APPENDIX F

Hazardous Materials and Solid Waste

Hazardous Materials Technical Report

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APPENDIX F

Hazardous Materials and Solid Waste

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Sustainable Airport Master Plan – Near-Term Projects

Hazardous Materials, Solid Waste, and Pollution Prevention Technical Report

January 2024

PREPARED FOR

Port of Seattle

PREPARED BY

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1. Introduction

Landrum & Brown prepared this Hazardous Materials Technical Report to document the results of the analysis to determine the potential hazardous materials impacts resulting from the Sustainable Airport Master Plan (SAMP) Near-Term Projects (NTP) at the Seattle-Tacoma International Airport (SEA or Airport).

The Port of Seattle (Port) conducted a desktop search of Washington Department of Ecology (WSDE) *What's in my Neighborhood* database, in June 2020, May 2021, and June 2023 to identify documented areas of hazardous materials contamination within the General Study Area (GSA). This desktop search was supplemented with existing Port data where available. Potential impacts were evaluated based on the location of each NTP in relation to areas of known contamination and the types of potential activities and materials that are likely to be present at the site. If a component of the Proposed Action or Hybrid Terminal Option would be in or near a previously identified site, the Port analyzed the specific characteristics of that site and identified measures to minimize the potential for impacts to hazardous materials that may be present. No field surveys were conducted as part of this analysis.

1.1 Description of the Proposed Action

The Port identified a set of NTPs to address the near-term activity levels projected to occur at the Airport. The NTPs include over 30 projects that would improve efficiency, safety, access to the Airport, and support facilities for airlines and the Airport. The NTPs (as a whole) are the Proposed Action and are shown on **Exhibit 1.**

In addition to the Proposed Action, a Hybrid Terminal Option was also evaluated in the Environmental Assessment (EA). This alternative includes the same elements as the Proposed Action. The only differences in the two alternatives are the location of passenger loading bridges and aircraft hardstands.

2. Regulatory Setting

Hazardous materials are any substance or material that has been determined to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce. The term hazardous materials includes both hazardous wastes and hazardous substances, as well as petroleum and natural gas substances and materials. A summary of some of the more pertinent regulations and guidelines is presented in the following paragraphs.

2.1 Federal Regulatory Setting

Table 1 lists the statutes, regulations, EOs, and other requirements related to hazardous materials, solid waste, and pollution prevention.

TABLE 1: STATUTES, REGULATIONS, EXECUTIVE ORDERS, AND OTHER REQUIREMENTS RELATED TO HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Statute	U.S. Code Implementing Regulation	Oversight Agency	Summary
Resource Conservation and Recovery Act (RCRA)	42 U.S.C. §§ 6901-6992k 40 CFR parts 240-299	EPA	Establishes guidelines for hazardous waste and non-hazardous solid waste management activities in the U.S. Regulates the generation, storage, treatment, and disposal of waste.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)(as amended by the Superfund Amendments Reauthorization Act of 1986 and the Community Environmental Response Facilitation Act of 1992)	42 U.S.C. §§ 9601-9675 40 CFR parts 300, 311, 355, 370, and 373	EPA	Establishes joint and several liability for those parties responsible for hazardous substance releases to pay cleanup costs and establishes a trust fund to finance cleanup costs in situations in which no responsible party could be identified. Enables the creation of the NPL, a list of sites with known releases or threatened releases of hazardous substances in the U.S. and its territories used to guide the USEPA in determining which sites warrant further investigation.
Pollution Prevention Act	42 U.S.C. §§ 13101-13109 CEQ Memorandum on Pollution Prevention and the National Environmental Policy Act, 58 Federal Register 6478 (January 12, 1993)	CEQ, EPA	Requires pollution prevention and source reduction control so that wastes would have less effect on the environment while in use and after disposal.

Note: CEQ = Council on Environmental Quality; CFR = Code of Federal Regulations; DOT = U.S. Department of Transportation; USEPA = U.S. Environmental Protection Agency; NPL = National Priorities List; U.S.C. = United States Code

EXHIBIT 1, PROPOSED ACTION

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2.2 State and Local Regulations

2.2.1 The Model Toxics Control Act (MTCA)

The MTCA (known as the state's cleanup law) governs the cleanup and prevention of contaminated sites that can threaten people's health and the environment. MTCA's main purpose is "to raise sufficient funds to cleanup all hazardous waste sites and to prevent the creation of future hazards due to improper disposal of toxic wastes into the state's lands and waters." (RCW 70.105D.010).

MTCA evolved from citizens' Initiative 97 in 1988 and became law in 1989. It has been amended 23 times (most recently in 2013) but its key principles remain in place today:[1]

- Polluter pays
- Cleanups should be as permanent as possible
- Public participation is crucial
- Processes should demonstrate a bias toward action, permanence, and innovation

3. Existing Conditions

The analysis of hazardous materials, solid waste, and pollution prevention focused on the area within the GSA where potential direct physical impacts associated with the Proposed Action and the alternatives would occur.

Current activities at SEA that generate or involve the use of hazardous materials include aircraft fueling; maintenance of aircraft, Ground Support Equipment (GSE), motor vehicles, buildings, and Airport grounds; various Port maintenance shop operations; and construction activities. In addition, many tenants use hazardous materials and generate hazardous waste. These wastes are disposed of by the tenants, and the Port does not take ownership of tenants' hazardous waste. SEA is considered a federal Small Quantity Generator by the EPA and a State of Washington Medium Quantity Generator, generating 19,891 pounds of hazardous waste in 2022.[2]

Based on a review of the WSDE's *What's in My Neighborhood* mapping tool, there have been 58 documented incidents of contamination within the GSA requiring further action. These sites are listed in **Table 2** and depicted on **Exhibit 2** (Sites H-1 through H-58). Twenty-two of these incidents occurred on SEA property and are indicated in **bold** text in the table. It should be noted that some of the properties are not located on SEA property, and the Port is in no way responsible for the site or required cleanup actions. The EPA National Priorities List site was also reviewed and no NPL sites are located within the GSA.[3]

The Airport also has potential for other contaminants such as per- and polyfluoroalkyl substances (PFAS). PFAS are in a number of materials used by industry and consumers, and include perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), among more than 7,800 chemicals. At the Airport, these substances are primarily found in aqueous film-forming foam (AFFF). Section 332 of the 2018 Federal Aviation Administration (FAA) Reauthorization Act directed the FAA to

[1] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Rules-directing-our-cleanup-work/Model-Toxics-Control-Act
[2] Data provided by the Port, February 27, 2023.
[3] https://www.epa.gov/superfund/national-priorities-list-npl-sites-state#WA, accessed June 2020, May 2021, June 2023.

not require the use of fluorinated chemicals to meet the performance standards referenced in Chapter 6 of Advisory Circular (AC) 150/5210-6, Aircraft Fire Extinguishing Agents, and acceptable under Section 139.319(l) of title 14, Code of Federal Regulations (CFR). This mandate accelerated research for an alternative firefighting foam that did not contain PFAS and prompted the FAA to issue guidance intended to help reduce the existing foam's impact on the environment. Specifically, Part 139 Policy Guidance #108, Discharge of AFFF at Certificated Part 139 Airports, dated June 20, 2019, advised FAA Airport Certification Safety Inspectors to no longer require the discharge of AFFF during the timed response drill. In December 2022, Congress formally directed the FAA to develop a transition plan that would include all known legislative requirements, personnel training changes, and other operational aspects to be implemented for a certificate holder's transition to MILSPEC F3.[4] In response, the FAA developed the Federal Aviation Administration Aircraft Firefighting Foam Transition Plan in coordination with the Department of Defense, industry work groups, and the EPA to meet this directive.[5]

In 2016, the EPA published a non-enforceable health advisory on PFAS containing substances, establishing safe levels of the chemicals in drinking water at no more than 70 parts per trillion. In 2019, the EPA unveiled a formal PFAS Action Plan, outlining long- and short-term actions it plans to take concerning the chemicals, including but not limited to: developing a maximum containment level (MCL) for states and local water utilities via the Safe Drinking Water Act; listing PFAS containing substances as hazardous substances under the CERCLA; considering listing the chemicals in the Toxic Release Inventory; and developing new and better methods to detect the chemicals in drinking water, soil and groundwater. The EPA's proposed regulations established a screening level of 40 parts per trillion (ppt) to determine if PFOA and/or PFOS is present at a site and may warrant further attention and then rescinded the guidance.[6] In March 2023, the EPA proposed a legally enforceable MCL of 4 ppt for PFOA and PFOS in drinking water. The proposed regulation would require public water systems to monitor PFAS levels in drinking water, notify the public of those levels and reduce the levels if they exceed the standards.[7] This rule was finalized in April 2024. In January 2024, the EPA announced the addition of seven PFAS substances to the list of chemicals covered by the Toxics Release Inventory, consistent with the Fiscal Year 2020 National Defense Authorization Act. In April 2024, the EPA issued a rule designating PFOA and PFOS, as hazardous substances under the CERCLA. Under the rule, entities are required to immediately report releases of PFOA and PFOS that meet or exceed the reportable quantity of one pound within a 24-hour period to the National Response Center, State, Tribal, and local emergency responders.[8]

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[4] On January 6, 2023, the Department of Defense published a new fluorine-free foam (F3) military specification (MILSPEC) to comply with the requirements for the Secretary of Defense and Secretary of the Navy set forth by the National Defense Authorization Act for Fiscal Year 2020.

[5] https://www.faa.gov/sites/faa.gov/files/FAA_Aircraft_F3_Transition_Plan_2023.pdf

[6] https://www.epa.gov/pfas/interim-recommendations-addressing-groundwater-contaminated-pfoa-and-pfos#:~:text=Notice%20of%20Rescinded%20Guidance,the%20best%2C%20currently%20available%20science.

[7] EPA Website (https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas).

[8] 42 U.S.C. 9602 - Designation of additional hazardous substances and establishment of reportable released quantities; regulations, April 19, 2024.

In 2022, the WSDE published the Final PFAS Chemical Action Plan[9] that recommends actions to address PFAS contamination of the environment and the resulting potential impacts to animal and human health. Specific recommendations include providing funding, technical support, and monitoring to ensure drinking water is safe, establishing future PFAS cleanup levels for soil and groundwater, reducing PFAS in products, and understanding and managing PFAS in waste. Department of Health State Action Levels for PFAS were adopted in 2021 through revision to Chapter 246-290 WAC Group A Public Water Systems. In addition, in June 2023 the WSDE published Guidance for Investigating and Remediating PFAS Contamination in Washington State that includes preliminary cleanup levels for soil and groundwater.[10]

A review of the Port's records indicates a total of 16 areas where AFFF has been deployed for an incident, used for training purposes, stored, or identified in water sampling (see Exhibit 3-1 and Table 3-1 Sites H-59 through H-75). Because AFFF has been stored or released at each of these sites, additional sampling would be conducted to evaluate the presence of PFAS. Though there are not yet cleanup levels established for PFAS, it is recognized that this could change prior to construction. If PFAS is determined to be present at levels requiring additional action, remediation would be completed to comply with adopted state and federal regulations that are applicable at the time of construction.

[9] Per- and Polyfluoroalkyl Substances Chemical Action Plan, Hazardous Waste and Toxics Reduction Program, Washington State Department of Ecology, 2021, revised September 2022. https://apps.ecology.wa.gov/publications/documents/2104048.pdf.

[10] https://apps.ecology.wa.gov/publications/summarypages/2209058.html

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EXHIBIT 2, AREAS OF KNOWN CONTAMINATION

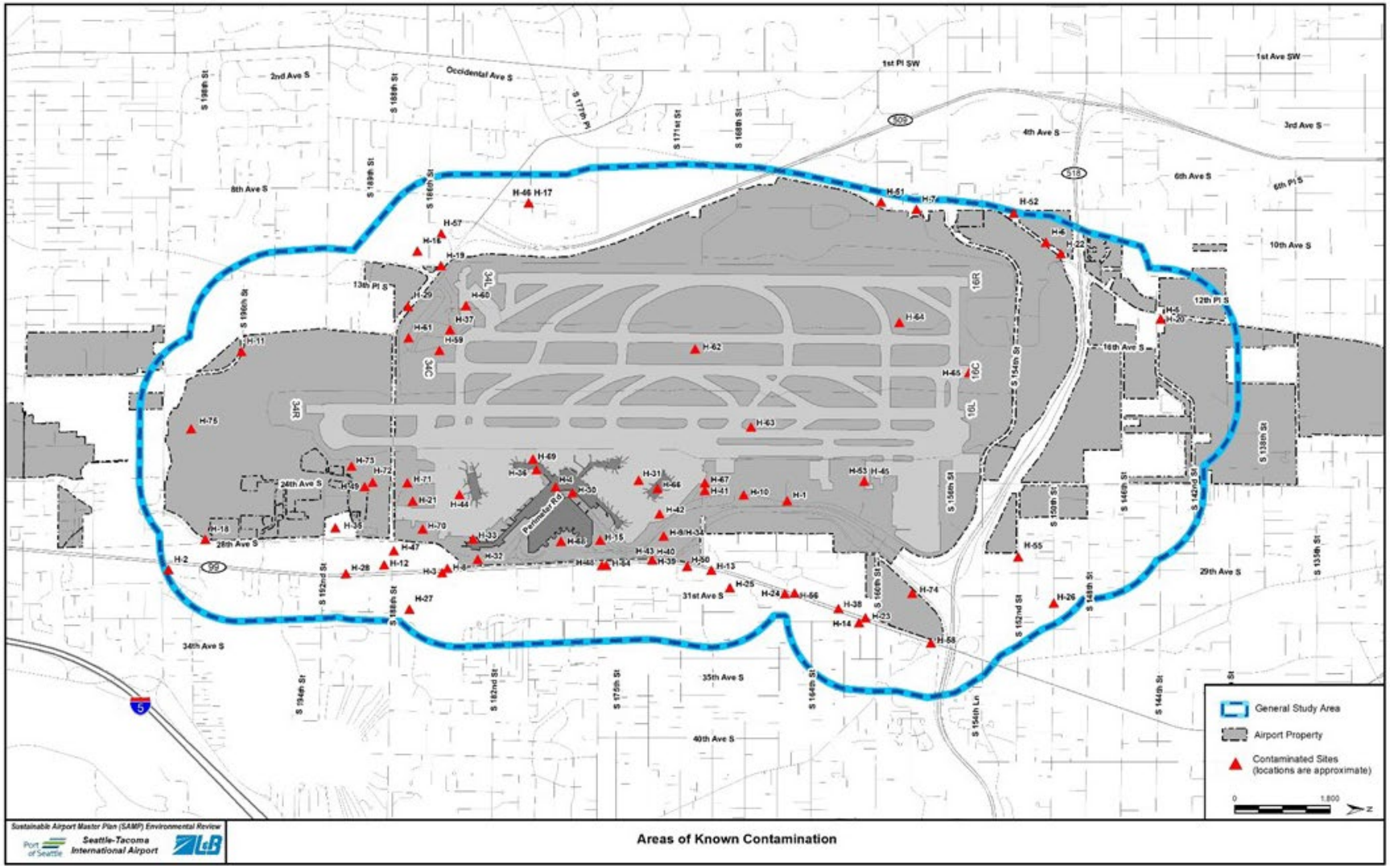

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TABLE 2: DOCUMENTED INCIDENTS OF HAZARDOUS MATERIALS CONTAMINATION

Map ID	Name	Address/Location	Site Status	Cleanup Type
H-1	**Airborne Express**	**2580 S 166th St, Seattle, Washington, 98158**	**Cleanup Started**	**Independent Action**
H-2	BP 11255	19924 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-3	Budget Rent a Car of WA & OR Pacific HWY	18445 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-4	**Budget Rent a Car of WA/OR**	**17801 International Blvd, Seattle, Washington, 98158**	**Cleanup Started**	**Independent Action**
H-5	Burien Fuel	14260 Des Moines Memorial Dr S, Seattle, Washington, 98168	Cleanup Started	Independent Action
H-6	Charley's Shell	15041 Des Moines Memorial Dr S, Seattle, Washington, 98148	Cleanup Started	Independent Action
H-7	Chevron Crombies	15804 Des Moines Memorial Dr S, Seattle, Washington, 98148	Cleanup Started	Independent Action
H-8	Chevron Station 92259	18514 Pacific Hwy S, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-9	**Continental Olympic United Fuel Farm**	**Air Cargo Rd, Seattle, Washington, 98158**	**Cleanup Completed under Participation Agreement conditions**	**Independent Action**
H-10	**Delta Air Lines Seattle**	**16745 Air Cargo Rd, Seattle, Washington, 98158**	**Cleanup Started**	**Independent Action**
H-11	Des Moines Creek Regional Detention Facility	S 196th St & 18th Ave S, Seattle, Washington, 98148	Cleanup Started	Independent Action
H-12	Exxon 73287	2841 S 188th St, Seattle, Washington, 98188	Cleanup Started	PLIA Petroleum Technical Assistance Program
H-13	Exxon 79047	16850 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-14	Gordon Tang Co Inc	16020 32nd Ave S, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-15	**Hertz Avis National Fuel Facility QTA**	**SEA**	**Cleanup Started**	**Independent Action**
H-16	Hertz Corp	18625 Des Moines Memorial Dr S, Seattle, Washington, 98148	Cleanup Started	Independent Action
H-17	Highline SD Maintenance Yard	17910 8th Ave S, Seattle, Washington, 98148	Cleanup Started	Independent Action
H-18	Highline Water District	19863 28th Ave S, Seattle, Washington, 98188	Cleanup Started	Independent Action

TABLE 2: DOCUMENTED INCIDENTS OF HAZARDOUS MATERIALS CONTAMINATION (CONTINUED)

Map ID	Name	Address/Location	Site Status	Cleanup Type
H-19	Jim's Detail Shop	98148-1919, Seattle, Washington	Cleanup Started	Independent Action
H-20	Joe's Inc.	14260 Des Moines Memorial Dr S, Seattle, Washington, 98168	Cleanup Started	Independent Action
H-21	**Lockheed Air Terminal**	**SEA**	**Cleanup Started**	**Independent Action**
H-22	**Lora Lake Apartments**	**15001 Des Moines Memorial Dr S, Seattle, Washington, 98148**	**Cleanup Completed (Port is currently monitoring)**	**WSDE supervised or conducted**
H-23	Loudon Real Estate	16015 International Blvd, Seattle, Washington, 98188	Awaiting Cleanup	Independent Action
H-24	M & M Finishers Inc	16600 Pacific Hwy S, Seattle, Washington, 98188	Cleanup Started	Voluntary Cleanup Program
H-25	Master Park	16826 International Blvd, Seattle, Washington, 98188	Awaiting Cleanup	No Process
H-26	Minchew Property	3025 S 150th St, Seattle, Washington, 98188	Awaiting Cleanup	Independent Action
H-27	Red Lion Hotel SeaTac	18740 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-28	Retail Building	19023 Pacific Hwy S, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-29	SAFCO Environmental Corp	1255 S 188th St, Seattle, Washington, 98148	Cleanup Started	Independent Action
H-30	**SEA**	**SEA**	**Cleanup Started**	**WSDE supervised or conducted**
H-31	**SEA NW Baggage Tunnel**	**SEA**	**Cleanup Started**	**Independent Action**
H-32	**SEA NW Fuel Farm**	**SEA**	**Awaiting Cleanup**	**Independent Action**
H-33	**SEA Pan Am Fuel Farm**	**SEA**	**Cleanup Started**	**Independent Action**
H-34	**SEA United Fuel Farm**	**SEA**	**N/A – See H-9**	**N/A – H-9**
H-35	Sea-Tac Alaska Airlines BLDG-1995	2651 S 192nd St, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-36	**SEA Concourse B Gate B2**	**SEA**	**Cleanup Started**	**Independent Action**
H-37	**Sea-Tac Crawford Aviation**	**SEA**	**Cleanup Started**	**Independent Action**
H-38	SeaTac Development	16025 International Blvd, Seattle, Washington, 98188	Cleanup Started	WSDE supervised or conducted
H-39	**SEA Pan Am Hangar**	**17205 Pacific Hwy S, Seattle, Washington, 98188**	**Cleanup Started**	**Independent Action**

TABLE 2: DOCUMENTED INCIDENTS OF HAZARDOUS MATERIALS CONTAMINATION (CONTINUED)

Map ID	Name	Address/Location	Site Status	Cleanup Type
H-40	**SEA Pan Am Tanks 10A-10D**	**17205 Pacific Hwy S, Seattle, Washington, 98188**	**Cleanup Started**	**Independent Action**
H-41	**SEA NW Air Bulk Fuel**	**SEA**	**Cleanup Started**	**Independent Action**
H-42	**SEA NW Airlines Front Hangar**	**SEA**	**Cleanup Started**	**Independent Action**
H-43	SEA Pan Am Av Gas Tanks	17205 Pacific Hwy S, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-44	**SEA South Satellite/NW Air**	**SEA**	**Cleanup Started**	**Independent Action**
H-45	**SEA United Tank Removal**	**2230 S 161st St, Seattle, Washington, 98158**	**Cleanup Started**	**Independent Action**
H-46	Seattle School Highline Maintenance	17910 8th Ave S, Seattle, Washington, 98148	Cleanup Started	Independent Action
H-47	Shell at Sea-Tac	2806 S 188th St, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-48	Sound Transit Parcel A1 109	17600 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-49	**Swissport Fueling**	**2350 S 190th St, Seattle, Washington, 98188**	**Cleanup Started**	**Independent Action**
H-50	Tac Sea Motel	17024 Pacific Hwy S, Seattle, Washington, 98188	Cleanup Complete-O&M/Monitoring	WSDE supervised or conducted
H-51	Willie's Texaco	15939 Des Moines Memorial Dr S, Seattle, Washington, 98148	Awaiting Cleanup	Independent Action
H-52	Tucker Upholstery	15217 Des Moines Memorial Dr S, Seattle, Washington, 98148	Cleanup Started	PLIA Petroleum Technical Assistance Program
H-53	**United Airlines Sea Tac Intl Airport**	**2230 S 161st St, Seattle, Washington, 98158**	**Closed under VCP**	**N/A**
H-54	UNOCAL 4871	17606 International Blvd, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-55	Victoria Town Homes	2805 S 152nd St, Seattle, Washington, 98188	Cleanup Started	Voluntary Cleanup Program
H-56	Washington Memorial Park	16445 Pacific Hwy S, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-57	Washington DOT Foreman A1 Towing	SR509 and 18451 12th Avenue S.	Cleanup Started	Independent Action
H-58	WSP Tukwila	15666 Pacific Hwy S, Seattle, Washington, 98188	Cleanup Started	Independent Action
H-59	**AFFF Testing and Training Location**	**Southern portion of Airfield, between Runway 34L and Runway 34 C**	**N/A**	**N/A**

TABLE 2: DOCUMENTED INCIDENTS OF HAZARDOUS MATERIALS CONTAMINATION (CONTINUED)

Map ID	Name	Address/Location	Site Status	Cleanup Type
H-60	**AFFF Testing and Training Location**	**Southern portion of Airfield, between Runway 34L and Runway 34C**	**N/A**	**N/A**
H-61	**Annual (Summer) Testing/Training**	**Southern portion of Airfield, near industrial wastewater system (IWS) Lagoon 1**	**N/A**	**N/A**
H-62	**Small Aircraft Fire/AFFF Release**	**Central Airfield near Taxiway T**	**N/A**	**N/A**
H-63	**Aircraft Engine Fire/ AFFF Release**	**Central Airfield on Taxiway B**	**N/A**	**N/A**
H-64	**Cargo Aircraft Crash/AFFF Release**	**Intersection of Taxiway E and Taxiway T**	**N/A**	**N/A**
H-65	**Grass Fire/AFFF Release**	**Northern portion of Airfield near end of Runway 16C**	**N/A**	**N/A**
H-66	**North Satellite Terminal AFFF Storage**	**North Satellite Terminal**	**N/A**	**N/A**
H-67	**Aircraft Rescue and Firefighting Station AFFF Storage and Testing/Training**	**ARFF Station**	**N/A**	**N/A**
H-68	**Small Plane Crash/AFFF Release**	**Near Main Terminal Parking Garage**	**N/A**	**N/A**
H-69	**B-Terminal Airplane Crash/AFFF Release**	**Main Terminal, Concourse B**	**N/A**	**N/A**
H-70	**AFFF in Hangar Fire Suppression System**	**Delta Airlines Hangar**	**N/A**	**N/A**
H-71	**AFFF in Hangar Fire Suppression System**	**Alaska Airlines Hangar**	**N/A**	**N/A**
H-72	**AFFF Accidental Release**	**Airport Fuel Farm**	**N/A**	**N/A**
H-73	**AFFF Storage for Fuel Farm**	**Airport Fuel Farm**	**N/A**	**N/A**
H-74	**AFFF in QTA Fire Suppression System**	**Rental Car Facility**	**N/A**	**N/A**
H-75	**Tyee Well**	**2152 S. 200th Street**	**PFAS detected at levels exceeding State Action Level**	**Well removed from service**

Notes: **Bold font** = site is located on SEA property.
N/A: Information is not available and/or not relevant
Independent actions: contamination cleanup is done independently without a legal agreement.
WSDE supervised cleanup: contamination cleanup is done under an agreed order of consent decree.

