PUGET SOUND ENERGY

Goldendale Generating Station
Spill Prevention, Control, and Countermeasure Plan

Developed by: TR TECHNICAL RESPONSE

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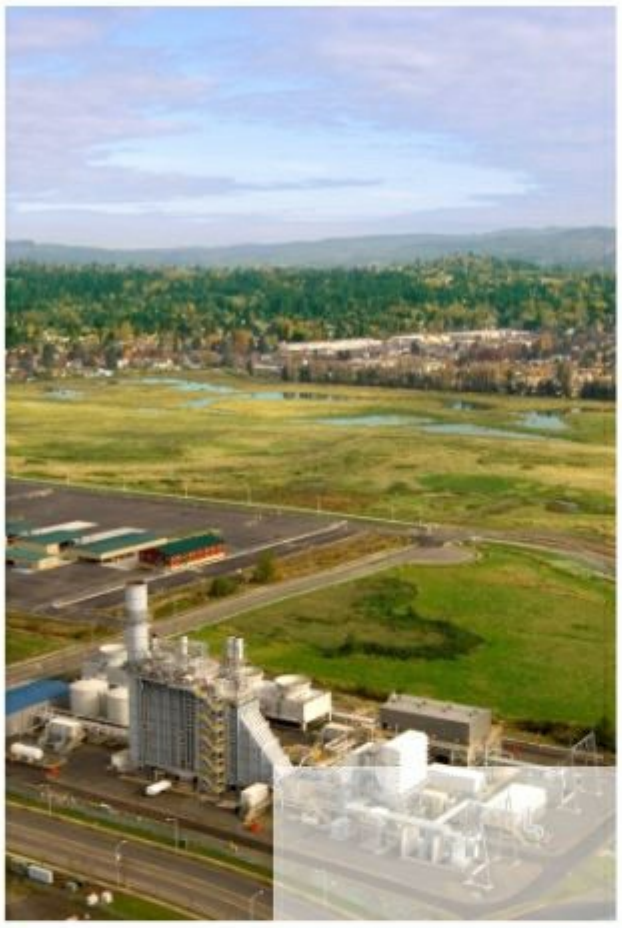

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Spill Prevention, Control, and Countermeasure Plan

Plan Last Revised: 12/17/2020

Developed by:

TECHNICAL RESPONSE PLANNING

2219 Sawdust Road #601 • The Woodlands, Texas 77380 USA • Tel: 281-955-9600 • Fax : 281-955-0369 • info@trpcorp.com • www.emergency-response-planning.com

Table of Contents

TABLE OF CONTENTS, CONTINUED

1.0 Overview

This Spill Prevention, Control, and Countermeasure (SPCC) Plan (or Plan) has been developed for the Puget Sound Energy (PSE) Goldendale Generating Station (Facility) located at 600 Industrial Way in Goldendale, Washington for compliance with SPCC regulations described in Title 40 Code of Federal Regulations (CFR) Part 112 (40 CFR Part 112).

1.1 Maintaining the SPCC Plan (Part 112.5)

This section describes SPCC plan review and amendment requirements for Professional Engineer (PE)-certified plans and "qualified facility" plans (also referred to as self-certified plans or non-PE-certified plans). The section also presents PSE's annual SPCC plan review cycle.

This Facility is a PE-certified facility.

1.1.1 PE-Certified Plans

PE-certified SPCC plans must be amended within six months whenever there is a change in the facility design, construction, operation, or maintenance that materially affects its potential for a discharge. Examples of such changes include but are not limited to: adding or removing containers; reconstruction, replacement, or installation of piping systems; changes to secondary containment systems; changes in product stored at the facility, or revisions to standard operating procedures.

Notwithstanding the above, PE-certified SPCC plans are reviewed by PSE at least once every five years. As a result of this review and evaluation, the SPCC plan must be amended within six months of the review to include more effective prevention and control technology if: (1) such technology will significantly reduce the likelihood of a spill event from the Facility and (2) such technology has been field-proven at the time of review.

The amendments discussed above must be reviewed by a PE and documented in the "Summary of Technical Amendments" in **Appendix A.1**. Minor changes to the plan (i.e., changes that do not require PE certification as described above) will be documented in the "Record of Changes" in **Appendix A.2**.

1.1.2 Qualified Facility Plans

Qualified facility SPCC plans must be amended within six months whenever there is a change in the facility design, construction, operation, or maintenance that materially affects its potential for a discharge. Examples of such changes include, but are not limited to: adding or removing containers; reconstruction, replacement, or installation of piping systems; changes to secondary containment systems; changes in product stored at the facility, or revisions to standard operating procedures.

Notwithstanding the above, qualified facility plans are reviewed by PSE at least once every five years. As a result of this review and evaluation, the SPCC plan must be amended within six months of the review to include more effective prevention and control technology if: (1) such technology will significantly reduce the likelihood of a spill event from the Facility and (2) such technology has been field-proven at the time of review.

The amendments discussed above do not require PE-review, but should be documented in the "Summary of Technical Amendments" in **Appendix A.1**. Minor changes to the plan (i.e., changes that are not described above) will be documented in the "Record of Changes" in **Appendix A.2**.

1.1.3 PSE Annual Reviews

In addition to the reviews described above, PSE internal annual reviews are required for any SPCC plan, per PSE policy, to confirm the SPCC plans contain the most up to date information. If a technical amendment is required, refer to **Sections 1.1.1** or **1.1.2** depending on the plan type. Minor changes to the plan (i.e., changes that do not require a technical amendment) will be documented in the "Record of Changes" in **Appendix A.2**.

1.2 Implementing the SPCC Plan

Plan Date: December 17, 2010

Next 5-year Plan Review/Recertification Date: December 17, 2025

1.3 Management Approval and Certification (Part 112.7)

The management of PSE fully supports this SPCC Plan and has sufficient internal resources, in the form of spill response materials and personnel, to adequately handle most spills that may occur at the Facility addressed in this document. PSE has written contracts with third-party spill response contractors in the event additional spill response resources are required.

This SPCC Plan Will Be Implemented As Described Herein:

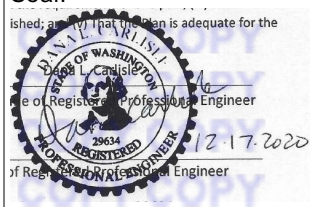
Management Approval:

Name:	Gerald Klug	**Signature:**	Gerald Klug
Title:	Plant Manager	**Date:**	12/22/2020

Designated Person Accountable for Spill Prevention:

Name:	Fred Best	**Signature:**	Fred Best
Title:	Supv Energy Resource Operations	**Date:**	1/4/2021

1.4 Engineer's Certification (Part 112.3(d))

I hereby certify that (i) I am familiar with the requirements of 40 CFR Part 112; (ii) That I or my agent have visited and examined the facility; (iii) That the Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of this part; (iv) That procedures for required inspections and testing have been established; and (v) That the Plan is adequate for the Facility.	
Printed Name of Registered Professional Engineer:	Dana L. Carlisle
Signature of Registered Professional Engineer:	Dana Carlisle
Date:	12/17/2020
Registration No.:	Washington State No. 29634
Seal: 	

1.5 Certification as a Qualified Facility (Part 112.6)

Not applicable to this SPCC Plan.

1.6 Alternative Requirements for General Secondary Containment for Qualified Oil-filled Operational Equipment (Part 112.7(k))

Not applicable to this SPCC Plan.

1.7 Facility Information and Contacts (Part 112.7(a)(3)(vi))

The Facility described in this SPCC Plan is under the primary responsibility of PSE. All questions relating to this SPCC Plan or Facility should be directed to the appropriate contacts listed in this section.

1.7.1 Emergency Contacts

Local Emergency Services	
Emergency Services	911* (Office) 9-911 (Internal Phones)
PSE Contacts	
Spill Response Pager (Contractor)	206-994-3186* (Office)
Gerald Klug Plant Manager	509-773-7913 (Office) 509-250-1957 (Mobile) Gerald.Klug@pse.com (Email)
Daniel Ellingw ood CT Foreman	509-773-7922 (Office) 509-261-0009* (Mobile) Daniel.Ellingw ood@pse.com (Email)

* 24-hour number

1.7.2 Federal, State, and Local Emergency Contacts

Federal Contacts	
National Response Center	800-424-8802* (Office)
EPA Region 10 SPCC Coordinator	206-553-1263 (Office)
Washington State Contacts	
Washington Division of Emergency Management	800-258-5990* (Office)
Department of Ecology Spill Hotline - Central Region	509-575-2490 (Office)
Local Notifications	
City of Goldendale	509-773-3771 (Office)

* 24-hour number

1.7.3 Non-Emergency Facility Contacts

Facility Owner	
Puget Sound Energy	425-454-6363 (Office)
Facility Operator	
Goldendale Generating Facility	509-773-1205 (Office)
PSE Contacts	
Fred Best Supv Energy Resource Operations	509-773-7902 (Office) 509-388-7804 (Mobile) Fred.Best@pse.com (Email)
Dustin Cornidez-Pittman Senior Environmental Scientist	425-456-2908 (Office) 425-213-6638 (Mobile) Dustin.Cornidez-Pittman@pse.com (Email)
Greg Andrina Supervisor, Environmental Programs	425-462-3198 (Office) 425-213-4143 (Mobile) Greg.Andrina@pse.com (Email)

* 24-hour number

2.0 Regulatory Authority, Definitions, General Requirements, and Purpose of the Plan (Parts 112.1, 112.2, 112.3(a) and (b), and 112.7)

The United States Environmental Protection Agency (EPA) administers and periodically updates regulations in 40 CFR Part 112, which require owners or operators of oil handling or oil-storage facilities to have SPCC plans in place to prevent the release of oil to navigable waterways. These requirements are applicable to non-transportation-related onshore or offshore facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, using, or consuming oil and oil products, which due to their location, could reasonably be expected to discharge oil in quantities that may be harmful into or upon the navigable waters of the United States or adjoining shorelines.

An SPCC plan is a document that details the equipment, workforce, procedures, and steps to prevent, control, and provide adequate countermeasures to prevent the discharge of oil to navigable waters of the United States. This information includes procedures and technologies in place at each facility to prevent and minimize the occurrence and consequences of oil spills. The SPCC plan must be prepared in writing and have the full approval of management at a level to commit the necessary resources to fully implement the plan.

Oil is defined as oil in any form, including, but not limited to fats, oils, or greases of animal, fish, or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils and greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil.

These regulations apply to oil storage or handling facilities that are not transportation-related, that have total aboveground oil storage of more than 1,320 gallons, or total belowground storage capacity of more than 42,000 gallons that are not regulated under a state program. Containers of less than 55-gallon capacity are not included in the calculation of the capacity of a facility. This Facility exceeds the 1,320-gallon threshold requiring an SPCC plan.

PSE and its contractors recognize that oil contamination of the waters of the United States or the State of Washington is harmful. Therefore, it is required that the strongest emphasis be placed on oil spill prevention and that the latest engineering and safety procedures be used at all times when dealing with oil and its associated equipment.

2.1 Plan Organization and Cross Reference (Part 112.7)

This SPCC Plan contains the required elements as described in 40 CFR Part 112. The SPCC Plan has been organized to meet the requirement of 40 CFR Part 112.7(a)(5) that requires organizing portions of the Plan to make them readily usable in the event of an emergency. Table 1 below presents cross-reference of the sections of 40 CFR Part 112 Subparts A and B to the sections contained in this SPCC Plan. Table 1 below does not list the requirements of Parts 112.9 through 112.15 (portions of Subpart B and Subpart C) because these requirements are for onshore oil production facilities or facilities storing and handling animal or vegetable oils and are not applicable to this Facility.

Other information contained in the SPCC Plan includes the following:

- **Appendix A** includes the “Five Year Review and Technical Amendment Log” and the “Record of Changes”.
- **Appendix B** includes a copy of the “Certification of the Applicability of the Substantial Harm Criteria,” as described in 40 CFR Part 112 Appendix C. Based on the requirements listed on this checklist, the Facility is not required to maintain a Facility Response Plan (FRP).
- **Appendix C** includes copies of PSE Standards and Forms referenced in the SPCC Plan.
- **Appendix D** contains PSE inspection and maintenance records for the oil storage structures at the Facility and training records for Facility personnel. This appendix will be maintained by the individual at the Facility responsible for spill prevention.
- **Appendix E** includes the following additional documents:
    - Secondary containment calculations and information for bulk storage containers at the Facility that are subject to specific (sized) secondary containment.

Table 1: Plan Elements and Cross Reference to 40 CFR Part 112

40 CFR Part	Description of Rule	SPCC Plan Section
112.1	General Applicability	Section 2.0
112.2	Definitions	Section 2.0
112.3(a) & (b)	Requirement to Prepare and Implement a SPCC Plan	Section 2.0
112.3(d)	Review and Certification by a Professional Engineer	Section 1.4
112.3(e)	Required SPCC Plan Locations	Section 5.3
112.3(g)	Certification for Qualified Facilities	N/A
112.4	Amendment of SPCC Plan by Regional Administrator	Section 6.5.3
112.5	Amendment of SPCC Plan by Owner or Operator	Section 1.1
112.6	Requirements of Qualified Facilities	N/A
112.7	General requirements for SPCC Plans for all Facilities and all Oil Types	Sections 1.3 & 2.0
112.7(a)(1-2) & 112.8(a)	Discussion of Facility's Conformance with Rules and Applicable Requirements of Subparts A and B and Deviations from the Plan Requirements	Section 3.1
112.7(a)(3)	Site Description and Facility Diagram	Section 3.0 & Figures 2-3
112.7(a)(3)(i)	Type of Oil in Each Container and Storage Capacity	Section 3.2
112.7(a)(3)(ii)	Discharge Prevention Measures – Procedures	Section 5.2
112.7(a)(3)(iii)	Discharge or Drainage Controls – Secondary Containment	Section 4.2
112.7(a)(3)(iii)	Discharge or Drainage Controls – Procedures to Control Discharges	Section 6.2
112.7(a)(3)(iv)	Countermeasures for Discharge Discovery, Response, and Cleanup for Facility Personnel and Cleanup Contractor	Section 6.0
112.7(a)(3)(v)	Methods of Disposal of Recovered Materials	Section 6.3
112.7(a)(3)(vi)	Emergency Contact and Notification Information	Sections 1.7 & 6.1
112.7(a)(4)	Procedures and Required Information Regarding a Discharge	Section 6.5.1
112.7(b)	Fault Analysis	Section 4.1
112.7(c)	Secondary Containment	Section 4.2
112.7(d)	Contingency Planning	N/A
112.7(e)	Inspections, Tests, and Records	Section 4.4 & Appendix D
112.7(f)	Personnel Training	Section 5.1
112.7(g)	Security	Section 4.6
112.7(h)	Tank Truck Loading/Unloading	Section 5.2
112.7(i)	Brittle Fracture Evaluation Requirements	Section 4.5
112.7(j)	Conformance with State Requirements	Section 7.0
112.7(k)	Qualified Oil-filled Operational Equipment	N/A
112.8(b)	Facility Drainage	Section 4.3
112.8(c)	Bulk Storage Containers	Sections 3.2 & 4.2
112.8(d)	Fuel Transfer Operations, Pumping, and Facility Process	Section 5.2

N/A = Not applicable to this SPCC Plan

3.0 General Facility Description (Part 112.7)

The Facility is located at 600 Industrial Way in Goldendale, Washington. A vicinity map is shown in **Figure 1**, and the general layout of the Facility is shown on **Figure 2**. The Facility is a natural gas-fired combined cycle 300-megawatt (MW) electricity generation facility. The Facility operations are located within an area of approximately 12 acres. The Facility is located on a larger PSE-owned property of approximately 140 acres; however, Facility industrial activities and oil storage, handling, and use only occur within the 12-acre portion of the larger PSE-owned property. The Facility began operating in September 2004.

The Facility uses a combined cycle electric generation process with a combustion turbine (CT) generator and steam turbine (ST) generator located in the Power Building (**Figure 3**). An underground natural gas pipeline supplies natural gas to the Facility. The natural gas is combusted in the CT, which drives a combustion turbine generator (CTG). Exhaust gas from the CT is directed to a heat recovery steam generator (HRSG) to produce steam, which drives a steam turbine generator (STG) that produces additional electrical energy. Steam is condensed in the main cooling tower (MCT) and the water is reused.

Oil is stored, handled, or used at the Facility in the following locations:

- Power Building (i.e., the STG, CTG, and Oil Storage Area),
- Nine (9) outdoor transformers,
- One (1) emergency generator, and
- Fire pump room.

All oil storage, handling, and use areas have secondary containment.

3.1 Compliance with Applicable SPCC Requirements (Parts 112.7(a)(1)-(2) and 112.8(a))

40 CFR Part 112 Subparts A and B are applicable to this SPCC Plan. A listing of the criteria applicable to the Facility covered under this SPCC Plan is included in **Table 1** and detailed information corresponding to each of these criteria may be found in the report section(s) referenced therein.

The Facility is designed to prevent oil releases during operation or maintenance of the Facility. The location of oil-containing equipment is shown in the **Figures** and a summary of potential releases is discussed in **Section 4.0**.

Oil is stored in equipment that is appropriate for the type of oil being stored in them, and the equipment is stored on paved surfaces with appropriate secondary containment consisting of concrete berms or other oil-containment features to control a potential release of oil.

Oil transfers, loading/unloading, and other oil-handling activities are staffed operations. Spill kits are readily available at the Facility or in staff vehicles. As part of the oil-handling protocol, signs are posted as applicable to warn personnel to disconnect hoses and secure containers before transport. Potential spill events at the Facility have been summarized, and estimates of the volume, rate of release, and direction of release are presented in **Section 4.0**.

Spills likely will be discovered quickly and oil-containing equipment is routinely inspected. Cleanup of minor spills would be performed by the Facility or other PSE personnel, whereas major spills would be controlled and cleaned up by qualified contractors. Contact information is detailed in **Section 1.7** and includes appropriate emergency and non-emergency contacts and regulatory agencies. Spill reporting requirements are summarized in **Section 6.5**.

Inspections and tests are routinely performed on oil-containing equipment and records of these activities are maintained as part of this SPCC Plan. Visual inspection is performed on all oil-containing equipment. Non-destructive testing is not performed on factory-fabricated containers as part of normal industry procedures. Because of the low container stresses associated with the typically small volumes of oil used in these non-pressure applications, it is our opinion that visual inspection is adequate to evaluate container condition. No field-fabricated oil containers subject to brittle fracture inspection requirements are used at this Facility.

Oil handling personnel receive training regarding this SPCC Plan on an annual basis. Locations where oil is stored are kept secure through the use of fencing, locks on gates and/or doors, security cameras, and/or security lighting.

3.2 Oil Storage and Oil-Containing Equipment (Part 112.7(a)(3)(i))

The oil-containing containers and equipment that are present at the Facility are listed in the tables below. Equipment locations are shown in the **Figures**.

Table 2: Non-Electrical Oil-Containing Equipment

Oil Storage/Oil-Containing Equipment	Contents	Quantity	Total Storage Capacity (gallons)
Combustion Turbine Lube Oil System	Lube oil	1	6,200
Steam Turbine Lube Oil System	Lube oil	1	4,700
Emergency Generator	Diesel	1	720
Fire Pump	Diesel	1	440
Aboveground Storage Tank (AST)	Diesel	1	100
Drums	Various oils	22	1,210
Totes	Various oils	8	520
Machine Shop Drum on Cart	Gear oil	1	55

Storage Subtotal:

Aboveground Non-Electrical Oil-Containment Equipment Capacity: 13,945 gallons

Below ground Non-Electrical Oil-Containment Equipment Capacity: 0 gallons

Table 3: Electrical Oil-Filled Operational Equipment

Electrical Oil-Filled Operational Equipment	Contents	Quantity	Total Storage Capacity (gallons)
GSU 1 Transformer	Mineral oil	1	17,200
Station Service Transformer 1 (SST 1)	Mineral oil	1	642
Station Service Transformer 2 (SST 2)	Mineral oil	1	642
Station Service Transformer 3 (SST 3)	Mineral oil	1	642
Station Service Transformer 4 (SST 4)	Mineral oil	1	642
Station Auxiliary Transformer 1 (SAT 1)	Mineral oil	1	2,586
Station Auxiliary Transformer 2 (SAT 2)	Mineral oil	1	2,540
LCI Transformer	Mineral oil	1	977
EX2K Transformer	Mineral oil	1	243

Storage Subtotal:

Aboveground Electrical Oil-Containment Equipment Capacity: 26,114 gallons

Total Facility Aboveground Oil Storage Capacity: 40,059 gallons

Total Facility Below ground Oil Storage Capacity: 0

Total Facility Oil Storage Capacity: 40,059 gallons

3.3 Description of Oil Storage and Oil-Containing Equipment (Parts 112.7(a)(3) and 112.8(c))

Oil storage and oil-containing equipment are described in the context of each activity at the Facility.

3.3.1 Combustion Turbine Lube Oil System

The CT is located in the eastern portion of the Power Building, which has a concrete floor with several floor drains that lead to an oil/water separator. The CT lube oil system has an oil capacity of approximately 6,200 gallons and consists of a single-walled steel reservoir and associated aboveground steel piping. Low-pressure piping is single-walled, and high-pressure piping is double-walled. The general location of oil-containing equipment within the Power Building is shown schematically on **Figure 3**; detailed engineering drawings showing the exact location of floor drains, equipment, and piping are available at the Facility.

The CT lube oil system is a "closed-loop" system within which oil circulates at a maximum pressure of approximately 3,400 pounds per square inch (psi) under normal operating conditions. Periodic maintenance of the system includes purifying the oil when the CT is not generating, and, very rarely, adding makeup oil during shutdowns. Both operations are staffed and closely monitored during the procedures.

The CT lube oil system has several alarms and/or safeguards. These include a low oil level alarm which would trigger if approximately 100 gallons or more oil were lost; temperature and pressure alarms; and a low pressure trip which would shut down the CT if oil pressure were to drop below a minimum required pressure during CT operation. The alarms include both local audible alarms, as well as visual displays in the control room of the Power Building to alert operators.

3.3.2 Steam Turbine Lube Oil System

The ST is located in the western portion of the Power Building. The ST lube oil system has an oil capacity of approximately 4,700 gallons and consists of a single-walled steel reservoir and associated aboveground steel piping. Low-pressure piping is single-walled, and high-pressure piping is double-walled. The general location of oil-containing equipment within the Power Building is shown schematically on **Figure 3**; detailed engineering drawings showing the exact location of equipment and piping are available at the Facility.

The ST lube oil system is a "closed-loop" system that circulates oil at a maximum pressure of approximately 1,875 psi under normal operating conditions.

The maintenance and alarm configuration of the ST are similar to those described in **Section 3.3.1** for the CT.

3.3.3 Emergency Generator

The emergency generator is a "stand-alone" system consisting of a generator mounted over a 720-gallon diesel fuel tank, and short segments of single-walled piping connecting the two. The fuel tank is double-walled. The entire emergency generator system is located inside an enclosed generator cabinet. The system is located on a paved foundation slab that is surrounded by unpaved (gravel) surfaces. The generator is only used in emergency power-outage situations and during testing, which involves running the generator for approximately 30 minutes once per month.

Fuel is delivered by tanker truck by an outside vendor. The facility reports fuel deliveries occur approximately four times per year or less. Fuel transfer procedures are staffed full time and are described in greater detail in **Section 5.2**.

3.3.4 Fire Pump

The fire pump is contained in the Fire Pump Room in the southeast corner of the Water Treatment Building (**Figure 3**), and consists of a diesel-powered engine, 440-gallon diesel fuel tank, and single-walled aboveground supply and return piping. The engine is used to pressurize water for fire-fighting activities in the event of a fire. The fuel tank is located inside a steel secondary containment structure, and the entire system (tank, piping, and engine) is inside the Water Treatment Building, which has a concrete floor with no floor drains in the area. The engine is only used in case of fire and during testing which is performed by running the engine for approximately 15 minutes once per week.

Fuel is delivered by tanker truck by an outside vendor. The facility reports fuel deliveries occur approximately four times per year or less. Fuel transfer procedures are staffed full time and described in greater detail in **Section 5.2**.

The fuel tank has a float switch alarm that triggers if the fuel level drops below a certain level, described as follows. The tank is a horizontal cylinder that is 48 inches in diameter. The alarm triggers if the fuel level falls below 14 inches (i.e., if the fuel level falls at or below 34 inches above the bottom of the tank). The alarm consists of a visual display on a control panel located adjacent to the fuel tank in the Fire Pump Room, as well as a visual display in the control room of the Power Building.

3.3.5 Oil Storage Area

The Oil Storage Area is located in the northwest corner of the Power Building (**Figure 3**). All oil containers are stored in secondary containment systems as summarized below; secondary containment is described in more detail in **Section 4.2** and **Appendix E**.

