STORMWATER POLLUTION CONTROL PLAN
For

Site Name: Port of Portland Terminal 6
Site Operator: Port of Portland

DEQ File Number: 125313
EPA Number: ORR807319

Contact Person:
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Site Physical Address:
Terminal 6 North 7201 North Marine Drive
Portland, OR 97210-1315

Mailing Address:
P.O. Box 3529
Portland, OR 97208-3529

Plan Date:
August 31, 2021

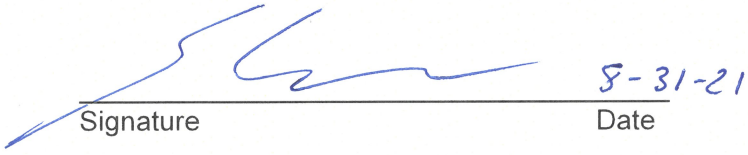
Standard Industrial Classification (SIC) Codes

The Port of Portland Terminal 6 is a marine break bulk cargo facility with a primary function of handling bulk materials cargo between ships, trains, and trucks. The primary SIC code is ***4491 - Marine Cargo Handling***. Secondary SIC codes for rail and truck operations, and maintenance activities include 4013 Railroad Switching and Terminal Establishments, and 4225 General Warehousing and Storage, 4231 Terminal and Joint Terminal Maintenance Facilities for Motor Freight Transportation. Based on the primary activity at the facility, this Terminal 6 is subject to Sector Q - Water Transportation sector-specific requirements of the 1200-Z permit.

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.



5-31-21

Signature Date

Stan Jones
Senior Manager, Environmental Operations

STORMWATER POLLUTION CONTROL PLAN CHECKLIST

Site Name: Terminal 6 *Name DEQ File No. 125313*

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	NA	
		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	NA	
		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	NA	
		Vehicle and equipment maintenance cleaning areas	NA	
		Loading/unloading areas	Figure 2	
		Locations used for the treatment, storage, or disposal of wastes	NA	
		Liquid storage tanks	NA	
		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	NA	
		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	2-4	
	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	2-3	
	A.1.k	Non-stormwater discharges	3-3	
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	3-4	
		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	3-1	
	A.1.a	Minimize exposure	3-1	
	A.1.b	Oil and grease	3-2	
	A.1.c	Waste chemicals and material disposal	3-2	
	A.1.d	Erosion and sediment control	3-2	
	A.1.e	Debris control	3-2	
	A.1.f	Dust generation and vehicle tracking	3-2	
	A.1.g	Housekeeping	3-2	

Permit Schedule		SWPCP Required Element	Page No.	Comments (Official Use Only)
Procedures and Schedules	A.10.b.vi	Include known maintenance schedules and frequency of housekeeping measures	3-6	
	A.1.h and A.10.c	**Spill prevention and response procedures:**	4-1	
	A.10.c.i	Procedures for preventing and responding to spills and cleanup and notification procedures	4-1	
		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	4-1	
	A.1.h.vi	Documentation and notification, including OERS number	4-2	
	A.1.i and A.10.d	**Preventative Maintenance:**	3-19	
		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	
		Schedules of waste collection	3-17	
	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:**	3-3	
		Develop and maintain an employee orientation and education program to inform personnel of the pertinent components and goals of this permit and the SWPCP	3-3	
		Orientation no later than 30 calendar days of hire or change in duties, annually thereafter	3-3	
		Include a description of the training content and the required frequency	3-3	
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	2-2	

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	NA	
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	2-2	
		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.

The Terminal 6 SWPCP was written to address industrial activities and Best Management Practice (BMP) requirements applicable to the Port of Portland (Port), tenants, operators, contractors and similar entities at Terminal 6. Each entity performing an industrial activity is responsible for stormwater compliance in portions of the site they control. 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. 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 Port's Terminal 6 facility, evaluates the potential for stormwater contamination from these sources, and presents the 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 practices 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.

Non-Port Operators means any entity leasing property owned by the Port or any entity performing activities at Terminal 6 subject to the tariff or other leasing agreement and with an associated with the industrial activity that meets either of the following two criteria:

i. The entity has operational control over industrial activities, including the ability to modify those activities; or

ii. The entity has day-to-day operational control of activities at a facility necessary to ensure compliance with the permit (e.g., the entity is authorized to direct workers at a facility to carry out activities required by the 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, 2008 Terminal 6 Stormwater Pollution Control Plan
- Port of Portland 2017, Spill Prevention Control and Countermeasure Plan
- ICTSI Oregon, Inc. 2014 1200-Z Stormwater Pollution Control Plan
- ICTSI Oregon, Inc. 2014 1200-COLS Stormwater Pollution Control Plan
- ICTSI Oregon, Inc. 2016 Spill Prevention Control and Countermeasure Plan

- Port of Portland Terminal 2 2017 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:

- Stan Jones, Senior Manager, Environmental Operations
- Blake Hamalainen, Environmental Specialist
- Erin Anderson, Environmental Specialist
- Amanda Coleman, Manager, Engineering Innovation
- Kat Maloney, GIS Analyst
- Pat Grill, Marine Maintenance Manager
- John Akre, Terminal Business Manager

1.5 Non-Port Operators

Terminal 6 tenants referenced in the SWPCP and entities performing industrial activities under the current tariff are covered under the 1200-Z permit and will comply with the 1200-Z permit and the Terminal 6 SWPCP.

Non-Port operators providing services under the Tariff are responsible for complying with all of the following stormwater requirements:

- Implement planned control measures and best management practices identified in the SWPCP.
- Conduct and document monthly inspections of industrial areas and activities exposed to stormwater, stormwater control measures, structures, catch basins, and treatment facilities including oil/water separators and catch basin filters in accordance with Schedule B.7.
- Perform any necessary preventative maintenance of stormwater control structures and facilities on leasehold.
- Participate in benchmark exceedance investigations and provide information as requested by the Port, local municipality or DEQ.
- Retain copies of inspection forms, preventative maintenance and repair documentation for a minimum of three years and provide copies to the Port, local municipality or DEQ upon request.
- Maintain a written schedule for regular pick-up and disposal of waste materials.
- Develop and implement a Spill Prevention and Response Plan (Spill Plan). The plan must include methods to prevent spills along with cleanup and notification procedures.
- Maintain a copy of the Spill Plan and adequate spill cleanup materials on-site at all times.

- Conduct and document an employee education program to inform personnel of the components and goals of the SWPCP and the Spill Plan consistent with 1200-Z permit requirements. Education and training should occur at the time of hire and annually thereafter.
- Entities preforming industrial activities under the current Tariff may be required to provide a written plan to the Port before services commence outlining, schedule of activities and inspection, potential pollutants, preventative maintenance procedures, and best management practices to prevent or reduce the discharge of pollutants to waters of the state.
- Review the SWPCP whenever facility operations change.
    - Ensure activities are adequately represented in the SWPCP for compliance and accuracy.
    - Submit any revisions or updates within two weeks to the Port's Environmental Department.

1.6 SWPCP Revisions

The SWPCP must be updated to reflect any substantial changes to industrial activities of 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.

If there are name changes or other revisions to this SWPCP, the Port will submit one paper and one electronic copy (.pdf), of the revised SWPCP to the Oregon DEQ. The Port will also keep a copy of the revised SWPCP on site and at the Port office and document the changes in the Record of Change form in Appendix B.

Section 2: Site Description

The Port Terminal 6 facility is located adjacent to the Columbia River in the Rivergate Industrial District 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 Terminal 6 facility drains via a system of catch basins and pipes that flow to three outfalls on the Columbia River and one outfall on the Columbia Slough (see Section 2.6 below).

Table 2-1: Facility Location and Emergency Contacts

Facility Name: **Facility Address:**	Port of Portland Terminal 6 7201 North Marine Drive, Portland, OR 97203	
Regular business hours of operations:	8:00am – 5:00pm	
Emergency Contact: (Spills and Security)	Marine Security Office	Phone #: (503) 240-2230
Stormwater Contact:	Blake Hamalainen	Phone #: (503) 341-7836 (mobile)
Port Communications Center:		Phone #: (503) 460-4000

2.1 Industrial Activities Conducted On-Site

The Port Terminal 6 facility is a marine terminal that maintains equipment used for moving bulk and containerized cargo containers between ships, barges, railcars and trailer trucks. The facility encompasses approximately 220 acres covered under the 1200-Z permit. Typical activities for Terminal 6 involve the interaction of commercial semi-trucks, on-site container transports (yard hustlers and chassis), container lift vehicles (reach stackers), container cranes, container ships, and rail transports. Other equipment used for breakbulk cargoes include mobile cranes, forklifts, and mobile vehicle loading ramps. Additional facilities and activities include vehicle maintenance and fueling, administrative offices, and an electrical shop. Historically most of the site was used for container storage on pavement.

Terminal 6 has the capability to handle a variety of break bulk commodity (e.g. rail, steel plate, steel coil), autos and containerized materials. The amounts and types of materials can vary depending on markets and shipping needs. A list of potential cargoes is discussed in Section 2.5 below. Portions of Terminal 6 may be leased for other operations. If new cargoes or uses of the facility not covered in this current SWPCP occur, this SWPCP will be updated to reflect the new uses.

This SWPCP was written to include industrial activities by non-Port operators and to ensure that non-Port operators at Terminal 6 are responsible for stormwater compliance in portions of the site they operate. 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.

2.2 Receiving Waters and Discharge Points

Terminal 6 is located in an industrial area adjacent to the Columbia River. Runoff from paved areas (Basin H) is directed toward on-site catch basins that discharge to the Columbia River through Discharge Point 005. The latitude and longitude of Discharge Point 005 are 45.634515°N and 122.741218°W.

There are four large areas (Basin I, J, K, and L) that infiltrate into the ground and do not discharge to surface waters.

A section of the southern portion of Terminal 6 (Basin M) drains to the Columbia Slough through Discharge Point 003. The latitude and longitude of Discharge Point 003 are 45.635846°N and 122.755452°W.

Runoff from paved areas in the northwest portion of Terminal 6 (Basin O) is directed toward on-site catch basins that discharge to the Columbia River through Discharge Point 004. The latitude and longitude of Discharge Point 004 are 45.643258°N and 122.752139°W.

2.3 Drainage Area Descriptions and Monitoring Points

There are seven drainage areas that cover approximately 205 acres within the permit boundary at Terminal 6. Below is a description of each drainage basin. Run-on from off-site areas is not known to occur at Terminal 6. The impervious area, total acreage, and final discharge location is summarized for each drainage area in Table 2-2 below.

Table 2-2: Drainage Basin Area in Acres

Drainage Basin	Impervious Area Acres	Total Area Acres	Drainage area Discharge Location
Basin H	10.0	10.0	Columbia River
Basin I	34.1	62.2	Stormwater infiltrates. No storm system in the area.
Basin J	8.2	13.6	Stormwater infiltrates. No storm system in the area.
Basin K	20.0	20.4	Stormwater infiltrates and does not discharge to surface waters. area.
Basin L	57.2	60.3	Stormwater infiltrates and does not discharge to surface waters.
Basin M	11.9	15.2	Columbia Slough
Basin O	36.8	37.9	Columbia River

2.4 Drainage Area Descriptions

There are seven drainage basins at Terminal 6 within the permit boundary. Drainage basins, I and J completely infiltrate through sand and gravel, there is no storm system in these drainage

areas and therefore no discharge. Drainage basins K and L are pumped to an infiltration basin. Drainage basin O discharges to the Columbia River. Drainage basin M discharges to the Columbia Slough. Below is a description of each drainage basin.

Basin H
Basin H is approximately 10 acres of asphalt parking and is used for chassis staging and storage. Buildings are not present in this basin. All stormwater in Basin H drains towards on-site catch basins and is conveyed to a manhole prior to discharge to the Columbia River. Monitoring Point 005 is located on the north side of Basin H, in manhole STSMH3227 just before discharging to the Columbia River through Discharge Point 005 (STSOUT273).

Basin I
Basin I is approximately 62.2 acres with 34.1 acres of impervious surface. A large bioretention facility was constructed in Basin I to infiltrate stormwater pumped from Basins K and L. The remaining acreage consists primarily of rail tracks and gravel areas. Buildings are not present in this basin. This area, referred to as the Intermodal rail yard, infiltrates into the ground without discharging to surface waters. No storm sewer system infrastructure exists in this basin.

Basin J
Basin J is approximately 13.6 acres with 8.2 acres of impervious surface. Stormwater in this area infiltrates into the ground without discharging to surface waters and is not serviced by a storm sewer system. There are no buildings present in the basin.

Basin K
Basin K is approximately 20.4 acres with 20 acres of impervious surface. Block houses containing electrical equipment are in this basin. All stormwater drains towards on-site catch basins and is conveyed to the Basin K lift station located in the northeast portion of the drainage area. Stormwater is conveyed via force main to a bioretention pond located in Basin I where it infiltrates. Flows exceeding the design storm (see Appendix C Tier II Report) bypass the lift station and are conveyed to Discharge Point 002. In the event of system failure or other unforeseen circumstances, the bioretention pond is equipped with an emergency overflow structure, which conveys stormwater to Discharge Point 002. A monitoring point is not required in Basin K.

Basin L
Basin L is approximately 60.3 acres with 57.2 acres of impervious surface. All stormwater in Basin L drains towards on-site catch basins. The row of catch basin laterals closest to the dock's edge is routed to and treated by two oil water separators (OWS). One of the OWS treats the east lateral and the other treats the west lateral. After flowing through an OWS stormwater is conveyed via gravity pipe to the Basin L lift station located in the northeast portion of the drainage area. Stormwater is conveyed via force main to a bioretention pond located in Basin I where it infiltrates. Flows exceeding the design storm (see Appendix C Tier II Report) bypass the lift station and are conveyed to Discharge Point 002. In the event of system failure or other unforeseen circumstances the bioretention pond is equipped with an emergency overflow structure, which conveys stormwater to Discharge Point 002. A monitoring point is not required in Basin L. This basin contains the majority of the buildings on the site including the following:

- Administration building 7201 (wooden structure);
- Transtainer building (metal structure) - maintenance area for reach stackers;
- Former Gearlocker building/Top loader maintenance building 7151 (metal structure) maintenance of reach stackers and crane spreader bars;
- Crane maintenance shop 7209 (metal structure) –various crane maintenance and storage area for spare parts;
- Waste receiving building 7199 (metal roof over concrete slab) - covered storage area for solid wastes awaiting disposition;
- Berth 605 dock office building 7101 three story wood structure; *and*
- Several concrete block houses containing electrical equipment.

In addition to the activities that take place inside buildings, the following activities take place outdoors:

- Yard hustler parking and fueling;
- Employee auto parking near the administration building and the crane maintenance shop;
- Hazardous cargo storage in a designated area;
- Container cleaning area (drains to the City's sanitary sewer system);
- Equipment steam cleaning area (drains to the City's sanitary sewer system);
- Covered storage areas (i.e. oils, antifreeze) necessary for vehicle maintenance and site activities; *and*
- Street sweeping solids and decant water storage in bins (drains to the City's sanitary sewer system).

As listed above, drainage Basin L contains a Hazardous Cargo Area. The hazardous cargo area is used to temporarily store any hazardous containers handled at the Facility. The area is also used to temporarily store containers leaking fluids. This area is divided into three distinct zones and has three stormwater shut-off sluice gates, to control any spills or leaks that may occur. The zones, catch basins, and shut-off gates are clearly marked to identify which gate to use in case of an emergency or spill. The gate operation is checked monthly by MFM plumbers. In addition, Marine Security and Port spill response staff have been trained to operate the shut-off system.

Basin M

Basin M is 15.1 acres with 11.9 acres of impervious surface. One industrial building is located within drainage basin M, the US Customs, Gear Locker and Warehouse building 7515, also known as the CDC. The CDC is approximately 200,000 square feet and consists primarily of warehouse space with offices located in the southwestern portion. The CDC building is used for storage of materials and general maintenance and repair of vehicles, reach stackers, and various equipment. The main secured entrance and gate house are located in the western portion of the drainage basin.

There is an exterior used oil Aboveground Storage Tank (AST), equipped with an overflow alarm system, located on the west side of the CDC building. A fueling area is also located west of the CDC building. Two ASTs are used to store fuel (12,000-gallon diesel capacity and 4,000-gallon gasoline capacity) and are located adjacent to the fuel area. Stormwater from the fuel island flows through an OWS and then to the City sanitary sewer. A valve exists downpipe of

the OWS that can be closed in the event of a spill to protect the sanitary sewer. A second valve is located on the lateral south of the sanitary catch basin which is just southwest of the fuel pad.

The areas adjacent to the CDC building are primarily developed with asphalt concrete for parking, concrete loading areas, and graveled areas along the northeastern and eastern portions. Vegetated areas are limited to landscaping along the main entrance road off North Marine Drive and the southwestern portion of the basin.

The basin topography generally slopes from northeast to the southwest. Paved areas are engineered with slopes for drainage (Figure 2). Surface water from impervious areas is directed toward on-site catch basins located throughout the site.

Drainage Basin M is serviced by a storm sewer system that discharges to the City's MS4, which also drains North Marine Drive. Stormwater discharges from Basin M to the Columbia Slough via the City's MS4 through Discharge Point 003.

Basin O
Basin O is approximately 38.1 acres with 37 acres of impervious surface. Buildings in the basin are constructed with wood, concrete and metal and activities include container and bulk cargo handling, as well as truck weighing.

Basin O is serviced by a stormwater piping system, which discharges to the Columbia River through Discharge Point 004, adjacent to Berth 603. All stormwater drains towards on-site catch basins. There are four catch basins directly adjacent to the Berth 603 dock office that connect to an oil-water separator which treats the water prior to being discharged through Discharge Point 004.

2.5 Significant Materials

Significant materials are handled or stored at Terminal 6 North in a manner that minimizes exposure to stormwater. Most of the maintenance and shop activities occur within roofed buildings. Activities that could contribute pollutants to runoff occur in impervious areas related to vehicle access and fueling. A detailed description of these areas and activities is shown in Table 2-3 on the following page. Significant materials from historical activities are not known to exist 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 Terminal 6. The spill response section of the SPCC plan is included in section 4 of this SWPCP.

