STORMWATER POLLUTION CONTROL PLAN (SWPCP)
For

Site Name: Navigation Base
Site Operator: Port of Portland

DEQ File Number: 125569
EPA Number: ORR807320

Contact Person:
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Site Physical Address:
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Portland, OR 97210-1315

Mailing Address:
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Portland, OR 97208-3529

Plan Date:
February 10, 2025

Standard Industrial Classification (SIC) Codes

The Port of Portland Navigation Base is a facility with a primary function of providing maintenance and storage for dredge support equipment. The primary SIC code is ***1629 – Heavy Construction Other Than Building Construction – Not Elsewhere Classified***

Certification

The signer below is duly authorized to sign all reports, updates and revision requirements of the National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit. In signing the Stormwater Pollution Control Plan (SWPCP), the authorized facility representative is attesting that the information contained in the plan is true and accurate. The authorized person's signature is required for all facilities covered by General Stormwater Permits, regardless of the number of employees or acreage of disturbance on the site.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____

Signature Date

Stan Jones
Sr Manager, Environmental Mixed Media

STORMWATER POLLUTION CONTROL PLAN CHECKLIST

SITE NAME: NAVIGATION BASE NAME DEQ FILE NO. 125569

Permit Schedule		SWPCP Required Element	Page No.	Comments (Official Use Only)
New Discharger	Condition I.1.a or b	A new discharger to an impaired water without a TMDL must meet one of the conditions in this section of the permit to obtain coverage	NA	
Signature	A.8.b.	Signed and certified in accordance with 40 CFR 122.22	II	
Title Page	A.10.a.	Plan date	I	
		Name of the site	I	
		Name of the site operator or owner	I	
		Name of the person(s) preparing the SWPCP	I	
		DEQ File No. and EPA Permit No.	I	
		Primary SIC code and any co-located SIC codes	I	
		Contact person(s) name, telephone number and email	I	
		Physical address, including county	I	
		Mailing address if different	I	
General Location Map	A.10.b.i.(1)	General location of the site in relation to surrounding properties, transportation routes, surface waters and other relevant features.	Figure 2	
Site Map* (please identify clearly)	A.10.b.i (2-19)	Drainage patterns, with flow arrows	Figure 2	
		Conveyance and discharge structures, such as piping or ditches	Figure 2	
		Exact location of all monitoring points labelled with a unique three-digit identifying number starting with 001, 002, etc.	Figure 2	
		Outline of the drainage area for each discharge point	Figure 2	
		Paved areas and buildings within each drainage area	Figure 2	
		Locations of discharge points if different from monitoring points	Figure 2	
		Areas used for outdoor manufacturing, treatment, storage, or disposal of significant materials	Figure 2	
		Areas of known or discovered significant materials from previous operations	NA	
		Existing structural control measures for minimizing pollutants in stormwater runoff	Figure 2	
		Structural features that reduce flow or minimize impervious areas	Figure 2	
		Material handling and access areas	Figure 2	
		Hazardous waste treatment, storage and disposal facilities	Figure 2	
		Location of wells including waste injection wells, seepage pits, drywells	NA	
		Location of springs, wetlands and other surface waterbodies both on-site and adjacent to the site	Figure 2	
		Location of groundwater wells	NA	
		Location and description of authorized non-stormwater discharges	NA	
		Location and description of spill prevention and cleanup materials	Figure 2	

Permit Schedule		SWPCP Required Element	Page No.	Comments (Official Use Only)
		Locations of the following materials and activities if they are exposed to stormwater and applicable:	Figure 2	
		Fueling stations	Figure 2	
		Vehicle and equipment maintenance cleaning areas	Figure 2	
		Loading/unloading areas	Figure 2	
		Locations used for the treatment, storage, or disposal of wastes	Figure 2	
		Liquid storage tanks	Figure 2	
		Processing and storage areas	Figure 2	
		Immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste materials, or by-products used or created by the facility	Figure 2	
		Transfer areas for substances in bulk	Figure 2	
		Machinery	Figure 2	
		Locations and sources of run-on to your site from adjacent property	NA	
Site Description*	A.10.b.ii	A description of industrial activities conducted at the site and significant materials stored, used, treated or disposed of in a manner which exposes those activities or materials to stormwater. Include in the description the methods of storage, usage, treatment or disposal	2-1	
	A.10.b.iii	Location and description, with any available characterization data, of areas of known or discovered significant materials from previous operations	NA	
	A.10.b.iv	Regular business hours of operation	2-1	
	A.10.b.v	For each area of the site where a reasonable potential exists for contributing pollutants to stormwater runoff, a description of the potential pollutant sources that could be present in stormwater discharges and if associated with a co-located SIC code	2-9	
	A.10.b.viiii	An estimate of the amount of impervious surface area (including paved areas and building roofs) and the total area drained by each stormwater discharge point to be reported in area units	2-4	
	A.1.k	Non-stormwater discharges	3-19	
Site Controls*	A.10.b.vi	A description of control measures installed and implemented to meet the technology and water quality-based requirements and any applicable sector-specific requirements in Schedule E	NA	
		A description of how the stormwater control measures address potential pollutant sources from industrial activities and significant materials on-site, spills and leaks and authorized non-stormwater discharges	3-12	
	A.1.a	Minimize exposure	3-12	
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Permit Schedule		SWPCP Required Element	Page No.	Comments (Official Use Only)
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		Indicate who is responsible for on-site management of significant materials and include their contact information	4-1	
		Spill prevention plans required by other regulations may be substituted for this provision if the spill prevention plan addresses stormwater management concerns and the plan is included with the SWPCP	NA	
	A.1.h.v	Develop procedures for expeditiously stopping, containing and cleaning up leaks, spills and other releases	4-3	
	A.1.h.vi	Documentation and notification, including OERS number	4-2	
	A.1.i and A.10.d	**Preventative Maintenance:**	3-17	
		Procedures for conducting inspections, maintenance and repairs to prevent leaks, spills, and other releases from drums, tanks and containers exposed to stormwater	3-20	
		Schedules or frequency of maintaining all control measures	3-21	
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	A.10.e	**Operations and Maintenance:**	App D	
		Include an operation and maintenance plan for active treatment and passive treatment systems	App D	
		Include system schematic, manufacturer's maintenance and operations specifications	App D	
		Include routine maintenance standards and schedules	App D	
	A.10.f and A.1.j	**Employee Education:**	3-19	
		Develop and maintain an employee orientation and education program to inform personnel of the pertinent components and goals of this permit and the SWPCP	3-19	
		Orientation no later than 30 calendar days of hire or change in duties, annually thereafter	3-19	
		Include a description of the training content and the required frequency	3-19	
Tier 2 Status	A.10.b.vii	Facility triggered Tier II under current permit ☐ Yes A description of stormwater treatment controls or source controls, including low impact development, in response to corrective action requirements and operation and maintenance procedures	3-20	
		Include safety sheets for any stormwater treatment chemicals or substances used in stormwater treatment and stored on site	NA	
Receiving Waters	A.10.b.ix	The name(s) of the receiving water(s), latitude and longitude of discharge points, and applicable SIC code, if facility has co-located operations	2-4	

Permit Schedule		SWPCP Required Element	Page No.	Comments (Official Use Only)
		If discharge point is to a municipal storm sewer system, name(s) and latitude and longitude of the receiving water and municipality	2-4	
Monitoring Locations*	A.10.b.x	The identification of each discharge point and the location(s) where stormwater monitoring will occur as required by Schedule B.6	2-4	
		Existing discharge points excluded from monitoring must include a description of the discharge point(s) and data or analysis supporting that the discharge point(s) are substantially similar as described in Schedule B.7.c.ii	NA	
**Some facilities must meet sector specific requirements (Schedule E) and include additional information in SWPCP, including the site map. If applicable, ensure that the SWPCP includes the sector specific information.*				

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Acronyms

AST	Aboveground Storage Tank
BMP	Best Management Practices
CDS	Container Distribution Center
CEG	Certified Engineering Geologist
CERCLA	Comprehensive Environmental Recovery, Cleanup, and Liability Act
CFR	Code of Federal Regulations
COD	Chemical Oxygen Demand
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning Community Right to Know Act
mg/l	Milligrams per Liter
ml	Milliliter
SDS	Safety Data Sheet
NPDES	National Pollutant Discharge Elimination System
OAR	Oregon Administrative Rule
PE	Professional Engineer
S.U.	Standard Unit
SARA	Superfund Amendments and Reauthorization Act
SIC	Standard Industrial Classification
SPCC	Spill Prevention, Control, and Countermeasure Plan
SWPCP	Stormwater Pollution Control Plan
TMDL	Total Maximum Daily Load

Section 1: Introduction

This Stormwater Pollution Control Plan (SWPCP) was prepared to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) Industrial Stormwater Discharge Permit No. 1200-Z (1200-Z permit), effective July 1, 2021.

This SWPCP applies to the permitted area of the Navigation Base shown in Figure 2 and stormwater discharges associated with industrial activities discharging to the Willamette River. This SWPCP was written to summarize the industrial activities and best management practices (BMP) applicable to the Port of Portland (Port). If industrial activities are planned that are not addressed in this SWPCP, appropriate changes will be made to the SWPCP consistent with the timelines identified in the 1200-Z permit.

A current copy of the SWPCP will be kept at the Port headquarters office and electronic copies are available on site. A copy will be made available upon request to government agencies responsible for stormwater.

1.1 Purpose of Plan

This plan identifies potential sources of pollution that may affect the quality of stormwater discharges associated with the Navigation Base, evaluates the potential for stormwater contamination from these sources, and presents BMPs that are used at the facility for reduction of pollutants in stormwater discharges. This SWPCP accomplishes pollution prevention by meeting three main objectives:

1. Identify the potential sources of pollution that affect the quality of stormwater discharges;

2. Describe the implementation of BMPs to reduce pollutants in stormwater discharges; and

3. Address compliance terms and conditions of the 1200-Z permit issued by DEQ.

1.2 Plan Organization

The attached SWPCP checklist references the 1200-Z permit requirements and the corresponding sections of this SWPCP.

1.3 Definitions

The following definitions are defined by the stormwater discharge permits issued by DEQ and EPA:

Corrective Action Plan means an addendum to the SWPCP developed in response to modification to the SWPCP or in response to a benchmark exceedance.

Best Management Practices (BMPs) are schedules of activities, prohibitions of practices, maintenance procedures, and other management practices designed to prevent

or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, and/or drainage from raw material storage. (EPA)

CERCLA is the Comprehensive Environmental Response, Compensation, and Liability Act. It is commonly referred to as the Superfund Act. (EPA)

Clean Water Act (CWA) was formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972. (EPA)

EPCRA is the Emergency Planning Community Right to Know Act. (EPA)

Hazardous Materials as defined in *The Code of Federal Regulations*, 40 CFR 302 - Designation, Reportable Quantities, and Notification.

Material Handling Activities include the storage, loading and unloading, and transportation or conveyance of raw material, intermediate product, finished product, by-product, or waste product.

Non-stormwater Discharges are not permitted under the new 1200-Z permit except where specifically authorized. This permit does not authorize the discharge of process wastewaters, vehicle wash waters, cooling waters, or any other wastewaters associated with the facility. Other discharges must be addressed in a separate NPDES permit.

Point Source Discharge is any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.

Reportable Quantities are those quantities of hazardous substances listed in Table 117.3 of *The Code of Federal Regulations*, 40 CFR 117.

Significant Material includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of the Comprehensive Environmental Recovery, Cleanup, and Liability Act (CERCLA); any chemical the facility is required to report pursuant to Section 313 of Title III of Superfund Amendments and Reauthorization Act (SARA); fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with stormwater discharges.

Significant Quantity is the volume, concentration, or mass of a pollutant in a stormwater discharge that can cause or threaten to cause pollution, contamination, or nuisance, adversely impact human health or the environment, and cause or contribute to a violation of any applicable water quality standards for the receiving water.

Stormwater is the runoff from a storm event, snow melt runoff, and/or surface runoff and drainage. It does not include infiltration and runoff from agricultural land.

Stormwater Associated with Industrial Activity is the discharge from any conveyance that is used for collecting and conveying stormwater directly pertaining to manufacturing, processing, or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program. The term includes, but is not limited to, stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials and intermediate and finished products; and areas where industrial activity has taken place in the past at which significant remaining materials are exposed to stormwater. The term also includes stormwater discharges from all areas listed in the previous sentence (except access roads) where material handling equipment or activities, raw materials, intermediate product, final products, waste materials, by-products, or industrial machinery **are exposed to stormwater**. Material handling activities include the: storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product, or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots, as long as the drainage from the excluded areas is not mixed with stormwater drained from the above-described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the descriptions of the facilities listed in this paragraph) include those facilities designated under 40 CFR 122.26(a)(1)(v).

Toxic Concentration refers to lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100-percent effluent in an acute bioassay test.

1.4 Information Sources

Sources of information used to assist with the development of this SWPCP include the following:

- Port of Portland Navigation Base Spill Prevention Control and Countermeasure Plan
- Port of Portland 2017, Navigation Base 1200-Z Stormwater Pollution Control Plan
- Gresham Smith and Partners, Inc. 2015 Draft 1200-Z Stormwater Pollution Control Plan
- 1200-Z Permit (July 1, 2021 through June 30, 2026)
- NPDES 1200-Z, 1200-ZN and 1200-COLS General Permits, applying for Permit Coverage, Developing Your Stormwater Pollution Control Plan: Technical Assistance for Industrial Operators, October 2018. Oregon DEQ
- 40 CFR Part 122 (Final Rule)

Information was also provided by the following individuals who are knowledgeable in stormwater management and familiar with the facility:

- Blake Hamalainen, Environmental Specialist
- Richard Vincent, Sr Environmental Planner
- Erin Anderson, Environmental Specialist
- Amanda Coleman, Manager, Engineering Innovation
- Kat Maloney, GIS Analyst
- Don Tjostolvson, Director, Navigation
- Pat Grill, Marine Maintenance Manager
- Dan Corey, Chief Engineer, Navigation
- Neil DeRosier, Shore Superintendent, Navigation
- Ron Norton, Welder, Navigation

1.5 SWPCP Revisions

The SWPCP must be updated to reflect any substantial changes to industrial activities or BMPs at the site within 30 days of the change. Not all revisions to the SWPCP require re-submittal. SWPCP revisions must be submitted only if they are made for any of the following reasons:

- Change in site contact(s);
- In response to a corrective action or inspection;
- Changes to the site or control measures that may significantly change the nature of pollutants present in stormwater discharge; or significantly increase the pollutant(s) levels, discharge frequency, discharge volume or flow rate; and
- Changes to the monitoring points or discharge points.

The Port will submit the required SWPCP revisions to DEQ. The Port will keep a copy of the revised SWPCP on site and at the Port Headquarters office and document the changes in the Record of Change form in Appendix B.

Section 2: Site Description

The Port Navigation Base facility is located adjacent to the Willamette River in the Swan Island industrial park in Portland, Oregon (see General Location Map, Figure 1). Facility address, business hours and site contact information are presented in Table 2-1. Stormwater from the Port Navigation Base facility drains via a system of catch basins and pipes that flow to the City of Portland's MS4 then to the Willamette River via a City of Portland outfall as well as direct discharges to Willamette River from the mooring barge (see Section 2.2 below).

Table 2-1: Facility Location and Emergency Contacts

Facility Name: **Facility Address:**	Port of Portland Navigation Base 6208 N. Ensign Street, Portland, OR 97210-1315	
Regular business hours of operations	0700-1530	
Emergency contact: (Spills and Security)	Don Tjostolvson, Navigation Director	**Phone #:** 503-703-4912 (mobile)
Stormwater contact:	Blake Hamalainen	**Phone #:** 503-341-7836 (mobile)
Port Communication Center:		**Phone #:** 503-460-4000

2.1 Industrial Activities Conducted On-Site

The Port of Portland Navigation Base facility maintains equipment used for dredging operations. The facility encompasses approximately 4.8 acres and 4.35 acres are used for industrial activities and covered under the 1200-Z permit. Typical activities for the Navigation Base involve pipe welding, equipment maintenance, fueling, and pesticide mixing.

2.2 Receiving Waters and Discharge Points

The Navigation Base is located in an industrial area adjacent to the Willamette River. Runoff from paved and rock areas (Basin A) is directed toward two catch basins that discharge to the Willamette River via the City's MS4 through Discharge Point 001 (Outfall SJ0m1). The latitude and longitude of Discharge Point 001 are 45.567815°N and 122.715926°W.

The mooring barges at the Navigation Base (Basin B) drain via sheet flow that is concentrated before discharging to the Willamette River via Discharge Point 002. The latitude and longitude of Discharge Point 002 are 45.567078°N and. 122.714935°W.

There is an upland area (Basin C) that infiltrates through sand and gravel and does not discharge directly to the Willamette River.

2.3 Drainage Basin Descriptions and Monitoring Points

There are three drainage basins that cover approximately 4.52 acres within the permit boundary at the Navigation Base. Below is a description of each drainage basin. Run-on from off-site areas is not known to occur at the Navigation Base. The impervious area, total acreage, and final discharge location is summarized for each drainage basin in Table 2-2 below.

Table 2-2: Drainage Basins

Drainage Basin	Impervious Area Acres	Total Area Acres	Drainage area Discharge Location
Basin A	0.94	1.99	Drains to two catch basins which flow to the City's MS4 then to the Willamette River
Basin B	1.04	1.04	Sheet flows over the barge edge to the Willamette River
Basin C	0.04	1.49	Infiltrates through sand and gravel

Samples must be representative of the discharge. Unless approved in writing by DEQ, samples must be taken at monitoring points specified in the SWPCP before the stormwater joins or is diluted from areas outside the facility, wastewater, or any other waste stream, body of water or substance unless:

- Otherwise approved in writing by DEQ; or
- On-site stormwater flows are combined to utilize a common treatment facility (for example, a filter). In this case, monitor the discharge from the treatment facility.

The drainage basins discharging to the Willamette River in the Navigation Base permitted area are sampled and a description of the monitoring points is provided below.

Basin A (impervious upland area)
Basin A drains approximately 2 acres and contains asphalt parking areas, the administrative building, graveled areas and roadways. Stormwater is collected in two catch basins and conveyed to a pretreatment manhole where it is pumped to an Aquip treatment system prior to discharge to the City of Portland's MS4. Monitoring Point 001 is a manhole located near the facility entrance/exit gate. The City's MS4 discharges to the Willamette River through Discharge Point 001 (Outfall SJ0M1) adjacent to the Port's southwest property boundary line. Samples representative of Basin A runoff are collected from a manhole (Monitoring Point 001) upstream of the outfall to the river (see Figure 2).