3.3 Description of Oil Storage and Oil-Containing Equipment (Parts 112.7(a)(3) and 112.8(c)), Continued

3.3.5 Oil Storage Area, Continued

100-gallon diesel AST. The AST is a single-wall steel tank with a battery-powered fuel dispenser pump mounted on top of the AST. The system pumps fuel through a flexible single-wall hose to a handle on the dispenser. The AST is used to transfer diesel to vehicles and small equipment such as generators. Fuel is periodically delivered by an outside vendor and distributed from the AST to small containers and/or vehicles by PSE employees trained in fuel transfer procedures (**Section 5.2**). The AST is contained in a steel secondary containment structure.

Drums. Up to 22 55-gallon steel drums are located on two-drum and four-drum spill pallets. The drums contain various types of new and used oil used by trained PSE employees. Drums with new oil are delivered to the Facility by an outside vendor and drums containing used oil are picked up by the vendor.

Totes. Eight 65-gallon steel totes are located on an elevated rack along the west wall of the Oil Storage Area. The totes contain various new oils for use in the shop. New totes are delivered by an outside vendor. Employees trained in oil handling can obtain oil at a piping manifold by manually opening a valve and allowing oil to drain into small containers by gravity. The totes and piping manifold are situated atop a metal secondary containment pan structure.

Machine Shop Drum on Cart. One 55-gallon steel drum is located on a small cart with wheels in the Oil Storage Area. The drum contains new gear oil. New drums are delivered by an outside vendor. PSE employees transfer small quantities of oil to containers and take the containers to the main cooling tower to change the oil in gear boxes at the tower. There are a total of 10 gear boxes (each containing less than 55-gallons of gear oil). According to Facility personnel, oil changes of this type occur about once per year.

3.3.6 Transformers

All nine (9) transformers at the Facility are located on concrete slabs enclosed by secondary containment structures consisting of concrete walls. A manual drain valve to gravity drain accumulated stormwater is installed on the secondary containment areas from all transformers except the GSU 1 transformer and transformers SST-3 and SST-4. For GSU 1, SST-3, and SST-4, pumps must be manually turned on to pump stormwater out of the secondary containment areas. Stormwater is not drained or pumped from any containment area until it is documented to have no oil sheen. Stormwater drained from containment areas associated with the seven transformers located north of the Power Building is conveyed by underground piping to a wastewater oil/water separator (described in **Section 4.2.1**), as shown schematically in **Figure 3**. Stormwater draining from the containment associated with SST-3 and SST-4 located southwest of the HRSG flows to the unpaved ground surface beneath the air-cooled condenser where the water infiltrates. The air-cooled condenser itself is an elevated structure.

The transformers each have several alarms including low oil level and high oil temperature. If a transformer alarm were triggered, operators would be alerted by visual displays in the control room of the Power Building.

4.0 Potential Spills and Prevention Measures

The following sections describe the Facility's secondary containment for oil-containing containers/equipment, Facility drainage pathways and distance to navigable waters, the inspection and recordkeeping program, and security measures at the Facility to control access to the oil handling, processing, and/or storage areas.

4.1 Fault Analysis - Potential Spill Events (Part 112.7(b))

The probability of a major oil release from the Facility is low. A significant oil spill could occur in the unlikely event of a catastrophic failure of a large container or piece of equipment (e.g. CT or ST lube oil system; GSU 1 Transformer); however, a spill of this magnitude would be contained by the spill containment features at the Facility.

Potential spill events that are more likely to occur would be:

- A slow leak from a piece of electrical or operating equipment due to a failed gasket or seal, cracked bushing, or a leaking oil stop plug, fitting, valve, or similar item. An event of this nature would be readily detectable during a routine inspection or day-to-day activities and allow ample response time for containment.

- A spill of oil during transport or handling of oil, or during maintenance, at the Facility. The personnel performing these activities would quickly detect an event of this nature, and the response would be rapid.

Potential spill events at the Facility are summarized in **Table 4**.

Table 4: Potential Spill Events (Part 112.7(b))

Source	Type of Failure	Maximum Volume (gallons)	Maximum Rate of Release (gallons/hr)	Direction of Flow	Secondary Containment
Combustion Turbine Lube Oil System	Leak; spill during maintenance	500	300	Radial	Wash water sump and wastewater OWS
Steam Turbine Lube Oil System	Leak; spill during maintenance	500	300	Radial	Bermed secondary containment area
Emergency Generator - Engine or Piping	Leak	20	60	Radial	Cabinet structure
Emergency Generator – Fuel Tank	Overfill	50	3,000	Into secondary containment	Generator cabinet structure
Emergency Generator – Fuel Tank	Rupture	720	Instantaneous	Radial	Belly pan
Fire Pump – Engine or Piping	Leak	20	60	Radial	Fire Pump Room
Fire Pump – Fuel Tank	Overfill	50	3,000	Into secondary containment	Steel secondary containment structure
Fire Pump – Fuel Tank	Rupture	440	Instantaneous	Radial	Steel secondary containment structure
Diesel AST (Oil Storage Area)	Rupture	100	Instantaneous	Radial	Steel secondary containment structure
GSU 1 Transformer	Leak; spill during maintenance	1,050	100	Radial	Concrete containment structure
Station Service Transformer 1	Leak; spill during maintenance	375	50	Radial	Concrete containment structure
Station Service Transformer 2	Leak; spill during maintenance	375	50	Radial	Concrete containment structure
Station Service Transformer 3	Leak; spill during maintenance	375	50	Radial	Concrete containment structure
Station Service Transformer 4	Leak; spill during maintenance	375	50	Radial	Concrete containment structure
Station Auxiliary Transformer 1	Leak; spill during maintenance	375	50	Radial	Concrete containment structure
Station Auxiliary Transformer 2	Leak; spill during maintenance	375	50	Radial	Concrete containment structure
LCI Transformer	Leak; spill during maintenance	375	50	Radial	Concrete containment structure

Table 4: Potential Spill Events (Part 112.7(b)), Continued

Source	Type of Failure	Maximum Volume (gallons)	Maximum Rate of Release (gallons/hr)	Direction of Flow	Secondary Containment
EX2K Transformer	Leak; spill during maintenance	243	50	Radial	Concrete containment structure

Notes:

(1) The type of failure and oil spill volumes for bulk storage containers assume a spill of the entire contents of each container, consistent with 40 CFR 112.8(c)(2) for specific secondary containment. The type of failure and oil spill volumes for *oil-filled operational equipment* are predictions based on the typical failure mode and the most likely quantity of oil that would be discharged, consistent with 40 CFR 112.7(c) for general secondary containment. See discussion in Sections 4.2.1 through 4.2.6 for specific oil spill scenarios for each container and each piece of equipment.

(2) Potential spill volumes for transformers based on PSE analysis of transformer spill scenarios.

4.2 Oil Spill Containment Systems (Parts 112.7(a)(3)(iii), 112.7(c), and 112.8(c))

Containment systems for oil-containing equipment and storage structures as applicable, are described in the sections below. Each section provides a discussion of the applicability of either general or specific secondary containment; how the requirement is met; and whether secondary containment consists of active measures, passive measures, or both.

With the exception of the outdoor transformers, precipitation cannot accumulate in any of the areas described below. Secondary containment calculations are included in **Appendix E**.

4.2.1 Wastewater Oil/Water Separator

Selected sections below make reference to the wastewater oil/water separator. The wastewater oil/water separator is an underground separator located northwest of the Power Building (**Figure 3**). The separator receives stormwater from seven transformer secondary containment areas, water pumped from the CT wash water sump, and Power Building floor drains. The separator contains a coalescer as well as an oil stop valve. When the oil stop valve is triggered, the oil/water separator could fill with oil up to the capacity of the separator, which is estimated to be greater than 600 gallons (**Appendix E**). The wastewater oil/water separator has a high-level float switch alarm that creates an audible alarm at the separator, and a visual display in the control room of the Power Building.

4.2.2 Combustion Turbine Lube Oil System

The CT lube oil system is located inside the Power Building, and the system has a total oil capacity of 6,200 gallons. The system is considered oil-filled operational equipment and must meet the general secondary containment requirement which includes an assessment of the typical failure mode and most likely quantity of oil discharged. PSE's experience at similar sites includes a typical failure mode of leaking equipment that would be discovered relatively quickly or a spill during maintenance that would be discovered immediately. The most likely quantity of oil spilled is 500 gallons.

In the event of a spill, oil could flow across the concrete floor of the Power Building into one of two locations: 1) a wash water sump located south of the CT lube oil system, or 2) one of several small floor drains in the vicinity of the CT lube oil system. The wash water sump has a capacity of approximately 2,700 gallons (Appendix E) and is a “dead-end” sump, meaning there are no drains exiting the sump; the sump is drained by pumping wash water from the sump. Pumping out the sump is a staffed operation and the recovered water is checked for oil before being pumped to the wastewater oil/water separator.

The floor drains near the CT lube oil system are covered with loose-fitting metal covers that would impede, but not entirely prevent, entry of oil. The drains flow by gravity to the wastewater oil/water separator.

A spill of 300 gallons toward the wash water sump would be contained on the floor of the Power Building and in the sump. A spill of 300 gallons to the floor drains would be contained on the floor of the Power Building, in the piping leading to the wastewater oil/water separator, and in the oil/water separator.

The containment systems discussed above are considered passive containment, and containment is sufficient in the opinion of the PE certifying this plan.

4.2.3 Steam Turbine Lube Oil System

The ST lube oil system is located inside the Power Building, and the system has a total oil capacity of 4,700 gallons. The system is considered *oil-filled operational equipment* and must meet the general secondary containment requirement which includes an assessment of the typical failure mode and most likely quantity of oil discharged. PSE's experience at similar sites includes a typical failure mode of leaking equipment that would be discovered relatively quickly or a spill during maintenance that would be discovered immediately. The most likely quantity of oil spilled is 500 gallons.

4.2 Oil Spill Containment Systems (Parts 112.7(a)(3)(iii), 112.7(c), and 112.8(c)), Continued

4.2.3 Steam Turbine Lube Oil System, Continued

The ST lube oil system is surrounded by a concrete curb, and there are no floor drains within the secondary containment area. The shape and geometry of the curbed area is complex and the oil-containing volume is difficult to calculate; however, PSE estimates the volume is close to 20,000 gallons (**Appendix E**). In the event of a spill from the ST lube oil system, oil would be contained within the concrete curbed secondary containment area. The containment systems discussed above are considered passive containment, and containment is sufficient in the opinion of the PE certifying this plan.

4.2.4 Emergency Generator

The emergency generator consists of a generator, fuel tank, and short segments of single-walled piping connecting the two. The entire system is located inside an enclosed generator cabinet with a concrete floor, and the fuel tank has an integral secondary containment "belly pan" with a capacity of 871 gallons according to the equipment manufacturer.

The generator is considered oil-filled operational equipment and must meet the general secondary containment requirement which includes an assessment of the typical failure mode and most likely quantity of oil discharged. A typical failure mode for the generator would include a drip from piping, and the most likely quantity of oil spilled is 20 gallons. This volume would be contained on the concrete pad inside the generator cabinet, the walls of which are sealed to the concrete.

The fuel tank is considered a bulk storage container and must meet the specific (sized) secondary containment requirement of being capable of containing the full volume of oil in the tank, which is 720 gallons. A rupture of the 720-gallon fuel tank would be contained within the 871-gallon belly pan.

A typical spill scenario during fueling includes a tank overfill that is discovered within one minute of overfilling, and the most likely quantity of oil spilled is 50 gallons. The oil would be contained within the cabinet structure.

The containment systems discussed above are considered passive containment, and containment is sufficient in the opinion of the PE certifying this plan.

4.2.5 Fire Pump

The fire pump system is contained in a room in the southeast corner of the Water Treatment Building and consists of an engine fueled by a 440-gallon diesel tank, connected by single-walled piping. The fuel tank is located inside a steel secondary containment structure. The room has a concrete floor with no floor drains.

The engine is considered oil-filled operational equipment and must meet the general secondary containment requirement which includes an assessment of the typical failure mode and most likely quantity of oil discharged. A typical failure mode for the engine would include a leak from piping, and the most likely quantity of oil spilled is 20 gallons. This volume would be contained on the concrete floor of the room.

The fuel tank is considered a bulk storage container and must meet the specific (sized) secondary containment requirement of being capable of containing the full volume of oil in the tank, which is 440 gallons. A rupture of the 440-gallon fuel tank would be contained within the steel secondary containment structure (**Appendix E**).

A spill during fueling includes a tank overfill that is discovered within one minute of overfilling, and the most likely quantity of oil spilled is 50 gallons. The oil would be contained within the fire pump room.

The containment systems discussed above are considered passive containment, and containment is sufficient in the opinion of the PE certifying this plan.

4.2 Oil Spill Containment Systems (Parts 112.7(a)(3)(iii), 112.7(c), and 112.8(c)), Continued

4.2.6 Oil Storage Area

The Oil Storage Area is located in the northwest corner of the Power Building. The building has a concrete floor, and there is one floor drain in the general vicinity of where oil is stored that discharges to the oil/water separator. The 100-gallon diesel AST, 55-gallon drums, 65-gallon totes, and the machine shop drum on the cart are all considered bulk storage containers. Most containers are located within secondary containment features including steel secondary containment for the AST; "spill pallets" for drums; and a metal secondary containment pan structure. In the event of a spill from these containers, the oil would be contained in the various forms of secondary containment.

The machine shop drum on the cart is not within a specific secondary containment feature. In the event of a spill, oil would be contained on the Power Building floor, in the piping leading to the oil/water separator, and in the oil/water separator. The oil/water separator has a capacity of greater than 600 gallons, as discussed in **Section 4.2.1** and **Appendix E**.

The containment systems discussed above are considered passive containment, and containment is sufficient in the opinion of the PE certifying this plan.

4.2.7 Transformers

All transformers are located outdoors and within secondary containment structures consisting of concrete floors and walls. The transformers are considered oil-filled operational equipment and must meet the general secondary containment requirement which includes an assessment of the typical failure mode and most likely quantity of oil discharged. PSE's experience is that typical failure mode for transformers is a slow spill either during oil transfer which is a staffed operation, or a slow leak from a failed gasket or seal, cracked bushing, or a leaking oil-stop plug, fitting, valve, or similar item. PSE has estimated the following most likely spill quantities based on the alarm configurations and response times for this Facility:

- GSU 1 – 1,050 gallons. This assumes a spill of 650 gallons of oil before an alarm would go off, and a 4-hour response time after the alarm, at an estimated leak rate of 100 gph.
- All other facility transformers – 375 gallons. This assumes a spill of 175 gallons before an alarm, and a 4-hour response time at a leak rate of 50 gph.

The secondary containment systems for all transformers are designed to contain a minimum of 110% of the oil in each transformer.

The containment systems discussed above are considered passive containment, and containment is sufficient in the opinion of the PE certifying this plan.

4.3 Drainage Pathways and Distance to Navigable Waters (Part 112.8(b))

Potential on-site and off-site drainage pathways are described for each oil storage and oil-containing equipment in the following subsections.

4.3.1 Onsite Drainage

The majority of the Facility is paved, and stormwater generally flows to grassy swales that convey the stormwater to a stormwater oil/water separator[3]. The average distance from oil storage areas to the oil/water separator is approximately ¼ mile. The stormwater oil/water separator discharges to two stormwater pond identified as Cell 1 and Cell 2 that are located northwest of the Facility. Stormwater either infiltrates or flows in series through Cell 1 into Cell 2. Any stormwater that does not infiltrate in the ponds flows from Cell 2 toward Twin Buttes Canal, north of the Facility. Twin Buttes Canal is considered a navigable waterway.

The likelihood of oil flowing to Twin Buttes Canal via the Facility stormwater system is low because all areas where oil is stored, used, or handled are located inside buildings, with the exception of the outdoor transformers. The outdoor transformers' secondary containment systems are manually discharged either to the wastewater oil/water separator or, in the case of SST-3 and SST-4, to an unpaved low spot beneath the cooling towers where stormwater infiltrates.

As described previously, the Facility wastewater oil/water separator collects wastewater/stormwater from the following sources:

- Industrial process water from inside buildings, including the floor drains in the Power Building.
- Domestic wastewater.
- Stormwater from the secondary containment structures surrounding all transformers except SST-3 and SST-4.

The wastewater from the wastewater oil/ water separator discharges to the City of Goldendale Wastewater Treatment Plant (WWTP) under State Waste Discharge Permit Number ST-9236. The wastewater oil/water separator has a coalescer and an oil stop valve. If the oil stop valve were to be triggered and close, liquid would accumulate in the oil/water separator. This separator has a high-level alarm (float switch) that creates an audible alarm at the oil/water separator, and a visual display in the control room of the Power Building.

[3] Two exceptions include: 1) beneath the cooling tower where the ground surface is unpaved and water infiltrates, as discussed in **Section 3.3.6** for SST-3 and SST-4; and 2) during storms that exceed the design storm criteria for the Facility, stormwater could bypass the oil/water separator and flow directly to the ponds.

4.3.2 Potential Off-Site Drainage Pathways

Stormwater that exits Cell 2 of the PSE stormwater pond system enters Twin Buttes Canal, which ultimately drains into the Little Klickitat River, approximately ½ mile west of the Facility (**Figure 1**).

Wastewater discharged from the wastewater oil/ water separator discharges to the City of Goldendale Wastewater Treatment Plant.

4.4 Inspections and Recordkeeping (Parts 112.7(e) and 112.8(c)(6))

Inspections of oil-containing equipment, storage structures, and containment systems are performed regularly. Inspection procedures, any required physical testing of oil-containing equipment, and recordkeeping requirements for oil-containing equipment and stored oil are described in the following subsections.

The Facility performs daily and monthly documented inspections of many areas of the Facility, including but not limited to the areas described in this Plan where oil is stored, used or handled. Inspections are recorded on the appropriate inspection forms. Completed copies of these forms are kept at the Facility, and are readily available for review and inspection. Inspections and record keeping for oil-filled equipment, stored oil, piping and containment structures are described in the following subsections.

4.4.1 Combustion Turbine and Steam Turbine Lube Oil Systems
Daily and monthly visual inspections are conducted of the CT and ST lube oil systems to check for leaks, damage, corrosion, or any other conditions that could result in an uncontrolled release of oil. The visible areas including piping and sides of reservoirs are inspected. The w ash w ater sump near the CT, and the secondary containment area for the ST lube oil system, are also inspected for the presence of oil.
4.4.2 Emergency Generator
The emergency generator is inspected daily. Inspections include opening the generator cabinet and visually observing the piping conditions, and visual observation of the sides of the generator, fuel tank, and the concrete floor of the enclosure.
4.4.3 Fire Pump
The fire pump is inspected as part of the daily rounds. Inspections include the visible portions of the sides and bottom of the engine and fuel tank, as w ell as the floor or the fire pump room. Fuel piping is also inspected for signs of leaks.
4.4.4 Oil Storage Containers
Inspections of storage containers such as the 100-gallon AST, 55-gallon drums, 65-gallon totes, and the machine shop drum on the cart for evidence of leaks or spills include visible sides and bottoms of the containers, as w ell as the areas around the containers. Secondary containments are inspected for oil accumulation. Any leaks or spills are recorded on the appropriate inspection form, and the spill is cleaned up. Oil is transferred out of containers in need of repair or replacement as soon as is practicable.
4.4.5 Transformers
Areas to be inspected include the sides and the areas surrounding the bottoms of the transformers, and any bushings or plugs on the equipment. These areas are observed to see if oil is present. Mountings, supports, brackets, and bases for the transformers w ill be inspected for any damage, deterioration, corrosion, or other evidence of potential failure. Any damage or deterioration of the mounting system w ill be reported to the Facility manager and repaired or replaced as necessary. The secondary containments are also observed for evidence of oil spills.

4.4 Inspections and Recordkeeping (Parts 112.7(e) and 112.8(c)(6)), Continued

4.4.6 Discharged Stormwater

The secondary containment areas are inspected after rain events for accumulated stormwater. Only clean stormwater (no visible oil) may be discharged from the containment areas. The procedure for discharge includes inspecting stormwater for oil and/or sheen and recording the results of the inspection. If no oil or sheen is observed, stormwater can be discharged out of the containment area by unlocking and opening the valve that is normally locked in the closed position, or for the GSU 1, SST-3, and SST-4 transformers, operating the pump to pump stormwater out of the containment area. If oil or sheen is observed, it is cleaned up and documented, and the source of the oil or sheen is investigated. The personnel performing the inspection, documentation, and discharge of the secondary containment area must be properly trained and authorized individuals. Information regarding stormwater discharge is recorded using the PSE Facility Inspection Form (PSE Form 1185) or an equivalent form developed for the Facility. Recorded information will include time, date, the confirmed absence of oil or sheen upon discharge, estimated volume of water discharged, treatment to remove oil or sheen if present, and the name of the person discharging the stormwater. Copies of the completed inspection form are maintained on-site or in **Appendix D** of this SPCC Plan for five years.

4.4.7 Oil/Water Separators

The stormwater oil/water separator is inspected monthly[4]. The wastewater oil/water separator is inspected daily, including checking the oil accumulation depth, if any. The separators are cleaned on an as-needed basis.

[4] This and other components of the Facility's stormwater system are inspected and maintained as part of the Facility's Industrial Stormwater General Permit.

4.5 Brittle Fracture Evaluation Requirements (Part 112.7(i))

Not applicable to this SPCC Plan.

4.6 Security (Part 112.7(g))

The Facility is staffed continuously (24 hours a day, seven days a week). Measures taken to prevent trespassing, vandalism, and sabotage include, but are not limited to, the following:

- Gated security fences with barbed wire extensions surround the perimeter of the Facility.
- Doors and windows on the building are secured at all times and accessed only with electronic security cards.
- Exterior building and yard lights.
- "Danger" and "No Trespassing" signs.
- Intrusion alarm system in the shop.
- Security camera system at the Facility that monitors gates and the interior building.

5.0 Training and Discharge Prevention Procedures

The following sections describe training requirements and PSE's policies and procedures to prevent oil discharges.

5.1 Training (Part 112.7(f))

Spill prevention training will be provided on an annual basis for all personnel that are involved in handling oil. The training program covers the information included in this SPCC Plan, methods and procedures used to prevent, control, and clean up an oil spill, and a review of pollution control regulations. Training programs and annual briefings will also include describing known releases or failures at the Facility, lessons learned from these events, updates on Facility equipment, new precautions to be observed, and new preventive control and cleanup measures. Information on the following PSE Standards (**Appendix C**) shall be included as a part of the training:

- 0150.3100, "Cleanup of Oil Spills" and
- 0150.3150, "Oil Sampling Procedures for Distribution Transformers and Oil-Filled Equipment" where applicable.

Other PSE standards and specifications also may be included as part of the training. Examples shown in PSE Standards are general ways of containing an oil spill. The exact methods employed will depend on local conditions and circumstances. Asample training roster is included in **Appendix C**. The individual responsible for training shall maintain a copy of the training roster in **Appendix D** of this Plan.

5.2 Oil Transferring and Handling Procedures (Parts 112.7(a)(3)(ii), 112.7(h), and 112.8(d))

It is stressed to all personnel that an essential part of oil spill prevention is being alert for signs of leaks and the prevention or control of spills during their daily activities. This is accomplished by being observant when personnel are at the Facility and by performing regular inspections at the Facility. These inspection procedures, as required by 40 CFR Part 112.8(d)(4) are described in detail in **Section 4.4**. Leaks or spills shall be immediately reported in accordance with **Section 6.1** of this document and appropriate response activities shall be started immediately. Only qualified PSE employees or contractors who have received oil handling training are permitted to perform oil transferring or handling operations at the Facility.

5.2.1 Transferring Fuel or Oil

Aqualified PSE employee or contractor will be present during all fuel transfers at the Facility. The truck will be parked with the engine off, brake set, and wheels chocked during fuel transfer operations. Personnel shall not leave transfer operations unattended. Drip pans and absorbents will be on hand during fueling and maintenance activities that involve the transfer of petroleum products and must be used during fueling operations to contain any drips or leaks.

The following oil transfers are periodically performed at the Facility:

- Delivery of diesel to the emergency generator and/or fire pump,
- Transfer of diesel into/out of the 100-gallon AST in the oil storage area,
- Pickup/delivery of new/used lube oil in the oil storage area,
- Transfer of new/used lube oil from containers to the turbine generators, and
- Transfer of new oil to transformers.

Transformers rarely require filling or replacement of oil once installed. The amount of oil that could spill during oil-transferring operations is primarily dependent upon the rate of oil being transferred and the time required for personnel to stop the release. Oil-transferring activities are staffed activities, thereby lessening the likelihood of a significant spill. If a spill occurred, the oil would be contained within the concrete secondary containment areas.