Multiple above ground storage tanks, mobile storage tanks and portable containers containing petroleum products are stored in designated areas throughout Terminal 6. 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 Oil Storage 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							
T6-AST-1	Interior CDC oil storage room	Motor oil	350	Steel	Gauge	Grated concrete vault	>350
T6-AST-2		Motor oil	182	Steel	Gauge	Grated concrete vault	>350
T6-AST-3		ATF	250	Steel	Gauge	Inside secondary containment	>250
T6-AST-4	Outdoors west of CDC building	Used oil	1,150	Steel	Gauge	Vaulted/Double-walled	>1,150
T6-AST-5	Outdoor CDC fueling area	Diesel fuel	12,000	Steel	Gauge	Double-walled	>12,000
T6-AST-6		Gasoline	4,000	Steel	Gauge	Double-walled	>4,000
T6-AST-7	Adjacent to the Transtainer building in a shed	Hydraulic oil	500	Steel	Gauge	Double-walled	>500
T6-AST-8		Used oil	1,000	Steel	Gauge	Double-walled	>1,000
T6-AST-9		Motor oil	500	Steel	Gauge	Double-walled	>500
T6-AST-10		ATF	280	Steel	Gauge	Double-walled	>280
T6-AST-11		Gear oil	120	Steel	Gauge	Double-walled	>120
T6-AST-12	Interior CDC	Diesel	600	Steel	Gauge	Double-walled	>600
PORTABLE CONTAINERS, TOTES, AND DRUMS (Drums are not equipped with gauges)							
DS-1	Interior CDC oil storage room	Various oils	Up to 15 drums	Steel	None	Inside oil storage room	>55
DS-2	Outside transtainer building (In sheds)	Various oils	Up to 3 drums	Steel	None	On containment pallets within bermed, covered area	>55
DS-3	Transtainer building	Various oils	Up to 15 drums	Steel	None	Inside building	>55
DS-4	Fenced drum storage Area	Empty drums, absorbent materials used to cleanup spills	Up to 50 drums	Polyurethane	None	In bermed, covered area with blind sump	>55
DS-5	Crane Maintenance shop	Various oils	Up to 10 drums	Steel	None	Inside building	>55
MOBILE GENERATORS							
MG-1	SW of CDC	Diesel fuel	1,200	Steel	Gauge	Steel containment	>1,200
MG-2	NE of CDC	Diesel fuel	1,200	Steel	Gauge	Double-walled	>1,200
FUEL TRUCK							
T-1	Fueling Station	Diesel	2,200	Steel	None	Double-walled	>2,200

2.6 Potential Pollutants

Outdoor activities include movement and temporary storage of break-bulk, bulk and containerized materials and fueling of container-moving equipment. Industrial activities that are exposed to stormwater at the site are located on impervious paved areas. Terminal 6 facility includes maintenance of equipment used for moving cargo. Maintenance 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.

Containers are currently handled at Terminal 6. The exact nature of future bulk and break-bulk business at Terminal 6 is currently unknown. Cargos may arrive on a short-term basis with very short notice of when vessels will arrive. The list of potential cargoes listed in Table 2-4 was developed to be able to have a permit in place that allows for the handling of these materials if and when the business may take place. It should be noted that the list of potential cargoes included in Table 2-4 are *potential* cargoes that *could* be handled at the facility and that only a very few of the cargoes listed will likely be handled at the facility. The cargos that are most likely to be handled are containers, steel slab, break bulk such as steel, lumber, transformers, and finished autos. Cargo will be handled with the equipment listed in Section 2.3 or moved offsite on railcars.

2.7 Sector-Specific Source Identification

The 1200-Z permit includes sector-specific requirements, including identification of industry-sector specific sources. The Port facility falls under industry sector Q – Water Transportation because its Primary Code is 4491. The following potential pollutant sources related to this sector were assessed:

Outdoor manufacturing or processing activities: No outdoor manufacturing or processing activities are currently conducted or anticipated at Terminal 6. However, if any such activities should occur in the future, this SWPCP will be amended to describe specific pollution prevention measures that will be taken to address specific manufacturing or processing activities.

Significant dust or particulate generating processes: No ship repair or painting activities that could generate dust or particulates are currently allowed or anticipated at Terminal 6. Handling and storage of fine bulk materials have the potential to generate dust. Typically, these materials will be handled in a manner to minimize dust generation will be stored inside warehouse buildings. Specific management plans will be created for each individual cargo handling operations that has the potential to create dust.

Because land transportation and equipment maintenance take place at the Terminal 6 facility, the following Sector P – Land Transportation and Warehousing related potential sources were also evaluated:

Onsite waste storage or disposal: maintenance-related wastes generated at the site are contained within holding tanks with secondary containment. Municipal refuse is held in covered dumpsters. Dunnage (typically wood spacers or straps used to secure cargo) may be held in open dumpsters pending recycling or disposal in accordance with local, state and federal regulations. Liquid wastes generated during equipment maintenance are recycled or disposed

of according to state and federal regulations. Solid wastes are disposed of at a permitted solid waste disposal facility. Per Port policy, no wastes are disposed of onsite.

Dirt/gravel parking areas for vehicles awaiting maintenance: Vehicles awaiting maintenance are staged inside the CDC building, adjacent warehouses or next to the maintenance building in the area shown on Figure 2. This area is paved so leaks can be detected.

Illicit plumbing connections between shop floor drains and the stormwater conveyance system: The Port has visually verified that all floor drains including warehouse drains and shop floor drains have been filled with concrete or otherwise plugged such that they do not flow to the storm sewer system.

Fueling area: Fueling may take place in three designated fueling areas located in drainage basin M on the west side of the CDC, and in two locations in the southern portion of drainage basin L, as shown on Figure 2. The CDC fueling area, including the fuel nozzle rack, drains through an oil/water separator and then to the City sanitary sewer system. In the event of a spill a valve located downstream of the oil/water separator can be closed, isolating the spill area. Spill kits are located in these areas. The Port requires staff to be present during vehicle fueling.

Table 2-4: Significant Materials and Potential Source Descriptions – Columbia River Discharges

				BENCHMARK PARAMETERS						IMPAIRMENT					SECTOR		ADDITIONAL POLLUTANTS			
MATERIAL	Constituents	Mobile Solids	Solubility	pH	TSS	Oil & Grease	T-Zinc	T-Copper	T-Lead	Aldrin	DDE	PCBs	PAHs	T-Arsenic	T-Iron	T-Aluminum	T-Cadmium	T-Chromium	T-Nickel	Overall Pollutant Risk
LOGS WITH BARK AND DE-BARKED	Solids, tannins, oils	Moderate	Low	x	x	x														Moderate
LUMBER	Tannins, oils	Low	Low	x	x	x														Moderate
BULK ORES:																				
BARITE	Barium sulfate, trace Fe, Hg, Cd, Cu, Pb, Zn, sulfide, phosphate	High	Low		x		x	x	x						x		x			High
MANGANESE	Manganese oxide	High	Low																	High
UREA	Assumes pure synthetic Urea in prill or granules, can break down into ammonia	High	High	7.5-9.5																High
BULK FERTILIZERS:																				
SODA ASH	Sodium carbonate	High	High	x	x															High
POTASH	Potassium carbonate/chloride/sulfate/magnesium sulfate/nitrate	High	High	x	x															High
OTHER DRY BULKS:																				
GRAINS	Carbohydrates, proteins, fiber	High	Low		x															Moderate
WOOD/BIO PELLETS	Solids, tannins, oils	Moderate	Low	x	x	x														Moderate
HAY AND OTHER ANIMAL FEED	Carbohydrates, proteins, fiber	High	Low	x	x															Moderate
COTTON SEED	Carbohydrates, proteins, fiber	High	Low	x	x	x														Moderate
SALT (CHILE)	Sodium chloride, trace Al, Fe, Mg, K, Sr	High	High		x										x					High
FRACKING SAND	Quartz, silica, ceramic, possible resin	High	Low		x															Moderate
SCRAP METAL	Iron, copper, lead, zinc, aluminum		Moderate	x	x	x	x	x	x			x	x		x	x	x	x	x	High
STEEL RAIL	Iron, trace copper (0.4 to 0.6%), Manganese (1.65%)	Low	Low												x					Low
STEEL PLATE	Iron, trace copper (0.4 to 0.6%), Manganese (1.65%)	Low	Low												x					Low
ROLLED STEEL	Iron, trace copper (0.4 to 0.6%), Manganese (1.65%)	Low	Low												x					Low
TRANSFORMERS AND OTHER MECHANICAL EQUIPMENT	Painted steel, oils	Low	Low			x														Low
CONTAINERS	Materials inside painted steel containers	Low	Low																	Low
RELIEF TRAILERS	Materials inside painted steel containers	Low	Low																	Low
BARGE COMPONENTS	Steel, oils	Low	Low			x														Low
MILITARY EQUIPMENT	Steel, oils	Low	Low			x														Low
ROLL-ON/ROLL OFF VEHICLES	Steel, oils	Low	Low			x														Low
SEDIMENT (DEWATERED)	Sand and silt, possible low level contaminants	High	Low		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	High
CONTAINERIZED WASTE	Materials inside painted steel containers	Low	Low																	Low

2.8 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 Terminal 6.

Section 3: Site Controls

3.1 General

Implementation of site stormwater pollution controls helps reduce the concentration 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 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, these activities will be conducted outside in a designated berm and/or covered area to reduce stormwater exposure.

- Use grading, berm, or curbing - Berms, bunds or curbs provide secondary containment for materials stored in ASTs. The fueling area in drainage basin M is

sloped inward to two separate catch basins, which drain to an oil water separator, emergency shut off valve then to the sanitary sewer.

- Store all hazardous substances within berms or other secondary containment devices – The drainage basin L hazardous cargo storage area is divided into three separate drainage zones. Each of these zones has sluice gates with shutoff valves that can be closed for system containment in the event of a leaking container, hazardous material fire, or other situation that could impact stormwater runoff. This area is also equipped with a bermed area for potential leaking containers. Each catch basin is labeled with the associated sluice gate. All hazardous substances are stored indoors or within berms or other secondary containment devices to prevent leaks and spills from contaminating stormwater.

- 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 a berm area that prevents runoff and run-on and also captures overspray – Wash water in drainage basin L drains to a proper collection system such as a closed-loop system or sanitary sewer and not discharged to the stormwater drainage system unless the wash water is an authorized non-stormwater discharge

- 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 Terminal 6 spill response procedures for all spills and leaks. Spill kits are located in areas where spills may occur (see Figure 2).

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:

- Except for mobile fueling performed in the designated fueling area, petroleum products are stored and dispensed in the covered maintenance shop. Pressure/steam cleaning is performed over a cleaning pad that drains to an oil/water separator and then to the sanitary sewer. Shop floors are routinely cleaned to prevent drag-out from the shop floor. Mobile Equipment carry oil spill containment materials and all spills are promptly reported and cleaned up.

- A portion of the discharges in drainage basin O flow through an oil water separator adjacent to berth 603 dock office before discharging to the Columbia River.

- In drainage basin M, stormwater in the fuel pad area flows through an oil water separator prior to discharging to the sanitary sewer.

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. Non-Port operators are responsible for managing waste and materials generated by their activities.

- Waste chemicals generated at Terminal 6 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. A variety of wastes, including spent oil absorbent pads, used batteries, used catch basin filters and catch basin cleanout debris, are stored inside the Waste Receiving building.
- Used batteries are stored in a covered cabinet located on the north side of building 7205 and picked up by a licensed contractor and recycled or disposed of off-site
- Used oil is stored in covered cabinets in double walled tanks along the west side of building 7151 and in a double walled above ground storage tank on the west side of the building 7515 and picked up by a licensed contractor and disposed of off-site
- Scrap metal is stored in a covered drop box inside the CDC building, 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.

- Most of the site is paved to reduce erosion. Pavement sweeping is conducted to remove sediment and dust that have accumulated on paved surfaces. Operational sweeping will vary based on the specific activity and cargo being handled.

- Landscaped areas are well vegetated and regularly maintained.

- Filter inserts are installed in all catch basins in Basin O to filter out sediment.

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. The yard area is swept.
- Lot sweeping is conducting 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.

3.2.6 Dust Generation and Vehicle Tracking:

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

- High traffic areas of the yard are paved and regularly swept.
- Lot sweeping is conducting during times the wind is minimal. Use vacuum recovery lot sweeping equipment.
- Specific bmp will be developed and implemented as applicable to individual cargo handling activities that have the potential to generate dust.

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 fixed cranes, workers must eliminate the potential for spent abrasives, paint chips, and overspray to discharge into receiving waters or the storm sewer systems. Contain all blasting and painting activities or use other measures to minimize the discharge of contaminants (e.g., hanging plastic barriers or tarpaulins during blasting or painting operations to contain debris). When necessary, regularly clean stormwater conveyances of deposits of abrasive blasting debris and paint chips.

- Materials and produces are stored in designated areas and all containerized materials (e.g., fuels, paints, solvents, waste oil, antifreeze, batteries) are stored and plainly labeled in a covered, contained, and secure location away from drains. Covered secondary containment and enclosures are used for materials stored outdoors. If abrasive blasting is performed, discuss the storage and disposal of spent abrasive materials generated at the facility.

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 the work areas. Rags or spill pads will be used for cleaning small spills and a damp mop will be 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, will not be left lying around on the site.

- Vehicles driven to the site for repair are examined for leaks. Drip pans will be place under the vehicles to collect fluids for recycling or proper disposal.

- Engine and transmission fluids are drained and collected from damaged equipment or wrecked vehicles brought on the site. If the equipment or vehicles were drained prior to arrival at the site, drip pans are 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 a designated area (see Figures C2-C5).

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

3.2.9 Break-Bulk and Bulk Source Control BMPs:

The contractor/operator implements the BMPs identified in this SWPCP during all work activities at Terminal 6 involving break-bulk or bulk products. Storm drains potentially impacted by the work are protected, the area is regularly cleaned, and waste materials disposed of properly. Catch basin inserts (filter media) are deployed in catch basins in Basin O. Warehouses and surrounding terminal areas are thoroughly cleaned as soon as possible following completion of break-bulk or bulk products activities. Product dust is swept up and disposed of safely, in accordance with applicable laws and BMPs. Routine visual inspections of catch basins by both the contractor and Port staff are conducted and documented. Equipment is maintained to control dust and spillage and the product is protected from the elements (rain, wind, snow, etc.) where practical. The non-Port operator will also develop a plan that addresses additional BMPs to be implemented if the bulk activity is conducted during wet weather if the routine BMPs are inadequate to prevent pollutant discharges.

3.2.10 Spill Prevention and Response:

Minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans that include methods for spill prevention and clean-up and notification procedures. Non-Port operators are responsible for maintaining their own spill response plans and procedures. Coordination between Port and non-Port operators are shown in Figure 3.

- The Port has a Spill Prevention, Control, and Countermeasures (SPCC) plan for the facility. The SPCC plan includes regular inspections of the double-walled fuel tanks, transformers, hydraulic systems, and oil/fluids holding tanks. Spill containment and cleanup materials are kept near the potential sources. There are seven spill kits located throughout the site (see Figures C2-C5) for each location. Additional spill response equipment and materials may be brought on site by the stevedoring companies responsible for cargo handling and are dependent upon the materials being transported.

- Spill response procedures and contact information are included in Section 4 of this SWPCP.

- Containers are labeled (e.g., “Used Oil”, “Spent Solvents”, etc.) to encourage proper handling and facilitate rapid response if spills or leaks occur.

- Monthly visual observations of chemical storage and transfer areas check for the presence of minor leaks or spills and overall operational effectiveness as well as structural integrity.

3.2.11 Stormwater Infiltration System

Tier 2 source control and treatment measures have been implemented at the site and include an engineered 9,700 square foot at-grade bioretention pond adjacent to the rail yard (see Figure 2). Stormwater flows from the surface through a gravity conveyance system to lift stations located near Discharge Points 001 & 002. Force mains convey stormwater from each lift station to a pretreatment sedimentation basin for energy dissipation, initial settling, and distribution onto the surface of the bioretention system. Flows exceeding the design storm (see Appendix C Tier

II Report) bypass the lift station and are conveyed to Discharge Points 001 & 002. The bioretention pond is designed to detain and filter stormwater runoff, allowing pollutants to settle and filter out as stormwater percolates through the medium and infiltrates into the ground. In the event of system failure or other unforeseen circumstances stormwater in excess of the bioretention pond infiltration capacity discharges through an emergency overflow structure, into a gravity conveyance system and discharges to the Columbia River at Discharge Point 002.
Mass Reduction Measures Certification

For mass reduction measures installed during previous permit cycles in response to an approved Tier 2 mass reduction waiver that reduced the mass of the pollutants discharged at or above DEQ-approved design storm capacity, the Port must submit to DEQ an evaluation that is certified by an Oregon registered professional engineer (PE). The Port must submit the mass reduction measures stamped certification by December 31, 2021, unless DEQ approves a later date.

3.2.12 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. Inspection forms are available electronically on site and a hard copy is kept by Environmental Operations at the Port's headquarters

- The bioretention pond is inspected monthly to ensure that facility inlets and outlets and overflow are clear of debris and in good working order. Remove trash, debris, and weeds. Ensure no noticeable odors are detected. The pond is inspected quarterly for cracking and deterioration of concrete. Inspect pretreatment and remove sediment annually during dry weather. Stabilize any eroded areas.

- Catch basins – Catch basins are inspected during monthly inspections. These 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 annually 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 placed in a decant box on site (see figure 2), and tested prior to disposal. Solids are profiled and disposed at a subtitle D landfill and liquids are discharged to the City sanitary system after receiving a Batch Discharge Approval from the City. 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 annually or more often if needed.

- Oil water separators - The condition of the oil/water separator system and all its components are inspected monthly. If separators are not functioning efficiently, then maintenance (i.e., cleaning, pump out, etc.) is performed. Oil/water separator maintenance is documented and kept on site and by Environmental Operations at the Port's headquarters.

