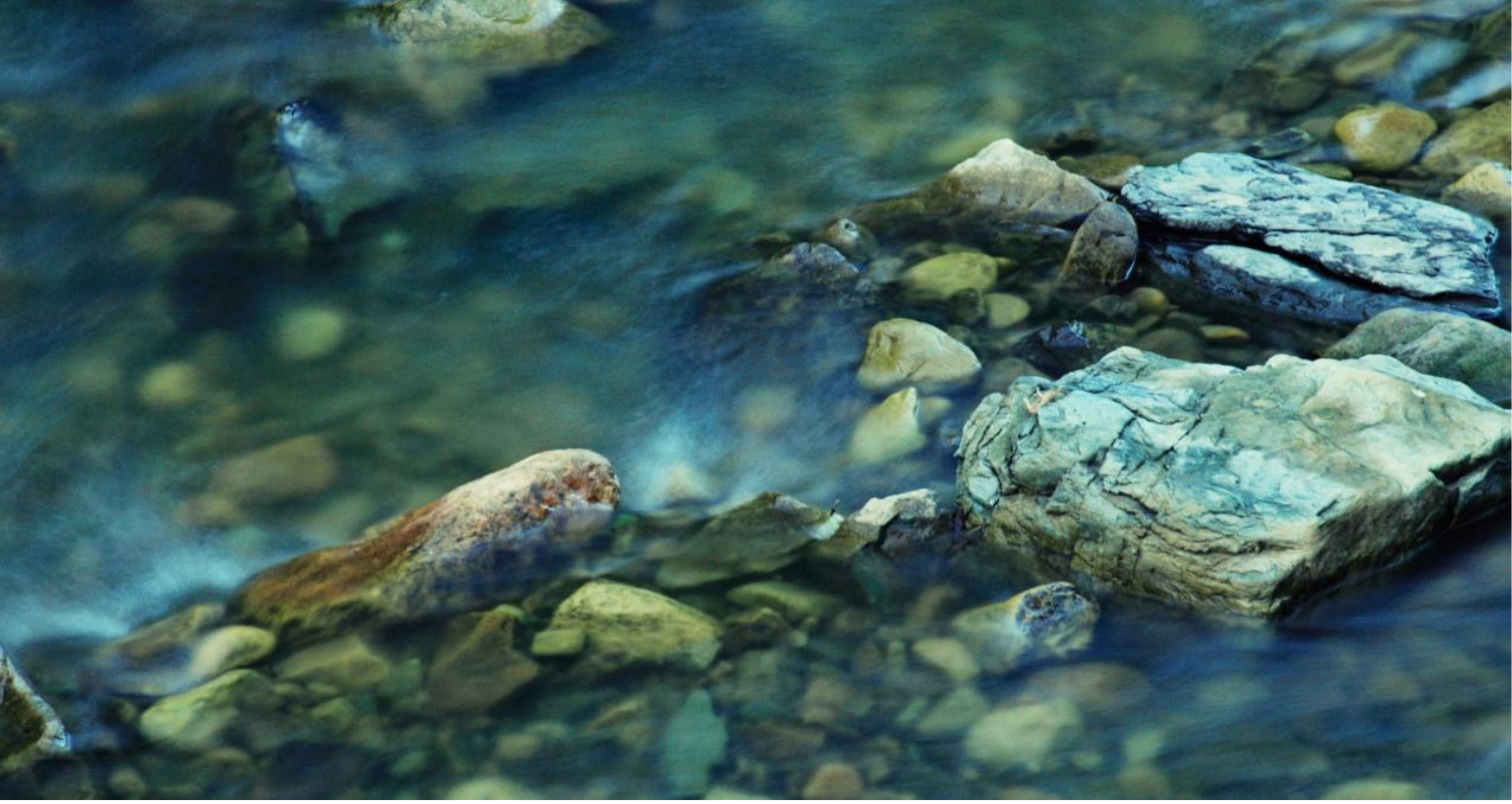

June 2024
Puyallup Facility Wastewater Discharge Permitting Support Services

Industrial Wastewater Facility Engineering Report

Prepared for the Red Dot Corporation

June 2024
Puyallup Facility Wastewater Discharge Permitting Support Services

Industrial Wastewater Facility Engineering Report

Prepared for
Red Dot Corporation
2504 East Main Avenue
Puyallup, Washington 98372

Prepared by
Anchor QEA
1201 3rd Avenue
Seattle, Washington 98101

Project Number: 232934-01.01
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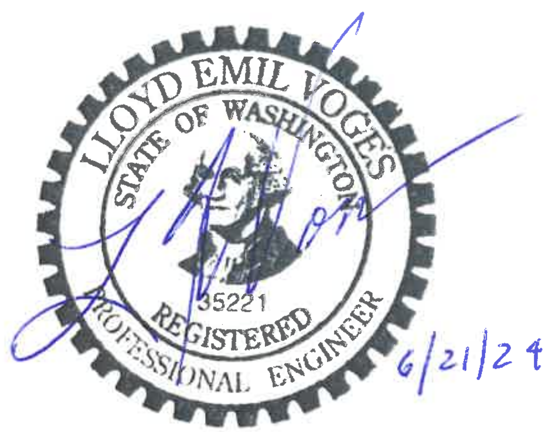
CERTIFICATION

This report was prepared by the staff of Anchor QEA under the supervision of the Engineer whose seal and signature appears hereon.