Voluntary Cleanup Program (VCP): under the Voluntary Cleanup Program, people who independently cleanup a contaminated site may request fee-based services from the WSDE, including technical assistance and written opinions on whether requirements have been met.
No Process: Sites are not under WSDE or federal oversight, not enrolled in the VCP, and where no independent action has been taken.
PLIA Petroleum Technical Assistance Program: this state program provides qualifying petroleum sites with consultation and opinion under the authority of Chapter 70A.330 RCW and the MTCA, Chapter 70A.305 RCW and Chapter 173-340 WAC (https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-900).
Source: Washington Department of Ecology, *What's in My Neighborhood Tool*. Available at https://apps.ecology.wa.gov/neighborhood/, accessed February 2023. WSDE data was supplemented with current Port of Seattle data where applicable.
* https://doh.wa.gov/data-and-statistical-reports/washington-tracking-network-wtn/pfas/dashboard, accessed February 11, 2024.

3.1.1 Recycling

SEA's Waste Reduction and Recycling Program manages services, provides outreach, and coordinates with SEA staff, tenants, and business partners to reduce solid waste generation and minimize contributions to landfills. The program provides waste diversion services, with recycling bins placed in concourses, at security checkpoints, and in food court areas, and other remote or SEA support facilities. As part of this program, food and beverage and retail businesses recycle and compost a wide range of pre-consumer materials, and airlines recycle deplaned waste.

The Port's goal is to recycle 60 percent of the solid waste generated at the terminal. In 2022, a total of 3,532 tons of terminal waste was either recycled, composted, converted, or diverted from landfills by other means, accounting for approximately 44 percent of the total waste generated.

The Port has also established construction waste management requirements, which require construction contractors to prepare a Waste Management Plan and Waste Management Final Report.[11] The primary goal of these requirements is to divert waste from landfills through salvage, reuse, or recycling. The Port's current goal is to divert 90 percent of construction debris from landfills.

3.1.2 Pollution Prevention

Pollution prevention describes methods used to avoid, prevent, or reduce pollutant discharges or emissions through strategies such as using fewer toxic inputs, redesigning products, altering manufacturing and maintenance processes, and conserving energy. The Port has established several processes to address pollution prevention to reduce the risk of pollutant transport should discharges or emissions occur during the operation of SEA, or construction of any new facilities. These include:

- Stormwater Pollution Prevention Plan (SWPPP): The purpose of the SWPPP is to ensure compliance with the terms and conditions of the existing National Pollutant Discharge Elimination System (NPDES) permit by identifying potential sources of pollution and practices used to minimize and control pollutant discharges.
- Spill Prevention, Control and Countermeasure (SPCC) Plan: The purpose of the SPCC plan is to ensure that proper containment and precautions are provided to prevent the discharge of oil and hazardous substances from Airport facilities to navigable waters of the United States. In addition, the SPCC plan describes emergency procedures to prevent the migration of oil or hazardous

[11] SEA 2019 Construction General Requirements, Section 01 74 19 – Construction Waste Management.

substances spills to navigable waters and provides the notification procedures if an oil or hazardous substances spill contaminates navigable waters.

- Dangerous Waste Contingency (DWC) Plan: The DWC Plan incorporates RCRA dangerous waste requirements into the SPCC plan, that provide for 90/180-day temporary storage of dangerous wastes such as solvent-based paints and thinners, pesticides, used oil, lab packs, polychlorinated biphenyls (PCB) ballasts, universal waste, certain security related confiscated hazardous materials, and other miscellaneous. off-spec products designated for disposal.

4. Potential Impacts

4.1 Alternative 1: No Action

The No Action Alternative is not anticipated to result in new impacts to/from hazardous materials.

4.2 Alternative 2: Proposed Action

The Action Alternatives would utilize construction equipment containing hazardous substances such as oil, fuel, solvents, batteries, or other similar products. The Port would require contractors to follow Master Specification Section 01 57 23 – Pollution Prevention, Planning and Execution which specifies construction equipment must be kept in good order and any spills or broken equipment would be immediately addressed. This Specification would also be followed to minimize contamination and address spills.

The Proposed Action would require construction and site preparation activities within areas of documented contamination. Eleven documented incidents of hazardous materials contamination are located within the limits of disturbance of one or more elements of the Proposed Action. The sites are in **Table 3** below and depicted on **Exhibit 2.**

TABLE 3: DOCUMENTED INCIDENTS OF HAZARDOUS MATERIALS CONTAMINATION WITHIN THE LIMITS OF DISTURBANCE

Map ID	Name	Cleanup Site ID	Address	Site Status	Project that Would Impact the Site:
H-9	Continental Olympic United Fuel Farm	1917	17200 Air Cargo Rd, Seattle, Washington, 98158	Completed under Participation Agreement Conditions	A09: Hardstand (Central)
H-15	Hertz Avis National Fuel Facility QTA	9588	Sea-Tac International Airport	Cleanup Started	L04: Northeast Ground Transportation Center
H-34	Sea-Tac United Fuel Farm	1918	Sea-Tac International Airport	See H-9	A09: Hardstand (Central)
H-45	Sea-Tac United Tank Removal	7191	2230 S 161st St, Seattle, Washington, 98158 (Building 161A – TBR)	Cleanup Started	A08: Hardstand (North) S04: Fuel Rack Relocation
H-49	Swissport Fueling	12270	2350 S 190th St, Seattle, Washington, 98188	Cleanup Started	S01: Fuel Farm Expansion

TABLE 3: DOCUMENTED INCIDENTS OF HAZARDOUS MATERIALS CONTAMINATION WITHIN THE LIMITS OF DISTURBANCE (CONTINUED)

Map ID	Name	Cleanup Site ID	Address	Site Status	Project that Would Impact the Site:
H-53	United Airlines Sea Tac International Airport	7040	2230 S 161st St, Seattle, Washington, 98158 (Building 161A – TBR)	Closed under VCP	A08: Hardstand (North) S04: Fuel Rack Relocation
H-60	AFFF Testing and Training Location	N/A	Southern portion of Airfield, between Runway 34L and Runway 34C	N/A	S02: Primary ARFF
H-63	Aircraft Engine Fire/ AFFF Release	N/A	Central Airfield on Taxiway B	N/A	A04: Taxiway B 500-foot Separation
H-67	Aircraft Rescue and Firefighting Station AFFF Storage and Testing/Training	N/A	ARFF Station	N/A	T01: North Gates
H-72	AFFF Accidental Release	N/A	Airport Fuel Farm	N/A	S01: Fuel Farm Expansion
H-73	AFFF Storage for Fuel Farm	N/A	Airport Fuel Farm	N/A	S01: Fuel Farm Expansion

Source: Washington Department of Ecology, *What's In My Neighborhood Tool*, accessed February 2023 (https://apps.ecology.wa.gov/neighborhood/). WSDE data was supplemented with current, Port of Seattle data where applicable.

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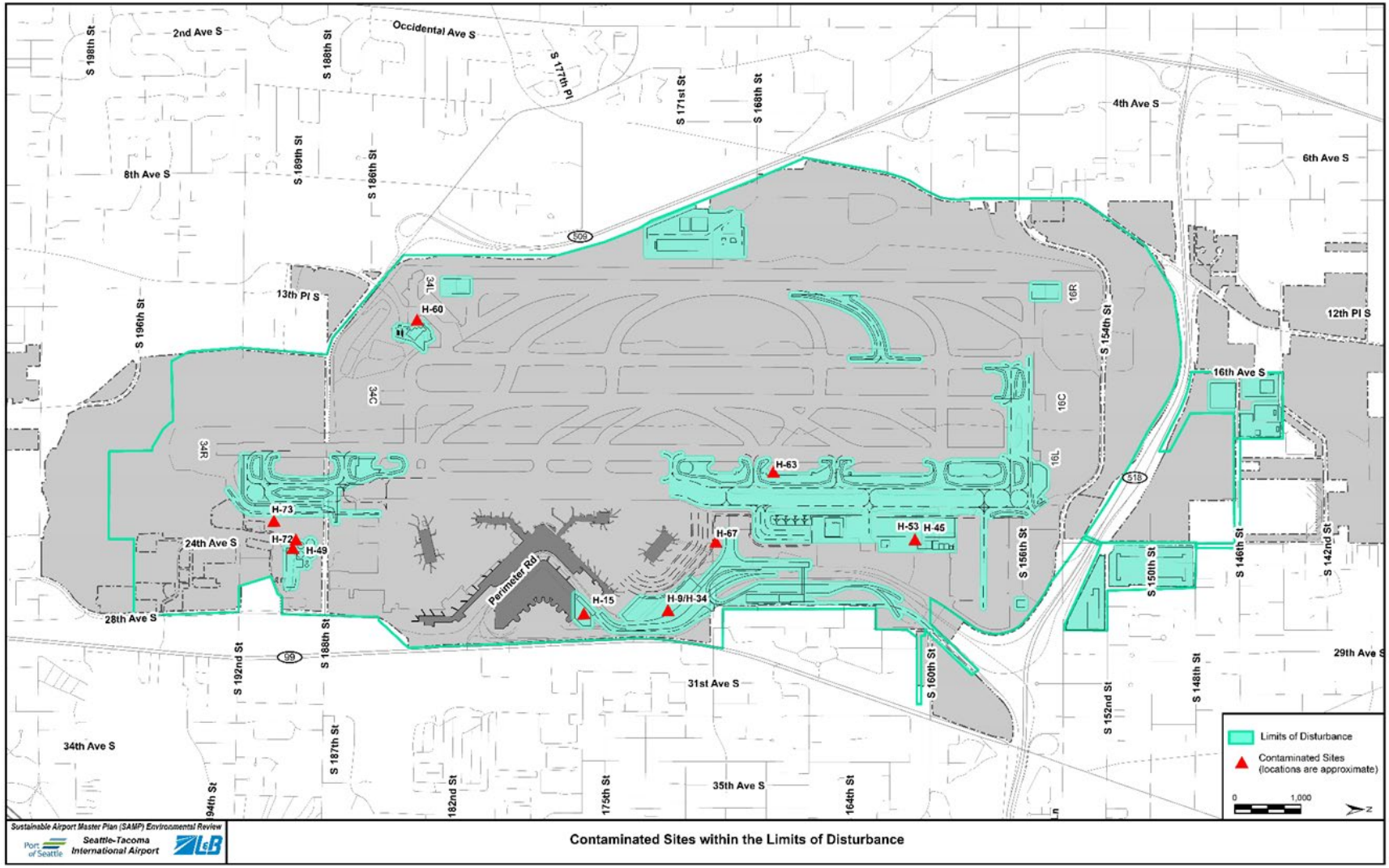
EXHIBIT 3, CONTAMINATED SITES WITHIN THE LIMITS OF DISTURBANCE



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4.2.1 Documented Sites

The Port collects information on potential hazardous materials sites on Airport property. These reports provided additional information about each site. The relevant information is provided below and where appropriate in attachments to this technical report:

- **Site H-9 - Continental Olympic United Fuel Farm and Site H-34 - Sea-Tac United Fuel Farm:** These sites are located in the northeastern portion of the Airport in a now vacant parcel along Air Cargo Road. Site H-9 was utilized as a fuel farm area until 2007 when it was closed. All Underground Storage Tanks (USTs), associated equipment, and fuel metering stations associated with the former site have been removed. The former underground fuel lines have also been abandoned and capped. From 1988 through 2010, numerous subsurface investigations were conducted at Site H-9 to assess the environmental conditions and delineate the extent of contamination.[12] In 2010 the site was entered into the WSDE's VCP to obtain an opinion regarding a Soil and Groundwater Remedial Action Work Plan. As part of this work plan an air sparging and soil vapor extraction (AS/SVE) remediation system was installed at the site in 2011. This SVE system extracts petroleum vapors from the soil above the water table by applying a vacuum to pull the vapors out. Air sparging pumps fresh air underground to extract vapors from groundwater and wet soil beneath the water table. In 2014, soil sampling at the site concluded that contaminant levels were below levels requiring cleanup. The site was withdrawn from the VCP in 2022, and site remediation is now done as an independent action completed by United Airlines, Olympic Pipeline, and the Port under the conditions of a participation agreement.

  Site H-34 - Sea-Tac United Fuel Farm identified in WSDE's public records, is associated with UST closure of select tanks from within the United Fuel Farm. This site involved the confirmed release of unspecified petroleum products and the suspected release of halogenated organics, non-halogenated solvents, metal priority pollutants, and PCBs. The releases were discovered in 1993. The fuel farm remained in operation until 2006. Cleanup conducted for Site H-9 includes the area of the former UST removal identified by WSDE's records as Site H-34.

  The Proposed Action, specifically project A09 – Hardstand (Central), would require excavation and/or site improvement in this area. The extent of contamination remaining at the Site is well defined, and limited in shallow soil and groundwater, however, all material excavated from within the project area or groundwater encountered during construction activities would be screened and/or tested prior to disposal. Any material found to be contaminated would either be removed and disposed of in accordance with federal, state, and local requirements, encapsulated on-site to remove any human health or environmental exposure risk, or remediated below established cleanup levels. Adherence to the Port's Construction Safety Manual (which outlines contractor safety responsibilities, handling requirements, and response protocols) and multiple construction-specific Master Specifications that control environmental contamination handling to prevent exposure and migration include Environmental Regulatory Requirements (Section 013543), Temporary Erosion and Sedimentation Controls (Section 0157713), Pollution Prevention (Section 015723), and Contaminated Soil Handling (Section 026113). Adhering to these specifications require preparation of a Temporary Erosion and Sediment Control Plan (e.g., silt fences, catch basin filters, etc.), labelling, storage and spill response procedures (e.g., secondary containment, restriction on chemicals/products in certain areas, etc.), and BMPs for handing contaminated

[12] See Attachment 1: Request for Ecology's Opinion Regarding Completed Remedial Action, Former Continental-Olympic-United Fuel Farm Area, 2019 (SLR).

materials (e.g., segregation of contaminated materials, stockpile management/controls, etc.). Given these precautions, no significant impacts to, or from, Site H-9 or Site H-34 are anticipated as a result of the Proposed Action.

- **Site H-15 - Hertz Avis National Fuel Facility QTA:** This site was located at the northern end of the main parking garage and was used by multiple companies for fueling and washing of rental car fleets until 2012. The facility was equipped with five, 12,000-gallon double-contained, fiberglass USTs that were located at the northeastern corner of the facility, nine fuel dispensing islands with two dispensers per island, and approximately 750-linear feet of trenching containing product and vapor recovery piping. Groundwater sampling conducted in 2004[13] identified gasoline-contaminated soil and/or groundwater at two of the nine pump islands and in the immediate vicinity of the five 12,000-gallon USTs. Because contaminant levels of total petroleum hydrocarbons and BTEX (benzene, toluene, ethylbenzene, and xylene) were above the WSDE's MTCA cleanup levels, the findings were reported to WSDE, and remediation activities ensued. Site remediation activities included the installation of an AS/SVE remediation system. The AS/SVE system began operation in August 2017 and is still in operation.

  The Proposed Action, specifically project L04 – Northeast Ground Transportation Center (NE GTC), would require excavation and/or site improvement in this area. Due to the known presence of contamination, all material excavated from within this project area would be screened and tested as appropriate prior to disposal. Any material found to be contaminated and requiring removal would be removed and disposed of in accordance with federal, state, and local requirements, encapsulated on-site to remove any human health or environmental exposure risk, or remediated below established cleanup levels. Because of the ongoing mitigation activities, development at this site would be designed to avoid the AS/SVE system infrastructure; or equivalent mitigation systems would be installed in their place. Adherence to the Port's Construction Safety Manual and Construction General Requirements (as previously described) would further minimize any risk of exposure to, or release of contaminated materials. Given these precautions, no significant impacts to, or from, Site H-15 are anticipated as a result of the Proposed Action.

- **Site H-45 – Sea-Tac United Tank Removal and Site H-53 – United Airlines Sea-Tac International Airport:** This site involved multiple incidents at the United Airlines GSE maintenance facility. Site H-45 involved a leaking UST in 2006 that resulted in the release of benzene and petroleum diesel fuel. Additional details on the extent of Site H-45 contamination are not available, however there has been no documented action regarding this incident since 2007. Site H-53 involved a release of hydraulic fluid from a subsurface line serving a hydraulic vehicle lift, discovered in 2009. The duration and total volume of the leak is unknown. In response to this leak, approximately five cubic feet of contaminated soil was removed to a depth of three feet below ground surface. An estimated 50 cubic yards of soil with concentrations above cleanup levels were left in place due to the proximity of structural footings of the building and underground infrastructure. After an additional assessment of potential contaminant migration was conducted, and a long-term Operations and Maintenance Plan was developed for the Site, a No Further Action determination was made by WSDE in 2021. Institutional Controls are required for this site to protect from future exposure to contamination remaining on-site.[14]

[13] See Attachment 2: QTA Environmental Baseline Investigation Report, 2004 (Landau Associates).
[14] See Attachment 3: Washington Department of Ecology No Further Action Opinion (2021).

The Proposed Action (specifically the hardstands-north and fuel rack relocation projects A08 and S04) would require excavation and/or site improvement in this area and would involve demolition of the affected building. Due to the past presence of contamination, all material excavated from within these project areas would be screened and tested as appropriate prior to disposal. Any material found to be contaminated would either be removed and disposed of in accordance with federal, state, and local requirements, encapsulated on-site to remove any human health or environmental exposure risk, or remediated below established cleanup levels. Actions would also require compliance with the Institutional Controls in place for the property to ensure control of potential exposures during and following construction. Adherence to the Port's Construction Safety Manual and Construction General Requirements (as previously described) would further minimize any risk of exposure to, or release of contaminated materials. Given these precautions, no significant impacts to, or from, Sites H-45 and H-53 are anticipated as a result of the Proposed Action.

- **Site H-49 – Swissport Fueling:** This site is located at the existing Airport fuel farm and involved an estimated 1,000-gallon spill of jet fuel due to a faulty valve on one of the tanks.[15] The spill was discovered in 2010. In response to this spill, Swissport excavated all impacted soil to the maximum extent practicable, resulting in the removal of approximately 83 percent of the released fuel.

  The Proposed Action, specifically project S01 – Fuel Farm Expansion, would require excavation and/or site improvement in this area. Due to the known presence of contamination, all material excavated from within the project area would be screened and tested as appropriate prior to disposal. Any material found to be contaminated would be removed and disposed of in accordance with federal, state, and local requirements, encapsulated on-site to remove any human health or environmental exposure risk, or remediated below established cleanup levels. Adherence to the Port's Construction Safety Manual and Construction General Requirements (as previously described) would further minimize any risk of exposure to, or release of contaminated materials. Given these precautions, no significant impacts to, or from Site H-49 are anticipated as a result of the Proposed Action.

- **Sites H-60, H-63, H-67, H-72, and H-73:** These sites are areas where PFAS have been either released or stored. These areas therefore have the potential for PFAS to be present in the soil at these sites, or the grounds surrounding these sites. All material excavated from within these areas would be tested prior to disposal. Construction occurring on or near these sites would follow enacted local, state, and federal guidelines for cleanup and disposal in place at the time construction starts. On April 10, 2024, EPA announced the final National Primary Drinking Water Regulation for six PFAS, including a legally enforceable MCL of 4 ppt for PFOA and PFOS in drinking water. The regulation requires public water systems to monitor PFAS levels in drinking water, notify the public of those levels and reduce the levels if they exceed the standards. The Port would work with the WSDE and the Highline Water District to monitor PFAS levels in drinking water to ensure that the Proposed Action would not result in any exceedances of PFAS levels. Washington State currently regulates PFAS under the persistent waste criteria.[16] Adherence to the Port's Construction Safety Manual and Construction General Requirements (as previously described) would further minimize any risk of exposure to, or release of contaminated materials. Given these precautions, no significant impacts to, or from these sites are anticipated as a result of the Proposed Action.

[15] See Attachment 4: Washington Department of Ecology Initial Investigation Field Report, September 2011.
[16] WAC,173-303-100(6)(d), https://app.leg.wa.gov/wac/default.aspx?cite=173-303-100.

If any unanticipated hazardous materials, waste, or contaminated soils are encountered during construction the discovery would immediately be brought to the attention of the Port's Project Manager for determination of appropriate action. The contractor would be prohibited from disturbing such hazardous materials or contaminated soils until directed by the Project Manager. Soils determined to be contaminated and requiring removal would be hauled and disposed of as contaminated materials, in accordance with federal, state, and local requirements, including, but not limited to:

- Management of Hazardous Waste (49 United States Code [U.S.C.] § 260-280)
- Transportation of Hazardous Waste (49 U.S.C. § 171-199)
- The Model Toxics Control Act (Revised Code of Washington [RCW] 70.105D.010)
- Dangerous Waste Regulations (Washington Administrative Code [WAC] 173-303)

4.2.2 Buildings to be Demolished

The Proposed Action also requires the demolition of 12 existing buildings:

- Building 160D, Gourmet Flight Kitchen;
- Building 161A, United Airlines Maintenance;
- Building 161E, Cargo 4E;
- Building 161G, Port Maintenance Building;
- Building 166B, United Airlines Maintenance/Cargo 4S;
- Building 167A/167B, Cargo 6 Swissport;
- Building 170A, Aircraft Rescue and Firefighting Facility (ARFF);
- Building 170B, Doug Fox Payment Building;
- Building 170C, Doug Fox Office;
- Building 170D, Guard Shack;
- Building 170W, Port Westside Field Offices; and
- Building 188WB, PACCAR Building.