There are two covered areas used for equipment and material storage. Drum Storage Area 1 (DS-1) is used for the storage of up to 55, 55-gallon drums. Drums contain various fluids and are stored under cover and in secondary containment. There is one 300-gallon double walled diesel above ground storage tank stored in this area. A contained pesticide mixing area is also located in the basin (see Figure 2).

Basin B (mooring barges)

Basin B drains approximately 1 acre and contains two mooring barges anchored along the shore that provide a working platform for the maintenance and storage of large pieces of dredging equipment. Stormwater is collected by four roof downspouts where it is treated by one of four portable media filters prior to discharging to the barge deck. Stormwater flows from the barge surface at different locations depending on the list of the barge; however, the barge predominately lists to the north; therefore, samples representative of Basin B are collected from the north side of the barge (Monitoring Point 002). If conditions change a new monitoring point will be proposed and this plan will be updated (see Figure 2).

The northwestern barge contains a welding shop and small mobile trailer used as a breakroom. Whenever possible, welding, and other maintenance activities take place inside the welding shop. The southeastern barge is generally used for the storage of dredge pipe and equipment. Welding also occurs on the southeastern barge, typically under cover and contained within a small structure.

Basin C (pervious sand and gravel area that infiltrates)
The central and eastern portion of the upland site is covered with sand and gravel surfaces and does not have storm infrastructure. Basin C is well maintained with gravel and does not overland flow to the river. No rivulets, riles or signs of runoff have been observed on the access road or other areas in Basin C. This area contains two structures, collectively named the maintenance shop, where maintenance is conducted. This area is also used for the storage of dredge support equipment. When the Dredge Oregon is not dredging a generator with a 67-gallon tank is stored on the south side of the maintenance shop. Also, when the Dredge Oregon is not dredging a mobile fuel truck and trailer, each equipped with a 1,000-gallon double-walled tank, are stored northeast of the maintenance shop.(see Figure 2).

2.4 Significant Materials

Significant materials will be handled or stored at the Navigation Base in a manner that minimizes exposure to stormwater. When possible, maintenance and shop activities occur within roofed buildings. Activities that could contribute pollutants to runoff include welding, equipment maintenance, material storage and fueling. ***There are no known areas of historical contamination or historical significant materials present on site.***

Federal regulations (40 CFR Part 112) require that facilities with oil-containing Aboveground Storage Tanks (AST) greater than 55 gallons totaling or exceeding 1,320 gallons, or total Underground Storage Tanks (UST) with capacity exceeding 42,000 gallons, must prepare a Spill Prevention Control and Countermeasure Plan (SPCC). The Port maintains an SPCC plan for the Navigation Base. The spill response section of the SPCC plan was referenced when preparing the spill prevention and response section of this SWPCP.

Multiple aboveground storage tanks, mobile storage tanks and portable containers containing petroleum products are stored in designated areas. A complete inventory of oil storage and use locations is listed in Table 2-3. Locations of storage areas are also shown in Figure 2.

Table 2-3 Storage Tanks and Locations

Container No.	Location	Substance Stored	Quantity (gallons)	Material of Construction	Alarm Systems	Secondary Containment/ Diversionary Structure	Containment Size (gallons)
BULK ABOVEGROUND STORAGE CONTAINERS							
AST-4	Maintenance Yard	Diesel	300	Steel	None	Double walled	>300
PORTABLE CONTAINERS, TOTES, AND DRUMS (Drums are not equipped with gauges)							
DS-1	Maintenance Yard	Gear oil, hydraulic oil used oil	Up to 55 drums	Steel/plastic	None	Plastic covered drum containment units with lids	>1,650
MOBILE GENERATORS							
P-3[(c)]	Shore Van	Diesel (generator tank)	44	Steel	Gauge	Diked/Double-walled	>80
FUEL TRUCK							
P-1[(b)(c)] MST	Maintenance Yard	Diesel	1,000	Steel	Stick gauge	Double walled	>1,000
P-2[(b)(c)] Truck Trailer	Maintenance Yard	Diesel	1,000	Steel	Leak detection gauge	Double walled	>1,000

Notes:
(b) These containers are not equipped with gauges; however, these containers are not filled onsite.
(c) These containers are only located on site on a seasonal basis when dredging operations are not being conducted. The P-2 tank trailer is drained prior to storage onsite and the fill port is tightly capped (wrench-tightened) to prevent filling.

2.5 Potential Pollutants

Outdoor activities include pipe welding, fueling, equipment welding and pesticide mixing. Maintenance and welding of equipment occurs indoors when it is possible for the equipment to be moved indoors. However, some equipment such as the exterior areas on the container cranes are too large or stationary and it is not possible to perform maintenance indoors. Pesticide mixing is conducted on a concrete pad that has a depressed grade, curbs and is hydraulically separated from the storm sewer system. The list of potential pollutants is listed in Table 2-4.

Table 2-4: Significant Materials and Potential Source Descriptions

Industrial Activity	Associated Pollutants	Facility Location(s)
Vehicle and Equipment Fueling	Petroleum Hydrocarbons	Basin A and B
Vehicle and Equipment Maintenance	Petroleum Hydrocarbons, Oil, Grease, Hydraulic Fluids, Solvents, and Metals	Basin B and C

Vehicle and Equipment Storage	Petroleum Hydrocarbons, Oil, Grease, Hydraulic Fluids, and Metals	Basin A, B and C
Bulk Petroleum Storage	Petroleum Hydrocarbons	Basin A and B
Portable Oil Storage	Oil, Grease, and Hydraulic Fluids	Basin A and B
Waste Storage and Disposal	Solids, Oil, and Other Wastes	Basin A
Grinding and Welding	Metals	Basin A and B
Material Storage	Metals	Basin A
Pesticide Mixing	Pesticides	Basin A

2.6 Sector-Specific Source Identification

The 1200-Z permit includes sector-specific requirements, including identification of industry-sector specific sources. The Port of Portland Navigation Base facility does not fall under any of the sector specific SIC code

2.7 Underground Injection Control Rules and Regulations

The Oregon Administrative Rules (OAR) 340-044-0050 regulate the discharge of waste, including stormwater discharges, into underground injection control (UIC) systems. The 1200-Z permit requires that all permittees comply with these regulations.

It is the Port's policy that no new UICs be created when there are other means of disposal available (i.e. stormwater system, sanitary system, off-site disposal). If a UIC is the only option, it must be approved in writing by the Port, and it shall be constructed, registered and operated in accordance with the UIC rules and regulations to protect groundwater. There are currently no known UICs at Navigation Base.

Section 3: Site Controls

3.1 General

Implementation of site stormwater pollution controls helps reduce the concentrations of pollutants in the stormwater runoff. Source controls are usually the most effective mechanisms for decreasing contamination and are typically less expensive than constructing end-of-pipe treatments.

Oregon is an EPA NPDES-authorized state with the authority to write general permits. DEQ has established benchmarks as a means of assessing pollution control effectiveness. Benchmarks are not effluent limits. The Port follows the intent of the 1200-Z permit by implementing appropriate stormwater controls to reduce pollutant concentrations. BMPs and stormwater pollution controls outlined in the following sections are implemented even if the benchmarks are not exceeded.

3.2 Stormwater Best Management Practices

Stormwater management controls are often categorized as source controls that minimize exposure of pollutants to precipitation and runoff, and treatment measures to remove pollutants from stormwater. Both types of controls help reduce the amount of pollutants in the stormwater discharge.

Source controls help reduce the contact of stormwater with potential pollutants. The overall intent of the NPDES stormwater regulations is to improve the quality of stormwater discharges by eliminating or reducing the exposure of stormwater to potential contaminants. Examples of source controls include good housekeeping, improved material handling techniques, secondary containment, and covering of potential pollutant areas.

Treatment is used to remove a pollutant after it has already entered the stormwater. Examples include oil/water separators, stormwater filter vaults, catch basins, and catch basin inserts.

The site controls required under the Schedule A, Technology Based Effluent Limits of the Permit are listed in the sections below.

3.2.1 Minimize Exposure

Minimize exposure of processing, and material storage areas, including loading and unloading, disposal, cleaning, maintenance and fixed fueling areas, to rain, snow, snowmelt and runoff.

- Locate materials and activities indoors–Welding and vehicle maintenance is conducted indoors or if this is not practicable due to equipment or vehicle size, work areas will be temporarily covered to reduce stormwater exposure.

- Use grading, berm, or curbing - Berms, bunds or curbs provide secondary containment for materials stored in ASTs. The pesticide mixing area in drainage basin A is located on a depressed concrete pad with curbs that contain spills or overspray from mixing activities. The concrete pad is hydraulically isolated from the storm system when in use. There are holes in the curbs that are plugged when mixing activities take place. The plugs are removed when the pad is not being used.

- Store all hazardous substances within berms or other secondary containment devices – All hazardous substances are stored under cover and in secondary containment at DS-1 (see Figure 2).

- Leak prone equipment and activities – Leak prone equipment and activities are located indoors or in containment systems. Drip pans or absorbents are used under or around leaking or leak-prone vehicles and equipment. Drain fluids from equipment and vehicles prior to on-site storage.

- Perform all cleaning operations indoors, under cover or in bermed areas that prevent runoff and run-on and captures overspray - Cleaning operations are not typically conducted on site. If cleaning activities are needed they will be performed in a manner that minimizes exposure to stormwater. Activities such as surface grinding are performed indoors, under cover or in an area that prevents runoff and run-on. Work areas are swept when work is complete or at minimum, the end of shift.

- No washing is performed at the Navigation Base.

- Clean up spills or leaks promptly using absorbents or other effective methods to prevent discharge of pollutants and use spill/overflow protection equipment. – Follow the Navigation Base spill response procedures for all spills and leaks. Spill kits are located in accessible areas and where spills have the potential to occur (see Figure 2).

- There are no known historically significant materials.

- The Port requires that all pesticide applicators working on Port property are licensed by the Oregon Department of Agriculture and receive annual training on pesticide BMPs. Maintenance staff use an Integrated Pest Management approach to minimize impacts to stormwater on all Port properties.

3.2.2 Oil and Grease

Employ oil/water separators, booms, skimmers or other methods to eliminate or minimize oil and grease contamination of stormwater discharges, where needed and as described below:

- A impermeable boom is anchored along the shore and deployed around both mooring barges to contain debris and potential spills.

- Catch basins are fitted with an inverted elbow outlet designed to trap floating oil and grease in the sump.

3.2.3 Waste Chemicals and Material Disposal:

Recycle or properly dispose of wastes to eliminate or minimize oil and grease contamination of stormwater discharges. Cover all waste contained in bins or dumpsters where there is a potential for drainage of stormwater through the waste to prevent exposure of stormwater to these pollutants. Acceptable covers include, but are not limited to, storage of bins or dumpsters under roofed areas and use of permanent lids.

- Waste chemicals generated at Navigation Base include used motor oils, hydraulic fluid, solvents, and paints. All hazardous waste (e.g., waste paint or solvents) are stored indoors or under cover and recycled or disposed of off-site by a licensed contractor.

- Small amounts of spent leak or spill response materials are placed in a plastic bag and disposed in a municipal waste dumpster. Larger quantities are placed in a drum, sealed, and picked up by a licensed contractor or Port Waste Specialist and disposed off site.

- Used batteries are stored in the DS-1 area in Basin A and picked up by a licensed contractor and disposed off site.

- Used oil is stored in DS-1 in Basin A and picked up by a licensed contractor Port Waste Specialist and disposed off site.

- Waste bins or dumpsters are equipped with lids and closed when not in use.

- Scrap metal is stored in a covered drop box or stored under cover, then picked up by an outside service and transported to an off-site recycling facility.

- Municipal and nonhazardous wastes are picked up by a municipal waste management provider and disposed of at a Subtitle D landfill.

3.2.4 Erosion and Sediment Control:

Stabilize exposed areas and contain runoff using structural and non-structural controls to minimize erosion of soil at the site and sedimentation. Employ erosion control methods such as vegetating exposed areas, graveling or paving to minimize erosion of soil at the site. Employ sediment control methods such as detention facilities, vegetated filter strips, bioswales, flow velocity dissipation devices or other permanent erosion or sediment controls to minimize sediment loads in stormwater discharges. For activities that involve land disturbance, the permit registrant must contact the local municipality to determine if there are other applicable requirements related to stormwater control.

- Sweeping of impervious surfaces is performed to remove accumulated sediment and dust, including paved areas within Basin A and impervious areas within Basin B impacted by maintenance or other industrial activities.

- Landscaped areas are well vegetated and regularly maintained.

- Filter inserts are installed in both catch basins to filter out sediment. Catch basins are cleaned and filter inserts are replaced semiannually or more frequent if needed.

- All Port construction contractors are required to comply with the Port's DEQ-issued NPDES General Construction Stormwater Permit No. 1200 CA. The Port implements construction specifications for "Required Environmental Practices for Construction" in order to minimize environmental risk at Port facilities. Contractors are required to follow the construction specifications pertaining to the Port's permit conditions. The Port prepares a project-specific erosion control plan and the contractor supplies supplemental information for the plan. The Port's engineering and environmental staff review the plans. In addition, all construction projects also follow the most current edition of the City of Portland's Erosion Control Manual.

- All Port construction inspectors are trained annually on appropriate construction erosion and sediment control measures to assist in the enforcement of mandatory erosion control measures.

- A pretreatment manhole and a Stormwater RX Aquip 160 treatment system was installed as part of the 2019 Tier 2 corrective action, see Section 3.2.10 and Appendix C. The new filters will reduce solids concentrations in stormwater discharged from the site.

3.2.5 Debris Control:

Employ screens, booms, settling ponds, or other methods to eliminate or minimize waste, garbage and floatable debris in stormwater discharges and ensure that this debris is not discharged to receiving waters.

- Employees are required to keep work areas clean and free of debris.

- Lot sweeping is conducted during times when wind is minimal. Use vacuum recovery lot sweeping equipment.

- Debris and trash are picked up on a routine basis and placed in covered dumpsters.

- Filter fabric inserts are used for debris control to ensure debris entering stormwater discharges from the site are minimized.

- A StormwateRx Aquip 160 treatment system with a CDS pretreatment manhole, was installed as part of the 2019 Tier 2 corrective action, see Section 3.2.10 and Appendix C. The new CDS unit targets debris and solids removal.

3.2.6 Dust Generation and Vehicle Tracking:

Minimize generation of dust and off-site tracking of raw, final, or waste materials.

- Sweeping of the parking lot is to remove dust and sediment that have accumulated on the pavement.

- The driveway and roadway leading to the driveway are paved to minimize off-site tracking of sediment or materials.

3.2.7 Housekeeping

Regularly inspect, clean, maintain and repair all industrial equipment and systems, and materials handling and storage areas that are exposed to stormwater to avoid situations that may result in leaks, spills, and other releases of pollutants discharged to receiving waters. Clean, maintain and repair all control measures, including stormwater structures, catch basins, and treatment facilities to ensure effective operation and in a manner that prevents the discharge of pollution.

Routinely clean all exposed areas that may contribute pollutants to stormwater using such measure as sweeping at regular intervals, litter pick-up, keeping materials orderly and labeled, and prompt clean-up of spills and leaks, proper maintenance of vehicles and stowing materials in appropriate containers.

Areas that may contribute to pollutants to stormwater will be kept clean and free of debris. Proper routine maintenance is performed on transportation vehicles, thereby minimizing the potential leakage of automotive components and exposure of stormwater to pollutants. The following measures will be implemented:

- Incidental spills at the site are cleaned up quickly.

- The asphalt parking area is swept to minimize debris, sediment and other pollutant build-up.

- Particulate matter, dust, and debris are promptly cleaned up, especially from areas where materials are loaded and unloaded, stored, or otherwise handled.

- When conducting maintenance of buildings, structures or dredging equipment, workers must eliminate the potential for spent abrasives, paint chips, welding debris and overspray to discharge into receiving waters or the storm systems. When possible, work is performed under cover, on an impervious surface, protected from stormwater run-on. Areas are swept and debris removed at end of shift.

- Materials and products are stored in designated areas and all containerized materials (e.g., fuels, paints, solvents, used oil, antifreeze) are stored in plainly labeled containers, under cover, and in a secure location away from drains. Covered secondary containment and enclosures are used for materials stored outdoors.

3.2.8 Vehicle and Equipment Maintenance

Prevent contaminants from vehicle and equipment maintenance from entering the stormwater drainage system. The following measures will be implemented:

- No wash downs are allowed to clean work areas. Rags or spill pads are used for cleaning small spills and a damp mop is used for general cleaning. Sorbent materials

including kitty litter, sawdust, spill pads, and spill booms may be used for containing large spills.

- Drip pans are placed underneath vehicles and equipment when performing maintenance such as removing parts, unscrewing filters, or unclipping hoses. Transfer of used fluids to the proper waste or recycling drums is conducted safely and promptly. Open containers, including full drip pans, are promptly drained or covered and labeled.

- Equipment taken to the site for repair is examined for leaks. Drip pans are placed under equipment to collect fluids for recycling or proper disposal.

- Fluids are drained and collected from damaged or leaking equipment. If equipment or vehicles are drained prior to arrival at the site, drip pans are still placed under them immediately to contain leakage since oils and other fluids may drip for several days. All fluids are disposed or recycled appropriately.

- All batteries are stored under cover in the DS-1 area (see Figure 2).

- Used degreasers, oil, oil filters, antifreeze, cleaning solutions, rags, and hydraulic fluid are stored indoors or undercover in secondary containment.

3.2.9 Stormwater Treatment System

Tier 2 source control and treatment measures have been implemented at the site and include a StormwateRx Aquip 160 filter with a CDS pretreatment hydrodynamic separator to filter stormwater from Basin A.

Portable media filters provide treatment to stormwater runoff from the weld shop roof on the mooring barge in Basin B. Treatment system maintenance activities are recorded on the monthly stormwater treatment system inspection and maintenance form and operation and maintenance information is provided in Appendix B.