Lloyd Emil Voges, PE

Anchor QEA

TABLE OF CONTENTS

TABLES

APPENDICES

ABBREVIATIONS

CFR	*Code of Federal Regulations*
City	City of Puyallup
Facility	the Red Dot Corporation facility at 2504 East Main Avenue, Puyallup, Washington 98372
gpm	gallon per minute
HVAC	heating, ventilation, and air-conditioning
lbs/day	pound per day
mg/L	milligram per liter
NA	not applicable
P&ID	piping and instrumentation diagram
PMC	City of Puyallup Municipal Code
POTW	publicly owned treatment works
Red Dot	Red Dot Corporation
SU	standard unit
UV	ultraviolet
WAC	Washington Administrative Code

1 Introduction

The Red Dot Corporation (Red Dot) manufactures and fabricates heat exchangers and related equipment for large vehicles and machinery. Red Dot recently relocated its operations from Tukwila, Washington, to Puyallup, Washington, at a facility (Facility) located at 2504 East Main Avenue. Red Dot's operations generate industrial wastewater that requires pretreatment before being discharged to the City of Puyallup (City) publicly owned treatment works (POTW). Per City regulations, the discharged wastewater must be permitted under the National Pollutant Discharge Elimination System. This *Industrial Wastewater Facility Engineering Report* has been prepared as part of the discharge permit application process for the Facility. It is supportive of and supplemental to the City's Source Control Program Discharge Application.

Red Dot is essentially replicating its Tukwila manufacturing process and its production output at the Puyallup facility, including relocating and installing the manufacturing equipment and wastewater treatment system. The treatment system was successfully operated to meet permit conditions in Tukwila and will operate under essentially identical flow and water quality conditions. An original comprehensive engineering report (*Professional Engineer's Report: Waste Water Pre-Treatment System*; Advanced Chemical Technologies 2012) was prepared for the Tukwila operations.

Content from the original report was used to describe manufacturing production operations and the quality and quantity of industrial wastewater generated. The wastewater treatment system process diagrams used for this Puyallup report have been carried over from the original report (see Appendix B). Thus, this report does not include an evaluation of alternate treatment solutions or related design basis decisions that led to the treatment system's selection. Instead, this report describes how the treatment system functions *as is*. This report provides a new, independent description not biased by the previous report's organization or style, but it is not contradictory to the original report's conclusions.

2 Permitting Jurisdiction

The Facility and POTW are located within the Puyallup Tribe of Indians reservation; thus, the permit will be administered as a U.S. Environmental Protection Agency permit. The City is delegated as the pretreatment manager and permitting lead agency. The City implements pretreatment permitting under the requirements of the Washington Administrative Code (WAC) and its municipal code. The wastewater pretreatment system was in use at the Tukwila facility and was permitted for use within the King County POTW. It is being relocated and reassembled for essentially identical function at the Facility.

2.1 Washington Administrative Code

This report has been developed in accordance with WAC Chapter 173-240, which describes the requirements for the submission of plans and reports for construction of wastewater-generating facilities. WAC 173-240-130 defines, by sections, the required content of engineering reports for industrial wastewater facilities. Table 1 lists those WAC sections and cross references them to the sections of this report. WAC sections that are not applicable to the Puyallup facility and the nature of its operations are annotated as such in Table 1.

Table 1
WAC-173-240-130 Engineering Report Requirements

WAC 173-240-130 Section		Engineering Report Requirements	Engineering Report Section(s)
2.a		Type of industry or business	3.1
2.b		The kind and quantity of finished product	3.1.1
2.c		The quantity and quality of water used by the industry and a description of how it is consumed or disposed of including:	
	2.c.i	The quantity and quality of all process wastewater and method of disposal	3.4, 4.3
	2.c.ii	The quantity of domestic wastewater and how it is disposed of	3.4.1
	2.c.iii	The quantity and quality of noncontract cooling water (including air-conditioning) and how it is disposed of	NA
	2.c.iv	The quantity of water consumed or lost to evaporation	NA
2.d		The amount and kind of chemicals used in the treatment process, if any	5.1, 5.2.7
2.e		The basic design data and sizing calculations of the treatment units	5.2
2.f		A discussion of the suitability of the proposed site for the facility	3.3
2.g		A description of the treatment process and operation, including a flow diagram	5.2, 5.3
2.h		All necessary maps and layout sketches	5.3
2.i		Provisions for bypass, if any	5.4
2.j		Physical provision for oil and hazardous spill control or accidental discharge prevention or both	NA

Refer to spill plan. [Red Dot Puyallup Facility WW Engineering Report_2024-06-21, Page 8/28]

WAC 173-240-130 Section		Engineering Report Requirements	Engineering Report Section(s)
2.k		Results to be expected from the treatment process including the predicted wastewater characteristics, as shown in the waste discharge permit, where applicable	
2.l		A description of the receiving water, location of the point of discharge, applicable water quality standards, and how water quality standards will be met outside of any applicable dilution zone	NA
2.m		Detailed outfall analysis	NA
2.n		The relationship to any existing treatment facilities, if any	
2.o		Where discharge is to a municipal sewerage system, a discussion of that system's ability to transport and treat the proposed industrial waste discharge without exceeding the municipality's allocated industrial capacity. Also, a discussion on the effects of the proposed industrial discharge on the use or disposal of municipal sludge.	NA
2.p		Where discharge is through land application, including seepage lagoons, irrigation, and subsurface disposal, include a geohydrologic evaluation of factor such as:	NA
	2.p.i	depth to groundwater and groundwater movement during different times of the year	NA
	2.p.ii	water balance analysis of the proposed discharge area	NA
	2.p.iii	overall effects of the proposed facility upon groundwater in conjunction with any other land application facilities that may be present	NA
2.q		A statement expressing sound engineering justification through use of pilot plant data, results from other similar installations, or scientific evidence from literature, or both, that the effluent from the proposed facility will meet applicable permit effluent limitations or pretreatment standards or both	5
2.r		A discussion of the method of final sludge disposal selected and any alternatives considered with reasons for rejection	5.2.6
2.s		A statement regarding who will own, operate, and maintain the system after construction	6.1
2.t		A statement regarding compliance with any state or local water quality management plan or any plan adopted under the Federal Water Pollution Control Act as amended	2
2.u		Provisions for any committed future plans	4.4
2.v		A discussion of the various alternatives evaluated, if any, and reasons they are unacceptable	1
2.w		A timetable for final design and construction	6
2.x		A statement regarding compliance with the State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA), if applicable	NA
2.y		Additional items to be included in an engineering report for a solid waste leachate treatment system are:	NA
	2.y.i	A vicinity map and also a site map that shows topography, location of utilities, and location of the leachate collection network, treatment systems, and disposal	NA