- Outside Storage Areas – Secondary containment areas, chemical transfer and storage areas, and spill response materials are inspected monthly. These inspections consist of inspecting any stormwater accumulated within these areas for grease sheen and must occur while it is raining. 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
Oil-water separators	Drainage Basins L, M and O	Annual	Monthly
Catch Basin filters	Drainage Basin O	Annual	Monthly
Sweeping	Pavements throughout	Annual and as needed depending on operations	Monthly
Catch Basins	Throughout	Annual or as needed	Monthly in high risk areas
Infiltration System	Basins K and L	See O&M in Appendix C	Monthly

3.2.13 Employee Education:

The Port staff members undergo annual stormwater pollution prevention and spill control training. Training is typically performed in the winter or spring. This training is also provided to new employees (within 30 days of hire) whose work has the potential to impact stormwater quality. Non-Port operators are required to train their staff on best management practices listed in this SWPCP and spill response specific to their operations annually and within 30 days of hire. 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

3.2.14 Non-Stormwater Discharges:

Any discharges not authorized by the 1200-Z permit are investigated and eliminated. The 1200-Z permit include a list of authorized non-stormwater discharges. During monthly inspections, signs of non-stormwater discharges in the stormwater conveyance and collection systems are documented and procedures in Appendix C are followed.

There are no known unauthorized nonstormwater discharges at the site. The following nonstormwater discharges are authorized under the 1200-Z permit:

- Landscape watering providing pesticides and fertilizers is conducted in accordance with manufacturers' instructions.
- Potable water, including water line flushing.
- Pavement washwaters 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).

3.2.15 Schedule E Industry sector specific requirements include:

3.2.15.1 Additional Good Housekeeping Measures:

- **E.Q.1.1.1 Pressure Washing Area**
  Pressure washing is performed on a wash pad that collects and contains the discharges from the pressures washing area so that they are not co-mingled with stormwater discharges authorized by this permit. If warehouse floors or other storage areas are pressure washed, the wash water is captured using vacuum trucks.

- **Blasting and Painting Area**
  There is no ship blasting or painting activities performed at the site. Any painting of small equipment is done inside of the Gearlocker maintenance building.

- **Material Storage Areas**
  All containerized materials (e.g., fuels, paints, solvents, waste oil, antifreeze, batteries) are plainly labeled and stored in a protected, secure location away from drains (inside the Gearlocker except for the exterior Except for the double-walled diesel fuel tank). This practice minimizes the contamination of precipitation or surface runoff from the storage areas. Materials stored indoors include oils, diesel fuel, lubricants, parts cleaners, and antifreeze/coolants. No abrasive blasting is performed at the facility. The Port has environmental policies, including requirements in lease agreements encourages the limitation of potentially hazardous materials onsite.

- **Engine Maintenance and Repair Areas**
  All vehicle maintenance is conducted indoors to minimize the contamination of precipitation or surface runoff from all areas used for engine maintenance and repair.

- **Material Handling Areas**
  The Port uses covered warehouses to temporarily store and handle most bulk materials. The maintenance shop is within a building and thus minimizes the contamination of precipitation or surface runoff from material handling operations and areas (e.g., fueling, paint and solvent mixing). There is no onsite disposal of process wastewater streams from vessels. Because of the size of the material handling equipment, it is not possible to cover the fueling area adjacent to the ASTs. However, fueling from the ASTs takes place on a containment pad that has spill and overflow protection. The fueling area drains flow through an oil water separator and connect to the sanitary sewer. Emergency closure valves are located on the sanitary lines one below the oil water separator and the other below the sanitary catch basin south of the fueling pad. Any mixing of paints and solvents is performed inside the CDC in a designated area.

3.2.15.2 Employee Training

The Port employee training addresses the following activities: used oil and spent solvent management; fueling procedures; general good housekeeping practices; proper painting procedures; and used battery management. Spill and stormwater

training for MFM staff is conducted annually. Any new employee who conducts duties related to the implementation of the SWPCP will be trained within 30 calendar days of being hired. Stormwater and spill training typically consist of:

- Introduction to SWPCP and 1200-Z permit
- Regulatory requirements
- Stormwater protection and good housekeeping BMPs
- Spill response goals
- Responsibilities for spills
- Spill kits and
- Spill notification requirements.

Stormwater training. Attendance records are retained by the Environmental Operations staff at the Port Administrative Office and in the Port's online Learning Management System.

E.Q.1.3 Preventative Maintenance

As part of the Port Preventative maintenance programs, staff perform timely inspection and maintenance of stormwater management devices (e.g., cleaning oil and water separators and catch basins to ensure that solids will be intercepted and retained prior to entering the storm drainage system), as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters.

Site controls will be selected for implementation based upon their effectiveness and cost. Where possible, source controls will be used. End-of-pipe controls may be used in situations where stormwater is required to be treated. Selection of controls is discussed in the following section.

3.2.16 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. Most maintenance activities are done inside without exposure to stormwater.

Table 3-2: Stormwater Best Management Practices Summary

Drainage Basin	Potential Sources[1]	Potential Pollutants	Site Specific BMPs
Basin H	• Chassis and trailer storage • Vehicle traffic	• Debris • Metals • Petroleum hydrocarbons • Sediments	• Annual or as needed scheduled pavement sweeping • Clean out catch basins annually • Monthly visual observation of catch basins and paved areas
Basin K	• Vehicle traffic	• Debris • Metals • Petroleum hydrocarbons • Sediments	• Annual or as needed scheduled pavement sweeping • Clean out catch basins annually • Monthly visual observation of catch basins and paved areas • Infiltration system
Basin L	• Equipment storage, loading, fueling, cleaning and equipment maintenance • Employee vehicle parking • Waste and hazardous waste storage • Street sweeping decant water storage	• Debris • Metals • Petroleum hydrocarbons (fuels, lubes and waste oils) • Solvents • Sediments	• Annual or as needed pavement sweeping • Stormwater vault will be cleaned out annually and cartridges will be replaced every 2 -3 years. • Oil-water separator and sluice gates at steam cleaning/washing area (which drains to sanitary). Oil-water separator will be cleaned out on an annual basis. • Monthly visual observation of catch basins and paved areas • Clean out catch basins annually • Monthly inspection of spill kits • Infiltration system
Basin M	• Container loading storage • Equipment storage, loading, fueling & maintenance • Employee vehicle parking • Waste storage	• Debris • Metals • Petroleum hydrocarbons (fuels, lubes. waste oils) • Solvents • Sediments	• Annual or as needed pavement sweeping • Oil-water separator and sluice gates at fueling center • Monthly visual observation of catch basins, oil water separator and paved areas • Clean out catch basins annually • Spill kits

Basin O	• Equipment maintenance, mobile fueling of vehicles	• Debris • Metals • Petroleum hydrocarbons • Sediments	• Annual or as needed pavement sweeping • Clean out catch basins and deployment of sedimentation filters in all catch basins twice/year • Deployment of filters in all basins. • Designated mobile fueling area, routine monthly visual observation of catch basins, oil water separator, and paved areas • Monthly inspection of spill kits

Section 4: Spill Prevention and Response Plan

4.1 Spill Prevention and Response Procedures

The following is a summary of spill response procedures. Non-Port operators are required to develop and implement spill prevention and response procedures specific to their operations. The process for coordination between non-Port operators, and Port employees is shown in Figure 3.

PORT OF PORTLAND TERMINAL 6 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 TERMINAL 6 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		
Marine Security 24-hour Contact Number	Incident Notification to Appropriate Parties	(503) 240-2230
On Duty Environmental Contact Number	Environmental Incident Command and Control	(503) 460-4000
Marine Security	Assist with Incident Management	(503) 240-2235
EMERGENCY RESPONSE CONTRACTORS		
Telluric Enterprises, Inc.	Provide Spill Response and Cleanup Resources	(503) 703-6057
NRC Environmental Services, Inc.	Provide Spill Response and Cleanup Resources	(800) 337-7455
Terra Hydr, Inc.	Provide Spill Response and Cleanup Resources	(503) 625-4000

IF A SPILL REACHES STATE'S WATER OR HAS THE POTENTIAL TO REACH THE STATE'S WATER, OR IF IN EXCESS OF 42 GALLONS, YOU MUST CALL: (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 (503) 823-3946
National Response Center (NRC) Time:_____ Name:_____	Incident Reporting: If spill exceed CERCLA Federal Response Quantity	(800) 424-8802
Oregon Emergency Response System (OERS) Time:_____ Name:_____	Incident Reporting Provide Spill Response Assistance	(800) 452-0311
Oregon Department of Environmental Quality Time:_____ Name:_____	Incident Reporting Provide Spill Response Assistance	(800) 542-4011
City of Portland Spill Notification Hotline Time:_____ Name:_____	Incident Reporting	503-823-7180
U.S. Coast Guard Time:_____ Name:_____	Incident Reporting	(503) 240-9370
EPA Office Time:_____ Name:_____	Incident Reporting	(503) 326-2715

In addition, record the name of the control officer, time, and details of the conversation on the Spill Response Notification Form in the SPCC plan.

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 provided on the list.

4.1.3 Spill Contingency Plan

In the event of a 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

A spill incident could occur at the facility from the following situations:

- Hydraulic reservoir failure
- Transformer failure

- Spill during loading/offloading operations
- Release from stored materials
- Spill during fueling operations
- Spilled materials inside of a transmodal shipping container

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

  - If able to safely address the spill, ensure that the spill is contained (see map of spill kits on Figure 2)
  - Cover catch basins and use pads to absorb spilled material
  - Pump remaining oil into drums or other appropriate containers away from surface water or storm drains.

4.1.5 Countermeasure Procedures

Once the spill control procedures outlined above have been implemented, facility personnel will initiate countermeasure activities to contain, cleanup, and mitigate the effects of a spill that could impact navigable waters. 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 will be 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
  - Bermed, designated containment area for leaking transmodal containers.

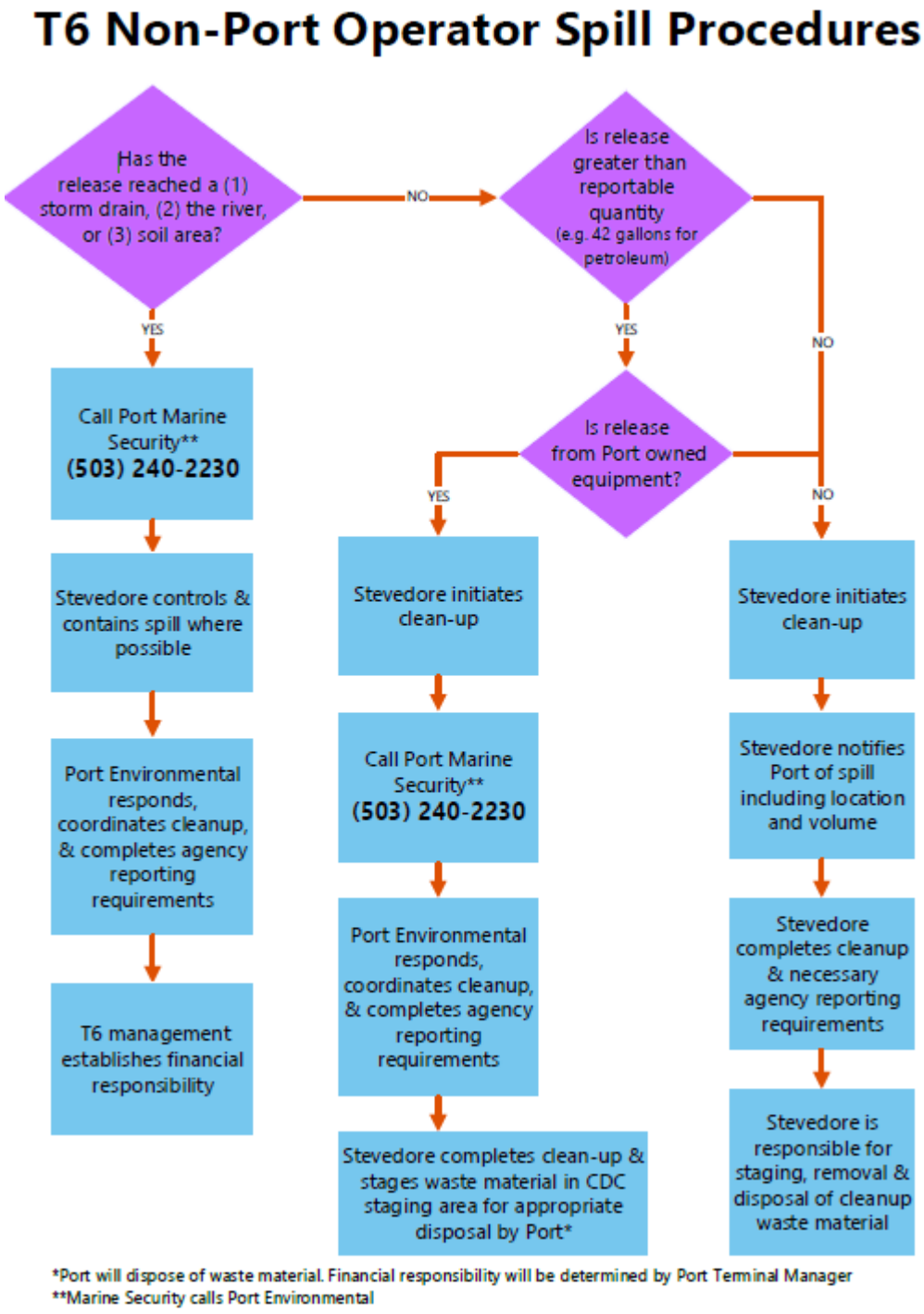
- Removal. Once the spill is contained, the absorbent material will be removed. Removal techniques include, but are not limited to:

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

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

  - Recycling
  - Disposal at an appropriate facility

Figure 3 Non-Port Spill Response Coordination



*Port will dispose of waste material. Financial responsibility will be determined by Port Terminal Manager
**Marine Security calls Port Environmental

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	Fueling island west side of the CDC
Spill Kit #2	Transtainer - north
Spill Kit #3	Transtainer - south
Spill Kit #4	Transtainer - west
Spill Kit #5	Adjacent to the berth 605 dock office building 7101
Spill Kit #6	Adjacent to the berth 603 dock office building 8101
Spill Trailer	Inside CDC Building

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 Potential Spill Locations

Table 4-2 lists the areas where potential spills of significant materials can impact stormwater runoff. These areas are shown on Figure 2.

Table 4-2: Potential Spill Locations

Location of Potential Spills	Potential Pollutants (common name)	Comments
CDC Oil Storage Room	Motor and hydraulic oils	Four steel tanks rest on a concrete vault or other secondary containment. The concrete floor is sloped toward the northwest wall of the building, which provides adequate secondary containment for drums stored in the room.
CDC Fueling Area	Diesel and Unleaded Gasoline Fuels	Fueling done on pad with oil/water separator and emergency shut off valve that drains to sanitary sewer system. The tanks are double walled.
Used Oil Tank	Used Oil	Product spilled on the pavement during transfer or released from secondary containment would likely be captured behind the concrete barriers that protect the tank.
Transtainer Building	Motor oil, hydraulic oil, and used oil.	Product is stored in double-walled tanks, or in drums stored on containment pallets or spill control pallets inside the building.
Transformers	Transformer Oil	The oil is sealed within each transformer and is not drained or added to the transformer on a routine basis.
Fuel Truck	Diesel Fuel	The fuel truck tank is double-walled and is parked on the CDC Fueling Area.
Gensets	Diesel Fuel	A spill response kit sized to capture 120 gallons is maintained in the immediate vicinity of the gensets.
Mobile Generator	Diesel Fuel	A spill trailer stocked with adequate secondary containment equipment for this tank is located just inside the nearby CDC building.
Fenced Drum Storage	Spill Cleanup Materials	A significant spill is unlikely; containers generally contain oil-contaminated absorbent material.
Product in Transmodal Containers	Miscellaneous products	Transmodal containers containing various products.

4.1.8 Spill Cleanup Training

Appropriate Port personnel are trained in incidental spill cleanup procedures and how to use available cleanup equipment including absorbent mats, scoop shovels, brooms, and a highly absorbent sweeping compound. 55-gallon drums are available to be used for receiving spilled materials. Fire extinguishers and ventilation equipment are also available at the facility. Non-Port operators are responsible for training their staff and contractors on their spill plan and for providing spill cleanup equipment appropriate for their industrial activities at Terminal 6.

Section 5: Inspections and Recordkeeping

5.1 Monthly Inspections

Inspections are conducted monthly at the locations identified in Section 4.2.1 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 4.3. Inspection forms are kept on file in the Port Administration Office.

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

Non-Port operators are responsible for conducting monthly inspections of their leased areas and areas within their control in compliance with Schedule B of the 1200-Z permit. Inspections of source areas and site controls are documented, kept onsite for at least three years and made available to the Port, DEQ, or local municipality upon request.

Visual observation of stormwater at the monitoring points and discharge points (see Figure 2) when discharge is occurring during regular business hours, for the presence of floating and suspended solids, foam, visible oil sheen, odor, color, or other obvious indicators of stormwater pollution. Conduct visual observations by collecting stormwater samples in a clean, colorless glass or plastic container and observing it in a well-lit area. Catch basins, manholes and inlets are inspected monthly.

5.1.1 Inspection Areas

General inspection areas include:

- Catch basins
- Roofs, including downspouts, and covers (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)
- Bioretention pond

Industry-specific inspection areas include the following:

- Material storage areas
- Engine maintenance and repair areas, material handling areas
- General yard area

.

5.1.2 Cleaning and Repair Program

Cleaning, maintenance, and repair of materials 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. For cargo shipments which have an abnormally high amount of particulate (dusts or debris), the stevedoring company managing the shipment conducts a post-transfer inspection of the catch basins and ensures that filters are replaced and catch basins are cleaned as necessary. 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 the MFM or a Port contractor. Catch basin cleaning records and water quality 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 container-moving equipment and other vehicles that are used or parked in the facility to help prevent leaks.

5.2 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 (see Monitoring Plan)
- 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 local, state, or federal agency notification. See the SPCC for the notification details. 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 6.4.

Section 6: Benchmarks and Corrective Actions

6.1 General

The Port is required to monitor for the Columbia River and Columbia Slough benchmarks and impairment pollutants as assigned.

