Paragraph 6.01, and to the fullest extent permitted by Laws and Regulations, Buyer shall be responsible to Seller for any infringement or alleged infringement of any patent, copyright, or other intellectual property right caused by Seller's compliance with the Procurement Drawings or Procurement Specifications, and will reimburse Seller for any license fee or royalties paid by Seller to others if such payment resulted from any invention, design, process, product, or device specified to be furnished or performed in the Procurement Drawings or Procurement Specifications, but not identified as being subject to payment of such license fee or royalty.
- B. Seller will promptly notify Buyer in writing of any claim, suit, or threat of suit by a third party for intellectual property infringement arising from Seller's compliance with the Procurement Drawings or Procurement Specifications.

- C. Buyer shall defend or settle the claim or suit. Buyer shall have control over such claim or suit, bear all expenses, and satisfy any adverse judgment.
  - 1. If Buyer fails to defend such suit or claim after written notice by Seller, Buyer will be bound, in any subsequent suit or claim against Buyer by Seller, by any factual determination in the prior suit or claim.
  - 2. If Seller fails to provide Buyer the opportunity to defend such suit or claim, Seller shall be barred from any remedy against Buyer for such suit or claim.

## **ARTICLE 7—SELLER’S RESPONSIBILITIES**

### **7.01   *Performance of Obligations***

- A. Seller shall be solely responsible for the means, methods, techniques, sequences, and procedures necessary to perform its obligations in accordance with the Procurement Contract Documents.
- B. Seller shall supervise, inspect, and direct the furnishing of the Goods and Special Services competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform its obligations in accordance with the Procurement Contract Documents.
- C. Seller shall coordinate the provision of Special Services to avoid or limit interference or disruption of other activities at the location where the Special Services are to occur, including but not limited to ongoing facility operations and construction activities.

### **7.02   *Labor, Materials and Equipment***

- A. Seller shall provide competent, qualified and trained personnel in all aspects of its performance of the Procurement Contract.
- B. All Goods, and all equipment and material incorporated into the Goods, must be as specified, and unless specified otherwise in the Procurement Contract Documents, must be:
  - 1. new, and of good quality;
  - 2. protected, assembled, connected, cleaned, and conditioned in accordance with the original manufacturer’s instructions; and
  - 3. shop-assembled to the greatest extent practicable.

### **7.03   *Laws and Regulations***

- A. Seller shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of its obligations in accordance with the Procurement Contract Documents. Except where otherwise expressly required by such Laws and Regulations, neither Buyer nor Engineer shall be responsible for monitoring Seller’s compliance with any Laws or Regulations.
- B. If Seller furnishes Goods and Special Services knowing or having reason to know that such furnishing is contrary to Laws or Regulations, Seller shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such performance. It will not be Seller’s responsibility to make certain

that the Procurement Specifications and Procurement Drawings are in accordance with Laws and Regulations, but this provision will not relieve Seller of Seller's obligations under Paragraph 3.03.

- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Procurement Contract if there were no Bids) that have a direct effect on the cost or time of Seller's performance will be the subject of an adjustment in Procurement Contract Price or Procurement Contract Times. If Buyer and Seller are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Article 12.

#### 7.04 "Or Equals"

- A. Whenever an item of material or equipment to be incorporated into the Goods is specified or described in the Procurement Contract Documents by using the names of one or more proprietary items or specific suppliers or manufacturers, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, other items of material or equipment or material or equipment of other suppliers or manufacturers may be submitted to Buyer for Engineer's review.
  - 1. If in Engineer's sole discretion, such an item of material or equipment proposed by Seller is functionally equal to that named and sufficiently similar so that no change in related work will be required, it may be considered by Engineer as an "or equal" item.
  - 2. For the purposes of this paragraph, a proposed item of material or equipment may be considered functionally equal to an item so named only if in the exercise of reasonable judgment, Engineer determines that: 1) it is at least equal in quality, durability, appearance, strength, and design characteristics; 2) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole; 3) it has an acceptable record of performance and availability of responsive service; and (4) Seller certifies that if approved: a) there will be no increase in any cost, including capital, installation or operating costs, to Buyer; and b) the proposed item will conform substantially to the detailed requirements of the item named in the Procurement Contract Documents.
- B. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or Submittal made pursuant to Paragraph 7.04.A. Engineer will be the sole judge of whether to accept or reject such a proposal or Submittal. No "or equal" will be ordered, manufactured or utilized until Engineer's review is complete, which will be evidenced by an approved Shop Drawing. Engineer will advise Buyer and Seller in writing of any negative determination. Notwithstanding Engineer's approval of an "or-equal" item, Seller shall remain obligated to comply with the requirements of the Procurement Contract Documents.
- C. *Special Guarantee:* Buyer may require Seller to furnish at Seller's expense a special performance guarantee or other surety with respect to any such proposed "or-equal."
- D. *Data:* Seller shall provide all data in support of any such proposed "or equal" at Seller's expense.

## 7.05 Taxes

- A. Seller shall pay all taxes and duties arising out of the sale of the Goods and the performance of Special Services. All taxes and duties are included in the Procurement Contract Price, except as noted in the Supplementary Conditions.

## 7.06 Submittals

### A. Shop Drawing and Sample Requirements

1. Before submitting a Shop Drawing or Sample, Seller shall:
  - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Procurement Contract Documents;
  - b. determine and verify:
    - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal; and
    - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of Seller's obligations.
  - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Seller has satisfied its obligations under the Procurement Contract Documents with respect to Seller's review of that Submittal, and that Seller approves the Submittal.
3. With each Shop Drawing or Sample, Seller shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Procurement Contract Documents. This notice will be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

- B. *Submittal Procedures for Shop Drawings and Samples:* Seller shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

### 1. Shop Drawings

- a. Seller shall submit the number of copies required in the Procurement Specifications.
- b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Seller proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.06.C.

### 2. Samples

- a. Seller shall submit the number of Samples required in the Procurement Specifications.



- b. Seller shall clearly identify each Sample as to material, supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.06.C.
3. Where a Shop Drawing or Sample is required by the Procurement Contract Documents or the Schedule of Submittals, any related work performed by Seller prior to Engineer's review and approval of the pertinent Submittal will be at the sole expense and responsibility of Seller.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Goods, comply with the requirements of the Procurement Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Procurement Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, manufacturing, fabrication, installation, or shipping, or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Seller from responsibility for any variation from the requirements of the Procurement Contract Documents unless Seller has complied with the requirements of Paragraph 7.06.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Procurement Contract Documents in a Field Order or other appropriate Procurement Contract modification.
5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Seller from responsibility for complying with the requirements of Paragraphs 7.06.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Procurement Contract Documents, will not, under any circumstances, change the Procurement Contract Times or Procurement Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing or Sample will result in such item becoming a Procurement Contract Document.
8. Seller shall furnish Goods that comply with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.06.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Seller shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review

and approval. Seller shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Seller shall furnish required Shop Drawing and Sample Submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Seller shall be responsible for Engineer's charges to Buyer for such time. Buyer may impose a set-off against payments due Seller to secure reimbursement for such charges.
3. If Seller requests a change of a previously approved Shop Drawing or Sample, Seller shall be responsible for Engineer's charges to Buyer for its review time, and Buyer may impose a set-off against payments due Seller to secure reimbursement for such charges, unless the need for such change is beyond the control of Seller.

E. *Submittals Other than Shop Drawings and Samples*

1. The following provisions apply to all Submittals other than Shop Drawings and Samples:
  - a. Seller shall submit all such Submittals to the Engineer in accordance with the schedule of Submittals and pursuant to the applicable terms of the Procurement Contract Documents.
  - b. Engineer will provide timely review of all such Submittals in accordance with the schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the schedule of Submittals will be deemed accepted.
  - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Procurement Contract Documents as to general form and content of the Submittal.
  - d. If any such Submittal is not accepted, Seller shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.04 and 2.05.

7.07 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Seller shall indemnify and hold harmless Buyer, Engineer, Project Owner, and any assignee of Buyer, including Contractor/Assignee, and their officers, directors, members, partners, employees, agents, consultants, contractors, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of Seller's obligations under the Procurement Contract, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Goods themselves), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Seller, or any individual or entity directly or indirectly employed by Seller or anyone for whose acts Seller may be liable.

- B. In any and all claims against Buyer, Engineer, Project Owner, or any assignee of Buyer, including Contractor/Assignee, or their officers, directors, members, partners, employees, agents, consultants, contractors, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Seller, any subcontractor, any supplier, or any individual or entity directly or indirectly employed by any of them to furnish any of the Goods and Special Services, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.07.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Seller or any such subcontractor, supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

**7.08** *Concerning Subcontractors and Suppliers*

- A. Seller may retain subcontractors and suppliers for the performance of parts of the furnishing of the Goods and Special Services. The Seller's retention of a subcontractor or supplier will not relieve Seller's obligation to Buyer to perform and complete the furnishing the Goods and Special Services in accordance with the Procurement Contract Documents.

**ARTICLE 8—SHIPPING AND DELIVERY**

**8.01** *Shipping*

- A. Seller shall select the carrier and bear all costs of packaging, transportation, insurance, special handling, and all other costs associated with shipment and delivery.

**8.02** *Delivery*

- A. Seller shall deliver the Goods free on board (FOB) to the Point of Destination, freight prepaid, in accordance with the Procurement Contract Times set forth in the Procurement Agreement, or other date agreed to by Buyer and Seller.
- B. At least 10 days before shipment, Seller shall provide written notice to Buyer of the manner of shipment and the anticipated delivery date. The notice must also include any instructions concerning special equipment or services required at the Point of Destination to unload and care for the Goods. Seller shall also require the carrier to give Buyer at least 24 hours' notice by telephone prior to the anticipated time of delivery.
- C. Buyer will be responsible and bear all costs for unloading the Goods from carrier.
- D. Buyer will assure that adequate facilities are available to receive delivery of the Goods at the time established for delivery, or on another date agreed to by Buyer and Seller.
- E. No partial deliveries will be allowed, unless permitted or required by the Procurement Contract Documents or agreed to in writing by Buyer.
- F. Provisions governing inspection on delivery are set forth in Paragraph 9.02.

**8.03** *Risk of Loss*

- A. Risk of loss and insurable interests transfer from Seller to Buyer upon Buyer's receipt of the Goods.
- B. Notwithstanding the provisions of Paragraph 8.03.A, if Buyer rejects the Goods as non-conforming, the risk of loss on such Goods will remain with Seller until Seller corrects the non-conformity or Buyer accepts the Goods. If rejected Goods remain at the Point of

Destination pending modification and acceptance, then Seller shall be responsible for arranging adequate protection and maintenance of the Goods at Seller's expense.

## **ARTICLE 9—BUYER'S RIGHTS**

### **9.01 *Seller's Warranties and Guarantees***

- A. Seller warrants and guarantees to Buyer that the title to the Goods conveyed will be proper, its transfer rightful, and free from any security interest, lien, or other encumbrance. Seller shall defend, indemnify, and hold Buyer harmless against any liens, claims, or demands contesting or affecting title of the Goods conveyed.
- B. Seller warrants and guarantees to Buyer that all Goods and Special Services will conform with the Procurement Contract Documents, and with the standards established by any Samples approved by Engineer. Engineer shall be entitled to rely on Seller's warranty and guarantee. If the Procurement Contract Documents do not otherwise specify the characteristics or the quality of the Goods, the Goods must comply with the requirements of Paragraph 7.02.B.
- C. Seller's warranty and guarantee hereunder excludes defects or damage caused by:
  - 1. abuse, improper modification, improper maintenance, or improper operation by persons other than Seller;
  - 2. excessive corrosion or chemical attack, unless corrosive or chemically-damaging conditions were disclosed by Buyer in the Procurement Contract Documents and the Procurement Contract Documents required the Goods to withstand such conditions;
  - 3. use in a manner contrary to Seller's written instructions for installation, operation, and maintenance; or
  - 4. normal wear and tear under normal usage.
- D. Seller's obligation to furnish the Goods and Special Services in accordance with the Procurement Contract Documents will be absolute. None of the following will constitute an acceptance of Goods and Special Services that are non-conforming, or a release of Seller's obligation to furnish the Goods and Special Services in accordance with the Procurement Contract Documents:
  - 1. observations by Buyer, Engineer, or Project Owner;
  - 2. recommendation by Engineer or payment by Buyer of any progress or final payment;
  - 3. use of the Goods by Buyer or Project Owner;
  - 4. any acceptance by Buyer, Engineer, or Project Owner, or any failure to do so;
  - 5. the end of the correction period established in Paragraph 9.04;
  - 6. the issuance of a notice of acceptance;
  - 7. any inspection, test or approval by others; or
  - 8. any correction of non-conforming Goods and Special Services by Buyer or Project Owner.
- E. Buyer shall promptly notify Seller of any breach of Seller's warranties or guarantees.

## 9.02 *Inspections and Testing*

### A. *General Provisions*

1. The Procurement Contract Documents specify required inspections and tests. Buyer shall have the right to perform, or cause to be performed, reasonable inspections and require reasonable tests of the Goods at Seller's facility, and at the Point of Destination. Seller shall allow Buyer a reasonable time to perform such inspections or tests.
2. Seller shall reimburse Buyer for all expenses, except for travel, lodging, and subsistence expenses of Buyer's and Engineer's representatives, for inspections and tests specified in the Procurement Contract Documents. If as the result of any such specified testing the Goods are determined to be non-conforming, then Seller shall also bear the travel, lodging, and subsistence expenses of Buyer's and Engineer's representatives, and all expenses of re-inspection or retesting.
3. Buyer shall bear all expenses of inspections and tests that are not specified in the Procurement Contract Documents (other than any re-inspection or retesting resulting from a determination of non-conformity, as set forth in Paragraph 9.03); provided, however, that if as the result of any such non-specified inspections or testing the Goods are determined to be non-conforming, then Seller shall bear all expenses of such inspections and testing, and of any necessary re-inspection and retesting.
4. Seller shall provide Buyer timely written notice of the readiness of the Goods for all inspections, tests, or approvals which the Procurement Contract Documents specify are to be observed by Buyer prior to shipment.
5. Buyer will give Seller timely notice of all specified tests, inspections, and approvals of the Goods which are to be conducted at the Point of Destination, and a representative of Seller will attend such tests, inspections, and approvals.
6. If, on the basis of inspections or testing, the Goods appear to be conforming, Buyer will give Seller prompt notice thereof. If on the basis of inspections or testing, the Goods appear to be non-conforming, Buyer will give Seller prompt notice thereof and will advise Seller of the remedy Buyer elects under the provisions of Paragraph 9.03.
7. Neither payments made by Buyer to Seller prior to any tests or inspections, nor any tests or inspections, will constitute acceptance of non-conforming Goods, or prejudice Buyer's rights under the Procurement Contract.

### B. *Visual Inspection on Delivery*

1. Buyer will visually inspect the Goods upon delivery solely for purposes of identifying the Goods, general verification of quantities, and observation of apparent condition. Such visual inspection will not be construed as final or as receipt of any Goods and Special Services that, as a result of subsequent inspections and tests, are determined to be non-conforming.
2. If, on the basis of the visual inspection specified in Paragraph 9.02.B.1, the Goods appear to comply with the requirements of the Procurement Contract Documents as to quantities and condition, then within 10 days of delivery Buyer shall issue to Seller Buyer's acknowledgment of the receipt of Goods.

C. *Final Inspection*

1. After all of the Goods have been incorporated into the Project, tested in accordance with such testing requirements as are specified, and are functioning as required, and Seller has performed and completed all Special Services, Buyer will make a final inspection.
2. If, on the basis of the final inspection, Buyer determines that the Goods and Special Services are conforming, Buyer's notice thereof will constitute Buyer's acceptance of the Goods and Special Services, subject to any limitations stated in the notice.
3. If, on the basis of the final inspection, the Goods and Special Services are non-conforming, Buyer will identify the non-conformity in writing.

9.03 *Non-Conforming Goods and Special Services*

- A. If, on the basis of inspections and testing prior to delivery, the Goods and Special Services are found to be non-conforming, or if at any time after Buyer has acknowledged receipt of delivery and before the expiration of the correction period described in Paragraph 9.04, Buyer determines that the Goods and Special Services are non-conforming, then Seller shall promptly, without cost to Buyer and in response to written instructions from Buyer, either correct such non-conforming Goods and Special Services, or, if Goods are rejected by Buyer, remove and replace the non-conforming Goods with conforming Goods, including all work required for reinstallation.

B. *Buyer's Rejection of Non-Conforming Goods*

1. If Buyer elects to reject the Goods in whole or in part, Buyer's notice to Seller will describe in sufficient detail the non-conforming aspect of the Goods. If Goods have been delivered to Buyer, Seller shall promptly, and within the Procurement Contract Times, remove and replace the rejected Goods.
2. Seller shall bear all costs, losses and damages attributable to the removal, replacement, reinspection, and retesting of the non-conforming Goods.
3. Upon rejection of the Goods, Buyer retains a security interest in the Goods to the extent of any payments made and expenses incurred in their testing and inspection.

C. *Buyer's Rejection of Non-Conforming Special Services*

1. If at any time Buyer elects to reject the Special Services in whole or in part, Buyer's notice to Seller will describe in sufficient detail the non-conforming aspect of the Special Services.
2. Seller shall promptly provide conforming Special Services acceptable to Buyer.
3. If Seller fails to provide conforming Special Services, Buyer may remove the Special Services from the scope of the Procurement Contract, and equitably reduce the Procurement Contract Price.

- D. *Remedying Non-Conforming Goods:* If Buyer elects to permit the Seller to modify the Goods to correct the non-conformance, then Seller shall promptly provide a schedule for such modifications and shall make the Goods conforming within a reasonable time.

- E. *Buyer's Acceptance of Non-Conforming Goods:* Instead of requiring correction or removal and replacement of non-conforming Goods discovered either before or after final payment,

Buyer may accept the non-conforming Goods. Seller shall bear all reasonable costs, losses, and damages attributable to Buyer's evaluation of and determination to accept such non-conforming Goods.

- F. *Seller Obligations:* Seller shall pay all claims, costs, losses, and damages, including but not limited to all fees and charges for re-inspection, retesting and for any engineers, architects, attorneys and other professionals, and all court or arbitration or other dispute resolution costs arising out of or relating to the non-conforming Goods and Special Services. Seller's obligations will include the costs of the correction or removal and replacement of the non-conforming Goods and the replacement of property of Buyer and others destroyed by the correction or removal and replacement of the non-conforming Goods, and obtaining conforming Special Services from others.
- G. *Buyer's Rejection of Conforming Goods:* If Buyer asserts that Goods and Special Services are non-conforming and such Goods and Special Services are determined to be conforming, or if Buyer rejects as non-conforming Goods and Special Services that are later determined to be conforming, then Seller shall be entitled to reimbursement from Buyer of costs incurred by Seller in inspecting, testing, correcting, removing, or replacing the conforming Goods and Special Services, including but not limited to fees and charges of engineers, architects, attorneys and other professionals, and all court or arbitration or other dispute resolution costs associated with the incorrect assertion of non-conformance or rejection of conforming Goods and Special Services.

#### 9.04 *Correction Period*

- A. Seller's responsibility for correcting all non-conformities in the Goods and Special Services will extend for a period of one year after the acceptance of the Goods and Special Services in accordance with Paragraph 9.02.C.2.
- B. Where non-conforming Goods and Services (and damage to other work resulting therefrom) have been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Goods and Services will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- C. Seller's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph may not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

### ARTICLE 10—ENGINEER'S STATUS

#### 10.01 *Engineer's Role Defined*

- A. Engineer will be Buyer's representative until assignment (if any) of the Procurement Contract.
- B. The duties and responsibilities and the limitations of authority of Engineer prior to assignment, if any, of the Procurement Contract, are set forth in the Procurement Contract Documents.
- C. Engineer's responsibilities, if any, after an assignment (if any) of the Procurement Contract, are set forth in the Procurement Agreement.

#### 10.02 *Duties and Responsibilities; Authority; Limitations*

- A. As set forth in Article 3, Engineer will be the initial interpreter of the Procurement Contract Documents and judge of the acceptability of the Goods and Special Services, and will issue clarifications, interpretations, and decisions regarding such issues.
- B. Acting on behalf of Buyer under the provisions of Article 9, Engineer has the authority to disapprove or reject Goods and Special Services that Engineer believes to be non-conforming. Engineer also has the authority to require special inspection or testing of the Goods or Special Services as provided in Paragraph 9.02, whether or not the Goods are fabricated or installed, or the Special Services are completed.
- C. Engineer may authorize minor deviations or variations in the Procurement Contract Documents by: 1) written approval of specific variations set forth in Shop Drawings when Seller has duly noted such variations as required in Paragraph 7.06.A.3, or 2) a Field Order.
- D. As set forth in Article 12, Engineer will review Claims, and render decisions on Claims.
- E. In rendering any interpretations, clarifications, reviews, decisions, disapprovals, acceptances, rejections, authorizations, and judgments, Engineer will not show partiality to Buyer or Seller. Engineer will not be liable to Buyer, Seller, or others in connection with any interpretations, clarifications, reviews, decisions, disapprovals, acceptances, rejections, authorizations, or judgments conducted or rendered by Engineer in good faith.
- F. Engineer will not supervise, direct, control, or have authority over or be responsible for the means, methods, techniques, sequences, or procedures used by Seller to perform its obligations under this Procurement Contract, or the safety precautions and programs incident thereto, or for any failure of Seller to comply with Laws and Regulations applicable to the performance of its obligations. Engineer will not be responsible for Seller's failure to furnish the Goods and Special Services in accordance with the Procurement Contract Documents.

### **ARTICLE 11—CHANGES**

#### 11.01 *Amending and Supplementing the Procurement Contract*

- A. The Procurement Contract may be amended or supplemented by a Change Order, a Change Directive, or a Field Order.
- B. If an amendment or supplement to the Procurement Contract includes a change in the Procurement Contract Price or the Procurement Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Procurement Contract that involve (1) the conformance or acceptability of the Goods and Special Services, (2) the design (as set forth in the Procurement Drawings, Procurement Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Buyer and Seller may amend other terms and conditions of the Procurement Contract without the recommendation of the Engineer.



## 11.02 *Change Orders*

- A. Buyer and Seller shall execute appropriate Change Orders covering:
  - 1. Changes in Procurement Contract Price or Procurement Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Goods and Special Services furnished in accordance with a Change Directive;
  - 2. Changes in Procurement Contract Price resulting from a Buyer set-off, unless Seller has duly contested such set-off;
  - 3. Changes in the Goods and Special Services which are: (a) ordered by Buyer pursuant to Paragraph 11.05, (b) required because of Buyer's acceptance of non-conforming Goods and Services under Paragraph 9.03 or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Goods and Special Services involves the design (as set forth in the Procurement Drawings, Procurement Specifications, or otherwise) or other engineering or technical matters; and
  - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Change Directive; Article 12, Claims; and similar provisions.
- B. If Buyer or Seller refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

## 11.03 *Change Directives*

- A. A Change Directive will not change the Procurement Contract Price or the Procurement Contract Times but is evidence that the parties expect that the modification ordered or documented by a Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Change Directive's effect, if any, on the Procurement Contract Price and Procurement Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Procurement Contract Documents governing adjustments, expressly including Paragraph 11.08 regarding change of Procurement Contract Price.
- B. If Buyer has issued a Change Directive and Buyer or Seller believes that an adjustment in Procurement Contract Times or Procurement Contract Price is necessary, then such party shall submit a Claim seeking such an adjustment no later than 30 days after the completion of the Goods and Services set out in the Change Directive.

## 11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Goods and Services if the changes do not involve an adjustment in the Procurement Contract Price or the Procurement Contract Times and are compatible with the design concept as indicated by the Procurement Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Buyer and also on Seller, which shall perform the Goods and Special Services involved promptly.
- B. If Seller believes that a Field Order justifies an adjustment in the Procurement Contract Price or Procurement Contract Times, then before proceeding with the Goods and Special Services at issue, Seller shall submit a Claim as provided herein.

11.05 *Buyer-Authorized Changes in the Goods and Special Services*

- A. Without invalidating the Procurement Contract and without notice to any surety, Buyer may, at any time or from time to time, order additions, deletions, or revisions in the Goods and Special Services. Changes involving the design (as set forth in the Procurement Drawings, Procurement Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Goods and Special Services may be accomplished by a Change Order, if Buyer and Seller have agreed as to the effect, if any, of the changes on Procurement Contract Times or Procurement Contract Price; or by a Change Directive. Upon receipt of any such document, Seller shall promptly proceed with the Goods and Special Services involved; or, in the case of a deletion in the Goods and Special Services, promptly cease activities with respect to such deletion. Added or revised Goods and Special Services must be performed under the applicable conditions of the Procurement Contract Documents.

11.06 *Buyer's Contingency Allowance*

- A. The Buyer's Contingency Allowance, if any such is set forth in the Procurement Agreement, is for the sole use of Buyer to cover unanticipated costs.
- B. If Buyer exercises its unilateral right to use all or a portion of the Buyer's Contingency Allowance, Buyer will issue a written directive that documents the costs to which the allowance is applied, Seller's entitlement to compensation, and the consequent reduction in such allowance.
- C. Prior to final payment, the Total Price, as set forth in the Procurement Agreement, will be duly adjusted to account for any unused portion of the Buyer's Contingency Allowance.
- D. The Procurement Agreement, Article 5, addresses the impact on Buyer's Contingency Allowance of an assignment of the Procurement Contract.

11.07 *Unauthorized Changes in the Goods and Special Services*

- A. Seller shall not be entitled to an increase in the Procurement Contract Price or an extension of the Procurement Contract Times with respect to any work performed that is not required by the Procurement Contract Documents, as amended, modified, or supplemented.

11.08 *Change of Procurement Contract Price*

- A. The Procurement Contract Price may only be changed by a Change Order. Any Claim for an adjustment of Procurement Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Procurement Contract Price will be determined as follows:
  - 1. For changes in Unit Price Goods and Special Services, by application of the unit prices to the quantities of the items involved;
  - 2. To the extent the cost of the change is not covered by unit prices, then by a mutually agreed lump sum; or
  - 3. To the extent the cost of the change is not covered by unit prices and the parties do not reach mutual agreement to a lump sum, then on the basis of documented costs plus a Seller's fee for overhead and profit of 15%.

#### 11.09 *Change of Procurement Contract Times*

- A. The Procurement Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Procurement Contract Times must comply with the provisions of Article 12.

#### 11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Goods and Special Services or the provisions of the Procurement Contract (including, but not limited to, Procurement Contract Price or Procurement Contract Times), the giving of any such notice will be Seller's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

### **ARTICLE 12—CLAIMS, DISPUTES, AND DISPUTE RESOLUTION**

#### 12.01 *Claims*

- A. The parties agree to endeavor to avoid or resolve Claims through direct, good faith discussions and negotiations whenever practicable. Such discussions and negotiations should at the outset address whether the parties mutually agree to suspend the Claims process, including the time periods established in this Paragraph 12.01; if so, a written record of such mutual agreement should be made and jointly executed.
- B. Claimant shall deliver to Engineer and the other party to the Procurement Contract written notice of each Claim within 15 days after the occurrence of the event giving rise to the Claim.
- C. Claimant shall deliver written supporting data to Engineer and the other party within 45 days after such occurrence unless Engineer allows an additional period of time.
- D. Engineer will review each such Claim and render a decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.
- E. If Engineer does not render a formal written decision on a Claim within the time stated in Paragraph 12.01.D., Engineer shall be deemed to have issued a decision denying the Claim in its entirety 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.
- F. The rendering of a decision by Engineer pursuant to this Paragraph 12.01 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment) will be a condition precedent to any exercise by Buyer or Seller of such rights or remedies as either may otherwise have under the Procurement Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter. If the exercise of such rights or remedies will imminently be time-barred, a party may take actions necessary to preserve such rights and remedies notwithstanding the lack of the condition precedent referred to in this paragraph.
- G. If a submitted matter in question concerns terms and conditions of the Procurement Contract Documents that do not involve (1) the performance or acceptability of Goods and Special Services under the Procurement Contract Documents, (2) the design (as set forth in the Procurement Drawings, Procurement Specifications, Addenda, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Buyer and Seller that Engineer is unable to provide a decision or interpretation. If Buyer and Seller

are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Paragraph 12.02.

- H. Engineer's written decision on such Claim or a decision denying the Claim in its entirety that is deemed to have been issued pursuant to Paragraph 12.01, will be final and binding upon Buyer and Seller 30 days after it is issued unless within 30 days of issuance Buyer or Seller appeals Engineer's decision by initiating the mediation of such Claim in accordance with the dispute resolution procedures set forth in Paragraph 12.02.
- I. If Article 12 has been amended to delete the mediation requirement, then Buyer or Seller may appeal Engineer's decision within 30 days of issuance by following the alternative dispute resolution process set forth in Article 12, as amended; or if no such alternative dispute resolution process has been set forth, Buyer or Seller may appeal Engineer's decision by 1) delivering to the other party within 30 days of the date of such decision a written notice of intent to submit the Claim to a court of competent jurisdiction, and 2) within 60 days after the date of such decision instituting a formal proceeding in a court of competent jurisdiction.
- J. No Claim for an adjustment in Procurement Contract Price or Procurement Contract Times will be valid if not submitted in accordance with Article 12.
- K. The effect on Claims of an assignment of the Procurement Contract by Buyer to a Contractor/Assignee is addressed in the Procurement Agreement, Article 5.

#### 12.02 *Dispute Resolution Method*

- A. Either Buyer or Seller may initiate the mediation of (1) any Claim decided in writing by Engineer under Paragraph 12.01 before such decision becomes final and binding, or (2) any other dispute between the parties, including but not limited to any dispute arising after final inspection of the Goods and Services. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Procurement Contract. The request for mediation must be submitted in writing to the American Arbitration Association and the other party to the Procurement Contract. Timely submission of the request will stay Engineer's decision from becoming final and binding.
- B. Mediation is a condition precedent to seeking final dispute resolution under Paragraph 12.01.C. Buyer and Seller shall participate in the mediation process in good faith. The process must be concluded within 60 days of filing of the request. The date of termination of the mediation will be determined by application of the mediation rules referenced above.
- C. If the mediation process does not result in resolution of the dispute, then Engineer's written Claim decision under Paragraph 12.01.D or a Claim denial pursuant to Paragraph 12.01.E becomes final and binding, or if applicable such other dispute is deemed resolved in favor of respondent, unless, within 30 days after termination of the mediation, Buyer or Seller:
  - 1. elects in writing to invoke any final dispute resolution process provided for in the Supplementary Conditions, or
  - 2. agrees with the other party to submit the Claim or dispute to another final dispute resolution process, or
  - 3. if no final dispute resolution process has been provided for in the Supplementary Conditions, delivers to the other party written notice of the intent to submit the Claim

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or dispute to a court of competent jurisdiction, and within 60 days of the termination of the mediation institutes such formal proceeding.