3.2.10 Preventative Maintenance

Regularly inspect, clean, maintain, and repair all industrial equipment and systems and materials handling and storage areas that are exposed to stormwater to avoid situations that may result in leaks, spills, and other releases of pollutants discharged to receiving waters. Clean, maintain and repair all control measures, including stormwater structures, catch basins, and treatment facilities to ensure effective operation and in a manner that prevents the discharge of pollution. The preventative maintenance schedule for site controls is listed in Table 3-1.

- Monthly preventative maintenance inspections of the stormwater system, secondary containment, chemical transfer and storage areas and spill response materials are conducted by the Port or qualified representatives of the Port and reviewed by site management. Electronic copies of inspection forms are available on site and hard copies are kept by Environmental Operations at the Port's headquarters.

- Catch basins – There are 2 catch basins at Navigation Base that will be inspected monthly. Inspections include checking for the condition of grouting around the catch basin, misaligned covers, debris stuck in the cover, or any debris or other materials that may be covering the catch basin. Debris and other materials that may be blocking the catch basin inserts are cleared as soon as practicable. Repairs and clearing of debris are documented. Maintenance requests are made to resolve unusual damage or problems.

  Catch basins are scheduled to be cleaned semiannually and more often if needed. The structural condition of the catch basin is evaluated during the cleaning, recorded, and any needed repairs are conducted.

  Materials removed from catch basins are disposed of by Port of Portland Marine Facilities Maintenance (MFM) staff. Catch basin cleaning records and sample analysis results are recorded and kept on file by Environmental Operations in the Port's headquarters.

- Catch basin filters - The filters in the catch basins are inspected for oil saturation, correct installation, and absorbent material integrity and replaced semiannually or more often if needed.

- Portable media downspout filters – the media in the downspout filters located at the weld shop on the mooring barge is inspected monthly and replaced based on the results of performance sampling, typically every three years.

- Outside Storage Areas – Secondary containment areas, chemical transfer and storage areas, and spill response materials are inspected monthly. These inspections include inspecting any accumulated stormwater for a petroleum sheen. In addition, daily (prior to use) inspections of equipment (e.g., forklifts, transportation equipment, etc.) are completed.

Table 3-1: Preventative Maintenance Schedule for Site Controls

Site Control	Locations	Cleaning Frequency	Visual Inspection
Catch Basin Filters	Drainage basin A	Semiannual	Monthly
Portable Media Downspout Filters	Drainage basin B	Typically every three years	Monthly
Sweeping	Drainage basin A & B	Annual and as needed depending on operations	Monthly
Catch Basins	Drainage basin A	Semiannual or as needed	Monthly
StormwateRx Aquip	Drainage Basin A	See O&M in App D	Monthly
CDS Unit	Drainage Basin A	See O&M in App D	Monthly

3.2.11 Employee Education

The Port of Portland staff members undergo annual stormwater pollution prevention and spill control training. Training is typically performed in the winter or early spring This training is also provided to new employees (within 30 days of hire) whose work has the potential to impact stormwater quality. For all personnel, topics in the training session may include:

- Importance of preventing stormwater pollution, including measures to minimize exposure of stormwater to potential pollution
- Contents of the SWPCP as applicable to employee work
- Stormwater monitoring, inspections, reporting, and recordkeeping
- Spill prevention and internal reporting procedures
- Unauthorized discharges to the stormwater system
- Materials handling and storage procedures
- Used oil management
- Spent solvent management
- Disposal of spent abrasives
- Fueling procedures
- General good housekeeping practices
- Erosion and sediment control measures
- Painting and blasting procedures
- Used battery management

3.2.12 Non-Stormwater Discharges

Any discharges not authorized by the Permit are investigated and eliminated. The 1200-Z permit includes a list of authorized non-stormwater discharges. During monthly inspections, if signs of non-stormwater discharges in the stormwater conveyance and collection systems are documented.

The following nonstormwater discharges are authorized under the Permit:

- Landscape watering, providing pesticide and fertilizer use is in accordance with manufacturers' specifications.
- Potable water, including water line flushing.

- Pavement wash waters in which no detergents or hot water are used, no spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed), and washwater from surfaces that were swept immediately prior to washing.
- Routine external building wash-down water that does not use detergents or hot water.
- Fire hydrant flushing.
- Discharges from firefighting activities.
- Uncontaminated condensate from air conditioners, coolers, and chillers and other compressors.
- Exterior vehicle washwater that does not use hot water or detergent; restricted to a maximum of eight vehicles washed per week.
- Uncontaminated groundwater or spring water.
- Foundation or footing drains where flows are not contaminated with process materials.
- Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but not intentional discharges from the cooling tower (e.g., “piped” cooling tower blowdown or drains).

3.2.13 Schedule E Industry Sector Specific Housekeeping Measures

There are no additional Schedule E Industry Sector Specific SIC codes applicable to the Navigation Base.

3.2.14 Stormwater Best Management Practices Summary

Stormwater management controls that are presently in use at the site are listed in Table 3-2 and shown on Figure 2. When practical, maintenance activities are conducted indoors or under cover.

Table 3-2: Stormwater Best Management Practices Summary

Drainage Basin	Potential Sources[1]	Potential Pollutants	Site Specific BMPs
Basin A	• Vehicle traffic • Chemical mixing area • Employee parking • Equipment and drum storage, • Loading, fueling and cleaning • Waste and hazardous waste storage	• Debris • Metals • Petroleum hydrocarbons • Sediments • Metals • Petroleum hydrocarbons (fuels, lubes and waste oils) • Pesticides	• Pavement sweeping • Clean out catch basins • Sedimentation filters in all catch basins and replacement of catch basin filters • Monthly visual observation of catch basins and storage areas • Cover and secondary containment for hazardous and waste materials • Covered garbage and recycling dumpsters • Spill kits • Pesticide mixing pad has concrete curbs and is hydraulically separated • StormwateRx Aquip 160 treatment system with the CDS pretreatment
Basin B	• Equipment storage, loading, fueling, cleaning and equipment maintenance • Waste and hazardous waste storage • Vehicle movement • Fuel transfers • Welding and blasting	• Debris • Metals • Petroleum hydrocarbons (fuels, lubes and waste oils) • Solvents • Sediments	• Pavement sweeping • Monthly visual observation of the mooring barges • Spill kits • Fuel transfer procedure • Impermeable perimeter boom
Basin C	• Equipment storage, loading and maintenance • Vehicle movement • Storage of metal dredge equipment • Mobile fuel storage tank	• Debris • Metals • Petroleum hydrocarbons (fuels, lubes. waste oils) • Solvents • Sediments	• Monthly visual observation of maintenance and storage areas • Spill kits • Maintenance performed under cover • Materials stored under cover when possible

Section 4: Spill Prevention and Response Plan

4.1 Spill Prevention and Response Procedures

The following is a summary of spill response procedures.

PORT OF PORTLAND NAVIGATION BASE FACILITY SPILL RESPONSE PLAN

PLEASE REFER TO THE FOLLOWING PROCEDURES WHEN HANDLING A SPILL INCIDENT.

*** * * * * * * * * * THINK C-C-C * * * * * * * * CONTROL-CONTAIN-CALL* * * * * * * ***

#1 If it is safe to do so CONTROL the source of the spill. STOP the flow.

#2 If it is safe to do so CONTAIN the spill to the smallest possible area.

#3 CALL your supervisor for further instructions.

4.1.1 Emergency Contacts

SPILL RESPONSE/EMERGENCY CONTACTS
PORT OF PORTLAND NAVIGATION BASE FACILITY

The following are the phone numbers of supervisors to contact in the event of a spill:

Regardless of the time of the day.

EMERGENCY NOTIFICATION PHONE LIST		
PRIORITIZED CONTACT LIST	**RESPONSIBLE ROLE**	**PHONE NUMBER**
PORT CONTACTS		
1. PDX Comm Center	Notifies spill response team	503-460-4000
2. Don Tjostolvson, Navigation Manager	Incident Command and Control	503-240-2202 (office) 503-703-4912 (mobile)
EMERGENCY RESPONSE CONTRACTORS		
Telluric Enterprises LLC	Provide Spill Response and Cleanup Resources	503-505-1995
NRC Environmental Emergency Spill Response	Provide Spill Response and Cleanup Resources	1-800-899-4672
OTHER EMERGENCY NUMBERS		
Portland General Electric	Report problems or leaks with the transformer onsite	503-464-7777 or 1-800-544-1795

IF A SPILL REACHES OR HAS THE POTENTIAL TO REACH THE WILLAMETTE RIVER, GROUNDWATER OR THE STORMWATER SYSTEM, OR IF IN EXCESS OF 42 GALLONS[1], YOU MUST CALL:

[1] Petroleum product spills greater than 42 gallons to land (including soil, gravel, or asphalt, but not indoor areas that do not have the potential to reach waters of the state) that are not likely to contact waters of

(Spill reporting must be made as soon as possible after initial spill response and control)		
GOVERNMENT AGENCIES (Record name of person called and time of call)		
Fire/Police – Portland HAZMAT Team Time: _____ Name: _____	Assist in spill clean-up and fire control	911 and/or 1-800-823-3946
National Response Center (NRC) Time: _____ Name: _____	Incident Reporting: If spill exceed CERCLA Federal Response Quantity	1-800-424-8802
Oregon Emergency Response System (OERS) Time: _____ Name: _____	Incident Reporting Provide Spill Response Assistance	1-800-452-0311
Oregon Department of Environmental Quality Time: _____ Name: _____	Incident Reporting Provide Spill Response Assistance	1-800-542-4011
City of Portland Spill Notification Hotline Time:_____ Name:_____	Incident Reporting	503-823-7180
U.S. Coast Guard Time: _____ Name: _____	Incident Reporting	1-800-240-9370
EPA Office Time: _____ Name: _____	Incident Reporting	503-326-2715

4.1.2 Notification Procedure

In the event of a spill incident, facility personnel on-duty will take immediate action to notify the Port personnel identified on the list of emergency telephone numbers on the Emergency Contact List above. The designated person (or coordinator) accountable for spill prevention is responsible and required by federal and state laws to notify the applicable federal, state, and local agencies.

4.1.3 Spill Contingency Plan

In the event of an oil spill incident, facility personnel will follow the procedures outlined below:

- If safe, CONTROL THE SOURCE OF THE SPILL
  - Stop flow of product (secure valves and pumps)
  - Shut off ignition sources, if applicable.
- If safe, CONTAIN THE SPILL TO THE SMALLEST POSSIBLE AREA
- CALL YOUR SUPERVISOR FOR FURTHER INSTRUCTIONS
- REPORT THE SPILL TO PROPER SPILL REPORTING AGENCIES AS REQUIRED.

4.1.4 Spill Control Procedures

An oil spill incident could occur at the facility from the following situations:

- Hydraulic line rupture

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the state must be reported within one hour to OERS and the City of Portland Spill Notification Hotline. Release of hazardous materials equal to or greater than the quantity listed in 40 CFR Part 302 (Table 302.4—List of Hazardous Substances and Reportable Quantities) requires immediate notification of the National Response Center, OERS, and the City of Portland Spill Notification Hotline.

- Storage tank rupture
- Spill during loading/offloading operations
- Spill during fueling operations

Should a spill incident occur, facility personnel will immediately implement the following spill control measures to prevent a spill from entering navigable waters:

- Hydraulic line rupture
  - Turn off pump
  - Ensure that spilled oil is contained (see Section B4.0, Countermeasure Procedures)
  - Pump used oil into drums or other containers away from surface water or storm drains

- Storage tank rupture
  - Ensure that spilled fuel or oil is contained (see Section B4.0, Countermeasure Procedures)
  - Add water to provide layer of water on bottom
  - Pump used oil into drums or other containers

- Spill during fueling operations
  - Turn off pump
  - Ensure that spilled fuel is contained
  - Pump spilled fuel into drums or other containers

4.1.5 Countermeasure Procedures

Once the spill control procedures outlined above have been implemented, facility personnel initiate countermeasure activities to contain, cleanup, and mitigate the effects of a spill that could impact navigable waters. Furthermore, incident-specific considerations and precautions must also be implemented during each spill incident to adequately protect human health and the environment.

The facility's countermeasure procedures are outlined below.

- Containment. Containment activities are initiated as soon as safely possible to prevent spreading of the spilled material. Containment techniques include, but are not limited to:

  - Trenching and diking
  - Filter fences
  - Booms

- Removal. Once the spill is contained, removal techniques include, but are not limited to:

  - Pumps
  - Sorbents (pads, pillows, or booms)
  - Skimmers
  - Vacuum trucks

- Disposal. After the spill is contained, the site is cleaned up. This includes recycling any recovered oil, disposing of abatement materials used to contain and/or remove the spill, and excavating contaminated soil following all applicable laws and regulation. Disposal techniques include, but are not limited to:

  - Recycling
  - Disposal at an appropriate facility

4.1.6 Emergency Response Equipment Location

The following table identifies the type and location of the emergency response equipment available at the facility (Figure 2).

Table 4-1: Emergency Response Equipment Location

Identification	Location
Spill Kit #1	Adjacent to the drum storage and chemical mixing area
Spill Kit #2	Entrance to mooring barge ramp
Spill Kit #3	Southeast corner of the barge shop
Spill Kit #4	Drainage basin A next to the maintenance shop

Additional spill response equipment such as pumps, booms, and additional absorbents are available on a 24-hour basis from the emergency response contractors listed on the Emergency Notification Phone List.

4.1.7 Spill Cleanup Training

Appropriate Port personnel are trained in incidental spill cleanup procedures and how to use available Port cleanup equipment including absorbent mats, scoop shovels, brooms, and a highly absorbent sweeping compound. 55-gallon drums are designated for receiving spilled materials. Fire extinguishers and ventilation equipment are also available at the facility.

Section 5: Inspections and Recordkeeping

5.1 Monthly Inspections

Inspections are conducted monthly at the locations identified in Section 5.1.1 and on Figure 2. In addition, the stormwater pollution control measures are inspected. The results of the inspections are documented on the form included in Appendix B. Upon completion of the inspection, cleaning and repair activities are conducted and documented as described in Section 5.2.

Inspection forms are kept on file in the Port of Portland Administration Office.

The Port is responsible for conducting monthly inspections in compliance with Schedule B of the 1200-Z permit. Inspections of source areas and site controls are documented, kept for at least three years, and made available to the Port, DEQ, or City of Portland upon request.

Port staff or qualified designated personnel also conduct visual observation of stormwater at the monitoring points (see Figure 2) when discharge is occurring during regular business hours. Inspection parameters include the presence of floating and suspended solids, foam, visible oil sheen, odor, color, or other obvious indicators of stormwater pollution. Visual observations are conducted by collecting stormwater samples in a clean, colorless glass or plastic container and observing it in a well-lit area.

5.1.1 Inspection Areas

General inspection areas include:

- Catch basins
- Roofs, including downspouts, and covers for containment structures (for potential leaks)
- Secondary containment areas
- Storage tanks
- Material handling and storage areas
- Waste storage, handling, and process areas
- Areas of potential spills (for possible contamination)

Industry-specific inspection areas include the following:

- Pressure washing area
- Any blasting, sanding, and painting areas
- Material storage areas
- Engine maintenance and repair areas, material handling areas
- General yard area

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5.2 Cleaning and Repair Program

Cleaning, maintenance, and repair of material handling and storage areas and stormwater control measures, structures, catch basins and treatment facilities are performed in such a manner as to prevent the discharge of pollution. Catch basins are cleaned and inserts replaced by the Port's MFM Department. The structural condition of the catch basin is observed, and any needed repairs are conducted. Materials removed from catch basins are disposed of appropriately. Catch basin sediment is removed by MFM or a Port contractor. Catch basin cleaning records and water and sediment laboratory results are kept on file in the Port of Portland Administration Office.

The schedule for cleaning and repairing stormwater management control structures is based primarily on the results of the monthly inspections. The following cleaning and repair activities are conducted:

- Repair and cleaning of catch basins
- Regular replacement of catch basin filters
- Repair equipment and tanks where spills or leaks are possible
- Repair equipment and other vehicles to help prevent leaks

5.3 Record Keeping and Internal Reporting Procedures

The following records are maintained:

- A copy of this SWPCP and revisions
- A copy of the 1200-Z permit
- 1200-Z permit assignment letter and permit coverage documents
- Discharge Monitoring Reports (DMRs), laboratory reports, pH calibration, and field sampling notes
- Incidents of spills or leaks
- Sampling/monitoring program
- Inspection and maintenance records
- Employee training materials and records
- Tier 1 Reports and corrective action implementation records
- Documentation of any benchmark exceedance and corrective action taken
- Tier 2 Report and engineering evaluation of infiltration facilities, if applicable

Incidents of spills or leaks may require federal, state, or local agency notification. All records will be dated and signed by the person recording the events or activities. Records of the monthly inspections, preventative maintenance practices, cleaning and repair activities, and stormwater monitoring data are maintained for a period of **three years** with the SWPCP documentation. Training records are maintained in the Port Learning Management System (LMS).

Additional information regarding the monitoring data records is found in Section 5.8.

Section 6: Benchmarks and Corrective Actions

6.1 General

The Port is required to monitor for the Portland Harbor benchmarks and impairment pollutants and implement corrective actions in response to a benchmark exceedance as outlined in the following sections.

6.2 Water Quality Standards

The permit registrant must not cause a violation of instream water quality standards as established in OAR 340-041.

Water quality standards have been established for many parameters not specifically limited by the 1200-Z permit. These water quality standards shall not be violated in the receiving water.

6.3 Stormwater Discharge Benchmarks

Benchmarks are guideline concentrations, not limitations. They are designed to assist the Port in determining whether the implementation of their SWPCP is sufficiently controlling pollutant concentrations.

6.3.1 Portland Harbor Benchmarks

The following benchmarks apply to each discharge point associated with industrial activity (Table 6-1).

Table 6-1: Portland Harbor Stormwater Discharge Benchmarks

Parameter	Benchmark
Total Copper	0.015 mg/L
Total Lead	0.24 mg/L
Total Zinc	0.24 mg/L
pH	5.5 – 9.0 S.U.
Total Suspended Solids	30 mg/L

Notes:
mg/l – milligrams per liter
S.U. – standard unit

6.3.2 Impairment Pollutants

The Willamette River in the Portland Harbor is impaired for total iron and the Port is required to monitor stormwater discharges for total iron as shown in Table 6-2.