During the rare occasion when the oil needs to be removed or added to operating electrical equipment, a mobile tanker is used to transfer oil and the following procedures are designed to prevent spills as follows:

- Notify the driver to turn off the mobile tanker truck engine, set the parking brake, and chock the truck wheels.

- The amount of oil to be transferred is determined by visually checking tank level gauges. Personnel then open and close the appropriate valves and double-check the transfer hose and valve alignments and connections. Additionally, a drip container and absorbent pads are placed underneath the dispensing and unloading equipment to capture potential drips from hose connections. This operation is attended by personnel at all times.

- Once a transfer is underway, Facility personnel monitor the pumping rates and quantities being transferred. If a discrepancy is noted, the transfer is immediately terminated and operators perform an investigation of the discrepancy.

- After a transfer is complete, Facility personnel will close the valves at the mobile tanker truck, drain transfer hoses into the tank and disconnect and remove transfer hoses, cap and lock tank valves closed, ensure that the tank valves are securely closed and capped, and verify there are no signs of leaks from the mobile tanker truck.

- During Facility inspections, personnel look for signs of actual or potential seepage from transformers and perform appropriate maintenance as needed to eliminate potential discharges.

If Facility personnel cannot ensure that oil transfer operations will take place in accordance with these general procedures, transfer operations will be postponed until appropriate corrections or repairs can be made.

5.2.2 Handling Oil-Filled Equipment

Spill kits will be readily available when handling oil and oil-filled equipment. Before handling oil-filled equipment, the location of the nearest spill kit should be identified. After handling oil containers or oil-filled equipment the seals should be checked for leaks and, if necessary, re-sealed or tightened and equipment will be properly secured and stored.

5.2.3 Spill Kits

Spill kits are located at areas of the Facility where oil is stored, used, or handled. Spill kits are also carried in PSE vehicles. Spill kits shall be readily accessible and shall not be hidden or covered with other materials or used for anything other than their intended purpose. Additional spill kits and materials are available through PSE's Materials Management Department.

5.3 Signs and SPCC Plan Location (Part 112.3(e))

Signs indicating "In Case of Oil Spill" are posted along the inside of perimeter fences and in oil storage or distribution areas. Copies of relevant standards are attached to this Plan in **Appendix C**. The SPCC Plan shall be kept in the control room at the Facility.

The SPCC Plan is kept electronically by PSE's Environmental Programs and Services (EPS) Department.

6.0 Spill Event: Containment and Countermeasure Procedures (Part 112.7(a)(3)(iii) and (iv))

Containment and countermeasure actions must start immediately after a spill is discovered. The primary objective will be to contain spilled oil within the immediate area, and prevent its entry into the Facility drainage system, the municipal drainage system, or the navigable waters of the United States. This objective shall be met while maintaining proper health and safety procedures. General procedures to be followed in all cases of an oil spill event are described below.

6.1 Identification and Notification (Part 112.7(a)(3)(vi))

EPS will advise on procedures for handling all oil spills. EPS will respond if a spill meets one or more of the following criteria:

- Aspill has contaminated soil, gravel, vegetation, or other environmental area;
- The spill enters the Facility drainage system; or
- The spill flows off PSE property.

Upon discovery of a spill, the discoverer shall immediately evaluate whether the spill can be approached safely. From a safe distance, the discoverer shall evaluate the nature and extent of the spill. If possible and safe, the discoverer shall identify the source and stop the leak. The discoverer then shall initiate immediate action to contain the spill and shall make the notifications described below.

- Notify the 24-hour spill response pager (206) 994-3186.
- The local fire department shall be notified if there is a potential fire hazard (phone 911)
- Notify the Plant Manager or designee – Phone 509-773-7913. If the Plant Manager is not available, notify the Supv Energy Resource Operations – Phone 509-773-7902.
- EPS will contact the City of Goldendale if necessary - 509-773-3771.

EPS or the spill contractor shall be the only representatives of PSE to contact state and federal agencies.

6.2 Containment (Part 112.7(a)(3)(iii))

Facility personnel will use available spill kits and equipment stored at the Facility. The spill contractor can bring material and equipment as required to control and/or contain the spill. This equipment may be limited to hand tools and sorbent media for a typical spill at this Facility. The spill contractor or subcontractor has other equipment available, up to and including heavy earthmoving equipment and watercraft capable of recovering spills from waterways in the event of a catastrophic failure at the Facility. Personnel from the Facility and the spill contractor (if utilized) will use the following general actions and PSE guidelines for spill control and containment.

- Confine and prevent further spread of the oil (see PSE Standard 0150.3100 [**Appendix C**]).
- Plug nearby storm drains. Block catch basins by putting plastic sheeting under the catch basin grates and/or by building diversion dikes of absorbent or other material around the catch basin.
- Close any manually operated valves, if applicable.
- Reduce or eliminate the spread of oil by using drain system isolation valves, dikes, channels, dams, and/or oil absorbent material (see PSE Standard 0150.3100 [**Appendix C**]).
- Stop the oil leak at its source, for example:
    - Plug the leak with available material;
    - If a transformer or other piece of equipment is leaking, it may be possible to turn it on its side or upside down to raise the point that is leaking; or
    - If a rupture or leak cannot be stopped, use bins, pans, barrels, or containers to catch the oil if possible.

After the spill has been contained, the spill response contractor will coordinate the cleanup of the material.

6.2.1 Oil Spill Contingency Plan: Site-Specific Spill Response Actions (Part 109.5(d)(3-5)

Not applicable to this SPCC Plan.

6.3 Cleanup (Part 112.7(a)(3)(v))

EPS or the spill contractor shall direct the collection of spilled oil, removal of contaminated soils, and other materials and coordinate disposal of contaminated media. Spilled oil and contaminated media will be disposed of appropriately as directed by EPS. Recovered oil, contaminated soil, or contaminated water will be disposed of by recycling, thermal treatment, and/or landfilling at permitted facilities as appropriate.

6.3.1 PCB Special Handling Procedures

Special handling is required for a spill event originating from containers or electrical items that are labeled as containing PCBs or PCB-contaminated oil. The label used for identifying such containers and items is shown in Standard 0150.3125 and cleanup is outlined in Standard 0150.3100 (**Appendix C**). Any oil-filled device of unknown PCB content must be assumed to be PCB contaminated and handled as such. Field test kits for PCB content can be obtained from PSE's Materials Management Department. Oil samples may be required to be analyzed by a laboratory for PCB content.

The spill contractor shall be notified when soil, concrete, or asphalt under a leaking PCB-containing device has been contaminated.

PCB contaminated oil is not expected to be at the Facility. In the event PCB contaminated oil or equipment with PCB contaminated oil is brought on-site, the above procedures will be followed.

6.4 Assessing the Spill Event

In accordance with **Section 6.1**, EPS shall be notified of the spill event (via the spill response pager). If necessary, a spill contractor will be contacted to perform any environmental sampling needed to evaluate areas affected by the spilled oil, assess and quantify the potential environmental damage, and collect the necessary information that may include samples of environmental media for testing to confirm that the extent of spilled material has been identified and spilled material has been cleaned up.

6.5 Spill Reporting Requirements

EPS will assist and coordinate all reporting and response to spills or suspected spills. Spills must be reported to appropriate federal, state, and local agencies if they result in a release of oil from the Facility or produce a sheen or discoloration on the surface of an adjacent water body. The following sections identify the spill reporting requirements.

6.5.1 Spill Reporting (Part 112.7(a)(4))

The following information needs to be readily available when reporting a spill from the Facility:

Name of Facility: Goldendale Generating Station

Facility Main Telephone Number: 509-773-7905

Location of Facility: 600 Industrial Way, Goldendale, WA 98620

County: Klickitat

GPS Coordinates: 45° 48' 40" N / 120° 50' 00" W

Date and Time of Release:

Type of Material Released:

Estimated Quantity of Material Released:

Source of Material Released:

All Media Affected by Release:

Cause of Release:

Damages or Injury Cause by Release:

Actions Being Used to Control the Release:

Is an Evacuation Needed?:

People and Organizations that have been Contacted Regarding this Release:

6.5.2 Oil Spill Report (PSE Form 1184)

When a spill occurs at the Facility, regardless of volume, the Facility personnel or spill contractor must fill out the "Spill Report Form" (see **Appendix C**). A copy of the Spill Report Form, including a map identifying the spill location and the any sampling test results (if applicable), must be forwarded to EPS in a timely fashion. EPS will manage the required federal and state spill notification and follow-up requirements.

6.5.3 Plan Amendment by the Regional Administrator (Part 112.4)

In the event of a spill resulting in discharges of more than 1,000 gallons of oil in a single discharge, or more than 42 gallons of oil in each of two discharges occurring in a single year, the following information must be submitted by EPS to the EPA Regional Administrator and Washington State Department of Ecology (Ecology) for their review within 60 days from the time of such a release or releases.

1. Name of the facility: Goldendale Generating Station

2. Your name:

3. Location of the facility: 600 Industrial Way, Goldendale, WA 98620

4. Maximum storage or handling capacity of the facility and normal daily throughout:

5. Corrective action and countermeasures you have taken, including a description of equipment repairs and replacements:

6. An adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary:

7. The cause of discharge, including a failure analysis of the system or subsystem in which the failure occurred:

8. Additional preventive measures you have taken or contemplated to minimize the possibility of recurrence:

9. Such other information as the Regional Administrator and State Department of Ecology may reasonably require pertinent to the Plan or discharge:

Amend your Plan, if required to do so after review of the information submitted above by the EPA Regional Administrator or Ecology. The Regional Administrator may require you to amend your SPCC Plan if it is found to not meet the requirements of this part or that amendment is necessary to prevent and contain discharges from your Facility.

The Facility has had no EPA-reported spills as described above.

7.0 Conformance with State Requirements (Part 112.7(j))

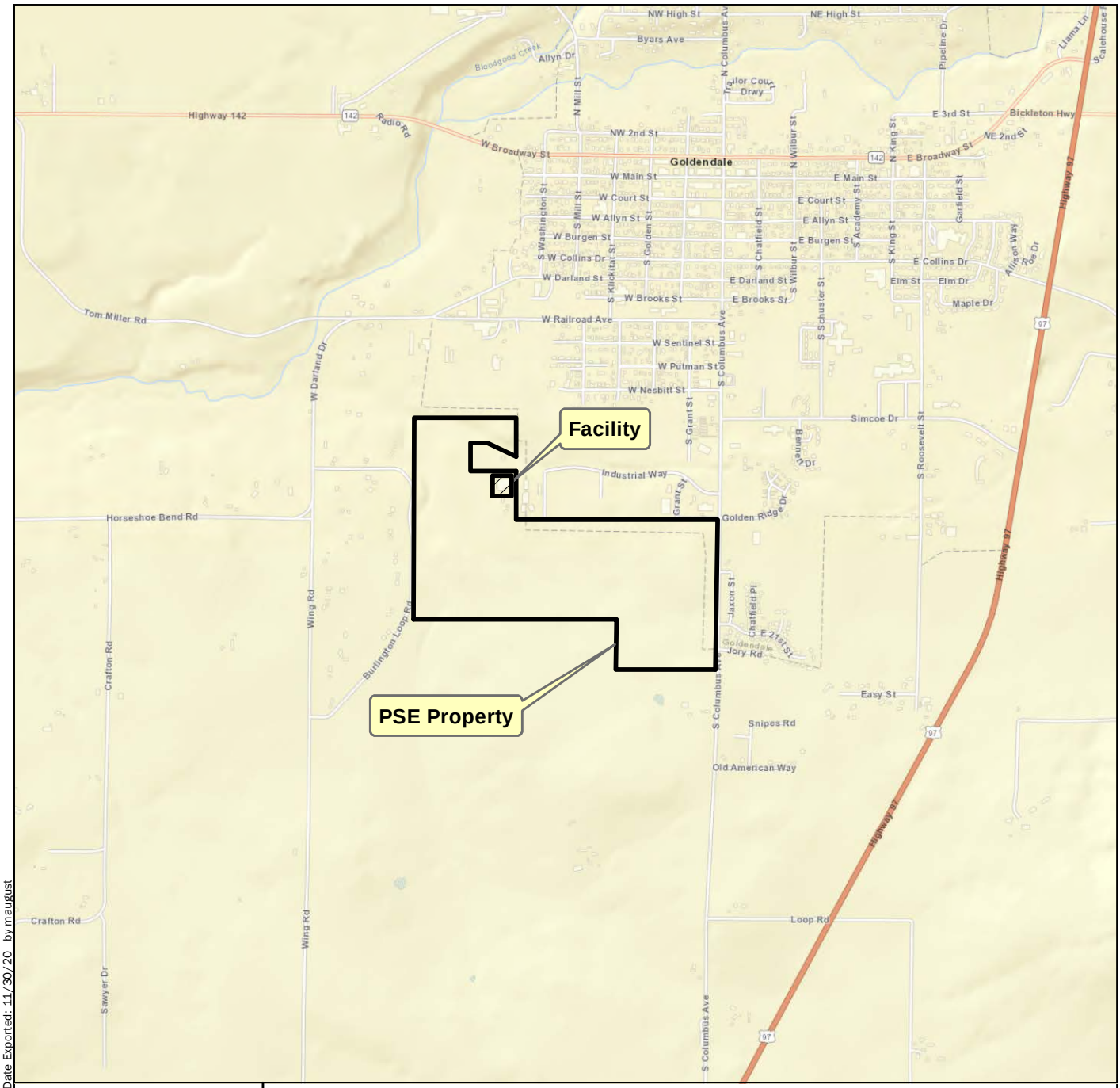
Oil spills in the State of Washington are regulated under the Revised Code of Washington (RCW), Chapters 90.48 and 90.56, which are enforced by Ecology. RCW 90.48.080 prohibits the discharge of polluting materials into the waters of the State, and RCW 90.56 describes the spill prevention and cleanup process. There is no ***de minimus*** release amount defined in these regulations. Rather, any amount of oil that degrades the waters within Washington State constitutes a release. Ecology typically considers the creation of a visible sheen on the water as a spill.

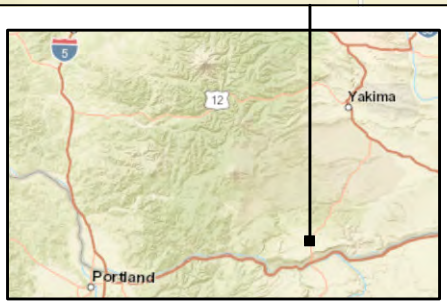
The goal of this Plan is consistent with the objective of RCW 90.48.080, and the items presented in this Plan, including prevention planning, Facility design and operation, spill response and spill notification requirements are in general conformance with the requirements of RCW 90.56. The conformance of the Facility with the requirements of 40 CFR Part 112 as discussed in **Section 3.1** of this document addresses the requirements of RCW 90.56.

Figures

FIGURE 1 VICINITY MAP

Click to view/print





N
W E
S

2,000 0 2,000

Feet

Vicinity Map

PSE Goldendale Facility
Goldendale, Washington

GeoEngineers

Figure 1

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

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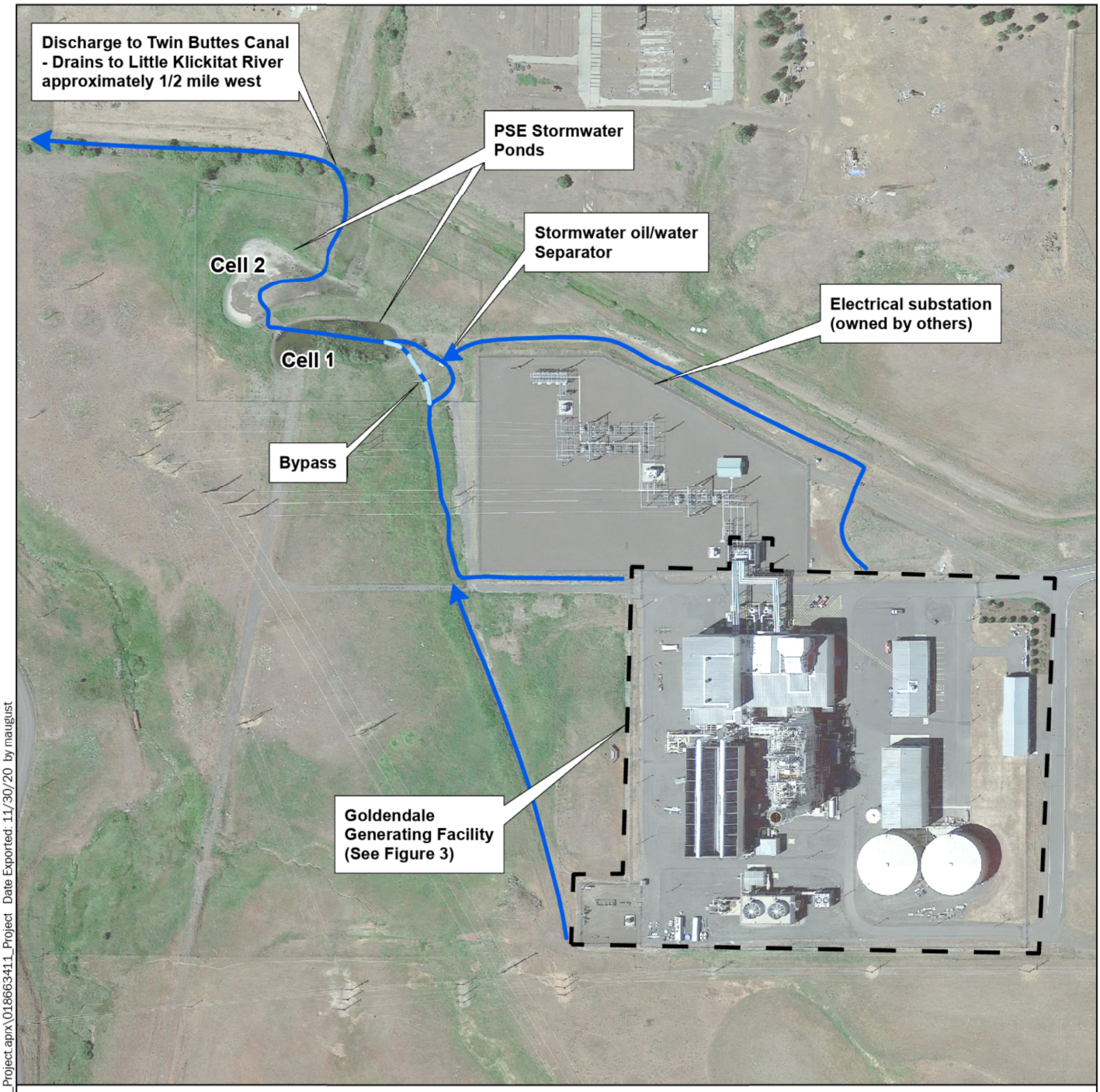
Figures, Continued

FIGURE 2 STORMWATER FLOW PATH

Click to view/print



Legend

Facility Boundary

Approximate Stormwater Flow Path

250 0 250

Feet

N

W E

S

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

Stormwater Flow Path

PSE – Goldendale Generating Station
Goldendale, Washington

GeoEngineers

Figure 2

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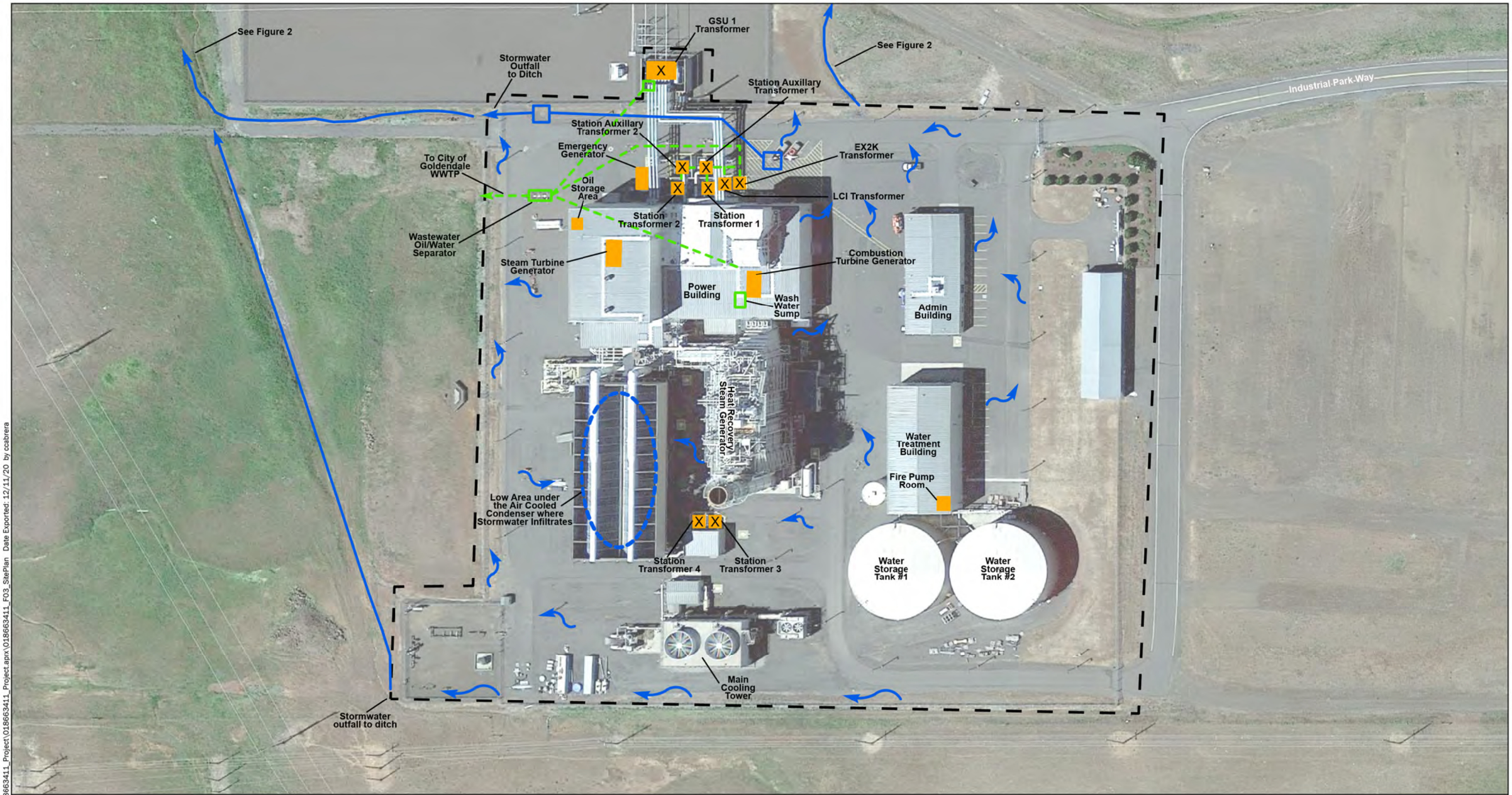
Figures, Continued

FIGURE 3 SITE PLAN

Click to view/print



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Google Earth, 2019.

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

- Facility Boundary
- X — Location of transformer
- Other location where oil is stored, used, or handled
- Stormwater Components or Locations
- Selected wastewater system components - schematic

N W E S

100 0 100

Feet

Site Plan - 2020

PSE – Goldendale Generating Station
Goldendale, Washington

GeoEngineers

Figure 3

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APPENDICES

A. REVIEW LOGS

B. CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA

C. STANDARDS AND FORMS

D. INSPECTION, MAINTENANCE, AND TRAINING RECORDS

E. SUPPLEMENTAL DOCUMENTATION

APPENDIX A
REVIEW LOGS

Last Revised: December 2017

A.1 Five Year Review and Technical Amendment Log

The following log records the required five-year SPCC plan reviews and any technical amendments that originate outside of the five-year review period.

Person Certifying this Technical Amendment	Description of Technical Amendment
Signature: Name: Title:	

A.2 Record of Changes

DATE OF CHANGE	DESCRIPTION OF CHANGE
8/13/2019	2010 Plan w as updated November 2015 for administrative reasons (name changes of personnel and change the Klickitat River to the Little Klickitat River). During an audit in 2019 it w as observed that some tank capacities w ere erroneously changed in the 2015 version of Table 2. The 2015 version of the SPCC is included as an App D. to this 2010 Plan. We are using the 2010 version w hich is technically correct and has been review ed w ith administrative changes made to update contacts and Little Klickitat River. - Libby Goldstein, Sr. Environmental Scientist, PSE
4/17/2020	Administrative changes to Sections 1.0, 2.0, 2.1, 6.4, and 7.0
5/21/2020	Administrative changes to Section 3.1.
8/27/2020	Sections w ere rearranged and template language w as created for all single-facility plans. The changes w ere made to increase consistency across PSE's SPCC plans and did not result in technical amendments.
12/17/2020	During the 5-year recertification process, the previous plan w as redone in its entirety.