## **ARTICLE 13—PAYMENT**

### **13.01 *Applications for Progress Payments***

- A. Seller shall submit to Buyer for Engineer's review Applications for Payment filled out and signed by Seller and accompanied by such supporting documentation as is required by the Procurement Contract Documents and also as Buyer or Engineer may reasonably require.
- B. The timing and amounts of progress payments will be as stipulated in the Procurement Agreement.
- C. Any Application for Payment that is based in whole or in part on the delivery of Goods must be accompanied by a bill of sale, invoice, or other documentation reasonably satisfactory to Buyer warranting that Buyer has rightfully received good title to the Goods from Seller and that, upon payment, the Goods will be free and clear of all liens. Such documentation will include releases and waivers from all parties with viable lien rights.
- D. Buyer shall notify Seller promptly of any deficiency in the required documentation.

### **13.02 *Review of Applications for Progress Payments***

- A. *Review of Applications*
  - 1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Buyer, or return the Application to Seller indicating in writing Engineer's reasons for refusing to recommend payment.
  - 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Buyer, based on Engineer's observations of Seller's progress, as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
    - a. the Goods and Special Services or other obligations of Seller have progressed to the point indicated;
    - b. the quality of the Goods and Special Services or other obligations of Seller are generally in accordance with the Procurement Contract Documents; and
    - c. the conditions precedent to Seller being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Seller's progress.
  - 3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
    - a. inspections made to check the quality or the quantity of the Goods and Special Services or other obligations of Seller have been exhaustive, extended to every aspect of the Goods and Special Services or other obligations of Seller in progress, or involved detailed inspections of the Goods and Special Services or other

- obligations of Seller beyond the responsibilities specifically assigned to Engineer in the Procurement Contract; or
- b. there may not be other matters or issues between the parties that might entitle Seller to be paid additionally by Buyer, or entitle Buyer to withhold payment to Seller.
4. Neither Engineer's review of Seller's progress for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
    - a. to supervise, direct, or control the Seller's performance or furnishing of Goods and Special Services or other obligations of Seller; or
    - b. for the means, methods, techniques, sequences, or procedures of construction, manufacturing, fabrication, installation, or shipping, or the safety precautions and programs incident thereto; or
    - c. for Seller's failure to comply with Laws and Regulations applicable to Seller's performance under the Procurement Contract; or
    - d. to make any examination to ascertain how or for what purposes Seller has used the money paid for the Procurement Contract Price; or
    - e. to determine that title to any of the Goods or component parts have passed to Buyer free and clear of any Liens.
  5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Buyer stated in Paragraph 13.02.A.2.
  6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Buyer from loss because:
    - a. the Goods and Services are non-conforming, requiring correction or replacement;
    - b. the Procurement Contract Price has been reduced by Change Orders;
    - c. Buyer has been required to correct non-conforming Goods and Special Services in accordance with Paragraph 9.03.C, or has accepted non-conforming Goods and Special Services pursuant to Paragraph 9.03.E; or
    - d. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Seller and therefore justify termination for cause under the Procurement Contract Documents.

#### **13.03 *Basis and Amount of Progress Payments***

- A. The basis and amounts of the progress payments will be as provided in the Procurement Agreement, subject to the provisions of this Article 13 regarding reductions in payment.

#### **13.04 *Suspension of or Reduction in Payment***

- A. Buyer may temporarily cease making progress payments, or reduce the amount of a progress payment, even though recommended for payment by Engineer, under the following circumstances:

1. Buyer has reasonable grounds to conclude that Seller will not furnish the Goods or the Special Services in accordance with the Procurement Contract Documents, and
  2. Buyer has requested in writing assurances from Seller that the Goods and Special Services will be delivered or furnished in accordance with the Procurement Contract Documents, and Seller has failed to provide adequate assurances within ten days of Buyer's written request.
  3. In addition to any reductions in payment (set-offs) recommended by Engineer, Buyer is entitled to impose a set-off against payment based on any of the following:
    - a. claims have been made against Buyer based on Seller's conduct in the performance or furnishing of the Goods and Special Services, or has incurred costs, losses, or damages resulting from Seller's conduct in the performance or furnishing of the Goods and Special Services, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
    - b. Seller has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Point of Destination or the worksite;
    - c. Seller has failed to provide and maintain required bonds or insurance;
    - d. Buyer has incurred extra charges or engineering costs related to Submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
    - e. the Goods and Special Services are non-conforming, requiring correction or replacement;
    - f. Buyer has been required to correct non-conforming Goods and Special Services, in accordance with Paragraph 9.03.C, or has accepted non-conforming Goods and Special Services pursuant to Paragraph 9.03.E;
    - g. the Procurement Contract Price has been reduced by Change Orders;
    - h. an event that would constitute a default by Seller and therefore justify a termination for cause has occurred;
    - i. liquidated or other damages have accrued as a result of Seller's failure to achieve Milestones, Substantial Completion, or final completion of the Goods and Special Services; or
    - j. liens have been filed in connection with the Procurement Contract, except where Seller has delivered a specific bond satisfactory to Buyer to secure the satisfaction and discharge of such liens.
- B. If Buyer refuses to make payment of the full amount recommended by Engineer, Buyer will provide Seller and Engineer immediate written notice stating the reason for such action and promptly pay Seller any amount remaining after deduction of the amount withheld. Buyer shall promptly pay Seller the amount withheld when Seller corrects the reason for such action to Buyer's satisfaction.

### 13.05 *Final Payment*

- A. After Seller has corrected all non-conformities to the reasonable satisfaction of Buyer and Engineer and furnished all Special Services, Seller may submit its final Application for Payment following the procedures for progress payments.
- B. The final Application for Payment will be accompanied by all documentation called for in the Procurement Contract Documents (including but not limited to all final operations and maintenance manuals, and any special warranties), a list of all unsettled Claims, and the written consent of surety to the making of final payment.
- C. If, on the basis of final inspection and the review of the final Application for Payment and accompanying documentation, Engineer is reasonably satisfied that Seller has furnished the Goods and Special Services in accordance with the Procurement Contract Documents, and that Seller has fulfilled all other obligations under the Procurement Contract Documents, then Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment subject to the provisions of Paragraph 13.02, and present the final Application for Payment to Buyer. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Buyer from loss for the reasons stated in Paragraph 13.02.
- D. If Engineer does not recommend final payment, Engineer will return the final Application for Payment to Seller, indicating the reasons for refusing to recommend final payment, in which case Seller shall make the necessary corrections and resubmit the final Application for Payment.
- E. In support of its recommendation of final payment Engineer will also give written notice to Buyer and Seller that the Goods and Special Services are acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 13.06.
- F. If the final Application for Payment and accompanying documentation are appropriate as to form and substance, Buyer shall, within 30 days after receipt thereof, pay Seller the amount recommended by Engineer, less any sum Buyer is entitled to set off against Engineer's recommendation, pursuant to the provisions of Paragraph 13.04.
- G. Buyer will not make final payment, or return or release included retainage (if any) at any time, unless Seller submits written consent of the surety to such payment, return, or release.

### 13.06 *Waiver of Claims*

- A. By making final payment, Buyer waives its claim or right to liquidated damages or other damages for late completion by Seller, except as set forth in an outstanding Claim, appeal, set-off, or express reservation of rights by Buyer. Buyer reserves all other claims or rights after final payment.
- B. The acceptance of final payment by Seller will constitute a waiver by Seller of all claims and rights against Buyer other than those pending matters that have been duly submitted or appealed under the provisions of Article 12.



## ARTICLE 14—CANCELLATION, SUSPENSION, AND TERMINATION

### 14.01 *Cancellation*

- A. Buyer has the right to cancel the Procurement Contract, without cause, at any time prior to delivery of the Goods by written notice. Cancellation pursuant to the terms of this paragraph will not constitute a breach of contract by Buyer. Upon cancellation:
  - 1. Buyer shall pay Seller for the direct costs incurred in producing any Goods that Seller has specially manufactured for the Project, plus a fair and reasonable amount for overhead and profit.
  - 2. For Goods that are not specially manufactured for the Project, Seller shall be entitled to a restocking charge of 10 percent of the unpaid Procurement Contract Price of such Goods.

### 14.02 *Suspension of Performance by Buyer*

- A. Buyer has the right to suspend performance of the Procurement Contract for up to 90 days, without cause, by written notice. Upon suspension under this paragraph, Seller shall be entitled to an increase in the Procurement Contract Times and Procurement Contract Price caused by the suspension, provided that performance would not have been suspended or delayed for causes attributable to Seller.

### 14.03 *Suspension of Performance by Seller*

- A. Seller may suspend the furnishing of the Goods and Special Services only under the following circumstance:
  - 1. Seller has reasonable grounds to conclude that Buyer will not perform its future payment obligations under the Procurement Contract; and
  - 2. Seller has requested in writing assurances from Buyer that future payments will be made in accordance with the Procurement Contract, and Buyer has failed to provide such assurances within ten days of Seller's written request.

### 14.04 *Breach and Termination*

#### A. *Buyer's Breach*

- 1. Seller shall have the right to terminate the Procurement Contract for cause by declaring a breach if Buyer fails to comply with any material provision of the Procurement Contract. Upon termination, Seller shall be entitled to all remedies provided by Laws and Regulations.
- 2. If Seller believes Buyer is in breach of its obligations under the Procurement Contract, Seller shall provide Buyer with reasonably prompt written notice setting forth in sufficient detail the reasons for declaring that it believes a breach has occurred. Buyer shall have 7 days from receipt of the written notice declaring the breach (or such longer period of time as Seller may grant in writing) within which to cure or to proceed diligently to cure such alleged breach.

#### B. *Seller's Breach*

- 1. Buyer may terminate Seller's right to perform the Procurement Contract for cause by declaring a breach should Seller fail to comply with any material provision of the

Procurement Contract Documents. Upon termination, Buyer shall be entitled to all remedies provided by Laws and Regulations.

2. In the event Buyer believes Seller is in breach of its obligations under the Procurement Contract, Buyer shall provide Seller with reasonably prompt written notice setting forth in sufficient detail the reasons for declaring that it believes a breach has occurred. Seller shall have 7 days from receipt of the written notice declaring the breach (or such longer period of time as Buyer may grant in writing) within which to cure or to proceed diligently to cure such alleged breach.
3. If and to the extent that Seller has provided a performance bond under the provisions of Paragraph 5.01, the notice and cure procedures of that bond, if any, will supersede the notice and cure procedures of Paragraph 14.04.B.2.

## **ARTICLE 15—MISCELLANEOUS**

### **15.01 *Giving Notice***

- A. Whenever any provision of the Procurement Contract requires the giving of written notice to Buyer, Seller, or Engineer, it will be deemed to have been validly given if delivered:
  1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
  2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
  3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

### **15.02 *Controlling Law***

- A. This Procurement Contract is to be governed by the law of the state in which the Goods are to be installed.
- B. In the case of any conflict between the express terms of this Procurement Contract and the Uniform Commercial Code, as adopted in the state whose law governs, it is the intent of the parties that the express terms of this Procurement Contract will apply.

### **15.03 *Computation of Time***

- A. When any period of time is referred to in the Procurement Contract by number of days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

### **15.04 *Cumulative Remedies***

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Procurement Contract, and the provisions of this paragraph will be as effective as if repeated specifically in the Procurement Contract in connection with each particular duty, obligation, right, and remedy to which they apply.

15.05 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Procurement Contract, as well as all continuing obligations indicated in the Procurement Contract, will survive final payment, completion, and acceptance of the Goods and Special Services or termination or completion of the Procurement Contract or of the services of Seller.

15.06 *Entire Agreement*

- A. Buyer and Seller agree that this Procurement Contract is the complete and final agreement between them, and supersedes all prior negotiations, representations, or agreements, either written or oral. This Procurement Contract may not be altered, modified, or amended except in writing signed by an authorized representative of both parties.

15.07 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Procurement Contract.

15.08 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

15.09 *Successors and Assigns*

- A. Buyer and Seller each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Procurement Contract.

# SUPPLEMENTARY CONDITIONS OF THE PROCUREMENT CONTRACT

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# SUPPLEMENTARY CONDITIONS OF THE PROCUREMENT CONTRACT

These Supplementary Conditions amend or supplement EJCDC® P-700, Standard General Conditions of the Procurement Contract (2019). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC-4.05."

## ARTICLE 1—DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Add the following terms to those defined in Paragraph 1.01.A of the General Conditions.
  - 1. *Contractor*—A construction contractor with which Project Owner enters into a construction contract.
  - 2. *Procurement Proposal Documents*—The Procurement Proposal Requirements and the proposed Procurement Contract Documents (including all Addenda).
  - 3. *Procurement Proposal Requirements*—The Request for Proposals, Instructions to Proposers, Bid security of acceptable form, if any, and Bid Form with any supplements.
  - 4. *Proposal*—An offer of a prospective Seller submitted on the prescribed form and included with the prescribed documents setting forth a proposed plan for the Goods and Special Services to be provided.
  - 5. *Proposer*—An individual or entity that, as a prospective Seller, submits a Proposal to Buyer.
  - 6. *Request for Proposals*—An invitation to prospective Sellers to submit Proposals for the design and supply of the Goods and Special Services.
  - 7. *Successful Proposer*—The Proposer whose Proposal the Buyer accepts, and to which the Buyer makes an award of the Procurement Contract.
- B. Delete the definition for *Point of Destination* and replace it with the following:

The location where delivery of the Goods will be made, as stated in the Procurement Agreement.
- C. Delete the definition for *Contractor/Assignee*.

## ARTICLE 2—PRELIMINARY MATTERS

SC-2.02 Amend the first sentence of Paragraph 2.02.A. to read as follows:

Buyer shall furnish to Seller three printed, unsigned copies of the Procurement Contract Documents (including one fully executed copy of the Procurement Agreement), and one copy in electronic portable document format (PDF).

## 2.01 *Electronic Transmittals*

SC 2.03 Delete Paragraph 2.03.A in its entirety and insert the following in its place:

2.03.A Except as otherwise stated elsewhere in the Procurement Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

## ARTICLE 5—BONDS AND INSURANCE

### 5.02 *Insurance*

SC-5.02 Add the following new paragraphs immediately after Paragraph 5.02.E:

- F. Seller shall purchase and maintain such liability and other insurance as is appropriate for the furnishing of Goods and Special Services and as will provide protection from claims set forth below which may arise out of or result from Seller's furnishing of the Goods or Special Services and Seller's other obligations under the Procurement Contract Documents, whether the furnishing of Goods and Special Services or other obligations are to be performed by Seller, any subcontractor or supplier, or by anyone directly or indirectly employed by any of them to furnish the Goods and Special Services, or by anyone for whose acts any of them may be liable:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
  - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Seller's employees;
  - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Seller's employees;
  - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained: (a) by any person as a result of an offense directly or indirectly related to the employment of such person by Seller, or (b) by any other person for any other reason;
  - 5. claims for damages, other than to the Goods, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
  - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- G. The policies of insurance so required by this Paragraph 5.02 to be purchased and maintained must:
  - 1. with respect to insurance required by Paragraphs SC-5.02.F.3 through SC-5.02.F.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) Buyer, Engineer, and their consultants, all of whom must be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any

of all such additional insureds, and the insurance afforded to these additional insureds must provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided below or required by Laws or Regulations, whichever is greater;
  3. include completed operations insurance;
  4. include contractual liability insurance covering Seller's indemnity obligations under Paragraph 7.07;
  5. contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder will provide a copy of the notice to the other party, each other insured, and Engineer;
  6. remain in effect at least until final payment and at all times thereafter when Seller may be correcting, removing, or replacing non-conforming Goods in accordance with Paragraph 9.03 and 9.04; and
  7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and Seller shall furnish Buyer and each other additional insured identified in these Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Buyer and any such additional insured of continuation of such insurance at final payment and one year thereafter).
- H. The limits of liability for the insurance required by Paragraph SC-5.02.F must provide coverage for not less than the following amounts or greater where required by Laws and Regulations:
1. Workers' Compensation, and related coverages under Paragraphs SC-5.02.F.1 and F.2:

<b>Workers' Compensation and Related Policies</b>	<b>Policy limits of not less than</b>
<b>Workers' Compensation</b>	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
<b>Employer's Liability</b>	
Each accident	\$1,000,000
Each employee	\$1,000,000
Policy limit	\$1,000,000
<b>Stop-gap Liability Coverage</b>	
For work performed in monopolistic states, stop-gap liability coverage must be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	\$1,000,000

2. Seller's General Liability under Paragraphs SC-5.02.F.3 through F.6 which must include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Seller:

<b>Commercial General Liability</b>	<b>Policy limits of not less than</b>
General Aggregate	\$2,000,000
Products—Completed Operations Aggregate	\$1,000,000
Personal and Advertising Injury	\$1,000,000
Bodily Injury and Property Damage—Each Occurrence	\$1,000,000

3. Automobile Liability under Paragraph SC-5.02.F.6:

<b>Automobile Liability</b>	<b>Policy limits of not less than</b>
<b>Bodily Injury</b>	
Each Person	\$1,000,000
Each Accident	\$1,000,000
<b>Property Damage</b>	
Each Accident	\$1,000,000

4. Professional Liability (if the Special Services include professional services):

<b>Seller's Professional Liability</b>	<b>Policy limits of not less than</b>
Each Claim	\$1,000,000
Annual Aggregate	\$1,000,000

- I. Seller shall deliver to Buyer, with copies to each additional insured identified in these Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Buyer or any other additional insured) which Seller is required to purchase and maintain.

## **ARTICLE 9—BUYER'S RIGHTS**

### **9.04 Correction Period**

- SC-9.04 Delete Paragraph 9.04.A in its entirety and insert the following in its place:

Seller's responsibility for correcting all non-conformities in the Goods and Special Services will extend for a period of one year after Final Payment, as established in the Procurement Agreement.



## ARTICLE 12—CLAIMS, DISPUTES, AND DISPUTE RESOLUTION

### 12.03 *Arbitration*

SC-12.03 Add the following new paragraph immediately after Paragraph 12.02.

#### SC-12.03 Arbitration

- A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the rules of USA&M Arbitration Service of Portland, Oregon, subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-12.03.D below.
- C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
  - 1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
  - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.
- D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.
- E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

**GENERAL REQUIREMENTS**

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## GENERAL REQUIREMENTS

### A. FACILITY DESCRIPTION

These General Requirements apply to the design and procurement of a package membrane bioreactor (MBR) system (the "Goods") for the reclamation of the City of John Day's domestic wastewater. The Goods shall include, without limitation, the following major components: grit removal and dewatering; anoxic basins, aeration basins, membrane basins, and other equipment as necessary; aerobic digesters; and all tankage, valving, piping, pumps, electrical and control equipment, and instrumentation equipment as required to treat the influent wastewater according to the performance standards and design criteria outlined below (see Figure 1 in the Appendix).

### B. REFERENCES AND APPLICABLE STANDARDS

AISI American Iron and Steel Institute  
ANSI American National Standards Institute  
ASTM American Society for Testing and Materials  
AGMA American Gear Manufacturers Association  
AWS American Welding Society  
ASME American Society of Mechanical Engineers  
IEC International Electrotechnical Commission  
IEEE Institute of Electrical and Electronic Engineers  
ISA The Instrumentation, Systems and Automation Society  
ISO Standard 9001  
NEC National Electric Code  
NEMA National Electrical Manufacturers Association  
PFI Pipe Fabrication Institute  
UL Underwriters Laboratory

### C. PERFORMANCE

1. The Goods shall be designed to treat domestic wastewater with the following influent characteristics:

Maximum Monthly Flow (MGD)	0.302
Average Annual Flow (MGD)	0.233
BOD <sub>5</sub> (mg/L)	221
TKN (mg/L)	40
NH <sub>3</sub> -N (mg/L)	20
Total Phosphorus (mg/L)	5.6
TSS (mg/L)	276
Wastewater Temperature (°F)	50 to 75

*BOD<sub>5</sub> = five day biochemical oxygen demand*

*MGD = million gallons per day*

*mg/L = milligrams per liter*

*NH<sub>3</sub>-N = ammoniacal nitrogen*

*TKN = Total Kjeldahl Nitrogen*

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*TSS = total suspended solids*

2. The Goods shall provide effluent meeting the requirements outlined by the Oregon Department of Environmental Quality (DEQ) for a Class A effluent. Effluent requirements for the treated wastewater are as follows:

Monthly BOD <sub>5</sub> (mg/L)	10
Monthly TSS (mg/L)	10
Total Nitrogen (mg/L)	5
Total Phosphorus (mg/L)	1
Average Daily Turbidity (NTU)	< 2
No more than 5 NTU 5 percent of the Time in One day	
No more than 10 NTU at Any Time	
Median Total Coliform Organisms (No. organisms/100 ml)	< 2.2
No sample to exceed 23/100 ml	

*ml = milliliters*

*NTU = nephelometric turbidity units*

3. In addition to the design criteria outlined above, the Goods shall meet the reliability requirements for a facility meeting Class 2 Reliability standards as outlined by the U.S. Environmental Protection Agency's (EPA) Design Criteria for Mechanical, Electric, and Fluid System and Component Reliability (EPA-430-99-74-001).
4. Additional Design Criteria
- a. Total Goods tankage shall be sized to treat two times the average annual flow (AAF).
    - 1) Two equally sized treatment trains will be provided, each with tankage capacity to handle the AAF.
  - b. Total membranes shall be sized and provided to treat the maximum monthly flow (MMF) with each treatment train sized for half of maximum monthly flow.
  - c. Space and necessary equipment shall be provided to permit the addition of membrane units to expand treatment capacity of each treatment train up to the AAF.
    - 1) This additional room for expansion is to allow for either future expansion of the membrane capacity or to permit using one treatment train to treat up to the AAF while the other treatment train is off line for maintenance.
  - d. Grit removal and dewatering equipment shall be sized per the membrane manufacturer's requirements. Six millimeter screen will be provided in the influent pump station by others.

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- e. Aerobic digesters shall be sized for 60 days of retention time at 3 percent solids.
- 5. Influent pumps by others shall initially be capable of pumping up to the MMF, with capability for future pump expansion or improvements to permit pumping of up to two times the AAF. Flow equalization will be provided ahead of the influent pumps by others.
- 6. Permeate pumps are required to be provided as part of this package, if needed for membrane operation. Effluent pumps provided by others may not be used as permeate pumps.
- 7. Equipment Temperature Rating  
  
Provide equipment and devices capable of continuous operation within an ambient temperature range of -20° to 110°F. Pipes, valves, and other weather-sensitive components shall be insulated or otherwise protected from cold weather conditions.
- 8. Goods shall be installed by Buyer's selected Contractor under the direction of the Seller.

### D. PRODUCTS

- 1. General
  - a. It is the intent of these General Requirements to secure high-quality equipment and materials and first-class workmanship to facilitate trouble-free operation and minimum maintenance of the system. Equipment and materials shall be the product of reputable, experienced manufacturers. Similar components in the Project shall be the product of the same manufacturer. All equipment and material shall be of industrial grade and standard construction and shall provide long and trouble-free service. Service and replacement components for all equipment furnished shall be normally stocked and readily available from service centers and Suppliers in Oregon, Idaho, Washington, or California.
  - b. NEMA-rated equipment and components are required for all applicable electrical and control components. IEC-rated equipment and components will not be acceptable.
- 2. Tank Construction  
  
All tanks shall be constructed out of Type 316 stainless steel. Fabrication and erection shall conform to the appropriate requirements of the "AISC Specification for Buildings." All welded components shall conform to the requirements of the American Welding Society's code and shall develop the full strength of the member.

## GENERAL REQUIREMENTS

### 3. Drain Lines

Valve drains shall be provided by Seller for all tankage. All drains shall connect to one common pipe. One connection will be provided by others to connect the drains to the influent pumps' wetwell.

### 4. System Connections

- a. One inlet connection shall be provided by others for installation of the system. Seller shall supply and assemble fittings as required to transition from the inlet connection to the treatment trains.
- b. One outlet connection shall be provided by others for installation of the system. Seller shall supply and assemble fittings as required to transition from the treatment trains to the outlet connection.

### 5. Grit Removal

Coarse screening down to 6 millimeter will be provided by others. Seller shall provide grit removal and/or fine screening to particle sizes small enough to adequately protect their provided MBR system.

### 6. Biological Reactor Basins

- a. Each treatment train shall contain any combination of anaerobic, anoxic, and aeration chambers as required to provide the biological nutrient removal (BNR) required to maintain the effluent nutrient standards outlined in the General Requirements above. The biological reactor basins will have capabilities such that the BNR can be seasonally halted if nutrients are needed in downstream processes.

- b. Anoxic Basin

Mixing for the anoxic tank must be provided. The mixer shall be able to be removed for maintenance and replaced without dewatering the anoxic basin.

### 7. Air Diffusers

Diffusers shall be able to be removed and replaced without dewatering their respective basin.

### 8. Aeration Blower Motor Units

- a. All blower units shall be housed in sound-attenuating enclosures and have appropriate inlet filters to comply with a maximum noise level of 85 decibel.



## GENERAL REQUIREMENTS

- b. The aeration system to the biological reactor basins, membrane chambers, and aerobic digesters shall be one common system. All diffusers and blowers used shall be of the same make and model.

### 9. Membrane Chambers

Seller shall provide tankage for membrane cleaning if required by the proposed membrane system.

### 10. Aerobic Digesters

Aerobic digesters shall be sized to stabilize solids concentration without thickening or solids thickened to concentrations up to 3 percent.

### 11. Piping

- a. All submerged piping shall be Type 316 stainless steel.
- b. All piping less than 3 inches in diameter shall be stainless steel.
- c. All piping greater than 3 inches in diameter shall be either stainless steel or industrial painted ductile iron coated with a 16 mil urethane paint system as approved by the Engineer.

### 12. Valves

All valves shall be easily accessible for maintenance purposes. A minimum of 9 inches of clearance shall be maintained on all sides of the valve to facilitate removal and replacement of valves.

### 13. Bolts and Fasteners

All bolts and exterior fasteners shall be stainless steel. All bolts and fasteners shall be easily accessible by maintenance personnel.

### 14. Service Walkways and Access

- a. All walkways shall be a minimum of 36 inches wide.
- b. All walkways, stairs, railing, and support structures for such shall be constructed of either stainless steel or aluminum.
- c. There shall be no vertical ladders to provide access for normal operations and maintenance activities. Stairs must be provided.
- d. There shall be no conduit or other trip hazards in any of the walkways.

## GENERAL REQUIREMENTS

- e. All service walkways and access shall meet Occupational Safety and Health Administration requirements.

### 15. Electrical

- a. All motors shall have local power disconnects.
- b. All equipment shall have local hand stations.
- c. All exterior electrical components shall be ultraviolet (UV) resistant.
- d. All electrical conduit shall be routed to the east edge of the provided equipment assembly so that it can be easily connected to the adjacent electrical and control room by others.
- e. Seller shall provide a motor control center (MCC) section that is complete and functioning for all provided components, once field wiring is completed. The MCC section shall be provided with all lockable disconnects, drives, starters, run-time meters (RTMs), and indicating lights for equipment supplied. Each starter shall include an Hand-Off-Auto switch that functions with the programmable logic controller (PLC) inoperable. RTMs, run and fault lights shall also be provided on the MCCs. The MCC section shall be provided ready to be bolted to the busing of an adjacent MCC section and switchboard provided by others. This adjacent MCC section will be for the remaining treatment plant equipment. Seller shall coordinate the MCC features with Buyer and Engineer during the design of the remaining treatment plant. Acceptable manufacturers include General Electric, Allen-Bradley, Square D, Siemens, Cutler Hammer, Eaton, or Engineer-approved equal. Provide a top and bottom wireway. Equipment shall be rated for the following at a minimum:
  - 1) 600 VAC, 3-phase with neutral bus
  - 2) Bus Bracing: 100,000 RMS Symm
  - 3) SCCR: 65,000 RMS Symm amps
  - 4) NEMA 12 enclosure
- f. All aboveground conduit shall be industrial painted GRS or stainless steel. Flexible liquid-tight conduit is allowed within 6 feet of a motor connection.

### 16. Controls

- a. One control panel to be remotely mounted and provide operational controls and status for the entire package system shall be provided by Seller.

## GENERAL REQUIREMENTS

- b. All controls shall have Ethernet protocol for all information/Supervisory Control and Data Acquisition system connections, dry contacts for all alarms, and must be compatible with Allen-Bradley PLCs.

### 17. Pumps and Bearings

- a. No pump motors with cooling jackets shall be permitted.
- b. All bearings shall be sized for a B10 life of 100,000 hours minimum.

### 18. Miscellaneous

Any lifting equipment (hoists, cranes, etc.) required for regular operations and maintenance (O&M) shall be provided by Seller.

## E. EXECUTION

### 1. Delivery Instructions

Delivery of the package treatment facility shall be coordinated with Buyer and Seller in accordance with the Procurement Contract.

### 2. MBR Package System Seller Field Services

After delivery of the MBR package system and after coordination with Buyer, Seller shall provide a minimum of five days of on-site services and installation oversight. A day of on-site service shall be defined as an 8-hour time period.

### 3. Training

Upon construction completion and subsequent filling of the wastewater treatment system, Seller shall provide two days of startup training to Buyer and/or Buyer's O&M staff. A day of startup training shall be defined as an 8-hour time period.

### 4. Submittals

#### a. Design Drawings

- 1) Before beginning manufacture of the package MBR system, five copies of design drawings shall be submitted to Engineer for review in accordance with the Procurement Contract Documents.
- 2) Process Design shall be submitted by a professional engineer licensed to practice in the State of Oregon.