Table 6-2: Willamette River Impairment Pollutant

Parameter	Reference Concentration
Total Iron	10 mg/l

Notes:
mg/l – milligrams per liter

6.4 Response to Portland Harbor Benchmark Exceedance

6.4.1 Tier 1 Corrective Action Response

A Tier 1 Report must be prepared if stormwater sampling results exceed any of the Portland Harbor benchmarks in Schedule B.2 of the 1200-Z permit and summarized in Table 6-1, or visual observations of the discharge at the Monitoring Points that show visible signs of pollution. Such visible signs include the presence of floating and suspended solids, color, odor, foam, oil sheen, or other obvious indicators of pollution. The Port must complete the Tier 1 Report within 30 calendar days of obtaining the monitoring results or visual observations of pollution and include the following:

- Investigate the cause of the elevated pollutant levels.
- Review the SWPCP and the selection, design, installation, and implementation of control measures to ensure compliance with the 1200-Z permit. If the Port determines that SWPCP revisions are necessary based on corrective action review, submit the revised pages of the SWPCP to DEQ, including a schedule for implementing the control measures.
- Summarize the following information in a Tier 1 Report that is retained at the Port Administrative Offices and submitted to DEQ or Agent upon request:
    - The results of the investigation.
    - Corrective actions taken or to be taken, including date corrective action completed or expected to be completed. Where the Port determines that corrective action is not necessary, provide the basis for this determination. Document whether SWPCP revisions are necessary.
- Implement the corrective actions before the next storm event if possible or no later than 30 calendar days after receiving monitoring results or visual observations of pollution. If Tier 1 corrective actions take longer than 30 days, reasons for the delay must be documented.

6.4.2 Tier 2 Corrective Actions

If the geometric mean of the qualifying sampling results collected at any monitoring point exceeds an applicable Portland Harbor benchmark during any reporting year, or if 50 percent or more of the pH measurements collected at any monitoring point during two reporting years are outside the permitted range for pH, a Tier 2 Report, Tier 2 Mass Reduction Waiver Request, or Tier 2 Natural Background Waiver Request must be submitted to the DEQ no later than December 31 (six months after the end of the reporting year that triggered Tier 2) unless the DEQ approves a later date. The geometric mean of the qualifying samples must be reported on the DMR due by August 15, unless a monitoring waiver is granted. This evaluation consists of reporting all qualifying samples collected during the reporting year and comparing the geometric mean of the sample results to the Portland Harbor benchmarks to determine whether Tier 2 corrective action requirements were triggered. Confirmation of the corrective action must be sent to DEQ within 30 days of implementation, including a revised SWPCP showing the implemented measures.

6.4.3 Tier 2 Report

The Tier 2 Report must summarize proposed stormwater treatment measures or a combination of stormwater treatment and source control measures, designed by an Oregon-licensed professional engineer (PE) with the goal of achieving the applicable Permit benchmark. The Tier 2 Report should include a rationale for the selection of the treatment measures, the projected reduction of pollutant concentration(s), and the implementation schedule. The Tier 2 Report must be submitted by December 31 (six months after the end of the reporting year that triggered Tier 2) unless the DEQ approved a later date. and Tier 2 measures must be implemented no later than September 30 (a year and nine months after the Tier 2 Report deadline), unless a later date is approved by the DEQ in writing. The Tier 2 Report must be stamped by a PE licensed in Oregon.

6.4.4 Tier 2 Mass Reduction Waiver Request

A Tier 2 Mass Reduction Waiver Request may be submitted if volume-reduction measures (e.g., infiltration) have or will result in a reduction of the mass load of pollutant(s) in the discharge to below the mass-equivalent of the applicable statewide benchmark. The request must include data and analysis to support the rationale, including a description of the measure(s), a mass load analysis, and expected implementation date(s). The request must be stamped by a PE licensed in Oregon or a certified engineering geologist.

6.4.5 Natural Background Waiver Request

A Tier 2 Natural Background Waiver Request may be submitted if an exceedance of a Portland Harbor benchmark is attributed solely to the presence of the pollutant(s) in natural background and not associated with industrial activities at the site. The request must include the results of investigations and data collected on or around the site and/or published peer-reviewed studies. It should be noted that these waivers are usually not applicable to developed industrial sites.

6.4.6 Tier 2 Notifications

The Port must notify the DEQ in wringing within 30 days of completion of the Tier 2 measures and submit a revised SWPCP showing the implemented measures.

Section 7: Monitoring and Reporting Requirements

7.1 Minimum Reporting Requirements

The Port monitors stormwater at the designated monitoring points (see Figure 2) for the following:

Table 7-1: Primary Monitoring Parameters (Grab Samples)

Parameter	Frequency
Total Copper Total Lead Total Zinc pH[1] Total Suspended Solids	Four times per year (2 between July 1 and December 31; 2 between January 1 and June 30), unless a monitoring waiver is granted
Impairment Pollutants	
Total Iron	Four times per year (2 between July 1 and December 31; 2 between January 1 and June 30), unless a monitoring waiver is granted

Notes:
[1]The sampling crew will analyze for pH at each sampling site using a calibrated pH meter. The remainder of the analyses will be performed by an outside laboratory in accordance with EPA protocols.

Table 7-2: Visual Monitoring Parameters

Parameter	Frequency
Floating and Suspended Solids	Once a month (when discharging)
Visible Oil Sheen	Once a month (when discharging)
Foam	Once a month (when discharging)
Odor	Once a month (when discharging)
Color	Once a month (when discharging)
Other Obvious Indicators of Pollution	Once a month (when discharging)

7.2 Monitoring Waivers

7.2.1 Benchmark and Impairment Pollutant Monitoring

Per section B.9 (a) of the permit, The Port may request monitoring waivers after completing at least five rounds of sampling data under the following conditions:

- The geometric mean of five consecutive and qualifying sampling results is equal to or below the applicable Portland Harbor benchmarks.
- For pH, qualifying sample results are within the permitted range for five consecutive readings.

- When impairment monitoring results indicate non-detect for four consecutive and qualifying samples, or when after two full reporting years all qualifying sample results are equal to or below the impairment monitoring concentrations.

The Port may submit to DEQ a written request to request a monitoring waiver based on the conditions above and include the documentation to support the request. DEQ will notify the Port in writing if the monitoring waiver is approved. Until written approval is received the Port must continue monitoring. Approved monitoring waivers are in effect until July 1, 2025. Monitoring waivers do not apply to the first (2021-2022) and last (2025-2026) Permit reporting years.

There is no reduction in monitoring allowed for visual observations unless the site is inactive or unstaffed and there are no industrial materials or activities exposed to stormwater and permit registrant meets requirements in Schedule B.9.a.iv.1 of the permit.

The permit registrant must reinstate the monitoring of stormwater discharge if:

- Prior monitoring efforts used to establish the monitoring waiver were improper or sampling results were incorrect;
- Changes to site conditions are likely to affect stormwater discharge characteristics;
- Additional monitoring occurs and the sampling results exceed benchmark(s), or
- For inactive or unstaffed sites, the facility becomes active and/or staffed or industrial materials or activities become exposed to stormwater
- The monitoring waiver has expired (July 1, 2025)

DEQ will notify the Port in writing if the monitoring waiver is revoked. DEQ may revoke the monitoring waiver based on any of the above conditions, in response to an inspection or corrective action, or upon discovery of the discharge that has caused or contributed to a water quality standard exceedance.

7.3 Recordkeeping and Reporting Requirements

Detailed records must be maintained to provide quality assurance/quality control for a stormwater sampling program. Personnel use the forms provided in the monitoring plan to record the monitoring information. Components of the records management program include the following items:

- Field Data Sheets (pH measurements)
- Chain-of-Custody Forms
- Specific monitoring information (visual and grab sampling)

Records of monitoring information shall include:

- The date, exact place, time, and methods of sampling or measurements
- The individual(s) who performed the sampling or measurements
- The date(s) analyses were performed
- The individual(s) who performed the analyses
- The analytical techniques or method used
- The results of the analyses

The Field Data Sheets, Chain-of-Custody Forms, and the analytical results are maintained by the Port Environmental Operations Department.

7.3.1 Reporting Requirements

The stormwater monitoring period is July 1 through June 30. The Port submits DMRs to the DEQ's Northwest Regional Office quarterly on November 15, February 15, May 15 and August 15. In addition to the sampling data, a tabulated record of the visual observations is to be included. The monitoring information for the Navigation Base facility is submitted electronically, when directed by the DEQ, or paper submittal on DEQ-approved DMR forms. Reports are submitted to:

DEQ Northwest Region
700 NE Multnomah St., Suite #600
Portland, OR 97232

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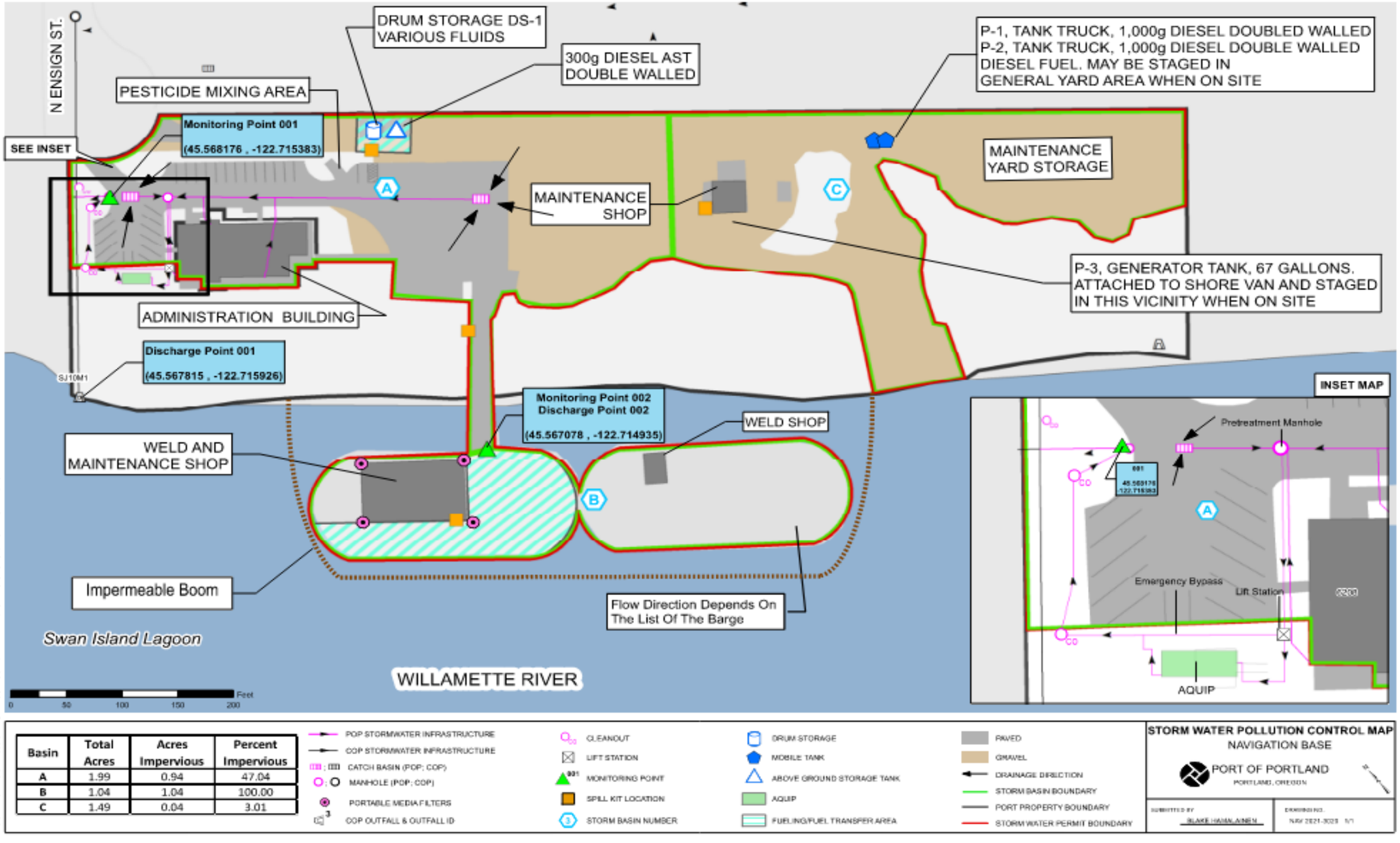
Figure 1 General Location Map

Figure 2: Site Map



Basin	Total Acres	Acres Impervious	Percent Impervious
A	1.99	0.94	47.04
B	1.04	1.04	100.00
C	1.49	0.04	3.01

POP STORMWATER INFRASTRUCTURE
COP STORMWATER INFRASTRUCTURE
CATCH BASIN (POP; COP)
MANHOLE (POP; COP)
PORTABLE MEDIA FILTERS
COP OUTFALL & OUTFALL ID

CLEANOUT
LIFT STATION
MONITORING POINT
SPILL KIT LOCATION
STORM BASIN NUMBER

DRUM STORAGE
MOBILE TANK
ABOVE GROUND STORAGE TANK
AQUIP
FUELING/FUEL TRANSFER AREA

PAVED
GRAVEL
DRAINAGE DIRECTION
STORM BASIN BOUNDARY
PORT PROPERTY BOUNDARY
STORM WATER PERMIT BOUNDARY

STORM WATER POLLUTION CONTROL MAP
NAVIGATION BASE
PORT OF PORTLAND
PORTLAND, OREGON

Appendix A

1200-Z NPDES Permit and Permit Assignment Letter

THE NPDES 1200-Z PERMIT HAS NOT BEEN ATTACHED TO THE SUBMITTAL FOR PAPER SAVING MEASURES.

THE PERMIT IS ON FILE. THE FACILITY SWPCP HAS THE PERMIT AVAILABLE.

Oregon
Kate Brown, Governor

Department of Environmental Quality
Northwest Region Portland Office/Water Quality
700 NE Multnomah Street, Suite 600
Portland, OR 97232
(503) 229-5263
FAX (503) 229-6957
TTY 711

June 26, 2021

Blake Hamalainen
PORT OF PORTLAND
PO BOX 3529 PORTLAND,
OR 97208-3529

RE: Issuance NPDES Permit Number 1200-Z - REVISED 6/26/2021
File Number: 125569 EPA Number. : ORR807320
Facility: NAVIGATION BASE, 6208 N ENSIGN STREET, PORTLAND, MULTNOMAH COUNTY
SIC Code(s): 1629

Dear Permit Registrant:

DEQ has reissued the 1200-Z, effective July 1, 2021. Attached is your revised monitoring requirements under the reissued permit, starting July 1, 2021. All monitoring waivers expire on July 1, 2021. Please review the information closely. If you identify any discrepancies in the tables, please contact me as soon as possible.

It is your responsibility to comply with the new permit conditions and monitoring requirements starting July 1, 2021. DEQ will be transitioning to electronic Discharge Monitoring Reports during this permit cycle. As such, you will not receive the first page of the permit identifying your facility as registered under the renewed permit.

Please visit our industrial stormwater permits webpage to find a copy of the permit and associated documents. https://www.oregon.gov/deq/wq/wqpermits/Pages/Stormwater-Industrial.aspx

Respectfully,

Jenni Seven, WQ Permit Coordinator

Enclosures: Monitoring Requirements
Schedule A.13

Monitoring Requirements

You must monitor for the pollutants in the table below. If discharge to a Category 5: 303(d) listed receiving water for pH, total copper, total lead, total zinc and/or E. coli, the table below will not include statewide or sector-specific benchmarks for those pollutants. Exceedance of impairment monitoring may escalate to a water quality-based effluent limit during this permit cycle. Please read Schedule A.13 and Schedule C carefully. Tier 2 geometric mean evaluations are required annually. Please read Schedule A.12 carefully.

Georegion	Pollutant	Statewide Benchmark	Unit	Frequency
Portland Harbor	Total Copper	0.015	mg/L	Four times per year
Portland Harbor	Total Lead	0.24	mg/L	Four times per year
Portland Harbor	Total Zinc	0.24	mg/L	Four times per year
Portland Harbor	pH	5.5-9.0	s.u.	Four times per year
Portland Harbor	TSS	30	mg/L	Four times per year
Receiving Water LLID: 1227618456580 AUID:104175 **River Mile: 8.52**	**Pollutant**	**Impairment Concentration**	**Units**	**Frequency**
Willamette River (Johnson Creek to confluence with Columbia River)	Total Iron*	10	mg/L	Four times per year

*Review Schedule A. 13 for specific conditions related to impairment monitoring.