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 Columbia River and Columbia Slough Benchmarks

The following benchmarks apply to each discharge point associated with industrial activity.

Table 6-1: Columbia Slough Stormwater Discharge Benchmarks

Parameter	Benchmark
Total Copper	0.017 mg/L
Total Lead	0.10 mg/L
Total Zinc	0.24 mg/L
pH	5.5 – 9.0 S.U.
Total Suspended Solids	30 mg/L
BOD	24 mg/L
E. coli	406/100mL
Phosphorus	0.16 mg/L

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

Table 6-2: Columbia River Stormwater Discharge Benchmarks

Parameter	Benchmark
Total Copper	0.017 mg/L
Total Lead	0.10 mg/L
Total Zinc	0.24 mg/L
pH	6.0 – 9.0 S.U.
Total Suspended Solids	100 mg/L

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

6.3.2 Sector-Specific Benchmarks

Sector Q – Water Transportation Facilities have sector-specific monitoring parameters and benchmark concentrations as shown on Table 6.2:

Table 6-3: Sector Q Discharge Parameters and Benchmarks

Parameter	Benchmark
Total Aluminum	1.10 mg/l

Notes:
mg/l – milligrams per liter

6.3.3 Impairment Pollutants

The Columbia Slough is impaired for total iron and the Port is required to monitor stormwater discharges for total iron as shown in Table 6.4.

Table 6-4: Columbia Slough Impairment Pollutants

Parameter	Benchmark
Total Iron	10 mg/l

Notes:
mg/l – milligrams per liter

6.4 Response to 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 Columbia River or Columbia Slough benchmarks in Schedule B.2 of the 1200-Z permit and summarized in Table 5-4, 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, the P or visual observations of pollution and include the following:

- Investigate the cause of the elevated pollutant levels. If the elevated pollutant levels appear to be caused by a non-Port operator, the Port will require information from the non-Port operator to assist with the investigation.

- 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 on site and submitted to DEQ upon request:

  — The results of the investigation.

  — Corrective actions taken or to be taken by the Port and/or the non-Port operator, 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 Permit statewide benchmark during any reporting year, or if 50 percent or more of the pH measurements collected at any monitoring point during two reporting years is 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 Permit benchmarks to determine whether Tier 2 corrective action requirements were triggered.

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 approves a later date. 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 in writing by the DEQ. The Tier 2 Report must be stamped by an Oregon-licensed PE.

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 resulted 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 by 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 statewide benchmark is attributed solely to the presence of the pollutant(s) in natural background and is 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 most usually not applicable to developed industrial sites.

6.4.6 Tier 2 Notifications

The Port must notify the DEQ in writing 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[2] Total Suspended Solids BOD[1] E. coli[1] Phosphorus[1]	Four times per year (2 between July 1 and December 31; 2 between January 1 and June 30) unless a monitoring waiver is granted.
Sector Q-Specific Parameters	
Total Aluminum	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]Columbia Slough discharges only (drainage basin M)
[2]The sampling crew will analyze for pH at each sampling site. 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.49 (a) of the 1200-Z permit, the Port may request monitoring waivers after completing at least five rounds of sampling data under the following conditions:

- If the geometric mean of five consecutive and qualifying sampling results is equal to or below the applicable Columbia River or Columbia Slough 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 for the monitoring waiver based on the conditions above and include 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) 1200-Z 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 the Port meets requirements in Schedule B.9.a.iv.1 of the 1200-Z permit.

The Port 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 sited, 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 from the Port Terminal 6 facility 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 calibration and 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 Environmental Operations Department.

7.3.1 Reporting Requirements

The stormwater monitoring period is July 1 through June 30. The Port submits DMRs to DEQs 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 Port of Portland Terminal 6 facility is submitted electronically when directed by 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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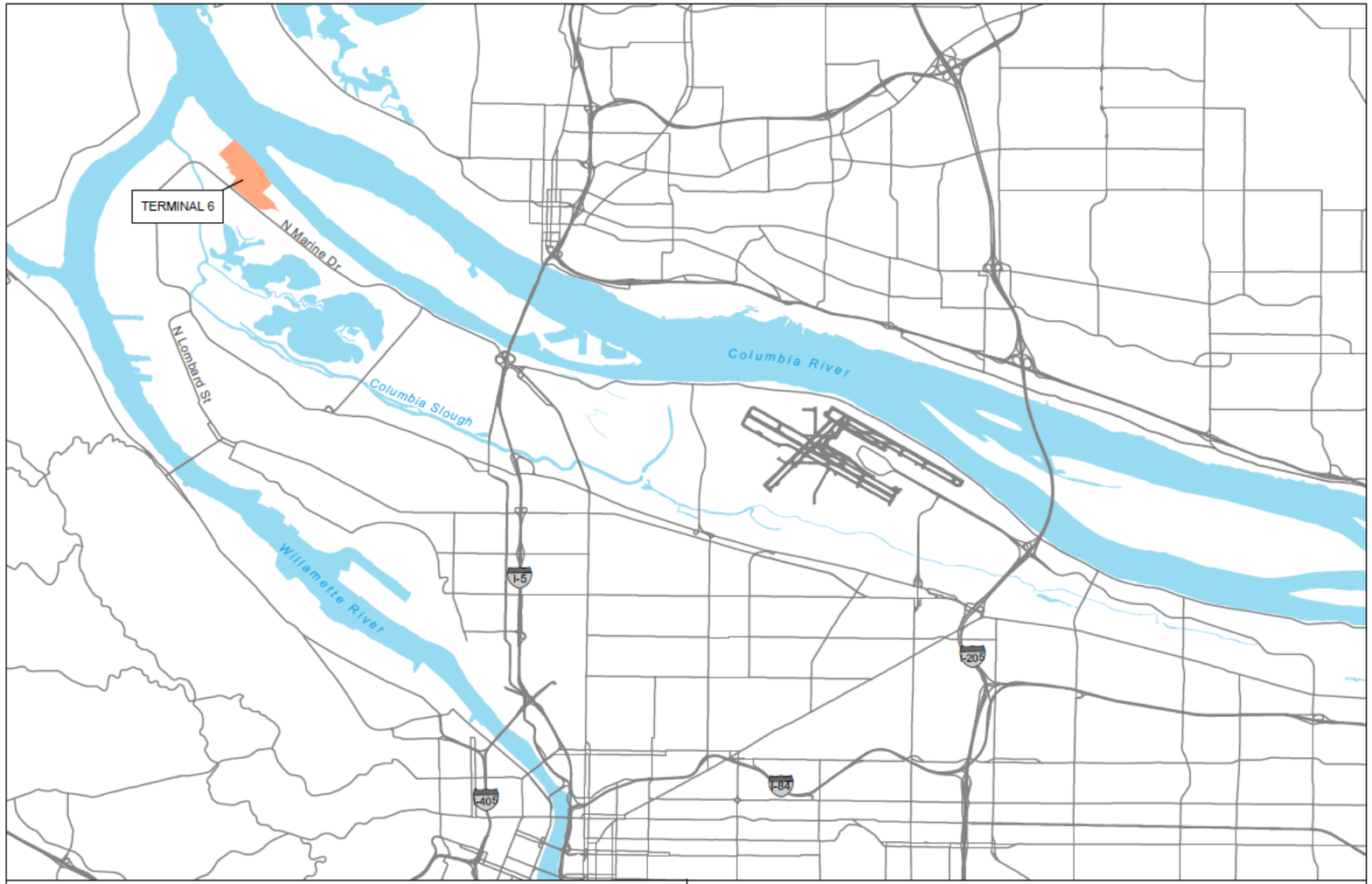
Figure 1 General Location Map

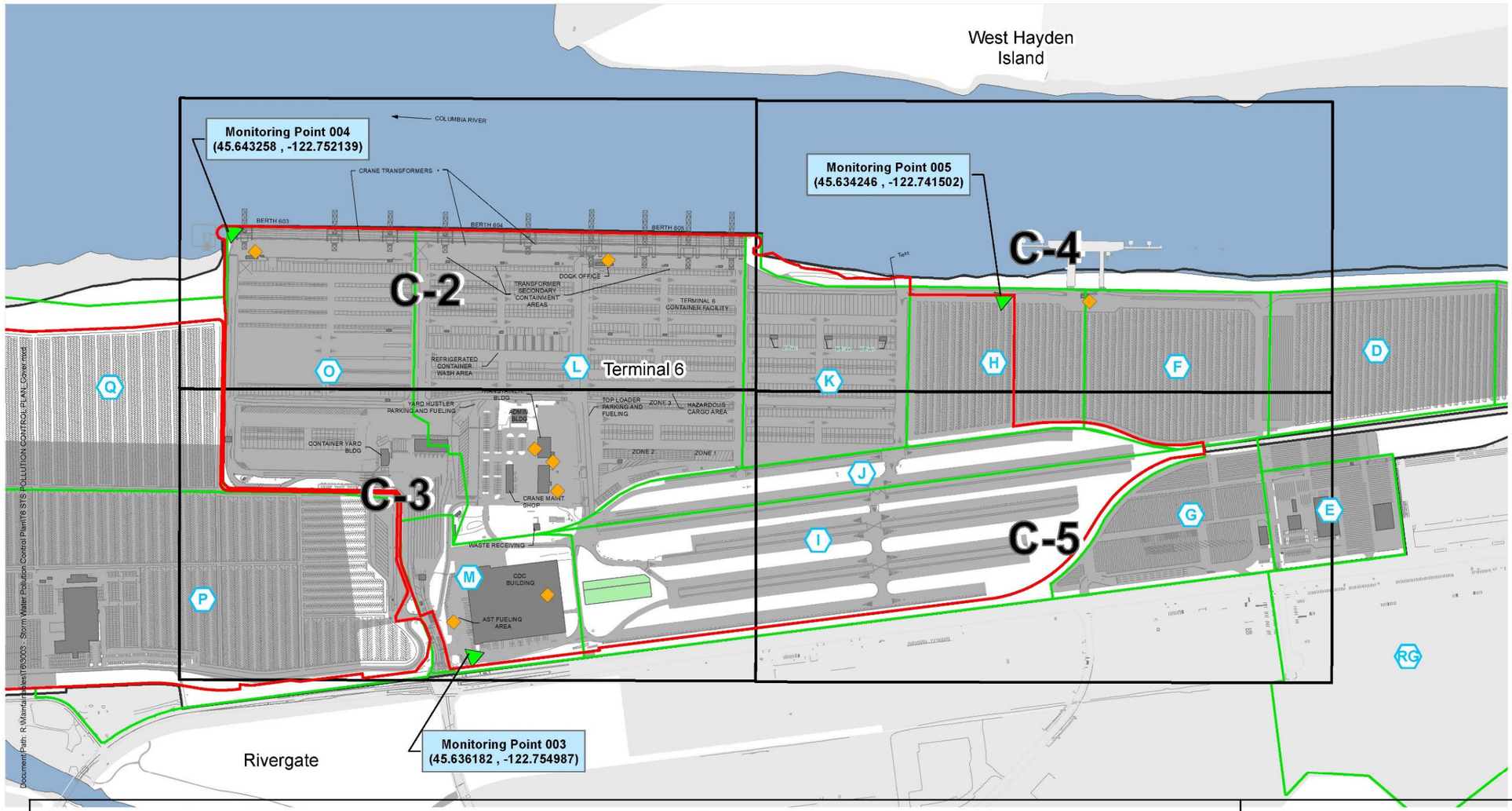


PORT OF PORTLAND
PORTLAND, OREGON

TERMINAL 6

MAP DRAWN: APRIL 2017
PROJECT MANAGER: DANELLE PETERSON

Figure 2: Site Map



Basin	Total Acres	Impervious Acres	Percent Impervious
I	62.23	34.07	54.74
J	13.64	8.17	59.90
K	20.43	20.00	97.91
L	60.34	57.17	94.74
M	15.21	11.90	78.26
O	37.92	36.79	97.01
H	10.0	10.0	100.0