## GENERAL REQUIREMENTS

### b. Shop Drawings

- 1) Five copies of all Shop Drawings shall be submitted to Engineer for review in accordance with the Procurement Contract Documents. One digital copy can be submitted for preliminary review to expedite the review process.
  - a) If Shop Drawings are returned to Seller marked "NO EXCEPTIONS NOTED," formal revision and resubmittal of said Shop Drawings will not be required.
  - b) If Shop Drawings are returned to Seller marked "NO EXCEPTIONS, PROVIDED THE FOLLOWING CONDITIONS ARE MET," formal revision and resubmittal of said Shop Drawings will not be required.
  - c) If Shop Drawings are returned to the Seller marked "MAKE CORRECTIONS NOTED," formal revision of said Shop Drawings will not be required.
  - d) If Shop Drawings are returned to Seller marked "REVISE AND RESUBMIT," Seller shall revise said Shop Drawings and shall resubmit five copies of said revised Shop Drawings to Engineer.
  - e) If Shop Drawings are returned to Seller marked "REJECTED," Seller shall revise said Shop Drawings and shall resubmit five copies of said revised Shop Drawings to Engineer.
  - f) If Shop Drawings are returned to Seller marked "SUBMIT SPECIFIED ITEM," Seller shall submit material requested but shall not be required to resubmit all previous material.
- 2) At a minimum, Shop Drawings for the following items and their associated components as prudent shall be submitted. Shop Drawings and submittals are required on all materials and equipment delivered to the Project Site.
  - a) Grit removal
  - b) Mixers
  - c) Aeration system
  - d) Blowers
  - e) Pumps
  - f) Valves

## GENERAL REQUIREMENTS

- g) Membrane units
  - h) Controls
  - i) Sensors
  - j) Probes
- c. Installation Drawings and Specifications
  - 1) Seller to provide drawings, instructions, and specifications for incorporation into the Buyer's selected Contractor's agreement. The documents shall outline all work required for a complete and functioning system.
  - 2) Installation drawings and specifications shall be provided to the Engineer in AutoCAD and Word format, respectively.
- d. Operations and Maintenance Manual
  - 1) Three copies of an O&M Manual shall be submitted to the Engineer prior to the Seller submitting the Seller's Notice of Substantial Completion. The material shall be bound in a three-ring loose-leaf notebook with the Project name, Owner's name, Engineer's name, and Seller's name printed on the cover. The material shall also be clearly indexed and grouped by the various systems in the Project. Data shall be supplied for all materials, equipment, devices, and components that will require maintenance, replacement of parts, and knowledge of operation. The information furnished shall pertain specifically to the materials and equipment furnished. Manufacturers' O&M manuals that deal with more than one product line shall have the non-relevant information crossed or blocked out. Also, in addition to the three bound copies due prior to final completion of the Project, the Seller shall furnish one copy of O&M material to the Engineer for all major equipment when it arrives on the Project Site. The Seller shall furnish a complete listing of all equipment supplied and each respective Supplier's name, address, and telephone number. The O&M data furnished shall include detailed manufacturer's O&M information on each component, function description of operation, a complete parts list, and a separate parts list for parts not readily available.
  - 2) For all electrical systems, in addition to other requirements listed herein, Record Drawing one line diagrams and wiring diagrams properly labeled shall be submitted. The Seller shall also furnish the Engineer with copies of the appropriate plan sheets marked up with "Record Drawing" locations of conduits underground, under, or in concrete slabs; locations

## GENERAL REQUIREMENTS

of installed equipment; and the name, address, and phone number of the electrician who installed the system.

- 3) For mechanical systems, in addition to other requirements listed herein, where appropriate, lubrication schedules shall be furnished or clearly identified in the manufacturer's O&M manual.
- 4) For painting systems, the Seller shall provide either fresh labels from paint cans with a list of places used or a written description of the painting systems, locations used, and application requirements and Supplier's name, address, and phone number.
- 5) IT IS INTENDED THAT THE O&M MANUAL BE COMPLETE AND DETAILED. EXAMPLES OF ACCEPTABLE O&M MANUALS ARE AVAILABLE FOR INSPECTION AT THE ENGINEER'S OFFICE.

e. Manufacturer's Warranties

All pumps, blowers, and mechanical equipment shall be provided with a 3-year warranty from manufacturer's defects. Membranes shall be provided with a 5-year warranty from manufacturer's defects.

END OF SECTION

**CITY OF JOHN DAY, OREGON  
WASTEWATER SYSTEM IMPROVEMENTS  
MEMBRANE BIOREACTOR EQUIPMENT PROCUREMENT - 2019**

**PROCESS GUARANTEE STATEMENT**

This system has been designed based on treatment using the influent parameters shown in the General Requirements of the Procurement Contract:

Based on these influent values, the treatment system proposed will, in the absence of toxicity and when operated by a certified operator according to the Seller's instructions and generally accepted operational procedures, produce an effluent of the following quality (monthly average values):

BOD <sub>5</sub>	=	10 mg/L
TSS	=	10 mg/L
TN	=	≤5 mg/L
TP	=	≤1.0 mg/L
Turbidity	=	<2 NTU
Median Coliform	=	<2.2 organisms/mL

These values shall not be exceeded more than once in a 12-month period.

The Buyer shall collect the minimum operating data and send a written report to the manufacturer in a coherent and timely manner as follows:

1. Daily Data: D.O., pH, ambient and wastewater temperature, influent flow, and chemical dosage.
2. Twice Per Month Data: MLVSS of Aeration Basin  
Influent Alkalinity  
Influent/Effluent BOD<sub>5</sub>  
Influent/Effluent TSS  
Influent/Effluent NH<sub>3</sub>  
Influent/Effluent TKN  
Influent/Effluent TP  
Effluent NO<sub>2</sub>/NO<sub>3</sub>

Note: All influent and effluent sampling will be based upon 24-hour composite sampling.

Failure to provide this minimum level of operating data will void the Process Guarantee. If the Buyer believes the system not to be meeting the above guaranteed effluent limits, they shall:

1. Notify the Seller, in writing, of the suspected problem and provide all facts, data, and information necessary to verify the problem.



2. Recommend and perform reasonable additional test work that may be required to determine the cause of the problem.
3. Make any changes in the system process or equipment design necessary to correct the problem until the system is meeting the guaranteed effluent values subject to the above influent parameters being met. Should the problem be identified as the influent parameters not meeting those stated above, the Buyer shall be responsible for making any necessary corrections.
4. Subject to the influent parameters being met, all charges incurred by the supplier in correcting the system process or equipment, including the supplier's engineering time and travel expenses, any recommended test work, modifications to existing equipment or addition of new equipment, freight expense, and installation cost up to the value of the original purchase order for equipment shall be for the supplier's account.
5. Subject to the influent parameters being met, if, after determining the cause of the problem and spending substantial effort to correct the problem, it is not feasible to do so with the system, the purchase price of the equipment will be refunded.

If, after a review of existing data or performance of additional recommended test work the results indicate the treatment system is meeting the guaranteed effluent values, the cost of reviewing these data and performing any additional test work, including engineering time, travel expenses, and test costs, shall be at the Buyer's expense.

This guarantee is valid for three years after final acceptance by the Buyer.

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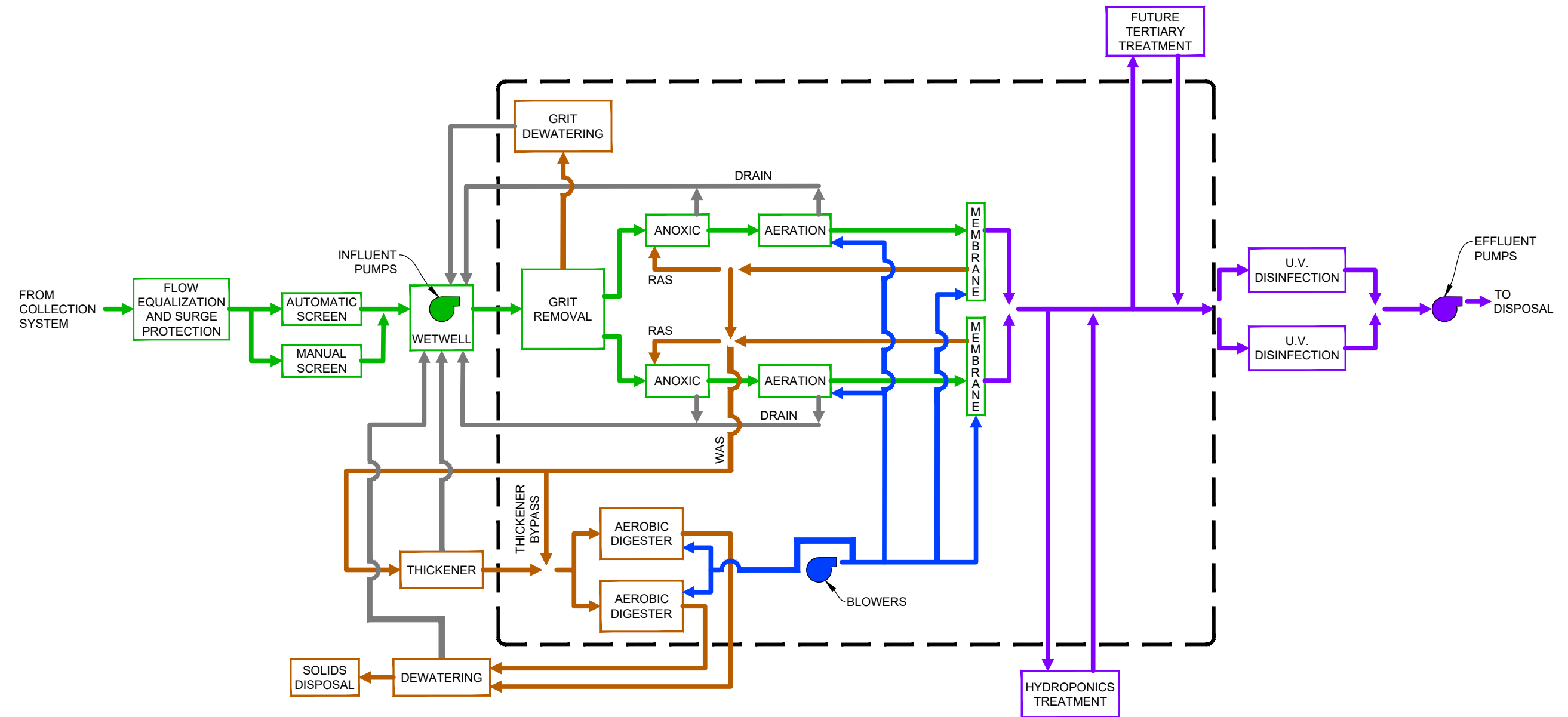
*Name of Person Authorized to Sign*

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*Name of Proposer*

## **APPENDIX**

NOTE:  
PROCESS DIAGRAM IS PROVIDED FOR REFERENCE ONLY AND IS SCHEMATIC IN NATURE. THE DIAGRAM IS NOT  
INTENDED TO SHOW ALL SYSTEM DETAILS REQUIRED, NOR DOES THE EQUIPMENT MANUFACTURER NEED TO  
FOLLOW THE PROPOSED SCHEMATIC LAYOUT TO MEET CONTRACT REQUIREMENTS. REFER TO THE RFP  
PACKAGE AND CONTRACT DOCUMENTS FOR CONTRACT REQUIREMENTS.



### LEGEND

- UNTREATED INFLUENT
- TREATED EFFLUENT
- AIR FLOW
- SOLIDS FLOW
- DRAIN/RECLAIMED WATER
- PACKAGE TREATMENT FACILITY



CITY OF JOHN DAY, OREGON  
WASTEWATER SYSTEM IMPROVEMENTS  
2019

PROCESS DIAGRAM

FIGURE  
1

## **APPENDIX B**

### **Ozzy Cup Screen Brochure**

---



# PROVEN OVIVO DRUM SCREEN TECHNOLOGY NOW SMALL, AND IN CHANNEL

High performance capture ratios

Straight channel design

Exceptional solids handling capabilities

Retrofittable to existing channels

No maintenance below grade

6mm to 0.5mm apertures available

Up to 5' deep channels

High reliability for constant flows



Interested in  
maximizing the life  
of your downstream  
equipment?

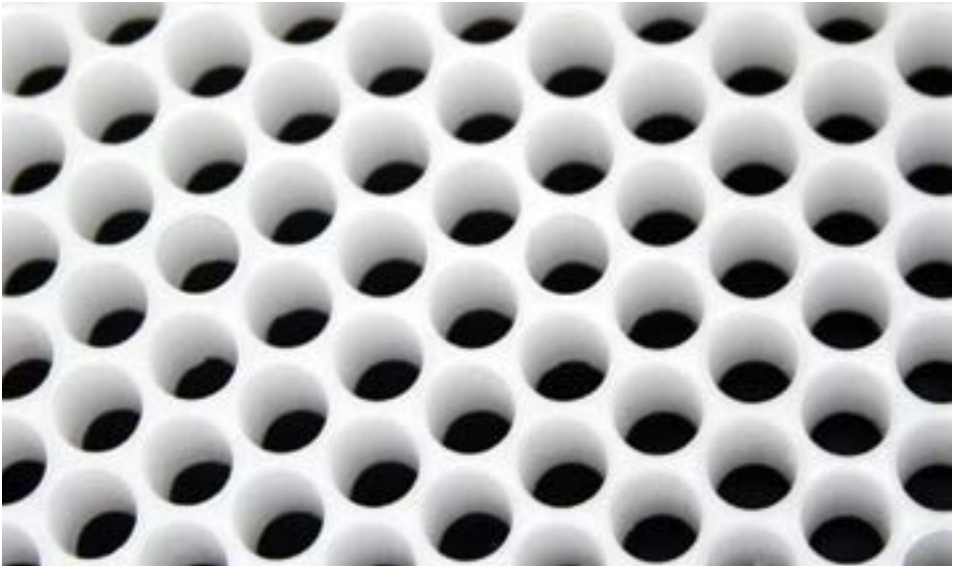
Call 1-855-GO-OVIVO to  
speak with an Ovivo  
Expert.

## OVIVO® OZZY CUP SCREEN



OVIVO’S HIGH PERFORMANCE, LOW MAINTENANCE, ELITE SCREENING TECHNOLOGY

Ovivo’s Ozzy drum screens are designed to meet the increasing demand for high capacity coarse and fine screening of raw or wastewater coupled with a robust low maintenance operation.



Close up of Ovivo’s ProPaPanel® technology

THE OZZY CUP SCREEN IS THE RESULT OF DECADES OF EXPERIENCE DEVELOPING SOME OF THE LARGEST DRUM SCREENS IN THE WORLD

- Low capital and maintenance cost
- Low energy usage
- Simple, slow rotating mechanism
- Simple to maintain
- Paired with the Ovivo’s ProPaPanel to reduced hair-pinning, and maximize corrosion resistance and durability.

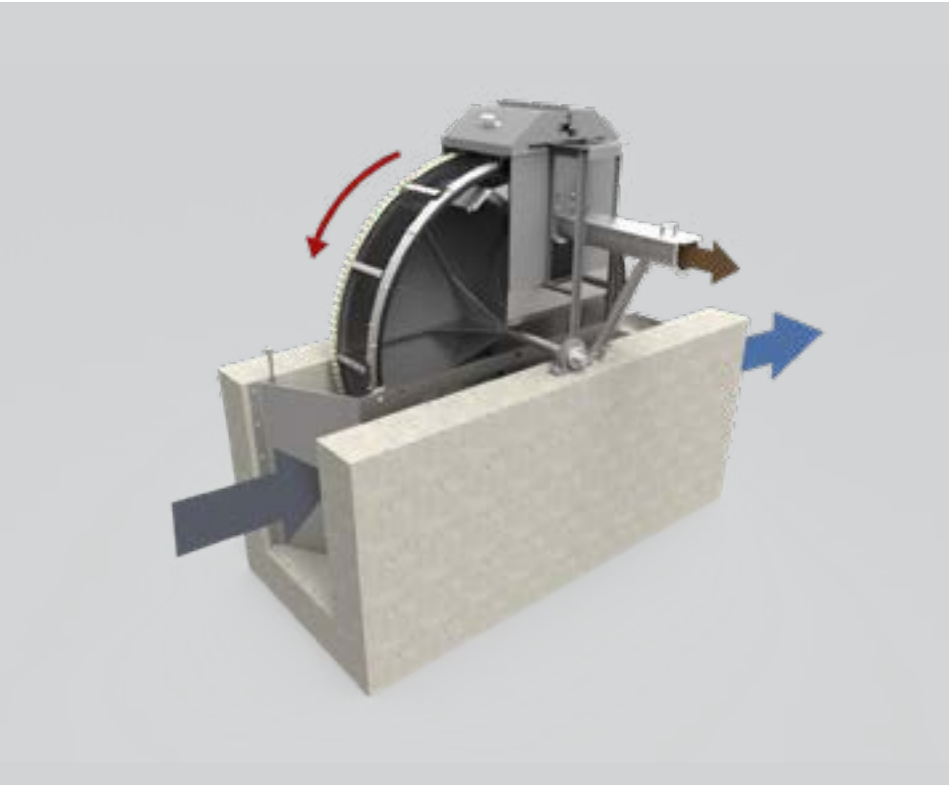
HOW IT WORKS

The Ovivo Ozzy Cup screen consists of a robustly constructed drum structure with a solid horizontal main shaft, which revolves slowly in heavy duty, self-aligning roller bearings.

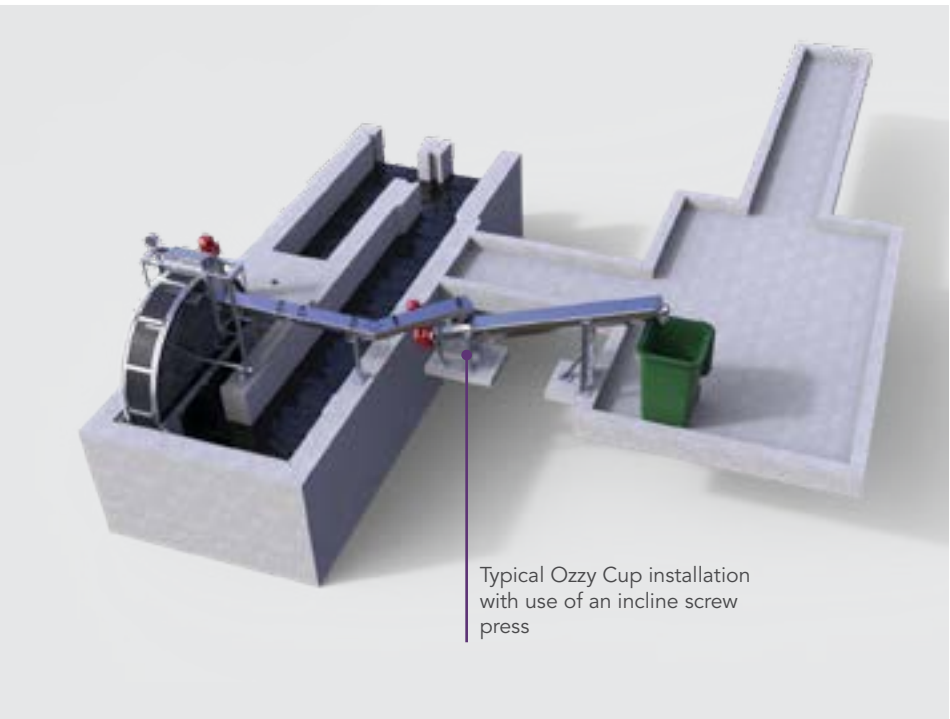
Water flows from the inside to the outside of the drum through mesh panels arranged around its periphery. Mesh panels are cleaned by spray wash nozzles mounted on the outer side of the drum screen. The screenings are then caught by a screening hopper and conveyed to the screw compactor through a sluice trough.

The screen is driven by a simple drive unit positioned at deck level. The final drive is a nylon pinion, which engages with a gear ring on the outside of the drum.

The drum screen structure can be designed to support high differential loading without failure of the mesh panels, thereby ensuring that the downstream plant does not become contaminated by unscreened water and debris.



THE OZZY CUP IS PAIRED WITH OVIVO’S J&A SCREW COMPACTORS OR SCREW PRESS FOR SCREENINGS HANDLING.



Typical Ozzy Cup installation with use of an incline screw press

Design allows for the Ozzy Cup to be installed in new or existing straight channels

## OVIVO® Ozzy Cup Drum Screen

### AVAILABLE SIZES

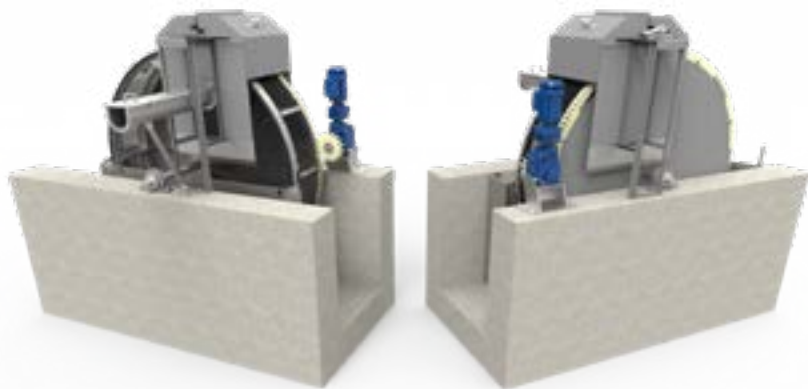
Diameter\*: 4'-8' (2'-4' channels depths)

Width\*: 0.5'-3'+

Aperture diameter: 0.5, 1, 2, 3, 5, 6mm

Flow range up to 10 MGD at 150mg/L TSS\*

*\*For specific flow capacity and sizing, please contact your local Ovivo Representative.*



## ENGINEERING SERVICES

### DESIGN AND ANALYSIS

Ovivo advanced 3D graphics and modeling, products are designed for different operating conditions and requirements for its customers.

### INSTALL, COMMISSION, MAINTAIN

Ovivo's service engineers can install, commission, maintain all machines and will visit sites around the world to advise on all aspects of our products.

### SPARE PARTS

All spares supplied are genuine, guaranteed and supported by our detailed knowledge of all historical modifications or upgrades.

### TRAINING

As a supplier of engineered capital equipment, we offer our end users on-site or in-house training courses. Contact our spares and service managers for details of the courses available.



**ALL OF YOUR MANUALS,  
ALL OF YOUR KNOWLEDGE,  
ALL IN ONE PLACE.**

Get your team on the same page.  
Upload and share documents & media.  
Create and manage service logs and  
maintenance schedules.

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## **APPENDIX C**

### **Perforated Plate Brochure**

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# PERFORATED PLATE **FILTER SCREEN**



The Kusters Water ProTechtor™ Perforated Plate Filter Screen is known for its reliable operation and robust design. Capture efficiencies of the filter screen are much higher than conventional bar style screens. All ProTechtor™ products are US Manufactured at Kusters Water's ISO 9001:2008 certified facility.

## FEATURES

- Rugged stainless steel construction
- Completely enclosed
- Screenings positively conveyed to discharge point
- Filter elements optimally cleaned due to precise brush contact
- Insensitive to grit and stones
- Perforated panels resist stapling effect of fibrous material
- Lifting fingers for larger particles

## BENEFITS

- High reliability, low maintenance cost
- No need for upstream coarse screening
- Ability to handle high grease discharges without clogging
- Easily adapted to suit modified operating conditions



**KUSTERS ■ WATER**  
a division of KUSTERS ZIMA



*Completely enclosed for odor control and hygienic operation.*



*Optimized Brush Configuration for superior cleaning.*



*High capture rate including fats and debris.*

## OVERVIEW

The Perforated Plate Filter Screen eliminates operational disruptions caused by fibrous and other inorganic material. Depending on the perforated panel, the screen capture efficiency is greater compared to a bar screen. The quality of the screened effluent is noticeably improved, which in turn improves performance of downstream processes.

## PRINCIPLE OF OPERATION

Wastewater flows through perforated filter elements while contaminants are captured on the face of the element. Larger objects, such as sticks, rocks, bottles, etc. are picked up from the bottom of the channel by the lifting tines at the bottom of every fifth element. The filter panels form a continuous belt which transports the screenings to the discharge point where they are cleaned from the panels by a rotating brush and high-pressure spray wash system. The screenings are then discharged into a dumpster, conveyor, or screenings washer compactor.

## DIMENSIONS

Channel widths from 1 to 10 feet

Standard channel depths to 36 feet

Filter element perforations of 3, 6, and 10 mm are standard (*other sizes on request*)

Angles of inclination: 50°, 60°, and 75°

## MATERIAL

Frame: 304 or 316 stainless steel

Filter Element: 304 or 316 stainless steel

Chain: Wear resistant 304 or 316 stainless steel

Sprockets: Wear resistant steel, wear resistant 304 or 316 stainless steel

Side Seals: UHMW plastic

Drives: Shaft mounted helical gear

For more information call **864.576.0660**  
or visit **kusterswater.com**



## **APPENDIX D**

### **Screw Screen Brochure**

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# JDV SCREW SCREEN

The **JDV SCREW SCREEN** is a proven design as a reliable self-cleaning method for the removal of solids from industrial or municipal wastewater. Removal of the non-organic solids helps increase operational plant efficiencies, particularly for downstream processing. The screen is designed for in channel or in standalone tank applications with low to moderate flow rates.

The **JDV SCREW SCREEN** provides screening, conveying and dewatering in one small compact and efficient design. Influent enters the screen and solids are captured by the filter media per design requirements.

Solids are then transported by the screw to the compaction zone and finally the discharge point. The optional wash zone, which is prior to the compaction zone, provides additional safety, convenience and efficiency of operations. This is achieved by removing a large portion of organic material from the screenings prior to compaction and discharge into customer supplied container or JDV supplied discharge bags.

## Features

- Capacities up to 5 MGD
- Optional wash zones
- Screenings volume reduction greater than 50%
- Filtration screen sizes from 1mm to 6mm
- Replaceable wear liner

## Benefits

- Proven Design for Transporting
  - Processed Waste Materials
- Reduced Maintenance Costs,
  - Lower Total Cost of Ownership
- Design Flexibility
- Increased Operational Efficiency of the Facility

Contact us today to learn more!  
[www.jdvequipment.com](http://www.jdvequipment.com)





## WE ARE THE LEADING MANUFACTURER

JDV Equipment Corporation is a leading manufacturer and provider of safe, environmentally friendly processing equipment and services for water treatment, wastewater treatment, industrial and agricultural applications.

### Pricing

Pricing varies depending on channel/tank size and flow requirements. Please contact your local JDV Sales Representative or contact JDV, 973-366- 6556. Quotations are provided within 48 hours of request when accompanied by minimum required specification data.

Minimum specification data required in order to provide a quote:

- ▶ Required Capacity (gpm, MGD)
- ▶ Tank or in channel installation
- ▶ Material Conveyed (Screenings or Other)

### Options & Accessories

Disposable Discharge Bags  
Washer Option  
304 or 316 SS Construction  
Tank Mounted  
Control Panel for Integration into  
Central Control System (SCADA)



1 Princeton Ave. | Dover, NJ

973-366-6556 [www.jdvequipment.com](http://www.jdvequipment.com)

SB\_23128 Rev 2019.1





# SPIRAL SCREEN



## OVERVIEW

Kusters Water offers a complete line of in channel or in-tank screening systems. Each unit utilizes a perforated plate or v-wire screen section to effectively remove unwanted solids and debris from the influent. The screenings are transported via a shaftless conveyor to the compaction zone, where they are cleaned, dewatered, then finally discharged.

## FEATURES

- Fits 10" – 36" Wide Channel
- 304 Stainless Steel Body
- Steel Shaftless Flighting
- Pivoting Stand For Easy Service
- Automated Control System
- Replaceable (sectional) Brushes
- High Efficiency Gear Reducer

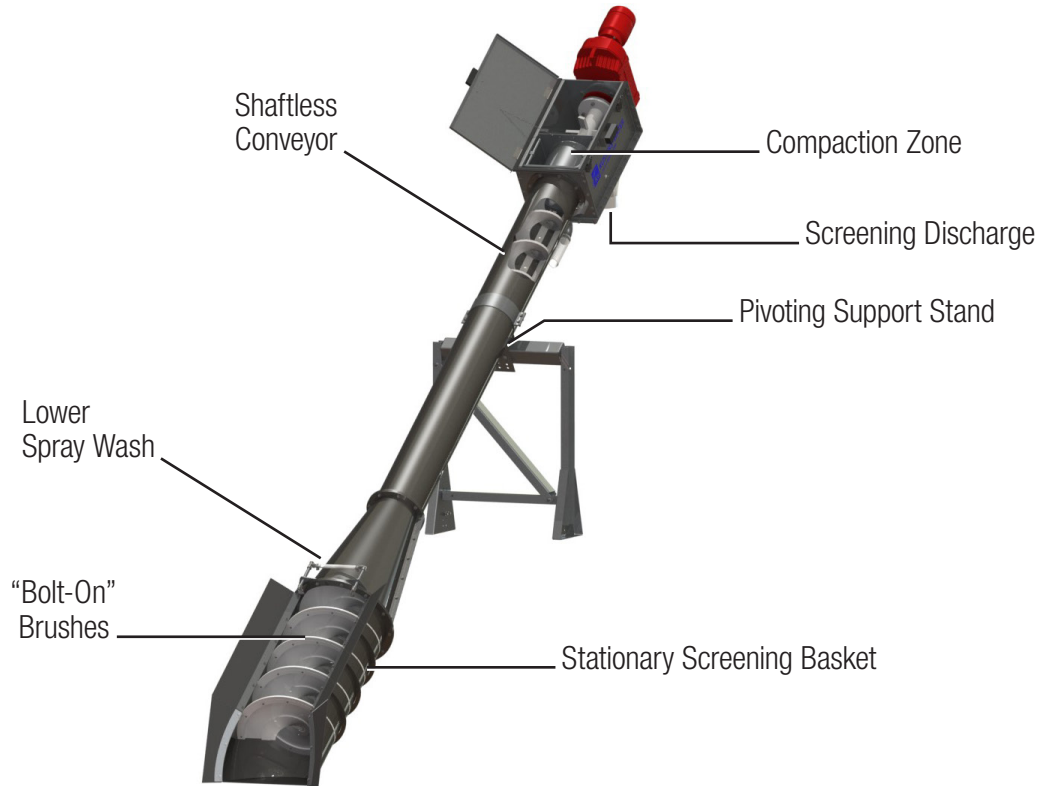
## APPLICATIONS

Wastewater	Tanneries
Textiles	Dairies
Food Processing	Slaughter House
Bottling	Meat Packing
Pulp & Paper	Snack Foods



**KUSTERS ■ WATER**  
a division of KUSTERS ZIMA





## OPTIONS

Weather Protection / Heating

Solids Bagger

Washing System

Stainless Steel Shaftless Flighting

Explosion Proof Operation

316 SStl Construction

In Channel Grinder



*Easily Replaceable "Bolt On" Brushes.*

For more information call **864.576.0660**  
or visit **kusterswater.com**



**KUSTERS ■ WATER**  
a division of KUSTERS ZIMA

Member of **J JAGENBERG** Group

# **APPENDIX E**

## **Low Pressure Lamps Compared to Medium Pressure Lamps**

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## UV LAMP TECHNOLOGIES

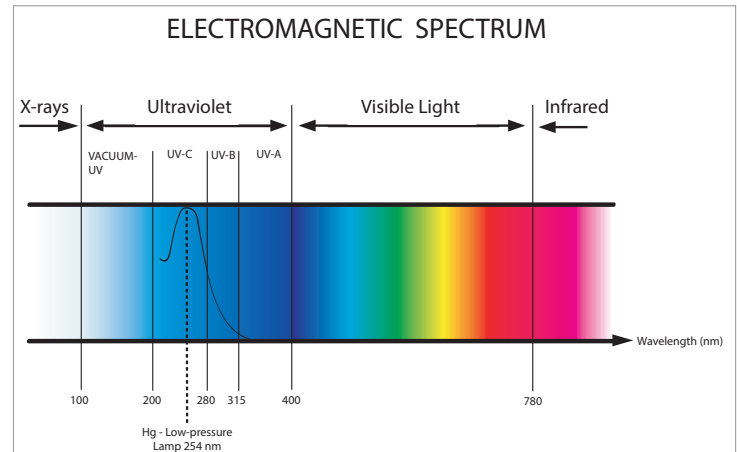
What are they and which one is for you?