CATEGORY 5: 303(d) LIST IMPAIRMENT EXCEEDANCE RESPONSE

13. Water Quality-based Effluent Limits

a. The permit registrant must comply with water quality-based effluent limits for discharges to impaired receiving waters based on the EPA-approved Category 5: 303(d) list in effect at the time of permit assignment for pH, copper, lead, zinc, iron and E. coli that correspond to the specific pollutant(s) for which the water body is impaired when monitoring results trigger the events specified below.

b. The permit registrant must use all qualifying samples except sample results from properly maintained mass reduction measures installed at or above DEQ-approved designed storm capacity.

c. For E. coli and iron, if the triggering events occur, the permit registrant must comply with narrative water quality-based effluent limits.

d. For pH, copper, lead and zinc, if the triggering events occur, the permit registrant must comply with numeric water quality-based effluent limits at the pollutant concentrations in Table 5 as required by Schedule B.3.

e. Triggering events for pH, copper, lead and zinc:

   i. If two consecutive qualifying sample results collected at any monitoring point falls outside the basin-specific range for pH in Appendix A as required by Schedule B.3 at each monitoring point subject to impairment monitoring for which the water body is impaired for pH.

   ii. If two consecutive qualifying sample results collected at any monitoring point exceed the impairment concentrations for copper, lead, or zinc in Table 5, as required by Schedule B.3 subject to impairment monitoring.

   iii. If a qualifying sample result collected at any monitoring point is greater than two times the impairment concentrations in Table 5, as required by Schedule B.3 for copper, lead, or zinc subject to impairment monitoring.

f. When the impairment monitoring as required by Schedule B.3 escalates to a numeric water quality-based effluent limit based on triggering events above in Schedule A.13.e, the permit registrants must notify DEQ or agent no later than 30 calendar days from receiving the monitoring results. At such time, permit registrant may request up to a two-year compliance schedule in accordance with Schedule C.

g. The permit registrants must sample all discharge points subject to numeric water quality-based effluent limit, including those previously designated as substantially similar.

h. Permit registrants that discharge into Category 5: 303(d) listed receiving waters for fecal coliform or enterococcus must monitor stormwater discharge that correspond to the specific pollutant and report as specified in Table 6 and Table 7 applicable to impairment pollutants. DEQ may require

additional narrative water quality-based effluent limits if a public health risk is identified from the discharge.

i. Triggering event for E. coli:
   i. If two consecutive qualifying sample results collected at any monitoring point exceeds the impairment concentration for E. coli in Table 5A, as required in Schedule B.4 subject to impairment monitoring, the permit registrant must implement the following narrative water quality-based effluent limits:
      (1) Prevent rodents, birds, and other animals from feeding/nesting/roosting at the facility to the degree practicable. Nothing in this section shall be construed as allowing violations of any applicable federal, state or local statutes, ordinances, or regulations including the Migratory Bird Treaty Act;
      (2) Clean storm sewer lines, including catch basins, annually. Frequency of cleaning may be reduced, or decreased to catch basins, only after the first annual cleaning if the source of the E. coli exceedances are identified and the storm sewer lines are determined to not be a contributing factor. Flushed water and solids must be disposed of properly and not allowed to discharge;
      (3) If the source of the exceedances is not readily identified, perform a one-time dry weather inspection to identify and eliminate any sanitary sewer cross-connections or leaky sewer pipes;
      (4) Investigate and document any human dwelling encampments;
      (5) Install additional source or operational controls to address known sources of fecal contamination such as green waste, illegal dumping, dumpsters or garbage trucks and grease bins, and portable toilets as applicable; and if applicable,
      (6) Conduct and report biochemical speciation identification results to indicate non-fecal discharges.

j. Triggering event for iron:
   i. If two consecutive qualifying sample results collected at any monitoring point exceeds impairment concentration for iron in Table 5A, as required by Schedule B.4 subject to impairment monitoring, the permit registrant must implement the following narrative water quality-based effluent limits:
      (1) Demonstrate compliance with the erosion and sediment control narrative technology-based effluent limit in Schedule A.1.d. and stabilize all exposed soils that have potential to discharge;
      (2) Implement sweeping or other equivalent methods of cleaning sufficient to minimize the discharge of sediment and debris, but in no case less than once per calendar quarter when industrial activity has occurred at the site;
      (3) Clean storm sewer lines, including catch basins, annually. Frequency of cleaning may be reduced or decreased to catch basins only after the first annual cleaning if the source of the iron exceedances are identified and the storm sewer lines are determined to not be a contributing factor. Flushed water and solids must be disposed of properly and not allowed to discharge; and
      (4) Install additional source and operational controls to the extent practicable to address known sources of iron pollution such as permanent structures by removing, replacing or sealing corroding metal.

k. The permit registrant must complete the narrative water quality-based effluent limits no later than 90 calendar days from receiving monitoring results of the triggering event above in Schedule A.13.h and i and continue as required. SWPCP revisions documenting completion are required as specified in Schedule A.9.

l. If the permit registrant is unable to comply with the numeric or narrative water quality-based effluent limits, it is a permit violation and permit coverage may be revoked under this general permit and coverage required under an individual permit.

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Appendix B

Record of Changes to
Stormwater Pollution Control Plan
Monthly Inspection and Maintenance Forms

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Appendix B – Record of Changes and Industrial Stormwater Inspection Forms

Record of Revisions & Corrective Actions

Date	Revision or Review	Corrective Action?	Person Making Change
February 14, 2019	Updated: Appendix A with reissued 1200-Z permit and the title page with the permit file number and EPA number	No	Danelle Peterson
March 26, 2019	Revision: Removed ASTs 1-3 and added AST 4; updated P-1 and P-2 capacities and secondary containment; updated inspection form	No	Blake Hamalainen
May 13, 2019	Updates made to the spill response procedures. Edits made to clean up the monitoring and reporting sections	No	Danelle Peterson
December 20th, 2019	Added appendix D for the Tier II corrective action. Added the StormwateRx Aquip treatment system to the applicable sections. Updated the Facility Manager contact information to Don Tjostolvson. Revised the site map to include the new AQUIP treatment system and the CDS pretreatment system. Updated the facility inspection forms to include the AQUIP and CDS.	Yes	Danelle Peterson
August 26, 2021	Updated to meet requirements of the 2021 Permit reissuance	No	Blake Hamalainen
October 15,2024	Updated SWPCP language and site map to include new impermeable boom positioning around mooring barge. Additionally removed language showing Terra Hydr as an emergency response contact for spills.	No	Blake Hamalainen

Appendix B – Record of Changes and Industrial Stormwater Inspection Forms

Appendix B – Record of Changes and Industrial Stormwater Inspection Forms

NAVIGATION BASE MONTHLY INSPECTIONS

OUTFALL INSPECTIONS - Associated with Industrial Activities									
LOCATION	DESCRIPTION	WATER LEVEL	WATER COLOR	WATER CLARITY	FLOATING SOLIDS	O&G SHEEN	ODOR	FOAM	COMMENTS / FOLLOWUP
Basin A Time:	MH2245 NW corner of facility, discharges to C.O.P. outfall	NO FLOW TRICKLE LOW MEDIUM HIGH VERY HIGH	NO COLOR GREEN BROWN GRAY YELLOW ORANGE OTHER:	CLEAR CLOUDY TURBID	NONE LIGHT MEDIUM HEAVY	NONE VERY LIGHT LIGHT MEDIUM HEAVY	NO YES (DESCRIBE IN COMMENTS)	NO YES (DESCRIBE IN COMMENTS)	
Basin B Time:	NW mooring barge, by bridge to facility	NO FLOW TRICKLE LOW MEDIUM HIGH VERY HIGH	NO COLOR GREEN BROWN GRAY YELLOW ORANGE OTHER:	CLEAR CLOUDY TURBID	NONE LIGHT MEDIUM HEAVY	NONE VERY LIGHT LIGHT MEDIUM HEAVY	NO YES (DESCRIBE IN COMMENTS)	NO YES (DESCRIBE IN COMMENTS)	

CATCH BASIN INSPECTIONS							
CATCH BASIN NO. & LOCATION	CONDITION OF STRUCTURE	DEBRIS IN BASIN	CLEANING REQUIRED?	ODOR	SHEEN	EVIDENCE/ POTENTIAL FOR POLLUTIANTS ENTERING BASIN	COMMENTS / FOLLOWUP
CB3853 Admin. Parking Area	GOOD NEEDS MAINT.	NONE LEAVES GRASS SILT SAND TRASH OTHER:	NO YES (DESCRIBE):	NONE MUSTY PETROLEUM OTHER:	NONE LIGHT MEDIUM HEAVY	NO YES (DESCRIBE):	
CB3874 MX Yard	GOOD NEEDS MAINT.	NONE LEAVES GRASS SILT SAND TRASH OTHER:	NO YES (DESCRIBE):	NONE MUSTY PETROLEUM OTHER:	NONE LIGHT MEDIUM HEAVY	NO YES (DESCRIBE):	

WEATHER FOR PAST 3 DAYS (Circle all that apply): Cold Wet Rainy Dry Other:_____

INSPECTED BY: _____ DATE: _____

COMMENTS: _____

_____

_____

_____

_____

_____

NAVIGATION BASE MONTHLY INSPECTIONS

STORM SYSTEM INSPECTIONS							
CATCH BASIN NO. & LOCATION	CONDITION OF STRUCTURE	DEBRIS IN STRUCTURE	CLEANING REQUIRED ?	ODOR	SHEEN	EVIDENCE/ POTENTIAL FOR POLLUTIANTS ENTERING BASIN	COMMENTS / FOLLOWUP
AQUIP	GOOD NEEDS MAINT.	NONE LEAVES GRASS SILT SAND TRASH OTHER:	NO YES (DESCRIBE):	NONE MUSTY PETROLEUM OTHER:	NONE LIGHT MEDIUM HEAVY	NO YES (DESCRIBE):	
CDS Pretreatment Manhole	GOOD NEEDS MAINT.	NONE LEAVES GRASS SILT SAND TRASH OTHER:	NO YES (DESCRIBE):	NONE MUSTY PETROLEUM OTHER:	NONE LIGHT MEDIUM HEAVY	NO YES (DESCRIBE):	

INDUSTRIAL AREA INSPECTIONS							
AREA	DEBRIS OR TRASH PRESENT	ARE INDUSTRIAL MATERIALS STORED UNDER COVER?	EVIDENCE OF LEAKING DRUMS, VEHICLES, TANKS, OR OTHER EQUIPMENT?	EVIDENCE OF SPILLS?	ARE CONTAINERS LABELED?	ARE CONTAINERS IN SECONDARY CONTAINMENT	COMMENT/ FOLLOW UP
Maintenance Yard Area	NO YES (DESCRIBE IN COMMENTS)	N/A YES NO (DESCRIBE IN COMMENTS)	NO YES (DESCRIBE IN COMMENTS)	NO YES (DESCRIBE IN COMMENTS)	N/A YES NO (DESCRIBE IN COMMENTS)	N/A YES NO (DESCRIBE IN COMMENTS)	
Mixing Pad Area	NO YES (DESCRIBE IN COMMENTS)	N/A YES NO (DESCRIBE IN COMMENTS)	NO YES (DESCRIBE IN COMMENTS)	NO YES (DESCRIBE IN COMMENTS)			
Mooring Barge Area	NO YES (DESCRIBE IN COMMENTS)	N/A YES NO (DESCRIBE IN COMMENTS)	NO YES (DESCRIBE IN COMMENTS)	NO YES (DESCRIBE IN COMMENTS)	N/A YES NO (DESCRIBE IN COMMENTS)	N/A YES NO (DESCRIBE IN COMMENTS)	
Admin. and Building Employee Parking	NO YES (DESCRIBE IN COMMENTS)	N/A YES NO (DESCRIBE IN COMMENTS)	NO YES (DESCRIBE IN COMMENTS)	NO YES (DESCRIBE IN COMMENTS)	N/A YES NO (DESCRIBE IN COMMENTS)	N/A YES NO (DESCRIBE IN COMMENTS)	

NAVIGATION BASE MONTHLY INSPECTIONS

AST INSPECTIONS								
TANK #	DESCRIPTION	LOCATION	EVIDENCE OF SPILLS	PUMP CONDITION	SPILL KIT	TANK INTEGRITY	2ND CONTAIN.	COMMENTS / FOLLOWUP
AST-4	300-gallon, Double Wall Steel Diesel Tank	Maintenance Yard	NO YES (DESCRIBE IN COMMENTS)	GOOD NEEDS MAINT.	GOOD NEEDS MAINT. NONE	GOOD NEEDS MAINT.	GOOD NEEDS MAINT. NONE	

PORTABLE CONTAINERS, TOTES, DRUMS, AND GENERATORS								
CONTAINER		DESCRIPTION	EVIDENCE OF SPILLS	BOOM CONDITION	PUMP CONDITION	TANK INTEGRITY	2ND CONTAIN.	COMMENTS / FOLLOWUP
Maintenance Yard	**DS-1**	Up to 30, 55-gallon drums/various oils	NO YES (DESCRIBE IN COMMENTS)			GOOD NEEDS MAINT.	GOOD NEEDS MAINT. NONE	

PORTABLE CONTAINERS, TOTES, DRUMS, AND GENERATORS								
CONTAINER		DESCRIPTION	EVIDENCE OF SPILLS	BOOM CONDITION	PUMP CONDITION	TANK INTEGRITY	2ND CONTAIN.	COMMENTS / FOLLOWUP
Maintenance Yard	**P-1**	Mobile Fuel Truck, 1,000-gallon diesel	NO YES (DESCRIBE IN COMMENTS)	NEW GOOD OKAY REPLACE NONE	GOOD NEED MAINT. NONE	GOOD NEEDS MAINT.	GOOD NEEDS MAINT. NONE	
	P-2	Mobile Fuel Trailer, 1,000-gallon diesel	NO YES (DESCRIBE IN COMMENTS)	NEW GOOD OKAY REPLACE NONE	GOOD NEED MAINT. NONE	GOOD NEEDS MAINT.	GOOD NEEDS MAINT. NONE	
	P-3	Shore Van Mobile Generator, 67-gallon diesel	NO YES (DESCRIBE IN COMMENTS)	NEW GOOD OKAY REPLACE NONE	GOOD NEED MAINT. NONE	GOOD NEEDS MAINT.	GOOD NEEDS MAINT. NONE	

ADDITIONAL COMMENTS: _____

_____

_____

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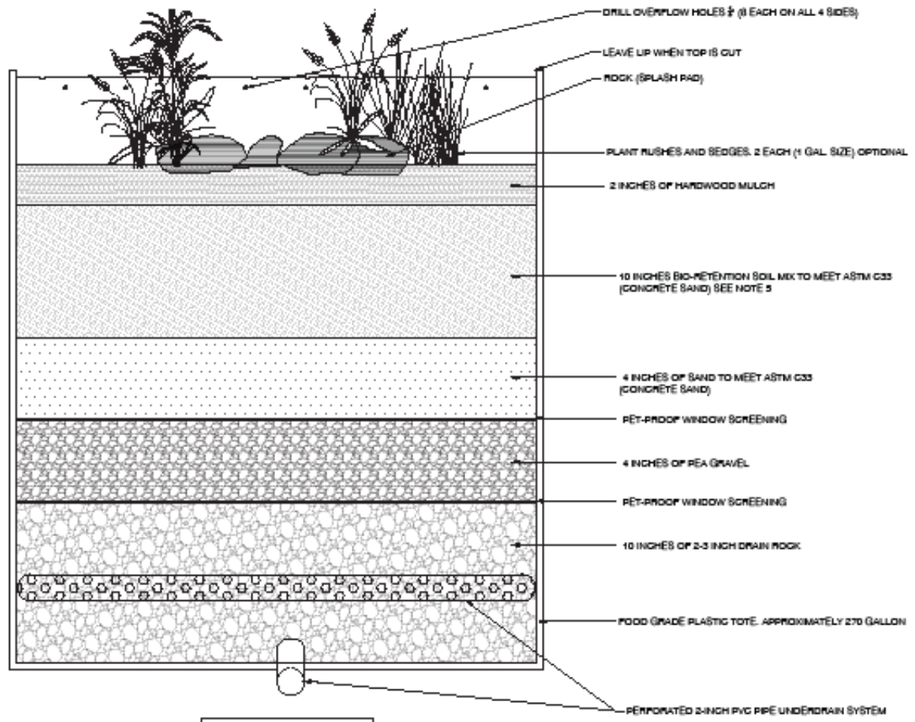
Appendix B – Portable Media Filter O&M M

CROSS SECTION OF A PORTABLE MEDIA FILTER



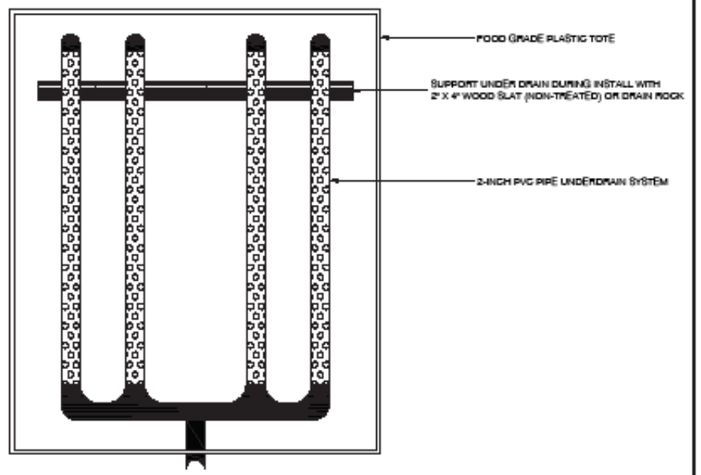
PORTABLE MEDIA FILTER

Scale: NTS

NOTES:

1. LEAVE 8-10 IN. FREEBOARD FOR PONDING
2. CREATE A SPLASH PAD FROM LARGE ROCK OR COBBLES
3. DRILL HOLES IN ALL 4 SIDES FOR BYPASS (SMALL - SEE NOTE ABOVE)
4. REMOVE MULCH 6 MO - 1 YR (WHEN FILM FORMS)
5. ADD 10-INCHES OF BIO RETENTION SOIL MIX [80-88% SAND, 8-12% SANDY LOAM, 1-5 % ORGANICS - MATURE COMPOST]

DIMENSIONS (45" X 30" X 36")



UNDERDRAIN SYSTEM

Scale: NTS

10 STEPS TO BUILDING PORTABLE MEDIA FILTER

1. OBTAIN A FOOD GRADE PLASTIC TOTE APPROXIMATELY 270 GALLON CAPACITY / RINSE THOROUGHLY / DISCHARGE TO SANITARY
2. INSTALL A PERFORATED 2-INCH PVC PIPE UNDERDRAIN SYSTEM
3. ADD 10 INCHES OF 2-3 INCH DRAIN ROCK (DOUBLE WASHED TO PREVENT TURBIDITY AND CLOGGING)
4. PLACE A LAYER OF PET-PROOF WINDOW SCREENING
5. ADD 4 INCHES OF PEA GRAVEL (DOUBLE WASHED)
6. PLACE ANOTHER LAYER OF PET-PROOF WINDOW SCREENING OVER THE PEA GRAVEL
7. ON TOP OF THE SCREENING, ADD 4 INCHES OF SAND (DOUBLE WASHED)
8. THEN ADD 10-INCHES OF BIO RETENTION SOIL MIX [80-88% SAND, 8-12% SANDY LOAM, 1-5 % ORGANICS - MATURE COMPOST]
9. PLANT RUSHES AND SEDGES - 2 EACH, 1 GAL. SIZE. AND THEN PLACE 2-3 INCHES OF HARD-WOOD MULCH AROUND PLANTS. POSITION ROCKS TO CREATE A SPLASH PAD

CAN YOU SEE THE AIRPLANES? THE ADJACENT SAMPLES SHOW THREE DIFFERENT LEVELS OF SHADING. SETTINGS FOR VIEWING AND PRINTING DRAWING CONTENT ARE OFTEN MISSHOWN. ALL THREE PLANES ARE VISIBLE. THIS SURFACE IS PROVIDED FOR REFERENCE ONLY.