APPENDIX B

Last Revised: December 2017

CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA

B.1 Certification of the Applicability of the Substantial Harm Criteria

B.1 Certification of the Applicability of the Substantial Harm Criteria

Does the facility transfer oil over-water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons? **No**

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and, within any storage area, does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest above ground oil storage tank plus sufficient freeboard to allow for precipitation? **No**

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at distance [as calculated using the appropriate formula in Appendix C-III (59 FR 34105) or a comparable formula] such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? **No**

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the facility would shut down a public drinking water intake? **No**

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years? **No**

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining information, I believe that the submitted information is true, accurate, and complete.

Signature:	
Name:	Gerald Klug
Title:	Plant Manager
Date:	12/22/2020

APPENDIX C
STANDARDS AND FORMS

Last Revised: December 2017

PUGET SOUND ENERGY

Appendix C

Monthly SWPPP/SPCC Inspection

Monthly SWPPP/SPCC Inspection
Goldendale Generating Station

SWPPP and Site Map:

Have a copy of the SWPPP and SPCC site map with you during the inspection so that you can ensure that they are current and accurate. Use it as an aid in recording the location of any issues you identify during the inspection.

DATE: TIME:

	Yes	No	Comments and Corrective Action
Is the site map current and accurate?			
Is the SWPPP inventory of activities, materials and products current?			

Weather Information:

Discription of Weather Conditions (e.g sunny, cloudy, raining, snowing, etc.):

	Yes	No	Comments and Corrective Action
Was stormwater (runoff from rain or snow melt) flowing at the outfall?			

Loading and Unloading Areas	Evidence of leaks or spills (staining/ puddles?)		Any Obstructions?		Clear Access?		Area Free of Debris?		Unusual Odors?		Comments and Corrective Action
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
Cooling Tower Unloading Area											
Water Treatment Building											
Hydrogen Unloading Area											
Ammonia Unloading Area											
Administration Building											

Material Storage Areas	Visible leaks or evidence of spills?		Containments Empty		Open Containers?		Area/Walkways Free of Debris?		Proper Labeling?		Comments and Corrective Action
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
Cooling Tower Chem Building											
Water Treatment Building											
Ammonia Tank											
Shop and Warehouse areas											
HRSG Treatment / Lab											
Diesel Fuel Storage Tank											
Atmospheric Drain Tank											

Other Potential Contaminant Zones	Visible leaks or evidence of spills?		Evidence of corrosion?		Structural Controls in Place?		Area/Walkways Free of Debris?		Unusual Odors?		Comments and Corrective Action
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
Transformers											
Lube Oil Storage in feedwater pumps, & ACC areas.											
General Plant Areas & Perimeter											

Stormwater Retention Pond and Controls	Accumulation Level below discharge?		Sediment or Debri accumulation?		Staining on ground?		Discharge Clear?		Evidence of erosion?		Comments and Corrective Action
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
Pri. Retention Pond											
Sec. Retention Pond											
Stormwater Oil/Sludge Separator											
Landscaped Areas											

Spill Response Inventory/ Spill Kits	Have Materials Been Used?		Have Materials Been Replaced?		Complete Inventory?				Comments and Corrective Action
	Yes	No	Yes	No	Yes	No			
CTG Area									
L.O. Storage Area									
Water Treatment Building									

	Yes	No	Comments
Are any vehicles and/or equipment leaking fluids?			
Identify leaking equipment.			

			Comments
Are all waste receptacles located outdoors:	Yes	No	
• In good condition?			
• Not leaking contaminants?			
• Closed when it is not being accessed?			

			Comments
Are the following areas free of accumulated sediment, debris, contaminants, and spills/leaks of fluids?	Yes	No	
• Maintenance shop(s)			
• Pallet, bin, and drum storage areas			
• Around bone yards			

	Yes	No	Comments
Are damaged materials stored inside a building or another type of storm resistant shelter?			
Are scrap metal bins covered?			
Are outdoor containers and dumpsters covered?			
Are all drums & containers of fluids, oil, used oil or waste stored with proper cover, labeling and containment?			

			Comments
Are paved surfaces free of accumulated dust/sediment and debris?			
• Date of last quarterly vacuum/sweep _____	Yes	No	
• Are there areas of erosion or sediment/dust sources that discharge to storm drains?			

Universal Waste Storage Shelter	Yes	No	SPCC Plan	Yes	No	
Visible leaks or spills			SPCC plan been reviewed in the last year and up-to-date?			
Properly sealed containers			Oil-filled devices and containers inspected for leaks?			
Proper Labeling			Is secondary containment in use and in good condition?			
Start Dates < 1 year old						

Inspector Certification: This section must be completed by the person who conducted the site inspection prior to submitting this form to the person with signature authority or a duly authorized representative of that person.
__ The facility is in compliance with the terms and conditions of the SWPPP and the Industrial Stormwater General Permit.
__ The facility is out of compliance with the terms and conditions of the SWPPP and the Industrial Storm water General Permit. This report includes the remedial actions that must be taken to meet the requirements of the SWPPP and permit, including a schedule of implementation of the remedial actions.

"I certify that this report is true, accurate, and complete, to the best of my knowledge and belief"

Inspector's Name – Printed	Inspector's Signature	Date & Time

Permittee Certification:

__ The facility is in compliance with the terms and conditions of the SWPPP and the Industrial Stormwater General Permit.
__ The facility is out of compliance with the terms and conditions of the SWPPP and the Industrial Storm water General Permit. This report includes the remedial actions that must be taken to meet the requirements of the SWPPP and permit, including a schedule of implementation of the remedial actions.

"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 gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering 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"

Printed Name of person with Signature Authority (Permit condition G2.A)	Signature of person with Signature Authority	Date

PUGET SOUND ENERGY

Appendix C

SPCC Training Roster

PUGET SOUND ENERGY
The Energy To Do Great Things

Compliance Training Roster

Course Name:		**Location:**		**Web-Ex:**	Yes | No
		Start Date:		**Time:**	
Instructor:		**End Date:**		**Time:**	

	Employee Name	Job Title	Employee ID	Work Location	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Instructor Signature: _____

Please return completed roster to the Compliance Department (PSE-09N)

PUGET SOUND ENERGY

Appendix C

Spill Report Form

PUGET SOUND ENERGY

SPILL REPORT FORM OR VACTOR WASTE DISPOSAL FORM

NO. 60429

Use a separate form for each device.

DEVICE TYPE	CO-ID NUMBER	NAMEPLATE OIL AMOUNT GALS.
SERIAL NUMBER	MFG	KVA
GRID NUMBER	INCIDENT / DAMAGE CLAIM NUMBER	

PCB Content Information:_____**ppm**

Verified by: ☐ MFG Nameplate ☐ PCB Field Test Kit (verify concentration)

☐ PSE Database ☐ Sample required for undocumented PCB information

☐ Rush sample obtained by_____

SPILL INFORMATION

DATE OF SPILL	TIME am / pm	DEVICE TAKEN TO
ADDRESS/LOCATION OF SPILL		
ESTIMATED QUANTITY GALS.	DATE SPILL CLEAN UP STARTED	DATE SPILL CLEAN UP COMPLETED

Cause of Spill:

☐ Equipment failure ☐ Car-pole accident ☐ Storm event ☐ Bird/Animal ☐ Dug-up underground

___ a. Corrosion ☐ Seepage from case ☐ Tree/Branches ☐ Vandalism ☐ System Oil

___ b. Electrical Overload ☐ Other _____

___ c. Other

NON SPILL CLEAN UP ACTIVITIES

DATE OF CLEANUP	ADDRESS

☐ Catch Basin ☐ Oil Water Separator ☐ Other

CLEAN-UP ACTIVITIES

☐ Contained oil on ground ☐ Cleaned up spilled oil ☐ Made final check of spill scene

☐ Obtained oil sample in sample bottle ☐ Removed contaminated soil ☐ Picked up oil contaminated debris

☐ Removed faulty transformer/device ☐ Removed contaminated vegetation ☐ Wiped down surfaces twice

☐ Replaced with CO - ID _____ ☐ Other _____ Solvent _____

VACTOR TRUCK REQUIRED? ☐ YES ☐ NO	CLEANUP CONTRACTOR

PCB content required before disposal at waste facility.

NAME OF CLEAN-UP CREW

UTILITY CONTRACTOR

SITE FOREMAN	PHONE NO.

Materials removed from site: **Taken to:**

_____ # of 55-gal drums _____ cubic yds of solids ☐ PSE SKC-WMF ☐ CSR

_____ gals of liquid _____ # of trash bags ☐ TPS ☐ Other _____

FOREMAN NAME (PRINT NAME)	SIGNATURE	DATE
CLEAN-UP SUPERVISOR (PRINT NAME)	SIGNATURE	DATE

WHITE: ENVIRONMENTAL SERVICES *CANARY:* WITH SITE FOREMAN *PINK:* VACTOR TRUCK DRIVER

1184 01/11

PUGET SOUND ENERGY

Appendix C

Standard 0150.3100

Cleanup of Oil Spills

Scope

This standard covers Puget Sound Energy's procedures for responding to oil spills.

In This Standard

These topics are covered in this standard:

⚠ WARNING!

These procedures are required by law and shall be followed by both Puget Sound Energy employees and contract labor crews. Failure to do so could result in citations or fines for noncompliance.

Definitions

Table 1 Definitions for this standard

Term	Definition
Oil	Oil of any kind or any form including petroleum, fuel oil, sludge, and oil refuse. Oil contained in transformers, capacitors, and other equipment sometimes contains PCBs.
PCBs	Polychlorinated biphenyls are a group of synthetic organic chemicals that can be toxic and are found in some dielectric fluids.
Spill Report Form (Form 1184)	A carbon-copy form that properly documents a spill. The form is used by the person who discovers the spill to document and report the spill event and what was done in response.
Spill Waste	Waste generated as a result of an oil spill including collected liquids, soil, rags, used Personal Protective Equipment, and other debris generated as a result of a spill cleanup.

Responding to an Oil Spill

Oil spills can occur during transfer of oil, (e.g., when draining or filling equipment or containers), or from equipment that has failed or been damaged recently or in the past. Most spills are discovered when a crew is dispatched by System Operations to respond to a power outage. In the event of an oil spill, Puget Sound Energy's policy is to respond promptly and thoroughly. Spill containment and/or cleanup must be initiated immediately.

Basic Steps for Responding to All Spills

The following basic steps apply for responding to all spills. Refer to the Spill Response section of this standard for the complete procedure.

Step	Action
1	If a spill or release occurs, ***think safety***. Take actions to protect yourself and others from exposure to the spill or release.
2	Keep the public and unprotected personnel away from the spill area.
3	Locate and stop the source and flow of the spill or leak, if you are qualified and it is safe to do so.
4	Secure the area.
5	Decide who should respond and notify appropriate parties.

Continued on next page

Spills Could Contain PCBs

Tests have shown that oil from some transformers, capacitors, and other electrical equipment may contain Polychlorinated Biphenyls (PCBs). The Environmental Protection Agency (EPA) has many requirements for the management of PCBs under the Toxic Substances Control Act (TSCA), which addresses the manufacturing, processing, distribution in commerce, use, cleanup, storage, and disposal of PCBs.

Table 2

Who to call for help

Contact	Phone
Environmental Services 24-hr Spill Pager	(206) 994-3186
Environmental Services Waste Management Facility	(360) 340-3716
Safety Department	Call Eastside System Supervisor, (425) 882-4681, and they will contact the on-call Safety Consultant.

Responsibilities

Employees

Employees with vehicles that transport oil or oil-filled equipment must carry equipment for cleaning up minor spills.

The employee who discovers or is first notified of the spill is responsible for coordinating initial response.

Supervisor, Crew Foreman, and System Operations

Responsible for determining whether the cleanup is to be completed by the Line/Wire Crew or coordinated by Environmental Services, who will request assistance from one or more spill response consultants.

Internal spill reporting is to be handled in accordance with *Table 7*.

If Cleanup is Handled by Line/Wire Crew

The Crew Foreman is responsible for:

- Coordinating and monitoring the spill cleanup activities.
- Submitting a draft Spill Report Form (Form 1184) to their Supervisor and Environmental Services.

Either the Crew Foreman or spill response consultant, (under the direction of Environmental Services) is responsible for:

- Decontaminating equipment.
- Accumulating, labeling, and packaging spill waste and out-of-service equipment and transporting it to the nearest Service Center or other approved storage area in accordance with Standard 0150.3125, “Temporary Storage of PCB Items.”

The Supervisor is responsible for submitting the completed Spill Report Form (Form 1184) to Environmental Services.

Line/Wire Crew employees involved in spill sampling or cleanup are responsible for wearing the appropriate personal protective equipment (PPE).

Continued on next page

Responsibilities, *continued*

Vactor Trucks at Cleanup Site

If a vactor truck is called to respond, the Vactor Truck Operator must verify with the Crew Foreman the PCB content of the oil that was released prior to beginning work.

The Vactor Truck Operator is also responsible for:

- Contacting the South King Waste Management Facility to coordinate disposal of vactor truck wastes. The operator should ensure that the PCB concentration of the source oil is known prior to disposing any vactor truck load.
- Completing the logbook and giving a copy of the Spill Report Form (Form 1184) to the Waste Management Facility (WMF) personnel. The WMF personnel are responsible for processing the discharged load.

If Cleanup is Handled by Environmental Services

The Environmental Services spill response consultant is responsible for:

- Mobilizing spill response contractors (if necessary) to spill site.
- Coordinating and monitoring the spill cleanup activities.
- Documenting the spill and cleanup activities in Spill Report Form (Form 1184).

Environmental Services and/or Consultant

Environmental Services, or when requested, their spill response consultant is responsible for:

- Any external reporting required, depending on the spill.
- Determining the probable PCB concentration of the oil spilled if it was from electrical equipment.
- Conducting and documenting any sampling of the equipment and/or site that may be necessary.

Manager of Environmental Services

The Manager of Environmental Services is responsible for maintaining PSE's overall compliance with the applicable environmental regulations.

Safety and Handling

Oil and oil-contaminated materials are potentially hazardous. Sometimes oil contains PCBs. This section describes the personal protective equipment that should be worn during oil spill response and first aid procedures that should be used to help anyone who has come into contact with PCB-containing oil.

Two very important safety tips to remember:

- If there is fire, keep away from the area and protect yourself from inhaling smoke or vapors. Vapors generated during the burning of PCBs can present a serious health risk.
- Avoid direct skin contact with electrical equipment fluids and soot.

⚠ CAUTION!

Wear personal protective clothing and equipment during all phases of spill cleanup.

Personal Protective Equipment

- Personal protective equipment (PPE) is to be worn during all phases of oil sampling and spill cleanup. This includes safety glasses, gloves, coveralls and shoe covers. See the Tools, Materials, and Equipment section of this standard for a list of appropriate PPE.
- When liquids are handled in an enclosed area, use a respirator. Wear a face shield to protect from liquid splatter.
- Consider sealing your coveralls to your boots with tape.

First Aid

If eyes, skin or clothing come in contact with PCBs or if PCBs are ingested or inhaled, follow these first aid treatments. If medical assistance is necessary, call 911 or take employee to the hospital and have the Supervisor contact the Safety Department immediately.

Clothing Contact

If clothing comes in contact with PCBs:

Step	Action
1	Remove contaminated clothing as soon as possible.
2	Place clothing in a plastic bag; seal and label it.
3	Place bags in a drum.
4	Notify the area Environmental Coordinator of the location of the drum for proper disposal.

Eye Contact

If eyes come in contact with PCBs:

- Flush eyes with water or eye irrigation solution for at least 15 minutes and take employee to emergency care.

NOTE: If flushing does not relieve symptoms, continue flushing on the way to emergency care.

Ingestion

If PCBs are ingested:

- The employee is to be taken to the hospital immediately.
- Contact the Safety Department immediately.

Inhalation

If PCBs are inhaled:

- If nausea, breathing difficulty or dizziness occurs, the employee is to be taken to the hospital immediately.
- Contact the Safety Department immediately.

Continued on next page

First Aid, *continued*

Skin Contact

If skin comes in contact with PCBs:

Step	Action
1	Remove as much of the oil as possible with paper towels.
2	Clean skin immediately with soap and water. If soap and water are not available, use waterless hand cleaner.
3	Wipe with clean paper towels or rags.
4	Repeat washing and wiping three times.
5	Rinse skin thoroughly with water.
6	Dry skin.
7	If irritation continues after washing, get medical attention.
8	Discard used towels or rags in plastic bags; seal and place bags in a drum.
9	Notify the area Environmental Coordinator of the location of the drum for proper disposal.

Industrial Injury and Illness

Every injury and illness is to be reported. The employee's Supervisor shall complete an Industrial Injury & Illness Report (Form 3892) and submit it to the Safety Department.

Tools, Materials, and Equipment

Table 3

Personal Protective Equipment

Category	Item	MID	Examples of Appropriate Use
Air Quality	Half-mask respirator	6876000 small 6876100 medium 6876200 large	In an enclosed area or when concerned about splash from spray or general air quality because of smoky or dusty conditions.
	Organic vapor/acid gas respirator cartridge	6806000 yellow	
		6806300 yellow/purple, with HEPA	

Continued on next page

Category	Item	MID	Examples of Appropriate Use
Eye Protection	Face shield	6829000 nonhard hat 6830000 hat-mounted 6888000	When transferring liquids from containment into a drum or between drums any time splash could occur or when air is dusty.
	Goggles	6827300	
	Safety glasses with side shields	6827000 6827101	
First Aid	Portable eye wash kit	6826400	If liquids contact the eye or eyelid.
	Waterless hand cleaner	4461001	To clean skin areas other than eyes.
Hand Protection	Gloves Nitrile	6857900 Size 9 (15 mil) 6858000 Size 10 (15 mil)	When hand contact with liquids is possible, (e.g., handling leaking or contaminated equipment, soil, or surfaces).
Skin and Clothing Protection	Disposable coveralls, rated for hazardous materials	6811000 small 6811100 medium 6811200 large 6811300 extra large	Strenuous cleanup, such as for a large oil spill from ruptured equipment.
	Disposable coveralls, Tyvek	6810600 small 6810700 large 6810800 extra large	Nonstrenuous cleanup, short-term exposure, dusty environment.
Skin and Shoe Protection	Disposable shoe covers	6811500 medium 6811600 extra large 6811700 giant	All cleanup operations.

Table 4

Labels and forms

Category	Item	MID	Examples of Appropriate Use
Injuries and Illnesses	Employee Injury Packet	Available from PSE Supervisor	When there is an injury or illness because of the spill.
Spill Reporting (for internal reporting to Environmental Services)	Spill Report Form (Form 1184)		All spills.

NOTE: Other tools and materials are required for waste packaging and labeling, in accordance with Standard 0150.3125, "Temporary Storage of PCB Items."

Continued on next page

Tools, Materials, and Equipment, *continued*

Figure 1 Example of Spill Report Form (Form 1184)

PUGET SOUND ENERGY

SPILL REPORT FORM
OR
VACTOR WASTE DISPOSAL FORM

NO.

Use a separate form for each device.

DEVICE TYPE	CO-ID NUMBER	NAMEPLATE OIL AMOUNT GALS.
SERIAL NUMBER	MFG	KVA
GRID NUMBER	INCIDENT / DAMAGE CLAIM NUMBER	

PCB Content Information:_____**ppm**

Verified by: ☐ MFG Nameplate ☐ PCB Field Test Kit (verify concentration)
☐ PSE Database ☐ Sample required for undocumented PCB information
☐ Rush sample obtained by_____

SPILL INFORMATION

DATE OF SPILL	TIME am / pm	DEVICE TAKEN TO
ADDRESS/LOCATION OF SPILL		
ESTIMATED QUANTITY GALS.	DATE SPILL CLEAN UP STARTED	DATE SPILL CLEAN UP COMPLETED

Cause of Spill:

☐ Equipment failure ☐ Car-pole accident ☐ Storm event ☐ Bird/Animal ☐ Dug-up underground
___ a. Corrosion ☐ Seepage from case ☐ Tree/Branches ☐ Vandalism ☐ System Oil
___ b. Electrical Overload ☐ Other _____
___ c. Other

CLEAN-UP ACTIVITIES

☐ Contained oil on ground ☐ Cleaned up spilled oil ☐ Made final check of spill scene
☐ Obtained oil sample in sample bottle ☐ Removed contaminated soil ☐ Picked up oil contaminated debris
☐ Removed faulty transformer/device ☐ Removed contaminated vegetation ☐ Wiped down surfaces twice
☐ Replaced with CO - ID _____ ☐ Other _____ Solvent _____
_____

VACTOR TRUCK REQUIRED? ☐ YES ☐ NO	CLEANUP CONTRACTOR

PCB content required before disposal at waste facility.

NAME OF CLEAN-UP CREW

UTILITY CONTRACTOR

SITE FOREMAN	PHONE NO.

Materials removed from site: **Taken to:**

_____ # of 55-gal drums ☐ PSE SKC-WMF
_____ gals of liquid ☐ TPS
_____ cubic yds of solids ☐ CSR
_____ # of trash bags ☐ Other _____

FOREMAN NAME (PRINT NAME)	SIGNATURE	DATE
CLEAN-UP SUPERVISOR (PRINT NAME)	SIGNATURE	DATE

WHITE: ENVIRONMENTAL SERVICES *CANARY:* WITH SITE FOREMAN *PINK:* VACTOR TRUCK DRIVER

1184 10-05

Table 5

Spill response equipment

Category	Item	MID	Examples of Appropriate Use
Cleaning	Absorbent granules	4460800	Capturing small amounts of free liquids.
	Brooms		Sweeping used absorbent into piles.
	Oil-absorbent sheets	7482500	Capturing small amounts of free liquids.
	Rags	7474500	Wiping down equipment.
	Shovels		Shoveling wastes into drums.
Sampling	Chain of Custody Report (Form 1257)		For all samples of the site or spill wastes.
	Oil sample collection kits	7408600	Sampling oil in damaged electric equipment.

NOTE: Other tools and materials are required for waste packaging and labeling, in accordance with Standard 0150.3125, "Temporary Storage of PCB Items."

Spill Response

This section covers the procedure for responding to and cleaning up oil spills.

Discovery and First Steps

For spills, the sooner containment/cleanup is initiated, the more effective it will be.

Step	Action
1	If a spill or release occurs, THINK SAFETY. Take actions to protect yourself and others from exposure to the spill or release. ▪ Drive cautiously when approaching and leaving a spill site. ▪ Avoid driving through the spill area. Oil spread by traffic expands the area of contamination. ▪ If there is a fire, maintain a safe distance from it. ▪ Ensure that all the equipment involved is de-energized and contact the fire department immediately. ▪ Assume all oil contains PCBs until proven otherwise. ▪ Use the proper PPE. – Protect yourself from skin contact. – Prevent contamination of clothing.
2	Keep the public and unprotected personnel away from the spill area.

Continued on next page

Spill Response, *continued*

Step	Action
3	Locate and stop the source and flow of the spill or leak, if you are qualified and it is safe to do so. ▪ If leaking cannot be stopped, place a container (bucket, plastic bag, absorbent pads, kitty litter, or whatever is available) beneath the leak to prevent continued migration of oil away from the spill area. ▪ Divert the oil flow to prevent the spill from entering nearby water bodies or floor drains. Give first priority to spills that could or have endanger(ed) water sources. ▪ If safe to do so, plug holes, reposition the equipment and/or shut valves. ▪ Use whatever materials and equipment are available to confine the spill and prevent further contamination of the area. Do not wait for a spill containment kit to arrive.
4	Secure the area. ▪ Use barricades or warning tape to form an adequate buffer around and beyond any visible traces of oil. A spill in a vault does not require barricading or tape. ▪ If cleanup is delayed, the area shall remain barricaded. Cover the spill with plastic sheeting. ▪ Limit the number of people entering the spill area.
5	Decide who should respond and notify appropriate parties.

Deciding Who Should Respond

Line/Wire Crews may either clean up the spill themselves according to this standard or may request assistance by calling the Environmental Services 24-Hour Spill Pager (see *Table 2*).

This decision is made by the Crew Foreman, Supervisor, or System Manager in accordance with the guidelines in *Table 6*.