Include this information. [Red Dot Puyallup Facility WW Engineering Report_2024-06-21, Page 9/28]

Discussion not found in 6.1. [Red Dot Puyallup Facility WW Engineering Report_2024-06-21, Page 9/28]

Why is this NA? [Red Dot Puyallup Facility WW Engineering Report_2024-06-21, Page 9/28]

WAC 173-240-130 Section		Engineering Report Requirements	Engineering Report Section(s)
	2.y.ii	Discussion of the solid waste site, working areas, soil profile, rainfall data, and groundwater movement and usage	NA
	2.y.iii	A statement of the capital costs and the annual operation and maintenance costs	NA
	2.y.iv	A description of all sources of water supply within 2,000 feet of the proposed disposal site. Particular attention should be given to showing impact on usable or potentially usable aquifers	NA

2.2 City of Puyallup Municipal Code

The City of Puyallup Municipal Code (PMC) Chapter 14.06 – Sewer Use Ordinance sets the requirements for users of the City's POTW and complies with all applicable state and federal laws including the Clean Water Act (33 USC 1251 et seq.) and the general pretreatment regulations (40 *Code of Federal Regulations* [CFR] Part 403).

3 Facility Review

3.1 Industry Description

Red Dot performs metal working, assembly, and finishing activities to produce heating, ventilation, and air-conditioning (HVAC) components and accessories for heavy duty vehicles and off-road machinery. It also engages in product development. The applicable industrial classifications are as follows:

- National American Industry Classification System code 344302 – Heat Exchangers, Condensers, and Components
- Occupational Safety and Health Administration Standard Industrial Classification code 3585: Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment

Include User Category 433 Metal Finisher. [Red Dot Puyallup Facility WW Engineering Report_2024-06-21, Page 11/28]

The business operations that cause wastewater generation include metal finishing processes.

3.1.1 Type and Quantity of Finished Product

Red Dot produces HVAC components and assemblies for heavy duty vehicles and off-road machinery. The final products relative to wastewater production will vary in type and size but are generally tubular with fin-shaped aluminum pieces, formed sheet metal, and assemblies thereof. The types of finished products manufactured at the Facility include heater cores and condensers; pressure switches; hose, tube, and pipe assemblies; wire harness; sheet metal fabrication; duct and plenum subassemblies; control panel assembly; powder coating; and HVAC unit final assembly. Not all finished products are associated with wastewater generation.

Metal finishing operations involve dipping manufactured parts into chemical solutions. Solution water remaining on the parts when they are removed is referred to as “drag out.” Wastewater is generated when parts are hung on racks or placed in baskets to drip off the drag out. Drag out wastewater volumes are estimated from the number of parts handled and experience with past similar operations. Rinse tank and drainage area size and treatment system hydraulic capacity is developed from solution drag out estimates. Wastewater batches are also generated when rinse tanks are drained and replenished.

The maximum daily number of parts produced, which is applicable for developing wastewater flow rate estimates, is shown for reference in Table 2 along with process locations. Table 2 establishes a baseline in case future manufacturing changes need to be evaluated with respect to wastewater generation rates.

Table 2
Types and Quantities of Finished Products

Product Type	Average Quantity Produced		
	Per Day	Per Week	Per Month
Heat cores and condensers	1,594	6,377	25,512
Hose, tube, and pipe assemblies	7,278	29,112	145,561
Duct and plenum assemblies	Custom	Custom	Custom
Powder coating	2,604	10,418	86,468

3.2 Facility Description

The Facility is located at 2504 East Main Avenue, Puyallup, Washington 98372, in a 199,000-square-foot building divided into work areas including offices; meeting rooms; and research and development, raw material and product storage, assembly, restrooms, powder coating, metal forming, joining (soldering, brazing, press fit, etc.), chemical processing, pressure testing, machine tools, maintenance, wiring, quality assurance/quality control, wastewater/hazardous waste management, and receiving/storage/shipping areas. The Facility location is zoned as “limited manufacturing” (City of Puyallup 2021). The layout of the Facility and drainage system is shown in Appendix A. The wastewater generating processes will generally be located in the central zone of the Facility, north of the pretreatment area that includes the powder coating and brazing/soldering areas. The pretreatment system will be located along the south wall near the center of the building.

3.3 Suitability of the Proposed Site

The general building outline and location are shown in Appendix A. The building is on a parcel zoned for limited manufacturing, general warehousing, and storage. It is bounded by East Main Avenue to the north; light industrial properties to the west, south, and southeast; and a residential area to the northeast with a 30-foot buffer zone. The wastewater treatment site is within the industrial building footprint on the concrete floor within a containment curb.

3.4 Water Quantity and Quality

3.4.1 Water Balance

The Facility water is supplied by the City’s water system. The water is used for domestic uses including restrooms, a breakroom, and office space; manufacturing processing and housekeeping purposes; and landscape irrigation. The Facility discharges domestic, or sanitary, wastewater and manufacturing process wastewater. Sanitary wastewater and treated process wastewater each are routed to their own dedicated pump station, which discharges to a common Facility drain.

Domestic water and wastewater flow are estimated based on 250 employees using 25 gallons per day for a total domestic water throughput of 6,250 gallons per day. Manufacturing process wastewater usage is provided in Table 3.