Given the age of these structures (except for Buildings 170B,170C, and 170D which were constructed in 2014, 2014, and 2006, respectively), each has the potential to contain regulated building materials including but not limited to asbestos-containing materials (ACM) (commonly found in floor and ceiling tiles, and insulation), lead paint, and mercury (commonly found in fluorescent light tubes and thermostats). Potential hazardous materials (if present) are noted for each of the 12 buildings:

- **Building 160D: Gourmet Flight Kitchen:** Building 160D is a single-story office building/warehouse that was constructed in the mid-late 1970s. No hazardous materials surveys have been conducted at this site; however, given the age of the structure it can be assumed that ACM, lead, and/or mercury are present, to some extent. Although hazardous materials are assumed present in this building, adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any exposure to, or release of these materials. In consideration of these safety measures, no significant impacts to, or from Building 160D are anticipated as a result of the Proposed Action.
- **Building 161A: United Airlines Maintenance:** Building 161A is a multi-story building with attached vehicle service bays. The building was constructed in 1990. A survey was conducted in November

of 2019[17] to identify the presence of regulated building materials. The survey analyzed 23 samples of suspect ACM and concluded that none of the samples contained greater than one percent asbestos. Five paint chip samples were collected and analyzed for total lead content, none of which were found to contain detectable levels of lead. Because no hazardous materials have been identified in this building, no significant impacts to, or from Building 161A are anticipated as a result of the Proposed Action. Should any unknown hazardous materials be encountered, adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any exposure to, or release of these materials.

- **Building 161E, Cargo 4E:** Building 161E is a two-story office/cargo building that was built in 1983. No hazardous materials surveys have been conducted at this site; however, given the age of the structure, it can be assumed that ACM, lead, and/or mercury may be present, to some extent. Although hazardous materials are assumed present in this building, adherence to the Port's Construction Safety Manual and Construction General Requirements (as previously described) would minimize any exposure to, or release of these materials. In consideration of these safety measures, no significant impacts to, or from Building 161E are anticipated as a result of the Proposed Action.
- **Building 161G: Port Maintenance:** Building 161G is a two-story office building with attached warehouse that was built in the late 1960s or early 1970s. No hazardous materials surveys have been conducted at this site; however, given the age of the structure, it can be assumed that ACM, lead, and/or mercury are present, to some extent. Although hazardous materials are assumed present in this building, adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any exposure to, or release of these materials. In consideration of these safety measures, no significant impacts to, or from Building 161G are anticipated as a result of the Proposed Action.
- **Building 166B, United Airline Maintenance/Cargo 4S:** Building 166B is a two-story office/cargo building that was built in 1969. No hazardous materials surveys have been conducted at this site; however, given the age of the structure, it can be assumed that ACM, lead, and/or mercury may be present, to some extent. Although hazardous materials are assumed present in this building, adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any exposure to, or release of these materials. In consideration of these safety measures, no significant impacts to, or from Building 166B are anticipated as a result of the Proposed Action.
- **Building 167A/167B: Cargo 6 Swissport:** Building 167A is a combination office building and warehouse that was constructed in 1977, with an addition that was built in 2000.[18,19] Two surveys were conducted in 2019 to identify the presence of regulated building materials. Survey #1 detected the presence of ACM in two of 54 samples taken. One additional sample was presumed to contain ACM. Detectable levels of lead were also detected in four of eight paint chip samples. Mercury-containing fluorescent light tubes, PCB-containing light ballasts, and high-intensity discharge (HID) lamps were also identified, which would be removed and recycled/disposed of prior to demolition.

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[17] See Attachment 8: Asbestos and Lead Survey, United Airlines Maintenance Building, December 12, 2019 (Terracon Consultants, Inc.).
[18] See Attachment 6: Regulated Building Materials Assessment Report, Building 167A; September 24, 2019 (AECOM).
[19] See Attachment 7: Regulated Building Materials Assessment Report, Building 167B; September 25, 2019 (AECOM).

Survey #2 detected no ACM in any of the 36 samples taken. One additional sample was presumed to contain ACM. Detectable levels of lead were also detected in one of six paint chip samples. Mercury-containing fluorescent light tubes, PCB-containing light ballasts, and HID lamps were also identified, which would be removed and recycled/disposed of prior to demolition. Although hazardous materials have been identified in this building, adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any exposure to, or release of these materials. In consideration of these safety measures, no significant impacts to, or from Building 167A are anticipated as a result of the Proposed Action.

- **Building 170A: ARFF:** Building 170A houses the Airport's Fire Department offices and includes fire engine bays on the southwest side of the building. The building was constructed in 1978. A survey was conducted in June of 2019[20] to identify the presence of regulated building materials. Results of the survey confirmed the presence of ACM in three of 77 samples taken. Two additional samples were presumed to contain ACM. Detectable levels of lead were also detected in nine of 18 paint chip samples. Mercury-containing fluorescent light tubes were also identified. Although hazardous materials have been identified in this building, adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any exposure to, or release of these materials. In consideration of these safety measures, no significant impacts to, or from Building 170A are anticipated as a result of the Proposed Action.
- **Building 170B, Doug Fox Payment Building:** Building 170B is a one-story building structure that includes enclosed payment booths, and canopy covering the entrance and exist lanes for the parking lot. This structure was built in 2014. No hazardous materials surveys have been conducted at this site; however, given the age of the structure, it can be assumed that no ACM, lead, and/or mercury are present. Adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any exposure to, or release of unknown hazardous or regulated materials. In consideration of these safety measures, no significant impacts to, or from Building 170B are anticipated as a result of the Proposed Action.
- **Building 170C, Doug Fox Office:** Building 170C is a one-story office building that was built in 2014. No hazardous materials surveys have been conducted at this site; however, given the age of the structure, it can be assumed that no ACM, lead, and/or mercury are present. Adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any exposure to, or release of unknown hazardous or regulated materials. In consideration of these safety measures, no significant impacts to, or from Building 170C are anticipated as a result of the Proposed Action.
- **Building 170D, Guard Shack:** Building 170D is a small one-story building structure that includes enclosed office space for Airport security guards controlling vehicle access to the secure portion of the Airport. This structure was built in 2006. No hazardous materials surveys have been conducted at this site; however, given the age of the structure, it can be assumed that no ACM, lead, and/or mercury are present. Adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any exposure to, or release of unknown hazardous or regulated materials. In consideration of these safety measures, no significant impacts to, or from Building 170D are anticipated as a result of the Proposed Action.

[20] See Attachment 5: Regulated Building Materials Assessment Report, POS Fire Department Station House; June 26, 2019 (AECOM).

- **Building 170W: Port Westside Offices:** Building 170W is a single-story office building constructed in the late 1990s to early 2000s. A survey was conducted in January of 2015[21] to identify the presence of regulated building materials. The survey analyzed 44 samples of suspect ACM and concluded that none of the samples contained greater than one percent asbestos. Eight paint chip samples were collected and analyzed for total lead content, three of which were found to contain detectable levels of lead. None of the existing thermostats in the building were suspected to contain mercury. Although hazardous materials have been identified in this building, adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any exposure to, or release of these materials. In consideration of these safety measures, no significant impacts to, or from Building 170W are anticipated as a result of the Proposed Action.
- **Building 188WB – PACCAR Building:** Building 188WB is a corporate aircraft hangar that was built in the late 1990s or early 2000s. This is a leased facility to which the Port does not currently have access; therefore, no hazardous materials surveys have been conducted. Regulated materials surveys would be conducted at this site once it is acquired by the Port and before any demolition activities would be started. Although the presence of hazardous materials is unknown in this building, adherence to the Port's Construction Safety Manual and Construction General Requirements would minimize any potential exposure to, or release hazardous materials should they be present. In consideration of these safety measures, no significant impacts to, or from Building 188WB are anticipated as a result of the Proposed Action.

4.2.3 Pollution Prevention

Because the Proposed Action would involve the expansion of Airport's Fuel Farm, to accommodate increased fuel demand, containment for additional tanks would be provided in accordance with the SPCC regulation per 40 CFR Part 112. This would help prevent potential spills from spreading outside of the fuel farm area. The SPCC plan requires a professional Engineer's review and certification. In addition to the SPCC regulation, the Port's SWPPP requires implementation of BMPs that are necessary for the facility to eliminate or reduce stormwater contaminants.[22] Example of BMPs include each tenant adhering to SEA procedures for spill containment and control, storage and handling of hazardous materials, and how vehicle maintenance and cleaning occurs. This also includes monthly and quarterly audits by Port staff to ensure compliance with the SPCC regulation. The DWC requires each tenant follow BMPs that include outdoor handing, storage, and disposal of waste and materials. These include spill containment requirements, how to safety store, and dispose of materials.

4.3 Alternative 3: Hybrid Terminal Alternative

The Hybrid Terminal Option would have the same impacts as the Proposed Action because the only differences in the two alternatives would be related to the location of passenger loading bridges and aircraft hardstands. No additional sites of known contamination would be impacted under this alternative versus the Proposed Action. The overall footprint of construction would be similar to the Proposed Action, and the number of proposed building demolitions would be the same.

[21] See Attachment 9: Targeted Regulated Building Assessment Report, February 9, 2015 (ARGUS Pacific).
[22] Sea-Tac Airport SWPPP, Operational Source Control BMP 1.0 – General Industrial Activities

Attachment 1:

Request for Ecology's Opinion Regarding Completed Remedial Action,
Former Continental-Olympic-United Fuel Farm Area, 2019 (SLR)
(Letter Only)

March 13, 2019
Project 101.00215.00003

Mr. Roger Nye
Washington Department of Ecology
3190 - 160th Avenue SE
Bellevue, Washington 98008

Re: Request for Ecology's Opinion Regarding Completed Remedial Action, Former Continental-Olympic-United Fuel Farm Area, Facility/Site # 2294, VCP# NW2300, SeaTac International Airport

Dear Mr. Nye:

On behalf of the Continental-Olympic-United Fuel Facility Environmental Committee (FFEC), SLR International Corporation (SLR) is requesting that the Department of Ecology (Ecology) evaluate the results of the remedial actions that have been conducted at the above-referenced site, review the attached institutional controls documents from the Port of Seattle (Port) that would minimize the potential risks associated with the limited remaining impacted soil and groundwater at the site, and provide an opinion regarding the implementation of the proposed institutional controls to obtain a "no further action" status for the site. A completed Voluntary Cleanup Program (VCP) Request for Opinion form is attached.

This letter summarizes the current environmental conditions, discusses the potential risks associated with the remaining petroleum-impacted soil and groundwater, and presents a substantial and disproportionate cost analysis that justifies the use of institutional controls for the site. The attached institutional controls documents meet the required alternative to restrictive covenants, in accordance with WAC 173-340-440(8)(b).

The FFEC currently consists of United Airlines, Inc. (United), Olympic Pipe Line Company (Olympic), and the Port. The FFEC's lead contact (project manager) is Ms. Christine Landmeier of United, and their local contact is Mr. Don Robbins of the Port. Because the project manager for the FFEC has changed since the last VCP communication in 2016, a completed Change of Contact Form is attached.

DESCRIPTION OF FORMER FUEL FARM AREA

The former Continental-Olympic-United fuel farm area (former fuel farm area) is located in the northeastern part of the airport, outside of the Aircraft Operations and Maintenance Area (AOMA; see Figure 1). The former fuel farm area is a vacant parcel that was previously occupied by: 1) the United fuel farm located in the central and southeastern parts of the area, 2) the Port pipeline fuel metering station (previously owned and operated by Olympic) located in the north-central part of the area, and 3) the Continental Airlines (Continental) fuel farm located in the northwestern part of the area (see Figure 2). All of

the underground storage tanks (USTs) and associated equipment, as well as the pipeline fuel metering station, have been removed, and the underground fuel lines have been abandoned and capped [Burns & McDonnell Waste Consultants, Inc. (Burns & McDonnell, 1993b); Burns & McDonnell, 2007; ENSR Consulting and Engineering (ENSR), 1992; and SLR, 2012b].

INVESTIGATION AND REMEDIATION ACTIVITIES – 1988 THROUGH 2010

From 1988 through 2010, numerous subsurface investigations were conducted at the former fuel farm area to assess the environmental conditions, to identify the sources of the contamination, and to delineate the lateral and vertical extents of the petroleum hydrocarbon-impacted soil and groundwater (including Jet A fuel free product) [Rittenhouse-Zeman & Associates, Inc. (RZA), 1988a; RZA, 1988b; Burns & McDonnell, 1989; Burns & McDonnell, 1992; Burns & McDonnell, 1993a; Burns & McDonnell, 1993b; Burns & McDonnell, 1993c; Burns & McDonnell, 1994; ENSR, 1994; Burns & McDonnell, 1996; Burns & McDonnell, 2000a; Friedman & Bruya, Inc. 2001; Enviro-Sciences, Inc. (ESI), 2001; ESI, 2002; Maul Foster & Alongi, Inc. (MFA), 2003a; GeoEngineers, Inc. (GeoEngineers), 2003; SLR, 2006b; Burns & McDonnell, 2007; and SLR, 2011a]. Prior to 2011, several remedial actions [including product extraction, bioventing (air sparging), soil vapor extraction (SVE), and soil excavations] were completed to remediate the source areas and to recover the free product (Burns & McDonnell, 1998; Burns & McDonnell, 2000b; and Burns & McDonnell, 2007). The locations of the previous soil excavations, product recovery wells, SVE points, and air sparging points are shown on Figure 2.

The shallow soil beneath the former fuel farm area consists of densely compacted fill materials (primarily sands, silts, and gravels) that are up to 30 feet thick. There are three laterally discontinuous perched groundwater zones (shallow, intermediate-depth, and deep) within the fill unit beneath the former fuel farm area and Jet A fuel free product is present on the intermediate-depth perched groundwater table and the deep perched groundwater table. The approximate lateral extents of the intermediate-depth and deep perched groundwater zones are shown on Figure 3. The shallowest aquifer (the Qva aquifer) beneath the airport area occurs at a depth of over 30 feet below the fill unit at the former fuel farm area.

In April 2010, there were three areas of free product at the site (see Figure 3). The areas of product occurred in the northwestern, central, and southeastern parts of the former fuel farm area and extended to the east, beyond the neighboring Air Cargo Road. In the intermediate-depth and deep perched groundwater zones, which are hydraulically connected, petroleum hydrocarbon concentrations greater than the Model Toxics Control Act (MTCA) Method A cleanup levels occurred near the areas of free product and extended up to 200 feet to the east-southeast of the former fuel farm area in January 2011 (see Figure 3). Groundwater compliance wells (MW-49, MW-50, and MW-51) located hydraulically downgradient (east-southeast) of the product areas have been used to verify

that the hydrocarbon-impacted groundwater is not migrating beyond the airport property line. Prior to the remedial actions described above, the previous investigation results showed that petroleum hydrocarbon concentrations greater than the Method A cleanup levels occurred in the soil beneath the former fuel farm area to depths of approximately 24 feet below ground surface (bgs).

REMEDIAL ACTION AFTER 2010

In 2010, the FFEC entered into the Voluntary Cleanup Program (VCP) to obtain Ecology's opinion regarding a Soil and Groundwater Remedial Action Work Plan (Remedial Action Work Plan; SLR, 2010). The results of the VCP review were discussed in a meeting that included Russ Olsen and Roger Nye of Ecology, Paul Agid of the Port, and Mike Staton of SLR. During the meeting, Ecology verbally stated that the remedial approach described in the Remedial Action Work Plan seemed reasonable. Based on a request by the FFEC, Ecology did not issue an opinion letter.

In accordance with the Remedial Action Work Plan, a dual-phase extraction (DPE) system was installed at the site, and the system was initially activated in February 2011. The system operated continuously through January 2012. Beginning in June 2012, the system was operated seasonally each year (during the summer and fall months when perched groundwater elevations were relatively low) through December 2015 (SLR, 2012b; SLR, 2013b; SLR, 2014b; SLR, 2015b; SLR, 2016b). The intermediate-depth and deep perched groundwater tables typically fluctuated by approximately 4 to 6 feet during each year, and the product-bearing zone was at least partially submerged during the periods of higher water level conditions.

The DPE system initially consisted of two, 7.5-horsepower rotary claw vacuum pumps that were plumbed to 11 DPE points located within the three areas of free product. To more effectively recover the remaining areas of free product, the system was expanded in September 2012 to include five additional existing wells or piezometers (MW-42, MW-43, MW-48, PZ-2, and PZ-4) that were screened in the intermediate-depth or deep perched groundwater zones. In July 2015, the DPE system was expanded to include intermediate-depth perched groundwater monitoring well MW-46. The locations of the DPE points are shown on Figure 4.

In 2014, confirmation soil sampling was conducted in accordance with the Remedial Action Work Plan to assess the current petroleum hydrocarbon concentrations at the locations that previously contained elevated TPH as Jet A or TPH as gasoline concentrations at depths of less than 15 feet bgs. The results of the soil sampling in 2014 (and in 2015 when four groundwater monitoring wells were installed) concluded that the DPE system has effectively reduced the petroleum hydrocarbon concentrations to less than the MTCA Method A cleanup levels at almost all of the known areas of impacted soil that occurred at depths of less than 15 feet bgs (SLR, 2015b). There are two localized

remaining areas of soil, at depths of less than 15 feet bgs, that contain petroleum hydrocarbon concentrations greater than the Method A cleanup levels (see Figure 5).

From the initial activation of the DPE system in 2011 through July 2015, groundwater sampling events were conducted at selected wells throughout the former fuel farm area on a semiannual basis. The groundwater sample analytical results indicated that the petroleum hydrocarbon concentrations in the groundwater near the product areas were decreasing due to the operation of the DPE system. In addition, the petroleum hydrocarbon concentrations in the groundwater outside of the influence of the DPE system were decreasing with distance away from the product areas due to natural attenuation. The groundwater sample analytical results showed that the impacted groundwater is attenuating to below the MTCA Method A cleanup levels before migrating to compliance well MW-50 (see Figure 4). Groundwater compliance wells MW-49 and MW-51 have been consistently dry, which indicates that the deep perched groundwater zone does not extend to within 80 feet of the airport property line that is located east and southeast (downgradient) of the site (see Figure 3). The groundwater sample analytical results from Qva aquifer well MW-E showed that the impacted groundwater has not migrated downward to the deeper Qva aquifer.

In April 2015, four additional intermediate-depth perched groundwater monitoring wells (MW-52 through MW-55) were installed to further assess the areas of remaining product at the site (SLR, 2015b). The locations of the wells are shown on Figures 4 and 5. Groundwater monitoring data collected in July 2015, immediately prior to the seasonal reactivation of the DPE system, indicated the system had extracted most of the recoverable free product at the site and that only localized areas of product were still present. On December 14, 2015, measurable product was only present in inactive DPE points MW-1C, MW-41, and PZ-4 (at thicknesses ranging from 0.01 to 0.05 feet), and in intermediate-depth perched groundwater wells MW-52 and MW-54 (at thicknesses of 0.06 and 0.01 feet, respectively; see Figure 4). A film of product was present in inactive DPE point PZ-2 (SLR, 2016b). The groundwater monitoring data from December 2015 indicated that the DPE system had extracted the recoverable free product at the site.

On February 1, 2016, the FFEC requested Ecology's oral opinion regarding a planned remaining soil and groundwater remedial action (Remaining Remedial Action Work Plan; SLR, 2016a) at the site. The planned activities included the following:

- During 2016, the depths to groundwater and free product, if present, will be measured in all of the wells, piezometers, and inactive DPE points at the site on a quarterly basis. The DPE system will be reactivated if any remaining actual product thicknesses in the formation exceed 0.10 feet and it is practicable to extract the remaining localized area(s) of recoverable product.
- Beginning in 2016, quarterly groundwater sampling will be conducted for four quarters to further verify that the remaining impacted perched groundwater continues to naturally attenuate to below the MTCA Method A cleanup levels, and

is not migrating off of the airport property. During each sampling event, groundwater samples will be collected from the perched groundwater compliance wells [MW-49, MW-50, and MW-51 (if groundwater is present)] and from downgradient perched wells MW-23, MW-35R, and MW-36. The locations of the wells are shown on Figure 4. All of the samples will be analyzed for TPH as Jet A and benzene, toluene, ethylbenzene, and total xylenes (BTEX).

- Since dissolved-phase petroleum hydrocarbon concentrations in the perched groundwater beneath portions of the site will exceed the MTCA Method A cleanup levels, the Port will implement institutional controls in accordance with WAC 173-340-440(8)(b) to prevent the use of the perched groundwater beneath the site area for drinking water purposes.
- Since there are two remaining areas of soil, at depths of less than 15 feet bgs, that contain petroleum hydrocarbon concentrations greater than the Method A cleanup levels, the Port will implement institutional controls in accordance with WAC 173-340-440(8)(b) to document that the airport is an industrial property and will remain an industrial property for the foreseeable future, and to notify any employees, tenants, or contractors of the presence of the impacted soil prior to any construction activities in those two areas.

On February 11, 2016, approximately 2½ months after deactivating the DPE system and prior to receiving Ecology's opinion on the Remaining Remedial Action Work Plan, measurable free product was present in inactive DPE points MW-6, MW-41, and PZ-4 at thicknesses of 0.03, 0.21, and 0.32 feet, respectively. Product was also present in intermediate-depth perched groundwater monitoring wells MW-52, MW-53, and MW-54 at thicknesses of 0.18, 1.26, and 0.01 feet, respectively (SLR, 2016b). Due to the product thickness in MW-53, the FFEC decided to expand the DPE system to include MW-53 and to operate the DPE system for one more season. The system was also expanded to include well MW-52. On July 15, 2016, the system was reactivated when the perched groundwater elevations were decreasing.

On July 26, 2016, Roger Nye of Ecology spoke with Mike Staton of SLR regarding his opinion about the Remaining Remedial Action Work Plan. Mr. Nye stated that he was pleased with the DPE system performance and that the planned activities were reasonable. However, he said that a substantial and disproportionate cost analysis would have to be applied to justify the use of institutional controls. On December 6, 2016, the system was shut down because measurable free product was not detected in any of the monitoring points on September 19th or November 22nd, and the hydrocarbon mass removal rate was very low (less than 0.05 pounds per day; SLR, 2017a). The hydrocarbon mass removal rates were low (less than 3 pounds per day) from mid-August through mid-October 2016 when the perched groundwater table was low. The low mass removal rates when the remaining localized product-bearing zones were exposed to the vacuum indicated that the system had removed most of the recoverable product. During 2016, the DPE system recovered a total of approximately 324 pounds (48 gallons) of Jet A fuel in the vapor

phase. From the initial system activation in February 2011 through December 2016, the DPE system recovered a total of approximately 43,086 (601 gallons) of petroleum hydrocarbons (SLR, 2017a).