### UV Spectrum for Organism Inactivation

Organisms typically respond to energy inputs, such as heat. While heat can help an organism by facilitating growth, excessive heat loads or high temperatures can be fatal. Energy in the form of UV can have the same effect.

The UV-C range in the UV spectrum can permanently alter the DNA structure of bacteria and viruses when exposed at appropriate levels - becoming "inactivated" and rendered unable to reproduce or infect.

The ultraviolet spectrum consists of 4 UV bands: Vacuum UV 100-200nm, UV-C 200-280nm, UV-B 280-315nm and UV-A 315-400nm. Despite claims that UV in general can efficiently disinfect in any UV band, the only band being used commercially for disinfection is UV-C.



**Figure 1.** UV Light Spectrum

Organisms such as bacteria and viruses have what is called an inactivation curve. This curve is related to the damage sensitivity of an organism to various wavelength of light. Below is a typical inactivation or sensitivity curve as related to the UV spectrum. The peak of the inactivation curve, or where the organism is most sensitive to UV energy, is at a wavelength of approximately 262nm.

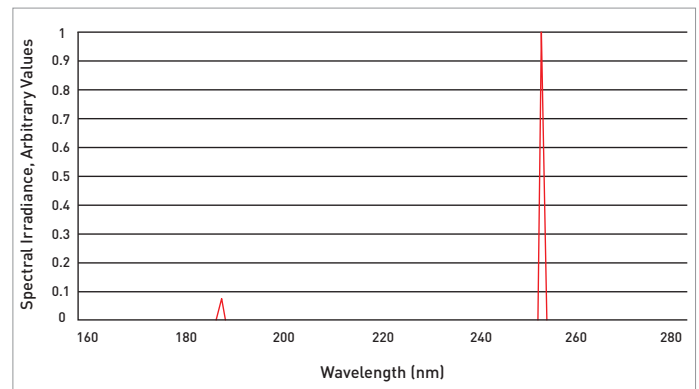
### Low Pressure, Amalgam Lamp, Or Medium Pressure | What's the Difference?

LP, Amalgam LP and MP lamps are mercury based arc lamps, differing primarily by electrical excitation and ionization levels of the mercury within the lamp and corresponding internal pressures.

#### Aquafine Low Pressure (LP) Lamps

Aquafine LP Lamps are considered to be monochromatic or 'single peak output' lamps, operates at about 40°C and has one useful disinfection output peak at 254nm. Roughly 40% of the electrical energy imparted into the lamp becomes UV-C energy of the 254nm wavelength.

This lamp type has the lowest internal pressure and has the lowest power density per unit length of lamp arc. Due to the very low temperatures that LP lamps operate at, fouling of the quartz sleeves is typically not a large issue, even in relatively low UVT fluids. Cleaning requirements are the least severe of the 3 lamp types.



**Figure 2.** Aquafine Standard & LP Amalgam Lamp Spectrum

#### Aquafine Low Pressure (LP) Amalgam Lamps

Aquafine LP amalgam lamps combine mercury with another element, allowing them to operate at higher temperatures, roughly 100°C. Like Aquafine LP lamps, Aquafine LP amalgam lamps are also considered to be monochromatic with a significant 254nm output peak. Roughly 35% of the electrical energy imparted into the lamp becomes UV-C energy of the 254nm wavelength. Operating at higher temperatures and pressures allow for an increased power density of roughly 1.5 to 4 times of a low pressure lamp per unit of arc length. Because of slightly higher 100°C temperatures that these lamps operate at, fouling may be slightly more than that of a low pressure system but it is typically not a major issue.

Medium Pressure (MP) Lamps

Aquafine MP lamps are considered to be polychromatic lamps, due to the wide output spectrum and operate at roughly 800°C to 900°C. With an average of 10 times the power density per unit arc length, Aquafine MP lamps have significantly higher power when compared to Aquafine LP amalgam lamps. Only 11-12% of the electrical energy imparted into the MP lamp becomes UV-C energy, with a range of 220nm to 280nm. Low output efficiency is a result of high power density, causing the lamp to emit many wavelengths outside the 220nm to 280nm output range required for disinfection.

MP lamp systems invariably require an automated cleaned system. Manual cleaning of these systems is very labor intensive and would be very frequent.

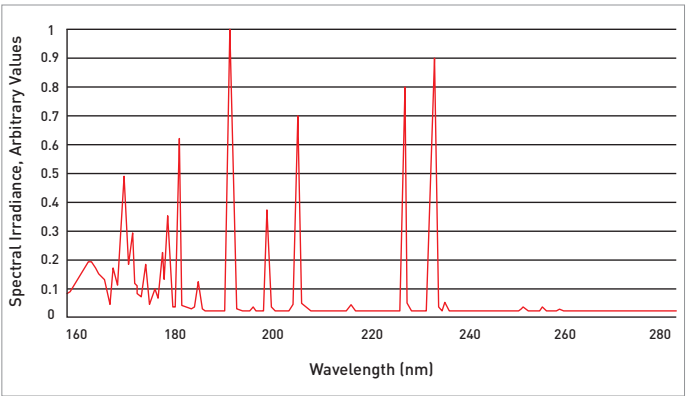


Figure 3. Aquafine MP Lamp Spectrum

Both Technologies Work | What are your Application Needs?

Both low and medium pressure systems are viable UV disinfection solutions. Your application requirements will dictate the selection of lamp technology you choose and will depend on the requirements of each specific site. For example; light in the UV-C region of 200nm to 280nm have very high energy levels in MP lamps, and that is why they can be used for disinfection purposes. As 262nm is the peak for the disinfection performance, other wavelengths can be useful, or harmful at their specific energy levels. Nitrite formation requires wavelengths of 230nm for instance. So if nitrite formation is an area of concern for you, a monochromatic light source may be your choice.

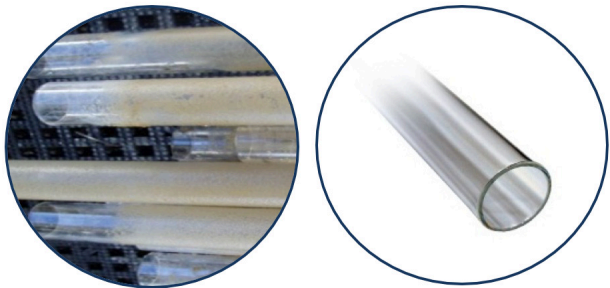
DISINFECTION	LP	LP AMALGAM	MP
UV Spectrum	Monochromatic	Monochromatic	Polychromatic
Relative Output Power per cm/arc 254nm	N	4N	40N
Lamp Efficiency 254nm	35%-40%	30%-35%	15-18%
Annual Operating Cost (Electrical)	\$5,957	\$2,628	\$7,358
Built-in Cleaning System Required <i>Clean Water/WasteWater</i>	No/No	No/Yes	Yes/Yes
Reactor Cooling	NO	NO	YES
Relative Maintenance <i>Clean Water/WasteWater</i>	LOW/MED	LOW/MED	MED/HIGH
Relative Closed Vessel Footprint: Reactor/Panel	LARGE/MEDIUM	MEDIUM/SMALL	SMALL/LARGE
Cost of lamp per UV-C Watt	2.1	3.1	2.7

Figure 4. LP vs. MP Lamp Technology Comparison

Maximum Performance | Quartz Sleeve Fouling

UV system performance is highly dependent on the cleanliness of quartz sleeves. Fouling quartz sleeves and improper maintenance of your system will directly impair your UV performance.

Appropriate and complete cleaning is functionally dependent on the water quality encountered in the system and the type of UV lamp technology used in the installed UV system. Aquafine’s approach is to match cleaning technologies (and monitoring of the cleaning process) to the application and lamp type being used.

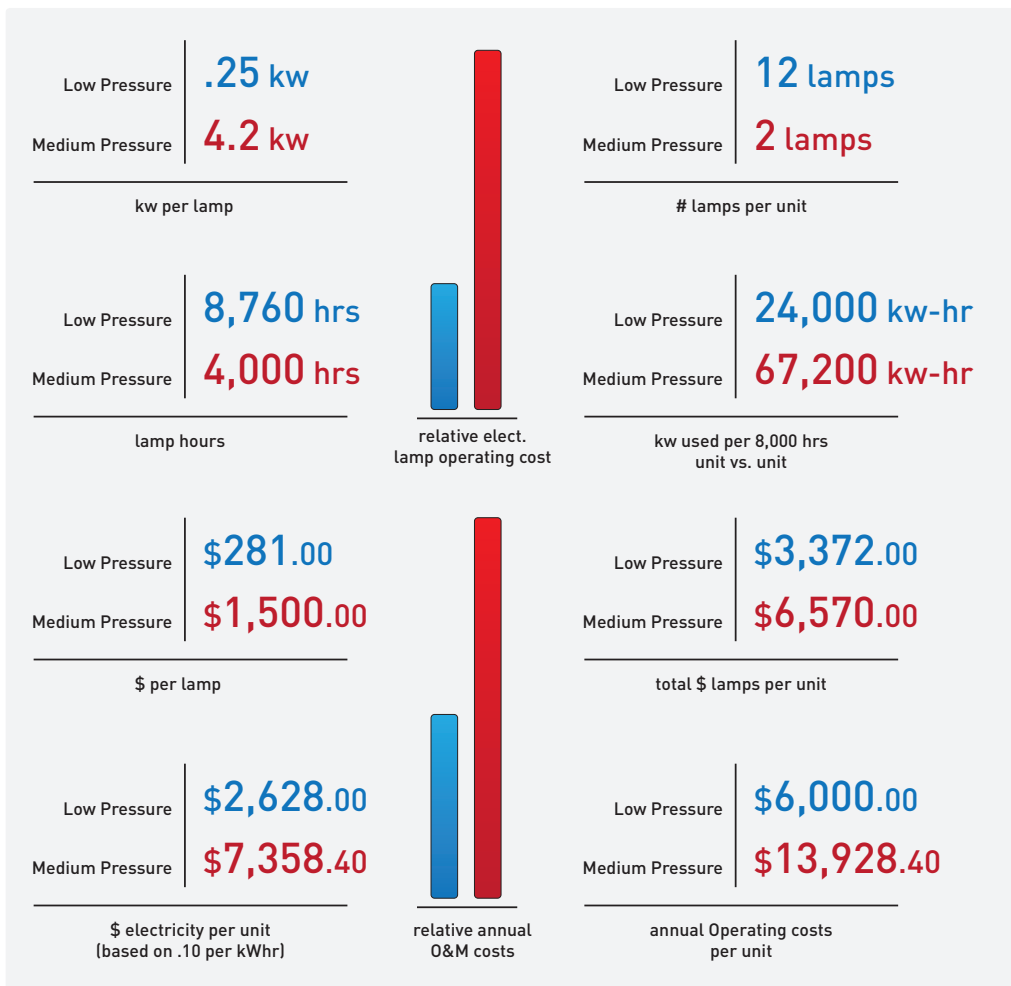


Aquafine LP Amalgam lamps for applications with high UVT water quality may need no quartz sleeve cleaning, or minimally - a mechanical wiping system. Aquafine MP lamps very predominantly require mechanical/chemical cleaning due to the rate and type of fouling induced by high thermal radiant and conduction loads on the wetted quartz surface of the sleeve or window, even in high UVT applications.

## Which one is for you? | Cost, Maintenance and Sustainability Comparisons

When comparing LP vs. MP lamp technology for UV disinfection, cost, maintenance and sustainability are important factors.

For example, in comparing annual operating and maintenance costs, LP is significantly less expensive, up to 50% vs. MP lamp technology. Environmental impact is also dramatically better on an annual basis, with a comparison of 16.5 metric tons of carbon dioxide (CO<sub>2</sub>) for LP technology vs. 46.3 metric tons for MP technology. That's a difference of 29.8 tons of CO<sub>2</sub> per year.



### Beverage Installation

**Lamp Technology:** Low Pressure  
**Drivers:** Low energy consumption, cost effective, low maintenance, sustainability



### Aquaculture Well Boat Installation

**Lamp Technology:** Medium Pressure  
**Drivers:** Space constraints, high-flow requirements

## Your UV Technology Solution | Things to Consider

Aquafine offers both LP and MP UV Solutions.

**Remember:** your application requirements will dictate the selection of lamp technology you choose and will depend on the requirements of each specific site.

- Conventional low-pressure and amalgam lamps are significantly more energy efficient than medium pressure lamps.
- Medium pressure lamps produce the greatest UV output per unit length of lamp, of the three lamp types.
- New high power amalgam lamps are significantly more powerful than low pressure lamps.
- Even though more cleaning may be required for medium and amalgam lamp based systems, due to the reduced number of lamps, these systems can cost effectively incorporate automatic cleaning systems to remove fouling. This automatic cleaning system can thereby significantly reduce labor associated with lamp maintenance.
- Polychromatic light has many different wavelengths, even beyond the disinfection range of 220nm to 280nm that can have positive, and/or negative effects on the fluid being treated.



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Aquafine is an ISO 9001:2008  
 certified company.

**APPENDIX F**  
**Closed-vessel Ultraviolet Reactors Brochure**



# SPECIFICATION SHEET

## UVLW RANGE



**The UVLW is a range of 800W low pressure, high output amalgam UV systems that are validated to the 2003 and 2012 NWRI Reuse Guidelines**

Model	Connection (Inches)	# of Lamps (800W)	Dimensions						Panel Dimensions		
			A	B	C	D	E	F	W	H	D
UVLW-6800-10	8	6	105	22	83	75	25	10	32	79	24
UVLW-6800-14	10	6	110	23	87	75	31	12	32	79	24
UVLW-8800-14	10	8	110	23	87	75	31	12	62	79	24
UVLW-16800-20	16	16	121	26	95	75	40	15	62	79	24
UVLW-20800-20	16	20	121	26	95	75	40	15	94	79	24
UVLW-22800-24	20	22	121	27	94	75	47	18	94	79	24
UVLW-30800-24	20	30	121	27	94	75	47	18	94	79	24
UVLW-30800-30	20	30	122	28	94	75	55	21	94	79	24
UVLW-45800-30	20	45	122	28	94	75	55	21	125	79	24

### CHAMBER

316L SS  
ANSI 150# flanged connections  
Install inline, horizontally or vertically  
Features:  
Access Hatch  
Twist lock lamp connections  
Dry UV intensity monitor  
High purity quartz thimbles  
Low voltage automatic wiper  
One piece wiper ring  
Temperature sensor  
Drain and vent ports

### CONTROL SYSTEM

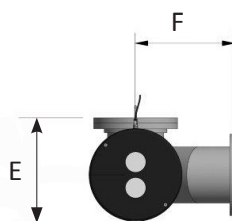
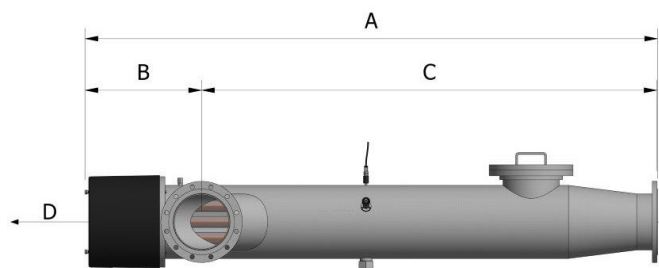
NEMA 12 epoxy coated mild steel enclosure  
Operational 32-113°F, RH < 90%  
Features:  
7" HMI  
Spectra II control system  
MODBUS  
Multiple warnings and alarms  
Variable power lamps  
480V/3-phase

### SYSTEM OPTIONS

304 or 316 NEMA 4X enclosures  
Effluent flange location  
Skid mounted  
Containerized  
Internal/external polish or electropolish

### INSTALLATION NOTES

Provide necessary maintenance space  
Install in a dry area  
Provide floor drain or sump  
Lamps submerged at all times  
Minimum of two conduits required  
Chamber must be grounded



The background image shows a row of Trojan UVFIT wastewater disinfection units. These are large, cylindrical, stainless steel vessels with multiple ports and valves. They are installed in an industrial setting, likely a wastewater treatment plant. A red diagonal graphic element is overlaid on the right side of the image.

TROJANUVFIT™

# Wastewater Disinfection

TROJAN ™

 Water  
Confidence™



## Proven TrojanUV Closed-Vessel Chambers for Reuse Disinfection.

Validated, chemical-free disinfection from the industry leader

Around the globe, wastewater treatment plants of all sizes are responding to the water quality and quantity demands of the communities they serve. As more municipalities adopt wastewater reuse policies and practices, wastewater treatment plants are required to treat effluent to higher levels—essentially eliminating all pathogens prior to reuse or discharge.

Depending on site and design conditions, wastewater treatment plants producing filtered effluent sometimes prefer a disinfection solution using closed-vessel or pressurized UV chambers. The TrojanUVFit™ offers an effective and energy-efficient closed-vessel UV solution. This compact chamber is available in multiple configurations to treat a wide range of flow rates. The streamlined

hydraulic profile of closed-vessel systems disinfect filtered effluent without breaking head in the treatment process. These benefits, along with UV's ability to provide environmentally friendly, chemical-free treatment for chlorine resistant microorganisms (such as *Cryptosporidium* and *Giardia*) make the TrojanUVFit closed-vessel solution an attractive option for wastewater disinfection.

# Key Benefits

## TrojanUVFit

**Fully validated performance.** System sizing is based on actual dose delivery verified through bioassay validation. Real-world, field performance data eliminates sizing assumptions and risks associated with theoretical dose calculations.

**Compact design.** The small chamber footprint simplifies indoor retrofit installations and reduces construction costs.

**Reliable, proven components.** UV lamps, quartz sleeves, electronic lamp drivers, sensors and sleeve wiping system have been tested, proven reliable and are operating in hundreds of installations.

**Design flexibility.** Chambers can be installed in parallel or in series, making it simple to incorporate redundancy or future expansion needs.

**Wide range of flow rates.** Peak flow rates per chamber are suitable for either individual post-filter or manifold installation. Flows up to 7 MGD per chamber – the largest validated low-pressure lamp in-pipe wastewater system in the industry.

**Validated lamp performance.** Lamp output and aging characteristics validated through industry protocols and proven through years of operating experience.

**Automatic wiping.** Automatic sleeve wiping saves operator's time and money. Ensures the maximum UV output is available for disinfection and minimizes energy consumption.

**Global support. Local service.** Our comprehensive network of certified service providers offers fast response for service and spare parts.

**Guaranteed performance and comprehensive warranty.** Our systems include a Lifetime Disinfection Performance Guarantee.



# TROJAN UV FIT™

Designed for efficient, reliable performance

## System Control Center (SCC)

The microprocessor or Programmable Logic Controller (PLC) based controller continuously monitors and controls UV system functions. Supervisory Control and Data Acquisition (SCADA) communication for remote monitoring, control and dose pacing is available. Programmable digital and analog input/output (I/O) capabilities can generate unique alarms for individual applications and send signals to operate valves and pumps.

## Sleeve Wiping System

Automatic sleeve wiping system operates online without interrupting disinfection. The wiping sequence occurs automatically at preset intervals without operator involvement.

## Amalgam Lamps

High-output amalgam lamps are energy-efficient and save operating costs due to reduced electrical consumption. Lamps are located within protective quartz sleeves with easy access from the service entrance.



## UV Intensity Sensor

Highly accurate, photodiode sensor monitors UV output within the chamber. The sensor ensures UV light is fully penetrating the water for complete disinfection.

*This chamber contains lamps in both ends of the chamber. Multiple inlet and outlet flange orientations are available.*

## Power Distribution Center (PDC)

The PDC panel distributes power to the chamber, UV intensity sensor and sleeve wiping system. The panel also houses high-efficiency, variable-output lamp driver (60 – 100% power) with proven performance in hundreds of installations around the world.



## End Cap

The end cap protects and isolates connections for components such as lamps, sleeves and wiping system. Power is automatically disconnected if end cap is removed thereby ensuring a safe working environment for operators.

## UV Chamber

Electropolished 316L stainless steel chamber available in multiple configurations for a wide range of flow rates. Optional flange orientations allow chambers to fit into existing piping galleries or tight spaces.



# Regulatory-Endorsed Bioassay Validation

Field testing ensures accurate dose delivery

## Benefits:

- Validated in accordance with industry protocols established by National Water Research Institute (NWRI)
- Performance data is generated from actual field testing over a wide range of flow rates and water quality (UV transmission)
- Bioassay testing offers peace of mind and improved public and environmental safety due to verified dose delivery – not theoretical calculations

# Compact Chamber for Installation Flexibility

Efficient, cost-saving design enables retrofit or new construction

## Benefits:

- Compact footprint simplifies installation and minimizes related capital costs – ideal for retrofit and new construction applications
- Lamps and sleeves are fully serviceable from the chamber end – allowing the system to be installed against walls, other equipment or piping
- Low head loss design simplifies integration into existing process, and avoids additional pumping and associated capital and operational costs
- Multiple flange orientations available – increasing design flexibility



*Chambers can be installed in parallel or in series for increased design and installation flexibility.*

# Amalgam Lamps Require Less Energy

Maintain maximum output and reduce O&M costs

## Benefits:

- Each lamp draws 250 Watts
- Our amalgam lamps maintain high output during entire lamp life – 20% less decline than competitive UV lamps
- Validated performance provides assurance of reliable dose delivery and prolonged lamp life
- Deliver consistent and stable UV output over a wide range of water temperatures

# Built for Reliable Performance and Easy Maintenance

Designed for trouble-free operation and minimal service

## Benefits:

- Routine procedures, including lamp change-outs are simple and require minimal time – reducing maintenance costs
- Access to internal components (lamps, sleeves, cleaning system) through service entrance at one end
- Service entrance and connections protected by end cap
- Intensity sensor continuously monitors UV output to ensure dose delivery



*The TrojanUVFit lamps are easily replaced in minutes without the need for tools.*

## Robust Sleeve Wiping System

Automatic wiping system maintains consistent dose delivery

## Benefits:

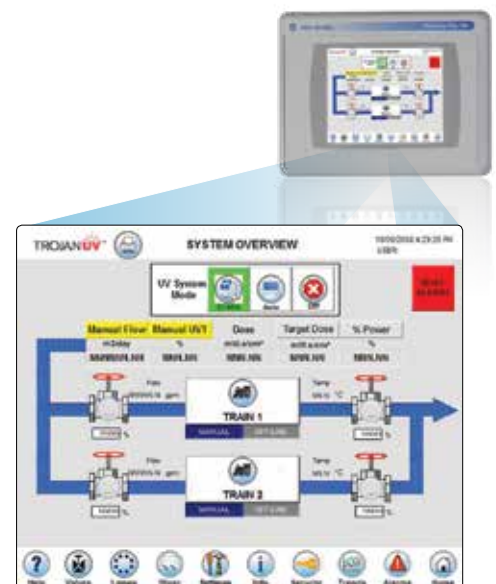
- Wiping system minimizes fouling of quartz sleeves
- Ensures consistent UV dose delivery and optimum performance
- Automatic wiping occurs while the lamps are disinfecting, reducing downtime
- Optional off-line chemical cleaning to reduce maintenance associated with manual cleaning

## User-Friendly Operator Interface

Touchscreen display allows easy operation and monitoring

## Benefits:

- Microprocessor or PLC-based system controls all functions and dose pacing to minimize energy use while maintaining required UV dose
- Controller features intuitive, graphical display for at-a-glance system status
- Controller communicates with plant SCADA systems for centralized monitoring of performance, lamp status, power levels, hours of operation and alarm status



*The PLC-based controller combines sophisticated system operation and reporting with an operator-friendly, touchscreen display.*

## System Specifications

Model			04AL20	08AL20	18AL40	32AL50	72AL75	D72AL75
Number of Lamps			4	8	18	32	72	144
Lamp Type			High-efficiency, High-output, Low-pressure Amalgam					
Sleeve Wiping			Automatic wiping system					
Lamp Driver			Electronic, constant output (100% power) or electronic, variable output (60 to 100% power)					
Chamber								
Materials of Construction			316L Stainless Steel					
Flange Size (ANSI/DIN), inches (mm)			6 (150)		10 (250)	12 (300)	20 (500)	20 (500)
Outlet Flange Orientation			Multiple orientations available 3, 6, 9 or 12 o'clock position					
Approx. Chamber Length, inches (mm)			80 (2032)	80 (2032)	82 (2083)	90 (2286)	90 (2286)	152 (3860)
Max. Operating Pressure, PSI (bar)			150 (10)	150 (10)	150 (10)	100 (6.8)	65 (4.5)	65 (4.5)
Dry Chamber Weight, lbs (kg)			107 (49)	115 (52)	400 (181)	1600 (726)	2100 (953)	3700 (1678)
Wet Chamber Weight, lbs (kg)			230 (105)		877 (398)	2200 (998)	3700 (1678)	7200 (3265)
Power Distribution Center (PDC)								
Electrical Supply	Standard: Single phase, 2 wire + gnd, 50/60 Hz L-L	120V	N/A	N/A	N/A	N/A	N/A	N/A
		208V	✓	✓	✓	✓	N/A	N/A
		240V	✓	✓	✓	✓	N/A	N/A
	3 Phase, 4 wire + gnd, 50/60 Hz	400/230V	N/A	N/A	✓	✓	✓	✓
Dimensions (H x W x D) inches (mm)		Type 12	30 x 16 x 10 (760 x 410 x 250)		36 x 30 x 10 (920 x 760 x 250)	60 x 36 x 10 (1520 x 920 x 250)	86 x 48 x 24 (2184 x 1219 x 610)	86 x 96 x 24 (2184 x 2438 x 610)
		Type 3R						
		Type 4X	30 x 24 x 10 (760 x 610 x 250)				60 x 36 x 12 (1520 x 920 x 305)	
Material		Type 12	Painted Mild Steel					
		Type 3R	Painted Mild Steel					
		Type 4X	304 Stainless (1.4301 in Europe)					
Panel Rating			NEMA 12, 3R or 4X			NEMA 12 or 4X		
Network Interface			Modbus RTU RS485, Modbus TCP/IP, AB Ethernet I/P, ProfiNet				N/A	
System Control Center (SCC)								
Panel is Required/Optional			N/A (requires only PDC)			Optional	Required	
Electrical			N/A (see PDC)			Two (2) Supplies of 120 V single phase, 2 wire plus ground, 60 Hz, 1.2 kVA (one (1) for the PLC, one (1) for lights & heater)		
Material		Type 12	Painted Mild Steel					
		Type 4X	Stainless(1.4301 in Europe)					
Panel Rating			N/A (see PDC)			NEMA 12 or 4X		
Typical Outputs Provided			Chamber status, common alarms and SCADA communication					
Network Interface			Modbus RTU RS485, Modbus TCP/IP, AB Ethernet I/P, ProfiNet					

TrojanUV is part of the Trojan Technologies group of businesses.