Table 6

Decision guidelines

Spill characteristics	Who should respond
Large spill that exceeds the available resources of the crew	Environmental Services
Spill from equipment known to contain PCBs	Environmental Services
Spill towards or near surface water or drains	Environmental Services
Spill in a sensitive area	Environmental Services
Spill that has a wide area of contamination	Environmental Services
Release that involves fire	Environmental Services
Spill around energized equipment	Line/Wire Crews and/or Environmental Services
Small spill that can be cleaned up using the available resources of the crew	Line/Wire Crews and/or Environmental Services

Oil Spill Notification

A spill or other unintentional release into the environment may give rise to a variety of reporting, response, and record-keeping requirements, generally depending upon what was spilled, the amount spilled, and the time, location, and effects of the spill. Every spill should be reported to Environmental Services to facilitate compliance with the applicable requirements.

Information to Report

Be prepared to report the following information:

- Date and time of the spill.
- Spill location.
- Spill source.
- Cause and circumstances of the spill.
- Existing or potential hazards, if any.
- Information on equipment involved including serial number, manufacturer, Company ID number, and type of equipment.
- Identity of the material spilled and information on PCB content (if shown on the nameplate).
- Total volume of oil contained in the equipment (if shown on the nameplate).
- Approximate quantity (e.g., estimated volume) of spill.
- Contact name and phone or radio number.
- Personal injuries or casualties, if any.
- Names of people exposed to oil or smoke.
- Corrective actions being taken and an approximate timetable to control, contain, and clean up the spill.
- Is the Line/Wire Crew equipped and trained to contain the spill?
- Has the oil reached water?
- Other unique or unusual circumstances.

Record all discussions, including people involved, time of the call, phone numbers, and any other information that may be useful for completing the Spill Report Form (Form 1184).

Continued on next page

Oil Spill Notification, *continued*

Internal Reporting of Oil Spills

Table 7 shows the plan for ensuring that all appropriate parties are promptly notified of spill events.

Table 7 Notification of appropriate parties

Person Responsible	Whom to Notify	When
Crew Foreman who discovers the spill	Supervisor	Immediately
Crew Foreman who discovers the spill	Submit draft Spill Report Form (Form 1184) to Supervisor.	Within 48 hours
Crew Foreman who discovers the spill or fire	Environmental Services 24-Hour Spill Pager (see *Table 2*) ▪ Fax a copy of the draft Spill Report Form (Form 1184) as soon as it is available.	Immediately if spill response assistance is needed.
Crew Foreman who discovers the spill or fire	Dispatcher/System Operations ▪ Fax a copy of the draft Spill Report Form (Form 1184) as soon as it is available.	Immediately
Dispatcher/System Operations	Environmental Services 24-Hour Spill Pager (see *Table 2*)	Immediately for fires and for any release to water. As soon as possible for other releases.
Dispatcher/System Operations	If there is a fire: ▪ Local Fire Department ▪ PSE Emergency Contacts ▪ Risk Management ▪ Corporate Communications	Immediately
Environmental Services Department	Report spill event to external regulatory agencies if required or appropriate.	Immediately or within regulatory deadlines.
Supervisor	Submit completed Spill Report Form (Form 1184) to Environmental Services.	Within 48 hours

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External Reporting of Oil Spills

Environmental Services will make all necessary notifications to appropriate regulatory agencies when appropriate. It is imperative that the Environmental Services 24-Hour Spill Pager (see *Table 2*) be called promptly to report every spill, so that Environmental Services can assess the situation, determine whether external spill reporting is required, and make the appropriate notifications within the time frames specified.

Spill Characterization

This section describes the procedure for characterizing the spilled material and the extent of contamination. A diagram should be drawn on the back of the white page of the Spill Report Form (Form 1184) to show the center and extent of contamination for each visible area of contamination.

Determining PCB Concentration

Environmental Services will coordinate the response and cleanup for spills containing PCBs. Each piece of electrical equipment can contain different amounts of PCBs. Spills of oil with 50 ppm or greater of PCBs are subject to specific cleanup requirements.

Often the manufacturer will state the concentration of PCBs contained in the dielectric fluid on the equipment nameplate. Additionally a search by serial number (from the manufacturer's nameplate) can be used to query PSE's SAP database to determine if sample data already exists for the equipment.

NOTE: Analyses for PCB concentrations that were conducted prior to 1986, yellow stickers (less than 50 ppm of PCBs), and blue stickers (non-PCB) are no longer honored. Analyses must be performed to properly document the concentrations of PCBs in the oil.

If Spill Occurs During of After Business Hours

If a spill occurs during business hours, contact Environmental Services to determine the probable PCB concentration. If the spill occurs after normal business hours, the Dispatcher or System Operations should contact the Environmental Services 24-Hour Spill Pager (see *Table 2*).

Sampling the Spill Area

The spilled oil and contaminated area may need to be sampled to characterize the extent of the contamination. Such sampling, as well as post-cleanup sampling, is specifically required for spills of oil with 50 ppm or greater of PCBs. Contact the Environmental Services 24-Hour Spill Pager (see *Table 2*) or Environmental Services to coordinate any sampling that may be necessary.

Spill Cleanup

A spill should be cleaned up either by the Line/Wire Crew that discovered it or by Environmental Services. When called to respond, Environmental Services uses one or more approved spill response contractors.

If there is a fire, the fire department will respond under the direction of an Incident Commander who will act as PSE's point of contact. Any fire involving PCBs will typically require the fire department's Hazardous Materials Unit.

When Line/Wire Crews Clean Up the Spill

Crews should only respond themselves if the spill is small, it is not suspected to contain PCBs, and the crew has the necessary resources to respond properly.

- Facilities with hazardous materials have spill kits with absorbent pads, booms, and other materials for containing and cleaning up spills. Spill response materials are available through Stores. Follow instructions from your Supervisor or Environmental Coordinator.
- Small spills of liquids (less than about 5 gallons) should be collected with absorbent booms or pads to prevent discharge to drains, waterways, or other receptors.
- Prevent storm-water pollution by preventing petroleum-contaminated soils from coming into contact with rainwater. Covering the spill area with plastic sheeting will help reduce contamination migrating off-site.
- If petroleum-contaminated soil is to be excavated, it should be collected preferably in closed, appropriately sized, leak-tight, labeled containers.
- All spilled material and contamination must be cleaned up in accordance with appropriate cleanup standards. Specific cleanup standards apply for spills of oil with 50 ppm or greater of PCBs, which should be handled by Environmental Services. Consult Environmental Services for any questions you may have.

Cleanup Guidelines for Specific Circumstances

Distribution Transformer Spill

Line/Wire Crews should request assistance from Environmental Services for spills from equipment that is known to contain PCBs. Contact the Environmental Services 24-Hour Spill Pager (see *Table 2*). If a PCB transformer develops a leak that runs off or is about to run off the surface of the transformer, the leak must be contained, cleanup must be initiated no later than 48 hours from finding the leak, and the transformer must be repaired or replaced.

For spills from equipment that is not known to contain PCBs:

Step	Action
1	Clean up all visible signs of oil.
2	Free liquid should be placed in closed drums.
3	Place solid material (soils, plant materials, et cetera) in drums.
4	Clean or remove all oil-contaminated vegetation. Wash and rinse all hard surfaces with a suitable solvent or cleaner.

Continued on next page

Oil-Contaminated Asphalt and Concrete

Step	Action
1	Make sure the area is well ventilated before you start to clean.
2	Recover liquid with a granular absorbent. Sweep it into piles with a broom, and then pick up with a shovel and dispose of material in a closed drum.
3	Wash and rinse hard surface twice, picking up the liquid with absorbent after each step.

Spills Within a Vault

If the equipment is known to contain PCBs, contact the Environmental Services 24-Hour Spill Pager (see *Table 2*).

- Vault spills are usually contained within the vault and may not pose an immediate environmental risk. Contact Environmental Services for assistance and guidance.
- Assess the quantity of oil present. Is it just a sheen on the water or is there a significant amount of oil?

To Clean Up an Oil Sheen

Step	Action
1	Place absorbent pads on the surface.
2	Move the pads around and allow time for the oil to be absorbed.
3	Remove the pads and place in a plastic bag.

To Clean Up a Large Amount of Oil

Step	Action
1	Environmental Services should be called to respond to large spills that exceed the available resources of the crew. Contact the Environmental Services 24-Hour Spill Pager (see *Table 2*).
2	Typically, a vactor truck is requested to pump out the vault. See the Vactor Truck Waste Accumulation, Transport, and Disposal section of this standard. Contact the Environmental Services 24-Hour Spill Pager (see *Table 2*) for assistance in scheduling a vactor truck.

Continued on next page

Cleanup Guidelines for Specific Circumstances, *continued*

Spills from Capacitors

Spills from capacitors at substations may contain PCBs. If the capacitor is not labeled as Non-PCB, assume it contains PCBs. Therefore, Environmental Services should be contacted to respond. Contact the Environmental Services 24-Hour Spill Pager (see *Table 2*).

For small spills from capacitors not at substations:

Step	Action
1	Disconnect the capacitor.
2	Allow five minutes to lapse before short circuiting from terminal to terminal with either aluminum or copper tie wire, #14 or larger. ***NOTE:*** Each capacitor must be shorted individually. Capacitors cannot be strung together when applying shorts.
3	Inspect for any leakage of fluid or oil.
4	Place capacitors that are cracked, ruptured, or leaking in heavy-duty plastic bags.
5	Place the bagged capacitor in a drum with one pail of absorbent granules per capacitor in the bottom and clamp the lid securely.
6	Remove contaminated gravel, sand, and soil and place it in a drum.

Spills from System Oil

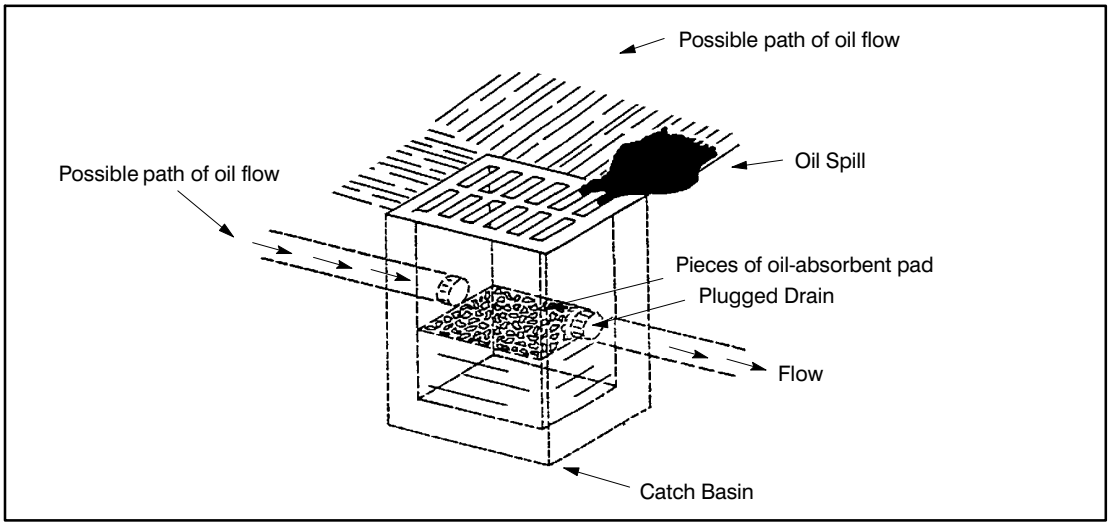
Spills from system oil from natural gas pipelines may contain PCBs. Contact Environmental Services immediately if there is a spill from system oil. See Standard 0150.3275, "Collecting, Managing, and Disposing of Liquids from Natural Gas Equipment," for more information on system oil.

Spills Affecting Water

Contact the Environmental Services 24-Hour Spill Pager (see *Table 2*) immediately.

Figure 2

Oil retrieval from a catch basin



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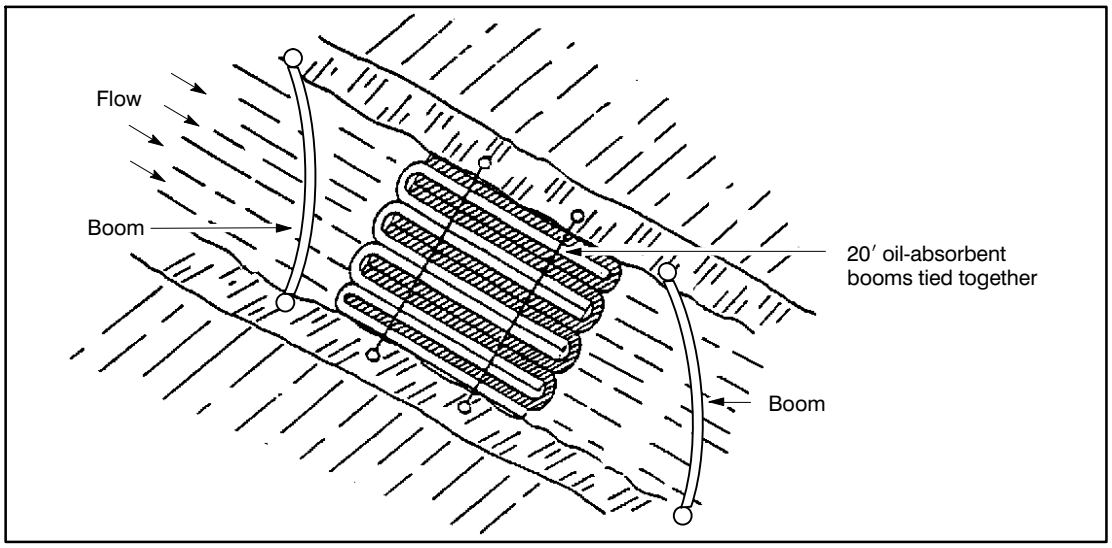
Large Spill

Figure 3 shows containment for a large spill into a stream. The boom is used to trap oil on the surface of the water and prevent it from flowing downstream. It is laid on the surface of the water and anchored at each end with a wood stake or rocks.

Figure 3

Large volume of oil in a stream

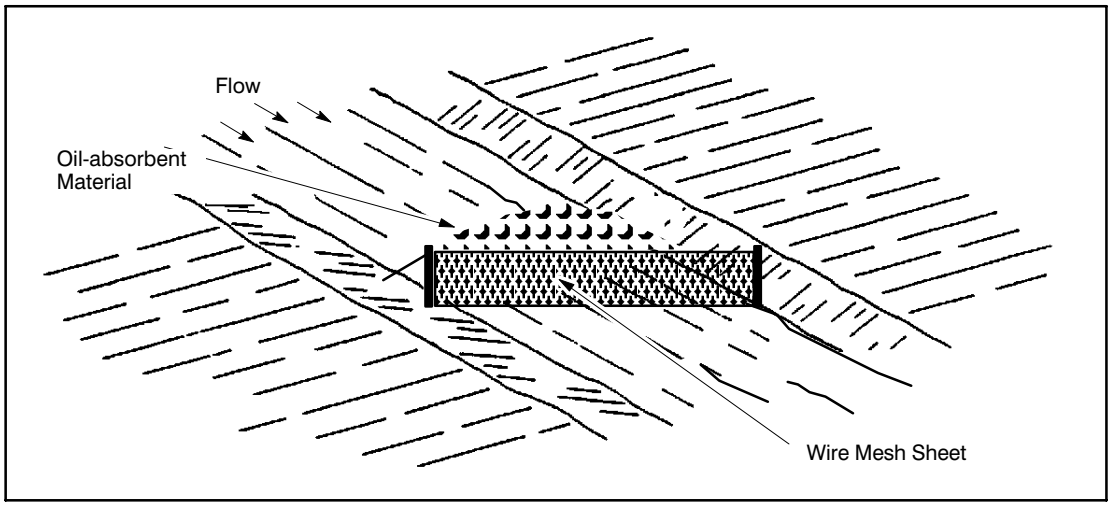


Use Wire Mesh

If a boom is not available, wire mesh may be used to build a net across a drainage ditch. Wood stakes are used to anchor the mesh in place. The absorbent material is placed on the surface of the water on the upstream side of the mesh.

Figure 4

Using wire mesh as a boom



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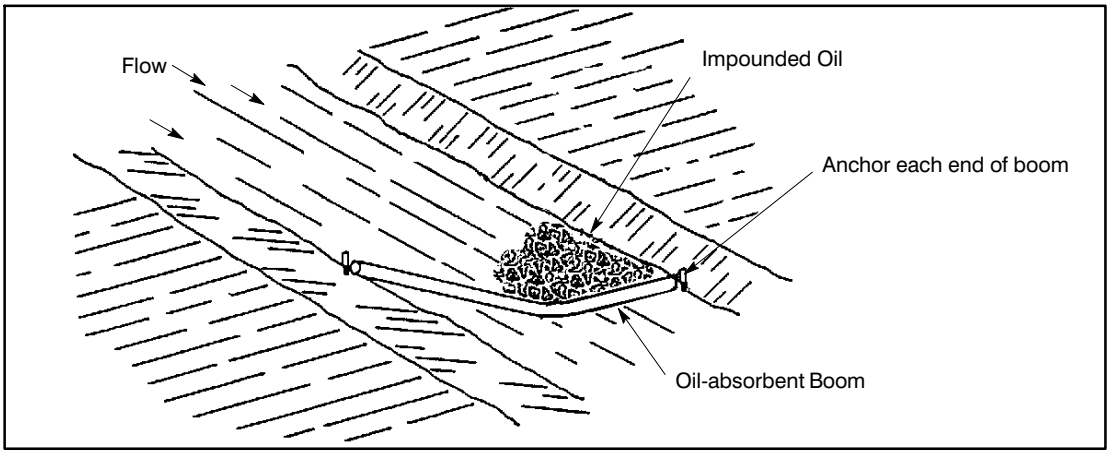
Cleanup Guidelines for Specific Circumstances, *continued*

Small Spill

One end of the boom should be anchored farther downstream than the other, forming a "V" close to the downstream end. The oil-absorbent materials or the contents of a boom are then used to collect and remove the oil from the surface of the water. Using three or more booms or dams is recommended.

Figure 5

Small volume of oil spillage

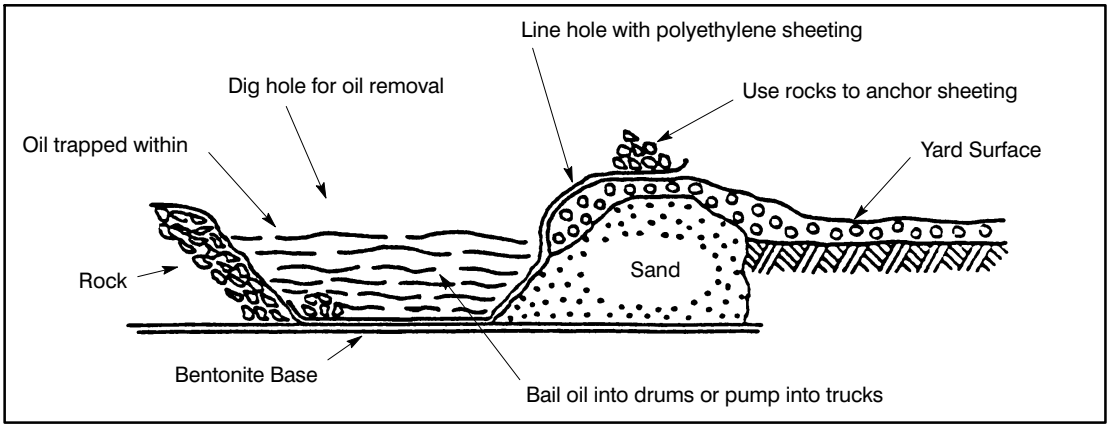


Use Plastic Sheeting

It is important to keep the oil from seeping into the ground. Polyethylene sheeting is used to line a trench or hole that has been dug for the purpose of collecting spilled oil.

Figure 6

Dam containment system



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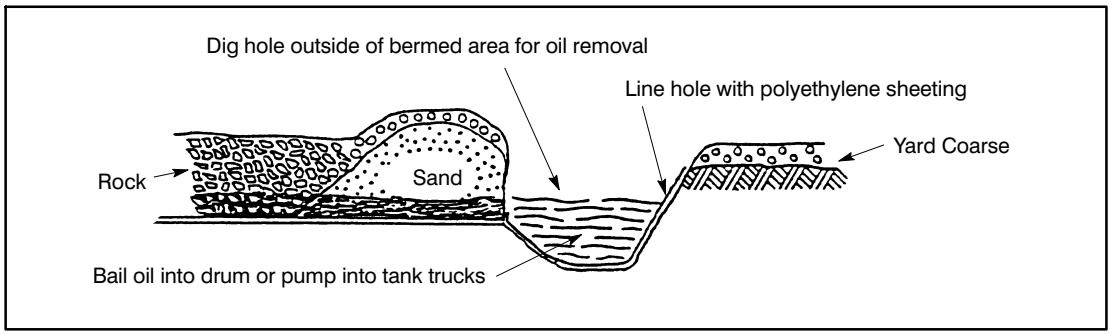
Dig a Hole

Figure 7 shows how a hole can be dug and lined to hold spilled oil until it can be removed.

Figure 7

Hole lined for oil containment

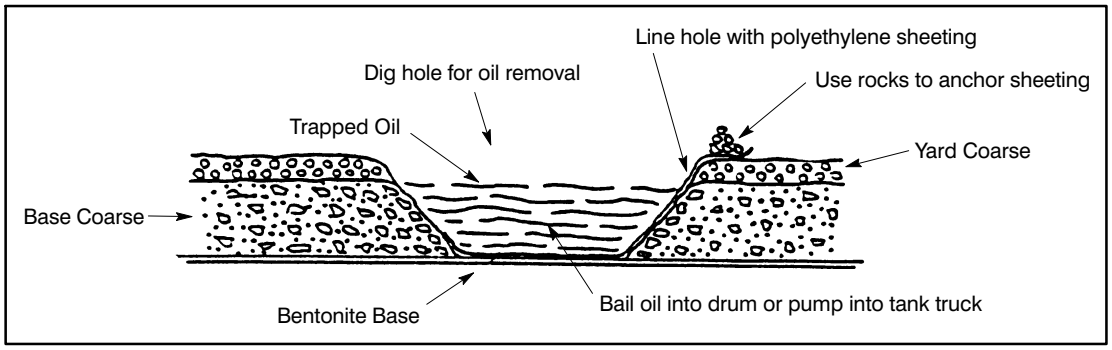


Use a Rock

Figure 8 shows how rock is used to secure the lining.

Figure 8

Lining secured with rocks

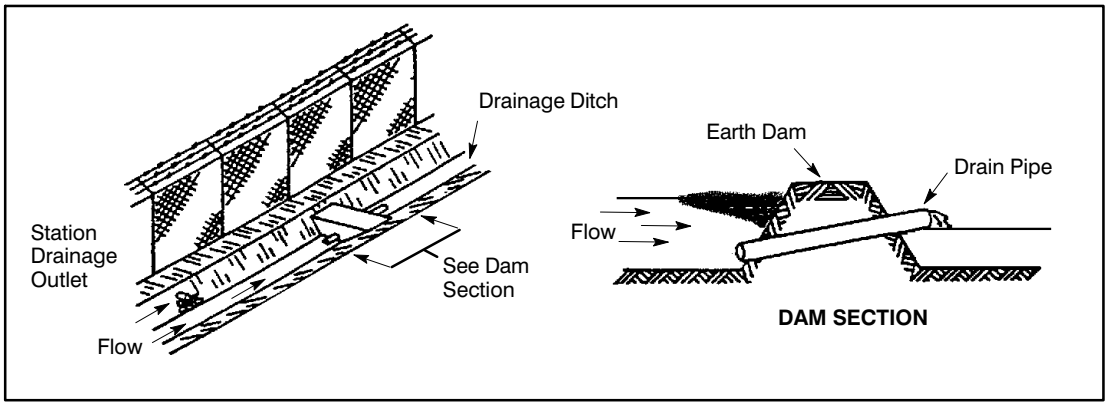


Dam with Through-Pipe

If oil has spilled into a drainage ditch, a dam with a through-pipe connection may be used to contain the oil spill, but permit water to pass.

Figure 9

Dam with a through-pipe



Decontamination of Equipment

All contaminated equipment, including hand tools, power tools, earthmoving equipment, vehicles, et cetera, that become contaminated with oil containing PCBs in known or assumed concentrations of 1 ppm or greater must be decontaminated before leaving the spill site.

- Vehicles, electrical equipment, and tools can be cleaned by wiping the surface two times with clean rags and a detergent solution.
- Prevent or collect drips of used solvents and detergents.
- Do not dump used solvents and detergents on the ground. Collect the waste in drums.
- When finished, PPE should be removed before leaving the decontamination area and collected properly in containers. Remove boot covers first, then overalls, and then gloves last.
- Respirators should be cleaned using the manufacturer's instructions.
- Hands and other exposed skin should be washed thoroughly before eating or drinking.
- For equipment that comes in contact with mineral oil with 50 ppm or more, PCBs must be decontaminated and then quarantined until chemical analysis can prove that same areas (on the equipment) are free of PCBs. Call Environmental Services for assistance.