After deactivating the DPE system, quarterly groundwater sampling events were conducted in January, April, July, and October 2017. During each sampling event, SLR personnel measured the depths to groundwater and free product, if present, in all of the monitoring points at the site. On July 6th, approximately 7 months after the DPE system was shut down, measurable free product was present in inactive DPE points MW-1C, MW-6, MW-41, MW-52, MW-53, and PZ-4 at thicknesses of 0.07, 0.05, 0.06, 0.11, 0.57, and 0.27 feet, respectively. Monitoring well MW-54 contained 0.02 feet of product. After measuring the depths to groundwater and free product on July 6th, SLR personnel bailed the product from the wells. On October 16th, measurable free product was present in inactive DPE points MW-1C, MW-41, MW-52, and MW-53, and in monitoring well MW-54 at thicknesses of 0.02, 0.21, 0.06, 0.05, and 0.08 feet, respectively. The measured product thicknesses on October 16, 2017, are shown on Figure 6. Due to the performance of the DPE, the localized remaining areas of free product in October 2017 were a fraction of the size of the three product areas in February 2011 (see Figure 6).

Fluctuations in groundwater table elevations result in large differences in measured product thicknesses in monitoring wells even though the volume of product in the formation has not significantly changed, and the measured product thicknesses typically increase with declining groundwater levels (Interstate Technology & Regulatory Council [ITRC], 2018; and United States Environmental Protection Agency, 1996). In addition, the measured product thicknesses at the former fuel farm area also increase with rising groundwater levels due to increased hydrostatic pressures that cause some lateral mobilization of the product within submerged coarser-grained zones in the formation. This accumulation of product in wells (exaggerated thicknesses relative to product thicknesses in the soil) is typical for perched and confined groundwater conditions (ITRC, 2018). Due to the significant fluctuations of the intermediate-depth and deep perched groundwater tables, which result in accumulated product thicknesses, where present, in the monitoring points relative to the product thicknesses in the soil, it is difficult to estimate the remaining actual product thicknesses in the formation. However, based on the 2016 and 2017 groundwater monitoring data (SLR, 2017a; and SLR, 2018), SLR believes that the actual product thicknesses at the remaining product areas are likely less than 0.10 feet thick. Furthermore, the smearing of the product due to the groundwater table fluctuations has redistributed the product mass so that it has become progressively less mobile and recoverable over time (ITRC, 2018).

The groundwater sample analytical results from the 2017 events further verified that the impacted groundwater is attenuating to below the MTCA Method A cleanup levels before migrating to compliance well MW-50 (see Figure 6). Compliance wells MW-49 and MW-51 continued to be dry. The groundwater sample analytical results from Qva aquifer

well MW-E further confirmed that the impacted groundwater has not migrated downward to the deeper Qva aquifer (SLR, 2017a; and SLR, 2018).

SUBSTANTIAL AND DISPROPORTIONATE COST ANALYSIS

Even though remedial actions were conducted at the site over an approximate 18-year period, there are 7 localized remaining areas of Jet A free product in the subsurface, an area of perched groundwater that contains dissolved-phase petroleum hydrocarbon concentrations that exceed the MTCA Method A cleanup levels, and two localized areas of soil that contain petroleum hydrocarbon concentrations greater than the Method A cleanup levels at depths of less than 15 feet bgs. The areas of free product and impacted groundwater are shown on Figure 6, and the areas of impacted soil are shown on Figure 5.

Remediation of Remaining Product

Based on the area of impacted groundwater, the remaining Jet A product (recoverable product and residual product trapped in the soil) is the primary source of the dissolved-phase petroleum hydrocarbon concentrations in the perched groundwater that exceed the MTCA Method A cleanup levels. Based on the decreasing hydrocarbon mass removal rates by the DPE system over time (SLR, 2017a) and the presence of the product within densely compacted soil that is submerged below the perched groundwater during approximately 6 months of the year, SLR estimates that it would take 4 to 6 more years (and possibly longer) of system operation to remove all of the remaining recoverable product and extract the volatile portion of the residual product that is exposed during lower seasonal groundwater conditions. There will likely be years when higher groundwater conditions prevent the DPE system from remediating at least a portion of deeper residual product that is continually submerged.

During 2016, the last year of the DPE system operations, the actual cost to operate and maintain the DPE system and conduct groundwater monitoring was approximately $30,000. The system equipment is now 8 years old, and it is likely that the 7.5-horsepower rotary claw vacuum pumps and the associated equipment (transfer pumps, hoses, and controls) would have to be replaced during the next 4 to 6 years. Based on costs obtained from equipment vendors, we estimate that the cost to purchase and install the replacement equipment would be approximately $70,000. The total estimated cost to remove the product and eliminate the primary source of the impacted groundwater would range from approximately $190,000 to $250,000 during this 4 to 6 year operation period.

Remediation of Remaining Impacted Soil

In August 2014, a total of seven confirmation soil borings (SSB-1 through SSB-7) were drilled and sampled at the known areas of soil that previously contained petroleum hydrocarbon concentrations greater than the MTCA Method A cleanup levels, at depths of less than 15 feet bgs (the zone of compliance for soil cleanup levels based on direct contact exposure). In 2015, soil samples were collected from the borings to install wells

MW-52 and MW-53. The soil sample analytical results showed that the samples from SSB-6 and MW-52, at depths of approximately 14 to 15 feet bgs, contained benzene and TPH as Jet A concentrations [up to 0.06 and 4,800 milligrams per kilogram (mg/kg), respectively] that exceeded the Method A cleanup levels (0.03 and 2,000 mg/kg, respectively) (SLR, 2015b). The two areas of remaining impacted soil at depths of less than 15 feet are located adjacent to and beneath South Air Cargo Road (the eastern area of impacted soil), and beneath a steep slope below an access road (the western area of impacted soil; see Figure 5).

Based on the field screening results and the soil sample analytical results from SSB-6 and MW-52, the remaining impacted soil at depths of less than 15 feet bgs appears to only occur from approximately 14 to 15 feet deep. The eastern area of impacted soil is located approximately 10 feet from DPE point MW-1C, and the confirmation soil sample was collected approximately 3 years after the initial activation of the DPE system. The western area of impacted soil is located at DPE point MW-52; however, the sample was collected before the system was expanded to include MW-52. It is important to note that the DPE system operated for one to two more years after the collection of the soil samples from SSB-6 and MW-52, and it is likely that the current concentrations at those areas are below the 2014 and 2015 concentrations, and possibly below the MTCA Method A cleanup levels. SLR believes that the continued operation of the DPE system, as described above, would likely reduce the benzene and TPH as Jet A concentrations to below the Method A soil cleanup levels, as necessary. Soil cleanup levels based on terrestrial ecological risks would not apply because the site was excluded from a terrestrial ecological evaluation due to the undeveloped land exclusion [WAC 173-340-7491(1)(c)].

The use of MTCA Method A soil cleanup levels at the airport is conservative. SeaTac International Airport qualifies as an industrial property under WAC 173-340-00, and as stated in the Port's attached institutional controls documents, the airport will remain an industrial property for the foreseeable future. In 2014, the soil sample from boring SSB-6 (sample SSB6-14-15) that contained benzene and TPH as Jet A concentrations greater than the Method A cleanup levels was also analyzed for volatile petroleum hydrocarbons (VPH), extractable petroleum hydrocarbons (EPH), naphthalenes, and n-hexane to allow for the calculation of risk-based soil cleanup levels for TPH at the site. SLR used Ecology's worksheets to calculate the risk-based TPH soil cleanup levels. If the continued operation of the DPE system effectively removed the remaining source of impacted groundwater at the site or if institutional controls were implemented to prevent exposure to the impacted groundwater, then human health direct contact would be the remaining potential exposure pathway associated with any impacted soil. The calculated Method C industrial soil cleanup level for TPH that is based on protection of direct contact is 29,272 mg/kg. The current TPH concentrations in the soil at depths of less than 15 feet bgs are less than the Method C cleanup level. Copies of the completed worksheets and the laboratory reports that present the analytical results for sample SSB6-14-15 are attached.

Cost Evaluation

As described above, the total estimated cost to continue to operate the DPE system for 4 to 6 more years would range from approximately $190,000 to $250,000. In comparison to the continued operation of the system, the cost to implement institutional controls that prevent human exposure to the remaining impacted soil and groundwater at the property would be less than $5,000. According to WAC 173-340-360(3)(e)(i), the costs are disproportionate to benefits (reducing the risks associated with the remaining contamination) if the incremental costs of the higher cost alternative (continued operation of the DPE system) exceed the incremental benefits of that alternative in comparison to the benefits of a lower cost alternative (implementation of institutional controls).

The previous groundwater sampling results demonstrate that the dissolved-phase petroleum hydrocarbon concentrations are naturally attenuating to below the MTCA Method A cleanup levels before reaching compliance well MW-50. The perched groundwater zone does not extend to compliance wells MW-49 and MW-51. Therefore, the impacted perched groundwater is contained within the airport property. The previous groundwater sampling results also indicate that the impacted perched groundwater is not migrating downward to the Qva aquifer. Furthermore, the Port's groundwater modeling study (Aspect Consulting, 2008) and subsequent airport-wide groundwater monitoring (SLR, 2015) have shown that the known impacted Qva aquifer plumes beneath several areas of the airport will attenuate to below cleanup levels before reaching any potential receptor (surface water bodies or drinking water supply wells) or extending beyond the AOMA. Based on the known natural attenuation of the dissolved-phase hydrocarbons in the perched groundwater, the lack of petroleum hydrocarbons in the Qva aquifer beneath the site, and the airport-wide groundwater modeling results, the risks associated with the remaining impacted perched groundwater at the site are minimal and the cost to continue the operation of the DPE system is disproportionate to the benefit of reducing the hydrocarbon concentrations to below the Method A groundwater cleanup levels throughout the site. The Port's implementation of an institutional control that prevents the withdrawal of the groundwater at the site will be as effective as the continued operation of the DPE system at minimizing the risks associated the impacted groundwater, and the cost would be lower by approximately $185,000 to $245,000.

There are two localized areas of remaining soil, at depths of less than 15 feet bgs (the zone of compliance for soil cleanup levels based on direct contact), that contain petroleum hydrocarbon concentrations greater than the MTCA Method A cleanup levels. The impacted soil occurs at depths of approximately 14 to 15 feet bgs, and any exposure to the soil would be during any future construction activities in those localized areas that extend to at least 14 feet bgs. The continued operation of the DPE system ($190,000 to $250,000) would likely reduce the remaining petroleum concentrations to below the Method A cleanup levels; however, since there are limited risks associated with the remaining impacted groundwater, Method A soil cleanup levels, which are based on a protection of groundwater exposure scenario, are not appropriate for the site. Since the

airport qualifies as an industrial property under MTCA, Method C industrial soil cleanup levels based on a human health direct contact exposure pathway are appropriate for this site. The TPH concentrations in the soil (up to 4,800 mg/kg) are well below the calculated Method C soil cleanup level of 29,272 mg/kg. Even though the risks associated with the remaining impacted soil are acceptable, the Port proposes to conservatively implement an institutional control that requires notification of any employees, tenants, or contractors of the presence of the impacted soil prior to any future construction activities in those two areas.

CONCLUSIONS

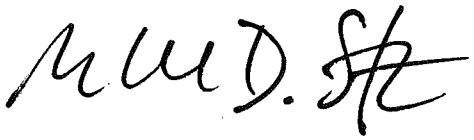
There are limited risks associated with the remaining product, impacted groundwater, and impacted soil at the site, and the cost of continued operation of the DPE system to remove the remaining recoverable product and eliminate the primary remaining source of the impacted groundwater at the site is disproportionate to the incremental benefit. On behalf of the FFEC, SLR requests Ecology's approval for the Port to implement the attached institutional controls to prevent withdrawal of the groundwater at the site, and to notify any employees, tenants, or contractors of the presence of the remaining impacted soil at the site prior to any construction activities in those localized areas. After the implementation of institutional controls, a "no further action" opinion is appropriate for the site.

All of the site data have been submitted into Ecology's EIM database, and all of the previous investigation, remediation, and groundwater monitoring reports for the site were previously submitted to Ecology. The site reports are listed in the references section of this letter.

If you have any questions, please contact me at (425) 471-0479.

Sincerely,

SLR International Corporation



Michael D. Staton, L.G.
Managing Principal

Attachments: References
Port of Seattle Institutional Controls Documents
Figures 1 through 6
VCP Request for Opinion Form
VCP Change of Contact Form
Completed Worksheets to Calculate Risk-Based Soil Cleanup Levels for TPH

cc: Christine Landmeier, United Airlines
Don Robbins, Port of Seattle
Kyle Christie, Remediation Management Services Co.

Attachment 2:

QTA Environmental Baseline Investigation Report
(Report Only)

QTAINVEST 5532.copy 1

QTA Environmental Baseline Investigation Report Seattle-Tacoma International Airport SeaTac, Washington

June 2, 2004

Prepared for

Port of Seattle
Seattle, Washington

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1.0 INTRODUCTION

This document presents the results of an environmental investigation of soil and groundwater conditions at the Quick Turnaround Area (QTA), where rental car fueling and washing occurs at the Seattle-Tacoma International Airport (Airport) in SeaTac, Washington. The investigation was conducted from March 15 to March 26, 2004 for the Port of Seattle (Port). The purpose of the investigation was to document baseline soil and groundwater conditions at the facility for the Port prior to entering into a new long-term lease of the facility with facility tenants.

The QTA investigation was conducted in accordance with the March 11, 2004 draft *Quick Turnaround Facility Site Investigation Work Plan* (work plan) (Landau Associates 2004). Implementation of the work plan and preparation of this report were authorized under a March 15, 2004 agreement (PV-0310903) between Landau Associates and the Port on the QTA project.

The remainder of this section provides background information on the QTA and describes our scope of services. Section 2 of the report describes the field procedures that were used to conduct the QTA investigation. Section 3 provides a geologic description of the soil encountered during the QTA investigation and the results of soil environmental testing. Section 4 provides the sampling results for groundwater. Section 5 provides some worker accounts of conditions of concern at the project site. Section 6 provides a brief summary of the QTA data presented in this report.

1.1 BACKGROUND

The QTA was constructed in 1991 and is used for fueling and washing of the rental car fleets owned by multiple rental car companies (i.e., tenants). The facility is located at the northern end of the main parking garage (Figure 1). The facility is equipped with five, 12,000-gal double-contained, fiberglass underground storage tanks (USTs) that are located at the northeastern corner of the facility, nine fuel dispensing islands with two dispensers per island, and approximately 750 lineal ft of trenching containing product and vapor recovery piping. Product piping consists of double-contained, fiberglass underground fuel delivery piping. One groundwater monitoring well, identified as MW-1, is located near the USTs. This well is 60 ft deep and screened from 40 to 60 ft (Kennedy/Jenks/Chilton 1991). MW-1 was installed and sampled in 1991 as part of site characterization work conducted immediately prior to QTA construction. The analytical results for a 1991 groundwater sample from MW-1 were nondetect for total petroleum hydrocarbons (TPH) as gasoline by U.S. Environmental Protection Agency (EPA) Method 8015 (modified) and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020. Testing by EPA Method 5030 detected 45 micrograms per liter (µg/L) TPH as gasoline, which is well below the Washington State Model Toxics Control Act (MTCA) Method A groundwater cleanup level of

1,000 µg/L. Figure 2 shows the location of the USTs, dispenser islands, underground fuel piping, and MW-1.

1.2 SCOPE OF SERVICES

Our scope of services for the investigation of the QTA included the following major activities:

- Sample existing monitoring well MW-1
- Core 14-inch diameter holes at 21 boring locations located within areas containing cement-concrete or asphalt-concrete pavement
- Clear underground utilities within the upper 5 ft at 23 boring locations using air-knife vacuum drilling
- Drill (with a hollow-stem auger), sample, and decommission 23 soil borings (Q-01 through Q-22B). Each boring was drilled to at least 20 ft below ground surface (BGS); however, refusal was encountered during two soil borings (Q-19 and Q-22A), a buried concrete slab was encountered just below coring depth during one boring (Q-11), and one boring (Q-20) was stopped at a depth of 5 ft based on geological and environmental observations
- Manage investigation-derived wastes including soil cuttings and decontamination water for proper disposal
- Evaluate laboratory and field observation data and prepare this report documenting environmental conditions along the fuel line.

Analytical services were provided by North Creek Analytical under contract with the Port. The following section describes the field procedures that were implemented for these scope elements. The results of the investigation are described in Sections 3 and 4.

2.0 FIELD PROCEDURES

This section describes the field procedures implemented during the QTA investigation. These field procedures were conducted in accordance with the investigation work plan (Landau Associates 2004), except where noted, and in accordance with the project Quality Assurance Project Plan (QAPP) and Health and Safety Plan attached to the work plan.

Field work was completed between March 15 and March 26, 2004, as described below:

- March 15 to March 19: Groundwater sampling of MW-1 and coring of pavement at each boring location.
- March 22 to March 26: Drilling and sampling of borings Q-01 through Q-22B.

2.1 GENERAL APPROACH

The approach used during the site investigation consisted of drilling soil borings to a minimum depth of 20 ft BGS at locations around the USTs, at each dispenser island, and at 50- to 100-ft intervals along the buried fuel delivery piping. When possible, borings were located at or near piping bends. A total of 22 soil borings were planned for this investigation consisting of 5 borings around the USTs, 9 adjacent to the dispenser islands, and 8 along the buried fuel piping. However, as noted above, only 21 soil borings were completed because one of the planned borings, Q-11, encountered refusal at a shallow depth. In addition, boring Q-20 was terminated after being vacuumed to 5 ft because its actual location, which was moved from its originally planned location due to site access restrictions, was only 10 ft from planned boring Q-21. Planned boring Q-22 was completed as two separate borings (Q-22A and Q-22B) after refusal was encountered at 6 ft BGS at the original planned location for Q-22 (later renamed as Q-22A).

Soil samples were collected at 2.5-ft intervals from the surface to 15 ft BGS and at 5-ft intervals below 15 ft. The samples were screened in the field for volatile organic compound (VOC) contamination using a photoionization detector (PID). If contamination was anticipated to extend beyond the minimum specified drilling depth of 20 ft BGS based on field screening, the boring was extended until contamination was no longer detected, or until the water table was encountered. If the contamination extended to the water table, a groundwater grab sample was collected from inside the hollow-stem auger. Soil borings Q-08, Q-09, and Q-21 were advanced to the water table; however, a groundwater sample was not collected at Q-21 due to lack of proper sampling equipment. Groundwater sampling was attempted at Q-08, but insufficient sample volume was available inside the auger for collection and analysis, even without prior purging. Selected soil samples were submitted to the laboratory for chemical analysis.

2.2 AOA OPERATIONS AND COORDINATION PROCEDURES

The QTA is not located within the Airfield Operations Area (AOA) of the airport; therefore, use of badged field personnel was not needed for drilling and sampling activities. However, badged field personnel were needed to deliver soil cuttings to the environmental stockpile located at the southern end of the airfield. Due to heavy use of the QTA during daytime and evening hours, site work was limited to the hours of 11:00 p.m. to 6:00 a.m.. Nondisruptive activities such as boring and utility locating work and monitoring well sampling was completed during normal business hours. The drive lane on the eastern side of the car wash facility that connects the northern and southern sides of the car wash facility remained open at all times.

2.3 BORING AND UTILITY LOCATE

Prior to initiating concrete coring and auger drilling activities, utilities near the preliminary boring locations were cleared by Applied Professional Services, Inc. (APS) under contract to Landau Associates. APS conducted the utility locate at each boring location using standard electromagnetic utility locating equipment. Boring locations were adjusted to avoid underground utilities identified during the utility locate. In addition, due to the presence of extensive buried utilities within the QTA, including non-conductible fiberglass fuel delivery piping, the first 5 ft of each boring was cleared using air-knife vacuum drilling prior to completing the boring using hollow-stem auger equipment. Air-knife vacuum drilling uses high-pressure air to break up soil, and vacuum suction from a vacuum truck to remove the cuttings. Final boring locations are shown on Figure 2. Final boring coordinates and ground surface elevations were measured by the Port surveyors and are listed in Table 1.

2.4 CONCRETE CORING

Twenty-one of the 23 borings were located within cement-concrete or asphalt-concrete paved areas. The thickness of pavement ranged from 2 to 10 inches. A concrete coring contractor, under subcontract to the drilling contractor, drilled 14-inch-diameter cores to allow access for the 11-inch (maximum) outside diameter hollow-stem augers. The cores were left in place after coring was completed and removed immediately prior to drilling activities. Silicone caulk was placed around the perimeter of each core to prevent gasoline from penetrating the pavement in the event of a surface spill between the time that the concrete was cored and patched. A concrete anchor was installed in the top of each core to aid in removing the cores.

If the vacuum truck or drill rig was required to move off of a boring prior to patching the concrete, a temporary steel cover was placed over the hole. The temporary covers consisted of a square

24-inch by 24-inch by ¾-inch-thick steel plate with a 14-inch-long welded collar to fit inside the hole. The steel plate was secured with two or three concrete screws to prevent lateral movement and tampering of the boring under construction. Silicone caulk was also used to seal around the cover to prevent gasoline from penetrating the pavement in the event of a surface spill between the time that the hole was drilled and patched.

2.5 DRILLING AND SOIL SAMPLING

Borings were drilled using either a truck-mounted or limited access hollow-stem auger drill rig. Drilling was performed by Cascade Drilling, Inc., of Woodinville, Washington under subcontract to Landau Associates. The borings were drilled using 4-inch inside diameter (11-inch outside diameter) hollow-stem augers. Dames & Moore split-barrel samplers were driven 1.5 ft with a 140- or 300-lb hammer (as noted on the boring logs) to collect soil samples at depths equal to or greater than 5 ft BGS. A hand auger was used to collect soil samples from 2 to 3 ft BGS and/or 5 ft BGS (as noted on the boring logs). Hammer blow counts were recorded at each boring for potential use in geotechnical evaluations at the facility. Blow counts are shown on the boring logs in Appendix A.

Final boring depths were determined based on field screening results, as described in the work plan (Landau Associates 2004). The following criteria were used to determine the boring depths:

- Borings were terminated at 20 ft BGS if the sample from that depth and the previous sample (i.e., 15-ft sample) yielded a PID result of 50 parts per million (ppm) or less.
- If drilling was required beyond 20 ft BGS, the boring was terminated after collecting two consecutive samples that yielded a PID result of 50 ppm or less.
- For borings that extended to the water table, the boring was terminated at approximately 5 ft below the water table to allow collection of a groundwater sample.

The only exception to the use of these criteria occurred at Q-09. It was determined prior to drilling that this boring would be drilled to the water table regardless of field screening results to allow collection of a groundwater sample.

Field screening and soil sampling was conducted using the following steps:

- **Step 1**: Each sampler was opened and the sample was immediately screened with the PID for VOCs.
  - If the sample was from one of the default sample analysis depths (see below), a composite of the sampler contents was placed into a 2-oz jar for potential VOC analysis (i.e., BTEX). The sample jar was completely filled to limit VOC losses. Jars were labeled in accordance with sample labeling procedures contained in the QAPP.

- If the sample was not from one of the default sample analysis depths and the PID scan did not indicate VOC concentrations above background, the sample was discarded after completing Step 2.