Table 3
Manufacturing Water Uses and Quantities

Location	Volume (gallons)	Frequency	Average Daily Volume (gallons)
Regular Operations			
WC 200/250			
Tube wash tank	262	Daily	262
Tube test tank	40	Daily	40
Small test tank	30	Daily	30
Fuse clean	55	7 Days	8
WC 699			
Powder coat/clean coat	400 (as overflow)	Daily, continuous	400
Typical daily volume	1,280		
Periodic Discharges			
Powder coat/clean coat	2,533	120 days	21
Total daily average	1,306		
Peak day discharge	4,063		

3.4.2 Manufacturing Process Water Quality

The Facility incorporates continuous flowing rinse tanks, dead or batch-wise rinse tanks, and water quality-based rinse movement, which are all typical for a metal finishing facility. With the exception of the powder coat cleaning/coating line, which uses continuous flow, the remaining rinse and test tanks' change outs are time-based. All tanks containing wastewater are single tanks—that is, with no alternating rinses—and are filled with potable water and gravity-drained to transfer tanks, which lead to the pretreatment equalization tank.

The production processes are the fabrication, assembly, cleaning, coating, and rinsing of brass/bronze and aluminum parts and assemblies. Cleaning the metal parts after soldering and brazing can release dissolved cationic copper and zinc into the rinse water. Other cleaning, pressure testing, and rinse tanks will also gather metal particulates. The cleaner and phosphate process prior to powder coating includes daily continuously flowing rinse water streams in addition to spent process solutions dumped once every 90 to 120 days.

Facility floors are cleaned using a motorized floor cleaner, which produces limited wastewater. The sweeper is not used in the Facility spill cleanup procedures. The wastewater generated from floor cleaning is assumed to be of similar quality to the rinse tank wastewater and amenable to treatment in the pretreatment system.

4 Pretreatment Standards

4.1 Federal Categorical Pretreatment Standards

The federal categorical pretreatment standards are set in 40 CFR Part Chapter 1 Subchapter N. Part 403 – General Pretreatment Regulations for Existing and New Sources of Pollution and Part 433 – Metal Finishing Point Source Category are applicable to the Facility. Pretreatment standards for new sources set in Part 433.17 are listed in Table 4. Although the pretreatment system that will be used at the Facility is not a new system, the Facility will be a new source of wastewater to the City's POTW, so the pretreatment standards for new sources are applicable.

Table 4
Part 433 Pretreatment Standards for New Sources

Pollutant or Pollutant Property	Daily Maximum (mg/L)	Maximum Monthly Average (mg/L)
Total cadmium	0.11	0.07
Total chromium	2.77	1.71
Total copper	3.38	2.07
Total lead	0.69	0.43
Total nickel	3.98	2.38
Total silver	0.43	0.24
Total zinc	2.61	1.48
Total cyanide	1.20	0.65
Total toxic organics	2.13	NA
Cyanide (A)[1]	0.86	0.32
Oil and grease	52	26
Total suspended solids	60	31
pH	$6.0<pH<9.0$	$6.0<pH<9.0$

Note:
1. Cyanide amenable to alkaline chlorination; only applicable to industrial facilities with cyanide treatment

4.2 City of Puyallup Municipal Code

The pretreatment standards listed in PMC Chapter 14.06.024 are local limits for daily maximum allowable discharge concentrations, solutions, or suspensions that meet the requirements of both state and federal limits and are listed in Table 5. Not all pollutants listed in Table 4 are pollutants of concern for the Facility; pollutants or properties of concern specific to the industrial activities performed at the Facility are zinc, copper, pH, and total suspended solids, as presented and discussed in Section 3.4.2. As described in PMC Chapter 14.06.021, the pH of wastewater is limited to a minimum of 5.5 and maximum of 11.0. These limitations apply to the point where the wastewater is discharged to the

POTW (end of pipe). Federal categorical limitations listed in Table 2 that are more stringent than the local limits (pH, cadmium, chromium, lead, and cyanide) supersede the local limits shown in Table 3.

Table 5
City of Puyallup Pretreatment Standards

Pollutant	Daily Maximum Allowable Discharge Concentration (mg/L)
Arsenic	0.187
Cadmium	0.167
Copper	0.165
Chromium[1]	5.0
Cyanide	1.29
Lead	1.18
Mercury	0.018
Molybdenum	0.692
Nickel	1.4
Selenium	0.325
Silver	0.169
Zinc	2.30
Oil and grease (petroleum or mineral oil products)	100
Ammonia	100
UV transmittance at 254 nanometers	>10%[2]
Biochemical oxygen demand	1,500 (or 200 lbs/day)
Total suspended solids	300 (or 25 lbs/day)
Total toxic organics	2.0

Notes:

1. The chromium limit applies to the total concentration of both trivalent (Chromium III) and hexavalent (Chromium VI) Chromium species. Chromium VI must not exceed 2 milligrams per liter (mg/L) of the total chromium concentration.
2. The transmittance limit applies to a sample that has been agitated and aerated with an equal volume of activated sludge from the POTW for the hydraulic residence time of the aeration system, allowed to settle overnight, and then decanted off the settled solids.

4.3 Sanitary Sewer Discharge

The Facility will discharge to a sanitary sewer leading to the City's Water Pollution Control Plant via a connection that meets the City's standard specification 04.03.04 for "Commercial Side Sewer Connection with Sampling Connection" (Puyallup 2011). The discharge that the Facility contributes to the sanitary sewer will not significantly increase flow or the type or concentrations of pollutants to the POTW. The pretreatment Facility's maximum daily discharge is less than 0.1% of the POTW's average daily flow of more than 5 million gallons per day. A detailed outfall analysis or description of the receiving water is not applicable to this Facility because all discharges will be pretreated and discharged to the sanitary sewer.

4.4 Expansion Plans

The Facility is fully built out with no room for manufacturing process expansion, and there are currently no plans to add or modify processes that will change the water balance or daily discharge volumes. Applying a modest safety factor, and based on Table 3, the maximum daily discharge will be 4,500 gallons.