Vactor Truck Waste Accumulation, Transport, and Disposal

Vactor trucks are available for removing accumulated liquids at spill sites and for cleaning storm drains, vaults, and catch basins. Wastes picked up by vactor trucks are typically taken to PSE's South King Waste Management Facility (WMF), where the mixture of oil, water, and solids is discharged at the wastewater treatment facility. If the recovered spill material contains a large volume of solids, it may be transported to a PSE-approved commercial disposal facility instead of to the WMF. Contact Environmental Services for guidance.

Vactor Truck Guidelines

A vactor truck must not be used for any equipment that contains PCBs of 50 ppm or greater, unless under the direction of Environmental Services.

- For spills known to contain PCBs, contact the Environmental Services 24-Hour Spill Pager for assistance.
- For spills where the PCB content of the spill is initially unknown, the vactor truck operator must verify with the Foreman the PCB content of the oil that was released prior to beginning work. Contact the Environmental Services 24-Hour Spill Pager (see *Table 2*) for assistance.

Vactor Truck Transport Procedure

Step	Action
1	The vactor truck operator must obtain a copy of the draft Spill Report Form (Form 1184) from the Crew Foreman to document the load.
2	The vactor truck operator contacts the WMF by phone and receives approval to discharge loads. The vactor truck operator must ensure that the PCB concentration of the source oil is known prior to disposing of any vactor truck load.

Continued on next page

Step	Action
3	The vactor truck operator transports the load to the WMF where it is discharged in compliance with discharge requirements set forth in the WMF Operations and Maintenance Manual.
4	The vactor truck operator logs the required information in the vactor truck logbook.
5	The vactor truck operator provides a copy of the Spill Report Form (Form 1184) to WMF personnel.
6	The WMF personnel process the discharged load in accordance with the WMF Operations and Maintenance Manual.

Spill Waste and Equipment Accumulation and Transport

If the spill volume is small, materials collected from the spill should be placed in drums and transported to the nearest Service Center. Refer to Standard 0150.3125, "Temporary Storage of PCB Items," for guidance.

Record Keeping

This section sets forth the records required when a cleanup of an oil spill has been performed.

Industrial Injury & Illness Report (Form 3892)

If there is an injury or illness, the Supervisor shall complete an Industrial Injury & Illness Report (Form 3892) and submit it to the Safety Department.

Spill Report Form (Form 1184)

The Crew Foreman should prepare a draft Spill Report Form (Form 1184) and submit it to the Supervisor, who finalizes the report and submits it to Environmental Services. If Environmental Services responds to the spill, they will complete their own Spill Report Form (Form 1184).

- The white copy of the spill report is submitted to Environmental Services at the South King Waste Management Facility.
- The canary copy is included with any samples sent to a laboratory.
- The pink copy is maintained at the satellite Service Center in the on-site files.
- The goldenrod copy should stay with the spill waste (taken by the vactor truck driver or kept with the containers of spill waste).

Spill reports need to include the information on the status of corrective actions and any plans for follow-up should be described in detail.

Continued on next page

Record Keeping, *continued*

Decontamination Records Maintenance for Spills with Concentrations of 50 ppm or Greater of PCBs

For cleanups of spills of oil with 50 ppm or greater of PCBs, records of decontamination must be maintained for five years, including:

- Identification of the source of the spill (e.g., type of equipment).
- Estimated or actual date and time of the spill occurrence.
- The date and time cleanup was completed or terminated. If cleanup was delayed by emergency or adverse weather, include the nature and duration of the delay.
- A brief description of the spill location and the nature of the materials contaminated.
- Precleanup sampling data used to establish the spill boundaries, if required, because of insufficient visible traces and a brief description of the sampling methodology used to establish the spill boundaries.
- A brief description of the solid surfaces cleaned.
- Approximate depth of soil excavation and the amount of soil removed.
- A signed certification statement stating that the cleanup requirements have been met and that the information contained in the record is true.
- For spills in nonrestricted access areas, post cleanup verification sampling data, and if not otherwise apparent from the documentation, a brief description of the sampling methodology and analytical techniques used.

Analytical Results

- Analytical results of samples obtained from oil-filled equipment are entered into the SAP database. A hard copy is maintained in the Environmental Services files at the Waste Management Facility.
- Analytical results of samples obtained to characterize soil conditions in the spill area are filed with the Spill Report Form (Form 1184).
- Analytical results of samples obtained to characterize waste are filed with other waste records (profiles, manifests, et cetera).

Shipping Records

Record keeping to track the equipment includes:

- **For equipment that is less than 50 ppm of PCBs –** the analytical report from SAP showing the equipment's PCB concentration and a shipping record.
- **For PCB capacitors and equipment that is 50 ppm or greater of PCBs –** the analytical report from SAP showing the equipment's PCB concentration and a WMF Shipping Document (Form 1754), which acts as an internal shipping manifest.
- Record keeping to track spill waste shipments including bills of lading.
- Hazardous/TSCA waste manifests
- Certificates of disposal for shipments of PCB wastes

References

The following Puget Sound Energy documents apply to this standard:

0150.3125	Temporary Storage of PCB Items
0150.3275	Collecting, Managing, and Disposing of Liquids from Natural Gas Equipment

Forms

1184	Spill Report Form
1257	Chain of Custody Report
1754	WMF Shipping Document
3892	Industrial Injury & Illness Report

Employee Safety & Health Program

Sources

40 CFR

112	Oil Pollution Prevention
761	Polychlorinated biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

PUGET SOUND ENERGY

Appendix C

Standard 0150.3150

Oil Sampling Procedures for Distribution Transformers and Oil-Filled Equipment

Oil Sampling Procedures for Distribution Transformers and Oil-Filled Equipment

0150.3150

Scope

This standard covers oil sampling procedures for distribution transformers and oil-filled equipment. For substation equipment, see Standard 8625.1070.

Background

Sampling of equipment is sometimes required to determine the PCB concentration of oil to profile a waste or to satisfy a customer's request, for example, during an environmental site assessment or property transfer. All sampling should be done by Environmental Services personnel. When that is not possible, the Environmental Services Department should be called for guidance.

In This Standard

These topics are covered in this standard:

⚠ WARNING!

These procedures comply with the Environmental Protection Agency and the OSHA and NIOSH guidelines that protect the environment and health of Puget Sound Energy workers. Federal regulations require a yearly review of this practice.

Do Not Test for PCBs

Each piece of electrical equipment can contain a different amount of PCBs. Testing for PCB concentration is not necessary if:

- The nameplate states that the equipment has less than 1 ppm PCBs. Often the manufacturer will specify on the equipment nameplate whether or not the concentration of PCBs contained in the dielectric fluid is less than 1.0 ppm non-PCB.
- The equipment has already been tested and the analysis has been recorded with a date later than 1986. A search by serial number (from the manufacturer's nameplate), Company ID number or Grid Number can be used to query PSE's SAP database to determine if sample data already exists for the equipment.
- The specified regulatory assumptions (40 CFR 761.2) can be used to determine the approximate concentration of PCBs found in the equipment.
- The device is a capacitor or ballast. Capacitors and ballasts are either labeled by the manufacturer as non-PCB or they are assumed to be greater than 500 ppm PCB and are not sampled.

NOTE: Analyses for PCB concentrations that were conducted prior to 1986 are no longer honored, including pre-1986 results that are shown on metal tags attached to equipment, paper or database records, yellow stickers (less than 50 ppm PCBs) and blue stickers (non-PCB). New analyses must be performed to properly document the concentrations of PCBs in the oil.

Contacting Environmental Services During and After Business Hours

If the question occurs during business hours, contact the Environmental Services Department at (253) 437-6783 or 82-6783 (from the PSE phone system) to determine the probable PCB concentration. If the question occurs after normal business hours, the Dispatcher or System Operations should page the 24-hour Spill Pager: (206) 994-3186 for assistance in looking up the PCB content in SAP.

Responsibilities

Environmental Services

Sampling should typically be done by Environmental Services personnel.

Line Work Crews

Line/work crews are responsible for sampling only when Environmental Services personnel are unavailable. For these special occasions, they should contact Environmental Services for guidance.

South King Waste Management Facility

All samples shall be sent to South King Waste Management Facility for processing by Environmental Services.

Safety

Oil sampling performed on energized systems shall be done only with hotstick tools designed especially for the job.

Oil sampling procedure for energized systems shall ***not*** be performed on cast iron or fiberglass transformers.

⚠ DANGER!

If you choose to take an oil sample while the transformer is energized, use insulated tools.

WAC Rule

Employees and conducting objects shall not come within the minimum distances of energized lines or conductors according to Table 1 in WAC 296-45-325.

PCB Holding Area

Waste material and oil must be placed in the Service Center's designated PCB holding area. Check with the Storekeeper to make sure you place the waste appropriately.

Personal Protective Equipment

Personal protective equipment is to be worn during all phases of oil sampling.

Disposable plastic gloves and a face shield, and, when necessary, disposable coveralls and boots shall be worn whenever you take oil samples.

When solvents are used in a confined area, or when air quality is questionable, use a respirator.

For Oil Sampling

This chart illustrates the kind of personal protective equipment you should wear during the oil sampling process.

Personal Protective Equipment	Type	MID	Examples of Appropriate Use
Eye Protection	Safety glasses with side shields Goggles	6827000 6827101 6827300	Collecting oil samples for gas chromatograph analyses.
Eye Protection	Goggles Face shield	6827300 6829000 non-hard hat 6830000 hat-mounted 6888000	Any time splash could occur.
Gloves	Nitrile – protect up to 1 hour	6858000	Gloves are required for hand contact with PCBs: Oils, leaking/contaminated equipment, soil, surfaces.

A complete list of personal protective clothing and equipment is in Standard 0150.3100.

First Aid

If eyes, skin, or clothing come in contact with PCBs, or if they are ingested or inhaled, follow these abbreviated first aid treatments. More complete treatments are in Standard 0150.3100.

Eye Contact

Flush eyes with water or eye irrigation solution for at least 15 minutes.

Skin Contact

Clean skin immediately with soap and water. If soap and water aren't available, use waterless hand cleaner.

Clothing Contact

Remove contaminated clothing as soon as possible.

Ingesting

Employee is to be taken to a hospital immediately.

Inhaling

If nausea, breathing difficulty, or dizziness occur, employee is to be taken to a hospital immediately.

Tools, Materials, and Equipment

These tools and materials are required for oil sampling operations.

Labels/Forms	MID	Used for
Transformer Inspection Form	None	All oil sampling methods
EPA yellow PCB Mark M_L label	3849100	Containers greater than 50 ppm or transformers 500 or greater ppm
Chain of Custody Report Dissolved Gas Analysis	F483.65 (printing form)	Shipping the DGA sample
Chain of Custody Report PCB/TPH Analysis	F483.55 (printing form)	Shipping the sample
Chain of Custody Report Emergency Analysis	F483.50 (printing form)	Shipping the sample for a rush analysis
Tools	**MID**	**Used for**
Hammer	7355100	Impalement method
Battery Operated Drill Motor, 3/8″ Drive, Slow Speed	None	Impalement method
Drill Bit, Cobalt 1/4″	None	Impalement method
5/16″ Socket, 3/8″ Drive	None – Available from JACO Construction Co.	Impalement method
Insulated Tools	**MID**	**Used for**
Hotstick equipped with disposable syringe and hose applicator	None – Available from JACO Construction Co.	Any energized oil sampling
Hotstick modified for drill and drill bit	None – Available from JACO Construction Co.	Any energized oil sampling
Shotgun	7351100	Any energized oil sampling

Continued on next page

Tools, Materials, and Equipment, *continued*

Miscellaneous	MID	Used for
Waterproof Marker, Printing and Stationery #383-1	None	All oil sampling methods
Plastic Bags	7220000	All oil sampling methods
Rags	7474500	All oil sampling methods
Galvanized Zinc Paint	4652700	All oil sampling methods
RTV Sealant	7808000	All oil sampling methods
Caulking Gun	7344700	All oil sampling methods
Oil Sampling Kit	7408600	All oil sampling methods

Ways to Take an Oil Sample

There are three different ways to take an oil sample from a transformer. Which way you choose depends on the type of transformer.

Oil-filled switches and other equipment may be sampled using Bay-O-Net fuses, or pressure relief valves, or the valve method.

The valve method is used for dissolved gas analysis.

If the equipment is . . .	See section for . . .
Overhead transformer without pressure relief valve or filler plug	Impalement method
Overhead transformer with pressure relief valve or filler plug	Pressure Relief Valve method
Padmount and total underground transformer	Bay-O-Net method
Oil-filled switches and equipment	Bay-O-Net method, Pressure Relief Valve method, Valve method

Before You Begin

These preparatory steps apply to all methods of taking oil samples.

- Visually inspect each work area and plan procedures for containing transformer oil if a spill occurs.
- Inspect the materials, equipment, and electrical connections on and around the transformer.
- Check the ground connections to the transformer case, pole ground, and neutral.
- If the oil level is low in a switch, do not test it.

Notify the proper supervisor of problems or potential problems which should be corrected before work begins.

Sampling Methods

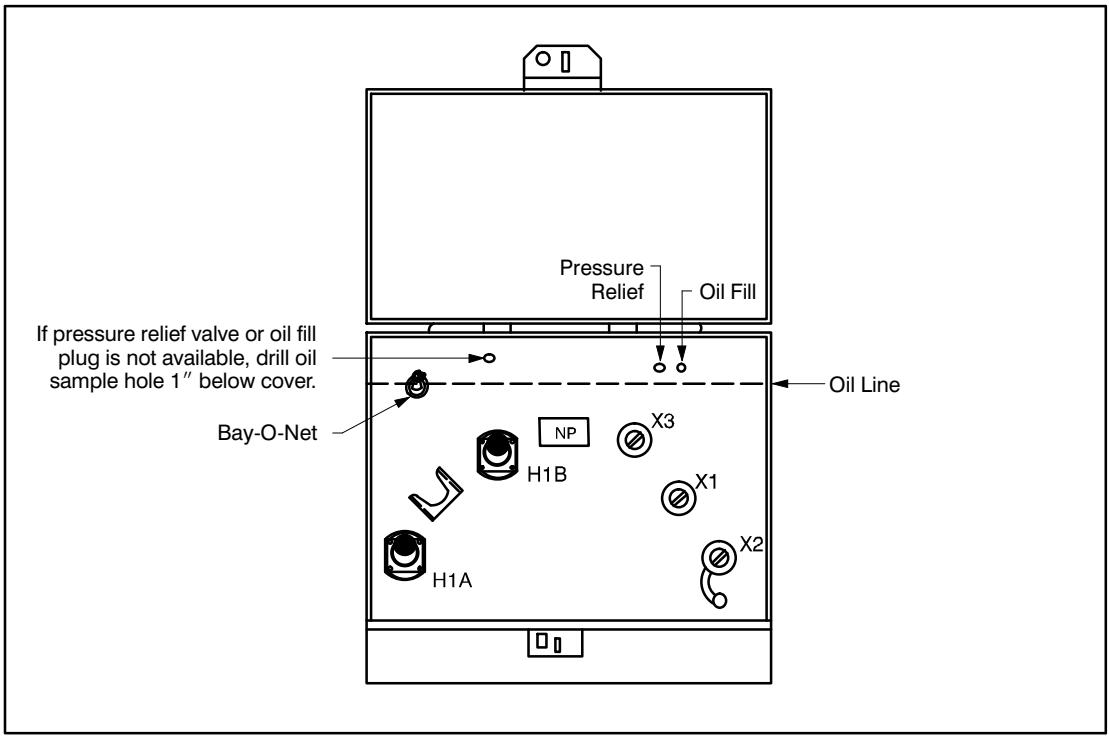
These are the procedures for the four methods to take oil samples from a distribution transformer:

- Impalement
- Pressure relief valve
- Bay-O-Net
- Valve

⚠ DANGER!

If you choose to take an oil sample while the transformer is energized, use insulated tools.

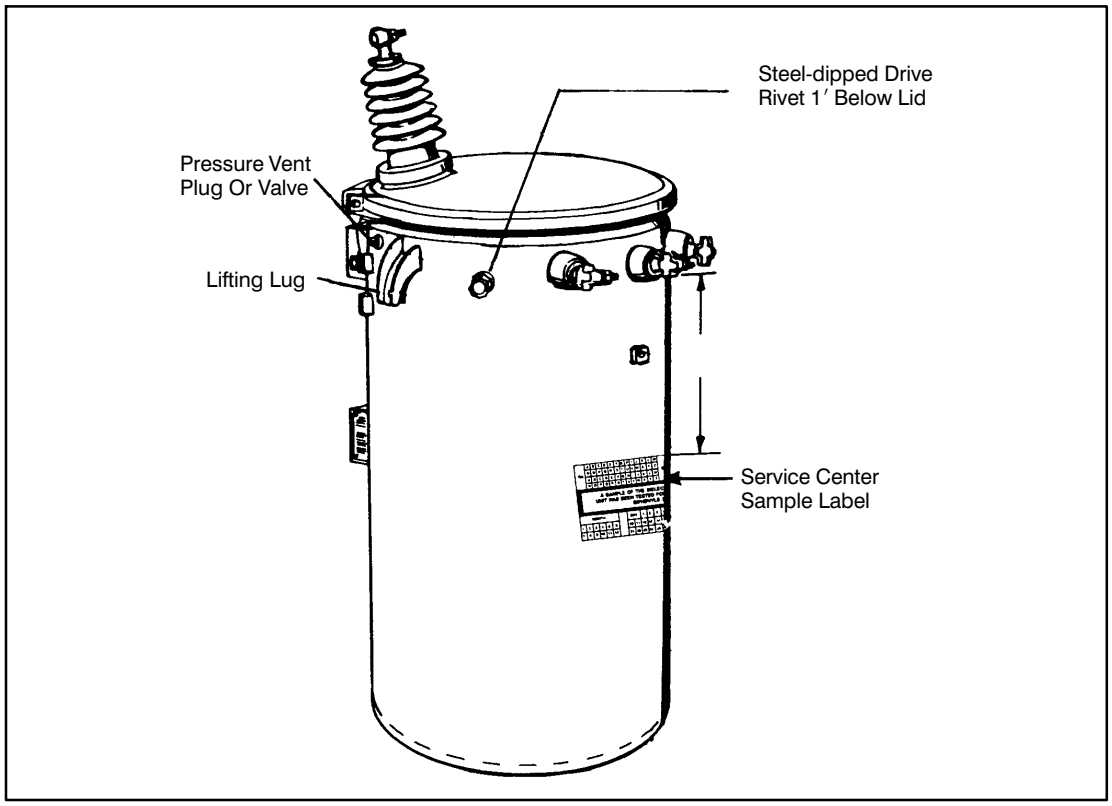
Figure 1 Oil sampling areas



Impalement Method

This section tells you how to use the impalement method to take oil samples from overhead transformers without pressure relief valves or filler plugs.

Figure 2 Impalement method



Continued on next page

Select Oil Sampling Point

Select a location for the oil sample hole above the oil line.

Step	Action	Procedure
1	Select, mark, and clean oil sampling location.	Measure 1/2 inch to 1 inch below the cover or top, between the secondary neutral bushing and the lifting lug, and mark the location. Use denatured alcohol to remove dirt and contamination from the location.
2	Drill the oil sampling hole.	Use a slow-speed drill with a split fluted bit to slowly drill the transformer case at the marked location until the collet touches the case. The collet will act as a stop, keeping the drill from going all the way through. ***NOTE:*** Drill shavings caught inside the magnetized collet should be cleaned out frequently with a small wire.
3	Drive the punch through the case.	Use an impalement tool and a hammer to drive the punch through the wall of the transformer case until the collar touches the case.

Drawing the Oil Sample

These next steps tell you how to draw the sample, clear the tube, and clean the area. Select a location for the oil sample hole above the oil line.

Step	Action	Procedure
1	Draw oil sample.	Use a disposable syringe to insert the hose into the hole and draw out the oil sample. ***NOTE:*** The syringe plunger should be completely in ***before*** drawing out the sample.
2	Clear tubing of air.	Tip the syringe plunger end down so the air is toward the tubing end of the syringe, then move the plunger forward until most of the air is out of the syringe.
3	Wipe the area.	Use denatured alcohol to wipe the drilling area clean of any oily residue.

Continued on next page

Impalement Method, *continued*

Finishing the Operation

The next steps tell you how to plug and seal the hole.

Step	Action	Procedure
1	Plug the hole.	Place a dipped steel rivet into sampling hole and strike the drive pin with a hammer.
2	Seal the hole.	Apply RTV sealant around the drive rivet. Be careful to completely cover the rivet and any surrounding area where paint may have been chipped off.
3	Check for leaks.	Check for leaks around the newly installed rivet.

See the Cleanup and Applying Labels section in this standard to finish operation.

Pressure Relief Valve Method

This section tells you how to use the pressure relief valves or filler plugs to take an oil sample.

Use this method for overhead transformers with pressure relief valves or filler plugs.

Step	Action	Procedure
1	Clean the area.	Use denatured alcohol to remove dirt and contamination from the location.
2	Remove valve.	Remove the valve or plug from the transformer case
3	Draw oil sample.	Use a disposable syringe to insert the hose into the hole and draw out the oil sample. ***NOTE:*** The syringe plunger should be completely in ***before*** drawing out the sample.
4	Clean the area.	Use denatured alcohol to wipe the drilling area clean of any oily residue.
5	Replace valve.	Replace the valve or plug and check for leaks.

See the Cleanup and Applying Labels section of t his standard to finish operation.

Bay-O-Net Method

This method is to be used for taking oil samples from padmount and total underground transformers.

If TUT is Energized

De-energize total underground transformer with an elbow before removing the Bay-O-Net fuse.

⚠ WARNING!

Do ***not*** use the drill method on these types of transformers, as screws installed in them tend to leak.

Step	Action	Procedure
1	Clean the area.	Use denatured alcohol to remove dirt and contamination around the Bay-O-Net fuse.
2	Lay plastic sheet.	Lay a piece of plastic sheeting at the bottom of the transformer below the Bay-O-Net fuse opening to catch oil drippings.
3	Take oil sample with Bay-O-Net fuse. ***OR see Step 4.***	Holding a sample bottle below the Bay-O-Net opening, pull the Bay-O-Net fuse out of the transformer and let the oil drip off the fuse into the sample bottle. The Bay-O-Net may have to be reinstalled and pulled out several times to get an adequate sample.
4	Draw oil sample.	Remove the Bay-O-Net fuse and insert the hose into the Bay-O-Net Tank opening. Take oil sample. ***NOTE:*** The syringe plunger should be completely in before taking the oil sample.
5	Fill bottle half full and clean drippings.	When the sample bottle is half full, wipe off all oil from the outside of the tank and any drippings caught on the plastic sheeting. Use a rag dampened with denatured alcohol.

See the Cleanup and Applying Labels section of this standard to finish operation.

Valve Method

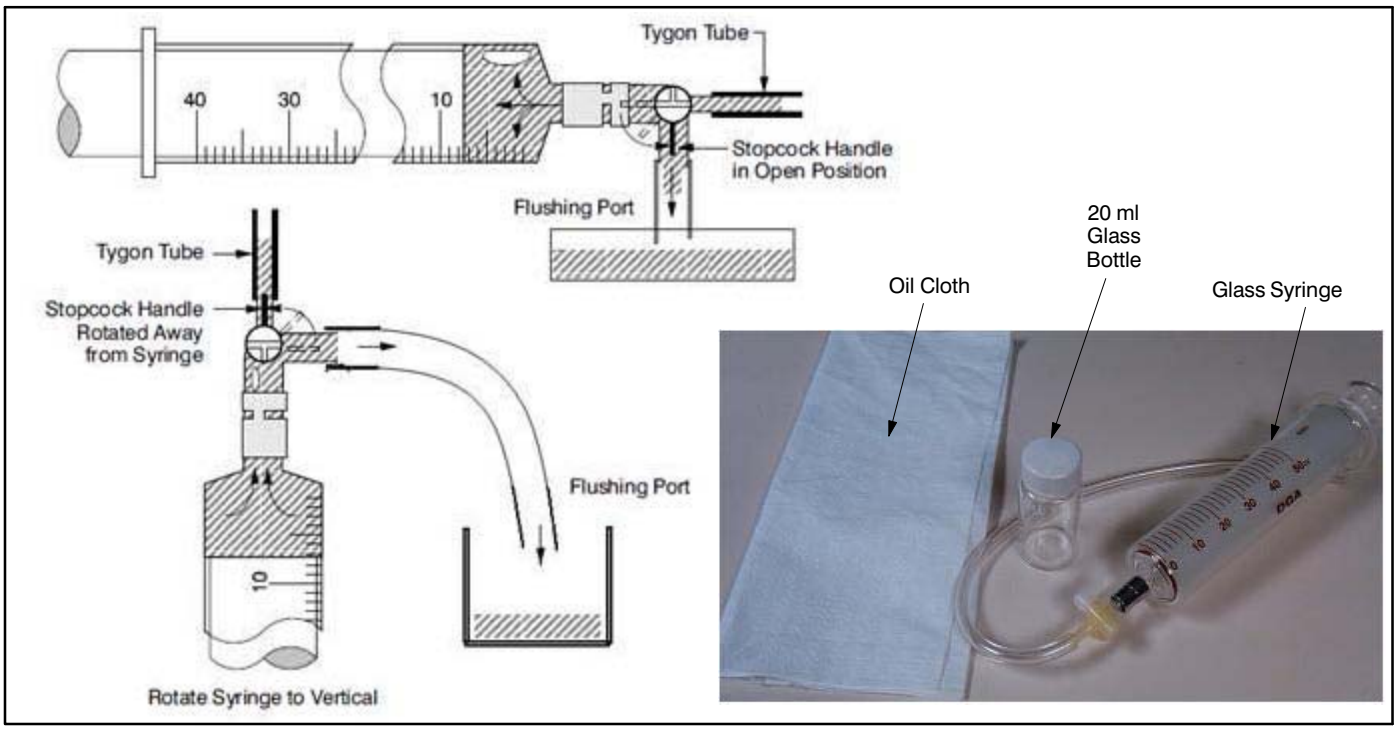
This method is to be used for taking oil samples from padmount oil-filled switches and equipment.