- If the sample was not from one of the default sample analysis depths and the PID scan indicated VOC concentrations above background, the sample was placed into a 2-oz jar for potential VOC analysis.

- **Step 2**: The samples were screened for the presence of free product or a sheen and for a petroleum odor. These observations were recorded in the field logbook along with a description of the sample in accordance with the unified soil classification system.

After the final sample from each boring was collected and field-screened, the following criteria were used to select individual samples for laboratory analysis:

- For borings completed to 20 ft BGS or less, the 20-ft sample and one of the other samples (two samples total) that yielded the highest PID reading were selected; if no VOCs were detected, then the 2-ft and 20-ft samples were selected.

- For borings completed to greater than 20 ft BGS, the bottom sample and two of the other samples (three samples total) that yielded the highest PID readings were selected; at least one sample was from the 0- to 15-ft interval.

The PID was calibrated at the beginning of each day and maintained by field personnel in accordance with the manufacturer's instructions. The date, time, and calibration results were recorded on the calibration form and documentation of calibration was entered in the field logbook.

Soil and groundwater samples were analyzed for TPH in the gasoline range and BTEX by Method NWTPH-G/BTEX. In accordance with the MTCA cleanup regulation (Table 830-1), the soil samples were not analyzed for fuel additives [1,2-dibromoethane (EDB); 1,2-dichloroethane (EDC); and methyl tertiary-butyl ether (MTBE)] because earlier sampling of groundwater from MW-1, conducted on March 15, 2004, did not detect any of these fuel additives. A total of 44 soil samples were analyzed by the laboratory. Table 2 presents a matrix summarizing the analyses performed on samples from each boring.

All samples were analyzed at North Creek Analytical under contract to the Port. All samples were picked up by the laboratory at the airport sample lock box. The laboratory provided data electronically in accordance with the Port's electronic data deliverable specifications. Sample results are discussed in Section 3.

2.6 GROUNDWATER SAMPLING

Groundwater samples were collected from monitoring well MW-1 and soil boring Q-09. MW-1 was sampled using a submersible pump fitted with new discharge tubing. A total of three casing volumes

of groundwater was purged from the well prior to sample collection. Samples were measured in the field for pH, specific conductance, and temperature. Samples were analyzed by the laboratory for TPH as gasoline and BTEX by Method NWTPH-G/BTEX and for TPH as diesel by Method NWTPH-Dx. Prior to purging and sample collection, water level and product thickness were measured at MW-1. These data are presented in Table 3.

Groundwater was sampled at boring Q-09 using a disposable bailer lowered to the bottom of the auger. The water in the boring did not recharge sufficiently to permit purging prior to sample collection. The Q-09 groundwater sample was analyzed for TPH as gasoline and BTEX by Method NWTPH-G/ BTEX. The Q-09 groundwater sample was very turbid and the laboratory was therefore instructed to allow the sample to settle and to extract only the turbid-free water from the top of the sample bottle for analysis. These steps were followed to limit the potential for false positives due to the analysis of petroleum constituents absorbed to suspended solids in the sample.

2.6.1 BOREHOLE ABANDONMENT AND CORE PATCHING

Each borehole was abandoned according to chapter 173-160 WAC (*Minimum Standards for Construction and Maintenance of Wells*) and Chapter 18, 18.104 RCW (Water Well Construction Act). The borehole was grouted to 1.5 ft BGS with bentonite chips. Pea gravel and/or drilling-derived soil was then added to the hole and tamped in place to approximately 0.5 ft BGS. The remainder of the borehole was filled to the surface with a rapid-set concrete mix capable of achieving 5,000 pounds per square inch (psi) compressive strength within 24 hours. The mix was also a non-shrink to prevent formation of depressions on the pavement.

2.7 EQUIPMENT DECONTAMINATION

The decontamination procedures described below were used by field personnel to clean drilling, sampling, and related field equipment.

2.7.1 SAMPLING EQUIPMENT

All sampling equipment (e.g., Dames & Moore samplers, stainless steel bowls, stainless steel spoons, etc.) was cleaned using a three-step process as follows:

1. Scrub surfaces of equipment that contact soil using brushes and an Alconox solution
2. Rinse and scrub equipment with clean tap water
3. Rinse equipment a final time with de-ionized water to remove tap water impurities.

Decontamination of the reusable sampling equipment occurred between each sample.

2.7.2 DRILLING RIGS

Downhole drilling equipment and drilling equipment that contacted potentially contaminated soil was cleaned using a hot water, high-pressure wash before each use. Potable tap water from the municipal supply was used as the cleansing agent. All decontamination water was collected and managed as discussed in Section 2.8.

2.8 INVESTIGATION-DERIVED WASTE MANAGEMENT

This section describes the management of soil, purge water, and decontamination water generated during the investigation.

2.8.1 SOIL CUTTINGS

Soil cuttings from each boring were placed in 55-gal steel drums, vacuumed into the vacuum truck, and temporarily stored at Cascade Drilling's yard. On April 5, 2004, the soil cuttings were loaded in a 5 cubic yard dump truck and then transported, in two round trips, to the environmental soil stockpile facility located at the southern end of the airfield. At the stockpile, the soil was placed in a designated location in accordance with direction provided by the Port's environmental agent in charge of stockpile operations. The soil cuttings were ultimately disposed by the Port after reviewing the analytical data from the 21 soil borings.

2.8.2 PURGE AND DECONTAMINATION WATER

Purge and decontamination water generated during the investigation was placed in six, 55-gal steel drums and temporarily placed along the curb adjacent to the portable toilets near the USTs within the QTA. Arrangements were made with the Port's surface water program manager (Mr. Tom Hubbard) to discharge the purge and decontamination water to the Airport Industrial Waste System (IWS) sewer connection. To limit the amount of suspended solids discharged to the IWS, the suspended solids were allowed to settle out of the water during a 10-day period after drilling activities ended. On April 5, 2004, clear water was discharged to an IWS catch basin after receiving Port approval. The wet soil at the bottom of each drum was mixed with the drill cuttings and delivered to the environmental soil stockpile facility. The drums were removed from the site.

3.0 SOIL SAMPLING RESULTS

This section includes an interpretation of geologic and environmental conditions encountered during drilling, and the soil analytical results. The geologic interpretation is based on information presented on investigation boring logs, and the general geologic setting at the airport. Environmental conditions are based on field screening and soil analytical results. Samples were selected for laboratory analysis based on the criteria described in Section 2.5.

Laboratory data reports for the analyses conducted during this investigation (soil and groundwater) are included as Adobe Acrobat files on the attached CD-ROM. Hard copies of these reports will also be maintained in Landau Associates' projects files. All laboratory analytical data were subjected to a data quality evaluation to assess the data with respect to several data quality criteria including holding times, field and method blank results, surrogate spike recoveries, and matrix spike/matrix spike duplicate results. Data requiring qualification based on this validation have been assigned a qualifier, as shown in Tables 4 and 5.

3.1 GEOLOGIC INTERPRETATION

Geologic conditions encountered during the drilling of borings Q-01 through Q-22B were consistent with conditions described in previous studies within this area of the airport (Landau Associates 1997, 2003). All borings encountered a sequence of loose to very dense fill, and dense to very dense Vashon drift deposits. The fill generally consisted of trench backfill material (i.e., pea gravel) or thin layers of brown silty, gravelly, sand to sandy gravel (occasionally with concrete debris) immediately below the pavement. Beneath the fill, most borings encountered a layer of very dense till consisting of gray-brown sand with silt and gravel. Beneath the till at depths ranging from 5 to 15 ft BGS, the borings encountered very dense advance outwash deposits (Qva) consisting of brown fine to medium sand with fine gravel and trace silt. The advance deposits extended to at least 50 ft BGS, the depth of the deepest borings drilled during the investigation. Boring logs are presented in Appendix A; soil descriptions are presented according to the unified soil classification system as described on Figure A-1.

In addition to MW-1, groundwater was encountered during this investigation at borings Q-08, Q-09, and Q-21. Note that during drilling, insufficient time was given for the groundwater to stabilize in the auger; therefore, groundwater measurements from Q-08 and Q-09 reflect estimated elevation of the local water table. No groundwater was measured in Q-21. Groundwater would have been expected to stabilize at about 44 ft BGS, similar to MW-1.

3.2 SOIL ANALYTICAL RESULTS

Up to three soil samples were submitted from each boring for analysis of TPH in the gasoline range and BTEX. Soil boring Q-11 was stopped on a buried concrete slab at 1.7 ft and no sample was collected. Soil boring Q-19 encountered pea gravel to 6.5 ft, cobbles or small boulders at 7 ft, poor recovery at 12.5 ft such that a sample was not obtained, and refusal at 14 ft; therefore, no sample was collected.

Sampling and field screening at each location were performed as described in Section 2.5. PID screening results were low (<50 ppm) except at borings Q-04, Q-08, Q-09, and Q-21. At boring Q-04, a soil sample from 2.5 ft BGS yielded a PID reading of 107 ppm; however, the laboratory analysis of this sample did not yield detectable levels of TPH as gasoline or BTEX. At boring Q-08, PID readings ranged from 38 to 2,000+ ppm between 7.5 and 45 ft BGS, with slight to strong petroleum odor. At boring Q-09, PID readings ranged from 67.3 to 2,000+ ppm between 40 and 45 ft BGS, with slight to strong petroleum odor. At boring Q-21, PID readings ranged from 73 to 2,000+ ppm between 7.5 and 45 ft BGS, with moderate to strong petroleum odor. The PID data are presented on the boring logs in Appendix A.

The only detections of TPH in the gasoline range were in samples from borings Q-08, Q-09, and Q-21. TPH in the gasoline range was detected at 419 milligrams per kilogram (mg/kg) in the 12.5-ft sample from Q-08; at 382 mg/kg in the 45-ft sample from Q-09, and at 7,230 and 1,030 mg/kg in the 10- and 40-ft samples, respectively, from Q-21. All the detected concentrations were above the MTCA Method A soil cleanup level for gasoline (100 mg/kg without benzene and 30 mg/kg with benzene for both unrestricted land use and industrial properties). Although TPH in the gasoline range was not detected in the 40-ft soil samples from borings Q-08 and Q-09, TPH in the gasoline range was detected in the sample collected near the water table at 45 ft BGS in Q-09 (382 mg/kg) and was likely present in the sample collected from near the water table at Q-08, based on a PID reading of 300 ppm at that depth. TPH results for soil samples are listed in Table 4 and are shown on Figure 3.

The only detections of BTEX were in samples from borings Q-08, Q-09, and Q-21. Each BTEX constituent was detected above its respective MTCA Method A soil cleanup level in the 12.5-ft sample from Q-08, the 45-ft sample from Q-09, and the 10- and 40-ft samples from Q-21. Benzene concentrations were also detected above the MTCA Method A soil cleanup level in the 40-ft sample from both Q-08 and Q-09. BTEX concentrations for soil samples are listed in Table 4 and are shown on Figure 3.

In summary, analytes were detected in samples from three soil borings at concentrations above the MTCA Method A soil cleanup levels. The data for both Q-08 and Q-21 indicated impact from TPH in the gasoline range and BTEX from approximately 5 ft BGS to the water table, suggesting a shallow or near-surface gasoline release at or near these locations. Sample results and field screening from Q-09

indicate impact from TPH in the gasoline range and BTEX at or near the water table, but no impact was noted between the surface and the water table. These conditions suggest lateral spreading of free product or highly contaminated groundwater on the water table from an upgradient source.

4.0 GROUNDWATER SAMPLING RESULTS

Groundwater was sampled from monitoring well MW-1 and boring Q-09. The samples from both these locations yielded TPH in the gasoline range and BTEX concentrations above the MTCA Method A groundwater cleanup levels. The concentrations of TPH in the gasoline range in MW-1 and Q-09 were 94,500 and 219,000 µg/L, respectively, which are both well above the Method A cleanup level of 800 µg/L. The BTEX concentrations in MW-1 and Q-09 were 6,740 and 28,600 micrograms per liter (µg/L) (benzene), 21,800 and 46,500 µg/L (toluene), 2,860 and 4,850 µg/L (ethylbenzene), and 16,440 and 29,300 µg/L (total xylenes), respectively. Groundwater analytical results are summarized in Table 5 and are shown on Figure 4.

A second groundwater sample from MW-1 was analyzed for TPH as diesel, Jet-A, and lube oil to evaluate whether contamination from other petroleum products was present in the well. As shown in Table 5, TPH as Jet-A (2.54 mg/L) and diesel (0.861 mg/L) were detected. However, the concentrations of these constituents were at least 37 times lower than the TPH as gasoline concentration. According to the laboratory, these detections represent laboratory instrument carry-over from gasoline-range hydrocarbons that appear within the Jet-A and diesel calibration range, and do not, therefore, represent a non-gasoline petroleum product within MW-1.

The concentrations detected in MW-1 and Q-09 are consistent with samples obtained from wells or borings containing separate phase (free) gasoline product (i.e., free product). A free product thickness of 0.03 ft (about ⅜ inch) was measured in MW-1 on March 15, 2004 (Table 3). Measurable free product was not present in Q-08 or Q-09 during sampling; however, if free product was present, it may not have been detected due to the use of the auger as a temporary well during sample collection, and limited equilibration time. The laboratory evaluated the chromatograms from the analysis of the 10-ft and 40-ft soil samples from boring Q-21 to assess the relative age of the gasoline in the soil. The laboratory reported the chromatograms "resemble a weathered gasoline pattern. The weathering appears to be moderately significant for a subsurface soil sample, suggesting the contamination is not recent."

WAC 173-340-450 and WAC 173-360-330 require that releases from UST systems be reported to the Washington State Department of Ecology (Ecology) by the owner and/or operator of the system, which in this instance are the rental car tenants. As a result of the discovery of gasoline constituents and free product in MW-1, the Port, acting as a responsible citizen, called Ecology on April 5, 2004 to report the discovery of gasoline contamination in the vicinity of the UST system.

5.0 WITNESS ACCOUNTS

During drilling activities, an onsite QTA worker reported to the Landau Associates field geologist that he had observed occasions in the past when the tank truck operator was mopping up a spill at the remote fill location during delivery of gasoline to the USTs. To evaluate potential spill migration routes at the remote fills, a Landau Associates field geologist simulated a spill at the remote fill location on April 5, 2004 by rapidly emptying 5 gal of water over the remote fill covers and observing the disposition of the water. The water was observed to temporarily pond on the concrete pad containing the remote fills and then spill over the shallow curb onto the adjacent street and flow across the paved fuel truck access road, where it collected against the opposite curb. Some of the water temporarily pooled against the retaining wall surrounding the concrete pad on three sides. It was difficult to assess whether any water seeped through the joint where the pad and wall meet. The water in the road eventually flowed along the eastern curb in a southerly direction and then around to the eastern side of the landscape island. The water was not observed entering a catch basin. The tightness of the spill containment buckets around the fill pipes was not tested.

A second QTA worker identified a condition of concern with the concrete slab in the southern gasoline dispenser islands where soil borings Q-02 and Q-03 are located. The northwestern corner of the concrete slab had developed a crack and broke off from the remaining slab. The crack allowed any spilled fluids (i.e., gasoline, motor oil, or wiper fluid) and rain and car wash water to flow into the crack and under the slab. The worker indicated that the slab was repaired at the Q-03 location but that the slab at the Q-02 location remains broken and moves freely under foot pressure. As reported earlier, petroleum contamination was not found in the soil borings located next to these dispenser islands.

6.0 SUMMARY AND DATA EVALUATION CRITERIA

A total of 21 soil borings were drilled at the Sea-Tac QTA, including 3 borings to a depth of 45 to 50 ft BGS, 17 borings to 20 ft BGS, and 1 boring to 15 ft BGS. Soil was sampled at each boring location and groundwater was sampled from one boring and from an existing monitoring well.

In summary, gasoline-contaminated soil and/or groundwater was found at two of the nine QTA pump islands and in the immediate vicinity of the five 12,000-gal USTs. Contamination was not found in any of the six borings drilled adjacent to the buried fuel piping. Boring Q-08, located adjacent to a pump island, and boring Q-21, located adjacent to the remote fill pipes, contained gasoline-contaminated soil from about 5 ft BGS to the water table, suggesting a shallow or near-surface gasoline release at or near these locations. Sample results and field screening from Q-09, located near a second pump island, contained gasoline-contaminated soil at or near the depth of the water table, but no contamination was noted from the surface to the water table. These conditions may be the result of lateral spreading of free product or highly contaminated groundwater on the water table from an upgradient source. A thin layer (0.03 ft) of free product was measured in MW-1 and strong gasoline odors were noted at Q-08 and Q-09. Based on an evaluation of sample chromatograms, the laboratory reported that the gasoline was moderately weathered, suggesting that the contamination is not recent.

7.0 USE OF THIS REPORT

This report has been prepared for the exclusive use of the Port of Seattle for specific application to the QTA baseline investigation project. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following key staff.

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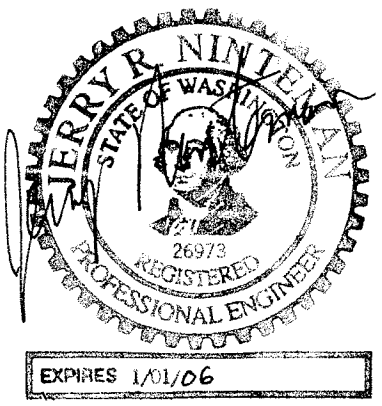

8.0 REFERENCES

Kennedy/Jenks/Chilton. 1991. Report: *Garage Expansion Project, QTA Tank Area and Parking Lot 5 Site Characterization*. Prepared for Port of Seattle. May.

Landau Associates. 2004. Draft: *Quick Turnaround Facility Site Investigation Work Plan, Seattle-Tacoma International Airport, SeaTac, Washington*. Prepared for Port of Seattle. March 11.

Landau Associates. 2003. *2003 Aircraft Fuel System Investigation Data Report, Seattle-Tacoma International Airport, SeaTac, Washington*. Prepared for URS Corporation Southern and Port of Seattle. September 23.

Landau Associates. 1997. Data and Evaluation Report: *Former Pan Am Avgas Tank Site Investigation, Seattle-Tacoma International Airport*. Prepared for Port of Seattle. January.

Attachment 3:

No Further Action Opinion Letter from Washington Department of Ecology to United Airlines regarding the United Airlines facility site (Site H-53)

Electronic Copy

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • PO Box 330316 • Shoreline, Washington 98133-9716 • (206) 594-0000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

December 22, 2021

Ryan Keeler
United Airlines Environmental Management and Remediation
233 S Wacker Drive
11th Floor WHQEN
Chicago, IL 60606
(ryan.keeler@united.com)

Re: No Further Action at the following Site:

- **Site Name:** United Airlines SeaTac International Airport
- **Site Address:** 2230 South 161st Street, Seattle, WA 98158
- **Facility/Site No.:** 1623532
- **VCP Project No.:** NW2257
- **Cleanup Site ID No.:** 7040

Dear Ryan Keeler:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the **United Airlines SeaTac International Airport** facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70A.305 RCW.

Issue Presented and Opinion

Is further remedial action necessary to clean up contamination at the Site?

NO. Ecology has determined that no further remedial action is necessary to clean up contamination at the Site.

This opinion is dependent on the continued performance and effectiveness of the post-cleanup controls specified below.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70A.305 RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following release:

- Total petroleum hydrocarbons as diesel (TPH-D), heavy oil (TPH-O), and mineral oil from hydraulic fluid into the Soil.

Enclosure A includes a detailed description and diagrams of the Site, as currently known to Ecology.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the portion of the parcel associated with this Site is affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. Enviro-Sciences, Inc., 2002. *Site Characterization Report: United Airlines Hydraulic Lift Sumps*. June 12.

2. Aspect Consulting, 2005. *Seattle-Tacoma International Airport Phase I Groundwater Study Report*. February 15.

3. ERM-West, Inc. (ERM), 2009. *Final Hydraulic Oil Line Leak Site Investigation Report*. November.

4. ERM, 2011. *Response to Comments and Regulatory Opinion Request.* October 5.

5. Department of Ecology, 2012. *Site Further Action Opinion Letter, VCP NW2257*. January 25.

6. ERM, 2018. *Evaluation of Site Geology, Groundwater, Extent of Vertical Migration and Request for No Further Action.* October 22.

7. ERM, 2021. *Cover Maintenance Plan*. December 20.

A number of these documents are accessible in electronic format from the Site webpage[1]. The complete records are stored in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Visit our Public Records Request page[2], to submit a public records request or get more information about the process. If you require assistance with this process, you may contact the Public Records Officer at publicrecordsofficer@ecy.wa.gov or (360) 407-6040.

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that no further remedial action is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site.

Ecology has determined your characterization of the Site is sufficient to establish cleanup standards and select a cleanup action. The Site is described above and in **Enclosure A.**

2. Establishment of cleanup standards.

a. Cleanup Levels.

Ecology has determined the cleanup levels and points of compliance you established for the Site **meet** the substantive requirements of MTCA.

Soil

The Site does not meet the MTCA definition of an industrial property; therefore, soil cleanup levels suitable for unrestricted land uses are appropriate.

The Site meets the initial Terrestrial Ecological Evaluation exclusion criteria (WAC 173-340-7491(1)(c)(i)). There are less than 1.5 acres of contiguous undeveloped land on or within 500 feet of any part of the Site. Cleanup levels protective of terrestrial ecological receptors are not necessary for this Site.

[1] https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=7040
[2] https://ecology.wa.gov/publicrecords

MTCA Method A cleanup levels were proposed for TPH-D, TPH-O, and mineral oil in soil at the Site. Ecology concurs for this exposure pathway.

Groundwater

Groundwater has not been encountered on the Property within the maximum depth of exploration which was 60 feet below the ground surface (bgs). In addition, based on the 2005 hydrogeological study that included the Site area, groundwater is estimated to occur at approximately 115 feet bgs. Because of this vertical separation, it is considered unlikely that contamination in soil would have migrated to groundwater. Cleanup levels protective of groundwater are therefore not necessary at this Site.

Air

Due to the limited volatility of hydraulic oil, the potential risk for vapor intrusion resulting from the soil contamination remaining in place is considered low. Cleanup levels protective of indoor air are therefore not necessary at this Site.

b. Point of Compliance.

Soil

The point of compliance for soil at this Site for protection of direct contact is from the land surface to a depth of 15 feet bgs.

3. Selection of cleanup action.

Ecology has determined the cleanup action you selected for the Site **meets** the substantive requirements of MTCA.

The selected cleanup action was contaminated soil removal to the maximum extent practicable using a vacuum truck.

4. Cleanup.

Ecology has determined the cleanup you performed meets the cleanup standards established for the Site.

The cleanup consisted of the 2009 removal of approximately 5 cubic feet of petroleum-contaminated soil using a vacuum truck equipped with an air knife. Soil was excavated to the maximum extent practicable before encountering utility infrastructure and building footings, the presence of which impeded the ability to remove any additional impacted soil.

An estimated 50 cubic yards of soil contaminated with TPH-O at concentrations exceeding the MTCA Method A cleanup level remain in place. This soil is contained within the United GSE maintenance building footprint and below the concrete floor slab.