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### Trojan Technologies Deutschland GmbH

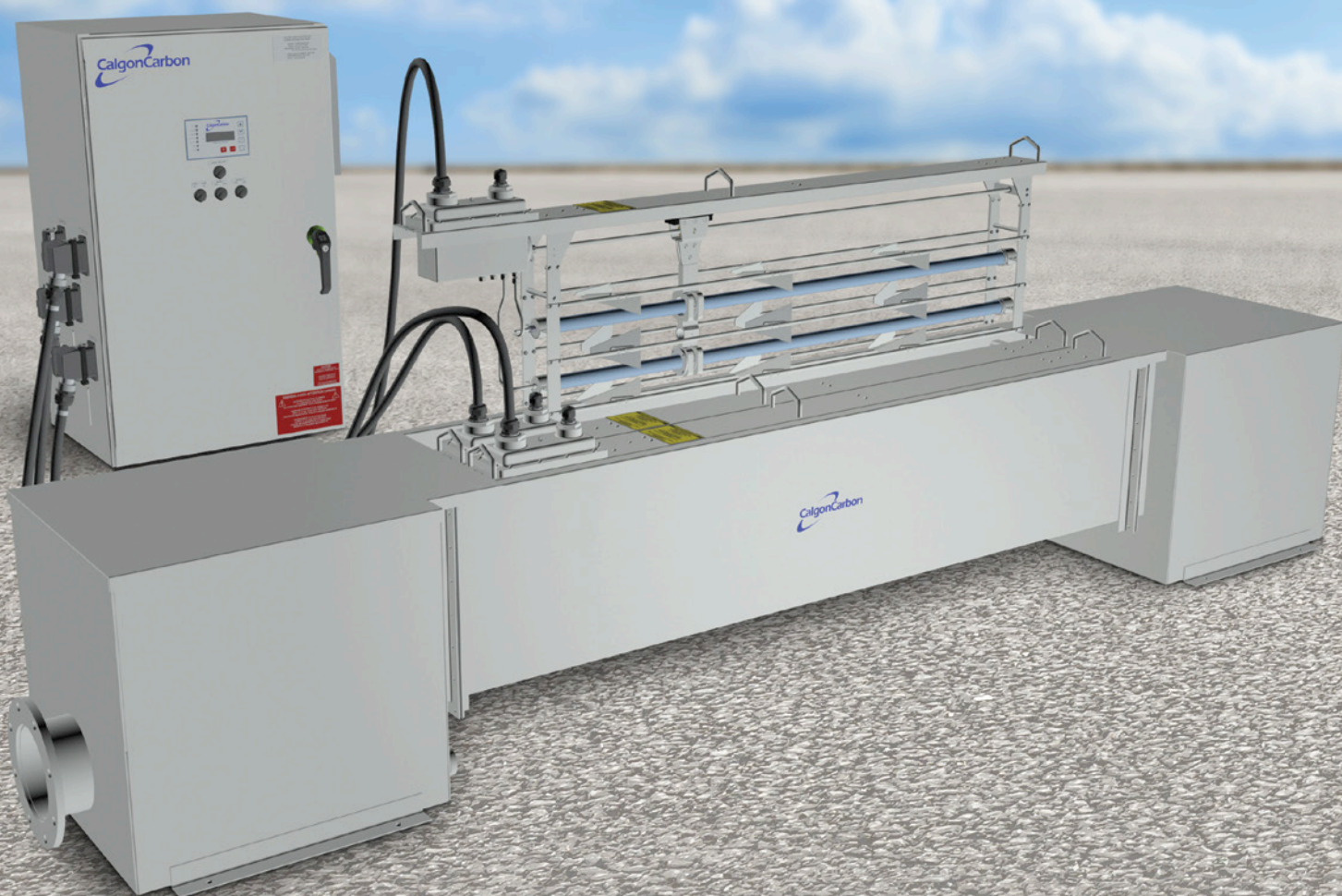
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**APPENDIX G**  
**Open Channel Ultraviolet Reactors Brochure**





Packaged Wastewater Disinfection

Pure Water. Clean Air. Better World.



## C<sup>3</sup>500™D/PS

### Packaged UV Wastewater Disinfection

Calgon Carbon UV Technologies, LLC designs and manufactures advanced wastewater ultraviolet light (UV) disinfection systems to prevent the spread of waterborne pathogens to lakes, streams, rivers and coastal water. UV is a proven, safe and environmentally friendly method of inactivating harmful organisms, including viruses, protozoa and bacteria.

**The C<sup>3</sup>500D/PS** UV System provides a pre-engineered, pre-packaged solution for communities needing to disinfect wastewater effluent under 2.6 million gallons per day (MGD) peak. The package system eliminates costly civil work for installation — the system can be easily connected from existing contact basins and channels by pipe runs to flanged inlet and outlet connections.

Operational modes can be easily selected from manual to fully automatic flow or dose pacing, affording significant power savings by applying only the UV intensity needed based on real-time conditions. Most comparable systems only provide rudimentary flow pacing or operate continuously at full power, wasting electrical energy.

The **C<sup>3</sup>500D/PS** is offered in six configurations, ranging from two lamps in a single bank to 12 lamps arranged in two series banks. The complete prepackaged system includes lamp racks, stainless steel channel, wall-mounted power distribution cabinet (PDC), instrumentation and all necessary interconnecting cables.

#### Applications



Wastewater  
Treatment



Reuse



Industrial  
Wastewater

#### Features/Benefits

- **Superior Disinfection Efficiency**

Fewer lamps than competing UV systems by use of 500 W LPHO lamps and controlled mixing.

- **Validated Performance**

Rigorously bioassay-tested from 35 to 80% UVT using MS2 and T1 surrogates.

- **Floodable Rack Modules**

Racks are IP68/NEMA 6P-rated should temporary flooding or upsets occur.

- **Dose Pacing**

Fully automated dose pacing is available, varying lamp output real-time for optimum energy efficiency.

- **Compact Level Control**

Tubular weir has smaller footprint than traditional serpentine weir, resulting in more uniform channel velocity profile for better dose distribution.

- **Self-Cleaning (Optional)**

Patented, electrically driven, stainless steel scrapers clean automatically without chemicals.

- **Simplified Assembly**

Assemble channel, connect piping, provide power and plug in UV racks, and the system is ready to operate.

- **Simplified Operation**

Intuitive navigation and display of all system parameters make the **C<sup>3</sup>500D/PS** very user-friendly.

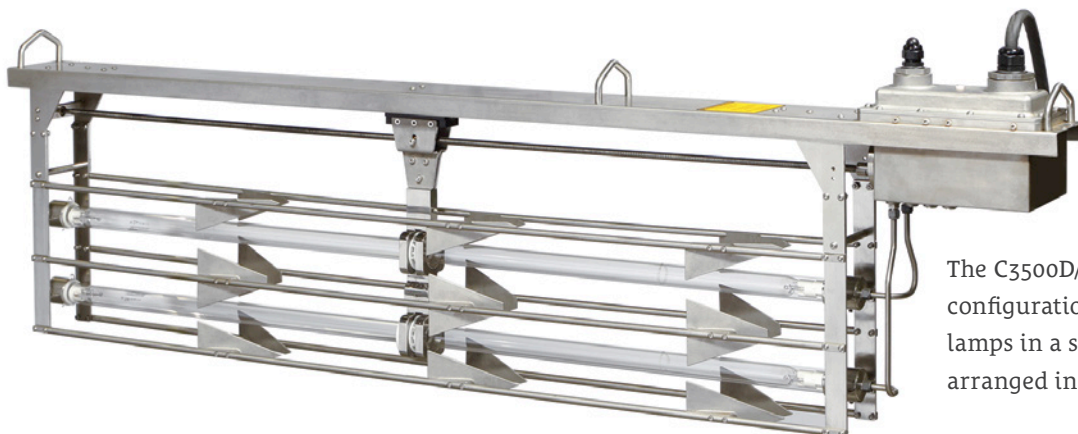
- **Designed for Easy Maintenance**

Racks can simply be unplugged and lifted from the channel for cleaning or maintenance, no hard-wired connections to disconnect.

- **Integrate to Existing Systems**

Built-in SCADA (Supervisory Control and Data Acquisition) using Modbus RTU industrial interface protocol.



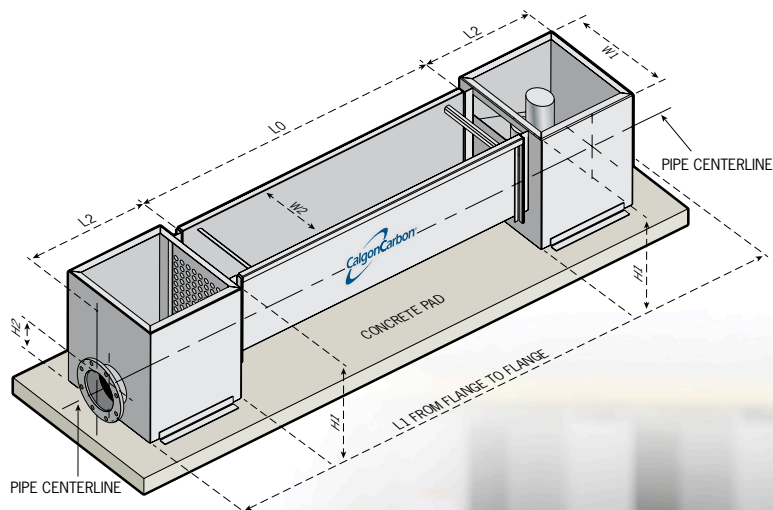


The C3500D/PS is offered in six configurations, ranging from two lamps in a single bank to 12 lamps arranged in two series banks.

## C<sup>3</sup>500™D Packaged Plant System Details

MODEL NUMBER	PEAK FLOW MGD (m³/hr)	NO. OF BANKS	RACKS PER BANK	TOTAL LAMPS	Dimensions – Inches (cm)							FLANGE SIZE	WEIGHT LBS. (kg) EXCL. LAMP RACK
					L0	L1	L2	W1	W2	H1	H2		
C3500DPS036	0.36 (57)	1	1	2	93 (236)	138 (351)	23 (58)	16 (41)	6 (15)	25 (64)	6 (15)	6" AWWA/ANSI	350 (159)
C3500DPS072	0.72 (114)	1	2	4	93 (236)	154 (391)	31 (79)	24 (61)	12 (30)	29 (74)	7 (18)	8" AWWA/ANSI	525 (238)
C3500DPS108	1.08 (170)	1	3	6	93 (236)	167 (424)	37 (94)	27 (69)	18 (46)	29 (74)	8 (20)	10" AWWA/ANSI	652 (296)
C3500DPS085	0.85 (134)	2	1	4	185 (470)	247 (627)	37 (94)	24 (61)	6 (15)	29 (74)	7 (18)	8" AWWA/ANSI	635 (288)
C3500DPS171	1.71 (270)	2	2	8	185 (470)	275 (699)	45 (114)	27 (69)	12 (30)	33 (84)	10 (25)	12" AWWA/ANSI	875 (397)
C3500DPS257	2.57 (405)	2	3	12	185 (470)	283 (719)	49 (124)	40 (102)	18 (46)	33 (84)	12 (30)	16" AWWA/ANSI	1125 (510)

Note: Configurations are based on a UV transmission of 65%, 15 mg/L of suspended solids and an MS2 dose of 30mj/cm<sup>2</sup>. Contact factory for other sizing requirements. Dimensions are for reference only and subject to change without notice.



Calgon Carbon's UV Technologies Division has been manufacturing and testing UV systems in Western Pennsylvania for over 20 years. You can have confidence in our highly qualified assembly and test personnel. We are fully certified to an ISO 9001 quality management system for all aspects from design to aftermarket support of UV treatment systems.



## C<sup>3</sup>500™D/PS UV System Specifications

Typical Applications	Up to 2.6M MGD (410 m <sup>3</sup> /hr)
Lamp Banks	1 or 2 (for redundancy or treatment in series)
Lamps	Low-pressure, high-output (LPHO) amalgam
Ballasts	Electronic, variable output (60-100%), pre-heat start to extend lamp life
Power Demand	565 watts/lamp including ballast (nominal)
Power Quality	.99 minimum system power factor, complies with IEEE 519-1992 for total harmonic distortion
Power Input	240 V, single phase
Environment	Indoor or Outdoor, 16 to 109° F (-9 to 43° C) ambient, <95% relative humidity (non-condensing)
Level Control	Fixed tubular weir to maintain correct water level from zero to full flow
System Controls	Microprocessor based closed loop control
Channel	Stainless construction with AWWA flanges and removable lids
Instrumentation	UV sensor, level monitor
Options	Automated cleaning Handheld UVT analyzer Jib crane Service trolley Portable cleaning tank (for systems without on-line cleaning) PDC stand Field start-up and training

Calgon Carbon Corporation (NYSE:CCC) is a global leader in innovative solutions, high-quality products and reliable services designed to protect human health and the environment from harmful contaminants in water and air. As a leading manufacturer of activated carbon, with broad capabilities in ultraviolet light disinfection, the Company provides purification solutions for drinking water, wastewater, pollution abatement, and a variety of industrial and commercial manufacturing processes.

For more information about Calgon Carbon's leading activated carbon, filtration media and ultraviolet technology solutions, visit [www.calgoncarbon.com](http://www.calgoncarbon.com).



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## **APPENDIX H**

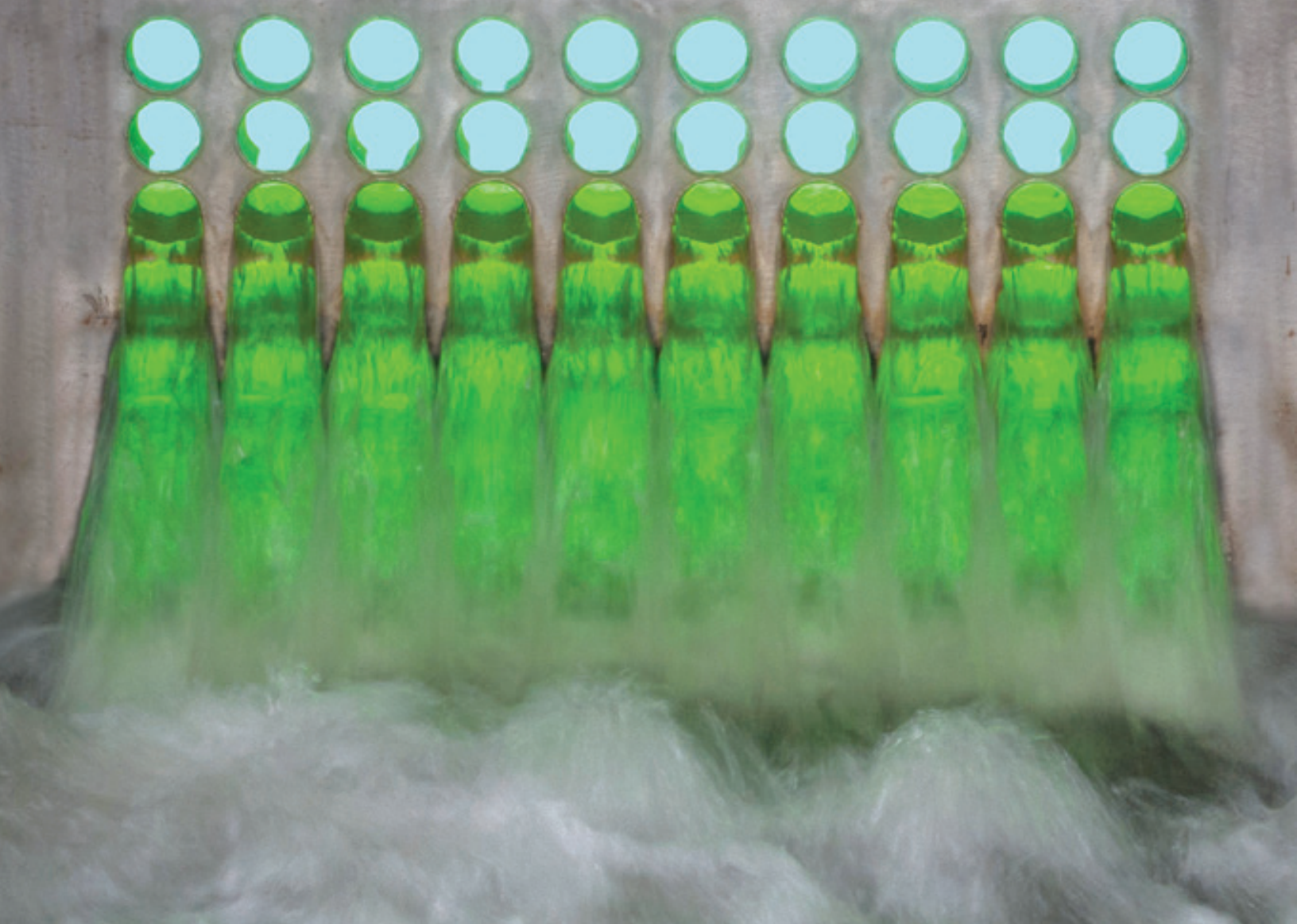
### **Non-contact Ultraviolet Reactors Brochure**

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# Non-contact UV disinfection systems

*Dry · Simple · Intelligent · Energy Efficient*





# The right choice

*UV is the most cost effective and environmental friendly disinfection solution for wastewater.*

## About UV Disinfection

Ultraviolet light irradiation is a proven disinfection process using short wave length 254nm Ultraviolet (UV) energy to inactivate harmful microorganisms. UV radiation disrupts the DNA of pathogenic organisms such as bacteria, viruses and molds, leaving them unable to reproduce. UV has been used to disinfect various types of effluent from low-quality combined sewer overflow (CSO) to high-quality tertiary effluent since early 1900’s.

## UV – The preferred disinfection method in municipal wastewater

To comply federal Clean Water Act, and other regulations for indicator organisms, municipal wastewater must be disinfected before discharging or reusing. There are multiple options for chemical disinfection, but only one non-chemical disinfection technology. UV is the preferred disinfection method for municipal wastewater discharge or water reuse applications various chemical disinfection technologies. Currently more than 20% of wastewater treatment plants in the United States use UV as their preferred disinfection technology and this percentage has been increasing year over year.



## Advantages & benefits

Compared to conventional chlorination

	Ultraviolet light	Sodium hypochlorite	Chlorine gas
Disinfection effectiveness	High	High*	High*
Disinfection by products	No	Yes	Yes
Safety risks	Low	High	High
De-chlorination required	No	Yes	Yes
Contact channel	Small	Large	Large
pH dependency, Corrosion	No	Yes	Yes
O&M Cost	Low	High	Medium
Capital Investment	Medium	Low	High

\*Cryptosporidium and Giardia are resistant against chlorination

## Third Party Validated Technology

Enaqua is the first non-contact UV system supplier to have applied and received Third Party Validation, as a result of continuous efforts improving the Non-Contact UV disinfection technology. The validation testing and reports were conducted in 2015 by Carollo Engineers in accordance with the following protocols:

- UV - Disinfection Guidelines for Drinking Water and Water Reuse (National Water Research Institute [NWRI]), August 2012
  - 53% to 80.0 % UVT range validated
- Uniform Protocol for Wastewater UV Validation Applications (International Ultraviolet Association [IUVA], 2011) – 36.0% to 81.0% UVT validated range
  - MS2 Bacteriophage
  - T1 Coliphage

## Enaqua – a history of innovation

1985	1990	1992	1993	1997	1999	2003	2007	2009	2012	2013	2015	2017
Enaqua founded									Acquisition by Grundfos			
First Non-Contact UV System Water Technology Consulting	Patented Non-Contact Opaque Fluid UV System	Chemical Recovery RO Systems Brackish Water RO Systems	Municipal UV Waste-water System	Distribution of Membrane Products	Large Municipal UV Waste-water Systems	Seawater De-salination RO Systems	UV Web-based Control System	UV / UF / RO Municipal Waste-water Systems	Ensure Dosing System(EDS)* SMART Lamps*	\$11 Million UV/ UF/ RO Chemical Recovery System	Validation test NWRI Title 22 and T1	Selected by several big municipalities for best TCO



ENAQUA  
 A GRUNDFOS COMPANY

\*Patent pending



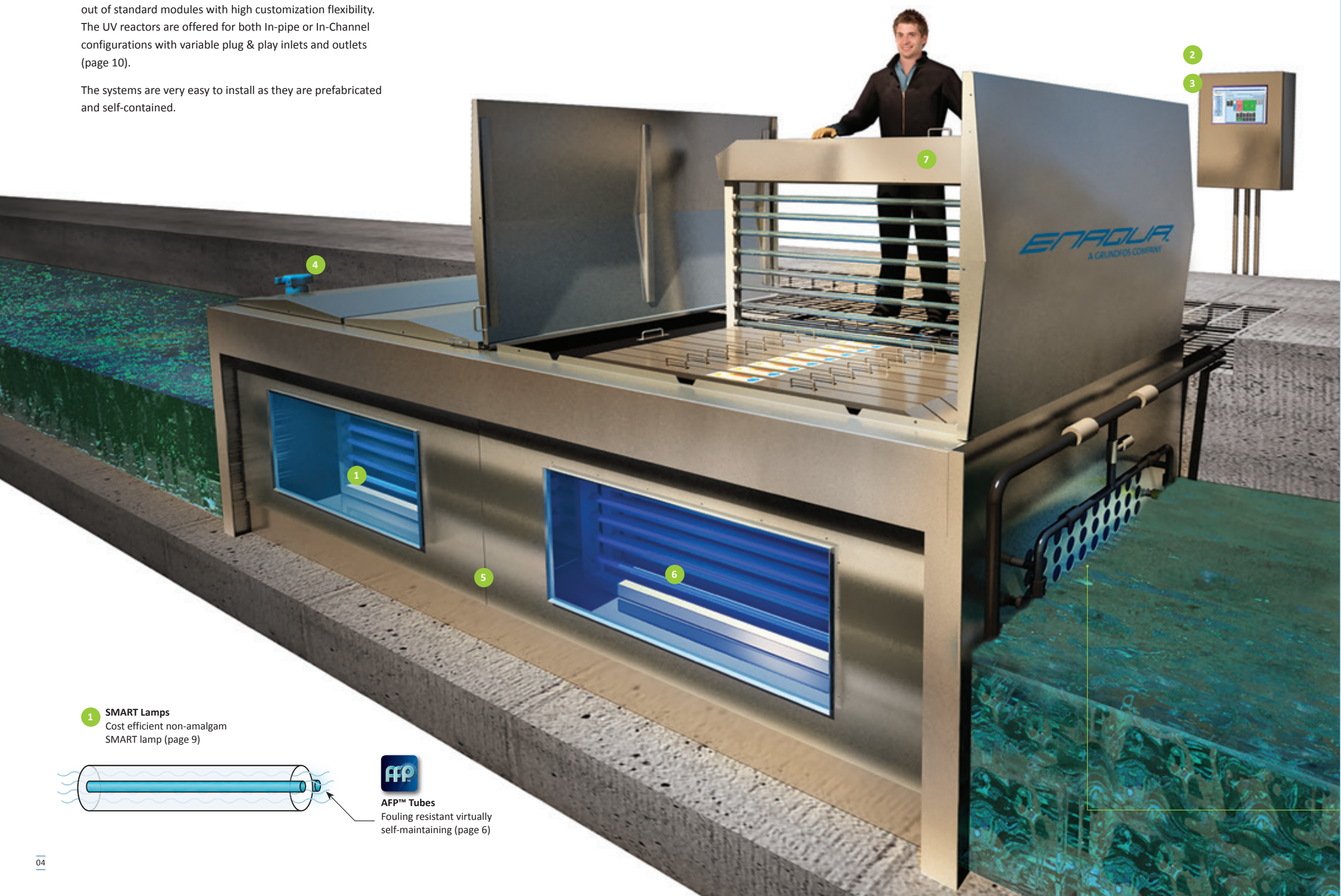
\*Please contact Enaqua for validation range, parameters, and other technical details.



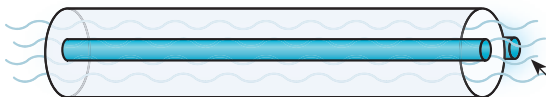
# UV made simple – features at a glance

All of Enaqua's Non-Contact UV disinfection systems are built out of standard modules with high customization flexibility. The UV reactors are offered for both In-pipe or In-Channel configurations with variable plug & play inlets and outlets (page 10).

The systems are very easy to install as they are prefabricated and self-contained.



- 1 **SMART Lamps**  
Cost efficient non-amalgam SMART lamp (page 9)



**AFP™ Tubes**  
Fouling resistant virtually self-maintaining (page 6)



- 2 **Ensure Dosing System (EDS)**  
Intelligent monitoring, control and FAIL SAFE ensures compliance at all times (page 8)

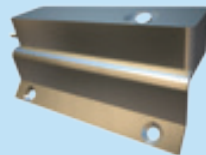
- 3 **Electrical panel**  
Simple, compact and operator friendly HMI

- 4 **Flow & Level pacing**  
Optimize energy consumption & life of consumables

- 5 **Heat Exchange System**  
Controls reactor temperature for optimal UVC output using Effluent, plant W3 water, Potable, or Closed Loop system



- 6 **UV Intensity Monitor**  
UV Sensor placed outside of AFP™ tubes – Dry without fouling



- 7 **Individually fused and switched lamp racks**  
No cranes required, simple maintenance (page 7)



- Single lamp ballast**  
Non-prorated Warranty up to 24 on/off cycles per day

- 8 **Controlled Water Level Downstream**  
No level control mechanism required – simple hydraulic design



# Always dry – AFP™ Non-Contact UV Technology

Enaqua – The Pioneer in cost effective Non-Contact UV design

Enaqua’s innovative non-contact UV technology means no more repairing and replacing submerged components. Effluent flows through Enaqua’s AFP tubes leaving the UV lamps, electronics and other components- accessible, and easy to maintain in the dry body of the UV reactor.

## AFP™ tubes – The secret behind the performance

AFP stands for “Activated Fluoropolymer” which Enaqua specifically developed for Non-Contact UV applications:

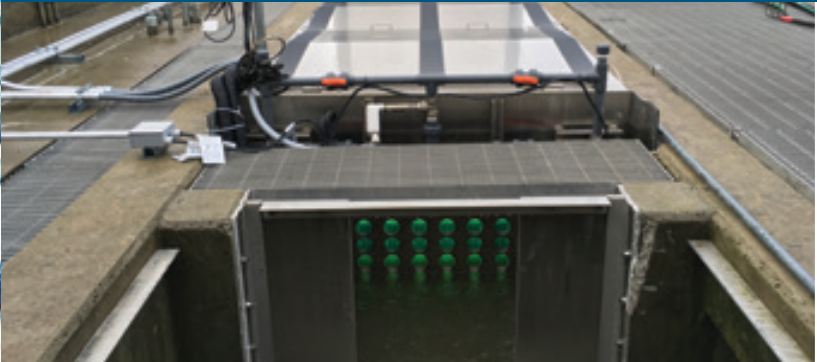
- High transmissivity of UVC
- AFP Tubes have no micro-structure-hence very resistant to scaling and fouling
- Durable, flexible, and fracture resistant material
- Long term UVC stability and Chemical resistance
- Multiple plants with over 20+ years of continuous operation



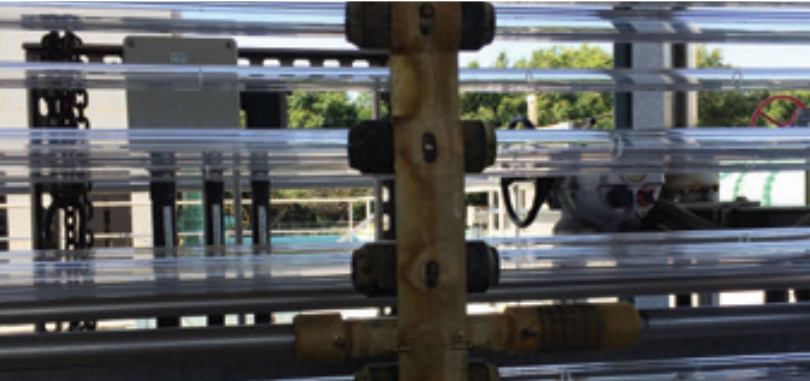
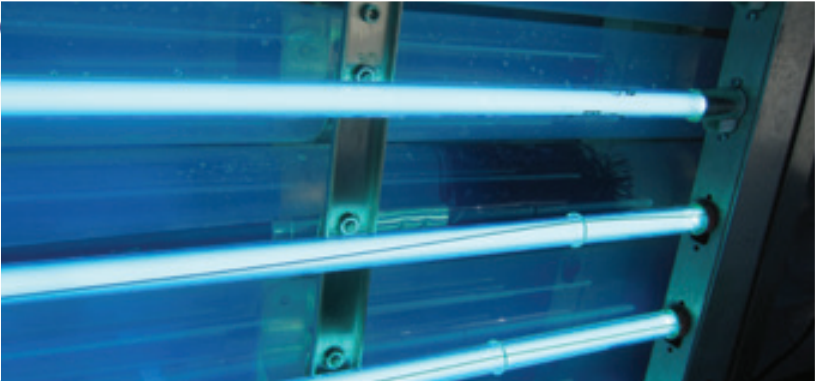
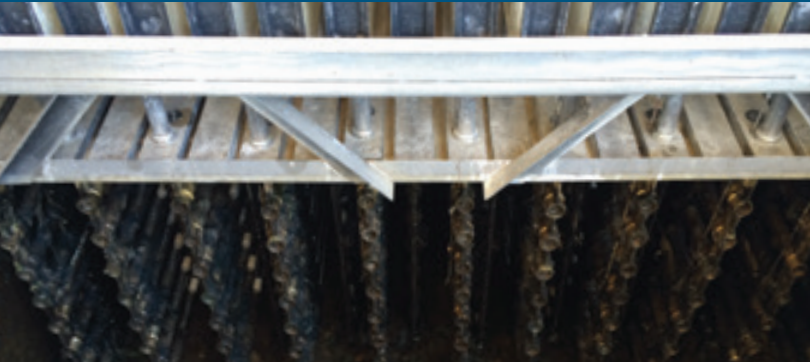
# Simple – maintenance made clean, fast and easy

Enaqua’s Non-Contact UV technology system maintenance is simple:

Enaqua’s Non-Contact UV

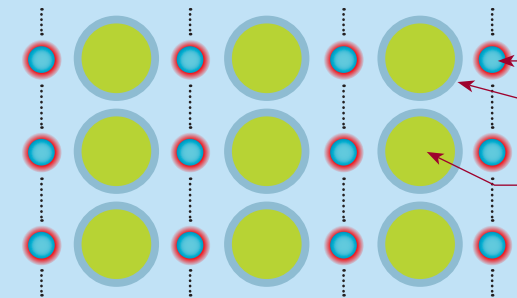


Traditional Contact UV



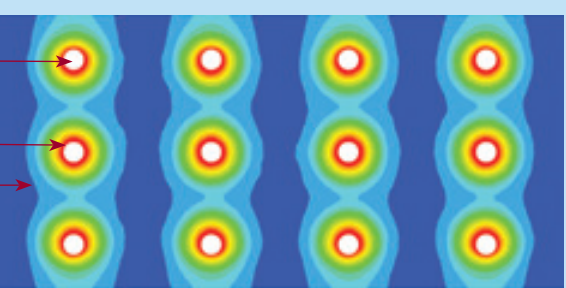
## Technologies in comparison

ENAUQA AFP™  
Non-Contact Technology

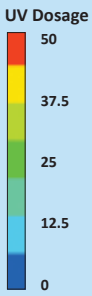


- Low cost high output lamps
- No quartz sleeves
- Fouling and Scaling Resistant AFP tube
- Turbulent flow provides self-cleaning of AFP™ tube
- No AFP tube replacement needed under normal operating conditions
- Simple pipe hydraulics makes UV disinfection easy to predict
- Level Control Devices typically not required

Quartz Sleeve UV  
traditional Contact Technology



- High cost amalgam lamps
- Fragile quartz sleeves with risk of mercury and glass contamination
- Fouling-prone quartz sleeves
- Cleaning system required
- Quartz sleeves need to be replaced over time
- Channel hydraulics makes UV disinfection less predictable
- Level control devices increase footprint

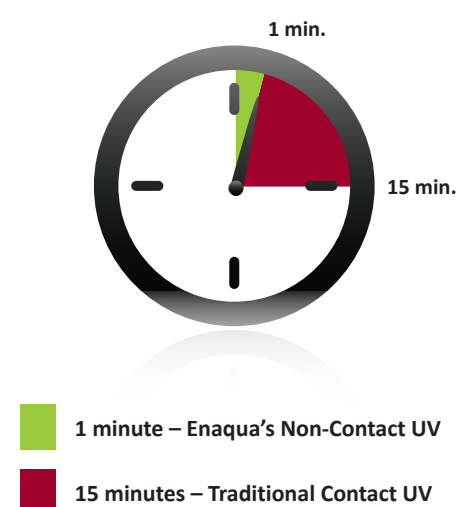


## No more:

- High cost amalgam lamps
- Dirty and fouled quartz sleeves
- Problems with quartz cleaning devices
- Need to interrupt or remove any hydraulic seals
- Heavy duty cranes required for system maintenance
- Minimize Civil and Structural construction costs
- Time consuming lamp replacements
- Algae growth on the lamp racks
- Quartz sleeves to break and replace\*
- SCADA programming

\*No AFP™ tube replacement under normal conditions (20+ year history)

## Typical lamp replacement time





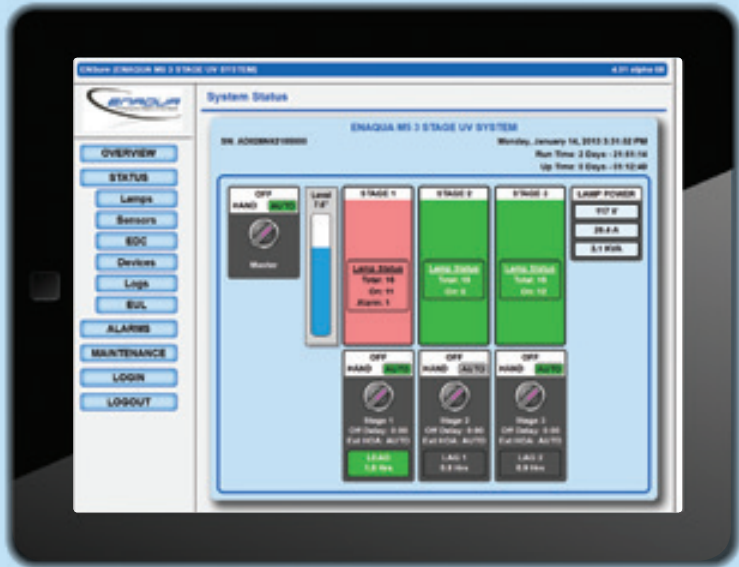
# Intelligence – you don't want to miss...