5 Pretreatment Process Description

5.1 Treatment Process Overview

From the 2012 engineering report (Advanced Chemical Technologies 2012):

> The process chemicals and resulting process wastewater are typical for the metal finishing industry. Therefore, the treatment process utilized is well established and follows standard chemistry protocols for pH adjustment, coagulation, flocculation, and sedimentation.

The treatment process uses hydroxide precipitation to coagulate dissolved (soluble) contaminant metal cations, removing them into the suspended solid (insoluble) phase. The resulting solids are then flocculated to form larger particles that can be settled more rapidly than those formed via the initial coagulation.

Iron oxyhydroxide solids are used to enhance the removal process via coprecipitation and adsorption reactions. Coprecipitation/coagulation occurs when iron (Fe^{3+}), a metal cation, is added to water and caused to precipitate as the oxyhydroxide known as ferrihydrite ($Fe(OH)_3$) in the presence of the copper (Cu^{3+}) and zinc (Zn^{2+}) cations. Iron, commonly added as an iron salt, is added as ferric chloride ($FeCl_3$). Causing the ferric cation to precipitate requires the addition of sodium hydroxide (NaOH or caustic soda). Adsorption of copper and zinc onto the ferrihydrite solid surface also occurs. Coprecipitation and adsorption reactions with iron are most efficient at pH values above 8 or 9 standard units (SUs).

The ferrihydrite that forms also behaves as a coagulant to capture other suspended particulates in the wastewater. The resulting coprecipitated contaminant metals and pre-existing particulate coagulated solids have surface charges that cause particles to repel each other and remain stably suspended in water. For the Facility's waste stream, the charges are positive, or cationic, and an anionic polymer is added to eliminate the surface charge repulsion, allowing the particles to flocculate, increasing particle size for improved settling in a clarifier.

The sequence of steps for a precipitation and settling process are as follows:

- Wastewater collection and equalization
- Coagulation/coprecipitation
- Flocculation
- Clarification (settling)
- Discharge

The steps have been historically implemented as batch or continuous processes. In a batch process, all steps occur in a single tank, and two tanks are required to allow one tank to fill while the other is used for the treatment and discharge steps. Batch processes are suitable for variable inflow such as occurs between the average and peak day flows at the Facility. Batch processes may require more space for the tanks and are less amenable to automation. In a continuous process, each step occurs in a dedicated tank with wastewater continuously flowing from one step to the next. A truly continuous process is not applicable for the Facility due to the variable inflow.

To account for inflow variability, the Facility uses a semi-continuous process, in which inflow is collected in a larger equalization tank and subsequently routed through a continuous flow process at a treatment and discharge rate larger than the inflow rate.

5.2 Treatment Unit Processes and Capacities

The objective for overall treatment time is to allow treatment and discharge of the peak day flow during a standard 8-hour work shift. A nominal treatment rate of 10 gallons per minute (gpm) was selected. This rate allows for 4,800 gallons of treatment and discharge per day, which is conservatively greater than the peak day inflow from the manufacturing processes shown in Table 3. The capacity basis for each step, or unit process, is described in the following sections.

5.2.1 Collection and Equalization

This section describes a theoretical worst case wastewater generation scenario in which the 2,783 gallons of powder coat and aluminum grill wash periodic inflows are instantaneously transferred to the wastewater collection and equalization tank. In practice, the periodic inflows are transferred at less than 50 gpm, requiring hours for the transfer.

The equalization tank has a volume of 3,000 gallons. The 1,280 gallons of typical daily volume from Table 3 are equal to 0.89 gpm. Following 16 hours of continuous “off shift” inflow, the tank collects approximately 853 gallons. Initiating treatment and discharge at 10 gpm causes the tank to drain at a rate of 9.11 gpm. To make room for periodic inflows, the tank needs to be drained to approximately 200 gallons. This requires approximately 1.2 hours of treatment. With the tank nearly full and draining at 9.11 gpm, approximately 5.5 hours are needed to drain the tank. In total, 6.7 hours are needed to treat the peak day inflow to the treatment system.

During typical operations, 2 days of 1,280 gallons per day inflow, or 2,560 gallons, can be collected. Between the end of one treatment shift and the beginning of the second-day shift, approximately 2,200 gallons are collected. The treatment system then drains at the typical 9.11 gpm rate for approximately 4 hours, and the bi-daily cycle is reset.

5.2.2 Coagulant Addition and pH Adjustment

Coprecipitation, adsorption, and coagulation of the contaminant metals and particulates occur in the reaction and mix tank by adding ferric chloride and maintaining pH at the set point value using caustic soda. The caustic soda is consumed by the typical acidity of the influent wastewater, and it supplies the hydroxyl anions to convert the ferric cations to ferrihydrite. Ferrihydrite formation is essentially complete at pH 4, and adjustment above that pH value requires additional hydroxyl ions. The optimum pH to maximize metal removal via adsorption is in the range of 8 to 10 SU. Operations staff can use this range to test best removal and install the best set point pH. Thus, adjustment of pH is based on metals removal and not staying within the effluent pH limits.

The coprecipitation, adsorption, coagulation, and pH adjustment reactions are rapid, occurring within 10 to 15 seconds. On this basis, the reaction tank would be small or could occur in-pipe. A minimum volume is also needed to provide concentration equalization of the various reactive chemicals that enter the reactor. Equalization compensates for, or prevents overshoot from, the non-constant nature of the chemical dosing pumps especially near neutral pH ranges with little ability to buffer hydroxyl additions. The resulting pH control system uses a band around the pH set point. As acidic water and ferric chloride are added, the pH drifts to the low end of the band, and then hydroxyl ions (from caustic soda) are added to raise the pH to the high end of the band.