NO.	DATE	BY	REVISIONS	APP'D	CKD

PORT OF PORTLAND
PORTLAND, OREGON

DESIGNED BY	M. GRAVES & M. MATTIX
DRAWN BY	J. HOYE-HOUSE
CHECKED BY	B. FREEMAN
DATE	NOV 2014
SCALE	AS SHOWN

PORTLAND INTERNATIONAL AIRPORT

STORMWATER TREATMENT TECHNOLOGY ASSESSMENT
PORTABLE MEDIA FILTER
BASED ON GRATTIX APPLICATION

SUBMITTED BY: BRIAN FREEMAN

TYPE	DRAWING NO.		
CD	PDX 2014-3	1 / 1	(C-1)

DRAWING SCALE IS REDUCED 50% WHEN SHEET SIZE IS 11" x 17".

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Appendix C
2019 Tier 2 Report

DEQ Industrial Stormwater Permits
Tier II Revised Stormwater Pollution Control Plan Checklist

Instructions: *Complete this form and submit with the revised SWPCP and engineered plan or waiver request. Fill in the requested information in the highlighted cells and the appropriate page number(s) indicating the location of information in the revised SWPCP.*

Facility Name: Port of Portland Nav. Base **File No.:** 125569

Permit Schedule	Requirement					Page #	Comments (for official use only)
A.11.f	Date Revised Plan submitted:						
A.11	Discharge Point	Parameter	Geometric Mean Exceedance	Units	Percent Reduction in Concentration	Percent of Design Storm Infiltrated or Injected	
	Willamette River	TSS	35.9	mg/L	81%	none	
	Willamette River	Cu	0.026	mg/L	81.5%	none	
A.11.j	**Proposed Tier II Corrective Action Response**						
	1.2	Design storm in inches					
A.11.j.i	Rationale for the selection of the measures					Attached	
A.11.j.i	Schedule for implementing these measures					Attached	
A.11.j.ii	Stamped by PE					Attached	
Cost of installation						$214,300	
Treatment system schematic and operational plan						Attached	
Operation and maintenance schedule for treatment measures and/or volume reduction measures proposed						Attached	

For DEQ or Agent use only			
A.11	Revised SWPCP complete and acceptable		
A.11.g	Installed by June 30 of 4th year of permit coverage		
A.11.h	Written notification of implementation of treatment measures by 30 calendar days from installation		

Notes: _____

Late updated: 10/15/2018
Created by: Mark Riedel

State of Oregon Department of Environmental Quality

Information Required for Tier II Mass Reduction Waiver Application

If applying for a Tier II mass reduction waiver based on projected volume reduction, please provide the information below *for each drainage basin on your site*. If no infiltration is proposed for a particular drainage basin, simply fill out the first four (bolded) entries in the Tier II Waiver Basin Table. Make additional copies if your site has more than three drainage basins. In addition, fill out the Tier II Waiver Summary Table.

Tier II Waiver Basin Table

	Basin name: _____		Basin name: _____		Basin name: _____	
	Value	Page number	Value	Page number	Value	Page number
Area of drainage basin (ft2)						
Impervious area (ft2)						
Runoff coefficients (unitless)						
Mass (with units) of pollutant discharged based on geometric mean (no infiltration)						
Infiltration rate (gal/day)						
Pond capacity, if applicable (gal)						
Mass (with units) of pollutant discharged based on geometric mean (with assumed infiltration)						
Mass (with units) of pollutant discharged assuming concentration equal to benchmark (no infiltration)						
Approximate depth to groundwater						

Tier II Waiver Summary Table (Combine entries from all basins)

	Value	Page number
Area of site (ft2)		
Total impervious area (ft2)		
Total mass (with units) of pollutant based on geometric mean (no infiltration)		
Total mass (with units) of pollutant based on geometric mean (with assumed infiltration)		
Total mass (with units) of pollutant assuming concentration equal to benchmark (no infiltration)		

State of Oregon
Department of
Environmental
Quality

Tier II Revised Stormwater Pollution Control Plan Checklist Instructions
Industrial Stormwater Discharge 1200-Z Permits

Tier II Parameters

Only exceedances of the geometric mean from statewide benchmarks are subject to Tier II corrective action. Please see the tables below for a list of the statewide parameters and associated benchmarks.

Table 4 from the permit: Statewide Benchmarks

Parameter	Units	Columbia River	Columbia Slough	Portland Harbor	Regional
Total Copper	mg/L	0.020	0.020	0.020	0.020
Total Lead	mg/L	0.040	0.060	0.040	0.015
Total Zinc	mg/L	0.12	0.24	0.12	0.090
pH	SU	5.5 – 9.0	5.5 – 8.5	5.5 – 9.0	5.5 – 9.0
TSS	mg/L	100	30	30	100
Total Oil & Grease	mg/L	10	10	10	10
E. coli	counts/100 ml	406*	406	406*	406*
BOD5	mg/L	N/A	33	N/A	N/A
Total Phosphorus	mg/L	N/A	0.16	N/A	N/A

*The benchmark for E. coli applies only to active landfills and sewage treatment plants.

Discharge point, Parameter and Corresponding Geometric Mean Exceedance

- Please indicate the discharge point, as identified on the Site Plan in your Stormwater Pollution Control Plan and also on your Discharge Monitoring Report.
- Please indicate the parameter, units and geometric mean associated with each discharge point exceedance.
- Please note, if you are not sampling all of your stormwater discharge points and your pollution control plan has identified substantially similar effluent based on a site analysis and/or monitoring, then you must install the same treatment on those representative discharge points. The substantially similar discharge points must be a listed in your revised Plan and sampling must resume.

Projected Reduction of Pollutant Concentration Treated

Please provide the projected percent reduction in concentration for the proposed treatment measure associated with the corresponding geometric mean exceedance. Regardless if a facility is proposing one treatment system to address more than one geometric mean exceedance or multiple treatment measures with the goal of reaching a single benchmark, please list the percent reduction for each parameter. The projected percent reduction should reduce the pollutant discharged to or below the benchmark.

Percent of Design Storm Volume Infiltrated

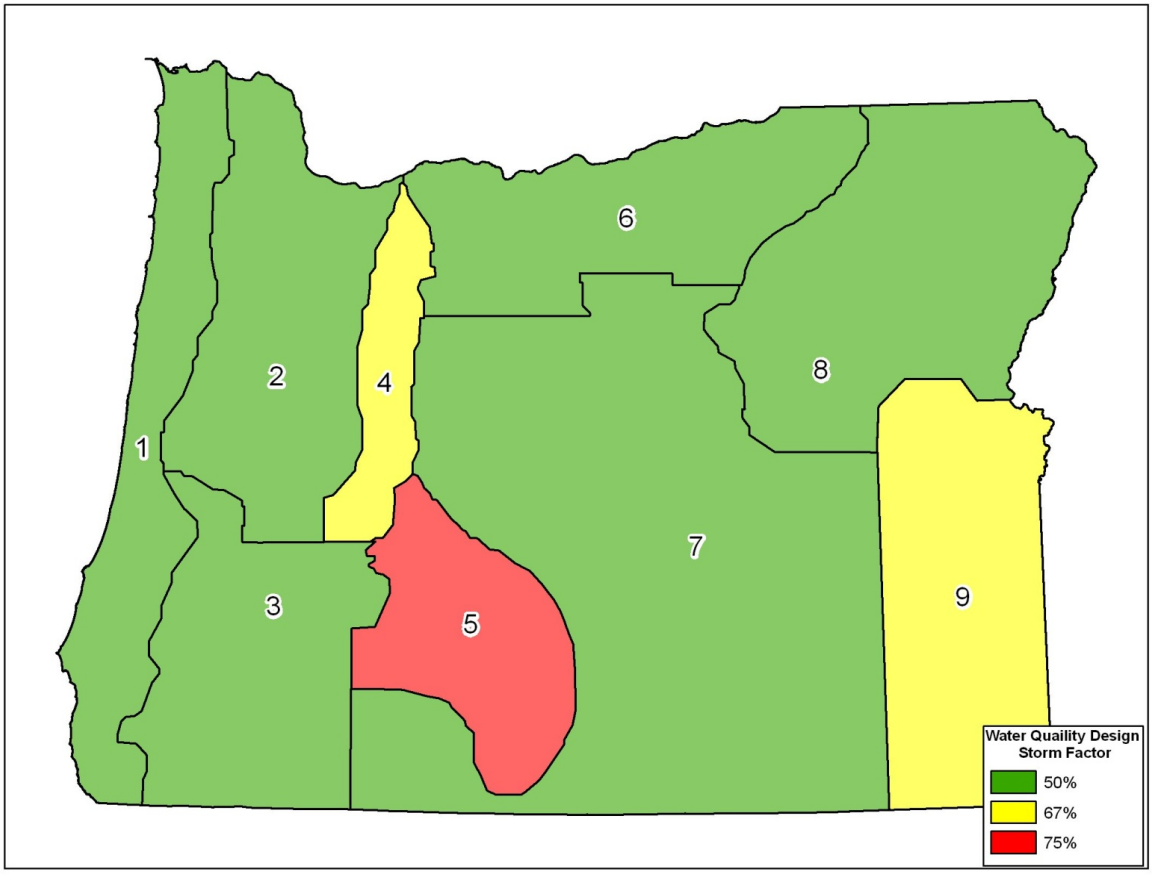
Please provide the calculated percent of the design storm that will be infiltrated for the drainage basin being addressed, if applicable. Facilities choosing to submit a Tier II Mass Reduction Waiver request need to evaluate their site and show how the remaining mass load of pollutants discharged are at or below the mass equivalent of the statewide benchmarks. In addition, provide the information requested in the

Tier II Waiver table. This calculation may result in discharge above the benchmark values. The revised Stormwater Pollution Control Plan must provide data and analysis to support this mass load analysis determination, including the detailed description of the measure(s).

Design Storm Criteria

Precipitation Data

1. Determine the 2-year, 24-hour rainfall depth for the facility using latitude and longitude; this information can be found here: http://www.nws.noaa.gov/ohd/hdsc/noaaatlas2.htm
2. Determine the Water Quality Design Storm amount by locating your facility's zone on the Oregon Department of Transportation's Water Quality Design Storm Factor map, attached below. Multiply the 2-year, 24-hour storm rainfall depth from Step #1 by the appropriate factor (50%, 67%, or 75%). The majority of the state will use 50% of the 2-year, 24-hour rainfall depth. For example, if the 2-year, 24-hour rainfall depth according to NOAA is 3.0 inches, and the facility is in Zone 6 on the map below, 3.0 x 50% = 1.5 inches. The Design Storm amount is 1.5 inches.
3. Design to a minimum storm size of 0.7 inches in 24- hours in order to capture the first flush of industrial pollutants, even if the calculation from Step #2 is fewer than 0.7 inches.
4. Compare the calculated Water Quality Design Storm to the facility's local jurisdiction's water quality design storm and use whichever is more stringent.



More information is available: https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Hydraulics-Manual.aspx

Please simply indicate the page numbers of the stamped plan or waiver for the following items:

Rationale for the Selection of the Measures

The permits require the revised Stormwater Pollution Control Plan include data and analysis to support the selection of each treatment best management practice or infiltration measure.

Schedule for Implementing Measure

Please include the expected implementation schedule for the proposed measures. The permit deadlines for the majority of registrants whose second monitoring year is: July 1, 2018, to June 30, 2019, include:

- Submittal of Tier II Corrective Action Response to DEQ or Agents by Dec. 31, 2019;
- Complete construction and implement treatment or mass reduction measures by June 30, 2021.

Cost of proposed Tier II Response

As part of the rationale in the selection of the measures, the facility must consider cost. In order to meet the implementation schedule, it is highly recommended that all proprietary, capital investment, permitting, operational and maintenance, as well as energy costs are evaluated.

Treatment System Schematic

Please include design and site location information for proposed treatment measures. Registrants are responsible for meeting water quality standards, including assurance that any chemical treatment is nontoxic to aquatic organisms. Any state approved program may be cited, such as Technologies Assessment Protocol - Ecology (TAPE).

Operation and Maintenance Schedule

All Tier II responses will require some maintenance overtime to optimize pollutant removal and manage break-through. Break-through happens when media is clogged or no longer treats the stormwater pollutants. Although each facility maintenance schedule will vary based on loading, this is an important component of the revised Stormwater Pollution Control Plan. Schedule A.7.c.iii outlines maintenance and repairs which must be recorded and available for review upon request of DEQ, Agents or a local municipality. The revised Plan must include a projected maintenance schedule. DEQ recognizes this may vary once installation is complete. Please ensure any Plan revisions related to operations of control measures are submitted to DEQ or Agents within 30 days calendar days after the change.

700 Lloyd Building at 700 NE Multnomah St., Suite #600, Portland, OR 97232 503-229-5263 or 1-800-452-4011		165 East 7th Avenue, Suite 100 Eugene, OR 97401 541-687-7326 or 1-800-844-8467		800 SE Emigrant Avenue, Suite 330 Pendleton, OR 97801 541-278-4605 or 1-800-304-3513	
Clackamas	Benton	Lane	Baker	Hood River	Sherman
Clatsop	Coos	Lincoln	Crook	Jefferson	Umatilla
Columbia	Curry	Linn	Deschutes	Klamath	Union
Multnomah	Douglas	Marion	Gilliam	Lake	Wallowa
Tillamook	Jackson	Polk	Grant	Malheur	Wasco
Washington	Josephine	Yamhill	Harney	Marrow	Wheeler

AGENT OFFICES		
Clean Water Services 2550 SW Hillsboro Highway Hillsboro, OR 97123 503-681-5175 *Includes Banks, Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, North Plains, Sherwood, Tigard, Tualatin, and portions of Washington Co.*	**City of Portland** Bureau of Environmental Services Water Pollution Control Laboratory 6543 N. Burlington Ave. Portland, OR 97203-5452 503-823-7584	**City of Eugene** Industrial Source Control 410 River Ave. Eugene, OR 97404 541-682-8616

Memorandum

DATE:	December 6, 2019		
PROJECT:	1600058-Port of Portland Navigation Base	**SUBJECT:**	Tier II Corrective Action Response Addendum
TO:	Danelle Peterson Port of Portland	**FROM:**	Ryan Milkowski, P.E. KPFF Consulting Engineers
		PHONE:	503-542-3860
EMAIL:	danelle.peterson@portofportland.com	**EMAIL:**	ryan.milkowski@kpff.com

Introduction

This memorandum serves as an addendum to the Stormwater Pollution Control Plan (SWPCP) for the Port of Portland Navigation Base site and provides the Tier II Corrective Action Response (CAR). This CAR is in response to the second-year geometric mean exceedances at monitoring point 001 for Total Suspended Solids (TSS) and Total Copper. This includes the rational for the selection of treatment measures, the schedule for implementing these measures, the cost of the proposed treatment plan, a treatment system schematic and updates to the Operation and Maintenance Manual.

The Navigation Base site is 4.35 acres in size and is located south of N Basin Avenue and N Ensign Street. The site borders the Swan Island Basin that feeds into the Willamette River and is owned and operated by the Port of Portland.

The Port obtained a National Pollutant Discharge Elimination System Stormwater Discharge Permit (NPDES) No. 1200-Z in 2017 and began monitoring in December 2017. The results from sampling 2018 and 2019 indicated that the upland area, which is 1.31 acres in size, triggered the site's Tier II requirements for total suspended solids and copper. The following pollutants did not trigger Tier II requirements, however, the treatment proposed will also reduce the lead, zinc and iron concentrations.

The proposed project improvements will consist of minor grading of the site to allow it to drain to the existing catch basin, installing 7,490 square feet of reconstructed asphalt pavement, 11,332 square feet of heavy pavement for the high load equipment onsite and 29,668 square feet of aggregate pavement sections. In addition, a new stormwater pretreatment system, duplex pump station, and StormwateRX Aquip 160 treatment system will be installed.

Rational for the Selection of Treatment Measures

The Port of Portland implemented source control measures, but none were deemed sufficient to meet the benchmarks, so treatment systems were evaluated to provide long term, consistent removal of TSS and copper.

The CDS Pretreatment system was chosen for sediment removal upstream of the StormwateRX Aquip as it allows for settling of gross pollutants down to 100 microns in size. The CDS has the WA Department of Ecology's General Use Level Designation as a pretreatment system and incorporates a 2400-micron screen

to prevent larger debris from passing through the system. See Attachment B for a treatment system schematic and Attachment C for a detail of the CDS and Aquip units.

The StormwateRX Aquip is designed to meet the Tier II requirements from the NPDES No. 1200-Z permit benchmarks for TSS and Copper that were identified in the 2018-2019 monitoring results. It will also address the requirement for corrective action due to the 2018-2019 monitoring results for Iron. The Aquip has the ability to remove 81% of TSS, 81.5% of Copper, and 79.5% of Iron (percentages listed are the median removal efficiencies based on sampling results from StormwateRX at other sites (see Attachment A). Compared to other options, StormwateRX had far more sampling data points showing the removal percentages of the pollutants in question at various influent concentrations compared to other options that were evaluated.

Vegetated treatment with infiltration as well as the Grattix treatment system were considered, but the data we could evaluate was not conclusive that these treatment measures would meet the benchmark requirements. On-site infiltration testing showed that this was also not an option given the native soil conditions. Although the capital cost for the Aquip system was higher than other options considered, the ability to retrofit this solution in an above-ground location, and the ease of expanding the system to treat additional area or target additional pollutants, was a deciding factor. See Attachment B for a treatment system schematic and Attachment C for a detail of the Aquip unit.

Treatment Measure Operational Plan

For the upland treatment area of 1.31 acres, which is composed of 0.97 acres of paving improvements and 0.34 acres of undisturbed impervious surface, SBUH was used to determine the water quality flow rate given the Permit Tier II design storm criteria. First the 2-year, 24-hour rainfall depth was determined (Appendix 3) using NOAA precipitation data. The 2-year, 24-hour rainfall is 2.32 inches. Next the water quality design storm was determined by locating the facility's zone on the Oregon Department of Transportation's Water Quality Design Storm Factor Map. The zone of the Navigation Base is #2, which has a water quality design storm factor of 50%. Then the 2-year, 24-hour storm rainfall depth of 2.32 inches was multiplied by the 50% factor, resulting in a water quality design storm of 1.2 inches in 24 hours. The resulting water quality flow rate was determined using SBUH and was calculated to be 0.334 cfs or 150 gpm.

The CDS2015-4 model was chosen as it has the ability to treat a water quality design storm up to 314 gpm. The internal components of the CDS are all contained within a 48-inch concrete manhole structure and will be placed upstream of the Aquip system.

The Aquip 160 was chosen for the site due to its ability to treat a water quality design storm up to 160 gpm. This is an above grade system, so pumps will be installed in a wet well and will be sized to deliver 150 gpm to the Aquip unit for treatment.