Where Energy Efficiency matters

## The Ensure Dosing System (EDS) is the most comprehensive monitoring and control system in the industry.

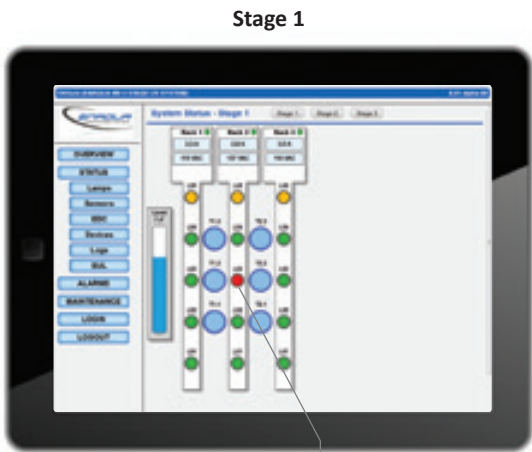
SCADA built in – Full system control and performance monitoring wherever and whenever you want:

- No special hardware and software requirements
- Simple connection via web browser
- Multiple Levels of Access
- Remote monitoring and control via Internet
- Stand-alone WiFi control e.g. with iPad®
- SCADA integration with ModBUS TCP/IP
- Remote troubleshooting
- Email and text notification

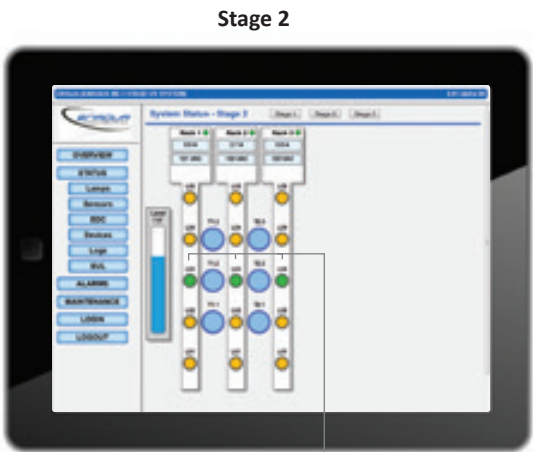


## Fail Safe – Intuitive protection

Enaqua's FAIL SAFE intelligence ensures compliance at all times. In case a lamp in one stage fails, the system will command selected lamps in a redundant stage to power-on to compensate for any UV dosage reduction (see application example).



Lamp fault in stage 1: Alarm Alerts



Automatically energizes ONLY selective lamps in Stage 2 to ensure disinfection while optimizing use of energy and consumables

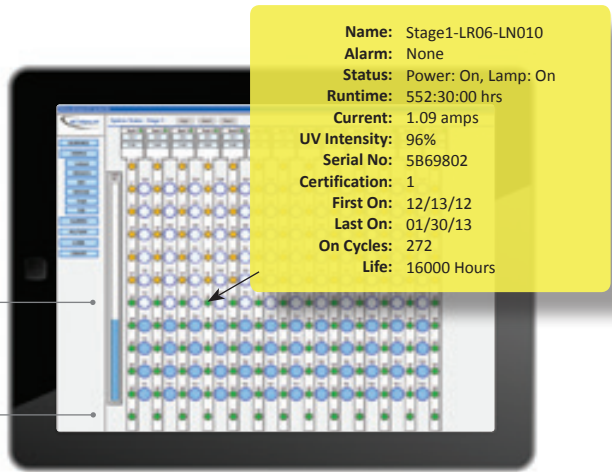
iPad® is a registered trademark of Apple



## SMART Lamps – Advanced lamp control



Enaqua's Low Pressure High Output (LPHO) lamps are equipped with a unique Smart Lamp Technology, a microchip integrated with the lamp connector identifies each UV lamp with a unique ID, monitors and logs lamp status, run time, lamp cycles, etc.

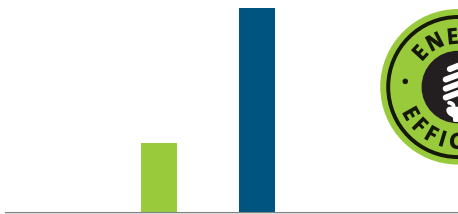


Name: Stage1-LR06-LN010  
Alarm: None  
Status: Power: On, Lamp: On  
Runtime: 552:30:00 hrs  
Current: 1.09 amps  
UV Intensity: 96%  
Serial No: 5B69802  
Certification: 1  
First On: 12/13/12  
Last On: 01/30/13  
On Cycles: 272  
Life: 16000 Hours

## Flow & Level Pacing – Best energy efficiency

Enaqua's Flow & Level Pacing system automatically turns on only lamps which are required. This improves lamp and ballast life and reduces power consumption compared to systems that use "dimming".

### Annual Energy Cost Comparison



\$13,346  
Enaqua EDS

\$34,528  
Traditional Dimming Systems

Actual comparison of bid guaranteed UV energy costs for Wastewater Plant, Peak 28MGD, Average 6MGD, \$0.10/kWh.

# Features and functions

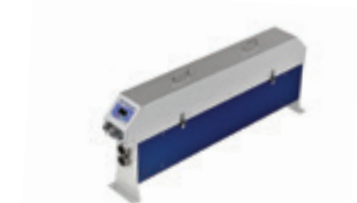
For specific selection and sizing please contact Enaqua

		M3	M4	M5	C-Series	D-Series	E-Series
Maximum F low and Pressure							
Flow Range*1	MGD	0.03 - 0.12	0.04 - 0.17	0.2 - 0.5	0.5 - 10	0.5 - 21	0.5 - 27
	gpm	20 - 80	30 - 120	140 - 350	350 - 6944	350 - 14600	380 - 18500
	m3/h	5 - 18	6.8 - 27	32 - 80	80 - 1600	80 - 3300	80 - 4200
Max. Operating Pressure	psi	40*2	40*2	40*2	20	15	10
	bar	2.8	2.8	2.8	1.4	1.0	0.7
Mechanical data							
Max. Number of AFP™ Tubes	pcs	2	2	6	180	160	140
Max. UV Lamps per Stage	pcs	8			228	204	180
Inlet and Outlet Configuration	inch	Flange 2	Flange 4, 6	Flange 8, 10	In-Channel or Flange Options		
Wetted Materials		AFP™, 304SS Option: 316SS, PVC, CPVC		AFP™, 304SS Option: 316SS			
Multistage Design		–	–	Option	Option	Option	
Electrical data							
Operating Voltage at 50/60 Hz	V, 1PH	120, 220			220		
	V, 3PH	–		220, 380, 415, 480*3			
Ballast Type		Auto Ranging 110-277 VAC 50/60 Hz with 5 Year Warranty					
Controls							
LCD Status Display		✓	✓	✓	Option	Option	Option
Hand-Off-Automatic Switch		✓*4	✓*4	✓	✓	✓	✓
Control Light: Alarm/Running		–	–	✓	Option	Option	Option
Individual Lamp Rack Fuse and Switch		✓	✓	✓	✓	✓	✓
UV Status LEDs in Lamp Racks		–	✓	✓	✓	✓	✓
Ensure Dosing System (EDS)		Option	Option	Option	✓	✓	✓
SMART Lamps		✓	✓	✓	✓	✓	✓
Flow & Level Pacing		–	–	–	Option	Option	Option
Fail Safe		Option	Option	Option	Option	Option	Option
UV Sensor		Option	Option	Option	✓	✓	✓
Heat Exchange System (Lamp Temperature Control)		Ambient Air Exchange			Air to Air. Air to Liquid using Effluent, plant W3 water, Potable, or Closed Loop system		

\*1 Design consideration 65% UVT, ~30 mJ/cm², Contact Enaqua for more details  
\*2 Max pressure for High Pressure Option: 80 psi (5.5 bar)  
\*3 Three-phase voltage requires neutral wire  
\*4 On/Off switch only

## M Series UV reactors

– compact uv reactors ideal for small treatment plants for surface discharge, reuse, and industrial applications.



**M3 Series**  
Flow rates up to 80 gpm (18.2 m³/ h)



**M4 Series**  
Flow rates up to 120 gpm (27.25 m³/ h)



**M4 5 Series**  
Flow rates up to 360 gpm (81.8 m³/ h)

## C1, C2, C3 & D1, D2, D3 UV series reactors

– medium size uv reactors for surface discharge, reuse, and industrial applications.



**C1 & D1 Series**  
In pipe UV reactors , single or double banks- for Flow rates up to 2.0 MGD (315.4 m³/ h).



**C2 & D2 Series**  
In pipe UV reactors, single or double banks- for Flow rates up to 4.2 MGD (662.5 m³/ h).



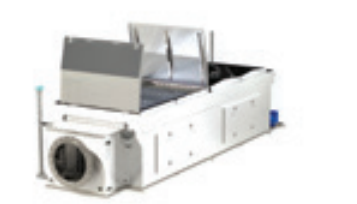
**C3 & D3 Series**  
In pipe UV reactors, single or double banks- for Flow rates up to 6.0 MGD (946.4 m³/ h).

## 4 – 11 Series UV reactors

– large uv reactors offered “in-pipe” or “ in-channel” configurations.

### C Series “In pipe” or “In Channel”

Multi Bank UV reactors for Flow rates up to 24.0 + MGD . Applications– UV disinfection for surface discharge, Reuse, industrial appli-cation, Etc.



C Series “In Pipe “ Reactor

### D Series “In pipe” or “In Channel”

Multi Bank UV reactors for Flow rates up to 36 + MGD . Applications– UV disinfec-tion for surface discharge, CSO, Industrial Applications, Etc.



D Series “In Pipe “ Reactor

### E Series “In Channel”

Multi Bank UV reactors for Flow rates up to 100 + MGD . Applications– UV disinfection for surface discharge, CSO, Etc.



C Series “In Channel” Reactor



D Series “In Channel” Reactor





*Designed and manufactured in USA*

# Enaqua – UV made simple Non-contact UV disinfection

- The **Engineer's Choice** for State-of-the-Art Technology
- The **City Manager's Choice** for Low Capital Cost
- The **Superintendent's Choice** for Low O&M Cost
- The **Operator's Choice** for Simple Operation
- The **Contractor's Choice** for Simple Installation
- The **Finance Director's Choice** for Lowest 20 Years Capital and Operations Cost Potential

## ENAGUA

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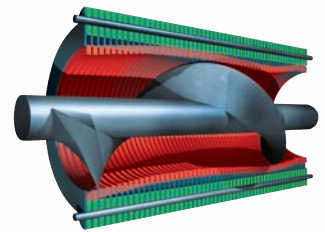
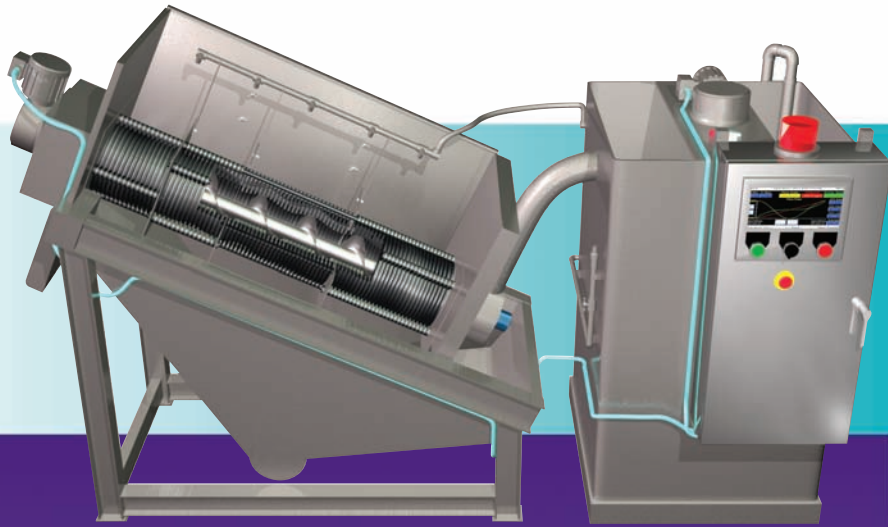
# **APPENDIX I**

## **Volute Thickener Brochure**

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# Volute Thickener

Simple, automated, and cost-effective sludge thickening





# Volute Thickener

## PWTECH INTRODUCES A NEW TECHNOLOGY FOR SLUDGE THICKENING TO THE UNITED STATES

In the fall of 2008, Process Wastewater Technologies began piloting and selling the Volute® Thickener in the United States. This technology has been used extensively in Japan and has many of the benefits that is fast making the Volute Dewatering Press the go-to technology for many dewatering applications.

### CONCEPT

The Volute Thickener design is based on the patented dewatering drum design used for the PWTech® Volute Dewatering Press sludge dewatering unit. The Volute Thickener is a very simple piece of equipment that is virtually maintenance-free and fully automated. It is designed to take dilute sludges and thicken them allowing for more cost-effective storage, dewatering, or transport.

Application of this technology includes automated sludge wasting from biological processes and thickening prior to storage, digestion, further dewatering, or transport.

### PERFORMANCE

In a wastewater (sewage) treatment plant, waste sludge is typically around 0.4% to 0.8% solids. Typically the Volute Thickener can be adjusted to give a solids output in the range of 3% to 12%.

### KEY BENEFITS

- Fully automated: the unit can operate itself from start-up to shutdown, allowing 24-hour unattended operation.
- Integrated system: the Volute Thickener is sold as a complete package for the entire sludge thickening process, including polymer system, feed pump (if required), flocculation tank, and controls.
- High solids recovery: typically over 99% of the solids are retained in the thickener so the filtrate is very clean and may not need to be returned through the entire treatment process.
- Very low power consumption: most units have no motors greater than one horsepower.
- Low maintenance requirements: units are designed to run in excess of 30,000 hours between overhauls. That's over 10 years at 8 hours per day, 7 days a week!
- Zero wash water requirements under regular operation.
- High-quality construction: stainless steel and engineering plastics, high-quality "sealed-for-life" drive motors, and robust, durable design result in long life and low maintenance.



Volute technology was pioneered by AMCON, Inc. and introduced in 1991. It innovates sludge dewatering and sludge thickening by automatically and continuously self-cleaning the filter mesh, eliminating clogging for stable and constant dewatering. Volute technology is available in the U.S. only through PWTech.

\*Volute and the AMCON, Inc. logo are registered with the U.S. Patent and Trademark Office as trademarks of AMCON, Inc., Yokohama, Japan.

## PROCESS DESCRIPTION

- Dilute sludge is dosed with polymer as it enters a flocculation tank.
- The sludge is gently mixed in the tank, separating into discrete agglomerations of solids (flocs) and free water, and then overflows into the thickening drums.
- Free water is discharged through the gaps in the thickening drum while solids are conveyed along the length of the drum and discharged at the opposite end.

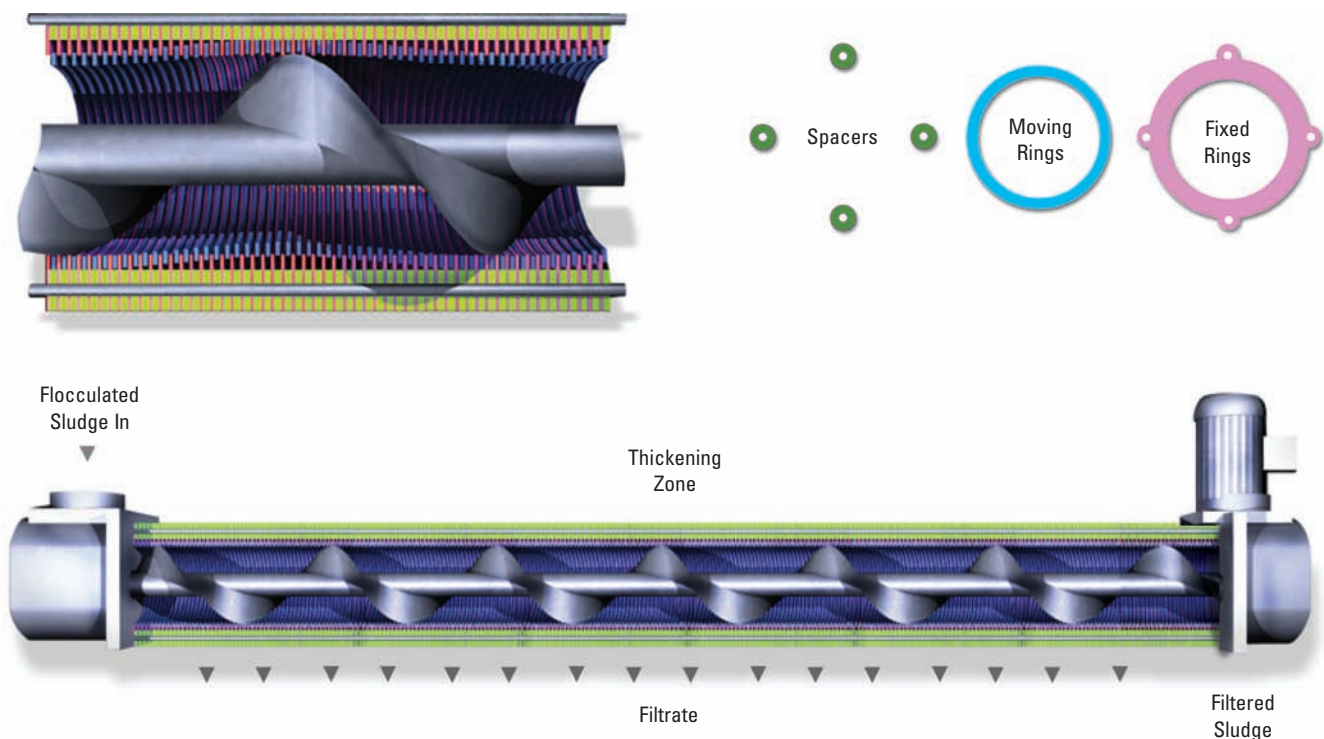
## THICKENING DRUM DESIGN

The dewatering drum utilizes a series of fixed rings that are held together on tie rods and separated by spacers to form a cylinder around an Archimedeian screw (see illustration). Between each fixed ring is a moving ring which is slightly narrower than the spacers and creates fine gaps between the fixed and moving rings. The moving rings also have a smaller inside diameter than the outside diameter of the screw, so as the screw rotates, it moves these rings.

The constant movement of the rings prevents the plugging of solids in fine gaps. Since the gaps are always clean, there is a continual discharge of fluid through them, allowing for very high solids capture in a very efficient operation.

## DIFFERENCE BETWEEN THE VOLUTE DEWATERING PRESS AND THE VOLUTE THICKENER

While the basic design and operation of both the Thickening and Dewatering Drums are the same, the drum of the Volute Thickener is made entirely with plastic rings with a constant gap between the moving and fixed rings. The screw is a constant pitch, and there is no end plate. The drum's motor is less highly geared to allow for greater drum speeds. In addition, the piping connections are larger and the flocculation tank is larger to accommodate higher flows.



## Standard Volute Thickener Models

Model	Maximum Capacities (GPM)	Dimensions (in.)			Power Use (kW)	Empty Weight (lb)
		Length	Width	Height		
VT101	5	70	32	42	0.3	350
VT131	15	70	32	42	0.3	374
VT201	45	96	36	70	1.2	792
VT202	90	103	46	70	1.9	1,030
VT301	150	137	52	80	1.5	1,848
VT302	300	142	58	80	3.0	3,300
VT303	450	162	67	80	4.5	4,290
VT304	600	172	84	80	6.0	5,100
VT305	750	182	101	80	7.5	6,000

All capacities, dimensions, and weights are approximate.  
Dimensions and power use do not include control panel, polymer make-up, and dosing systems.

**Available in your area from:**



**410-238-7977 • volute@PWTech.us • www.PWTech.us**

## **APPENDIX J**

### **Trident Wave Separator Brochure**

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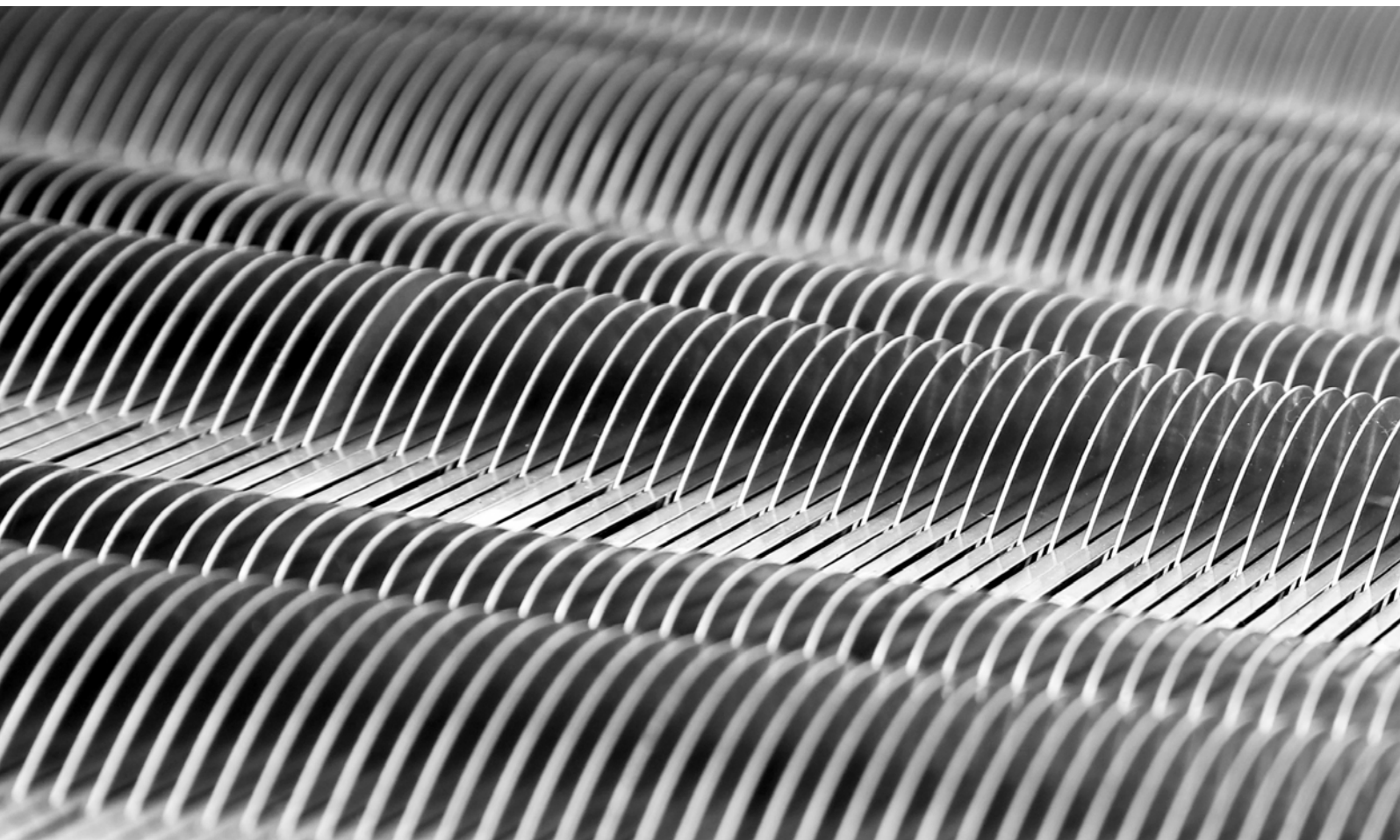


*Industry's Most Advanced Technology.  
Experience, Not Experiments.*



# WAVE SEPARATOR

## Advanced Wastewater Solutions



*EFFICIENT SLUDGE THICKENING*

1.604.330.2500 | 1.800.799.3740 | [info@tridentprocesses.com](mailto:info@tridentprocesses.com) | [www.tridentprocesses.com](http://www.tridentprocesses.com)

TRI.WAVE.BRO.1705



# TRIDENT Wave Separator



## Introduction

This unique material separation technology offers a very effective alternative to conventional solid/liquid separation systems. Slow moving discs gently move the material through the separation surface achieving high capacities and excellent capture rates. This provides very effective material separation, a small footprint and very low opex superior to centrifuge or belt press technology. The sludge cake can be generated in a batch processing method, or the system can run 24/7. The Wave separator technology is scalable to suit multiple applications and varying volumes of material.

## Features

### Non clogging

Continuous counter rotating discs perform self-cleaning.

### Stable, reliable treatment capacity

Continuous self-cleaning process ensures consistent throughput of material.

### Large throughput capacity, with a small footprint

Material moves in waves, advanced by oval plates.

### Simple, low energy operation

Efficient, variable speed drives, optimizing the material handling process.

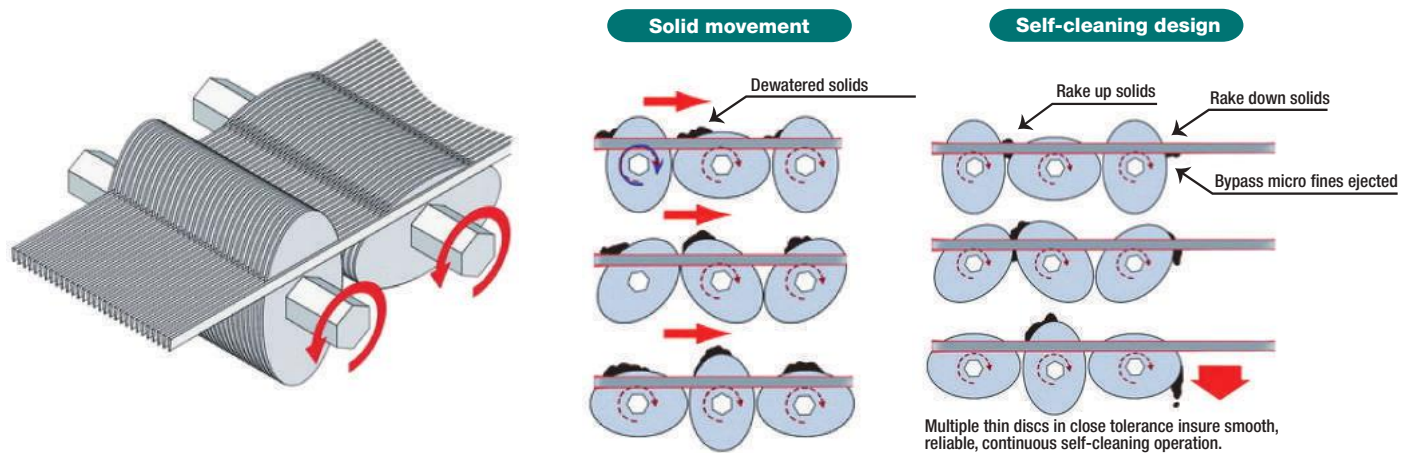
### Easy maintenance

Simple drive with minimal parts, located internally, away from the material being processed. The operation is quiet and vibration free.