Prepare the Area

These first steps tell you how to prepare the area.

Step	Action	Procedure
1	Clean the area.	Use denatured alcohol to remove dirt and contamination around the valve.
2	Remove the switch valve plug.	Slightly open the valve to flush out any stagnant oil.
3	Attach bushing adapter.	If a sampling cock is already installed, use that instead.
4	Attach brass connector to adapter.	Check for tightness.
5	Allow one gallon of oil to flow into waste oil container.	This ensures the sample will be obtained from the main section switch. If air bubbles, sludge, or sediment are in this oil, continue flushing until you see a steady flow of clear oil.
6	Close the drain valve.	– – –

Figure 3 Valve method – dissolved gas analysis



Attach Sample Fittings

These steps tell you how to attach the sample fittings.

Step	Action	Procedure
1	Connect sample cylinder to large plastic tube.	Use the serrated brass fitting.
2	Connect small plastic tube to the other end of the cylinder.	Use the Luer-Lok fitting.
3	Hold the cylinder vertically with the large plastic tube on the bottom.	A. Open the valve at the switch. B. Open the bottom cylinder valve. C. Open the upper cylinder valve.

Take the Oil Sample

These steps tell you how to take the oil sample and replace the plug.

Step	Action	Procedure
1	Allow one quart to flow into the waste oil container.	If air bubbles are seen in the plastic tube, tap or shake the tube lightly. Flush with oil until the flow out of the cylinder is free of bubbles.
2	Close the cylinder.	A. Close the upper cylinder valve. B. Close the bottom cylinder valve. C. Close the switch valve.
3	Disconnect the plastic tubes.	Check the cylinder for air bubbles by shaking it and listening for oil movement. If there is there movement, reconnect the cylinder and flush more oil through until the cylinder is completely filled.
4	Remove bushing adapter and replace plug.	

See the Cleanup and Applying Labels section of this standard to finish operation.

Cleanup

Cleanup after you take the oil sample is the same for all methods.

Step	Action
1	Clean up all visible signs of oil.
2	Place rags and other material used to clean up oil in a plastic bag. Dispose of it in the designated PCB holding area located at the Service Center.
3	Tools shall be cleaned with alcohol.

Decontamination of Nondisposable Equipment

Nondisposable equipment means hand tools, power tools, earthmoving equipment, vehicles, et cetera that become contaminated with oil containing PCBs in known or assumed concentrations of 1 ppm or greater.

All contaminated equipment, including vehicles, should be decontaminated before leaving the spill site.

Equipment	Procedure
Vehicles	Wipe two times with clean rags and a detergent solution.
Electrical equipment and tools	Wipe two times with clean rags and a solvent.

Solvents and Detergents

- Prevent or collect drips of used solvents and detergents.
- Do not dump used solvents and detergents on the ground.
- Place used solvents and detergents in properly labeled drums and send to South King Waste Management Facility for appropriate disposal.

Personal Protective Equipment

Personal protective equipment should be removed before leaving the decontamination area and disposed of properly in containers.

- Respirators should be cleaned using the manufacturer's instructions.
- Hands and other exposed skin should be washed thoroughly before eating or drinking.

Remove personal protective equipment ***in this order***:

- Boot covers
- Overalls
- Gloves

Shipping the Sample

Ship samples for PCB analysis to the South King Waste Management Facility, SKC-WMF.

- Styrofoam mailers, each of which holds 20 samples, are available from Environmental Services for this purpose.
- If a Styrofoam mailer is not available, wrap the sample vials in absorbent pads to cushion them and place them in a cardboard box.

Shipping DGA Analysis

All Dissolved Gas Analysis is sent directly to Doble in Massachusetts.

Record Keeping

Analytical results of samples obtained from oil-filled equipment are entered into the SAP database. A hard copy is maintained in the Environmental Services Department files at the Waste Management Facility.

References

The following Puget Sound Energy documents apply to this standard:

0150.3100	Cleanup of Oil Spills
8625.1070	Oil-Sampling Procedures for Oil-Filled Substation Equipment

Sources

40 CFR

Part 112	Oil Pollution Prevention
Part 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

WAC

296-45-325	Working on or Near Energized Parts

APPENDIX D

Last Revised: December 2017

INSPECTION, MAINTENANCE, AND TRAINING RECORDS

APPENDIX E

Last Revised: December 2017

SUPPLEMENTAL DOCUMENTATION

E.1 Secondary Containment Calculations

E.1 Secondary Containment Calculations

Click to view/print Secondary Containment Calculations

APPENDIX E1
SECONDARY CONTAINMENT CALCULATIONS

This appendix contains the secondary containment volume calculations for *bulk storage containers* required to have specific (sized) secondary containment, including:

- Emergency Generator Fuel Tank
- Fire Pump Fuel Tank
- Containers in the Oil Storage Area:
- 100-gallon AST
- 55-gallon drums
- 65-gallon totes
- 55-gallon machine shop drum on cart

Though not required, this appendix also contains secondary containment volume calculations for facility features related to containment for selected pieces of *oil-filled operational equipment*, including:

- Wash Water Sump (for ST Generator Lube Oil System)
- Concrete curbed area (for ST Generator Lube Oil System)
- Wastewater oil/water separator
- Transformers (volume calculations performed in 2001 for PSE by NEPCAN Engineering Ltd.)

Required Calculations

Emergency Generator Fuel Tank

The fuel tank has a capacity of 720 gallons. Precipitation cannot accumulate in the containment. The fuel tank nameplate indicates the containment capacity of the belly pan is 121% of the tank volume (i.e., 871 gallons).

Containment is sufficient in the opinion of the certifying PE.

Fire Pump Fuel Tank

The fuel tank has a capacity of 440 gallons. Precipitation cannot accumulate in the containment. The displacement in the containment (tank supports) is negligible. The secondary containment structure is 53” wide and 89” long, with a height of 38”. The containment volume is therefore $(53x89x38)/12^3 = 104$ ft^3 x 7.48 gal/ft^3 = 778 gallons.

Containment is sufficient in the opinion of the certifying PE.

Containers in the Oil Storage Area

100-gallon AST

The AST has a capacity of 100 gallons. Precipitation cannot accumulate in the containment. The displacement (tank walls) is negligible. The secondary containment structure is 28” wide and 51” long, with a height of 18”. The containment volume therefore is $(28x51x18)/12^3 = 14.8$ ft^3 x 7.48 gal/ft^3 = 110 gallons.

Containment is sufficient in the opinion of the certifying PE.

55-Gallon Drums

All drums are located on secondary containment "spill pallets" that have capacities of at least 66 gallons. Precipitation cannot accumulate.

Containment is sufficient in the opinion of the certifying PE.

65-Gallon Totes

The secondary containment pan structure is 50" wide and 120" long, with a height of 7". Precipitation cannot accumulate. The containment volume therefore is $(50x120x7)/12^3 = 24.3$ ft^3 x 7.48 gal/ft^3 = 182 gallons.

Containment is sufficient in the opinion of the certifying PE.

55-Gallon Machine Shop Drum on Cart

If the entire drum contents spilled, the oil could reach a floor drain and flow to the wastewater oil/water separator, closing the oil stop valve. Water and/or oil would back up in the separator. The separator is a horizontal cylinder that is 6' in diameter and 15' long. The inside of the separator has several appurtenances including a coalescer, internal baffles, the oil stop valve etc.

The height of the invert of the oil/water separator outlet pipe is approximately 4'-5" above the bottom of the tank. The volume of the void space in the tank above the permanent wet-level, assuming the tank does not contain any appurtenances, is approximately 90 cubic feet, or approximately 673 gallons (https://www.mathopenref.com/cylindervolpartial.html). Assume approximately 70 gallons of the space is occupied by appurtenances, leaving an oil storage volume of approximately 600 gallons.

Containment is sufficient in the opinion of the certifying PE.

Non-Required Containment Calculations

Wash Water Sump (for CT Generator Lube Oil System)

The volume of oil in the CT lube oil system is 6,200 gallons. Precipitation cannot accumulate. From NEPCON Engineering Ltd. Drawing 0471 GA003, the dimensions of the wash water sump are 15'-8" by 8'-8" by 3'. The volume of the sump therefore is 15.66x8.66x3 = 407 ft^3 x 7.48 gal/ft^3 = 3,044 gallons. This is greater than the most likely quantity of oil that would spill, estimated to be 500 gallons.

Containment is sufficient in the opinion of the certifying PE.

Concrete Curbed Area (for Steam Turbine Generator Lube Oil System)

The shape of the curbed area is complex and the oil-containing volume is difficult to calculate; however, in an email from PSE to GeoEngineers on October 9, 2020, PSE estimates the containment volume is close to 20,000 gallons. This is greater than the most likely quantity of oil spilled, which is estimated to be 500 gallons.

Wastewater Oil/Water Separator

See calculation for "55-Gallon Machine Shop Drum on Cart," above.

Transformers

The volume calculations were performed in 2001 for PSE by NEPCAN Engineering Ltd. The documents are attached, and indicate containments of at least 110% of the volume of oil stored in each transformer.

Containment is sufficient in the opinion of the certifying PE.

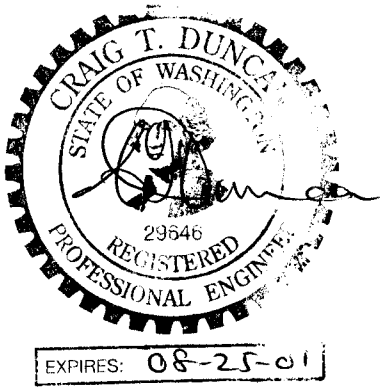
NEPCAN Engineering Ltd.
#200 – 1770 W. 7th Ave.
Vancouver, BC V6J 4Y6 Canada
Tel: (604) 736-3273
Fax: (604) 736-1519

DWG # C027-8

Foundation Design Calculations:

GSU Transformer Pit.

(Ref. Dwg. No. 0471-F025-01)



Project: Goldendale Energy Inc., Goldendale, WA
Job No. VN 0047100VE

Date: July 30, 2001

Design Engineer: Nyima Tsundu, P.Eng.,

Checked By: Sanjay Duggal, P.Eng., PE Washington State

COCHRANE ENGINEERING

DESIGN NOTES

Page No. _____

Project Name: GOLDENDALE

Project Number: 0471 Designed by: NT Date 7/5/01

GSU TRANSFORMER

OIL VOL = 68000 L = 68 m³ = 2400 ft³.

WT = 250,000 kg = 551.25 kip.

PAD AREA = 22'-0" × 12'-0" = 264 SF

PIPE I/L DIMENSION = (48 + 48) × 2 & (235 + 48) × 2 =

= 196" : 566"

= 16.33' × 47'-3"

= 16'-6" × 47'-6".

VOL. SPACE REQ'D = 2400 × 1.1 = 2640 ft³

~~AVAILABLE PIPE AREA = (16.5 × 476) − 264 = 521.4 SF~~

T.O. WALL ELEV = 100'-4½"

MAX. LIQ. ELEV = 95'-8"

MAX DEPTH AVAILABLE = 4'-4½" = 4'-6"

100% DEPTH = 1'-0" = 1.0

35% DEPTH = 3'-6" × 0.35 = 1.225 } = 2.225' EFFECTIVE

∴ PIPE AREA REQ'D = 2640 ÷ (2.225) = 1187 SF

TOTAL AREA = 1187 + 264 = 1451 SF

∴ DIMENSION = $\frac{1451}{(a \times 1.6a)} = \frac{906.9}{a^2}$ ∴ a = 30'

470

OVER ALL TANK DIMENSION = 295 × (235 × 2) =

RATIO = $\frac{470}{295}$ = 1.6

∴ I/L DIMENSION = 30' × 48'-0" USE 32' × 48'

366" × 576" FOR 4" CLEARANCE

100% YOKE 32.75 × 44.42 = 1454 SF × 1 = 1454

32.75 × 44.42 = " × 1.225 = 1782

3236 ft³ 724 Bay

COCHRANE ENGINEERING

DESIGN NOTES

Page No. _____

Project Name: GOLDENDALE

Project Number: 0471 Designed by: NT Date _____

KIT. OF GSH = 551 lbs

PAD AREA = 22 x 12 = 264 SF.

LOAD / SF. 551 ÷ 264 = 2.08 lbs ft.

WD. PAD = 0.15 x 4 = = 0.60 lbs ft

2.68 lbs ft (OK)

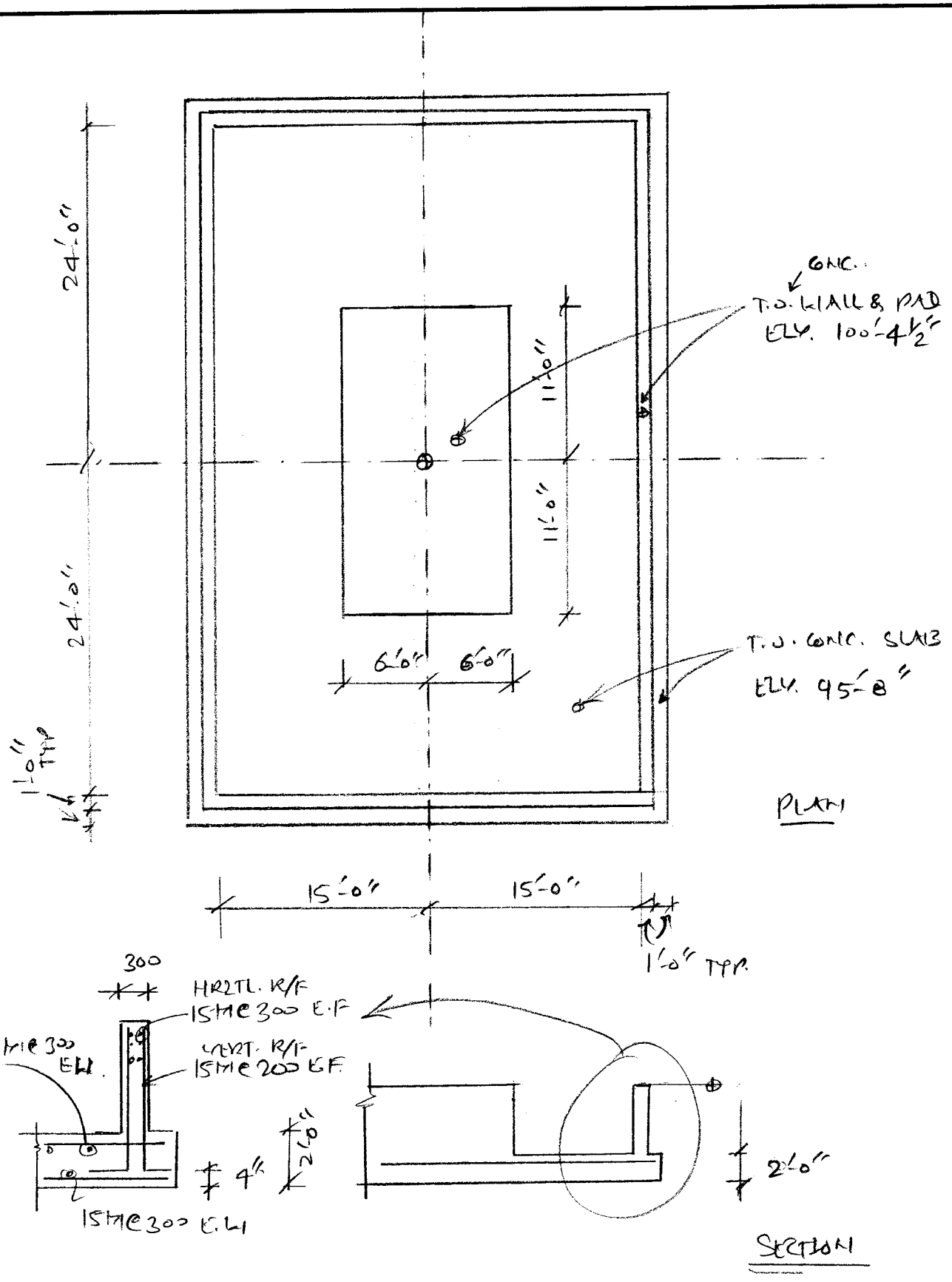
COCHRANE ENGINEERING

DESIGN NOTES

Page No. _____

Project Name: _____

Project Number: _____ Designed by: _____ Date 7/5/01



GSU. TRANSFORMER

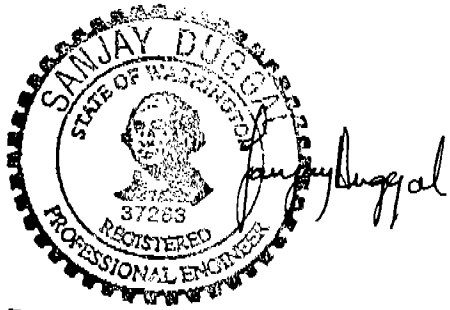
NEPCAN Engineering Ltd.
#200 – 1770 W. 7th Ave.
Vancouver, BC V6J 4Y6 Canada
Tel: (604) 736-3273
Fax: (604) 736-1519

0471-/C027-2

Foundation Design Calculations:

Auxiliary Transformers,
Service Station Transformers,
Isolation Transformer and
Excitation Transformer.

(Ref. Dwg. No. 0471-F009-01 and 0471-F009-03)



EXPIRES 6/25/01

Project: Goldendale Energy Inc., Goldendale, WA
Job No. VN 0047100VE

Date: June 15, 2001

Design Engineer: Nyima Tsundu, P.Eng., PE California

Checked By: Sanjay Duggal, P.Eng., PE Washington State

DESIGN NOTES

COCHRANE ENGINEERING

Page No. 1

Project Name: GOLDENDALE

Project Number: VN04FINE Designed by: NT Date 14/6/01

I SEISMIC LOADS FOR ELEMENTS OF STRUCTURE FOR CONNECTIONS (WHERE NON RIGID EQUIPMENT COULD CAUSE LIFE HAZARD.)

MAX. $F_p = 4.0\, C_a \frac{I_p}{R_p} W_p$ — (32-1)

MIN $F_p = 0.7\, C_a I_p W_p$ →

$$F_p = \frac{a_p C_a I_p}{R_p}\left(1 + \frac{2h_x}{h_r}\right) W_p \rightarrow (32-2)$$

$$= \left[\frac{a_p}{R_p}\left(1 + \frac{3h_x}{h_r}\right)\right] \times C_a \cdot I_p \cdot W_p$$

Based on (32-2)

$a_p = 1.0$ $F_{p_{MAX}} = 1.33\, C_a I_p W_p$ (MAX)

$a_p = 2.5$ $F_{p_{MAX}} = 3.33\, C_a I_p W_p$

$a_{p_{MIN}}$

$a_p = 1.0$.

$R_p = 3.0$

$\frac{h_x}{h_r} = \frac{0.5}{6.7'} = 0.07$ (E. MIN HT.)

$\left(1 + \frac{3h_x}{h_r}\right)_{MAX} = 4.$

SINCE FOR THE TANKS $a_p = 1.0$ $\boxed{F_{p_{MAX}} = 1.33\, C_a I_p W_p}$

CONNECTIONS.

II OVER ALL SYSTEM STRUCTURAL (SEISMIC LOADS)

$V = 0.7\, C_a I W \leq 0.7 \times 0.2\, I W = 0.14\, I W$ (GOVN)

$V_{MIN} = 0.56\, C_a I W$

$\boxed{V = 0.14\, W}$ STRUCTURE

COCHRANE ENGINEERING

DESIGN NOTES

Project Name: GOLDENDALE

Project Number: VN00491VF Designed by: NT Date 14/6/01

FOUNDATION DESIGN FOR SAT#1&2, SST#1&2

GRAVITY LOADS

EXCITATION TRANSF = 8.3

SAT#1 = 18.81 kip

SAT#2 = 18.91 kip

SST#1 = 14.6

SST#2 = 14.6

ISOLATION TRANSF = 14.9

$= \sum 211$ kip

CONC. PAD FOR SAT1&2 = $2 \times 0.15 \times 6.5 \times 10 \times 1.58 = 30.81$ kip

EXCAVATION = $0.15[(4 \times 4 \times 0.83) + (4 \times 7 \times 3.83)] = 18.1$

SST1&2 = $2 \times 0.15 \times 6.5^2 \times 0.83 = 10.52$ kip

SLAB = $0.15 \times 1.5 [(2 \times 21) + (2 \times (19 \times 19))] =$ 478.35 kip

SUMP = $0.15 \times 1.5 (3 \times 22) =$ 148.5

WALLS = $0.1 \times 10 [52 + (15 \times 2) + 23] =$ 105 kip

GRAVEL:

WALLS = $0.1 \times 10 [46] =$ 46

$= 837$ kip

837 211 1048

L_1 = WT. OF CONC + EQUIP = ~~627 + 157~~ = ~~812~~ kip

SEISMIC LOAD

V_f = SEISMIC LOAD = $0.14 L_1 =$ ~~113.68~~ 146.76 kip.

V_R = SLIDING RESISTANCE = $\ell \times L_1 = 0.35 \times W_{PE}$ 284.1 kip

$\frac{V_R}{V_f} = 1.94 > 1.5$ (OK) + PASSIVE RESISTANCE

- SINCE NO OVERTURNING @ BASE OF INDIV. EQUIPMENTS C (TRANSFORMER) BY INSPECTION NO OVERTURNING @ BASE OF FOUNDATION.

COCHRANE ENGINEERING

DESIGN NOTES

Page No. 3

Project Name: GOLDEN BALL

Project Number: UNO4-1164 Designed by: NT Date 14/6/01

SAT #1 & 2

(1) CONNECTION 1.

$F_p = 1.33\, C_a I_p\, W_p$

$= 1.33 \times 0.2 \times 1\, W_p$

$F_p = 0.266\, W_p$ $\qquad W_p = 79\,kip$ (FOR SAT.)

$F_p = 21\,kip$

$M_o = F_p \times 4' = 84\,kip\,ft$

$M_R = W_p \times 2.5 = 197.5\,kip\,ft$ $\qquad \therefore \frac{M_R}{M_O} = 2.35 > 2.0$ o/c

NO NET UPLIFT.

HORIZ SHEAR / BOLT = $F_p \div 4 = 5.25\,kip$ (23.36 kN), $< 59\,kN$ A307.

A307 BOLTS o/c

COCHRANE ENGINEERING

DESIGN NOTES

Page No. 6

Project Name: GOLDENDALE - GSU TRANSFORMER

Project Number: _____ Designed by: NT Date 7/5/01

SAT#1 & 2 CIVIL CALCS FOR CONTAINMENT

SAT#1 (ID# 0166251 DWG# HB0981201)
&
SAT#2 (ID# 0166252 DWG# HB0981301)

SINCE DIMENSIONS & WTS. OF SAT#1 & SAT#2 ARE ALMOST SAME THE LARGER OF EACH USED & THE FOUND & CONT. PITS MADE SAME.