Figure 2: Site Map

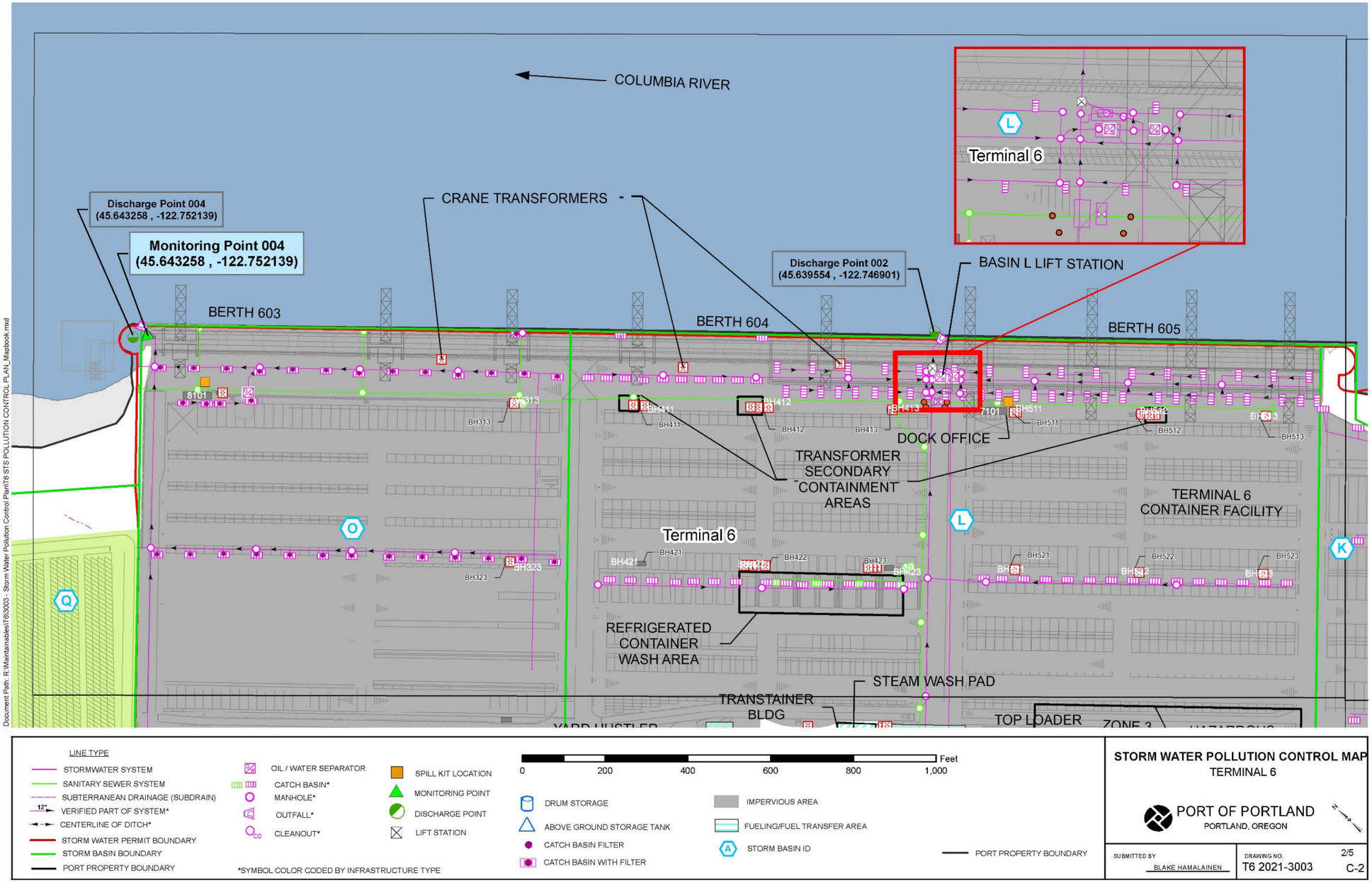


Figure 2: Site Map

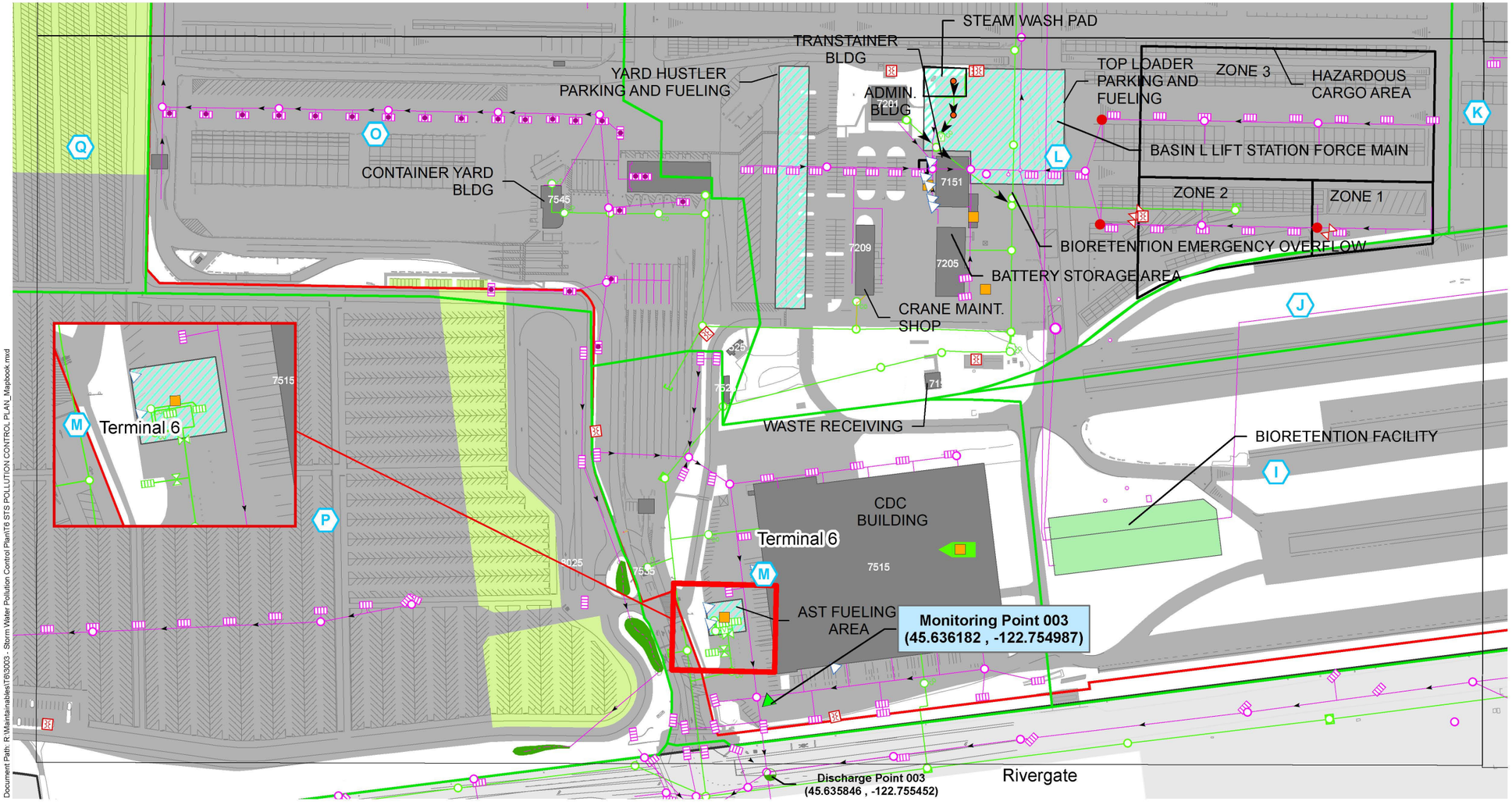


Figure 2: Site Map

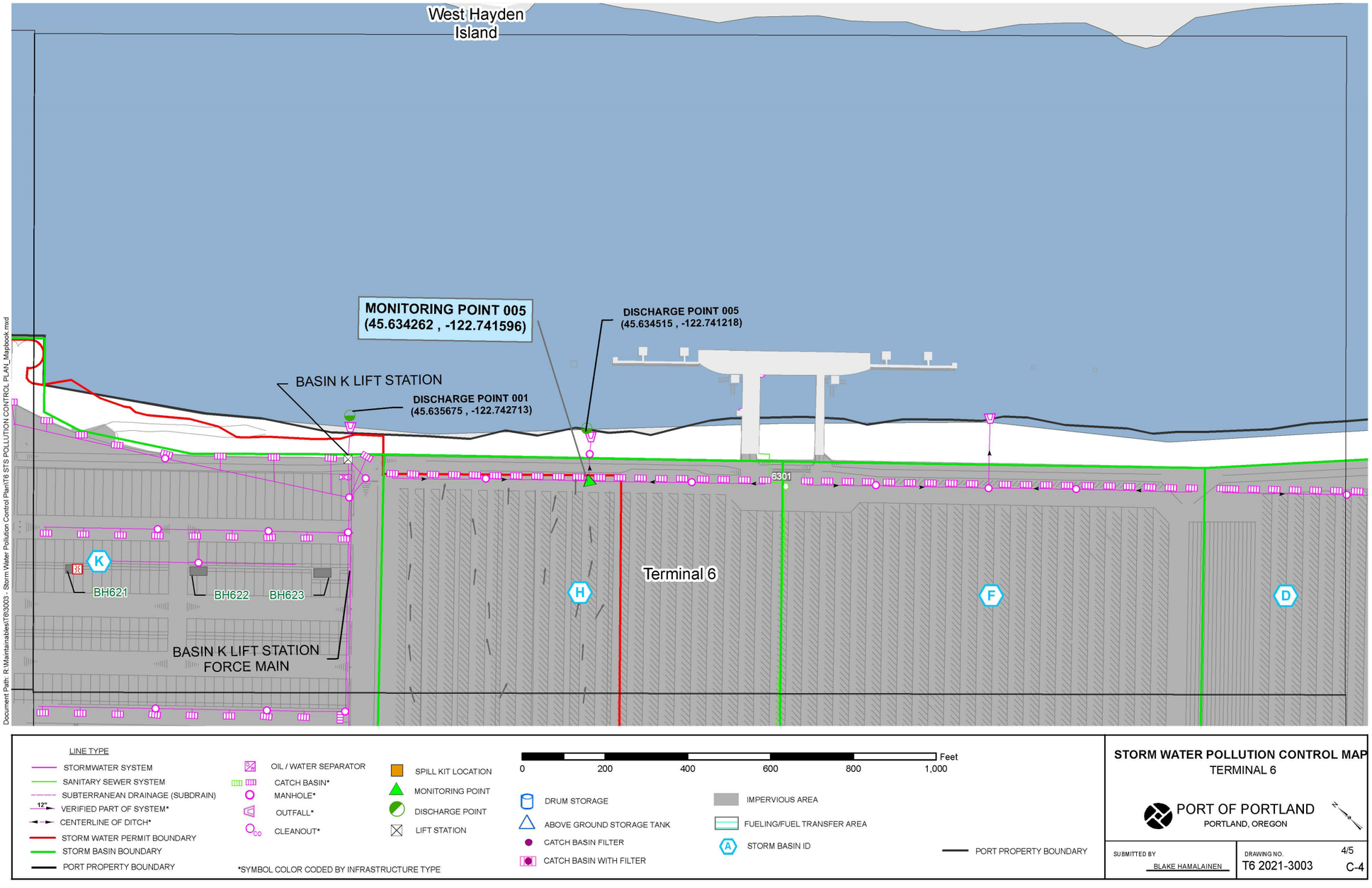
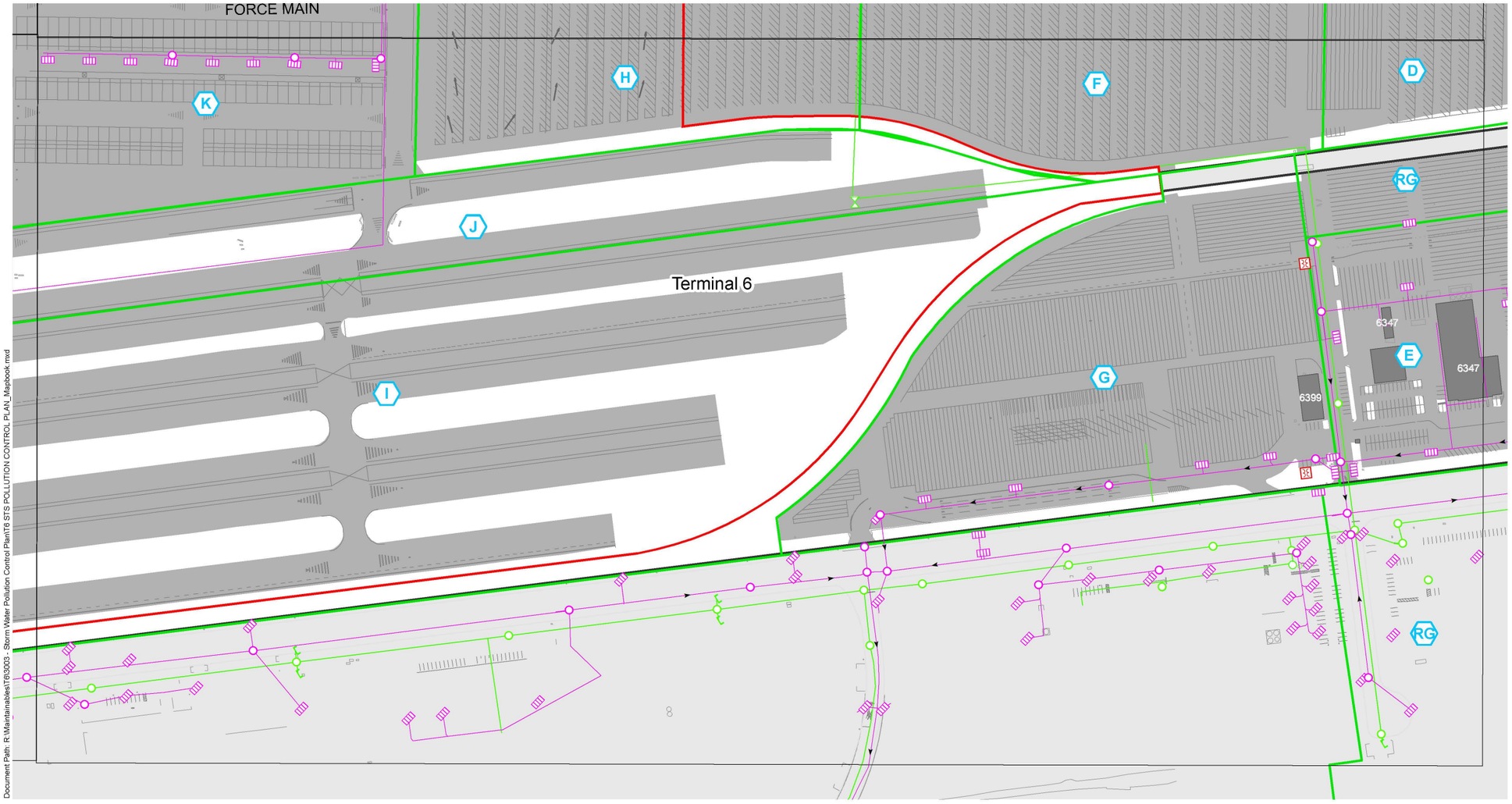


Figure 2: Site Map



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Appendix A

1200-Z NPDES Permit and 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

May 26, 2021

VINCE GRANATO
PORT OF PORTLAND
PO BOX 3529
PORTLAND, OR 97208-3529

RE: Issuance NPDES Permit Number 1200-Z
File Number: 125313 EPA Number. : ORR807319
Facility: PORT OF PORTLAND TERMINAL 6, 7201 NORTH MARINE DRIVE, PORTLAND, MULTNOMAH COUNTY
SIC Code(s): 4491

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**
Columbia Slough	Total Copper	0.017	mg/L	Four times per year
Columbia Slough	Total Lead	0.10	mg/L	Four times per year
Columbia Slough	Total Zinc	0.24	mg/L	Four times per year
Columbia Slough	pH	5.5-9.0	s.u.	Four times per year
Columbia Slough	TSS	30	mg/L	Four times per year
Columbia Slough	E. coli	406	organisms/100 mL	Four times per year
Columbia Slough	BOD	24	mg/L	Four times per year
Columbia Slough	Total Phosphorus	0.16	mg/L	Four times per year
SIC code of Industrial Activity	**Pollutant**	**Sector-specific Benchmark**	**Units**	**Frequency**
4491	Total Aluminum	1.10	mg/L	Four times per year
Receiving Water LLID: 1227713456450 AUID:104554.1	**Pollutant**	**Impairment Concentration**	**Units**	**Frequency**
River Mile: 0.76				
Columbia Slough	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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Form A – Record of Changes
Form B – Monthly Inspection and Maintenance Form

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Appendix B – Record of Changes

Record of Revisions & Corrective Actions

Date	Revision or Review	Corrective Action?	Person Making Change
December 21, 2017	Replaced 1200-COLS references with 1200-Z	Yes	Peterson
	Moved the basin K and basin O monitoring locations from the designated manholes to the river outfall	Yes	Peterson
	Removed sections 1.7, 1.8 and 1.9. These sections are not required by the 1200-Z	Yes	Peterson
February 1, 2018	Added BMP to address pavement deicing	Yes	Peterson
April 12, 2018	Selected five representative catch basins for each storm basin to inspect monthly. Updated inspection form accordingly	No	Hamalainen
August 29, 2019	Updated Table 2-3 to include addition of 600g diesel AST, removal of 280g antifreeze AST and updated AST contents	No	Hamalainen
December 20, 2019	Added the Appendix E Tier II Report. Updated the site map, Tables 3-1, & 3-2	Yes	Peterson
July 24, 2020	Updated Section 4 Spill Response Procedures and person certifying document	No	Peterson
March 3, 2021	Removed the following statement from page 2-11 under the basin O	No	Peterson

Appendix B – Record of Changes

Record of Revisions & Corrective Actions

Date	Revision or Review	Corrective Action?	Person Making Change
	description. “Currently, there is no industrial activity occurring in this basin.”		
August 30, 2021	Updated to meet requirements of the 2021 Permit reissuance	No	Blake Hamalainen

Section 8: Discharge Point Inspections Associated with Industrial Activity									
SITE	**MP/DP DESCRIPTION**	**WATER LEVEL**	**WATER COLOR**	**WATER CLARITY**	**FLOATING SOLIDS**	**O & G SHEEN**	**ODOR**	**FOAM**	**COMMENTS/ FOLLOW UP**
Basin H Time:	Monitoring Point 005 (MH3227) northeast corner of the basin, discharges to the Columbia River (Discharge Point 005)	TRICKLE LOW MEDIUM HIGH V. HIGH NO FLOW	GREEN BROWN GRAY ORANGE NO COLOR OTHER NO FLOW	CLEAR CLOUDY TURBID NO FLOW	LIGHT MEDIUM HEAVY NO VISIBLE NO FLOW	V. LIGHT LIGHT MEDIUM HEAVY NO VISIBLE NO FLOW	YES DESCRIBE: NO NO FLOW	YES DESCRIBE: NO NO FLOW	
Basin K Time:	MH3134 northeast corner of the basin, discharges to the Columbia River (Discharge Point 001)	TRICKLE LOW MEDIUM HIGH V. HIGH NO FLOW	GREEN BROWN GRAY ORANGE NO COLOR OTHER NO FLOW	CLEAR CLOUDY TURBID NO FLOW	LIGHT MEDIUM HEAVY NO VISIBLE NO FLOW	V. LIGHT LIGHT MEDIUM HEAVY NO VISIBLE NO FLOW	YES DESCRIBE: NO NO FLOW	YES DESCRIBE: NO NO FLOW	
Basin L Time:	MH3158 between Berths 604 and 605, discharges to the Columbia River (Discharge Point 002)	TRICKLE LOW MEDIUM HIGH V. HIGH NO FLOW	GREEN BROWN GRAY ORANGE NO COLOR OTHER NO FLOW	CLEAR CLOUDY TURBID NO FLOW	LIGHT MEDIUM HEAVY NO VISIBLE NO FLOW	V. LIGHT LIGHT MEDIUM HEAVY NO VISIBLE NO FLOW	YES DESCRIBE: NO NO FLOW	YES DESCRIBE: NO NO FLOW	

Basin M Time:	MH3222 south of the fuel pad, discharges to the Columbia Slough (Discharge Point 003)	TRICKLE LOW MEDIUM HIGH V. HIGH NO FLOW	GREEN BROWN GRAY ORANGE NO COLOR OTHER NO FLOW	CLEAR CLOUDY TURBID NO FLOW	LIGHT MEDIUM HEAVY NO VISIBLE NO FLOW	V. LIGHT LIGHT MEDIUM HEAVY NO VISIBLE NO FLOW	YES DESCRIBE: NO NO FLOW	YES DESCRIBE: NO NO FLOW	
Basin O Time:	OUT272, northwest corner of the basin, discharges to the Columbia River (Discharge Point 004)	TRICKLE LOW MEDIUM HIGH V. HIGH NO FLOW	GREEN BROWN GRAY ORANGE NO COLOR OTHER NO FLOW	CLEAR CLOUDY TURBID NO FLOW	LIGHT MEDIUM HEAVY NO VISIBLE NO FLOW	V. LIGHT LIGHT MEDIUM HEAVY NO VISIBLE NO FLOW	YES DESCRIBE: NO NO FLOW	YES DESCRIBE: NO NO FLOW	

Aboveground Storage Tanks						
CONTAINER No.	***DESCRIPTION/ CONTENTS***	***LOCATION***	***EVIDENCE OF SPILLS/LEAKS***	***CONDITION OF BOOM***	***CONDITION OF PUMP***	***COMMENTS/ FOLLOW UP***
T6-AST-4	1,150 gallons / Used oil	West of CDC Building	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT
T6-AST-5	12,000 gallons / Diesel fuel	CDC Fueling Area	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT
T6-AST-6	4,000 gallons / Gasoline	CDC Fueling Area	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT:
T6-AST-7	500 gallons / Hydraulic oil	Outside Transtainer Building	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT:
T6-AST-8	1,000 gallons / Used oil	Outside Transtainer Building	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT

Aboveground Storage Tanks- Continued						
CONTAINER No.	***DESCRIPTION/ CONTENTS***	***LOCATION***	***EVIDENCE OF SPILLS/LEAKS***	***CONDITION OF BOOM***	***CONDITION OF PUMP***	***COMMENTS/FOL LOW UP***
T6-AST-9	500 gallons / Motor oil	Outside Transtainer Building	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ ____ NOTE SEC.
T6-AST-10	280 gallons / Hydraulic oil	Outside Transtainer Building	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ ____ NOTE SEC.
T6-AST-11	120 gallons / Hydraulic oil	Outside Transtainer Building	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ ____ NOTE SEC.