Schedule for Implementing these measures

The CDS pretreatment and Aquip 160 treatment system are scheduled to be installed in Q1 of 2020. The systems should be operational in Q2 of 2020. If after performing initial monitoring it is determined that the treatment implemented is not sufficient, additional treatment will be assessed to ensure compliance. See Attachment E for the Erosion Control Plan.

Cost of installation

The total estimated cost of adding these treatment measures is $214,300.

Operation and Maintenance Updates:

CDS Pretreatment:

The CDS unit should be inspected at a minimum twice per year (spring and fall). A visual inspection should determine if the system has any blockages or obstructions in the inlet and separation screen and should quantify the accumulation of hydrocarbons, trash, and sediment in the system. Pollutant accumulation should be done with a calibrated dipstick or tape measure. The level of sediment can be determined by measuring from the finished grade down to the top of the sediment pile. A second measurement should be taken to determine the distance from the manhole opening to the water surface. If the difference between these two measurements is less than 3-feet, the system should be maintained. This would indicate that the level of sediment has reached 75% of the capacity in the sump. If appreciable levels of hydrocarbons and trash has accumulated in the system, that is another indicator that maintenance is needed.

Cleaning of the CDS unit should be done during dry weather conditions. The use of a vacuum truck is generally the most effective. First remove the manhole covers and insert the vacuum hose into the sump. Then completely drain down and evacuate sediment from the unit. The area outside the screen should also be cleaned out if pollutant build-up is observed.

StormwateRX Aquip 160:

Routine Surface Maintenance: Quarterly to Annually depending on loading

1. Remove and set aside the Energy Dissipation Fabric.
2. Clean the Energy Dissipation Fabric if necessary.
3. Clean the entire surface of the media by shoveling off the accumulated solids and the top ¼ - ½ inches of media (approximate). The newly exposed media should look cleaner than the removed media. Remove more depth if necessary.
4. Dispose of the removed media and accumulated debris.
5. Level the surface of the media.
6. Measure the depth of the remaining inert media layer by inserting a shovel directly down into the media until it reaches the lower-lying fabric layer. This will indicate the depth of the inert media layer.
7. Replenish the removed media with new media if less than 7-inches of the inert layer remains (more than 2-inches of the inert layer has been removed over the course of several surface maintenances).
8. Re-install the Energy Dissipation Fabric beneath the Inlet Distributor using scoops of sand to hold down the edges.

Seasonal Maintenance: Annually to Biannually depending on loading

Same as the Routine Surface Maintenance described above plus:

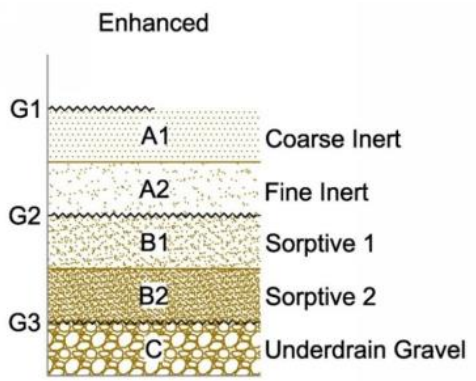
1. Sparingly pressure-wash or hand-wipe the side walls of the Aquip prior to removing any media. Cleaning the inside walls of the Aquip will allow the operator to observe the system's most recent operating water level based upon the scum line left behind inside of the Aquip. No detergent or hot water should be used when cleaning the insides of the Aquip.
2. Remove and dispose of the Energy Dissipation Fabric.
3. Excavate the spent filter media (Media Layer A) down to the first layer of geotextile fabric. A shovel or vactor truck may be used to remove the filter media.
4. Remove Fabric Layer G2 and inspect the underlying filter media.
5. Break up the top three to six inches of media to rejuvenate Media Layer B. Level and smooth the filter media.
6. Re-install Fabric Layer G2 over the top of Media Layer B.
7. Install the new inert filter media. Media should be added in uniform, level layers using the level indicators on the side walls of the Aquip as a guide. Each media layer should be leveled before adding the next media layer.
8. Install the new Energy Dissipation Fabric on top Media Layer A using scoops of sand to hold down the edges.

Full Maintenannce: Every 5-6 years depending on loading

Same as Seasonal Maintenance described above plus:

1. Sparingly pressure-wash or hand-wipe the side walls of the Aquip prior to removing any media. Do not use any detergents. Cleaning the inside walls of the Aquip will allow the operator to observe the system's most recent operating water level based upon the scum line left behind inside of the Aquip. No detergent or hot water should be used when cleaning the insides of the Aquip.
2. Remove and dispose of the Energy Dissipation Fabric. Use a vacuum truck or shovel to remove all spent media (Media Layers A and B). Stop at the geotextile fabric above the underdrain gravel (Fabric Layer G3). The underdrain gravel (Media Layer C) should not be removed.
3. Remove the PVC plugs at each of the ends of the underdrain. Also remove the Adjustable Head Control on the outlet end of the Aquip by loosening the flanges on both sides of this PVC loop.
4. Pressure-wash the insides of the underdrain to flush its insides.
5. Reinstall all the PVC plugs on the underdrain and the Adjustable Head Control.
6. Install new geotextile fabric (Fabric Layer G3) on top of Media Layer C.
7. Install the new media layers and filter fabric layers as shown in the Auquip Media Layer diagram below. Media should be added in uniform, level layers using the level indicators on the side walls of the Aquip as a guide. Each media layer should be leveled before adding the next media layer.
8. Install a new Energy Dissipation Layer (Fabric Layer G1) on top layer of the media using scoops of sand to hold down the edges.
9. When conducting a full maintenance, the Pretreatment Chamber should also be maintained.

Aquip Media Layers:



Aquip Pretreatment Chamber Maintenance:

The pretreatment chamber should be maintained when performing a seasonal or full maintenance. Inspections of the pretreatment chamber should be performed as part of your routine inspections.

1. Drain down the pretreatment chamber using the inlet sample port.
2. If necessary, hose down the walls of the pretreatment chamber.
3. Suspend a pump off the floor of the pretreatment chamber and pump down the water beneath the pretreatment media grates.
4. Shovel or vactor out the accumulated solids on the floor of the pretreatment chamber.

Aquip Flow Meter Maintenance:

The inside of the flow meter should be cleaned at a minimum of once a year to remove accumulating oil and dirt. Any accumulation on the surfaces of the electrodes will impede the proper operation of the flow meter. Remove the flow meter from the influent line on the Aquip and clean the small metal surfaces (electrodes) and all other surfaces inside of the flow meter using a soft cloth and a 50/50 solution of denatured alcohol and water.

This technical memorandum is stamped by a licensed Professional Engineer and is provided to the Port of Portland to be added as Addendum D to the revised SWPCP. Full compliance with the Tier II corrective action should be achieved when the following are complete: revised SWPCP submitted and accepted and treatment system commissioned and functioning as designed.

Ryan Milkowski, PE

Attachments: *A - StormwateRX Pollutant Removal Data*
B - Treatment System Schematic
C – CDS and Aquip Details
D – Paving and Grading Plan
E – Erosion Control Plan

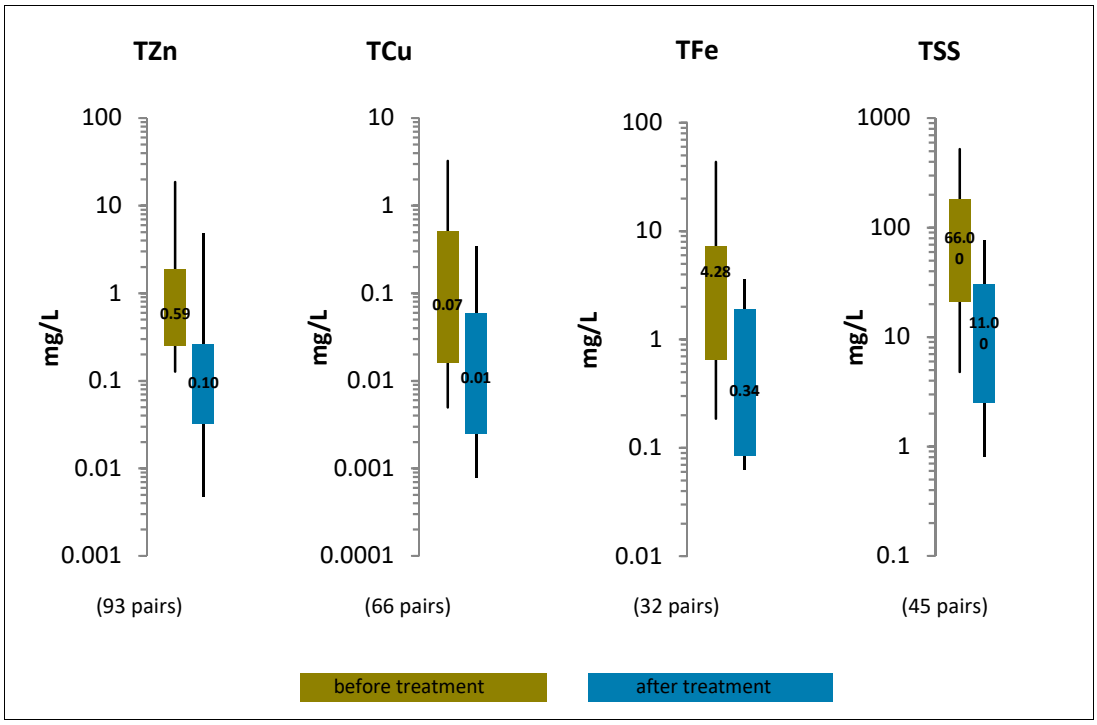
10101600058.24-pm

ATTACHMENT A

Performance Summary of Aquip® SBE Full-Scale Stormwater Filtration Systems

Parameter	Sample Location	Median (Range[3]) Number of Samples	Removal Efficiency[4] Median (Range[3])
TZn (mg/L)	Influent	0.59 (0.253 - 1.9) n = 93	86 (72 - 95)
	Effluent	0.097 (0.0325 - 0.258) n = 93	
TCu (mg/L)	Influent	0.0749 (0.0161 - 0.516) n = 66	81.5 (70 - 93)
	Effluent	0.011 (0.0025 - 0.059) n = 66	
TFe (mg/L)	Influent	4.28 (0.649 - 7.3) n = 32	79.5 (61 - 88)
	Effluent	0.34 (0.0842 - 1.88) n = 32	
TSS (mg/L)	Influent	66 (21.1 - 181) n = 45	81 (70 - 90)
	Effluent	11 (2.5 - 30) n = 45	

1 - Sampling from inlet and outlet of Aquip SBE full-scale stormwater filtration systems. Results through August 2019. Data compiled by StormwateRx LLC.
2 - All chemical analysis by third party certified analytical testing laboratory.
3 - The inlet, outlet, and removal efficiency ranges provided are the 25th to the 75th percentile of all results.
4 - The removal efficiencies based on inlet and outlet pairs.
5 - Median values may include non-detections; for the purposes of these calculations, the non-detected values are presented at half the detection limit.



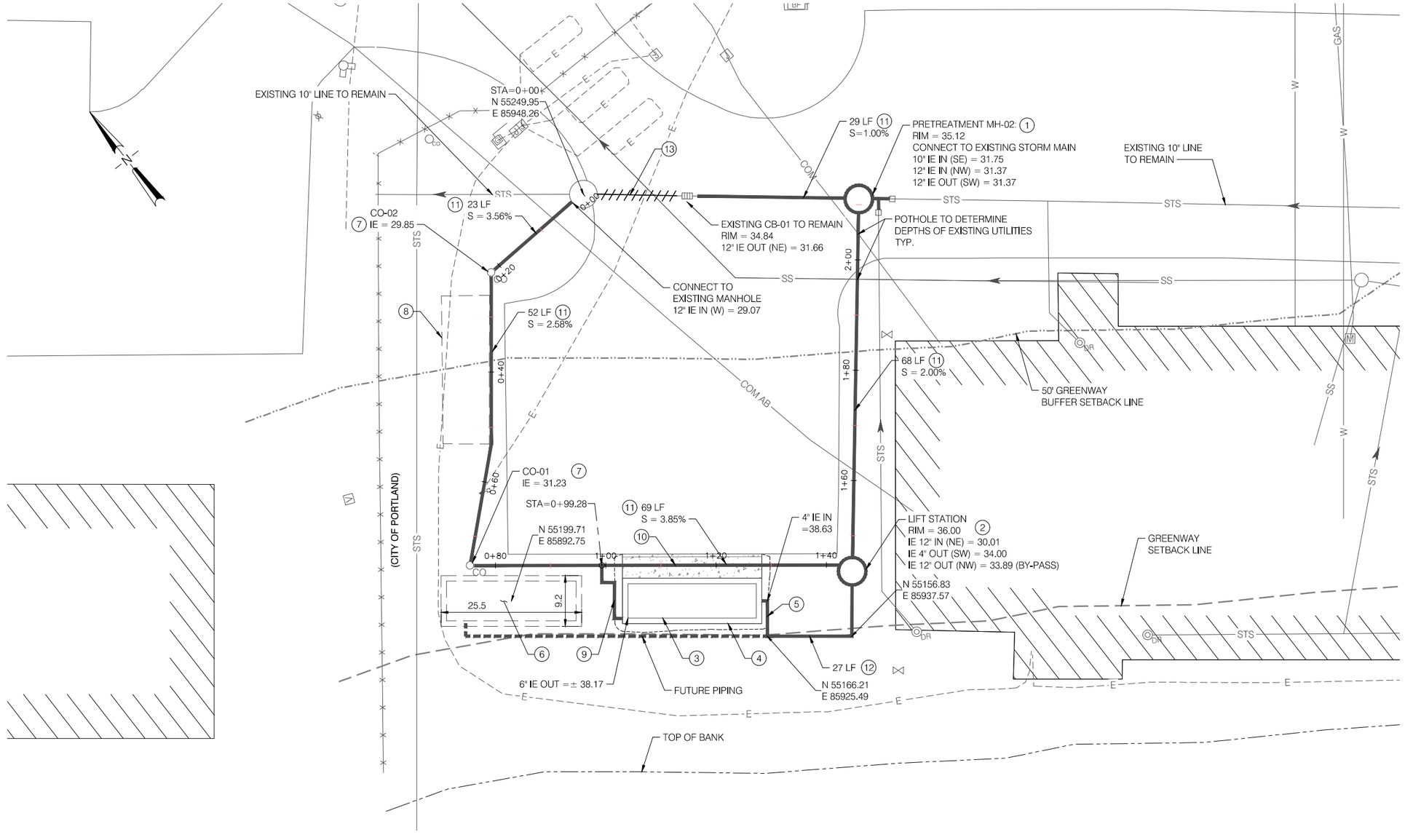
ATTACHMENT B

NOTE(S):

1. INSTALL LOCATE WIRE ON ALL NEW UTILITIES PER PORT STANDARDS. SEE DETAIL 3/C-11.
2. PIPE BEDDING AND BACKFILL FOR ALL UTILITIES SHALL BE DONE PER DETAIL 3/C-10.

KEY NOTE(S) (#):

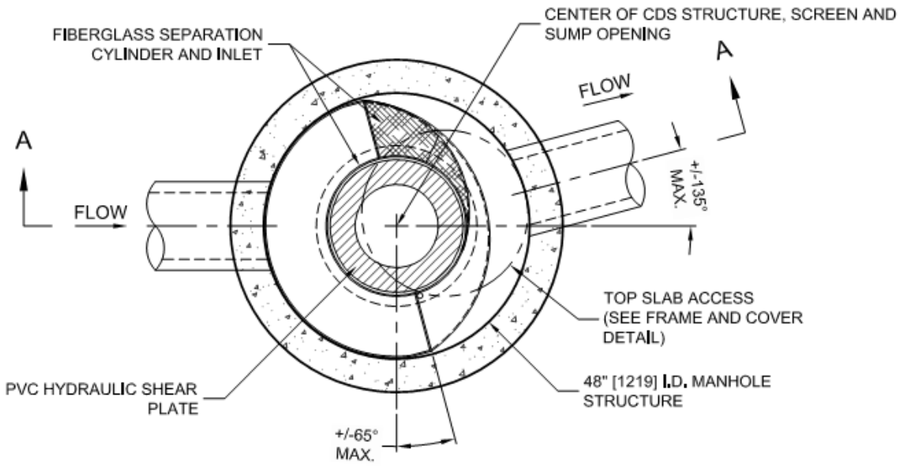
1. INSTALL PRETREATMENT SYSTEM PER DETAIL 2/C-10.
2. INSTALL 48" PUMP WET WELL WITH DUPLEX PUMPS PER STORMWATER DETAIL 4/C-10.
3. INSTALL TREATMENT ABOVE GRADE PER STORMWATER DETAIL 1/C-11.
4. INSTALL FOUNDATION CONCRETE PAD. SEE STRUCTURAL SHEETS.
5. INSTALL INLET PIPING PER DETAIL 1/C-11.
6. POTENTIAL FUTURE TREATMENT FACILITY.
7. INSTALL CLEANOUT PER DETAIL 1/C-10.
8. POTENTIAL FUTURE PLANTER AREA.
9. INSTALL OUTLET PIPING PER DETAIL 1/C-11.
10. INSTALL BYPASS PIPING PER DETAIL 2/C-11.
11. INSTALL 12" STORM PIPE WITH ALL REQUIRED FITTINGS.
12. INSTALL 4" STORM PIPE WITH ALL REQUIRED FITTINGS.
13. CUT AND CAP EXISTING 10" CONCRETE PIPE TO BE ABANDONED.