This determination is dependent on the continued performance and effectiveness of the post-cleanup controls specified below.

The Site cleanup meets the requirement for Soil Model Remedy 3, in accordance with *Model Remedies for Sites with Petroleum Impacts Soil, Ecology Publication No. 15-09-043, Revised December 2017*[3]. Therefore, a Feasibility Study and Disproportionate Cost Analysis are not required to document the remedy selection. The requirements of Soil Model Remedy 3 are:

- Petroleum hydrocarbons consisting of gasoline, middle distillates/oils, or heavy fuels/oils and their constituents are the only contaminants present in soil.
- Emergency or interim actions are not required due to the lower risk nature of the Site.
- The Site meets the criteria for a Terrestrial Ecological Evaluation (TEE) exclusion of a simplified TEE.
- The primary remedy consists of source removal, including free product and contaminated soil, to the greatest extent practicable.
- Method A soil cleanup levels are not met throughout the property, due to structural impediments.
- The Site characterization confirms that no other exposure pathways have or can reasonably be expected, to be impacted.
- An environmental covenant on the property is filed, to ensure that the remedy remains protective.

[3] https://apps.ecology.wa.gov/publications/SummaryPages/1509043.html

Post-Cleanup Controls and Monitoring

Post-cleanup controls and monitoring are remedial actions performed after the cleanup to maintain compliance with cleanup standards. This opinion is dependent on the continued performance and effectiveness of the following controls, in accordance with WAC 173-340-440(8)(b):

1. Compliance with institutional controls.

Institutional controls prohibit or limit activities that may interfere with the integrity of engineered controls or result in exposure to hazardous substances. The following institutional control is necessary at the Site:

- INSTITUTIONAL CONTROL #1: Any proposed construction on the Property conducted by the Port, Port tenants, and all contractors that would potentially result in exposure to the contaminated soil left in place must be performed in compliance with STIA Rules for Airport Construction[4]. The procedures in place require that Port environmental staff review and approve such work before it is performed. In addition, most requires issuance of a permit from the Port Airport Building Department. Permits are not issued until Port Aviation Environmental staff have reviewed and approved the project.

  To implement the above institutional control, Ecology will rely on the *Port of Seattle, Sea-Tac International Airport, Operational Area Institutional Controls* (*OAIC*) as an alternative to a restrictive covenant (per WAC 173-340-440(8)(b)), which pertains to the following parcel of real property in King County:

  - 2823049016

A copy of the *OAIC*, which incorporates an associated letter of support from the Port of Seattle, is included in **Enclosure B**.

The *OAIC* documentation provided by the Port of Seattle does not include some elements required under WAC 173-340-440. Ecology requests that the Port of Seattle add the following to their institutional controls documentation for the Site:

[4] https://www.portseattle.org/sea-tac/leasing-tenant-resources/tenant-construction-and-design-reference-documents

a) **Interference with Remedial Action**: The property owner shall not engage in any activity on the property that may impact or interfere with the remedial action and any operation, maintenance, inspection, or monitoring of that remedial action without prior written approval from Ecology.

b) **Protection of Human Health and the Environment**: The property owner shall not engage in any activity on the property that may threaten the continued protection of human health or the environment without prior written approval from Ecology. This includes, but is not limited to, any activity that results in the release of residual contamination that was contained as a part of the remedial action, or that exacerbates or creates a new exposure to residual contamination remaining on the property (such as construction activities or other earthwork).

c) **Conveyance of Any Interest:** The property owner must provide written notice to Ecology when conveying any interest, including but not limited to title, easement, leases, or other interests. A notice of the institutional controls and effective alternative system must be included in the conveying document.

d) **Access**: The property owner grants Ecology and its authorized representatives, upon reasonable notice, the right to enter the property at reasonable times to evaluate the effectiveness of the institutional controls and associated remedial actions, including the right to take samples, inspect any remedial actions conducted on the property, and to inspect related records.

e) **Port of Seattle Aviation (POSAV) Compliance and Project Status Database (CPSD)**: Ecology requests that the Port of Seattle update this database to clarify that the No Further Action (NFA) status of this Site with Ecology is contingent upon institutional controls, which limit or prohibit activities that interfere with the integrity of the cleanup action or that may result in exposure to hazardous substances at the Site.

2. Operation and maintenance of engineered controls.

Engineered controls prevent or limit movement of, or exposure to, hazardous substances. The following engineered controls are necessary at the Site:

- ENGINEERED CONTROL #1. Site access is restricted with fencing and Property signage.

- ENGINEERED CONTROL #2. A concrete slab-on-grade foundation functions as a cap covering the contaminated soil left in place.

Ecology has approved the *Cover Maintenance Plan* you submitted for these engineered controls. A copy of the plan is included in **Enclosure B**.

3. Performance of confirmational monitoring.

Confirmational monitoring is not required at the Site to confirm the long-term effectiveness of the cleanup.

Periodic Review of Post-Cleanup Conditions

Ecology will conduct periodic reviews of post-cleanup conditions at the Site to ensure that they remain protective of human health and the environment. If Ecology determines, based on a periodic review, that further remedial action is necessary at the Site, then Ecology will withdraw this opinion.

Listing of the Site

Based on this opinion, Ecology will remove the Site from our Confirmed and Suspected Contaminated Sites List and Leaking Underground Storage Tank List.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70A.305.040(4).

2. Opinion does not constitute a determination of substantial equivalence.
To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70A.305.080 and WAC 173-340-545.

3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70A.305.170(6).

Termination of Agreement

Thank you for cleaning up the Site under the Voluntary Cleanup Program (VCP). This opinion terminates the VCP Agreement governing this project (#NW2257).

For more information about the VCP and the cleanup process, please visit our VCP webpage[5]. If you have any questions about this opinion or the termination of the Agreement, please contact me by phone at (206) 594-0121 or by email at michael.warfel@ecy.wa.gov.

Sincerely,

Michael R. Warfel
Site Manager
Toxics Cleanup Program, NWRO

Enclosures (2): A – Site Description and Diagrams
B – Cover Maintenance Plan for Engineered Controls

cc: Mike Mendes, ERM (mike.mendes@erm.com)
Suzanne Dolberg, P.E., ERM (suzanne.dolberg@erm.com)
Megan King, Port of Seattle (king.m@portseattle.org)
Sonia Fernandez, Ecology (sonia.fernandez@ecy.wa.gov)
Tra Thai, Ecology (tra.thai@ecy.wa.gov)

[5] http://www.ecy.wa.gov/vcp

Attachment 4:

Washington Department of Ecology Initial Investigation Field Report for Swissport Fueling Site (Site H-49)

INITIAL INVESTIGATION FIELD REPORT

WASHINGTON STATE DEPARTMENT OF ECOLOGY

ERTS Number: 623781
Parcel #(s):
County: King
FSID #: 3289930
CSID #: 12270

SITE INFORMATION

Site Name (e.g., Co. name over door):	Site Address (including City and Zip+4):	Site Phone:
SWISSPORT FUELING	2350 S 190TH ST SEATAC, WA 98188	
Site Contact and Title: DEAN WILLIAMS	Site Contact Address (including City and Zip+4): SAME AS ABOVE	Site Contact Phone:
Site Owner: PORT OF SEATTLE	Site Owner Address (including City and Zip+4):	Site Owner Phone:
Site Owner Contact:	Site Owner Contact Address (including City and Zip+4):	Owner Contact Phone:
Alternate Site Name(s):	Comments: Tax parcels:	
Previous Site Owner(s):	Comments:	

Latitude (Decimal Degrees):	47.433124
Longitude (Decimal Degrees):	-122.302251

INSPECTION INFORMATION

Inspection Conducted? Yes ☐ No ☒	Date/Time:	Entry Notice: Announced ☐	Unannounced ☐
Photographs taken?	Yes ☐	No ☒	
Samples collected?	Yes ☐	No ☒	If *Yes*, be sure to include a figure/sketch showing sample locations.

RECOMMENDATION

No Further Action (Check appropriate box below):		**LIST on Confirmed and Suspected Contaminated Sites List**: ☒
Release or threatened release does not pose a threat	☐	
No release or threatened release	☐	
Refer to program/agency (Name:_____)	☐	
Independent Cleanup Action Completed (i.e., contamination removed)	☐	

COMPLAINT (Brief Summary of ERTS Complaint):
Estimated 1,000 gallon spill of jet fuel to gravel, ground, impermeable surface, with rainwater carrying off site. Spill occurred due to a faulty valve on AST.

CURRENT SITE STATUS (Brief Summary of why Site is recommended for Listing or NFA):
Review of Interim Action Report results in site being listed on CSCSL. Impacted soil was excavated to maximum extent practicable, but some was inaccessible and was left in place. Free product removal activities resulted in removal of about 83% of the released fuel, meaning that 612 gallons of product were NOT removed. GW remains on the water table.

Investigator:	Donna Musa (Arthur Buchan)	Date Submitted: 9/2/11

OBSERVATIONS

Description (please be sure to include the following: site observations, site features and cover, chronology of events, sources/past practices likely responsible for contamination, presence of water supply wells and other potential exposure pathways, etc.):

(fill in contaminant matrix below with appropriate status choice from the key below the table)

CONTAMINANT GROUP	CONTAMINANT	*SOIL*	*GROUNDWATER*	*SURFACE WATER*	*AIR*	*BEDROCK*	DESCRIPTION
Non-Halogenated Organics	Phenolic Compounds						Compounds containing phenols (Examples: phenol; 4-methylphenol; 2-methylphenol)
	Non-Halogenated Solvents						Organic solvents, typically volatile or semi-volatile, not containing any halogens. To determine if a product has halogens, search HSDB (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB) and look at the Chemical/Physical Properties, and Molecular Formula. If there is not a Cl, I, Br, F in the formula, it's not halogenated. (Examples: acetone, benzene, toluene, xylenes, methyl ethyl ketone, ethyl acetate, methanol, ethanol, isopropranol, formic acid, acetic acid, stoddard solvent, Naptha). *Use this when TEX contaminants are present independently of gasoline.*
	Polynuclear Aromatic Hydrocarbons (PAH)						Hydrocarbons composed of two or more benzene rings.
	Tributyltin						The main active ingredients in biocides used to control a broad spectrum of organisms. Found in antifouling marine paint, antifungal action in textiles and industrial water systems. (Examples: Tributyltin; monobutyltin; dibutyltin)
	Methyl tertiary-butyl ether						MTBE is a volatile oxygen-containing organic compound that was formerly used as a gasoline additive to promote complete combustion and help reduce air pollution.
	Benzene	C	C				Benzene
	Other Non-Halogenated Organics	C	C				Other Non-Halogenated Organics (Example: Phthalates)
	Petroleum Diesel	C	C				Petroleum Diesel
	Petroleum Gasoline						Petroleum Gasoline
	Petroleum Other						Crude oil and any fraction thereof. Petroleum products that are not specifically Gasoline or Diesel.
Halogenated Organics (see notes at bottom)	PBDE						Polybrominated di-phenyl ether
	Other Halogenated Organics						Other organic compounds with halogens (chlorine, fluorine, bromine, iodine). search HSDB (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB) and look at the Chemical/Physical Properties, and Molecular Formula. If there is a Cl, I, Br, F in the formula, it is halogenated. (Examples: Hexachlorobutadiene; hexachlorobenzene; pentachlorophenol)
	Halogenated solvents						Solvents containing halogens (Halogen is typically chlorine, but can also be fluorine, bromine, iodine), and their breakdown products (Examples: Trichloroethylene; Tetrachloroethylene (aka Perchloroethylene); TCE; TCA; trans and cis 1,2 dichloroethylene; vinyl chloride)
	Polychlorinated Biphenyls (PCB)						Any of a family of industrial compounds produced by chlorination of biphenyl, noted primarily as an environmental pollutant that accumulates in animal tissue with resultant pathogenic and teratogenic effects
	Dioxin/dibenzofuran compounds (see notes at bottom)						A family of more than 70 compounds of chlorinated dioxins or furans. (Examples: Dioxin; Furan; Dioxin TEQ; PCDD; PCDF; TCDD; TCDF; OCDD; OCDF). *Do not use for 'dibenzofuran', which is a non-chlorinated compound that is detected using the semivolatile organics analysis 8270*
Metals	Metals - Other						Metals other than arsenic, lead, or mercury. (Examples: cadmium, antimony, zinc, copper, silver)
	Lead						Lead
	Mercury						Mercury
	Arsenic						Arsenic
Pesticides	Non-halogenated pesticides						Pesticides without halogens (Examples: parathion, malathion, diazinon, phosmet, carbaryl (sevin), fenoxycarb, aldicarb)
	Halogenated pesticides						Pesticides with halogens (Examples: DDT; DDE; Chlordane; Heptachlor; alpha-beta and delta BHC; Aldrin; Endosulfan, dieldrin, endrin)

CONTAMINANT GROUP	CONTAMINANT	SOIL	GROUNDWATER	SURFACE WATER	AIR	BEDROCK	DESCRIPTION
Other Contaminants	Radioactive Wastes						Wastes that emit more than background levels of radiation.
	Conventional Contaminants, Organic						Unspecified organic matter that imposes an oxygen demand during its decomposition (Example: Total Organic Carbon)
	Conventional Contaminants, Inorganic						Non-metallic inorganic substances or indicator parameters that may indicate the existence of contamination if present at unusual levels (Examples: Sulfides, ammonia)
	Asbestos						All forms of Asbestos. Asbestos fibers have been used in products such as building materials, friction products and heat-resistant materials.
	Other Deleterious Substances						Other contaminants or substances that cause subtle or unexpected harm to sediments (Examples: Wood debris; garbage (e.g., dumped in sediments))
	Benthic Failures						Failures of the benthic analysis standards from the Sediment Management Standards.
	Bioassay Failures						For sediments, a failure to meet bioassay criteria from the Sediment Management Standards. For soils, a failure to meet TEE bioassay criteria for plant, animal or soil biota toxicity.
Reactive Wastes	Unexploded Ordinance						Weapons that failed to detonate or discarded shells containing volatile material.
	Other Reactive Wastes						Other Reactive Wastes (Examples: phosphorous, lithium metal, sodium metal)
	Corrosive Wastes						Corrosive wastes are acidic or alkaline (basic) wastes that can readily corrode or dissolve materials they come into contact with. Wastes that are highly corrosive as defined by the Dangerous Waste Regulation (WAC 173-303-090(6)). (Examples: Hydrochloric acid; sulfuric acid; caustic soda)

Status choices for contaminants	
Contaminant Status	**Definition**
B - Below Cleanup Levels (Confirmed)	The contaminant was tested and found to be below cleanup levels. (Generally, we would not enter each and every contaminant that was tested; for example if an SVOC analysis was done we would not enter each SVOC with a status of "below". We would use this for contaminants that were believed likely to be present but were found to be below standards when tested
S - Suspected	The contaminant is suspected to be present; based on some knowledge about the history of the site, knowledge of regional contaminants, or based on other contaminants known to be present
C - Confirmed Above Cleanup Levels	The contaminant is confirmed to be present above any cleanup level. For example - above MTCA method A, B, or C; above Sediment Quality Standards; or above a presumed site-specific cleanup level (such as human health criteria for a sediment contaminant).
RA - Remediated - Above	The contaminant was remediated, but remains on site above the cleanup standards (for example - capped area).
RB - Remediated - Below	The contaminant was remediated, and no area of the site contains this contaminant above cleanup standards (for example - complete removal of contaminated soils).

Halogenated chemicals and solvents: Any chemical compound with chloro, bromo, iodo or fluoro is halogenated; those with eight or fewer carbons are generally solvents (e.g. halogenated methane, ethane, propane, butane, pentane, hexane, heptane or octane) and may also be used for or registered as pesticides or fumigants. Most are dangerous wastes, either listed or categorical. Organic compounds with more carbons are almost always halogenated pesticides or a contaminant or derivitive. Referral to the HSDB is recommended you are unfamiliar with a chemical name or compound, as it contains useful information about synonyms, uses, trade names, waste codes, and other regulatory information about most toxic or potentially toxic chemicals.

Dibenzodioxins and dibenzofurans are normalized to a combined equivalent toxicity based on 2,3,7,8-tetrachloro-p-dibenzodioxin as set out in Ch. 173-340-708(8)(d) and in the Evaluating the Toxicity and Assessing the Carcinogenic Risk of Environmental Mixtures using Toxicity Equivalency Factors Focus Sheet (https://fortress.wa.gov/ecy/clarc/FocusSheets/tef.pdf). Results may be reported as individual compounds and isomers (usually lab results), or as a toxic equivalency value (reports).

FOR ECOLOGY II REVIEWER USE ONLY (For Listing Sites):

How did the Site come to be known: ☒ **Site Discovery (received a report):** 12/2/10 (Date Report Received)
☐ **ERTS Complaint**
☐ **Other (please explain):** _____

Does an Early Notice Letter need to be sent: ☒ Yes ☐ No
If *No*, please explain why: _____

NAICS Code (if known): _____
Otherwise, briefly explain how property is/was used (i.e., gas station, dry cleaner, paint shop, vacant land, etc.):
_____

Site Unit(s) to be created (Unit Type): ☒ Upland (includes VCP & LUST) ☐ Sediment
If multiple Units needed, please explain why: _____

Cleanup Process Type (for the Unit): ☐ No Process ☒ Independent Action
☐ Voluntary Cleanup Program ☐ Ecology-supervised or conducted
☐ Federal-supervised or conducted

Site Status: ☐ Awaiting Cleanup ☐ Construction Complete – Performance Monitoring
☒ Cleanup Started ☐ Cleanup Complete – Active O&M/Monitoring
☐ No Further Action Required

Site Manager (Default: Donna Musa): _____

Specific confirmed contaminants include:

_____ in Soil

_____ in Groundwater

_____ in Other (specify matrix: _____)

Facility/Site ID No. (if known):
_____

Cleanup Site ID No. (if known):
_____

12/2012

COUNTY ASSESSOR INFO:

Please attach to this report a copy of the tax parcel/ownership information for each parcel associated with the site, as well as a parcel map illustrating the parcel boundary and location.

Attachment 5:

Regulated Building Materials Assessment Report for Fire Department Station House
(Report Only)

AECOM

Environmental Compliance

Submitted to
Port Construction Services
P.O. Box 68727
Seattle, Washington
98168

Submitted by
AECOM
1111 3rd Avenue
Suite 1600
Seattle, Washington
98101
June 26, 2019

Regulated Building Materials Assessment Report

Port Construction Services
POS Fire Department Station House
2400 South 170th Street
SeaTac, Washington

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Project Title:	Regulated Building Materials Assessment POS Fire Department Station House Seattle-Tacoma International Airport 2400 South 170th Street SeaTac, Washington 98004
Prepared for:	Mr. Scott Rinear RMM Construction Manager Port Construction Services P.O. Box 68727 Seattle, Washington 98168
Assessment Conducted by:	AECOM Technical Services 1111 3rd Avenue, Suite 1600 Seattle, Washington 98101-3241
AECOM Project Number:	60606326
Assessment Personnel:	Ms. Shannon MacKay AHERA-Accredited Building Inspector Number ABIR0115190004N18965 (exp. 1/15/2020) Mr. Chris Selders AHERA-Accredited Building Inspector Number IR-18-6916B (exp. 10/22/2019)
Assessment Dates:	June 12, 13 and 24, 2019
Report Prepared by:	Chris Selders Industrial Hygienist AECOM, Technical Services
Report Reviewed by:	Shannon MacKay Senior Environmental Scientist AECOM, Technical Services
Report Issue Date:	June 26, 2019

EXECUTIVE SUMMARY

Port Construction Services (PCS) retained AECOM Technical Services, Inc. (AECOM), to conduct a regulated building materials assessment for the POS Fire Department Station House located at 2400 South 170th Street in SeaTac, Washington. AECOM's representatives, Ms. Shannon MacKay and Mr. Chris Selders, conducted the assessment on June 12, 13 and 24, 2019. The assessment included building materials anticipated to be impacted by scheduled HVAC upgrades in addition to providing the Port of Seattle with a comprehensive regulated building materials assessment.

The assessment included the interior and exterior portions of the Fire Station House and Training Tower (the Project Area). Due to recent renovations to the associated roof, no roofing samples were taken during this assessment.

AECOM assessed the Project Areas for the following:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials;
- Lead-containing coatings (paints);
- Mercury-containing light tubes;
- Polychlorinated biphenyls (PCBs)-containing light ballasts; and
- Suspected PCB-containing caulking.

Seventy-seven bulk samples of suspect asbestos-containing materials were collected and analyzed using Polarized Light Microscopy (PLM). Three of the materials were found to contain greater than one percent asbestos, two of the materials were assumed to contain asbestos, and none of the materials were found to contain less than one percent asbestos. In addition, two of the materials was visually assessed and determined to be non-suspect.

Eighteen paint chip samples were collected and analyzed for total lead content. Nine of the paint chip samples were found to contain detectable levels of lead.

Mercury-containing fluorescent light tubes and electronic non-PCB containing light ballasts were identified in the building.

Four bulk samples of caulking were collected and analyzed for PCBs. None of the samples were found to contain detectable levels of PCBs.

1.0 INTRODUCTION

Port Construction Services (PCS) retained AECOM Technical Services, Inc. (AECOM), to conduct a regulated building materials assessment for the POS Fire Department Station House located at 2400 South 170th Street in SeaTac, Washington. AECOM's representatives, Ms. Shannon MacKay and Mr. Chris Selders, conducted the assessment on June 12, 13 and 24, 2019. The assessment included building materials anticipated to be impacted by scheduled HVAC upgrades in addition to providing the Port of Seattle with a comprehensive regulated building materials assessment.
The assessment included the interior and exterior portions of the Fire Station House and Training Tower (the Project Area). Due to recent renovations to the associated roof, no roofing samples were taken during this assessment.

AECOM assessed the Project Areas for the following:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials;
- Lead-containing coatings (paints);
- Mercury-containing light tubes;
- Polychlorinated biphenyls (PCBs)-containing light ballasts; and
- Suspected PCB-containing caulking.

2.0 PROJECT BACKGROUND

This report presents the results of our regulated building materials assessment conducted for the POS Fire Department Station House located at 2400 South 170th Street in SeaTac, Washington. The purpose of the assessment was to identify potential asbestos-containing materials, lead-containing coatings, PCB-containing sources, and mercury-containing components prior to renovation and for purposes of hazard communication and on-going management. The assessment included the interior and exterior of the building and excluded the roof.

The purpose of the inspection was to assist Port Construction Services with communicating the presence of lead-containing coatings, PCB-containing sources, and mercury-containing sources, and the presence, location, and quantity of ACM and assumed ACM to employees, vendors, and contractors working in the Project Areas and to meet the requirements for an asbestos survey for the Puget Sound Clean Air Agency (PSCAA) and a good faith inspection as required by Washington State Department of Labor and Industries' Division of Occupational Safety and Health (DOSH) regulations prior to renovation and for O&M purposes.