Portable Containers, Totes, Drums, Generators, and Fuel Trucks						
CONTAINER No.	***DESCRIPTION/ CONTENTS***	***LOCATION***	***EVIDENCE OF SPILLS/LEAKS***	***CONDITION OF BOOM***	***CONDITION OF PUMP***	***COMMENTS/ FOLLOW UP***
DS-2	Up to 3 drums / Various oils	Outside Transtainer Building (covered sheds)	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT: _____
DS-4	Up to 50 drums / Empty drums, used absorbent materials	Fenced drum storage area north of CDC Building	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT: _____
MG-1	Mobile Generator / Diesel Fuel	South side of CDC	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT: _____
MG-2	Mobile Generator / Diesel Fuel	NE of CDC	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT: _____

Wet Transformers					
ENTITY ID No.	***LOCATION***	***EVIDENCE OF SPILLS/LEAKS***	***TANK INTEGRITY***	***SECONDARY CONTAINMENT***	***COMMENTS/FOLLOW UP***
504	NW of Security Trailers	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
507	Substation South of Decant Box	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
857	North of T6 Admin Bldg	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
509	North of Toploader Lot	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
712	BH 542 (on roof of Rail Scale/Hazardous Cargo BH)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
513	BH 323 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
517	BH 422 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
660	BH 422 (fenced area)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
661	BH 422 (fenced area)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	

Wet Transformers					
ENTITY ID No.	***LOCATION***	***EVIDENCE OF SPILLS/LEAKS***	***TANK INTEGRITY***	***SECONDARY CONTAINMENT***	***COMMENTS/FOLLOW UP***
662	BH 422 (fenced area)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
518	BH 423	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
663	BH 423 (fenced area)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
664	BH 423 (fenced area)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
665	BH 423 (fenced area)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
520	BH 521 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
521	BH 522 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
620	BH 522 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
522	BH 523 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	

Wet Transformers					
ENTITY ID No.	***LOCATION***	***EVIDENCE OF SPILLS/LEAKS***	***TANK INTEGRITY***	***SECONDARY CONTAINMENT***	***COMMENTS/FOLLOW UP***
523	BH 523 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
703	BH 621 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
537	BH 311 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
729	BH 313 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
532	BH 411 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
533	BH 411 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
813	BH 411 (in secondary containment)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
531	BH 412 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
814	BH 412 (in secondary containment, down river)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	

Wet Transformers					
ENTITY ID No.	***LOCATION***	***EVIDENCE OF SPILLS/LEAKS***	***TANK INTEGRITY***	***SECONDARY CONTAINMENT***	***COMMENTS/FOLLOW UP***
815	BH 412 (in secondary containment, up river)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
530	BH 413 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
527	BH 511 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
646	BH 511 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
855	BH 512 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
612	BH 512 (in secondary containment)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
T2 091	BH 512 (in secondary containment)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
524	BH 513 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
525	BH 513 (on roof)	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	

Wet Transformers					
ENTITY ID No.	***LOCATION***	***EVIDENCE OF SPILLS/LEAKS***	***TANK INTEGRITY***	***SECONDARY CONTAINMENT***	***COMMENTS/FOLLOW UP***
606	Crane 6373	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
607	Crane 6373	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
608	Crane 6374	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
609	Crane 6374	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
610	Crane 6375	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	
611	Crane 6375	NO YES	GOOD NEEDS MNTC	GOOD NEEDS MNTC NONE	

Oil Water Separators				
LOCATION	***CONDITION OF STRUCTURE***	***EVIDENCE OF SPILLS***	***CLEANING REQUIRED***	***COMMENTS/FOLLOW UP***
Berth 603	GOOD NEEDS MNTC NONE	No Yes explain:	No Yes explain:	
Berth 604	GOOD NEEDS MNTC NONE	No Yes explain:	No Yes explain:	
Berth 605	GOOD NEEDS MNTC NONE	No Yes explain:	No Yes explain:	
Steam Pad	GOOD NEEDS MNTC NONE	No Yes explain:	No Yes explain:	
CDC Fueling Area	GOOD NEEDS MNTC NONE	No Yes explain:	No Yes explain:	

Section 9: Catch Basin Inspections								
SITE AREA/ INDUSTRIAL ACTIVITY	***ASSET ID***	***CONDITION OF STRUCT-URE***	***DEBRIS IN CATCH BASIN***	***DOES CATCH BASIN NEED TO BE CLEANED***	***ODOR***	***SHEEN***	***EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING THE STORM SYSTEM***	***COMMENTS/ FOLLOW UP***
Drainage Basin H	6724	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6728	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6732	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6735	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	

Section 9: Catch Basin Inspections								
SITE AREA/ INDUSTRIAL ACTIVITY	***ASSET ID***	***CONDITION OF STRUCT-URE***	***DEBRIS IN CATCH BASIN***	***DOES CATCH BASIN NEED TO BE CLEANED***	***ODOR***	***SHEEN***	***EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING THE STORM SYSTEM***	***COMMENTS/ FOLLOW UP***
Drainage Basin K	6518	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6513	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6509	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6507	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	

Section 9: Catch Basin Inspections								
SITE AREA/ INDUSTRIAL ACTIVITY	***ASSET ID***	***CONDITION OF STRUCT-URE***	***DEBRIS IN CATCH BASIN***	***DOES CATCH BASIN NEED TO BE CLEANED***	***ODOR***	***SHEEN***	***EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING THE STORM SYSTEM***	***COMMENTS/ FOLLOW UP***
	6503	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
Drainage Basin L	6555	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6547	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6591	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	

Section 9: Catch Basin Inspections								
SITE AREA/ INDUSTRIAL ACTIVITY	***ASSET ID***	***CONDITION OF STRUCT-URE***	***DEBRIS IN CATCH BASIN***	***DOES CATCH BASIN NEED TO BE CLEANED***	***ODOR***	***SHEEN***	***EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING THE STORM SYSTEM***	***COMMENTS/ FOLLOW UP***
	6521	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6529	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
Drainage Basin M	2038	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	2032	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	

Section 9: Catch Basin Inspections								
SITE AREA/ INDUSTRIAL ACTIVITY	***ASSET ID***	***CONDITION OF STRUCT-URE***	***DEBRIS IN CATCH BASIN***	***DOES CATCH BASIN NEED TO BE CLEANED***	***ODOR***	***SHEEN***	***EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING THE STORM SYSTEM***	***COMMENTS/ FOLLOW UP***
	2030	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	2036	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6403	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
Drainage Basin O |	6408	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	

Section 9: Catch Basin Inspections								
SITE AREA/ INDUSTRIAL ACTIVITY	***ASSET ID***	***CONDITION OF STRUCT-URE***	***DEBRIS IN CATCH BASIN***	***DOES CATCH BASIN NEED TO BE CLEANED***	***ODOR***	***SHEEN***	***EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING THE STORM SYSTEM***	***COMMENTS/ FOLLOW UP***
	6746	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6758	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6772	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	
	6781	GOOD NEEDS MNTC EXPLAIN:	NO YES EXPLAIN:	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	NO YES EXPLAIN:	

Appendix B – Monthly Stormwater Inspection and Maintenance Forms

Stormwater Facility	Bypass Yes/No?	Trash or Sediment Present?	Corrective Action Taken?
Infiltration Gallery			

Additional SPCC Items				
IDENTIFICATION	***LOCATION***	***EQUIPMENT***	***OK=Acceptable X= Not Acceptable NA= Not Applicable***	***COMMENTS/FOLLOW UP***
Spill Kit #1	CDC Fuel Island	absorbent pads/booms/drain cover		
Spill Kit #2	Outside Transtainer Building-North	absorbent pads/booms/drain cover		
Spill Kit #3	Outside Transtainer Building-South	absorbent pads/booms		

Additional SPCC Items				
IDENTIFICATION	***LOCATION***	***EQUIPMENT***	***OK=Acceptable X= Not Acceptable NA= Not Applicable***	***COMMENTS/FOLLOW UP***
Spill Kit #4	Dock Office 605 (Building 7101)	absorbent pads/booms		
Spill Kit #5	Dock Office 603 (Building 8101)	absorbent pads/booms		

Additional SPCC Items						
IDENTIFICATION	***LOCATION***	***EQUIPMENT***	***OK=Acceptable X= Not Acceptable NA= Not Applicable***		***COMMENTS/FOLLOW UP***	
Spill Response Trailer	Inside CDC Building	5 cases absorbent pads/booms 6 traffic cones 3 empty waste barrels 8 sacks peat-moss-based absorbent 4 brooms 4 shovels 2 bases boom socks 2 drain covers 6 pair rubber gloves 6 disposable Tyvek overalls				
DS-1	Up to 15 drums / Various oils	CDC Oil Storage Room	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT: _____
DS-3	Up to 15 drums / Various oils	Within Transtainer Building	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT: _____

Additional SPCC Items						
IDENTIFICATION	***LOCATION***	***EQUIPMENT***		***OK=Acceptable X= Not Acceptable NA= Not Applicable***	***COMMENTS/FOLLOW UP***	
DS-5	Up to 10 drums / Various Oils	Inside Crane MX Shop	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT: _____
T6-AST-1	350 gallons / Motor oil	CDC Oil Storage Room	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT: _____
T6-AST-2	182 gallons / Motor oil	CDC Oil Storage Room	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT: _____
T6-AST-3	250 gallons / Hydraulic oil	CDC Oil Storage Room	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	NOTE TANK INTEGRITY: _____ NOTE SEC. CONTAINMENT: _____

*Shaded cells are additional SPCC items

WEATHER FOR PAST 3 DAYS (Circle all that apply): COLD WET RAINY DRY OTHER:_____

INSPECTED BY: _____ DATE & TIME: _____

COMMENTS:

_____

_____

_____

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Appendix C
2019 Tier II Report

Tier II Revised Stormwater Pollution Control Plan Checklist
Schedule for implementing these measures
Rationale for the selection of the measures
Treatment system schematic and operational plan
Operation and maintenance schedule for treatment measures and/or volume reduction measures proposed

19 December 2019

1200-Z Stormwater Pollution Control Plan Addendum, Tier II Corrective Action Response

Port of Portland Marine Terminal 6
ORDEQ File 125313, EPA Number ORR807319

KJ Project No. 1896043*00

Introduction

This addendum to the Port of Portland Marine Terminal 6 (T-6) Stormwater Pollution Control Plan (SWPCP) presents the information required in the Oregon Department of Environmental Quality's (ORDEQ) Tier II Revised Stormwater Pollution Control Plan Checklist (checklist). The addendum is in response to the Tier II Corrective Action Response requirement triggered by second-year geometric mean benchmark exceedances at 1200-Z Monitoring Point 001, Basin K. The second year of permit coverage at T-6 was from 1 July 2018 to 30 June 2019. In addition, for efficiency in design and construction, treatment is also proposed to be constructed for Monitoring Point 002, Basin L. The second-year geometric mean of sampling results at Monitoring Point 002 was below benchmarks; however, if the level of industrial activity at the facility increases, it is expected that benchmark exceedances would become more likely.

This addendum follows the order of the checklist and includes the checklist text in bold italics for reference to ease review. The checklist form and supporting calculations are included as Attachment A.

The proposed corrective action includes at-grade bioretention systems, with stormwater pumped to the surface from the existing conveyance system via new lift stations to be located near Outfalls 001 and 002. The preliminary conceptual site layout and schematic of the proposed pump stations, force mains, electrical connections and bioretention systems are shown in Attachment B, T-6 SW Treatment and Conveyance Systems Site Plan & Schematic and described in more detail in a subsequent section. Treatment systems will be designed with the goal of achieving benchmarks in future discharges and are also expected to reduce the mass loading of pollutants to below the mass load equivalent.

It is important to note that the treatment systems described in this document are conceptual and the configuration and details are expected to change as additional information is gathered and the design progresses.

Kennedy Jenks

1200-Z Stormwater Pollution Control Plan Addendum,
Tier II Corrective Action Response
19 December 2019
1896043*00
Page 2

Projected Reduction of Pollutant Concentration

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.

The second-year geometric mean concentrations at T-6 Monitoring Points 001 and 002 are presented in Table 1. The required percentage concentration reduction to reach benchmark levels for Basin K is 16%. The second-year geometric mean concentration for Basin L was below benchmarks.

Table 1. Port of Portland T-6 Second Year Geometric Means, 1200-Z Benchmarks, and Required Reductions

Monitoring Point	Basin	Parameter	1200-Z Benchmark (mg/L)	Geometric Mean, Year 2[(a)] (mg/L)	Required Reduction
001	K	Total zinc	0.12	0.14	16.0%
002	L	Total zinc	0.12	0.10	< 0%

Notes/Abbreviation:
(a) Year 2 Geometric Mean is calculated from four samples at each outfall, which were collected on 5 October 2018, 27 November 2018, 18 January 2019, and 11 February 2019.
mg/L = milligrams per liter

The Port of Portland is proposing to provide treatment through bioretention soil media prior to infiltration. Kennedy Jenks has experience at other industrial facilities with several examples of similar biofiltration treatment systems, where treated stormwater runoff is discharged rather than infiltrated, and these systems have been effective at reducing metals concentrations to below permit-required benchmarks. The proposed bioretention systems will be sized to infiltrate the peak flow rate of the water quality design storm; therefore, the project reduction in pollutant concentration will be 100% for for Basins L and K, for the water quality design storm.

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

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).

The facility is not submitting a Tier II waiver request and is proposing to provide treatment through bioretention soil media prior to infiltration. Lift stations will be constructed to collect runoff from the existing collection system and will be sized to pump the peak flow of the water quality design storm. The proposed bioretention systems have been sized to infiltrate the peak flow rate of the design storm; therefore, the proposed infiltration basins are sized to infiltrate the entire water quality volume of the 1.06-inch design storm, which corresponds to approximately 90% of the annual runoff volume. Development of the water quality design storm according to the design storm criteria and hydrologic modeling to develop the peak flow rate of the water quality storm is presented in Attachment C. Systems are sized at a design infiltration rate of 18 inches per hour, based on a field-measured infiltration rate of 35.5 inches per hour reduced by appropriate correction factors. Detailed infiltration basin sizing calculations are provided in Attachment D.

Design Storm Criteria

A water quality design storm size of 1.06 inches was calculated using the Design Storm Criteria methodology in the Tier II Checklist. The water quality design storm amount is 50% of the 2-year, 24-hour rainfall depth at the Facility's location with a Natural Resources Conservation Service (NRCS) Type 1A rainfall distribution over 24 hours. This design storm is greater than the 0.7 inch in 24 hours minimum storm size and is also greater than the water quality design storms and criteria specified in the City of Portland's Bureau of Environmental Services (BES) Stormwater Management Manual (SWMM). The facility was sized using the design storm criteria required by the Tier II Checklist.

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.

Bioretention systems are cost-effective, low-impact development tools that have a demonstrated pollutant removal capability. These systems decrease runoff and discharge while returning stormwater to the natural groundwater system. Design does not rely on pollutant removal

capabilities of native soils, because discharges are pretreated through bioretention soil media, a mixture of sand and compost, prior to infiltration. Well-draining native soil is a requirement for the use of infiltration as a best management practice. Preliminary geotechnical investigation and infiltration testing completed at the proposed treatment location indicate that the native soil is well-suited for infiltration systems.

Schedule for Implementing Measure

Please include the expected implementation schedule for the proposed measures. The permit deadlines for those registrants in their second monitoring year; July 1, 2018, to June 30, 2019, include:

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

The estimated schedule for implementation of the Tier II Response is as follows:

November 2019 – Contract and begin engineering design

31 December 2019 – Submit Tier II Corrective Action Response

December 2019 - February 2020 – Field investigations (geotechnical, pilot infiltration testing)

July 2020 – Complete final design of selected treatment systems

August 2020 – Bidding and contracting for construction

September 2020 – Begin construction of infiltrations systems

30 June 2021 – Construction complete, measures implemented

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.

Based on preliminary conceptual designs, the estimated range of probable project cost through construction of the proposed conveyance and treatment systems for Basin K, which is the required Tier II corrective action, is between $1.7 million and $3.6 million. The estimated range of probable project cost through construction for the proposed conveyance and treatment systems for both Basins K and L is between $3.6 million and $7.7 million.

Reliable guidelines or rules of thumb to estimate operational and maintenance costs for stormwater treatment systems have not been developed due to variability in influent stormwater quality and other site-specific factors, inconsistent maintenance standards and practices, and intermittent and variable runoff patterns. Therefore, no quantitative estimate of these costs is provided herein; however, bioretention systems are commonly reported to have lower operation and maintenance costs than alternative treatment systems with similar performance.

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).

The locations and proposed conveyance and treatment systems are shown on the attached T-6 SW Treatment and Conveyance System Site Plan and Schematic (Attachment B). Proposed modifications include addition of new lift stations to collect flows from the existing conveyance system, in the vicinity of the monitoring point and outfall for each of Basin K and L. Flows up to the peak water quality flow rated will be conveyed via new force mains away from the river to an area adjacent to the rail yard that is currently gravel and used infrequently for additional parking or storage. Flows higher than the water quality flow rate will overflow at the lift station and discharge to the existing outfalls.

The force mains will discharge to a pretreatment sedimentation basin or basins for energy dissipation, initial settling, and distribution onto the surface of the bioretention systems. Prior to infiltration treatment will be provided by filtration through an 18-inch thick media bed similar in composition to the Washington State Department of Ecology's bioretention soil mixture or media (BSM). BSM is a blend of approximately one-third compost and two-thirds sand. The BSM surface will be covered in surface mulch and planted with drought and flood tolerant plants. Native species will be used to the extent practicable. No chemical treatment is proposed. Final design will be based on field conditions, including further evaluation of subsurface conditions.

Operation and Maintenance Schedule

All Tier II responses will require some maintenance overtime [sic] to optimize pollutant removal and manage break-through. Although each facility maintenance schedule will vary based on loading, this is an important component of the revised Stormwater Pollution Control Plan. Schedule B.10.b outlines maintenance and repairs 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 changes are submitted to DEQ or Agents within 30 days.

Operation and maintenance (O&M) tasks and initial recommended frequency are listed below. It is estimated that the treatment system will initially require up to 4 hours of maintenance per month. As experience is gained with operating the facility, the extent and frequency of maintenance activities will be adjusted. Maintenance and repairs will be recorded following 1200-Z Schedule B.10.b and these records will be made available for review upon request of ORDEQ.

Operations and Maintenance Activities

Monthly:

- Ensure that facility inlets outlets and overflow are clear of debris and in good working order.
- Remove trash and debris.
- Remove weeds.
- Ensure no noticeable odors are detected at the facility.

Quarterly:

- Inspect for cracking or deterioration of concrete.
- Inspect pretreatment and remove sediment if needed.
- Stabilize any eroded areas.
- During or following a stormwater runoff event, observe and record ponding depth and dewatering time for infiltration cells. If excessively long ponding time is observed, may need to remove and replace layer of filter media.

As needed or seasonally:

- Irrigate during dry periods until plants are established.
- Inspect plants and prune as appropriate or remove and replant dead or distressed plants.
- Remove and replace deteriorated surface mulch.
- Remove sediment accumulated on top of bioretention media.
- Repair or replace damaged structural parts.

Follow manufacturer or supplier recommendations and maintenance schedules for lift stations, pumps, controls, and other mechanical and electrical equipment.