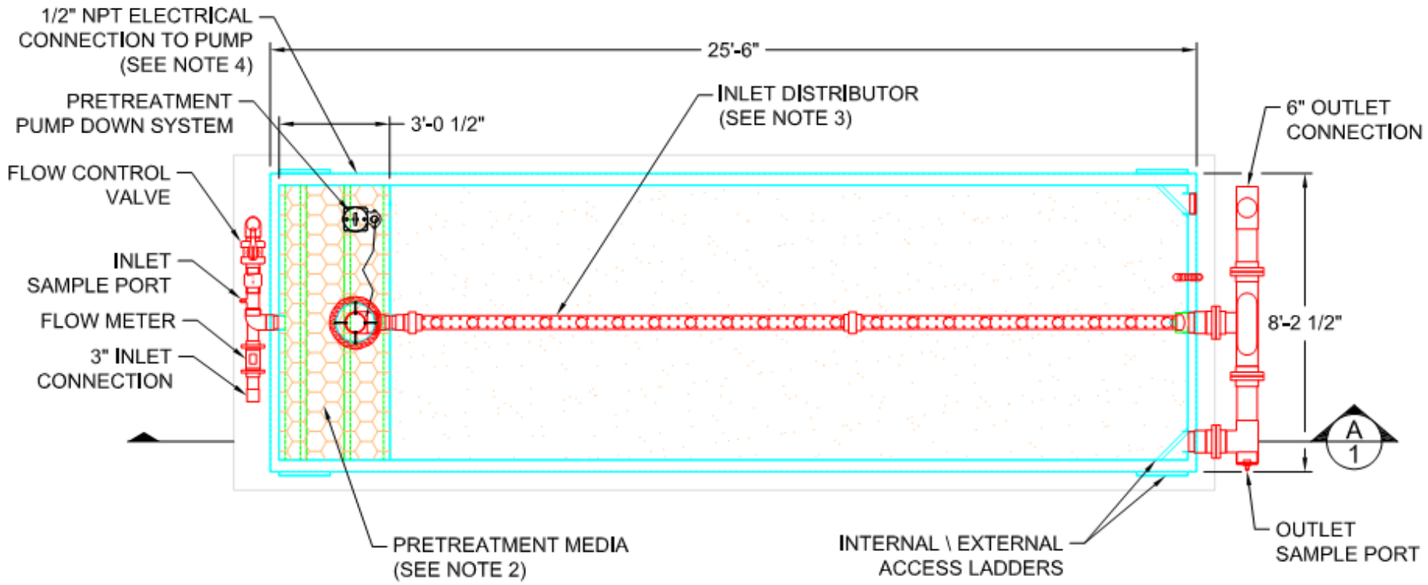
SCALE: 1" = 20'
0 20'

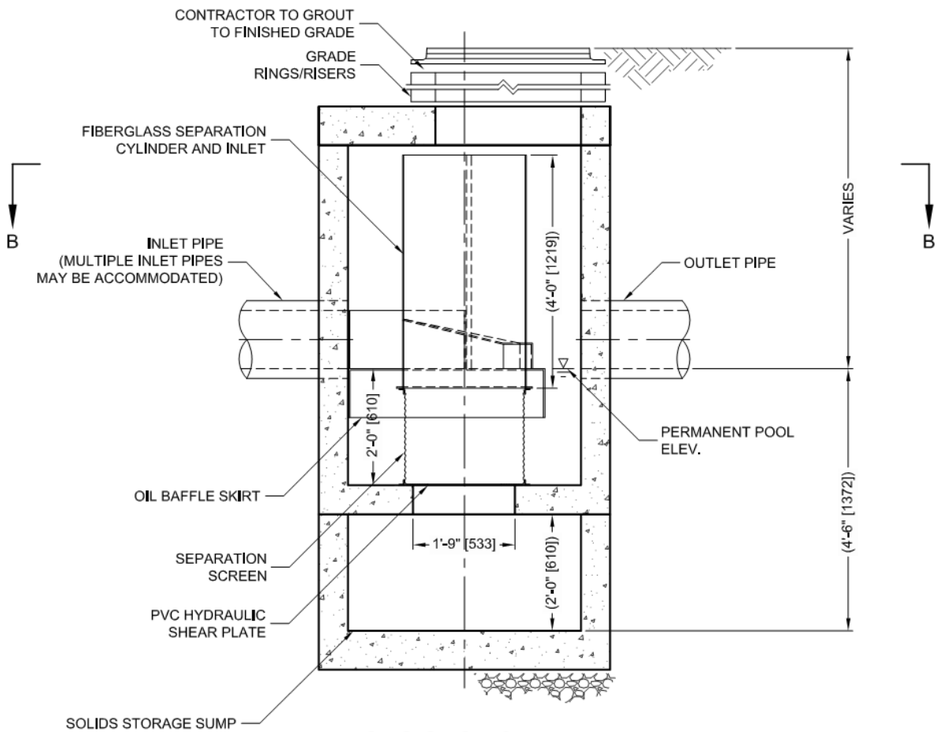
kpff	PORT OF PORTLAND NAVIGATION BASE TREATMENT SYSTEM SCHEMATIC	B
	#1600058	12/06/2019

ATTACHMENT C



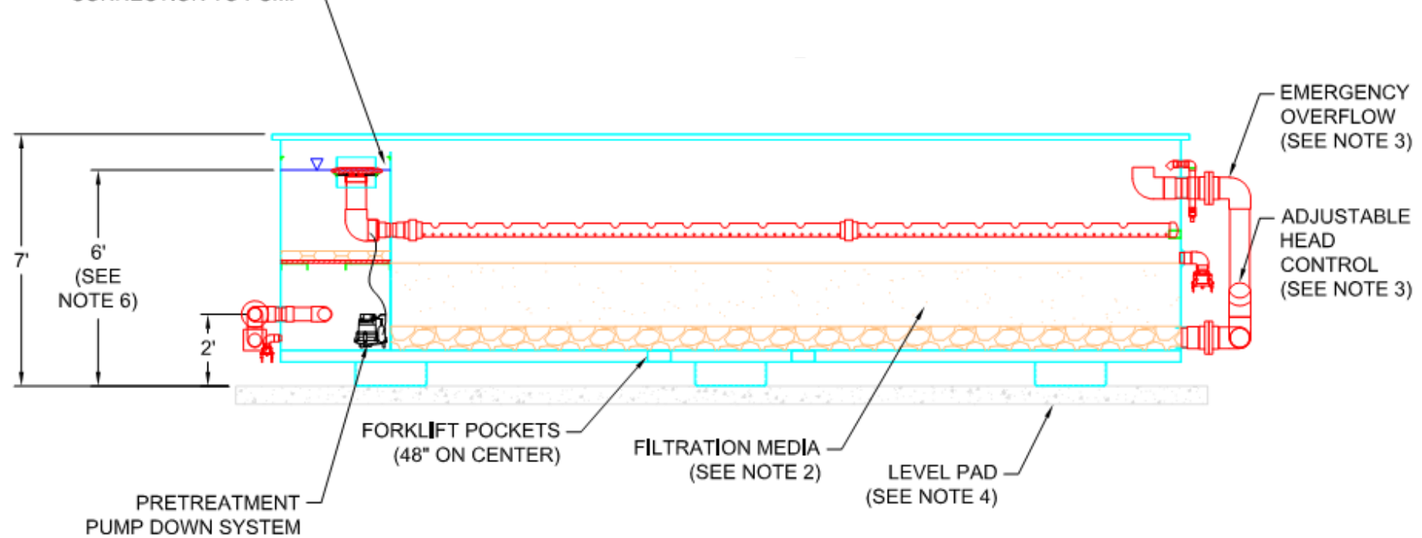
CDS PLAN VIEW





CDS SECTION VIEW
N.T.S

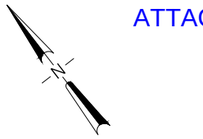
AQUIP 160 PLAN VIEW



AQUIP 160 SECTION VIEW
N.T.S.

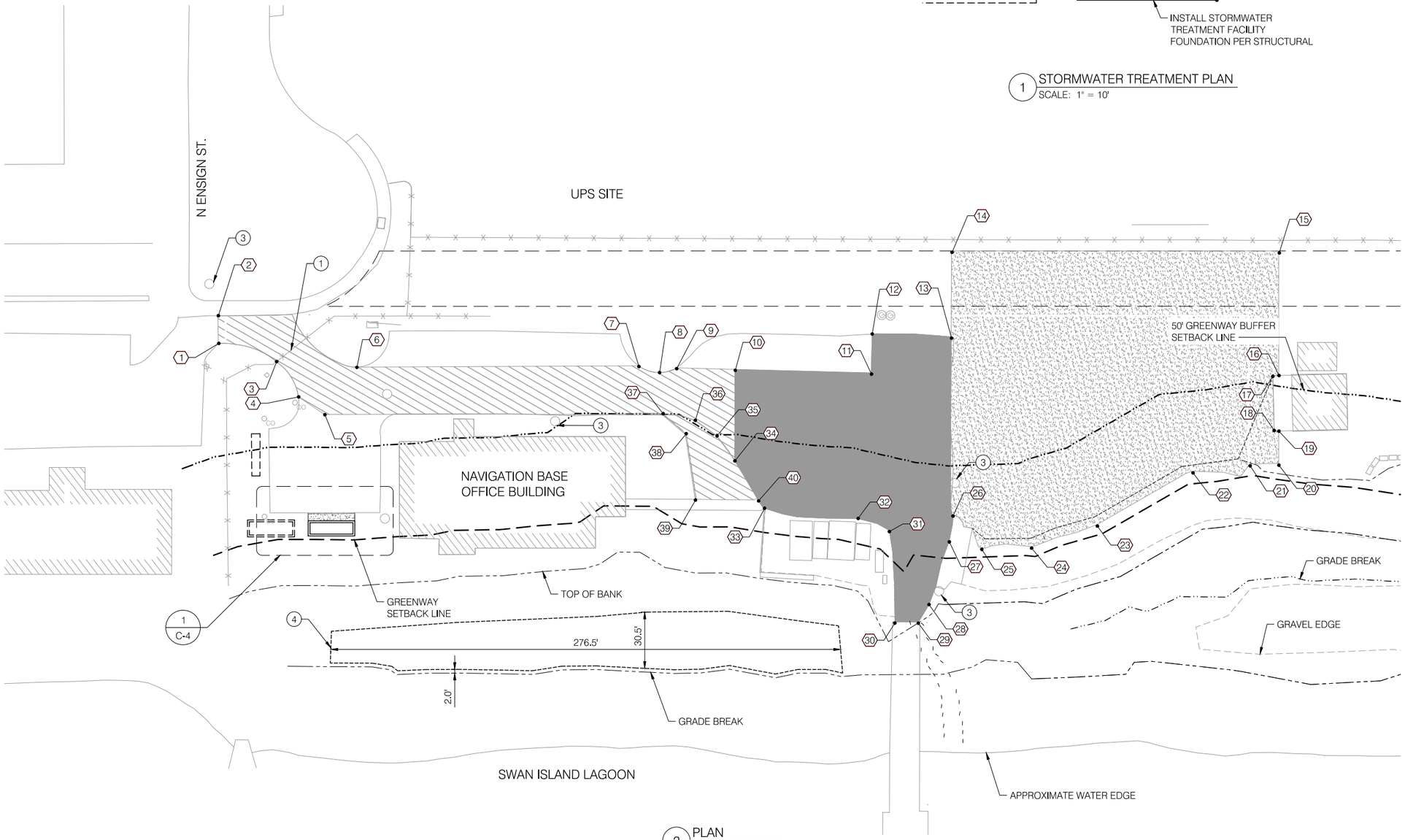
kpff	PORT OF PORTLAND NAVIGATION BASE CDS AND AQUIP DETAIL SHEET	EXH-C 11/04/2019

ATTACHMENT D

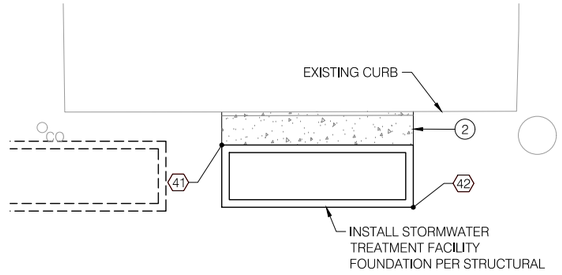


0' 15' 30' 60' 90'

SCALE: IN FEET



2 PLAN
SCALE: 1" = 30'



1 STORMWATER TREATMENT PLAN
SCALE: 1" = 10'

NOTE(S):

1. SEE SHEET GI-4 FOR HORIZONTAL CONTROL INFORMATION.
2. PROTECT ALL EXISTING CONCRETE CURB TO REMAIN.

KEY NOTE(S) (#):

1. PROVIDE 4" HIGH x 3'-0" WIDE ASPHALT BERM, SMOOTHLY RAMPED, CENTERED DIRECTLY UNDER GATE. TACK COAT BERM IN PLACE. ALLOW FOR SMALL 3" WIDE CHANNEL AT EACH END FOR WATER DRAINAGE ALONG CURBS,
2. INSTALL SIDEWALK BETWEEN SLAB AND CURB PER DETAIL 3/C-13.
3. PROTECT EXISTING MANHOLES.
4. SOIL STOCK PILE AREA. CLEAR AND GRUB PRIOR TO PLACEMENT. PROVIDE 2' BENCH FROM TOP OF SLOPE. CONTRACTOR TO FIELD VERIFY LIMITS WITH THE PORT.

LEGEND:

- HEAVY PAVEMENT SECTION FOR HEAVY EQUIPMENT OPS, SEE DETAIL 1/C-12
- AGGREGATE PAVEMENT SURFACE, SEE DETAIL 2/C-12
- ASPHALT RECONSTRUCTION, SEE DETAIL 3/C-12
- POINT - SEE POINT TABLE BELOW FOR COORDINATES

POINT TABLE		
POINT #	NORTHING	EASTING
1	55296.40	85931.85
2	55308.40	85940.92
3	55269.35	85950.67
4	55246.91	85948.31
5	55230.56	85953.63
6	55240.18	85983.12
7	55146.74	86104.24
8	55137.27	86111.12
9	55133.27	86119.72
10	55113.08	86144.30
11	55066.17	86201.43
12	55083.10	86215.08
13	55054.93	86247.67
14	55091.56	86276.44
15	54982.48	86416.50
16	54930.00	86375.63
17	54931.73	86372.73
18	54908.06	86355.25
19	54906.19	86357.09
20	54891.63	86345.75
21	54900.91	86333.23

POINT TABLE CONT.		
POINT #	NORTHING	EASTING
22	54916.86	86306.39
23	54925.93	86247.70
24	54938.37	86212.17
25	54954.35	86190.44
26	54978.20	86189.16
27	54968.36	86178.99
28	54948.27	86149.42
29	54943.82	86138.66
30	54951.69	86128.65
31	54992.74	86156.73
32	55008.73	86147.73
33	55044.21	86111.00
34	55074.36	86114.00
35	55091.04	86114.68
36	55104.91	86110.56
37	55118.46	86098.95
38	55102.24	86102.22
39	55070.67	86084.06
40	55049.36	86110.87
41	55190.62	85911.16
42	55168.62	85926.10

CAN YOU SEE THE AIRPLANES? THE ADJACENT SAMPLES SHOW THREE DIFFERENT LEVELS OF SHADING. SETTINGS FOR VIEWING AND PRINTING DRAWING CONTENT ARE OPTIMIZED WHEN ALL THREE PLANES ARE VISIBLE. THIS GUIDANCE IS PROVIDED FOR REFERENCE ONLY.

NO.	DATE	BY	REVISIONS	APPV'D	CK'D

PORT OF PORTLAND
PORTLAND, OREGON

kpff
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www.kpff.com

2019D007 DESIGN NUMBER
102690 PROJECT NUMBER

PRELIMINARY
2020

DESIGNED BY K. THOMASON
DRAWN BY J. LAMONT
CHECKED BY R. MILKOWSKI
DATE JAN 2020
SCALE AS SHOWN

PORTLAND INTERNATIONAL AIRPORT

NAVIGATION BASE STORMWATER TREATMENT IMPROVEMENTS
PAVING AND SITE PLAN

SUBMITTED BY ROGER ANDERSON, PROJECT ENGINEER
TYPE CD | DRAWING NO. NAVD 2020-500 | SHEET NO. 8/27 | DISC. SHT. NO. C-4

PRINTED: 12/6/2019 4:10:14 PM KTHOMASON\\c\p\2016\1600058-pop-civil-on-call\23-navigation base stormwater\cad\plot\paving and site plan.dwg

DRAWING SCALE IS **REDUCED 50%** WHEN SHEET SIZE IS 11" x 17".

ATTACHMENT E

0' 10' 20' 40' 60'

SCALE: IN FEET

EROSION CONTROL NOTE(S):

1. EROSION CONTROL MEASURES NEED TO BE INSTALLED PRIOR TO THE START OF WORK.
2. TEMPORARY EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AS SHOWN. ADHERE TO CITY OF PORTLAND EROSION CONTROL GUIDLINES AND SPECIFICATION SECTION 015713 TEMPORARY EROSION AND SEDIMENT CONTROL. THE MEASURES SHOWN HERE ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED CONDITIONS. UPGRADE FACILITIES AS NEEDED TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.
3. MAINTAIN ALL ROADWAYS, KEEPING THEM CLEAN AND FREE OF CONSTRUCTION MATERIALS AND DEBRIS. PROVIDE DUST CONTROL AS NEEDED.
4. PREVENT SEDIMENT AND SEDIMENT LADEN WATER FROM ENTERING THE STORM DRAINAGE SYSTEM.
5. INSTALL CONCRETE WASHOUT FACILITY PER DETAIL 3/C-15 AS REQUIRED.

LEGEND:

SEDIMENT BARRIER — 2 / C-15

INLET PROTECTION — 1 / C-15

GRAPHIC SCALE - FOR REFERENCE ONLY
0 1/4" 1/2" 1"

CAN YOU SEE THE AIRPLANES? THE ADJACENT SAMPLES SHOW THREE DIFFERENT LEVELS OF SHADING. SETTINGS FOR VIEWING AND PRINTING DRAWING CONTENT ARE OPTIMIZED WHEN ALL THREE PLANES ARE VISIBLE. THIS GUIDANCE IS PROVIDED FOR REFERENCE ONLY.

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DRAWN BY J. LAMONT
CHECKED BY R. MILKOWSKI
DATE JAN 2020
SCALE 1" = 20'

PORTLAND INTERNATIONAL AIRPORT

NAVIGATION BASE STORMWATER TREATMENT IMPROVEMENTS
EROSION CONTROL PLAN

SUBMITTED BY ROGER ANDERSON, PROJECT ENGINEER

TYPE CD | DRAWING NO. NAVD 2020-500 | SHEET NO. 18/27 | DISC. SHT. NO. C-14

PRINTED: 12/6/2019 4:12:45 PM KTHOMASON\\c\p\2016\1600058-pop-civil-on-call\23-navigation base stormwater\cad\plot\erosion control plan.dwg

DRAWING SCALE IS **REDUCED 50%** WHEN SHEET SIZE IS 11" x 17".