# Separation Technology

The Wave Separator's simple and robust working principle is based on the slow moving oval discs that are mounted on columns. The forward rotating discs convey the material over the separation screen allowing liquid to escape through the wedge wire construction. The Trident Wave Separator is typically used for applications that require 2-7% sludge concentration.

Trident Wave Separators are offered in a wide range of models to meet every required capacity. The units are available with different disc spacing and can be built to order with variations. An optional flocculation & mixing tank and automations package is available as well. Please contact Trident for details.



## Separation Process



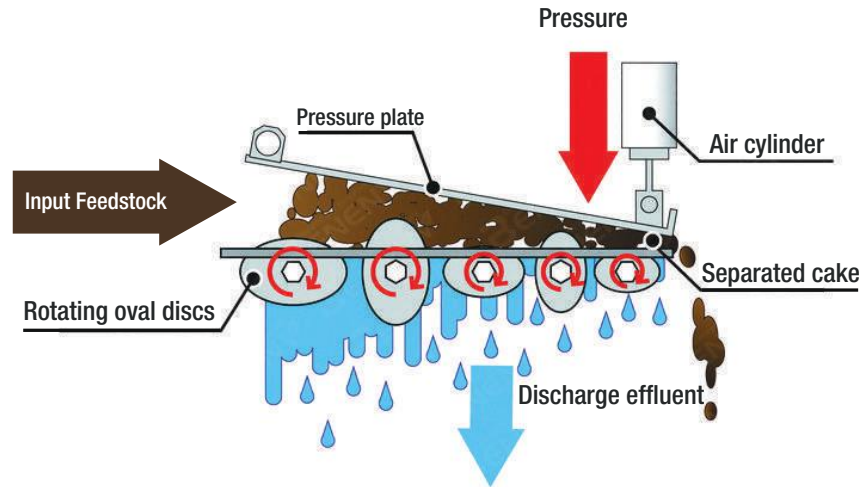
Raw feedstock of liquids and suspended solids becomes:

Thickened sludge

Significantly clarified liquid

\*Note input feedstock used in demonstration pictures was a mix of vegetables, fish and meat. Maceration was performed by the food processor client.

# How it works – Dewatering Separator



The oval shaped discs are designed to deliver waves of high volume, consistent, separated material. The operation is quiet and vibration free.

## Applications

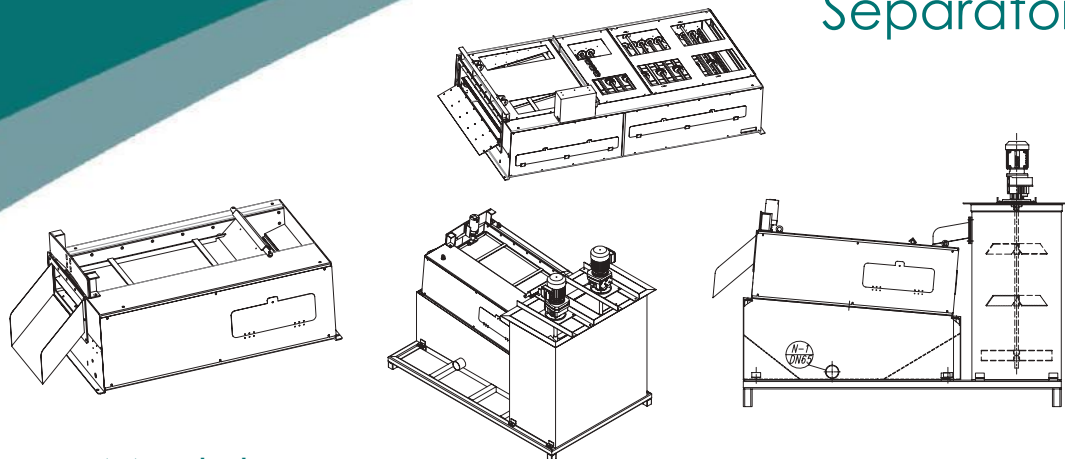
This equipment has a wide range of applications, and is used successfully in diverse situations, e.g. Paint and coatings effluents, tanneries, metal processing industries, algae harvesting (primary and sediment sludge treatment).

- Headworks (Pre-treatment) of municipal wastewater operations
- Waste Activated Sludge, DAF aerobic digested sludge
- Distillers grain applications (breweries, ethanol)
- Primary treatment of grease trap wastes
- Fish and Food Processing
- Livestock manure





## Wave Dewatering Separator



## Wave Thickener Models

Model	DN		Oval discs column numbers	Capacity (clean water)		Sludge (reference)		Power	Weight	
	mm	in		m3/hr	gal/min	kg-ds/hr	lbs-ds/hr		kg	lbs
SS-310	300	11.8	10	18	79	41	90	0.1kw	100	220
SS-312	300	11.8	12	23	101	49	108	0.2kw	110	243
SS-48	400	15.7	8	20	88	45	99	0.2kw	130	287
SS-410	400	15.7	10	25	110	56	123	0.2kw	150	331
SS-412	400	15.7	12	30	132	67	148	0.2kw	200	441
SS-510	500	19.7	10	31	136	70	154	0.2kw	200	441
SS-512	500	19.7	12	38	167	83	183	0.2kw	210	463
SS-516	500	19.7	16	50	220	109	240	0.4kw	240	529
SS-610	600	23.6	10	38	167	85	187	0.4kw	210	463
SS-612	600	23.6	12	45	198	100	220	0.4kw	230	507
SS-616	600	23.6	16	60	264	130	287	0.4kw	300	661
SS-618	600	23.6	18	67	295	145	320	0.4kw	315	694
SS-712	700	27.6	12	74	326	160	353	0.4kw	380	838
SS-716	700	27.6	16	100	440	215	474	0.4kw	410	904
SS-812	800	31.5	12	86	379	185	408	0.75kw	410	904
SS-816	800	31.5	16	114	502	245	540	0.75kw	440	970
SS-912	900	35.4	12	98	431	210	463	0.75kw	440	970
SS-916	900	35.4	16	128	564	275	606	0.75kw	470	1036
SS-1012	1000	39.4	12	107	471	230	507	0.75kw	470	1036
SS-1016	1000	39.4	16	144	634	310	683	1.5kw	600	1323
SS-1212	1200	47.2	12	130	572	280	617	1.5kw	600	1323
SS-1216	1200	47.2	16	172	757	370	816	1.5kw	640	1411

## Wave Dewatering Models

Model	DN		Oval discs column numbers	Capacity (1.5%SS)		Sludge (reference)		Power	Weight	
	mm	in		m3/hr	gal/min	kg-ds/hr	lbs-ds/hr		kg	lbs
SS-311D	300	11.8	11	1.3-2.0	6-9	20-30	44-66	0.4kw	120	265
SS-411D	400	15.7	11	1.8-2.6	8-11	27-40	60-88	0.4kw	200	441
SS-511D	500	19.7	11	2.2-3.4	10-15	34-51	75-12	0.4kw	240	529
SS-611D	600	23.6	11	2.6-4.0	11-18	40-60	88-32	0.4kw	320	705
SS-711D	700	27.6	11	3.1-4.6	14-20	47-70	104-154	0.75kw	380	838
SS-811D	800	31.5	11	3.8-5.3	17-23	57-80	126-176	0.75kw	410	904
SS-1011D	1000	39.4	11	4.5-6.8	20-30	68-102	150-225	1.5kw	570	1257
SS-1211D	1200	47.2	11	5.3-8.0	23-35	80-120	176-265	1.5kw	750	1653



Distributor/Dealer

**TRIDENT PROCESSES LLC.**

1.604.330.2500 | 1.800.799.3740 | [info@tridentprocesses.com](mailto:info@tridentprocesses.com) | [www.tridentprocesses.com](http://www.tridentprocesses.com)



## **APPENDIX K**

### **Rotary Drum Thickener Brochure**

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## JDV ROTARY DRUM THICKENER

Removing water from solids is a primary concern for plant operators, whether it is digested sludge or raw sludge. Less water means lower overall solids disposal costs. For operators feeding digesters, removing free water from raw sludge equals increased digester efficiency and volume. The **JDV Rotary Drum Thickener** is also excellent for liquids separation for industry. Pulp and paper, textiles, rendering facilities, food & beverage processing, tanneries, poultry plants and other industrial wastes can be thickened using the JDV Rotary Drum Thickener.

Polymer is injected into the feed line and mixes with the thin sludge in the Floc Basin or Tank. The conditioned sludge material is then passed into the JDV Rotary Drum Thickener, which separates the flocculated solids from the water. Thickened sludge rolls out the end of the drum, while the separated water decants through the self-cleaning screen. The **JDV Rotary Drum Thickener** has a smaller foot print, lower upfront capital costs and lower overall operating costs when compared to other methods of thickening material.

### Features

- Self Cleaning Rotary Screen, reducing polymer consumption
- Capacities up to 600 Gallons Per Minute (GPM)
- Compact Design Minimizes Need for Valuable Building Square Footage
- Lower Power Requirements Versus Other Methods
- Completely Enclosed Design

### Benefits

- Increased Return On Invested Capital
- Design Flexibility
- Reduced Operating Costs
- Reduced Odors
- No Material Drop Off Losses
- Increased Personnel Safety During Operation
- Lower Total Cost of Ownership

Contact us today to learn more!  
[www.jdvequipment.com](http://www.jdvequipment.com)





## WE ARE THE LEADING MANUFACTURER

JDV Equipment Corporation is a leading manufacturer and provider of safe, environmentally friendly processing equipment and services for water treatment, wastewater treatment, industrial and agricultural applications.

### Pricing

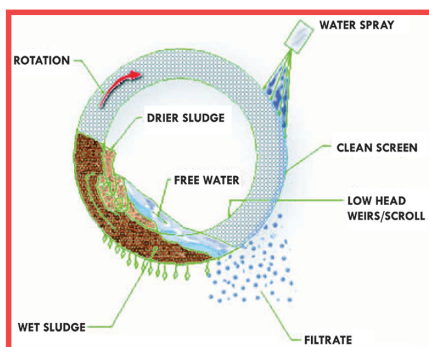
Pricing varies depending on capacity, in/out percent Dry Solids and the type of sludge. Quotations are provided within 48 hours of request when accompanied by minimum required specification data.

Minimum specification data required in order to provide a quote:

- ▶ Flow/Capacity (GPM)
- ▶ % Feed ( % Dry Solids)
- ▶ % Out ( % Dry Solids)
- ▶ Type of Sludge  
(WAS, Primary, Secondary, etc...)

### Options & Accessories

- Conditioning (Floc) Tank
- Over flow switch/alarm
- Drum Brush
- Control Panel for integration into central control system (SCADA)



1 Princeton Ave. | Dover, NJ

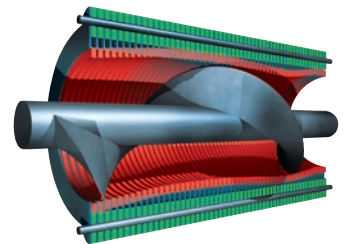
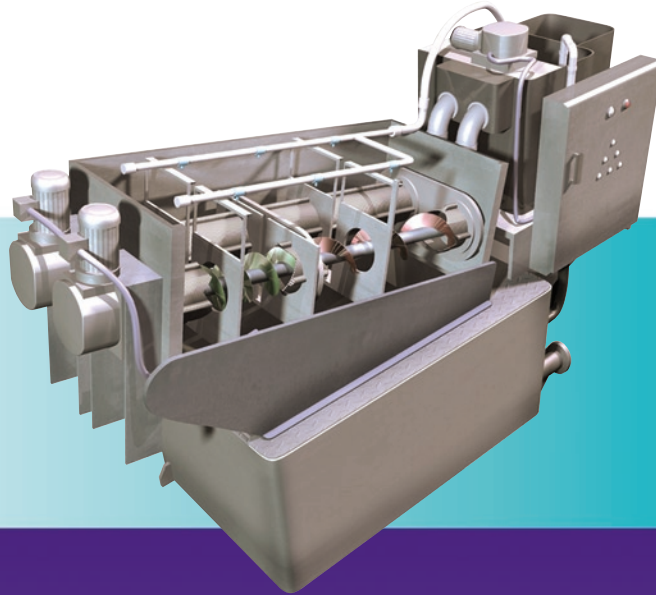
973-366-6556 [www.jdvequipment.com](http://www.jdvequipment.com)

**APPENDIX L**  
**Volute Dewatering Press Brochure**

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# Volute Dewatering Press

**Innovative sludge dewatering technology  
offering many advantages over conventional  
sludge management methods**





# Volute Dewatering Press

## CONCEPT

The PWTech® Volute® Dewatering Press is a unique product, originally developed in Japan, that offers many advantages over current sludge management practices. Patented worldwide, the Volute Dewatering Press is presently used in over 1,650 installations.

The key to the process is the “dewatering drum.” This drum can achieve both thickening and pressing (dewatering) of the sludge in a single, compact operation. Thus the Volute Dewatering Press can take sludge as dilute as 0.1% solids directly from a treatment process, such as an oxidation ditch or clarifier, and produce a cake of over 20% solids. Separate thickening, storage, and conditioning processes are eliminated. In addition, the need for operators, continuous use of wash water, and high power consumption are eliminated.

## UNIQUE DEWATERING DRUM DESIGN

Screw presses are a neat, simple way of conveying and dewatering sludge. They typically have a single bearing or bushing at one end and a gear drive at the other end—simple, robust, and low maintenance. However, the screws for dewatering typically have a casing with openings in it to allow fluid to escape from the sludge as it is pressed. If these openings are too small, they constantly plug with solids, preventing fluid from leaving the sludge. Therefore, the openings are usually fairly large, which means that the sludge cannot be pressed

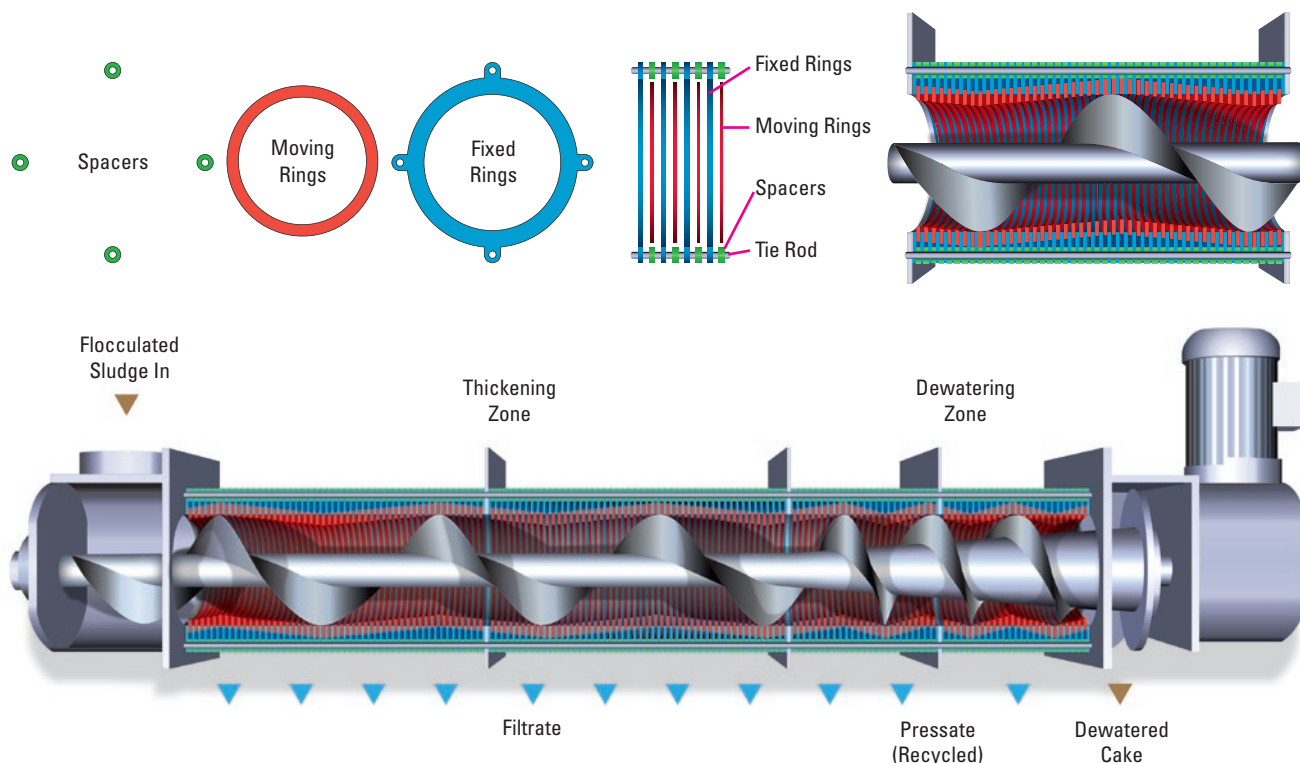
too much as it will extrude through the openings. The result is that screw presses generally do not achieve good cake solids.

Unlike traditional screw presses, the Volute Dewatering Press features the unique “dewatering drum.” Spacers and fixed rings are held in place on tie rods. Moving rings, slightly smaller than the outer diameter of the screw and slightly narrower than the spacers, are located between the fixed rings and are moved by the screw. The constant movement of the moving rings cleans the fine gaps between the moving and fixed rings, preventing clogging. The moving rings also cut into the sludge cake, allowing additional surface area for the release of moisture.

The initial section of the dewatering drum is the thickening zone. The filtrate is discharged here. The pitch of the screw narrows and the gaps between the rings decrease towards the end-plate where solids are discharged. Pressing of the sludge occurs here.

## PROCESS DESCRIPTION

Sludge is fed into a mixing tank where polymer is thoroughly mixed in. The sludge then passes through a flocculation tank where gentle mixing and flocculation occurs. From there, the sludge overflows into the dewatering drum and is pressed. The entire operation is controlled by the Volute Dewatering Press control panel.



\*Volute is registered with the U.S. Patent and Trademark Office as a registered trademark of AMCON, Inc., Yokohama, Japan.

## THE VOLUTE SYSTEM

The Volute Dewatering Press is designed to be a fully automated system capable of starting up, operating, and shutting down with no operator intervention. This is possible because the control panel is designed to control the automated polymer feed system, the unit sludge feed pump, and any conveyors required to remove dewatered cake, all in addition to the Volute Dewatering Press itself. Thus, all components of the dewatering system work together, automatically starting up, operating, and shutting down as required.

PWTech can provide complete systems or work with other suppliers to provide an integrated package. In addition, unit operating and alarm outputs for connection to plant PLC/SCADA systems are standard.

## ADVANTAGES

- No need for thickeners, sludge storage, or separate dosing facilities
- No need for regular operator attendance
- Produces high-quality filtrate, does not need to return to the head works (i.e. high solids recovery)
- Extremely low power consumption—up to 95% less than many other dewatering processes
- Low noise, low odor
- Low wash water consumption
- Able to handle oily sludges
- Flexible—can deal with feed sludges from <0.2% to >4%
- Rapid installation



The Volute Dewatering Press is designed to be fully automated, capable of starting up, operating, and shutting down with no operator intervention.

## OPERATION AND MAINTENANCE

The Volute Dewatering Press requires very little operator attention, other than periodic inspection and chemical replenishment. As a fully automated process, it controls the operation of wasting sludge directly from the biological process or clarifier, chemical make-up and dosing, flocculation, and then dewatering. Depending on operating conditions, a partial overhaul of the dewatering drums may be required every three years. This two-hour operation is undertaken in the field, with minimal disruption to plant operation.

### Results Achieved with the Volute Dewatering Press

Sludge Type	Feed Solids (%)	Cake Solids (%)	Solids Recovery (%)	Polymer Use (lb/dry ton of solids)
<b>Municipal &amp; Biological</b>				
Waste Sludge	0.2-1.5	17-25	98	10-22
Digested/Thickened	1.6-6	16-28	97	10-16
Primary	1-4	25-40	95	6-12
<b>Potable</b>				
Ferric Sludge	5-10	35-45	95	5-10
Alum Sludge	1-2.5	20-30	95	4-8
Lime Slurry	2	25-38	97	4-10



Volute technology was pioneered by AMCON, Inc. and introduced in 1991. It innovates sludge dewatering and sludge thickening by automatically and continuously self-cleaning the filter mesh, eliminating clogging for stable and constant dewatering. Volute technology is available in the U.S. only through PWTech.



Solids generated by the Volute Dewatering Press.

\*The AMCON, INC. logo is registered with the U.S. Patent and Trademark Office as a trademark of AMCON, Inc., Yokohama, Japan.

## APPLICATIONS

The PWTech Volute Dewatering Press has been installed to handle a wide range of sludges. It is especially useful when sludges have a high oil and fat content that would blind filter materials.

Other sludges the Volute Dewatering Press has been shown to work well on include:

- DAF float from slaughter houses and other agricultural processes
- Food processing and wash-down wastes
- Oil sludge from machining operations
- Wastes from textile processing

## A REVOLUTION IN MUNICIPAL SOLIDS HANDLING

The PWTech Volute Dewatering Press can be set up to achieve both wasting and dewatering of sludge in a single operation. By feeding the Volute Dewatering Press directly from the biological process or the RAS piping the unit can automatically switch on and waste and dewater the sludge in one operation. Key benefits of this include:

- Reduction in operator time with the wasting operation
- No need for sludge storage tanks and additional pumping facilities and odor control—can be used to free up existing sludge storage facilities for other uses
- Increased process stability (wasting can occur over long periods of time or several times a day)
- Direct dewatering prevents additional nutrient load on the treatment plant by removing solids from the system before they break down and release nutrients

### Standard Volute Dewatering Press Models

Model	Maximum Capacities		Dimensions (in.)			Weight (lb)		Power Use (hp)
	GPM	Dry lb/hr	L	W	H	Dry	Operational	
ES101	4	20	68	33	55	396	576	0.5
ES131	8	38	74	33	55	396	610	0.5
ES132	15	75	82	39	55	660	1,075	0.6
ES201	15	80	99	34	60	1,050	1,620	1.0
ES202	28	160	106	40	57	1,496	2,491	1.5
ES301	35	350	135	45	68	1,892	2,942	1.5
ES302	70	700	145	52	64	3,036	4,730	2.0
ES303	105	1,050	154	63	64	4,092	6,611	2.5
ES351	65	700	160	48	89	3,530	5,180	2.8
ES352	130	1,400	174	61	89	5,512	8,160	5.3
ES353	200	2,100	187	83	89	7,500	11,580	8.5
ES354	265	2,800	187	105	89	9,488	15,000	11.0
ES355	330	3,500	195	127	89	11,475	18,500	14.0

All capacities, dimensions, and weights are approximate. Capacities will vary for different sludge types. Please note that these capacities are maximums. The hydraulic capacity (GPM) would be applicable for sludge with a solids concentration of under 1%. The solids throughput capacity would be applicable for sludge with a solids concentration of over 3%. The press should not be expected to exceed either of these numbers in any installation. Consult PWTech for a more accurate assessment of capacity for your application. Dimensions and power use do not include control panel, polymer make-up, and dosing systems.



Several PWTech Volute Dewatering Press pilot units, such as the ES201 shown here, are available to demonstrate operation at your facility. Contact your local PWTech representative or PWTech directly to arrange this.

**Available in your area from:**



**410-238-7977 • volute@PWTech.us • www.PWTech.us**

## **APPENDIX M**

### **Screw Press Brochure**

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# BIOSOLIDS DEWATERING

FKC screw presses provide a unique, cost effective solution for dewatering of municipal and industrial biosolids. While relatively new to this market in North America, FKC screw presses have been dewatering various non-fibrous sludges and other materials for over 20 years in a wide variety of industries.



Model BHX-1000x5500L  
(covers removed for photo)



## APPLICATIONS

- Municipal WWTP Sludges of All Types  
(Aerobically Digested, Anaerobically Digested, Raw)
- Primary, Secondary, or Mixed Sludges
- Industrial Biosolids
- Septage & Grease Trap

## FEATURES OF THE FKC BIOSOLIDS DEWATERING SCREW PRESS

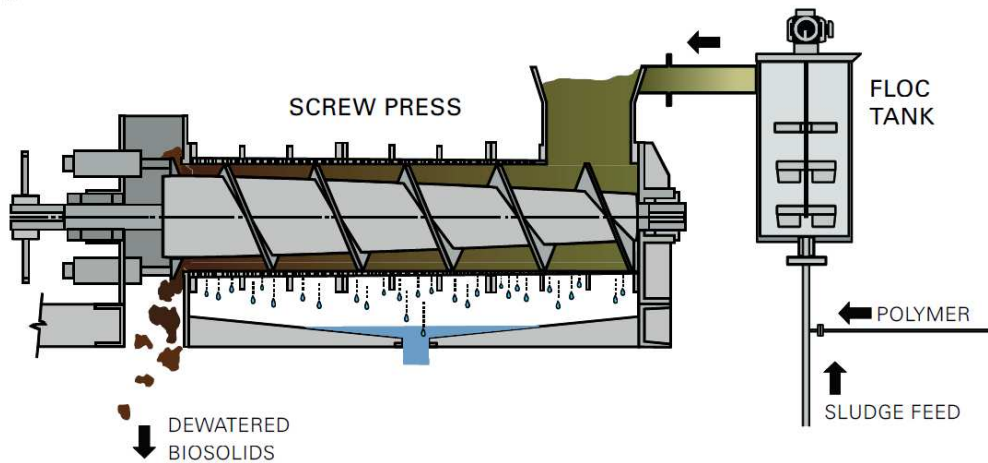
- |   |                                |
|---|--------------------------------|
| • Heavy Duty Construction                     | • Stainless Steel Wetted parts |
| • High Outlet Consistency                     | • Low Power Consumption        |
| • Slow Speed                                  | • Fully Enclosed covers        |
| • Few Moving Parts                            | • Simple, Unattended Operation |
| • Very Low Maintenance                        | • Automated Washdown           |
| • Upgradeable to Produce<br>Class A Biosolids | • High Quality Construction    |



Two 1.25 meter diameter class A capable screw presses in Monterey, CA



## Typical Sludge Dewatering Process Flow Diagram

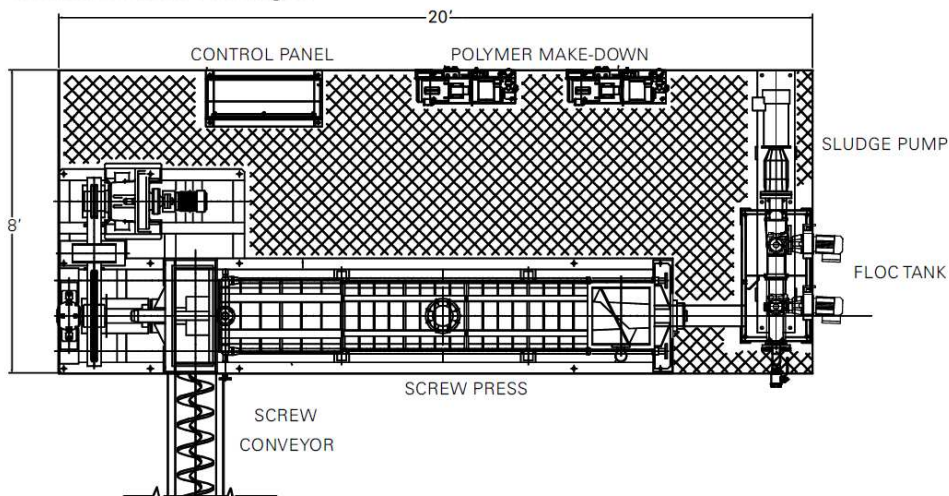


## Dewatering Skid Systems for Small Applications



Sludge Dewatering Skid

## Skid Mounted Packages



FKC Co., Ltd.  
2708 W. 18th Street  
Port Angeles, WA 98363  
(360) 452-9472  
[www.fkcscREWpress.com](http://www.fkcscREWpress.com)  
[mail@fkcscrewpress.com](mailto:mail@fkcscrewpress.com)

A brand of  
Aqseptence Group

## Passavant® Screw Press – SludgePress PSP

Thickening and dewatering of biological sludge.



The Aqseptence Group provides with the Passavant® Screw Press SludgePress PSP an economic solution for either sludge thickening or dewatering at small and medium-sized water and wastewater treatment plants. The system can operate automatically or manually – either continuously or intermittently for batch processing. Sludge thickening of up to 8 % DS or sludge dewatering of up to 25 % DS are attainable depending on the flocculation reaction and sludge type.

### Benefits

- Low operating costs due to low energy consumption
- Easy operation and maintenance
- Simple mechanized operation
- Low space requirement
- Low investment costs
- 24 h-operation possible

### Function

The patented Passavant® Screw Press SludgePress PSP consists of a static circular drum with an internal conical screw conveyor. The drum is fabricated in stainless steel using a special wedge-wire screen profile with large surface to obtain optimum liquid drainage characteristics. The flocculated sludge enters the inlet chamber into the drum zone where it is conveyed by spiral movement and is gradually compacted. The liquid

drains continuously through the drum wedge-wire screen and gravitates to the filtrate outlet where it can be discharged or returned for treatment. Spray nozzles together with the internal cleaning system fixed on the spiral conveyor wash the drum screen section. Eventually the solids will pass into the discharge section and to the outlet where they can be collected into a container or conveyed for eventual disposal.

## Applications & fields of operation

The SludgePress PSP is suitable for small to medium-sized water and wastewater treatment plants for thickening and dewatering of biological sludge.