GOV. DIMENSIONS SEE VENDOR DWG. WITH HIGHLIGHT & ①

OIL VOL = 2536 GAL × 0.134 FT³ = 347 CU FT

TOTAL WT = 73813 #. = 78.8 KIP

PAD DIMENSIONS = 120" × 78" = 10' × 6'-6"

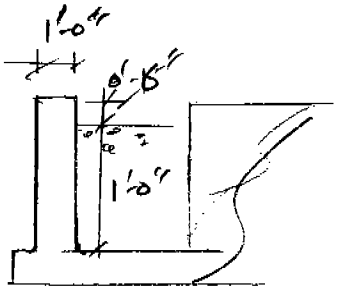
IDEAL MIN. I/I DIMENSIONS = (106 + 36) + (102 + 36) = 23'-3" = 23'-6"
= (89 + 36) + (61 + 36) = 23'-0" (CLEAR)

(22.75 × 23) ×2 (CHAIN.)

AVAILABLE AREA = (23.5 × 18.5) − (10 × 6.5) = 370 SF.

REQD SPACE = 1.1 × 347 = 382 FT³

(6" HIGH) 100% VOID = 370 × 0.5 = 229
1'-6" 35% VOID = 1.6 × 370 × 0.35 = 199
= 389 > 382 (OK)
= 374 (OK)



WT = 78.8 KIP
PRESS. ON SOIL = (78.8) + (145 × 10 × 6.5 × 3) = 108 ÷ (6.5 × 10) = 1.66 KSF OK

COCHRANE ENGINEERING

DESIGN NOTES

Page No. 6A

Project Name: GOLDEN DALE

Project Number: _____ Designed by: NT Date 26/6/01

AUX. TRANSF PLT.

AUX. TRANSF #1

PAD LENGTH CHANGED.

OIL = 2580 GAL = 346 ft3.

10% INCR = 380 ft3 (OK)

PAD SIZE = 6.5 × 12.75 = 82.875 ft²

INSIDE PIT AREA = 21.54 × 22.99 = 518.3 ft²

VOID AREA = 518.3 − 82.875 = 435.43 ft²

100% VOID VOL = 1 × 435.43 = 435.43 ft³

35% VOID VOL = 0.35 × (99.375 − 98.5) × 435. = 133

568 > 380 OK

AUX. TRANSF #2

OIL VOL = 2540 GAL = 340 ft³

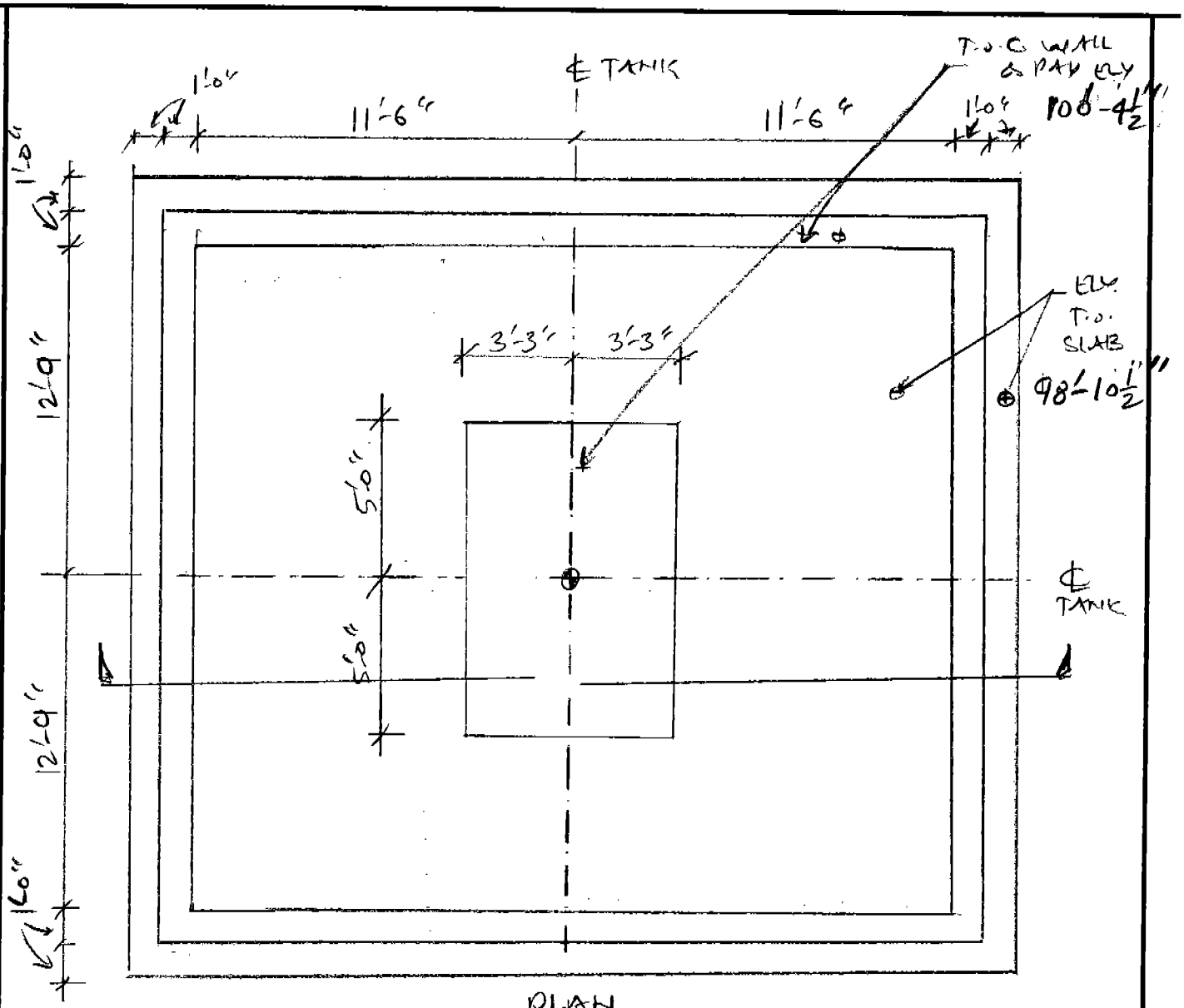
10% INCREASE = 375 ft³

PAD = 6.5 × 10.5 = 68.25 ft²

PIT AREA = 25.42 × 22.99 = 584 ft²

VOID AREA = 516 ft²

100% VOID = 1 × 516. = 516 > 375 (OK)



(SAT#182) AUXILIARY TRANSFORMER #182

COCHRANE ENGINEERING

DESIGN NOTES

Page No. 8

Project Name: GOLDEN DALE

Project Number: 00491 Designed by: AIT Date 5/21

SST REFERENCE # PA 0981401 (OIL CONTAINMENT)

WT = 14623 # = 14.6 kip

VOL = 642 GAL = 86 ft³

REQ. VOL (MAX) = 1.1 × 86 = 94.6 ft³

CONC. PAD = (61+16) * (57.5+16) = 77" × 73.5" = 78" × 78"

≈ ~~6'6" ×~~ 6'6" × 6'6"

PUMP I/E = (54+48) 2 * (59+48) 2 = (102×2) * 107×2

TRY ~~18' × 18'~~ 17' × 14.5'

AREA AVAILABLE = ~~18²~~ 17×14.5 − 6.5² = 204 − 28.75 SF.

6" OF 100% VOID = 0.5 × 28.5 = ~~140~~ 102 ft³ > 94.6 . (OK)

∴ 6" HIGH CONT. CURB (OK)

BEARING

SOIL PRESS = 14.6 ÷ 6.5² = 346 PSF << 3000 PSF (OK)

FOUNDATION.

134 COMPARISON W/ SAT - SLAB (FOUNDATION)

AS LOADS MUCH LESS BUT. FOUNDATION THICKNESS

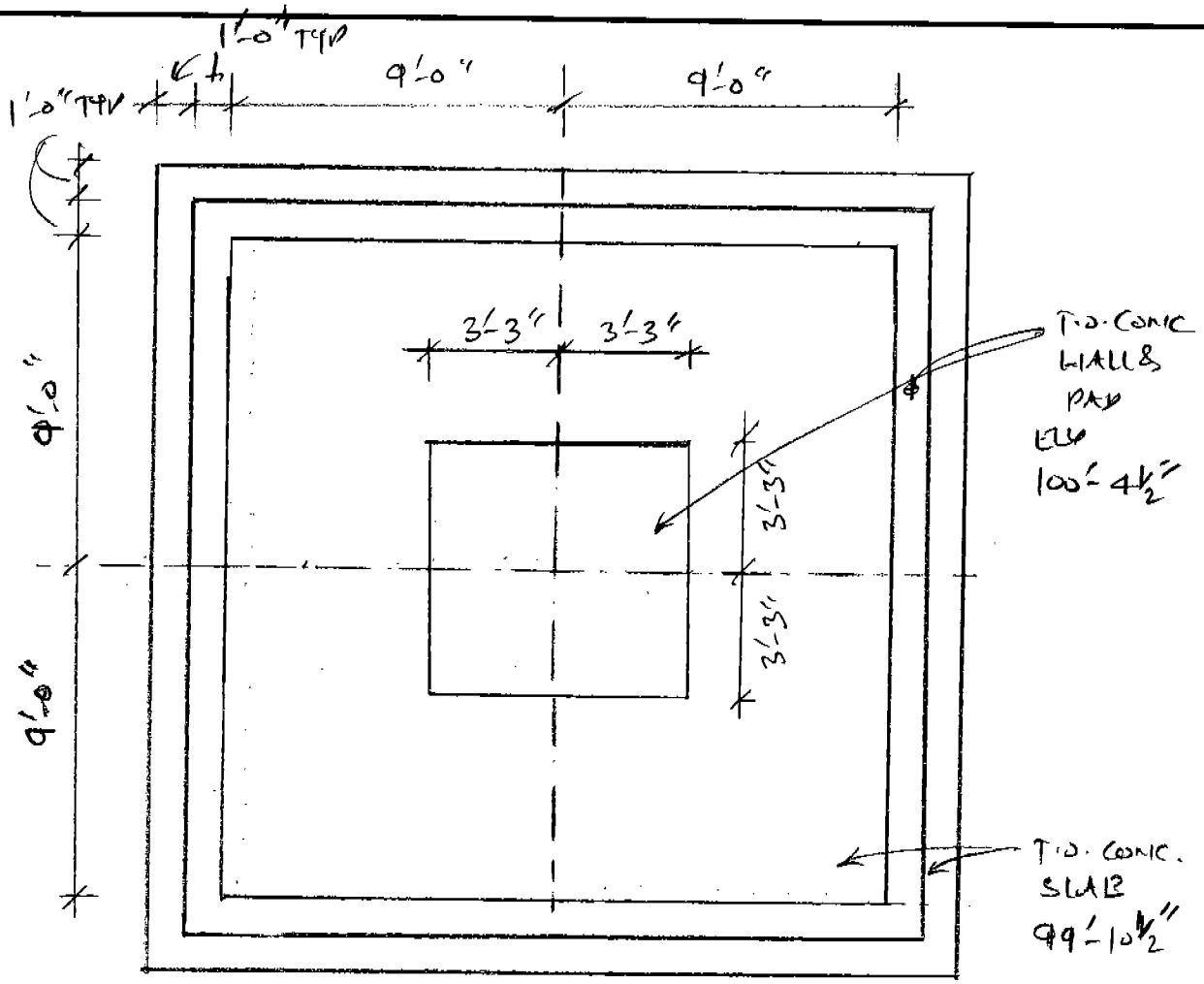
& REINF. SAME ∴ OK

COCHRANE ENGINEERING

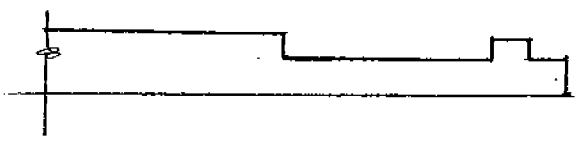
DESIGN NOTES

Project Name: GOLDEN BALL

Project Number: 00471. Designed by: MT Date 5/01



PLAN - SST



COCHRANE ENGINEERING

DESIGN NOTES

Page No. 10

Project Name: GOLDEN DALE

Project Number: 00411 Designed by: NT Date 21/5/21

EQUIPMENT # A150 TRANSFORMER (EXCITATION TRANSFORM.)

CONTAINMENT VOL. CALCS:

LIT = 8.8 lay

PAD = 48" x 48" = 4' x 4'

OIL VOL = 920L = 123 ft³

SPACE REQ'D = 1.1 x 123 = 135 ft³

MIN. PIT PLAN DIMENSIONS = (95 + 96) x (78 + 96)

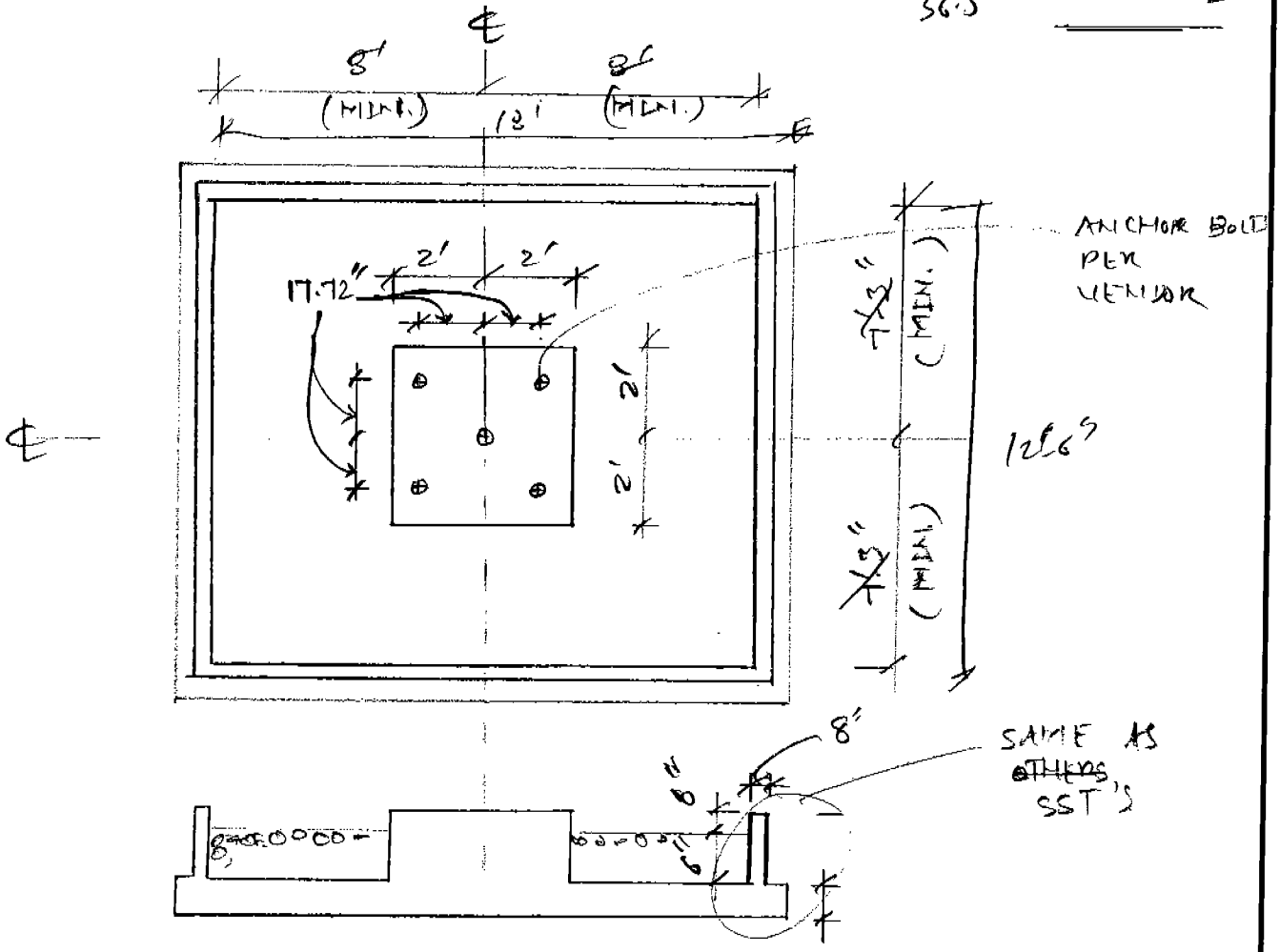
= 16' x 14'-6"

VOID AREA = (16 x 12'6") − (4 x 4) = ~~216~~ 209 SF

100% VOID VOL @ 6' HIGH: 0.5 x 209 = ~~108~~ 104.5 ft³

35% VOID VOL @ 6' = 0.5 x 209 x 0.35 = ~~37.8~~ 36.5

= ~~145.8~~ 141 ft³ (OK)



COCHRANE ENGINEERING

DESIGN NOTES

Page No. 11

Project Name: GOLDENDALE

Project Number: 00471 Designed by: NIT Date 21/5/01

EQUIPMENT - A-141 (ISOLATION TRANSFORMER) CONTAINS VOL CATCS.

PAD = ~~48"~~ 48" = 6.5' x 4'

OIL = 3700L = 495 ft³.

SPACE REQ'D = 1.1 x 495 = 545 ft³.

MIN PIT AREA = (136+96) x (115+96) = 232" x 211"

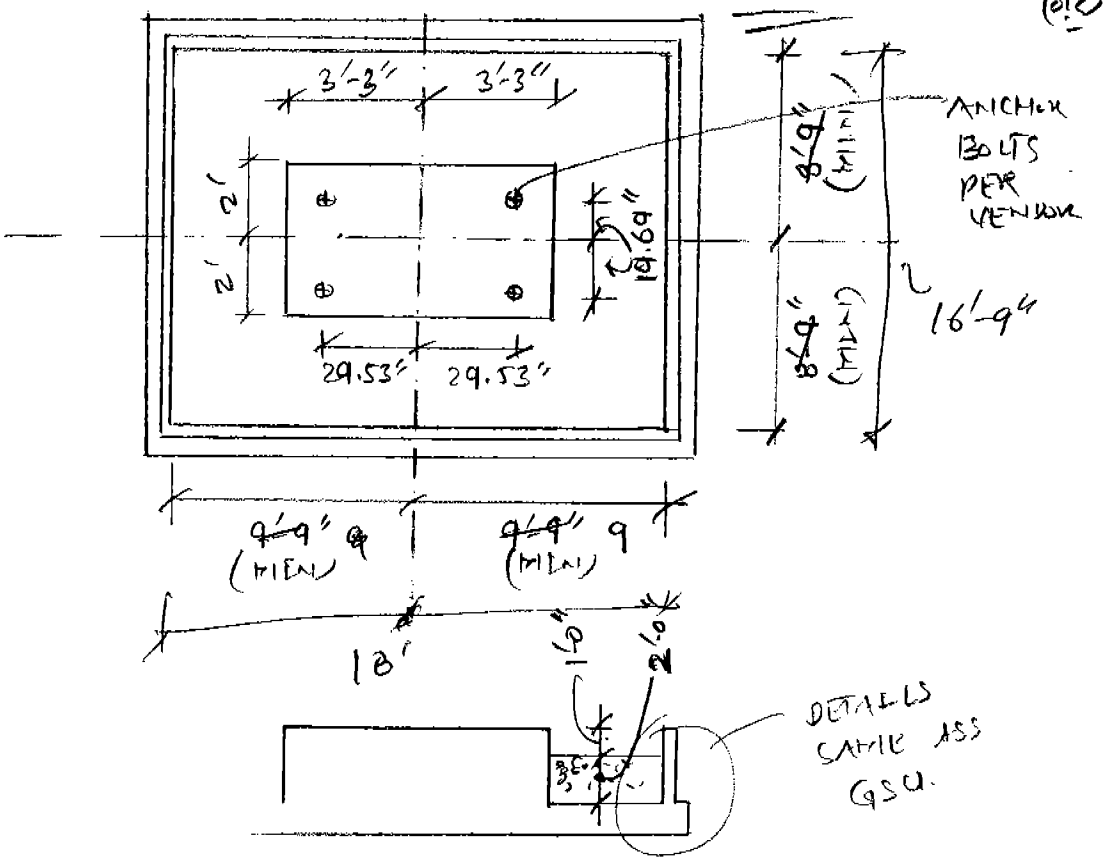
= ~~19'-6"~~ 18' x ~~17'-6"~~ 18'-9" CLEAR.

AVAILABLE AREA = (19.5 x 17.5) - (6.5 x 4) = ~~315.25~~ 275.5 SF

100% 12" HIGH 100% VOL = 1 x ~~315~~ 275.5 = 315 ft³.

35% VOID 2" HIGH: 3 x ~~315~~ 275.5 x 0.35 = ~~221~~ 289.3

~~560~~ 596 ft³ = 545 (O.K.)



NEPCAN/Cochrane Engineering Ltd. #200-1770 W. 7th Ave. Vancouver, BC, V6J 4Y6	Project: Goldendale Power				Job Ref.: VN0047100VE	
	Section: Auxiliary Transformers				Sheet no./rev.: 1	
	Calc. by: SD	Date: JUN 1, 2001	Chck'd by:	Date: JUN 14, 2001	App'd by: CTD	Date: JUN 14, 2001

STRUCTURAL CALCULATIONS FOR CMU FIREWALL

OF AUXILIARY, EXCITATION, ISOLATION & SUBSTATION TRANSFORMERS

PAGES = 3

Isolation / Auxiliary / Substation / Excitation Transformer Fire/Sound Wall Design

Wind Design Pressure

For basic wind speed of 80 mph; q_s = 16.4 psf

Importance factor; I_w =1.00

Pressure Coefficient; C_q = 1.3

Combined Height, Exposure and Gust factor coefficient; C_e = 1.19;

Wind Pressure;

$P_{WIND} = q_s \times I_w \times C_q \times C_e$ = **25.37** psf

Seismic Design Pressure

Seismic zone 2B; Z = 0.20

Seismic Importance Factor; I_P = 1.0

Coefficient; C_a = 0.2

Weight of concrete masonry wall; W_P = 1 ft × 110 pcf × 1 ft = **110.00** plf

Design Seismic Force;

$F_P = 4.0 \times (I_P \times C_a \times W_P)$ = **88.000** plf

Moment Design:

Therefore seismic force is critical

Masonry wall height; h = 12.625 ft

As per UBC 1997 paragraph 1612.3.1, the seismic force may be reduced by 1.4 for Allowable Stress Design:

$M = (1/1.4) \times F_P \times h^2/2$ = **5.01** kip_ft

Moment Capacity:

f_m = 2800 psi; f'_m = 2000 psi

$E_m = 750 \times f'_m$ = **1500.00** ksi

E_s = 29000 ksi

$n = E_s / E_m$ = **19.33**

Using #6 @ 8 inch on each face;

d_b = 0.75 in; b = 8 in; d = 9.25 in

$A_s = d_b^2 \times \pi \times 0.25$ = **0.44** in^2

$\rho = (A_s) /(b \times d)$ = **0.0060**

$k = [(n \times \rho)^2 + 2 \times (n \times \rho)]^{0.5} - (n \times \rho)$ = **0.38**

$j = 1 - k/3$ = **0.87**

Compressive stress in concrete

$f_b = ((8/12) \times M \times 2)/(b \times d^2 \times j \times k)$ = **353.86** psi

Allowable bending compressive stress of CMU; $F_b = 0.33 \times f'_m$ = **660.00** psi

Tensile stress in steel; $f_s = ((8/12)\times M)/(A_s \times j \times d)$ = **11.22** ksi

Allowable bending tensile stress of steel rebar; F_s = 24 ksi

$k = 1 / (1 + (f_s /(n\times f_b)))$ = **0.38**

Moment capacity per unit feet;

$M_n = A_s \times F_s \times j \times d \times (12 \text{ in} / b)$ = **10.71** kip_ft

---SAFE---

Design of Concrete Wall

Moment Design:

Height of wall; h = 16.75 ft

$M_{UWALL} = (1/1.4) \times 1.7 \times F_P \times h^2/2$ = **14.99** kip_ft

Moment Capacity:

Provide 1 layer of #6 @ 8 inches on each face

Strength reduction factor; $\phi = 0.9$;

Diameter of rebar; d_b = 0.75 in

Thickness of wall; T = 12 in; Effective depth; d = 9.625 in; Width; b = 8 in

$A_{st} = (\pi /4 \times d_b^2)$ = **0.4** in^2

$\rho = A_{st} / (b \times d)$ = **0.00574**

f_y = 60 ksi; f_c = 3 ksi

$\phi M_{NWALL} = \phi \times f_y \times A_{st} \times d \times (1 - ((\rho\times f_y) / (1.7\times f_c))) \times (12 \text{ in} / b)$ = **26.76** kip_ft

Minimum vertical reinforcement required; ρ_{min} = 0.0015

$\rho_{provided} = (2\times\pi /4 \times d_b^2) / (b \times T)$ = **0.00920**

Minimum horizontal reinforcement required; ρ_{min} = 0.0025

d_b = 0.5 in; b = 12 in

$\rho_{provided} = (2\times\pi /4 \times d_b^2) / (b \times T)$ = **0.00273**

---SAFE---