Attachments:

A. T-6 Tier II Revised Stormwater Pollution Control Plan Checklist (ORDEQ Form)
B. T-6 SW Treatment and Conveyance Systems Site Plan & Schematic
C. T-6 Tier II Design Storm & Hydrologic Modeling
D. T-6 Bioretention Sizing
E. T-6 Waiver Basin Table

Attachment A

Tier II Form and Checklist

State of Oregon Department of Environmental Quality

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 T-6 **File No.:** 125313

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	
	001	Total Zinc	0.140	mg/L	16%	100%	
	002	Total Zinc	0.120	mg/L	0%	100%	
A.11.j	**Proposed Tier II Corrective Action Response**					2	
	1.06	Design storm in inches				2. 3	
A.11.j.i	Rationale for the selection of the measures					3, 4	
A.11.j.i	Schedule for implementing these measures					4	
A.11.j.ii	Stamped by PE					1	
Cost of installation						4, 5	
Treatment system schematic and operational plan						5, 16	
Operation and maintenance schedule for treatment measures and/or volume reduction measures proposed						6	

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: _____

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 K		Basin name: Basin L		Basin name:	
	Value	Page number	Value	Page number	Value	Page number
Area of drainage basin (ft2)	889,500	19	2,628,400	19		
Impervious area (ft2)	871,200	19	2,489,900	19		
Runoff coefficients (unitless)	0.93	30	0.90	30		
Mass (with units) of pollutant discharged based on geometric mean (no infiltration)	20.3 lbs	30	40.7 lbs	30		
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)	3,517,900	19
Total impervious area (ft2)	3,361,100	19
Total mass (with units) of pollutant based on geometric mean (no infiltration)	61 lbs	30
Total mass (with units) of pollutant based on geometric mean (with assumed infiltration)	0 lbs	30
Total mass (with units) of pollutant assuming concentration equal to benchmark (no infiltration)	67 lbs	30

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

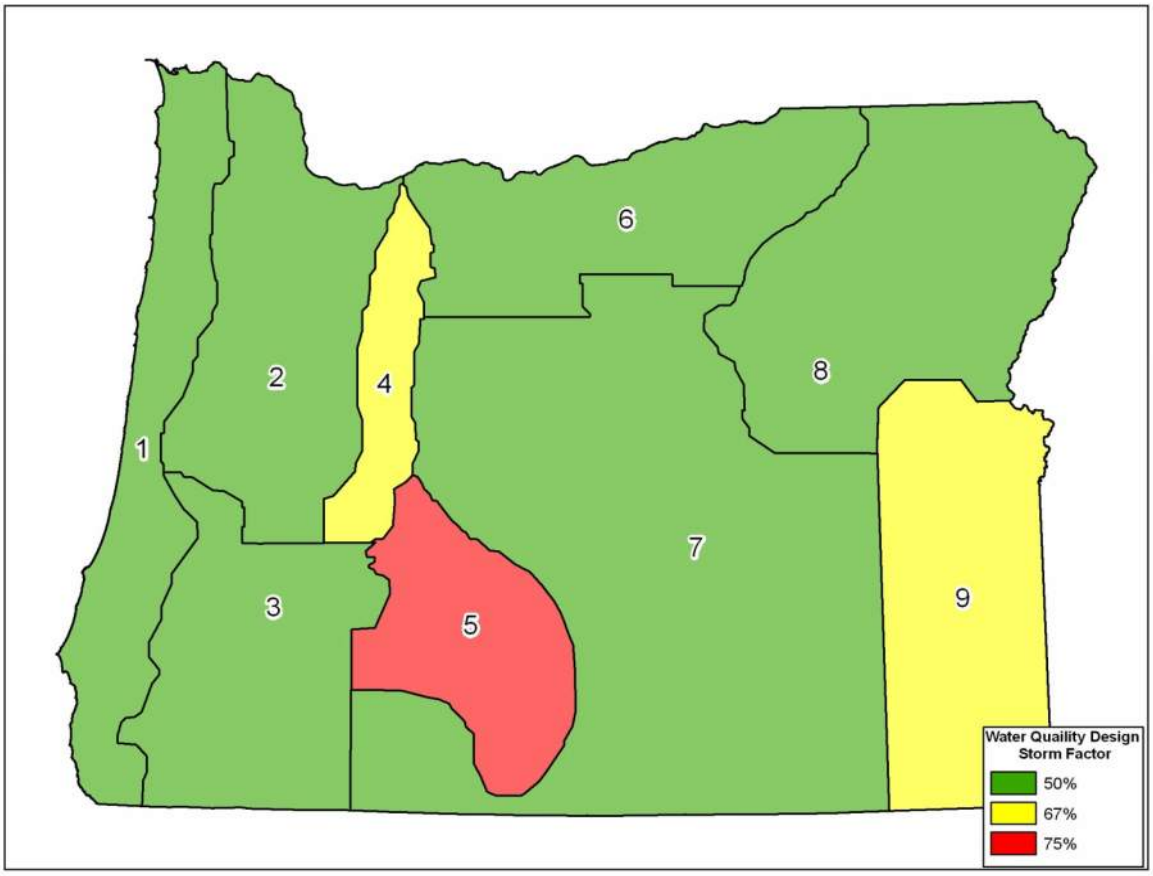
Please provide the calculated percent of the design storm that will be infiltrated for the drainage basin being addressed, if applicable. Facilities choosing to submit a Tier II Mass Reduction Waiver request need to evaluate their site and show how the remaining mass load of pollutants discharged are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

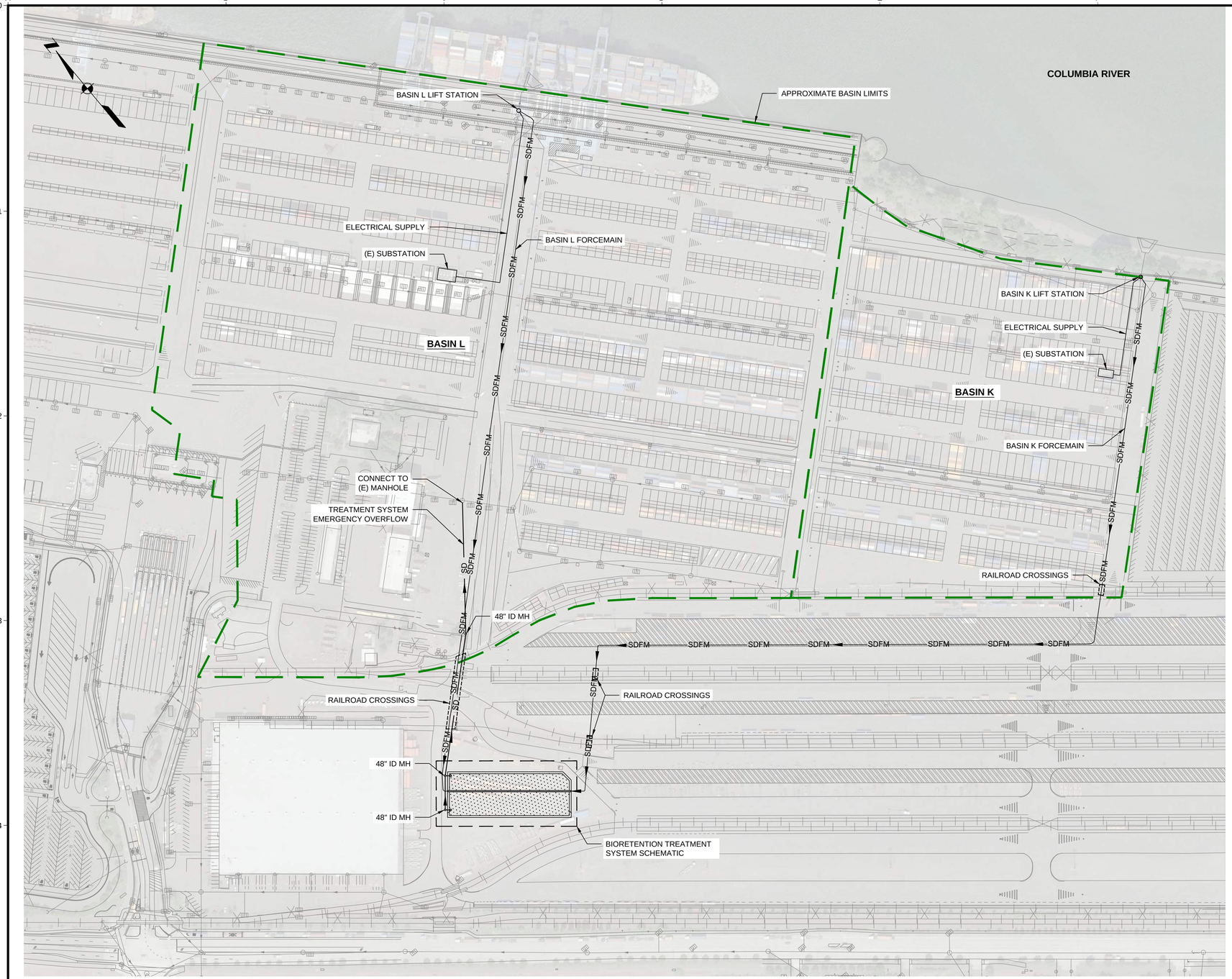
All Tier II responses will require some maintenance overtime to optimize pollutant removal and manage break-through. Break-through happens when media is clogged or no longer treats the stormwater pollutants. Although each facility maintenance schedule will vary based on loading, this is an important 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

Attachment B

Site Plan & Schematic



0 150 300

1" = 150'-0"

PROJECT NARRATIVE

STORMWATER DISCHARGES FROM THE PORT OF PORTLAND'S TERMINAL 6 ARE COVERED UNDER THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY STORMWATER DISCHARGE GENERAL PERMIT NO. 1200-Z, REISSUED ON 22 OCTOBER 2018. DISCHARGES FROM BASIN K EXCEEDED BENCHMARKS IN THE SECOND MONITORING YEAR OF PERMIT COVERAGE WHICH REQUIRES THE SUBMISSION OF A TIER II REPORT AND INSTALLATION OF A STORMWATER TREATMENT SYSTEM. IN ANTICIPATION OF A POTENTIAL FUTURE NEED OF TREATMENT IN BASIN L DUE TO INCREASED OPERATIONS, THE PORT IS PROCEEDING WITH DESIGN OF STORMWATER TREATMENT AND CONVEYANCE SYSTEMS FOR BOTH BASINS K AND L. THIS DESIGN INCLUDES THE FOLLOWING:

1. 2 LIFT STATIONS
2. 4800 LF OF STORM DRAIN FORCE MAIN
3. 860 LF OF GRAVITY STORM DRAIN TO SERVE AS TREATMENT OVERFLOW PIPING
4. 5 MANHOLES
5. 2 INFILTRATION TREATMENT SYSTEMS WITH ASSOCIATED PRETREATMENT AND EQUALIZATION BASINS.

DESIGN ASSUMPTIONS

1. DESIGN IS IN GENERAL ACCORDANCE WITH THE PORT OF PORTLAND DESIGN MANUAL.
2. RAILROAD CROSSINGS WILL BE DESIGNED IN GENERAL ACCORDANCE WITH AREMA STANDARDS.
3. POTENTIAL UTILITY CONFLICTS EXIST AND WILL BE FURTHER INVESTIGATED IN SUBSEQUENT PHASES OF DESIGN.
4. ADDITIONAL GEOTECHNICAL INVESTIGATION WILL BE REQUIRED FOR FINAL DESIGN INCLUDING, BUT NOT LIMITED TO, SUBSURFACE EVALUATIONS FOR SHORING, TRENCHING, DEWATERING, SUBGRADE PREPARATION, FOUNDATION SUPPORT, AND EXCAVATION BACKFILL AND COMPACTION.
6. PRELIMINARY HYDROLOGIC CALCULATIONS WERE PERFORMED TO DEVELOP WATER QUALITY FLOW RATES FOR SIZING THE TREATMENT SYSTEMS.
7. PRELIMINARY HYDRAULIC CALCULATIONS WERE PERFORMED TO SUPPORT PUMP SELECTION, LIFT STATION SIZING, AND FORCE MAIN AND GRAVITY MAIN SIZING.
8. COMPLETE HYDROLOGIC AND HYDRAULIC ANALYSES WILL BE PERFORMED IN SUBSEQUENT PHASES OF DESIGN.

DRAINAGE BASIN K	
BASIN SIZE:	20 ACRES
WATER QUALITY DESIGN STORM SIZE:	1.06 IN
PEAK WATER QUALITY FLOW RATE:	1810 GPM
DESIGN INFILTRATION RATE:	18 IN/HR
BIORETENTION SURFACE AREA:	9,700 SF

BASIN K LIFT STATION	
LIFT STATION SIZE:	605 CF
STRUCTURE DEPTH:	22'-8"
TOTAL DYNAMIC HEAD:	51.4'
STATIC HEAD:	23.5'
VFD:	YES
ELECTRICAL SUPPLY LENGTH:	310 LF

BASIN K FORCE MAIN	
PIPE LENGTH:	2,800 LF
PIPE SIZE:	12"
PIPE MATERIAL:	C900 PVC

DRAINAGE BASIN L	
BASIN SIZE:	60 ACRES
WATER QUALITY DESIGN STORM SIZE:	1.06 IN
PEAK WATER QUALITY FLOW RATE:	4640 GPM
DESIGN INFILTRATION RATE:	18 IN/HR
BIORETENTION SURFACE AREA:	25,000 SF

BASIN L LIFT STATION	
LIFT STATION SIZE:	1500 CF
STRUCTURE DEPTH:	20'-8"
TOTAL DYNAMIC HEAD:	39.2'
STATIC HEAD:	28.5'
VFD:	YES
ELECTRICAL SUPPLY LENGTH:	600 LF

BASIN L FORCEMAIN	
PIPE LENGTH:	2,000 LF
PIPE SIZE:	18"
PIPE MATERIAL:	C900 PVC

TREATMENT SYSTEM EMERGENCY OVERFLOW	
PIPE LENGTH:	860 LF
PIPE SIZE:	20"
PIPE MATERIAL:	C900 PVC
MINIMUM SLOPE:	0.5%

ABBREVIATIONS

"	INCH
'	FOOT
%	PERCENT
#	NUMBER
±	PLUS/MINUS
AC	ACRE
AREMA	AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION
BGS	BELOW GROUND SURFACE
CF	CUBIC FEET
CFS	CUBIC FOOT PER SECOND
D	DEEP
EL	ELEVATION
(E)	EXISTING
FPS	FOOT(FEET)/PER SECOND
FT	FOOT(FEET)
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HR	HOUR(S)
ID	INNER DIAMETER
IN	INCH(ES)
L	LONG
LF	LINEAR FEET
MH	MANHOLE
N	NORTH
OC	ON CENTER
PVC	POLY VINYL CHLORIDE
SD	STORM DRAIN
SF	SQUARE FOOT(FEET)
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE
W	WIDE

USE OF DOCUMENTS

THIS DOCUMENT, INCLUDING THE INCORPORATED DESIGNS, IS AN INSTRUMENT OF SERVICE FOR THIS PROJECT AND SHALL NOT BE USED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF KENNEDY/JENKS CONSULTANTS ©.

NO.	REVISION	DATE	BY

SCALES

0 1"

0 25mm

IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.

DESIGNED SNMK

DRAWN SNMK

CHECKED NTW

PORT OF PORTLAND

7201 N MARINE DRIVE PORTLAND, OREGON 97203

PORT OF PORTLAND TERMINAL 6
STORMWATER TREATMENT AND CONVEYANCE SYSTEMS

Kennedy/Jenks Consultants©

421 SW 6TH AVE #1000, PORTLAND, OREGON 97201

TIER II CORRECTIVE ACTION RESPONSE
SITE PLAN & SCHEMATIC

FILE NAME

JOB NO. 1896043*00

DATE NOVEMBER 2019

SHEET C1 OF

Attachment C

Design Storm & Hydrologic Modeling

Tier II Water Quality Design Storm
Port of Portland - Terminal 6
Alan Flemming, PE
24 October 2019

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. If you propose to use a different design storm, provide an explanation of why this is necessary and adequate.

Step 1:	NOAA Atlas 2 Precipitation Frequency Estimate		
Latitude:	45.637		
Longitude:	-122.747		
2-yr, 24-hr rainfall depth based on NOAA:		**2.11**	**inches**

Step 2:			
Region:	2		
Water Quality Design Storm Factor:		50%	
Design Storm:		**1.06**	**inches**

Step 3:			
Minimum Design Storm:	0.7	inches	
Calculated Design Storm:	1.06	inches	
More stringent design storm:	**1.06**	**inches**	**Calculated Design Storm**

Step 4:			
City of Portland Stormwater Management Manual (SWMM)	0.83	inches	
Calculated Design Storm:	1.06	inches	
More stringent design storm:	**1.06**	**inches**	**50% of NOAA rainfall depth**

Note: for BMPs that qualify for a mass reduction waiver, the SWMM storm (0.83 inches) could be appropriate.