5.2.3 Flocculant Addition and Slow Mixing

Coagulated solids flow to the flocculation tank, in which the anionic polymer is dosed. The flocculation tank uses a slow paddle-type mixer to agglomerate precipitated solids into larger particles. A reaction time of 5 minutes is needed to allow for charge destabilization and particle collisions. The flocculation tank then overflows into the clarifier.

5.2.4 Clarification

The clarifier is a large, conical-bottom tank that separates the treated water from the formed solids. The agglomerated solids settle to the bottom of the cone, and treated water overflows through the overflow trough at the top of the clarifier tank to a transfer tank. Settled solids are pumped to the sludge management system.

5.2.5 Effluent Flow Control

The clarified effluent holding tank provides flow equalization prior to pumping the effluent. Treated water is pumped from the transfer tank based on level in the tank, with a high-level set point to turn the transfer pump on and a low-level set point to turn it off. The pump discharges via a 1.5-inch pipeline inside the building to a floor drain that connects to the to the main sanitary plumbing drain line. The drain line routes effluent flow to the Puyallup sewer via a site manhole in the Facility’s north parking lot.

5.2.6 Sludge Management and Disposal

Solids that settle in the clarifier tank are referred to as "sludge" and are pumped to a sludge holding tank then pumped to a filter press. The liquid removed from the sludge in the filter press is directed back to the equalization tank for treatment of any potentially entrained solids. Solids ("plates") remaining at the filter press are a secondary waste stream and are collected and packaged for shipment off site to a Resource Conservation and Recovery Act-licensed hazardous waste treatment and storage disposal facility.

5.2.7 Chemicals Used in Pretreatment Process

Red Dot stores process- and treatment-related chemicals in 90-gallon or smaller containers. Production process chemicals are stored near the process equipment that require their use. The treatment process chemicals and their major constituents are stored within the treatment area secondary containment. Chemicals stored at the Facility, quantities, and storage location are shown in Table 6.

Table 6
Chemicals Stored at the Facility

Chemical	Location	Concentration (percent weight)	Container Size (gallons)
Iron-based coagulant	Treatment Area	30%	55
Caustic soda	Treatment Area	25%	55
Flocculent/polymer	Treatment Area	100%	5
Flocculent/polymer	Treatment Area	1%	90

5.3 Process Diagram and System Layout

Detailed process diagrams, referred to as piping and instrumentation diagrams (P&IDs) are included as Appendix B. A diagram of the overall site wastewater flow, including the location of the treatment system, is included as Appendix A.

5.4 Provisions for Bypass

During treatment system maintenance or other downtime, Red Dot is able to have the wastewater hauled to a third party, off-site wastewater processor.

6 Operations and Maintenance

The system has been installed and is operating, and treated water is being disposed off site. Off-site disposal will continue until permit approval.

6.1 Sampling Point for Monitoring

The discharge sample point for the industrial wastewater is the pipe assembly on the clarifier transfer tank pump. The connection is a pressure drain line running in the building to the sanitary sewer floor drain that connects to a City sanitary sewer manhole in the Facility's north parking lot.