2.1 Sources of Information

During the course of the assessment, the following personnel and documents provided assistance to the AECOM inspector:

- Mr. Scott Rinear, RMM Construction Manager, Port Construction Services
- Mr. Joel Astley, Foreman, Port Construction Services
- *Port of Seattle, Fire Department Station House HVAC Upgrades, 90% Construction drawings*, dated April 22, 2019

2.2 Project Area Descriptions

The Port of Seattle Fire Department Station House is a two-story, slab-on-grade facility that houses offices, dorm rooms, a kitchen, dining room, mechanical rooms, restrooms with showers, class rooms, conference rooms, and an apparatus/truck bay. The Training Tower which is adjacent to the Fire Station House is also included in this assessment.

The interior walls include gypsum wallboard, concrete walls, and concrete masonry unit (CMU) walls. The exterior walls consist of exterior metal siding and concrete. The ceilings include gypsum board, metal pan deck, and suspended ceiling tiles. The floor finishes consist of vinyl floor tiles, ceramic floor tiles, glued-on carpeting, poured flooring, aggregate flooring, or unfinished concrete. The Building is heated by a forced air furnace roof mounted heating, ventillation, and air conditioing (HVAC) system located in the second floor mechanical room. HVAC ducting throughout the Station House was insulated with

foil-wrapped fiberglass insulation, flex ducting, or was not insulated. The piping throughout the building was insulated with paper-wrapped fiberglass pipe insulation with mudded elbows and fittings.

The Training Tower is a multiple story slab-on grade facility with CMU walls and an exterior stairwell. Walls in the Training tower are unfinished and floors are bare concrete, with no HVAC system.

3.0 ASBESTOS ASSESSMENT

3.1 Building Assessment

Ms. MacKay and Mr. Selders, both Asbestos Hazard Emergency Response Act (AHERA)-accredited building inspectors, (Certification ABIR0115190004N18965, expiration date: 1/15/2020 and Certification IR-18-6916B, expiration date: 10/22/2019, respectively), from AECOM, performed the sampling on June 12, 13 and 24, 2019. The AECOM inspectors collected 77 samples of materials identified as suspect ACM.

This assessment was conducted using a modified protocol adapted from AHERA. The protocol is as follows:

- Identify suspect asbestos-containing materials.
- Group materials into homogeneous sampling areas/materials.
- Quantify each homogeneous material and collect representative samples. The number of samples collected of miscellaneous materials was determined by the inspector.
- Samples of each material were taken to the substrate, ensuring that all components and layers of the material were included.
- Sample locations are referenced on the field data forms according to sample number.
- Sampling was performed by an AHERA-accredited building inspector, and the use of proper protective equipment and procedures was followed.

3.2 Sampling Procedures

This sampling was conducted using the following procedures:

1) Spread the plastic drop cloth (if needed) and set up other equipment, e.g., ladder.
2) Don protective equipment (respirator and protective clothing if needed).
3) Label sample container with its identification number and record number. Record sample location and type of material sampled on a sampling data form.
4) Moisten area where sample is to be extracted (spray the immediate area with water).
5) Extract sample using a clean knife, drill capsule, or cork boring tool to cut out or scrape off approximately one tablespoon of the material. Penetrate all layers of material.
6) Place sample in a container and tightly seal it.
7) Wipe the exterior of the container with a wet wipe to remove any material that may have adhered to it during sampling.
8) Clean tools with wet wipes and wet mop; or vacuum area with HEPA vacuum to clean all debris.
9) Discard protective clothing, wet wipes and rags, cartridge filters, and drop cloth in a labeled plastic waste bag.

3.3 Analytical Methodology

Suspect ACMs were sampled in general accordance with 40 Code of Federal Regulations (CFR) 763.86 by an Environmental Protection Agency (EPA) AHERA-accredited building inspector. Each sample was collected and stored in a heavy-duty, self-sealing plastic bag, and delivered to NVL Laboratories, Inc. in Seattle, Washington. Samples were analyzed via polarized light microscopy (PLM) in accordance with EPA/600/M4-82-020 and EPA/600/R-93/116. NVL Laboratories, Inc. is accredited to perform PLM analysis by the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program (NVLAP).

3.4 Asbestos Sampling Results

Table 2.4-1 provides a list of suspect homogeneous sampling area (HSA) material descriptions, material locations, and results for this sampling. ACMs are presented in bold. Refer to the attached Figures in Appendix A for sample locations and Photographs in Appendix B for additional material information.

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
FS-1: Gray sandy brittle material and residual off-white compacted powdery material with tan paper and gold mastic (M)	Aggregate flooring in portions of dining room	Gray sandy brittle material: ND Off-white compacted powdery material with tan paper and gold mastic: ND
FS-2: Gray speckle pattern resilient epoxy floor coating (bumpy texture) with white with clear adhesive, off-white soft mastic, yellow mastic, and gray crumbly material with tan brittle mastic (M)	Portions of floor in dining room and hallway	Gray speckle pattern resilient epoxy floor coating (bumpy texture) with white with clear adhesive: ND Off-white soft mastic: ND Yellow mastic: ND Gray crumbly material with tan brittle mastic
FS-3: Gray poured epoxy flooring with black/white speckle pattern (smooth texture) and gray sandy material with gold mastic (M)	Portions of floor in dining room and kitchen	Gray poured epoxy flooring with black/white speckle pattern (smooth texture): ND Gray sandy material with gold mastic: ND
FS-4: 4” black rubber cove base and white/yellow mastic (M)	At base of walls in reception areas, offices, dining room, and conference rooms	Cove base: ND White/yellow mastic: ND
FS-5: Off-white joint compound, off-white gypsum wallboard with paint, beige/white fibrous material, and peach chalky material with paper (M)	Walls throughout (pre-dominant gypsum)	Off-white joint compound: ND Off-white gypsum wallboard with paint: ND Beige/white fibrous material: ND Peach chalky material with paper: ND
FS-6: 2’x4’ white ceiling tile with shallow crater and pinhole pattern with white coating and thin mastic (M)	Associated with suspended ceiling tile system throughout	ND
FS-7: 2’x4’ white ceiling tile with fissure and pinhole pattern with white coating and thin mastic (M)	Associated with suspended ceiling tile system in spots	ND
FS-8: 2’x4’ dark cream ceiling tile with deep fissure and pinhole pattern with white coating and thin mastic (M)	Associated with suspended ceiling tile system in spots (pre-dominant tile)	ND

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
FS-9: 2'x4' white ceiling tile with short fissure, pinhole, and 2'x2' section pattern with white coating and thin mastic (M)	Associated with suspended ceiling tile system in shared/open office area	ND
FS-10: White paper wrapped fiberglass insulation on 1" and 3" pipe runs (T)	Above suspended ceiling tile system throughout	Visually assessed and determined to be non-asbestos containing
FS-11: Tan compressed powdery material mudded pipe insulation (T)	Associated with elbows and fittings on pipe runs located above suspended ceiling tile systems throughout	ND
FS-12: Dark gray carpet with white mastic, yellow mastic, and tan mastic (M)	Flooring in reception area and adjacent offices	Carpet with white mastic: ND Yellow mastic: ND Tan mastic: ND
FS-13: White and pink sink undercoating (M)	**Sink in reception area corridor**	**3% chrysotile**
FS-14: Gray sink undercoating (M)	Sink in kitchen	ND
FS-15: White joint compound and white/pink gypsum wallboard with paper (M)	Associated with walls in spots on first and second floors, observed during the survey in a first floor closet and second floor restroom area	White joint compound: ND White/pink gypsum wallboard with paper: ND
FS-16: Not used		
FS-17: Green soft adhesive, gray/beige compressed fibrous material, brown brittle mastic, and white compacted powdery material (M)	Adhesive and flooring located under carpet squares in single dorm room across from Men's restroom	Green soft adhesive: ND Gray/beige compressed fibrous material: ND Brown brittle mastic: ND White compacted powdery material: ND
FS-18: Black and gray fibrous sound dampening material with paint (M)	Sound dampener located behind wall mounted wood slats in dining room	ND
FS-19: Tan rubber stair tread, light brown adhesive, and brown brittle mastic (M)	Located on stair treads and risers in stairwell to second floor	Stair tread: ND Light brown adhesive: ND Brown brittle mastic: ND
FS-20: 12"x12" gray vinyl floor tile, brown soft mastic, brown brittle mastic, and gray adhesive with paint (M)	Located on landings of stairwell to second floor	Vinyl floor tile: ND Brown soft mastic: ND Brown brittle mastic: ND Gray adhesive with paint: ND
FS-21: 4" gray cove base and brown brittle mastic (M)	Located at base of walls in stairwell to second floor	Cove base: ND Mastic: ND
FS-22: 12"x12" dark gray vinyl floor tile with streak pattern and light brown soft mastic (M)	Flooring on second floor vestibule area from stair well to rooms	Vinyl floor tile: ND Mastic: ND
FS-23: 2" brown cove base and brown soft mastic (M)	At base of walls on second floor vestibule area from stair well to rooms	Cove base: ND Mastic: ND

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
FS-24: Metal fire doors (M)	Doors throughout Fire Station house (blue asbestos-free stickers affixed to all doors observed during inspection)	Visually assessed and determined to be non-asbestos containing
FS-25: Spray-applied wall texture (S)	One wall located on second floor vestibule area	ND
FS-26: White joint compound with paper and dark gray gypsum wallboard with paper (M)	Associated with walls in former restroom located in alarm room	Joint compound with paper: ND Gypsum wallboard with paper: ND
FS-27: 1"x1" dark brown ceramic floor tile with grout, and brown mortar (M)	Flooring in restrooms throughout	Ceramic tile and grout: ND Mortar: ND
FS-28: Yellow carpet mastic (M)	Under gray/ blue carpet in alarm room	ND
FS-29: White vinyl floor tile, black asphaltic mastic, brown soft adhesive, and white soft adhesive (M)	**Located at south area of floor in alarm room under gray/ blue carpet**	**White vinyl floor tile: ND Black mastic: 7% chrysotile Brown soft adhesive: ND White soft adhesive: ND**
FS-30: Light brown mastic and white leveling compound (M)	Under gray/ blue carpet in alarm room	Mastic: ND Leveling compound: ND
FS-31: Off-white duct sealant and gray duct sealant (M)	Associated with HVAC duct seams in 2nd floor mechanical room (predominant sealant)	Off-white duct sealant: ND Gray duct sealant: ND
FS-32: Silvery gray duct sealant (M)	Associated with HVAC duct seams in 2nd floor mechanical room (in spots)	ND
FS-33: White fibrous tape with paint and clear soft adhesive (M)	Corner areas of HVAC units	Fibrous tape with paint: ND Clear soft adhesive: ND
FS-34: Black vibration isolator (M)	**Associated with HVAC units located in 2nd floor mechanical room**	**Assumed to be asbestos-containing**
FS-35: Gray vibration isolator (M)	**Associated with HVAC units located in 2nd floor mechanical room**	**Assumed to be asbestos-containing**
FS-36: White soft caulking (M)	At gypsum wall to ceiling interface in 2nd floor mechanical room	ND
FS-37: Gray duct sealant with paint (M)	Associated with HVAC seams in 2nd floor fitness center	ND
FS-38: Brown compressed fibrous material and paint (M)	Under exterior metal siding, assumed to be throughout siding	ND
FS-39: White soft caulking with paint (M)	Associated with exterior vents	ND
FS-40: Off-white caulking (M)	Located at seams of exterior metal siding and door frames	ND

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
FS-41: Black asphaltic fibrous foundation water proofing (M)	**Located on foundation walls where grass/soil is present**	**20-22% chrysotile**
FS-42: 2”x2” brown and white ceramic tile, off-white grout, brown mortar, green brittle mastic (M)	Associated with walls in restrooms throughout	Ceramic tile: ND Grout: ND Mortar: ND Mastic: ND
FS-43: Gray caulking, white brittle material with paint (M)	Located at expansion joint and vertical bumper to ground seams at exterior of apparatus/truck bay	Gray caulking: ND White brittle material with paint: ND
FS-44: Red rubbery fibrous fire stop (M)	Newer red fire stop located in wall penetrations throughout	ND
FS-45: Red brittle fire stop (M)	Older red fire stop located in wall penetrations throughout	ND

ND: none detected, HSA: material that is uniform in color, texture, general appearance, and construction and application date, M: Miscellaneous material per AHERA, S: Surfacing material per AHERA, T: Thermal System Insulation material per AHERA, OD: Outer diameter

Additional suspect ACMs may be present in inaccessible or concealed spaces. These spaces include, but are not limited to, areas not assessed, areas not accessible at the time of the assessment, freight elevators, fire doors, electrical systems, pipe chases, spaces between wall/ceiling/door/floor cavities, interior of mechanical components, beneath foundation pads, etc. If future maintenance, renovation, and/or demolition activities make these areas accessible, AECOM recommends that a thorough assessment of these spaces be conducted at that time to identify and confirm the presence or absence of additional suspect ACMs. Until then, all such unidentified materials must be treated as assumed ACMs in accordance with applicable federal, state, and local regulations.

If the analytical results indicate that all the samples collected per HSA do not contain asbestos, then the HSA (material) is considered a non-ACM. If the analytical results of one or more of the samples collected per HSA indicate that asbestos is present in quantities of greater than one percent asbestos as defined by the EPA, all of the HSA (material) is considered to be an ACM regardless of any other analytical results.

Any material that contains greater than one percent asbestos is considered an ACM and must be handled according to Occupational Safety and Health Administration (OSHA), EPA, and applicable state and local regulations. The EPA National Emission Standard for Hazardous Air Pollutants (NESHAP) 40 CFR 61, Subparts A and M has a requirement related to assessment of suspect ACM in buildings. When the asbestos content of a friable material is visually estimated by PLM to be detectable but less than ten percent, your firm may elect to (1) assume the amount is greater than one percent and treat the material as asbestos-containing or (2) require verification of the amount by the PLM point counting technique. If the results obtained by point counting and visual estimation are different, the point count result must be used. When no asbestos is detected by PLM, point counting is not required.

4.0 LEAD ASSESSMENT

4.1 Sampling Methodology

Homogeneous painted surfaces were defined by substrate, application, and color. The paint chip samples were collected to the substrate to ensure that all layers present on the substrate were included in the laboratory analysis. The samples were collected and stored in a heavy-duty, self-sealing plastic bag and delivered to NVL Laboratories, Inc.. The samples were analyzed via Atomic Absorption Spectrophotometry in accordance with Method EPA 3051/7000B. NVL Laboratories, Inc. is accredited by American Industrial Hygiene Association (AIHA) for lead analysis.

4.2 Lead Sampling Results

Eighteen paint chip samples were collected and analyzed. Nine of the samples were found to contain reportable levels of lead. The result of the analysis is presented in Table 4.2-1.

Table 4.2-1. Paint Chip Sample Result

Sample Number and Description	Paint Location	Sample Result in parts per million (ppm)
Pb1: Number not used		
Pb2-01: White paint on metal	**Structural I-beams throughout**	**50,000**
Pb3-01: White paint on concrete	**Concrete masonry unit (CMU) walls**	**88**
Pb3-02: White paint on concrete	Concrete masonry unit (CMU) walls	<48
Pb4-01: White paint on metal	**Window framing in dining room**	**40,000**
Pb5-01: Tan paint on metal	**Door frames throughout**	**66**
Pb6-01: Blue paint on metal	Window and door framing at main entry vestibule area	<75
Pb7-01: Off-white paint on gypsum	On gypsum walls throughout	<50
Pb7-02: Off-white paint on gypsum	On gypsum walls throughout	<50
Pb7-03: Off-white paint on gypsum	On gypsum walls throughout	<48
Pb8-01: White paint on metal	Window and door framing located in corridor area outside of shared/open office area /	<49
Pb9-01: Tan paint on metal	**Hand railing on 1st floor, 2nd floor to Roof access stairwell**	**54,000**
Pb10-01: Tan paint on metal	**Door frames on 2nd floor**	**57**
Pb11-01: White paint on metal	**Exterior siding throughout**	**260**
Pb11-02: White paint on metal	Exterior siding throughout	<50
Pb12-01: Blue paint on metal	Exterior door and window frames	<48
Pb13-01: White paint on metal	**Interior of apparatus/truck bay metal siding**	**68**
Pb14-01: Off-white paint on metal	Training tower door and door frames	<49
Pb15-01: Off-white paint on metal	Training tower exterior stairwell and structural	2,200

< below laboratory reportable level

5.0 OTHER REGULATED BUILDING MATERIALS

5.1 Methodologies

Bulk samples of suspect caulking were collected to the substrate. Each sample was collected and stored in a glass jar with Teflon lined lid and delivered to Fremont Analytical Laboratory in Seattle, Washington. Samples were analyzed via GCMS in accordance with EPA Method 8270. Fremont Analytical is licensed by Washington State Department of Ecology for PCB analysis.

An inventory of fluorescent light tubes, and potential PCB-containing ballasts was conducted in all accessible areas of the Buildings.

Where fluorescent light fixtures were accessible, the ballast covers were removed, and the ballast labels were visually examined. Different types of fluorescent fixtures were distinguished by shield shape, fixture dimension, diffuser type, and the manner in which the ballast covers were connected to the fixture. Inspectors attempted to visually inspect at least two of each type of fluorescent light fixture.

Where fluorescent light fixtures could not be visually examined, the number of potential PCB-containing ballasts in each fixture was estimated based on the following assumptions:

- Each single light tube fluorescent fixture contains one ballast;
- Each multiple light tube fluorescent fixture contains one ballast for every pair of light tubes; and
- All light ballasts are assumed to contain PCBs unless the ballasts are electronic.

5.2 Results

5.2.1 PCB-Caulking Sampling Results

Four bulk samples of caulking were collected and analyzed for PCBs. None of the samples was found to contain detectable levels of PCBs. The results of the suspected PCB-containing caulking sampling are presented in Table 5.2-1.

Table 5.2.1-1. PCB-Caulking Sampling Results

Sample Number and Description	Material Location	Sample Result in parts per million (ppm)
FS–PCB1–01: White caulking (See HSA 31)	Associated with HVAC duct seams in 2nd floor mechanical room (predominant sealant)	ND
FS–PCB2 –01: Silver caulking (See HSA 32)	Associated with HVAC duct seams in 2nd floor mechanical room in spots	ND
FS–PCB3–01: Gray caulking (See HSA 43)	Located at expansion joint and vertical bumper to ground seams at exterior of apparatus/truck bay	ND
FS–PCB4–01: White caulking (See HSA 40)	Located at seams of exterior metal siding	ND

5.2.2 Universal Waste Inventory

Mercury-containing fluorescent light tubes and HID lamps were identified in the Project Areas. All light ballasts observed were electronic. The result of the inventory is presented in Table 5.2-2.

Table 5.2.2-1. Universal Waste Inventory

Sample Number and Description Material Description	Quantity
Mercury-containing fluorescent light tubes (4' length)	620 EA
Mercury-containing fluorescent light tubes (2' length)	11
HIDs	10 EA

EA: Each

6.0 CONCLUSIONS AND RECOMMENDATIONS

On June 12, 13 and 24, 2019, AECOM conducted a regulated building materials assessment of suspect regulated building materials associated with the POS Fire Department Station House located at 2400 South 170th Street in SeaTac, Washington.

6.1 Asbestos

Table 6.1-1 identifies the ACM and assumed ACM.

Table 6.1-1. ACM and Assumed ACM

HA ID, Material Description, and AHERA Classification	Material Location	HA Quantity (approximate)
FS-13: White and pink sink undercoating (M)	Sink in reception area corridor	1 EA
FS-29: White vinyl floor tile, black asphaltic mastic, brown soft adhesive, and white soft adhesive (M)	Located under gray/ blue carpet in 2nd floor Alarm room, asbestos containing black asphaltic mastic is present through floor under carpeting	250 SF
FS-41: Black asphaltic fibrous foundation water proofing (M)	Located on foundation walls where grass is present	900 LF
FS-34: Black vibration isolator (M)	Associated with HVAC units located in 2nd floor mechanical room	10 EA
FS-35: Gray vibration isolator (M)	Associated with HVAC units located in 2nd floor mechanical room	10 EA

HA: material that is uniform in color, texture, general appearance, and construction and application date
M: Miscellaneous material per AHERA, EA: Each, LF: Linear feet, SF: Square feet

During renovation activities, inaccessible materials may be uncovered which were not identified or sampled during this assessment. Personnel in charge of renovation should be alerted to note materials uncovered during these activities which were not identified in this report. The following are AECOM's recommendations.

- The results of this sampling should be communicated to any Contractors working in the Project Areas and a copy of the assessment report must be on-site during renovation activities.
- Any concealed building materials discovered during renovation activities, which are suspected to contain asbestos, should be sampled by an AHERA-accredited building inspector and analyzed by a NVLAP-accredited laboratory to confirm the

presence of asbestos prior to the disturbing such materials.

- The Washington State Department of Labor and Industries requires an exposure assessment be conducted during operations that may disturb the lead paint in such a way that the airborne exposure may reach or exceed the Action level of 30 micrograms per cubic meter (µg/m3) or the Permissible Exposure Limit of 50 µg/m3. The worker protection requirements of WAC 296-155 "Lead in Construction" may apply.

6.2 Lead

Eighteen paint chip samples were collected and analyzed for total lead content. Nine of the samples were found to contain reportable levels of lead. If lead-containing paint is impacted, the Washington State Department of Labor and Industries requires an exposure assessment be conducted during operations that may disturb the lead paint in such a way that the airborne exposure may reach or exceed the Action level of 30 micrograms per cubic meter (µg/m^3) or the Permissible Exposure Limit of 50 µg/m^3. The worker protection requirements of WAC 296-155 "Lead in Construction" and 29 CFR 1926.62 Lead may apply.

6.3 The Other Regulated Building Materials

Four bulk samples of caulking were collected and analyzed for PCBs. None of the samples were found to contain detectable levels of PCBs. PCB bulk product waste should be handled and disposed of in accordance with Toxic Substances Control Act (TSCA) 40 CFR 761.

Mercury-containing fluorescent light tubes were identified in the Project Areas. Fluorescent light tubes, switches, and thermostats may contain mercury. Fluorescent light ballasts and HID lamp ballasts may contain PCBs. In Washington State, even non-electronic ballasts labeled with "No PCBs" may have regulated amount of PCBs and therefore should be handled in accordance with Washington Department of Ecology requirements. Employers must inform their employees of mercury and PCB hazards in accordance with WAC 296-800-170.

Fluorescent light tubes must be removed and recycled or disposed of prior to demolition or renovation as per 40 CFR 262, 40 CFR 265, and WAC 173-303.

LIMITING CONDITIONS

AECOM‘s assessment was limited to observation and minimal destructive sampling and analysis of potentially regulated building materials in accessible portions of the Project Areas. However, common construction techniques render portions of any building inaccessible. As a result, additional asbestos-containing building materials or lead-containing coatings may be present in inaccessible areas (i.e., between walls, ceiling spaces enclosed by wallboard, interior of metal fire doors, etc.) of the Project Areas that were not observed during the assessment. Inaccessible areas should be assumed to contain asbestos until extensive destructive sampling is performed in those areas.

6.4 Limitations of the Assessment

The conclusions of this report are AECOM’s professional opinions, based solely upon visual site observations and interpretations of laboratory analyses, as described in this report. The opinions presented herein apply to the site conditions existing at the time of AECOM’s assessment and interpretation of current regulations pertaining to asbestos, lead-containing paint, PCB-containing sources, and mercury-containing components. Therefore, AECOM’s opinions and recommendations may not apply to future conditions that may exist at the site which we have not had the opportunity to evaluate. All applicable state, federal, and local regulations should always be verified prior to any work that will disturb materials containing asbestos.