TR-55 Method - Peak Discharge Calculations
Port of Portland - Terminal 6
Alan Flemming, PE
24 October 2019

	Basin K	**Basin L**	**Combined**	**Units**	**Notes/Source**
Rainfall Distribution:	24-hour Type 1-A				
WQ Design Storm Rainfall Depth:	1.06			inches	Tier II Checklist
Drainage Area:	**20.42**	**60.34**	80.76	**acres**	Terminal 6 SWPCP Map
	889,500	2,628,400	3,517,900	square feet	
Impervious Area	**20.00**	**57.16**	77.16	**acres**	Terminal 6 SWPCP Map
	871,200	2,489,900	3,361,100	square feet	
Percent Impervious	**98.0%**	**94.7%**	95.5%		Terminal 6 SWPCP Map
Pervious Area:	0.42	3.18	3.60	acres	
	18,300	138,500	156,800	square feet	
Hydrologic Soil Group:	A	A	-		Web Soil Survey
Impervious Curve Number:	98	98	-		paved
PerviousCurve Number:	68	68	-		mixed cover - assume open space, poor
Composite Curve Number (CN):	**97**	**96**	-		
Time of Concentration	7.9	12.5	-	minutes	WinTR-55
WQ Design Storm Peak Flow:	**4.0**	**10.3**	**14.4**	**cfs**	WinTR-55
WQ Design Storm Peak Flow:	**1810**	**4640**	**6450**	**gpm**	
2-yr 24-hr (2.11 inches) Peak Flow:	9.5	26.1	35.5	cfs	WinTR-55
100-yr 24-hr (4.15 inches) Peak Flow:	19.8	56.6	76.2	cfs	WinTR-55
WQ Design Storm Runoff Depth	0.761	0.684		inches	WinTR-20
WQ Design Storm Runoff Volume	56,400	149,800	206,200	cubic feet	WinTR-20

WinTR-55 Current Data Description

--- Identification Data ---

User: ATF
Project: Port of Portland
SubTitle: Terminal 6 - Basin K & L
State: Oregon
County: Multnomah
Filename: \\Kjc\kjc-root\KJ-Projects\Portland\Projects\2018\1896043.00 Port of Portland-SW Treatment\09-R

Date: 10/24/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Basin K	Drains to Outfall 001	Outlet	20.42	97	.131
Basin L	Drains to Outfall 002	Outlet	60.34	96	.209

Total area: 80.76 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

0.9-Yr (in)	2-Yr (in)	10-Yr (in)	100-Yr (in)	-Yr (in)	-Yr (in)	-Yr (in)
1.06	2.11	3.4	4.15	.0	.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type IA
Dimensionless Unit Hydrograph: <standard>

ATF

Port of Portland
Terminal 6 - Basin K & L
Multnomah County, Oregon

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 0.9-Yr (cfs)	(hr)	2-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS								
Basin K	4.03	7.93	9.46	7.91	16.02	7.90	19.79	7.89
Basin L	10.34	8.00	26.12	7.97	45.47	7.96	56.59	7.96
REACHES								
OUTLET	14.32		35.49		61.36		76.23	

ATF

Port of Portland
Terminal 6 - Basin K & L
Multnomah County, Oregon

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Basin K	Open space; grass cover < 50% (poor)	A	.42	68
	Paved parking lots, roofs, driveways	A	20	98
	Total Area / Weighted Curve Number		20.42	97
Basin L	Open space; grass cover < 50% (poor)	A	3.18	68
	Paved parking lots, roofs, driveways	A	57.16	98
	Total Area / Weighted Curve Number		60.34	96

ATF

Port of Portland
Terminal 6 - Basin K & L
Multnomah County, Oregon

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Basin K							
SHEET	100	0.0070	0.011				0.038
SHALLOW	100	0.0070	0.025				0.016
CHANNEL	1200	0.0100	0.015	0.60	2.10	4.329	0.077
					Time of Concentration		.131
Basin L							
SHEET	100	0.0070	0.011				0.038
SHALLOW	100	0.0070	0.025				0.016
CHANNEL	1900	0.0100	0.015	0.34	1.70	3.405	0.155
					Time of Concentration		.209

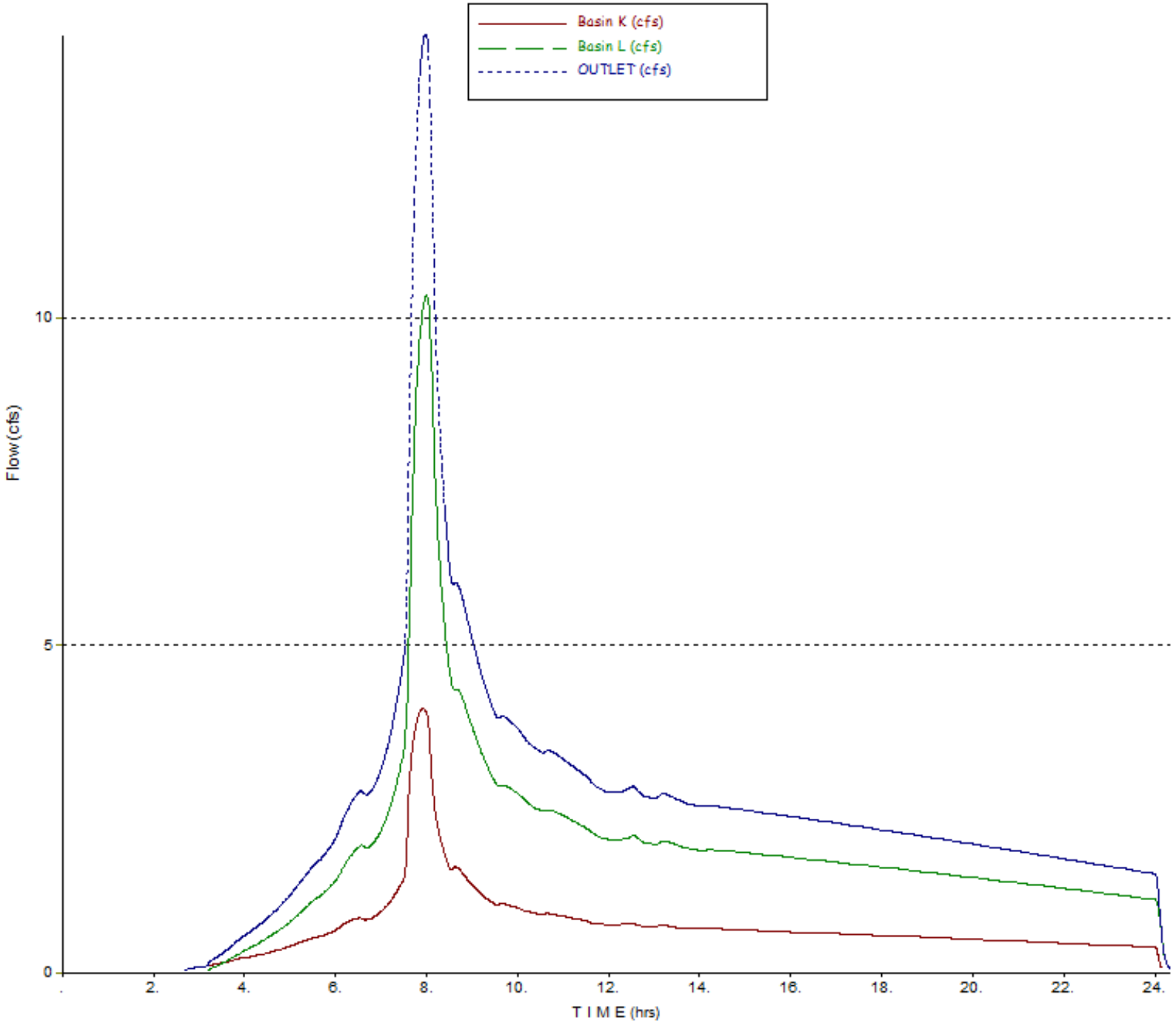
WinTR-55 Output Hydrograph

Project: Port of Portland

10/24/2019

Subareas: (Basin K, Basin L, Outlet) Storm: 0.9-Yr

\\Kjc\kjc-root\KJ-Projects\Portland\Projects\2018\1896043.00 Port of Portland-SW Treatment\09-Reports\9.09_4 Tier II Report\Att_2-Hydrologic Modeling\WinTR-55\Port of Portland T-6 Tier II Basin K & L.w55



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Port of Portland
Terminal 6 - Basin K & L

SUB-AREA:
          Basin K   Outlet              .03191    97.       .131
          Basin L   Outlet              .09428    96.       .209

STREAM REACH:

STORM ANALYSIS:
          0.9-Yr                        1.06      Type IA   2
          2-Yr                          2.11      Type IA   2
          10-Yr                         3.4       Type IA   2
          100-Yr                        4.15      Type IA   2

STRUCTURE RATING:


GLOBAL OUTPUT:
          2         0.05                YYYYN     YYYYNN


WinTR-20 Printed Page File      End of Input Data List

                              Port of Portland
                          Terminal 6 - Basin K & L

                          Name of printed page file:
                                  TR20.out

                                        STORM 0.9-Yr

Area or     Drainage   Rain Gage      Runoff    ------------ Peak Flow ------------
 Reach        Area       ID or        Amount    Elevation    Time       Rate       Rate
Identifier  (sq mi)    Location       (in)       (ft)       (hr)       (cfs)      (csm)

Basin K       0.032                   0.761                 7.93       4.03     126.40

   Line
Start Time   ------------ Flow Values @ time increment of  0.008 hr ------------
      (hr)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)

     2.710       0.05       0.05       0.05       0.05       0.05       0.06       0.06
     2.768       0.06       0.06       0.06       0.06       0.06       0.06       0.06
     2.826       0.07       0.07       0.07       0.07       0.07       0.07       0.07
     2.884       0.07       0.07       0.08       0.08       0.08       0.08       0.08
     2.942       0.08       0.08       0.08       0.08       0.08       0.09       0.09
     2.999       0.09       0.09       0.09       0.09       0.09       0.09       0.09
     3.057       0.09       0.10       0.10       0.10       0.10       0.10       0.10
     3.115       0.10       0.10       0.10       0.10       0.10       0.11       0.11
     3.173       0.11       0.11       0.11       0.11       0.11       0.11       0.11
     3.231       0.11       0.11       0.12       0.12       0.12       0.12       0.12
     3.289       0.12       0.12       0.12       0.12       0.13       0.13       0.13
     3.347       0.13       0.13       0.13       0.13       0.13       0.13       0.13
     3.405       0.14       0.14       0.14       0.14       0.14       0.14       0.14
     3.463       0.14       0.14       0.15       0.15       0.15       0.15       0.15
     3.521       0.15       0.15       0.15       0.16       0.16       0.16       0.16
     3.579       0.16       0.16       0.17       0.17       0.17       0.17       0.17
     3.636       0.17       0.17       0.18       0.18       0.18       0.18       0.18
     3.694       0.18       0.18       0.19       0.19       0.19       0.19       0.19
     3.752       0.19       0.19       0.20       0.20       0.20       0.20       0.20
     3.810       0.20       0.20       0.20       0.21       0.21       0.21       0.21
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TR20.inp

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of Portland (continued)
Terminal 6 - Basin K & L

STORM 0.9-Yr

SUB-AREA:

Basin K	Outlet	.03191	97.	.131	
Basin L	Outlet	.09428	96.	.209	

Line Start Time (hr)	Flow Values @ time increment of 0.008 hr (cfs)						
22.749	0.43	0.43	0.43	0.43	0.43	0.43	0.43
22.807	0.43	0.43	0.43	0.43	0.43	0.43	0.43
22.865	0.43	0.42	0.42	0.42	0.42	0.42	0.42
22.922	0.42	0.42	0.42	0.42	0.42	0.42	0.42
22.980	0.42	0.42	0.42	0.42	0.42	0.42	0.42
23.038	0.42	0.42	0.42	0.42	0.42	0.42	0.42
23.096	0.42	0.42	0.42	0.42	0.42	0.42	0.42
23.154	0.42	0.42	0.42	0.42	0.41	0.41	0.41
23.212	0.41	0.41	0.41	0.41	0.41	0.41	0.41
23.270	0.41	0.41	0.41	0.41	0.41	0.41	0.41
23.328	0.41	0.41	0.41	0.41	0.41	0.41	0.41
23.386	0.41	0.41	0.41	0.41	0.41	0.41	0.41
23.444	0.41	0.41	0.41	0.41	0.41	0.41	0.41
23.502	0.41	0.41	0.40	0.40	0.40	0.40	0.40
23.560	0.40	0.40	0.40	0.40	0.40	0.40	0.40
23.617	0.40	0.40	0.40	0.40	0.40	0.40	0.40
23.675	0.40	0.40	0.40	0.40	0.40	0.40	0.40
23.733	0.40	0.40	0.40	0.40	0.40	0.40	0.40
23.791	0.40	0.40	0.40	0.40	0.40	0.40	0.40
23.849	0.40	0.40	0.39	0.39	0.39	0.39	0.39
23.907	0.39	0.39	0.39	0.39	0.39	0.39	0.39
23.965	0.39	0.39	0.39	0.39	0.39	0.39	0.39
24.023	0.38	0.37	0.36	0.34	0.32	0.29	0.27
24.081	0.24	0.21	0.18	0.15	0.13	0.11	0.09
24.139	0.08	0.07	0.06				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Basin L	0.094		0.684		8.00	10.34	109.68

Line Start Time (hr)	Flow Values @ time increment of 0.013 hr (cfs)						
3.211	0.05	0.05	0.06	0.06	0.07	0.07	0.07
3.303	0.08	0.08	0.09	0.09	0.09	0.10	0.10
3.396	0.11	0.11	0.12	0.12	0.12	0.13	0.13
3.488	0.14	0.14	0.15	0.15	0.16	0.16	0.16
3.581	0.17	0.17	0.18	0.18	0.19	0.20	0.20
3.673	0.21	0.21	0.22	0.22	0.23	0.23	0.24
3.765	0.24	0.25	0.25	0.26	0.26	0.27	0.27
3.858	0.28	0.28	0.29	0.29	0.30	0.31	0.31
3.950	0.32	0.32	0.33	0.33	0.34	0.34	0.35
4.043	0.35	0.36	0.36	0.37	0.37	0.38	0.38
4.135	0.39	0.39	0.39	0.40	0.40	0.41	0.41
4.227	0.42	0.42	0.43	0.43	0.44	0.44	0.45
4.320	0.45	0.46	0.46	0.47	0.48	0.48	0.49
4.412	0.49	0.50	0.50	0.51	0.51	0.52	0.53
4.505	0.53	0.54	0.54	0.55	0.55	0.56	0.57

Attachment D

Bioretention Sizing

Tier II Bioretention Basin Sizing
Port of Portland - Terminal 6
Alan Flemming, PE
30 October 2019

Design Infiltration Rate Calculation, Based on Draft 2019 Stormwater Management Manual for Western Washington
V-5.4 Determining the Design Infiltration Rate of the Native Soils

Assume runoff from Basin L and Basin K Treated in Area A, and Assume peak flows are coincident

TR-55 Method - Peak Discharge Calculations - 1.06-inch WQ Design Storm Peak Flow

	Basin K	Basin L	Combined	
WQ Peak Flow	4.0	10.3	14.4	cfs
	1,810	4,640	6,450	gpm
WQ Runoff Volume	1.3	3.4	4.7	ac-ft

Design Infiltration Rate - Assuming 'Thick' Unsaturated Zone

GW Depth	20 ft		seasonal high groundwater, depth below ground surface
i	1		steady state hydraulic gradient, no mounding (Green Ampt equation)
fprelim	35.5	in/hr	preliminary geotechnical investigation measured infiltration rate
CFv	0.80		few tests relative to system size, but low site variability
CFt	0.70		small -scale pit dimensions (~12 sq-ft) but site has high rate
CFm	0.90		degree of influent control to prevent siltation and bio-buildup
CFtotal	0.50		CFtotal = CFv x CFt x CFm
fdesign	**17.9**	in/hr	
Factor of Safety	2.0		

Table V-5.1: Correction Factors to be Used With In-Situ Saturated Hydraulic Conductivity Measurements to Estimate Design Rates

Issue	Partial Correction Factor
Site variability and number of locations tested	CF_V = 0.33 to 1.0
Test Method	
• Large-scale PIT • Small-scale PIT • Other small-scale (e.g. Double ring, falling head) • Grain Size Method	• CF_t = 0.75 • = 0.50 • = 0.40 • = 0.40
Degree of influent control to prevent siltation and bio-buildup	CF_m = 0.9

Total Correction Factor, $CF_T = CF_V \times CF_t \times CF_m$

Bioretention Design Area and Dimensions

	Basin K	Basin L	Combined		
Required area	9,700	25,000	**34,700**	square feet	
	0.2	0.6	**0.8**	acres	
Length	350	350	350	ft	set at approx. maximum length available
Width	28	71	99	ft	
Aspect Ratio	12.6	4.9	3.5		Target > 5:1
Ponding	3	3	3	ft	design maximum ponding depth
Normal Depth	0.75	0.75	0.75	ft	normal depth is 1/4 the pond depth
Freeboard	1	1	1	ft	1 foot freeboard is required
Bottom	2	2	2	ft	facility bottom depth below ground surface
Basin Volume	0.6	1.8	2.4	ac-ft	available volume

Colour Legend

	test result
	estimated factor
	design number

Attachment E

Tier II Waiver Basin Table Calculations

Tier II Waiver Basin Table
Port of Portland - Terminal 6
Alan Flemming, PE
29 October 2019

Basin	Basin K	Basin L	Combined	Units
Area of drainage basin	889,500	2,628,400	3,517,900	square feet
Impervious area	871,200	2,489,900	3,361,100	square feet

Runoff coefficients (unitless)

Rv = 0.05 + (0.009 × Iu)

Where: Iu = Percent impervious area, and Rv = site runoff volume coefficient

Impervious percentage, Iu	98.0	94.7	95.5	%
Runoff volume coefficient, Rv	0.93	0.90	0.91	unitless

EPA Simple Method - Estimate of Annual Runoff Volume

R = P * Pj * Rv

Where: R = Annual runoff, P = Annual rainfall, Pj = Fraction of rainfall events that produce runoff (usually 0.9), Rv = Runoff volume coefficient

Total Annual Rainfall, P	37	37	37	inches
Events Producing Runoff, Pj	0.9	0.9	0.9	unitless
Annual Runoff, R	31.0	30.1	30.3	inches
Annual Runoff Volume	2,300,500	6,583,200	8,882,400	cubic feet
	307,600	880,100	1,187,500	gallons

Mass of pollutant discharged based on geometric mean (no infiltration)

Geometric Mean, Total Zinc	0.14	0.10	na	mg/L
Annual mass of pollutant discharged	20.3	40.7	61.0	pounds

Mass of pollutant discharged based on geometric mean (with infiltration)

Infiltrate Sized for Peak of WQ Storm, approximately 90% of Annual Runoff Volume

Overflow Discharge = 10% of Annual Runoff	230,100	658,300	888,200	cubic feet
Annual mass of pollutant discharged (less than*):	2.0	4.1	6.1	pounds

*high flow event concentration can be presumed to be less than geometric mean of samples

Mass of pollutant discharged based on benchmark concentration (no infiltration)

Benchmark Concentration, Total Zinc	0.12	0.12	0.12	mg/L
Mass of pollutant discharged	17.2	49.3	66.6	pounds

Approx. depth to Groundwater	20	20	20	feet

Tier II Waiver Basin Table
Port of Portland - Terminal 6
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