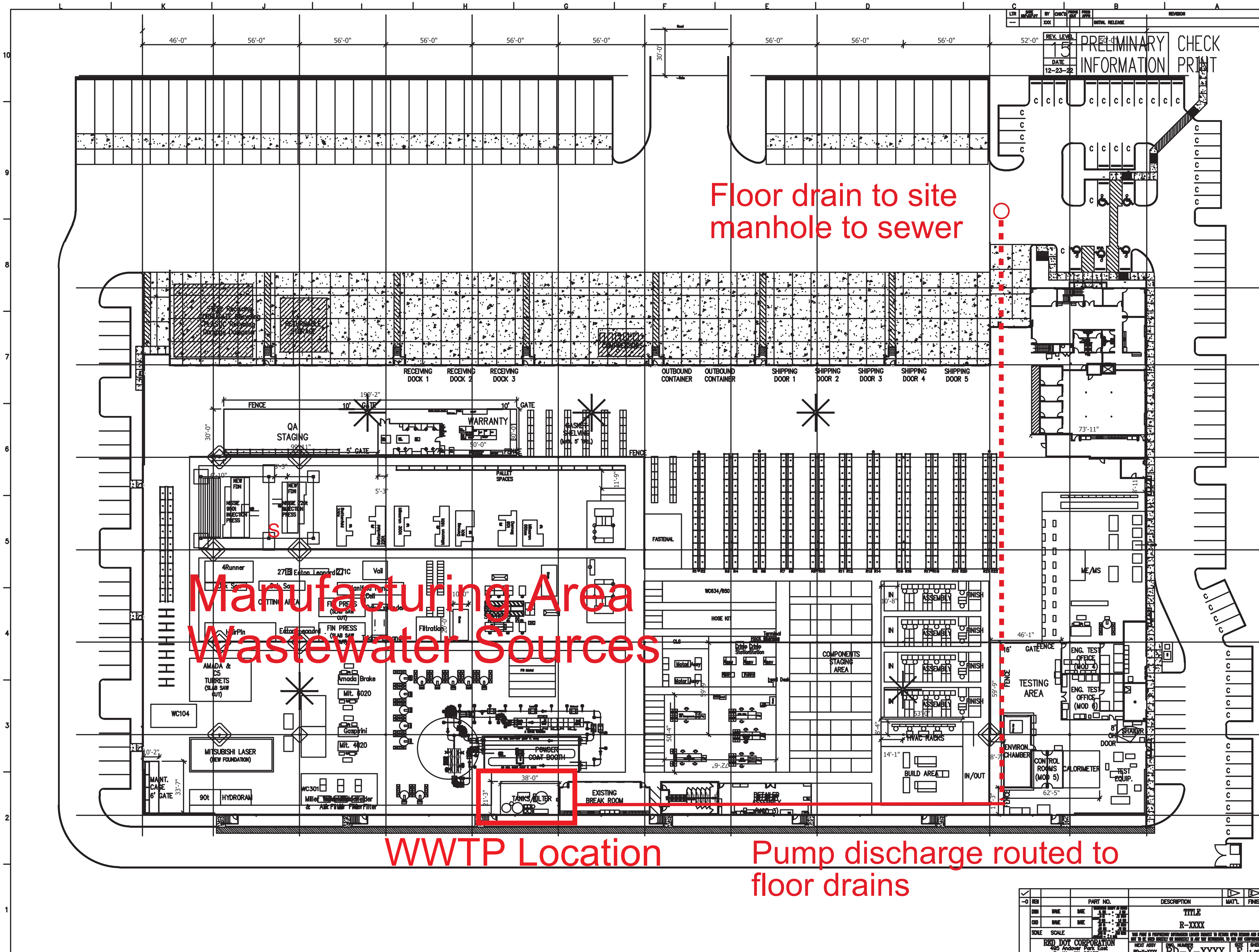
6.2 Operations and Maintenance Manual

An operations and maintenance manual was created for the system while it was operating at the Tukwila facility. It will be updated to reflect configuration changes and administrative changes associated with new contact information and reporting requirements.

7 References

Advanced Chemical Technologies, 2012. *Professional Engineer's Report: Waste Water Pre-Treatment System*. Prepared for Red Dot Corporation. August 2012.

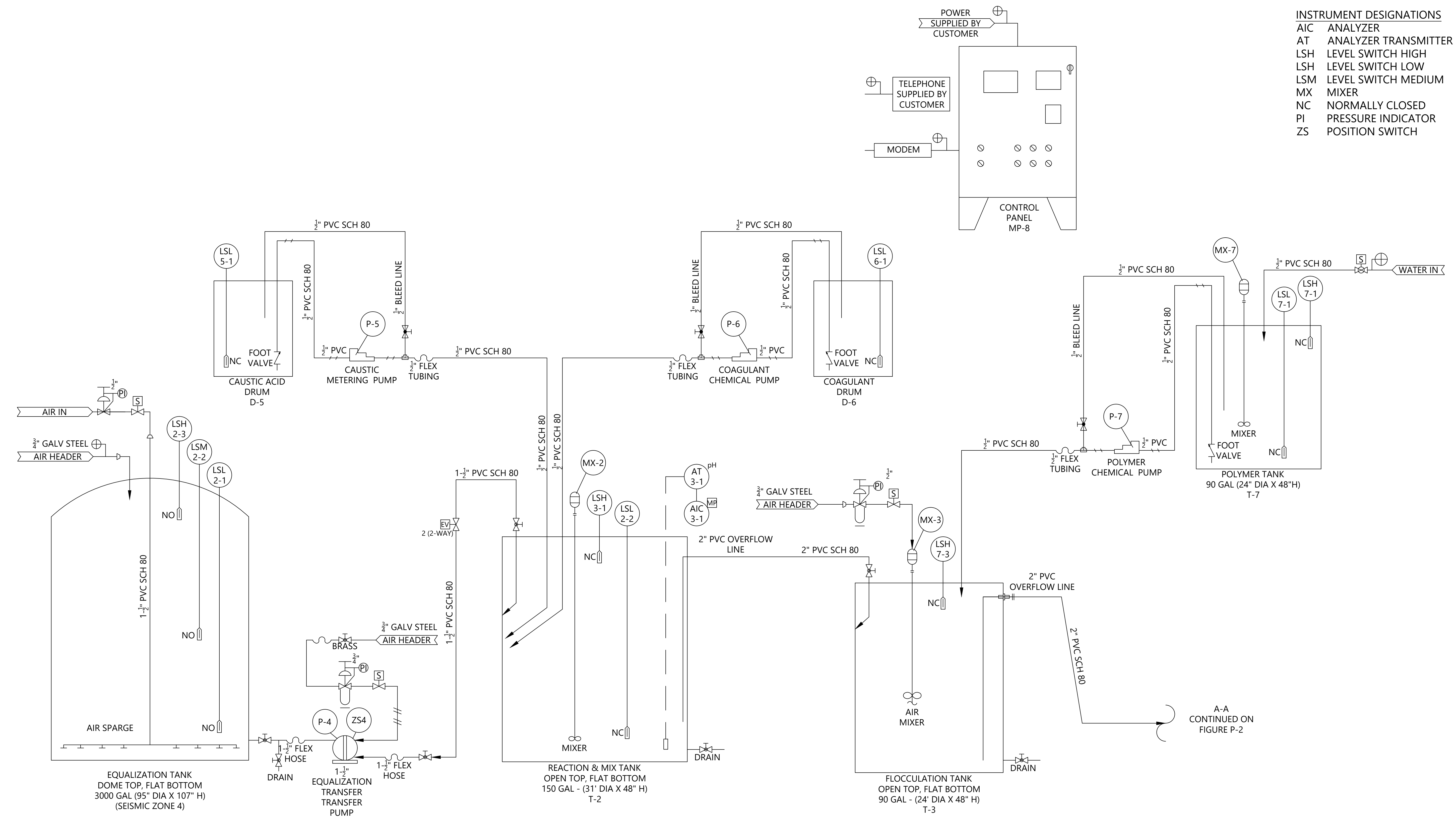
Appendix A
Facility Industrial Wastewater Site Plan