## Design Sizes

	Thickening		Dewatering	
	Throughput capacity	Content of inlet sludge	Throughput capacity	Content of inlet sludge
<b>PSP20</b>	1.0 m <sup>3</sup> /h	1 %	0.6 m <sup>3</sup> /h	1 %
<b>PSP40</b>	2.5 m <sup>3</sup> /h	1 %	1.4 m <sup>3</sup> /h	1 %
<b>PSP70</b>	6.5 m <sup>3</sup> /h	1 %	3.5 m <sup>3</sup> /h	1 %

## Materials

**Conveyor trough, cover, supports, discharge hopper, spiral, internal drum**

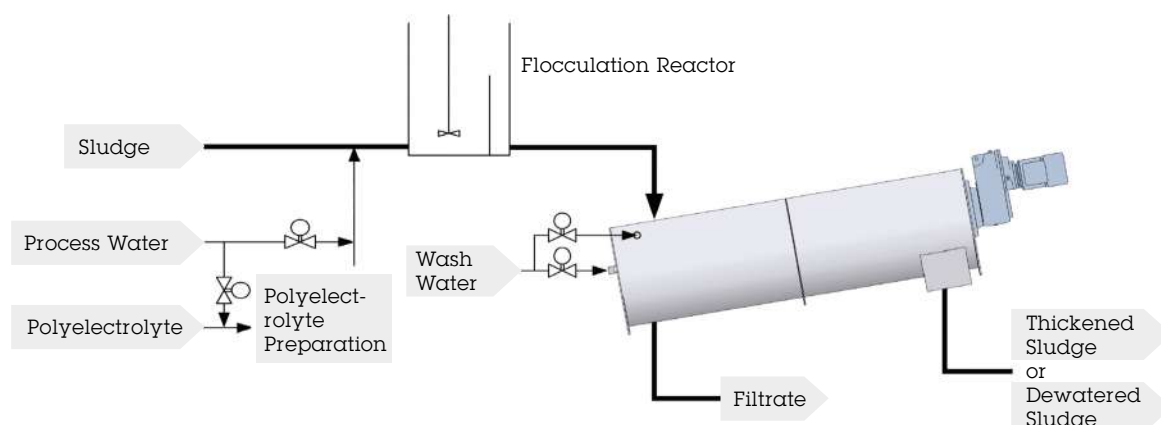
Stainless steel AISI 304, AISI 316  
Others on request

**Screw**

Special Micro Alloy Steel St 52  
(carbon steel in acc. with Aqseptence Group standard),  
alternatively AISI 304, AISI 316

## Options

- Control panel
- Flocculation reaction tank
- Polymer mixing
- external washing system



## Aqseptence Group GmbH Water Treatment Systems

Passavant-Geiger-Strasse 1  
65326 Aarbergen · Germany  
Phone +49 6120 28-0  
Fax +49 6120 28 2182  
passavant@aqseptence.com

[www.aqseptence.com](http://www.aqseptence.com)



## **APPENDIX N**

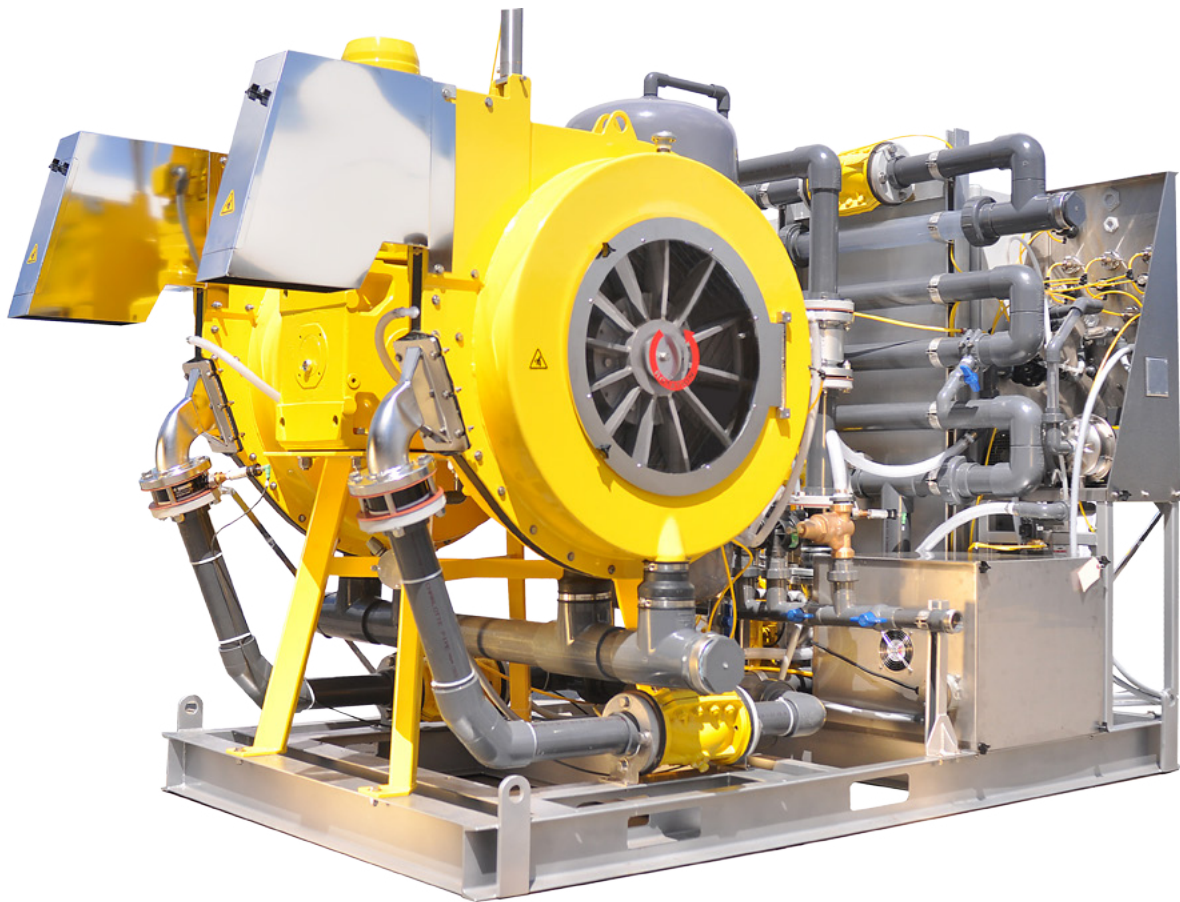
### **Fan Press Brochure**

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DEWATERING PERFORMANCE SIMPLIFIED

## THE PRIME ROTARY FAN PRESS FAMILY



### HIGH PERFORMANCE, COST EFFECTIVE ROTARY FAN PRESSES

Prime Solution designs, manufactures and services dewatering equipment. Our technology is designed and built in Michigan, in the heart of the USA.

**ROTARY FAN PRESS • ROTARY FAN PRESS 2.0 • ROTARY FAN SCREW PRESS**

**SERVING INDUSTRIES WORLD WIDE**



## FAMILY FARM TO GLOBAL LEADER



With a humble start on a family farm in the mid-west, Prime Solution has evolved into a global leader in dewatering solutions with one mission: Design and manufacture operator-friendly, simple, yet effective dewatering solutions that meet or exceed the needs and wants of our customers.

- Headquartered in Otsego, MI
- Manufactured in the USA
- 30+ years of reliability and innovation.
- Skid, trailer, and free standing systems
- Dedicated customer service department
- Feasibility testing
- On-site pilots



### **OVER 30+ YEARS AND OVER 160 INSTALLATIONS WITH LESS THAN 0.5% IN PARTS SALES. MORE UP TIME AND LOWEST COST OF OWNERSHIP.**

We engineer from an operator's perspective — simple is better. Over the years, sludge dewatering requirements have changed along with sludge processes. Our family of Rotary Fan Presses has expanded to exceed these requirements while maintaining proven operational advantages, higher cake solids and capture rates along with capital saving of the lowest footprint per lbs of solids dewatered.

All of our rotary fan presses use a patented screen technology that uses simple pressure differential and friction resistance to provide superior dewatering

performance at a lower cost and prolonged service life. The totally enclosed dewatering process has slow operation speeds of <1 rpm, minimal wear parts, produces high cakes solids and excellent filtrate. Low operational costs, minimal or no manpower required, and low energy and water use provide savings year over year. Models are available in several sizes ranging up to 260 gpm hydraulically, in a small footprint, and most models have the ability to accommodate additional channels for future increased throughput requirements.



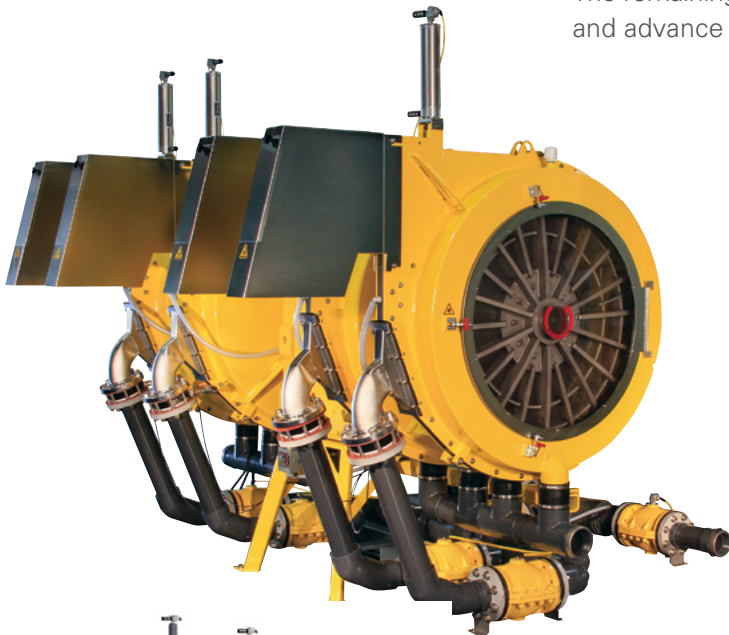
### THE ONE AND ONLY

The only dewatering device with patented screen technology that uses simple pressure differential and friction resistance to provide superior dewatering performance at a lower cost and prolonged service life. The totally enclosed dewatering process has slow operation speeds of <1 rpm, minimal wear parts, produces high cake solids and excellent filtrate. Low operational costs, minimal or no manpower required, and low energy and water use provide savings year over year. Models are available in several sizes ranging up to 260 gpm hydraulically, in a small footprint, and most models have the ability to accommodate additional channels for future increased throughput requirements.



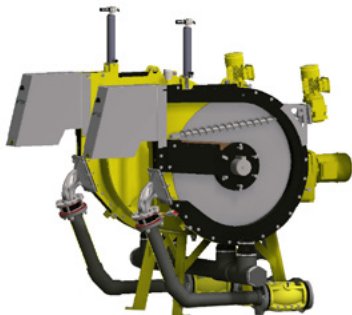
### SIMPLE AND EFFECTIVE

- Patented screen technology and fundamental physics.
- Friction and pressure to force liquid out the path of least resistance.
- Conditioned sludge is fed into the dewatering channel between two slow moving (<1 rpm) parallel stainless steel filter screens.
- Friction intensifies as the solids compress against the filter screens, causing liquid to take the path of least resistance and drain through the screens.
- The remaining solids collect in the annular space between the filter screens and advance towards the discharge end of the press.



### PRIME ROTARY FAN PRESS® *patented*

- Lowest maintenance and cost
- Expandable throughput
- High cake solids and capture rates
- Proven technology
- Easily automated
- Easy start up and shut down
- Retro-fit without expansion
- Low speed



### PRIME ROTARY FAN PRESS 2.0 *patented*

**Revolutionary. All the benefits of the original Rotary Fan Press, plus:**

- Designed for sludge that releases moisture at a slower rate.
- Ultra-advanced, simplified low-shear dewatering device with a patented internal mixing element.
- Drier cake solids with higher throughputs at a lower cost.



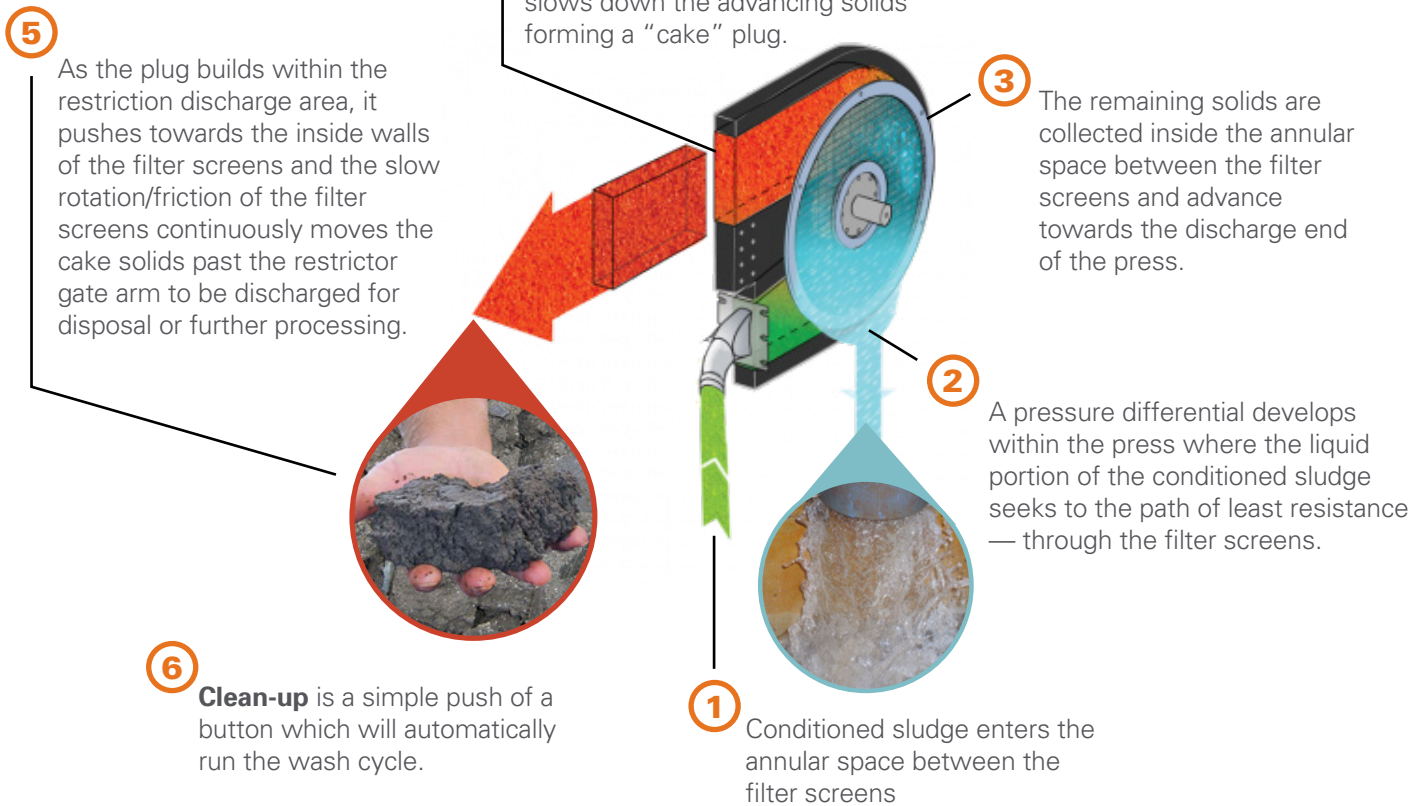
### PRIME ROTARY FAN SCREW PRESS® *patent pending*

**The best of both worlds. All of the benefits of the original Rotary Fan Press coupled with the benefits of a screw press, results:**

- Higher throughput and cake solids in a smaller footprint.

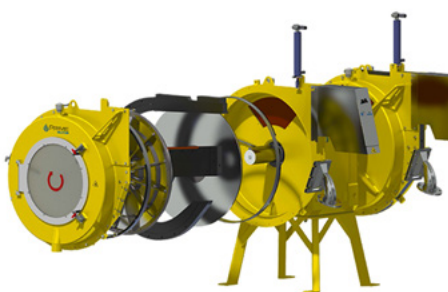
## SO SIMPLE IT'S GENIUS.

### HOW IT WORKS.



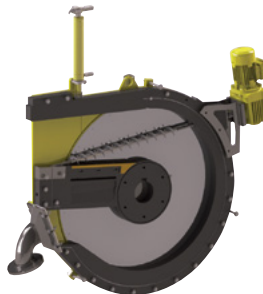
The totally enclosed, slow moving (<1 rpm), small footprint design with the lowest maintenance of any mechanical dewatering technology provides for long sustainable dewatering. The unit is controlled by a PLC touch screen which provides fine adjustments, allowing infinite control of the unit and accurate detailed refinement of the operating parameters. The operator has the option to control the dewatering process from the sludge feed all the way through to the sludge cake transfer, thus interlocking the entire system for semi-automatic operation.

### NOT ALL SLUDGE IS CREATED EQUAL.



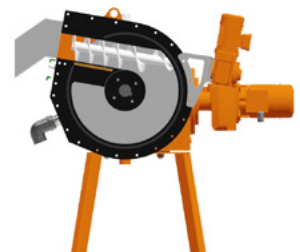
#### The Prime Rotary Fan Press

was designed to handle most common sludges, producing high cake solids and capture rates, while requiring less space, power and maintenance. It's strength is in it's simple design.



#### The Prime Rotary Fan Press 2.0

was designed for sludge that releases moisture at a slower rate. This ultra-advanced, simplified low-shear dewatering device with a patented internal mixing element will give you drier cake solids with higher throughputs at a lower cost.



#### The Prime Rotary Fan Screw Press®

is ideal if you need larger throughput in a smaller space. The RFSP uses the same reliable technology of the Prime Rotary Fan Press®, with the added technology of an additional compression zone and screw press technology. It's the best of both worlds.



# SIZES AND CAPABILITIES

## FREE STANDING UNIT – ROTARY FAN PRESS, ROTARY FAN PRESS 2.0, AND ROTARY FAN SCREW PRESS.

MODEL	CHANNELS	FILTRATION AREA (ft <sup>2</sup> )	PRESS DRIVE HP	APPROX. LENGTH (ft.)	APPROX. WIDTH (ft.)	APPROX. HEIGHT (ft.)	APPROX. WEIGHT (lbs)
RFP24S	1	4.28	1.5	6	4.5	5.5	2,100
RFP24D	2	8.56	1.5	6	4.5	5.5	2,600
RFP36S	1	10.32	3	7.5	5.5	6.5	2,400
RFP36D	2	20.64	3	7.5	6	6.5	3,600
RFP36DE	2 (expandable)	20.64	5	8	6	8	6,600
RFP36T	3	30.96	5	8	8	8	8,300
RFP36Q	4	41.28	5	8	9.5	8	9,800
RFP48S	1	18.82	5	8.5	5.5	8	6,400
RFP48D	2	37.64	5	8.5	6.5	8	8,500
RFP48DE	2 (expandable)	37.64	7.5	9.5	6.5	8.5	9,500
RFP48T	3	56.46	7.5	9.5	8	8.5	11,800
RFP48Q	4	75.28	7.5	9.5	10	8.5	14,200



### THE PRIME ADVANTAGE

- Proven technology
- Space savings and simple installation
- Easily retro-fits plants without building expansion
- Low energy, LOWEST maintenance (less than .5% over 20 yrs)
- Easy startup/shutdown
- Easily automated
- High cake solids and capture rates
- Expandable throughput without replacement
- QUICKEST ROI (see previous points)
- Ongoing innovation
- Excellent customer service and support

### SPECS

- 24, 36, and 48 inch diameter
- Sludge Cake Conveyors
- One to Four Dewatering Channels
- Emulsion Polymer Systems
- Free Standing/Skid Mounted/Mobile

### APPLICATIONS

- Municipalities
- Industrial
- Food
- Agricultural
- Gas, Oil and Mining



## SERVICES AND ANCILLARY EQUIPMENT



### LABS

Will the Prime Rotary Fan Press meet your dewatering requirements? Find out before you make a capital investment. Our no-cost wet lab will determine the effectiveness of the Prime Rotary Fan Press on different applications. Prime will provide sample containers at no cost and generate a report for your review.



### PILOT TESTING

After we've determined the effectiveness of the Prime Rotary Fan Press on your particular application, the next step is to see it in operation at your facility.

Prime Solution will bring our mobile trailer to your facility for a demonstration of its functionality. Analysis of your cake solids and filtrate is performed in our lab, allowing you to select the right chemistry and the right equipment to achieve the highest cake solids possible, matching the right equipment to your application to maximize dewatering results. At the conclusion of the on-site demonstration Prime will provide a comprehensive report of the demonstration results.



### PRIME SERVICES

At Prime Solution we pride ourselves on exceeding excellence, striving to always provide our customers with superior service. Customized Service Maintenance Programs, New Employee and Refresher Training, Equipment Upgrades, and On-site Support are offered to maximize and enhance the operating and efficiency of dewatering products.



### PRIME CONVEYORS

Not only can Prime Solution customize your dewatering needs, but we can also customize the way that you handle cake solids transference. We offer multiple sizes and styles of conveyors to fit your application. With our rugged stainless steel construction and simple maintenance, you can be assured of many years of reliable and uninterrupted service.

**LEARN MORE.** Please contact us if you would like to learn more about Prime or to speak to a salesperson.



**PRIME**  
SOLUTION

**MICHIGAN**  
610 S. Platt St.  
Otsego, MI 49078  
269.694.6666

[psirotary.com](http://psirotary.com)





## **APPENDIX O**

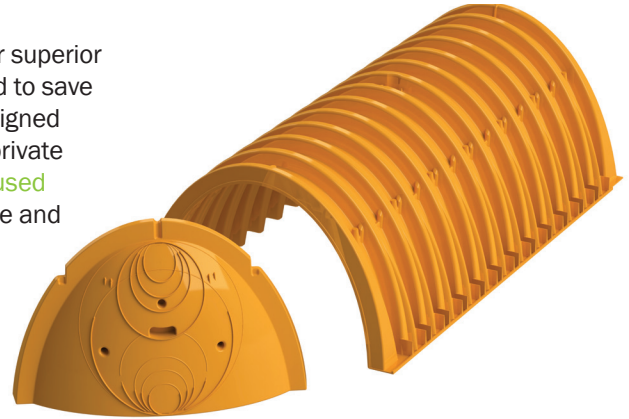
### **Stormtech Chamber Specifications**

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## STORMTECH DC-780 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.

- 12' (3.6 m) Deep Cover Applications
- Designed in accordance with ASTM F 2787 and produced to meet the ASTM 2418 product standard.
- AASHTO safety factors provided for AASHTO Design Truck (H20 and deep cover conditions.)



### STORMTECH DC-780 CHAMBER (not to scale)

#### Nominal Chamber Specifications

##### Size (L x W x H)

85.4" x 51.0" x 30.0"

2,170 mm x 1,295 mm x 762 mm

##### Chamber Storage

46.2 ft<sup>3</sup> (1.30 m<sup>3</sup>)

##### Min. Installed Storage\*

78.4 ft<sup>3</sup> (2.20 m<sup>3</sup>)

##### Weight

80.0 lbs (36.3 kg)

##### Shipping

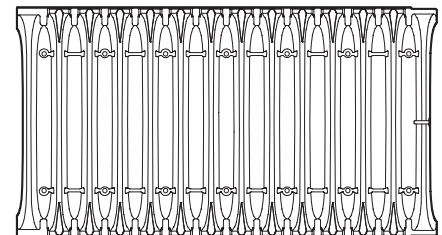
24 chambers/pallet

60 end caps/pallet

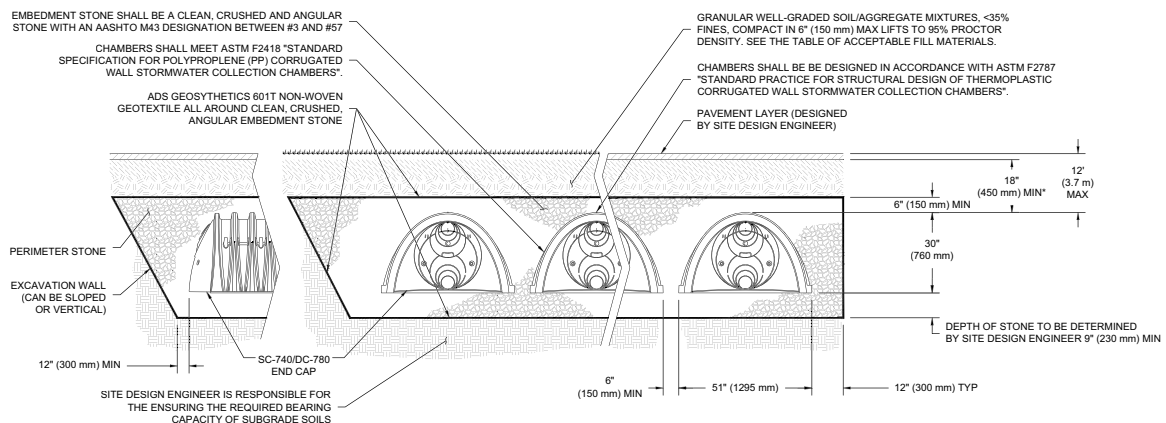
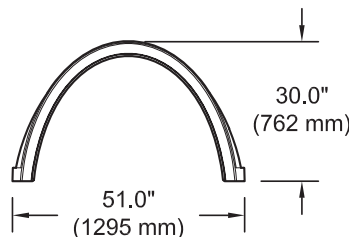
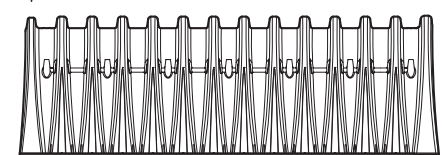
12 pallets/truck

\*Assumes 9" (230 mm) stone below, 6" (150 mm) row spacing and 40% stone porosity.

90.7" (2304 mm)  
ACTUAL LENGTH



85.4" (2169 mm)  
INSTALLED LENGTH



\*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

## DC-780 CUMULATIVE STORAGE VOLUMES PER CHAMBER

Assumes 40% Stone Porosity. Calculations are Based Upon a 9" (230 mm) Stone Base Under Chambers.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft <sup>3</sup> (m <sup>3</sup> )	Total System Cumulative Storage ft <sup>3</sup> (m <sup>3</sup> )
45 (1,143)	↑ 46.27 (1.310)	78.47 (2.222)
44 (1,118)	46.27 (1.310)	77.34 (2.190)
43 (1,092)	Stone Cover ↑ 46.27 (1.310)	76.21 (2.158)
42 (1,067)	46.27 (1.310)	75.09 (2.126)
41 (1,041)	46.27 (1.310)	73.96 (2.094)
40 (1,016)	↓ 46.27 (1.310)	72.83 (2.062)
39 (991)	46.27 (1.310)	71.71 (2.030)
38 (965)	46.21 (1.309)	70.54 (1.998)
37 (940)	46.04 (1.304)	69.32 (1.963)
36 (914)	45.76 (1.296)	68.02 (1.926)
35 (889)	45.15 (1.278)	66.53 (1.884)
34 (864)	44.34 (1.255)	64.91 (1.838)
33 (838)	43.38 (1.228)	63.21 (1.790)
32 (813)	42.29 (1.198)	61.43 (1.740)
31 (787)	41.11 (1.164)	59.59 (1.688)
30 (762)	39.83 (1.128)	57.70 (1.634)
29 (737)	38.47 (1.089)	55.76 (1.579)
28 (711)	37.01 (1.048)	53.76 (1.522)
27 (686)	35.49 (1.005)	51.72 (1.464)
26 (660)	33.90 (0.960)	49.63 (1.405)
25 (635)	32.24 (0.913)	47.52 (1.346)
24 (610)	30.54 (0.865)	45.36 (1.285)
23 (584)	28.77 (0.815)	43.18 (1.223)
22 (559)	26.96 (0.763)	40.97 (1.160)
21 (533)	25.10 (0.711)	38.72 (1.096)
20 (508)	23.19 (0.657)	36.45 (1.032)
19 (483)	21.25 (0.602)	34.16 (0.967)
18 (457)	19.26 (0.545)	31.84 (0.902)
17 (432)	17.24 (0.488)	29.50 (0.835)
16 (406)	15.19 (0.430)	27.14 (0.769)
15 (381)	13.10 (0.371)	24.76 (0.701)
14 (356)	10.98 (0.311)	22.36 (0.633)
13 (330)	8.83 (0.250)	19.95 (0.565)
12 (305)	6.66 (0.189)	17.52 (0.496)
11 (279)	4.46 (0.126)	15.07 (0.427)
10 (254)	2.24 (0.064)	12.61 (0.357)

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft <sup>3</sup> (m <sup>3</sup> )	Total System Cumulative Storage ft <sup>3</sup> (m <sup>3</sup> )
9 (229)	↑ 0 (0)	10.14 (0.287)
8 (203)	0 (0)	9.01 (0.255)
7 (178)	0 (0)	7.89 (0.223)
6 (152)	Stone Foundation ↑ 0 (0)	6.76 (0.191)
5 (127)	0 (0)	5.63 (0.160)
4 (102)	0 (0)	4.51 (0.128)
3 (76)	0 (0)	3.38 (0.096)
2 (51)	0 (0)	2.25 (0.064)
1 (25)	↓ 0 (0)	1.13 (0.032)

Note: Add 1.13 ft<sup>3</sup> (0.032 m<sup>3</sup>) of Storage for Each Additional Inch (25 mm) of Stone Foundation.

### STORAGE VOLUME PER CHAMBER FT<sup>3</sup> (M<sup>3</sup>)

	Bare Chamber Storage ft <sup>3</sup> (m <sup>3</sup> )	Chamber and Stone Foundation Depth in. (mm)		
		9" (230 mm)	12" (300 mm)	18" (450 mm)
DC-780 Chamber	78.4 (2.2)	78.4 (2.2)	81.8 (2.3)	88.6 (2.5)

Note: Assumes 40% porosity for the stone, the bare chamber volume, 6" (150 mm) of stone above, and 6" (150 mm) row spacing.

### AMOUNT OF STONE PER CHAMBER

ENGLISH TONS (yds <sup>3</sup> )	Stone Foundation Depth		
	9"	12"	18"
DC-780 Chamber	4.2 (3.0)	4.7 (3.3)	5.6 (3.9)
METRIC KILOGRAMS (m <sup>3</sup> )	230 mm		
	300 mm	450 mm	
DC-780 Chamber	3,810 (2.3)	4,264 (2.5)	5,080 (3.0)

Note: Assumes 9" (150 mm) of stone above, and between chambers.

### VOLUME EXCAVATION PER CHAMBER YD<sup>3</sup> (M<sup>3</sup>)

	Stone Foundation Depth		
	9" (230 mm)	12" (300 mm)	18" (450 mm)
DC-780 Chamber	5.9 (4.5)	6.3 (4.8)	6.9 (5.3)

Note: Assumes 6" (150 mm) separation between chamber rows and 18" (450 mm) of cover. The volume of excavation will vary as depth of cover increases.



Working on a project?  
Visit us at [www.stormtech.com](http://www.stormtech.com)  
and utilize the StormTech Design Tool

For more information on the StormTech DC-780 Chamber and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

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