PRELIMINARY INFORMATION
CHECK PRINT
Floor drain to site manhole to sewer
Manufacturing Area Wastewater Sources
WWTP Location
Pump discharge routed to floor drains
RECEIVING DOCK 1
RECEIVING DOCK 2
RECEIVING DOCK 3
OUTBOUND CONTAINER
OUTBOUND CONTAINER
SHIPPING DOOR 1
SHIPPING DOOR 2
SHIPPING DOOR 3
SHIPPING DOOR 4
SHIPPING DOOR 5
QA STAGING
WARRANTY
FENCE
GATE
PALLET SPACES
FASTENAL
COMPONENTS STAGING AREA
ASSEMBLY
FINISH
HVAC RACKS
BUILD AREA
IN/OUT
TESTING AREA
ENG. TEST OFFICE (MOD 4)
ENG. TEST OFFICE (MOD 6)
ENVIRON. CHAMBER
CONTROL ROOMS (MOD 5)
CALORIMETER
TEST EQUIP.
ME/MS
POWDER COAT BOOTH
TANKS FILTER
EXISTING BREAK ROOM
MITSUBISHI LASER (NEW FOUNDATION)
AMADA & C5 TURRETS (SLAB SAW CUT)
WC104
WC301
HYDRORAM
MAINT. CAGE 6' GATE
4Runner
Amada Brake
Filtration
FIN PRESS
38'-0"
RED DOT CORPORATION
495 Andover Park East
Seattle, WA 98188
TITLE
R-XXXX
RD-X-XXXX
DATE 12-23-22

Appendix B

Process and Instrumentation Diagrams

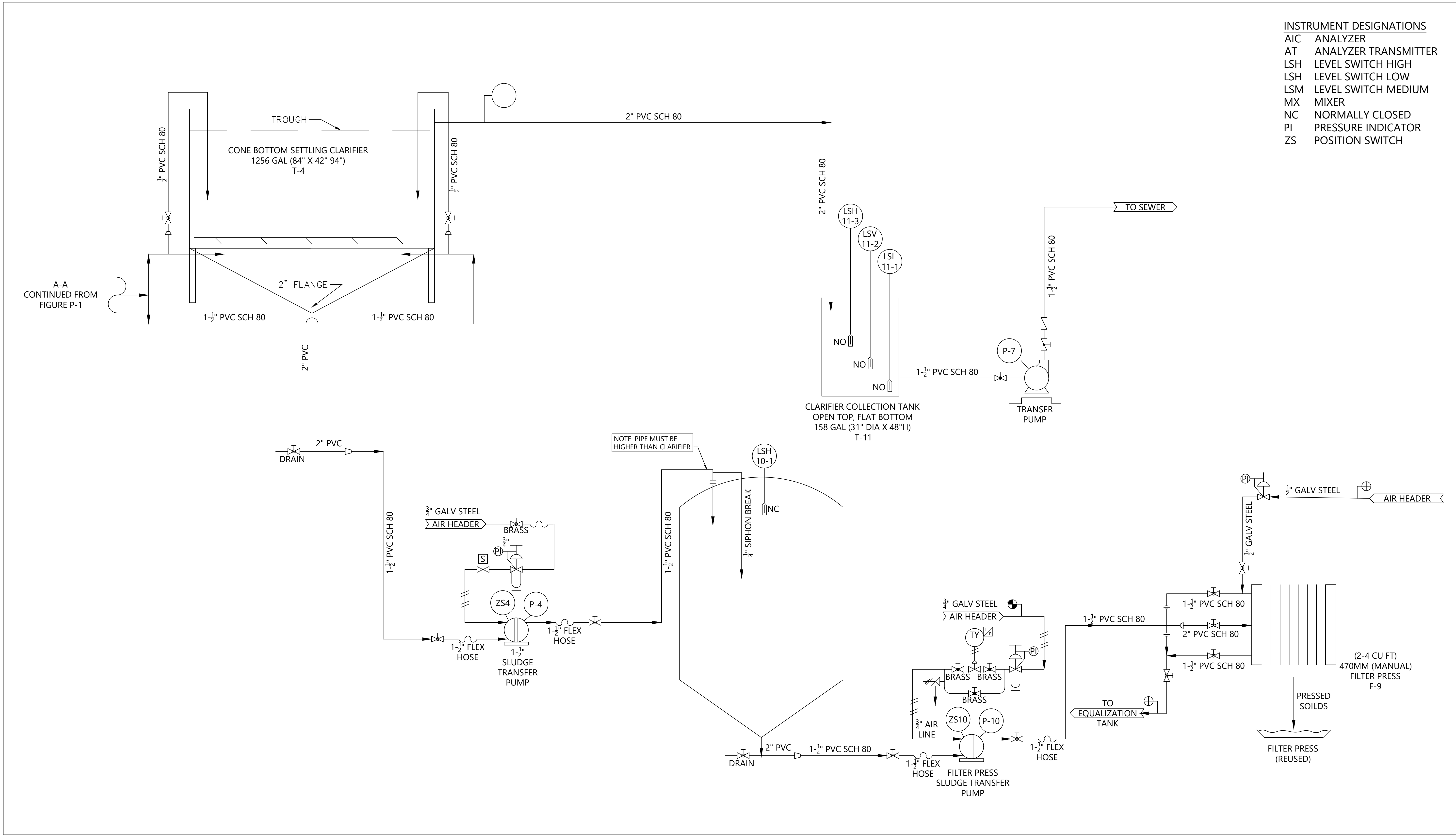


Publish Date: 2024/06/21 10:06 AM | User: ccopper
Filepath: K:\Projects\2934-RedDotCorp\Puyallup Facility\Wastewater Discharge Permitting\2934-RP01-10 GPM WASTERWATER.dwg FIGURE P-1

ANCHOR QEA

FIGURE P-1
Chemical Coagulation Process

Industrial Wastewater Treatment System
Red Dot Puylallup Manufacturing Facility



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Filepath: K:\Projects\2934-RedDotCorp\Puyallup Facility\Wastewater Discharge Permitting\2934-RP01-10 GPM WASTERWATER.dwg FIGURE P-2

ANCHOR QEA

FIGURE P-2
Solids Separation and Effluent Processes

Industrial Wastewater Treatment System
Red Dot Puylallup Manufacturing Facility