AECOM has performed the services set forth in the Scope of Work in accordance with generally accepted industrial hygiene practices in the same or similar localities, related to the nature of the work accomplished, at the time the services were performed.

Suspect regulated building materials located at POS Fire Department Station House that are outside the Project Areas and/or are not included in this regulated building materials assessment are assumed to be asbestos-containing unless they are sampled by an AHERA-accredited asbestos building inspector and analyzed by a NVLAP-accredited laboratory to confirm the presence of asbestos prior to the disturbing of such materials.

The regulated building materials and conditions presented in this report represent those observed on the dates we conducted the sampling. This sampling is intended for the exclusive use of Port Construction Services for specific application to the proposed renovation. This assessment is not intended to replace construction or demolition plans, specifications, or bidding documents. This report is not meant to represent a legal opinion.

Prepared by
:

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Industrial Hygienist
AECOM, Technical Services

Reviewed by:

Shannon MacKay
Senior Environmental Scientist
AECOM, Technical Services

Attachment 6:

Regulated Building Materials Assessment Report for Cargo 6 (Swissport)
Building 167A
(Report Only)

AECOM

Environmental Compliance

Submitted to
Port Construction Services
17900 International Boulevard,
Suite 400-C
Seattle, Washington
98168

Submitted by
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Seattle, Washington
98101

Regulated Building Materials Assessment Report

Building 167A
Port Construction Services
Seattle-Tacoma International Airport
16745 Air Cargo Road
SeaTac, Washington

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Project Title:	Regulated Building Materials Assessment Building 167A 16745 Air Cargo Road SeaTac, Washington 98004
Prepared for:	Mr. Scott Rinear Construction Manager Port Construction Services 17900 International Boulevard, Suite 400-C Seattle, Washington 98168
Assessment Conducted by:	AECOM Technical Services 1111 3rd Avenue, Suite 1600 Seattle, Washington 98101-3241
AECOM Project Number:	60614488
Assessment Personnel:	Ms. Shannon MacKay AHERA-Accredited Building Inspector Number ABIR0726190006N18984 (exp. 7/26/2020) Mr. Mike Kosoff AHERA-Accredited Building Inspector Number 174631 (exp. 9/10/2020)
Assessment Date:	September 24, 2019
Report Prepared by:	Mike Kosoff Environmental Scientist AECOM Technical Services, Inc.
Report Reviewed by:	Shannon MacKay Sr. Environmental Scientist AECOM Technical Services, Inc.
Report Issue Date:	October 23, 2019

EXECUTIVE SUMMARY

Port Construction Services retained AECOM Technical Services, Inc. (AECOM), to conduct a regulated building materials assessment for Building 167A (the Building) located at 16745 Air Cargo Road in SeaTac, Washington. AECOM's representatives, Ms. Shannon MacKay and Mr. Mike Kosoff, conducted the assessment on September 24, 2019. This assessment included the interior, exterior, and did not include the roof.

AECOM assessed the Building for the following:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials;
- Lead-containing coatings (paints);
- Mercury-containing light tubes; and
- Polychlorinated biphenyls (PCBs)-containing light ballasts.

Fifty-four bulk samples of suspect asbestos-containing materials were collected and analyzed using Polarized Light Microscopy (PLM). Two of the materials were found to contain greater than one percent asbestos, one of the materials was assumed to contain asbestos, and none of the materials were found to contain less than one percent asbestos. In addition, seven materials were visually assessed and determined to be non-suspect.

Eight paint chip samples were collected and analyzed for total lead content. Four of the paint chip samples were found to contain detectable levels of lead.

Mercury-containing fluorescent light tubes and PCB-containing light ballasts were identified in the Building.

1.0 INTRODUCTION

Port Construction Services retained AECOM Technical Services, Inc. (AECOM), to conduct a regulated building materials assessment for Building 167A (the Building) located at 16745 Air Cargo Road in SeaTac, Washington. AECOM's representatives, Ms. Shannon MacKay and Mr. Mike Kosoff, conducted the assessment on September 24, 2019. This assessment included the interior, exterior, and did not include the roof.

AECOM assessed the Building for the following:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials;
- Lead-containing coatings (paints);
- Mercury-containing light tubes; and
- Polychlorinated biphenyls (PCBs)-containing light ballasts.

2.0 PROJECT BACKGROUND

This report presents the results of our regulated building materials assessment conducted for Building 167A located at 16745 Air Cargo Road in SeaTac, Washington. The purpose of the assessment was to identify potential lead-containing coatings (paints), PCB-containing ballasts, mercury-containing components, and asbestos-containing materials for purposes of hazard communication and on-going management. The assessment included the interior, exterior, and did not include the roof.

The purpose of the inspection was to assist Port Construction Services with communicating the presence of lead-containing coatings (paints), PCB-containing ballasts, mercury-containing sources, and the presence, location, and quantity of ACM and assumed ACM to employees, vendors, and contractors working in the Building and to meet the requirements for an asbestos survey for the Puget Sound Clean Air Agency (PSCAA) and a good faith inspection as required by Washington State Department of Labor and Industries' Division of Occupational Safety and Health (DOSH) regulations prior to renovation.

2.1 Sources of Information

During the course of the assessment, the following personnel and documents provided assistance to the AECOM inspector:

- Mr. Scott Rinear, Construction Manager, Port Construction Services
- Mr. Joel Astley, Construction Manager, Port Construction Services
- *Western Airlines Air Freight Facility As-Built Drawings*, prepared by Richardson Associates, dated April 1979

2.2 Project Area Descriptions

Building 167A is approximately 40,882 square feet and contains a warehouse with a drive-in cooler and two stories of office spaces, restrooms, locker rooms, storage rooms, and a lobby. Flooring consists of glued-down floor tiles, glued-down carpeting, ceramic floor tiles, and bare concrete. Walls consist of gypsum wallboard with joint compound and cement masonry units (CMU). Ceilings consist of suspended ceiling tiles and gypsum wallboard. The Building is heated via heating, ventilating, and air conditioning (HVAC) systems with observed ductwork being insulated with paper and foil-wrapped fiberglass insulation. Pipe insulation consists of paper and foil-wrapped fiberglass insulation with canvas-wrapped mudded fittings and plastic-wrapped fiberglass fittings.

The Building exterior consists of painted concrete. The roof was not included as part of this assessment.

3.0 ASBESTOS ASSESSMENT

3.1 Building Assessment

Ms. MacKay and Mr. Kosoff, both Asbestos Hazard Emergency Response Act (AHERA)-accredited building inspectors, (Certification No. ABIR0726190006N18984, expiration date: 7/26/2020 and Certification No. 174631, expiration date: 9/10/2020, respectively), from AECOM, performed the sampling on September 24, 2019. The AECOM inspectors collected 54 samples of materials identified as suspect ACM.

This assessment was conducted using a modified protocol adapted from AHERA. The protocol is as follows:

- Identify suspect asbestos-containing materials.
- Group materials into homogeneous sampling areas/materials.
- Quantify each homogeneous material and collect representative samples. The number of samples collected of miscellaneous materials was determined by the inspector.
- Samples of each material were taken to the substrate, ensuring that all components and layers of the material were included.
- Sample locations are referenced on the field data forms according to sample number.
- Sampling was performed by an AHERA-accredited building inspector, and the use of proper protective equipment and procedures was followed.

3.2 Sampling Procedures

This sampling was conducted using the following procedures:

1) Spread the plastic drop cloth (if needed) and set up other equipment, e.g., ladder.
2) Don protective equipment (respirator and protective clothing if needed).
3) Label sample container with its identification number and record number. Record sample location and type of material sampled on a sampling data form.
4) Moisten area where sample is to be extracted (spray the immediate area with water).
5) Extract sample using a clean knife, drill capsule, or cork boring tool to cut out or scrape off approximately one tablespoon of the material. Penetrate all layers of material.
6) Place sample in a container and tightly seal it.
7) Wipe the exterior of the container with a wet wipe to remove any material that may have adhered to it during sampling.
8) Clean tools with wet wipes and wet mop; or vacuum area with HEPA vacuum to clean all debris.
9) Discard protective clothing, wet wipes and rags, cartridge filters, and drop cloth in a labeled plastic waste bag.

3.3 Analytical Methodology

Suspect ACMs were sampled in general accordance with 40 Code of Federal Regulations (CFR) 763.86 by an Environmental Protection Agency (EPA) AHERA-accredited building inspector. Each sample was collected and stored in a heavy-duty, self-sealing plastic bag, and delivered to NVL Laboratories, Inc. in Seattle, Washington. Samples were analyzed via polarized light microscopy (PLM) in accordance with EPA/600/M4-82-020 and EPA/600/R-93/116. NVL Laboratories, Inc. is accredited to perform PLM analysis by the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program (NVLAP).

3.4 Asbestos Sampling Results

Table 3.4-1 provides a list of suspect homogeneous sampling area (HSA) material descriptions, material locations, and results for this sampling. ACMs are presented in bold. Refer to the attached Figures in Appendix A for sample locations and Photographs in Appendix B for additional material information.

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
167A-1: 12”x12” red vinyl floor tile with white fibrous mesh and white soft adhesive with gray floor leveling compound and debris (M)	Flooring in first floor lobby 1	Floor tile with mesh: ND Adhesive with leveling compound: ND
167A-2: 2’x2’ white ceiling tiles with pinholes and fissures (M)	Predominant suspended ceilings throughout north end of the Building	ND
167A-3: White/off-white joint compound with paint, white joint compound with paper, and white gypsum wallboard with paper (M)	Predominant walls throughout north end of the Building	Joint compound with paint: ND Joint compound with paper: ND Gypsum: ND
167A-4: 4” black rubber cove base and white soft mastic (M)	Base of walls throughout first floor lobby 1	Cove base: ND Mastic: ND
167A-5: 12”x12” beige vinyl floor tile with tan streaks and black asphaltic mastic (M)	**Flooring in counter area 2 and rooms 27, 30, 32, and 34**	**Floor tile: ND** **Mastic: 2% to 3% chrysotile**
167A-6: 4” gray rubber cove base, white soft mastic, white joint compound with paint (M)	Base of walls in counter area 2 and predominant throughout second floor	Cove base: ND Mastic: ND Joint compound: ND
167A-7: Yellow soft mastic with debris and black fibrous material (M)	Associated with blue carpeting in rooms 4, 32, 43, and second floor east offices	ND
167A-8: 6” blue rubber cove base, white soft mastic, and white joint compound with paint (M)	Base of walls in counter area 2 and in places of second floor	Cove base: ND Mastic: ND Joint compound: ND
167A-9: Foil and paper-wrapped yellow fiberglass insulation (T)	HVAC ductwork above the ceilings	Visually assessed and determined to be non-suspect
167A-10: Paper and foil-wrapped yellow fiberglass pipe insulation with plastic-wrapped fiberglass fittings (T)	Predominant 2” to 4” OD pipe insulation throughout the Building	Visually assessed and determined to be non-suspect
167A-11: Foil and paper-wrapped black fiberglass batt insulation (T)	Throughout wall cavities	Visually assessed and determined to be non-suspect
167A-12: Tan crumbly material, brown compressed fibrous laminate with pink/white surface, and yellow soft mastic (M)	Countertops in counter area 2	Tan material: ND Laminate: ND Mastic: ND
167A-13: 12”x12” light gray vinyl floor tile with gray streaks, gray floor leveling compound with yellow mastic, and yellow soft mastic with residual white joint compound (M)	Flooring in rooms 6, 7, 8, 9, and 35	Floor tile: ND Leveling compound with mastic: ND Mastic with joint compound: ND

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
167A-14: Light gray vinyl floor sheeting with dark blue specks and white fibrous backing with yellow soft mastic and debris (M)	Flooring on round metal covers in room 8	Vinyl: ND Backing with mastic: ND
167A-15: 4” beige rubber cove base, tan brittle mastic, brown brittle mastic with paint, and white joint compound with paint (M)	At base of walls on north end of the warehouse	Cove base: ND Tan mastic: ND Brown mastic: ND Joint compound: ND
167A-16: 2’x2’ white ceiling tiles with light fissure and pinhole pattern (M)	Patch areas of predominant suspended ceiling tiles (HSA 2)	ND
167A-17: Yellow/black soft mastic with debris (M)	Associated with dark blue carpeting in room 14	ND
167A-18: 4” dark brown rubber cove base, white soft mastic, trace thin brown brittle mastic with paint, white joint compound with paint (M)	At base of walls in room 14	Cove base: ND White mastic: ND Brown mastic: ND Joint compound: ND
167A-19: White joint compound with paint and yellow mastic and tan fibrous gypsum paper (M)	Associated with plastic panels on lower walls of restroom 3	Joint compound with mastic: ND Paper: ND
167A-20: White soft caulking with paint (M)	At sink and toilet of restroom 3	ND
167A-21: White/black fibrous spray-applied fireproofing (S)	On pandecking in rooms 10 and 15	ND
167A-22: Brown soft/crumbly sealant with trace amount of silver flaky material (M)	At seams of VAV boxes	ND
167A-23: 2”x2” beige ceramic tile, gray brittle grout, and tan fibrous mortar (M)	Flooring in rooms 17, 29, 31, 41, 42, and 43	Ceramic: ND Grout: ND Mortar: ND
167A-24: 4”x4” beige ceramic tile and white grout and mortar (M)	Lower walls in rooms 17, 29, 31, 41, 42, and 43	Ceramic: ND Grout and mortar: ND
167A-25: 3”x8” brown ceramic tile (M)	Flooring at entrance to room 17	ND
167A-26: Gray CMU block with mortar and paint (M)	Walls in room 17	ND
167A-27: Brown stair tread with yellow streaks and brown brittle mastic (M)	Stairways 11, 19, and 44	Tread: ND Mastic: ND
167A-28: Black asphaltic sink undercoating (M)	**Sink in room 35**	**3% chrysotile**
167A-29: 2’x2’ white ceiling tile with pinholes and textured pattern (M)	Suspended ceiling in corridor 33, reception 20, and offices 45	ND
167A-30: Gray sealant (M)	At seams of HVAC ducting on west end of second floor	ND

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
167A-31: Gray flaky fibrous mudded insulation with gray fibrous mesh, residual white fibrous mesh with silver foil, paper, and trace yellow mastic, and yellow fiberglass insulation (HSA 10) (T)	Mudded fittings in pipe chase for restroom 29	Mudded insulation with mesh: ND Mesh with foil, paper, and mastic: ND Fiberglass insulation: ND
167A-32: Black rubber vibration isolator with embedded white fibrous mesh (M)	At HVAC ducting on west end of second floor	ND
167A-33: Beige rubbery material, white fibrous material, white interwoven fibrous material with paint, and gray fibrous material (M)	Folding wall partition between rooms 35 and 39	Rubbery material: ND White fibrous material: ND Interwoven fibrous material: ND Gray fibrous material: ND
167A-34: 4”x4” blue ceramic tile, black grout, and white soft mastic (M)	Flooring at entry to room 25	Ceramic: ND Grout: ND Mastic: ND
167A-35: Gaskets (M)	**At pipe flanges throughout the Building**	**Assumed to be asbestos-containing**
167A-36: Paper and foil-wrapped yellow fiberglass pipe insulation with plastic-wrapped fiberglass fittings (T)	Observed 8” to 12” OD pipe insulation throughout the Building	Visually assessed and determined to be non-suspect
167A-37: Gray caulking with paint (M)	At seams of concrete on exterior walls throughout the Building	ND
167A-38: Red fire stop sealant and white joint compound with paint (M)	At conduit penetrations in places	Sealant: ND Joint compound: ND
167A-39: Yellow brittle mastic with white crumbly material and gray concrete (M)	Associated with exterior sign on east side of the Building	Mastic with crumbly material: ND Concrete: ND

ND: none detected, HSA: material that is uniform in color, texture, general appearance, and construction and application date, M: Miscellaneous material per AHERA, S: Surfacing material per AHERA, T: Thermal System Insulation material per AHERA, OD: Outer diameter

Additional suspect ACMs may be present in inaccessible or concealed spaces. These spaces include, but are not limited to, areas not assessed, areas not accessible at the time of the assessment, freight elevators, fire doors, Electrical systems, pipe chases, spaces between wall/ceiling/door/floor cavities, interior of mechanical components, beneath foundation pads, etc. If future maintenance, renovation, and/or demolition activities make these areas accessible, AECOM recommends that a thorough assessment of these spaces be conducted at that time to identify and confirm the presence or absence of additional suspect ACMs. Until then, all such unidentified materials must be treated as assumed ACMs in accordance with applicable federal, state, and local regulations.

If the analytical results indicate that all the samples collected per HSA do not contain asbestos, then the HSA (material) is considered a non-ACM. If the analytical results of one or more of the samples collected per HSA indicate that asbestos is present in quantities of greater than one percent asbestos as defined by the EPA, all of the HSA (material) is considered to be an ACM regardless of any other analytical results.

Any material that contains greater than one percent asbestos is considered an ACM and must be handled according to Occupational Safety and Health Administration (OSHA), EPA, and applicable state and local regulations. The EPA National

Emission Standard for Hazardous Air Pollutants (NESHAP) 40 CFR 61, Subparts A and M has a requirement related to assessment of suspect ACM in buildings. When the asbestos content of a friable material is visually estimated by PLM to be detectable but less than ten percent, your firm may elect to (1) assume the amount is greater than one percent and treat the material as asbestos-containing or (2) require verification of the amount by the PLM point counting technique. If the results obtained by point counting and visual estimation are different, the point count result must be used. When no asbestos is detected by PLM, point counting is not required.

4.0 LEAD ASSESSMENT

4.1 Sampling Methodology

Homogeneous painted surfaces were defined by substrate, application, and color. The paint chip samples were collected to the substrate to ensure that all layers present on the substrate were included in the laboratory analysis. The samples were collected and stored in a heavy-duty, self-sealing plastic bag and delivered to NVL Laboratories, Inc. The samples were analyzed via Atomic Absorption Spectrophotometry in accordance with Method EPA 3051/7000B. NVL Laboratories, Inc. is accredited by American Industrial Hygiene Association (AIHA) for lead analysis.

4.2 Lead Sampling Results

Eight paint chip samples were collected and analyzed for total lead content. Four of the samples were found to contain reportable levels of lead. The result of the analysis is presented in Table 4.2-1.

Table 4.2-1. Paint Chip Sample Result

Sample Number and Description	Paint Location	Sample Result in parts per million (ppm)
167A-Pb1: White paint on gypsum wallboard	Predominant interior walls throughout north side of the Building	<47
167A-Pb2: Light green paint on CMU	Interior walls in places on north side of first floor	<47
167A-Pb3: Off-white paint on metal	Predominant interior door frames	82
167A-Pb4: Gray paint on concrete	Exterior walls throughout the Building	<51
167A-Pb5: Dark blue paint on metal	Exterior roll-up doors and door frames	190
167A-Pb6: Yellow paint on metal	Interior bollards throughout the warehouse	50,000
167A-Pb7: White paint on concrete	Interior walls throughout the warehouse	<50
167A-Pb8: Off-white paint on metal	Interior structural steel throughout the warehouse	200

< below laboratory reportable level

5.0 OTHER REGULATED BUILDING MATERIALS

5.1 Methodology

An inventory of fluorescent light tubes, and potential PCB-containing ballasts was conducted in all accessible areas of the Building.

Where fluorescent light fixtures were accessible, the ballast covers were removed, and the ballast labels were visually examined. Different types of fluorescent fixtures were distinguished by shield shape, fixture dimension, diffuser type, and the

manner in which the ballast covers were connected to the fixture. Inspectors attempted to visually inspect at least two of each type of fluorescent light fixture.

Where fluorescent light fixtures could not be visually examined, the number of potential PCB-containing ballasts in each fixture was estimated based on the following assumptions:

- Each single light tube fluorescent fixture contains one ballast;
- Each multiple light tube fluorescent fixture contains one ballast for every pair of light tubes; and
- All light ballasts are assumed to contain PCBs unless the ballasts are electronic.

5.2 Results

An inventory of fluorescent light tubes, and potential PCB-containing ballasts was conducted in all accessible areas of the Building The results of the inventory are presented in Table 5.2-1.

Table 5.2-1. Other Regulated Building Materials Findings

Sample Number and Description Material Description	Quantity
Mercury-containing fluorescent light tubes (4’ length)	353 EA
PCB-containing light ballasts (magnetic)	203 EA
HIDs	91 EA

EA: Each

6.0 CONCLUSIONS AND RECOMMENDATIONS

On September 24, 2019, AECOM conducted a regulated building materials assessment of suspect regulated building materials associated with the Building 167A located at16745 Air Cargo Road in SeaTac, Washington.

6.1 Asbestos

Table 6.1-1 identifies the assumed ACM and confirmed ACM.

Table 6.1-1. Assumed ACM and Confirmed ACM

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Quantity (approximate)
167A-5: Non-asbestos-containing 12”x12” beige vinyl floor tile with tan streaks and asbestos-containing black asphaltic mastic (M)	Flooring in counter area 2 and rooms 27, 30, 32, and 34	600 SF
167A-28: Asbestos-containing black asphaltic sink undercoating (M)	Sink in room 35	1 EA
167A-35: Assumed asbestos-containing gaskets (M)	At pipe flanges throughout the Building	35 EA

HSA: material that is uniform in color, texture, general appearance, and construction and application date
M: Miscellaneous material per AHERA, SF: Square feet, EA: Each

During demolition activities, inaccessible materials may be uncovered which were not identified or sampled during this assessment. Personnel in charge of demolition should be alerted to note materials uncovered during these activities which were not identified in this report. The following are AECOM’s recommendations.

- The results of this sampling should be communicated to any Contractors working in the Project Areas and a copy of the assessment report must be on-site during demolition activities.
- Any concealed building materials discovered during demolition activities, which are suspected to contain asbestos, should be sampled by an AHERA-accredited building inspector and analyzed by a NVLAP-accredited laboratory to confirm the presence of asbestos prior to the disturbing such materials.
- The Washington State Department of Labor and Industries requires an exposure assessment be conducted during operations that may disturb the lead paint in such a way that the airborne exposure may reach or exceed the Action level of 30 micrograms per cubic meter (µg/m3) or the Permissible Exposure Limit of 50 µg/m3. The worker protection requirements of WAC 296-155 "Lead in Construction" may apply.

6.2 Lead

Eight paint chip samples were collected and analyzed for total lead content. Four of the samples were found to contain reportable levels of lead. If lead-containing paint is impacted, the Washington State Department of Labor and Industries requires an exposure assessment be conducted during operations that may disturb the lead paint in such a way that the airborne exposure may reach or exceed the Action level of 30 micrograms per cubic meter (µg/m^3) or the Permissible Exposure Limit of 50 µg/m^3. The worker protection requirements of WAC 296-155 "Lead in Construction" and 29 CFR 1926.62 Lead may apply.

6.3 Other Regulated Building Materials

Mercury-containing fluorescent light tubes and HID lamps were identified in the Building. Fluorescent light tubes, switches, and thermostats may contain mercury. Fluorescent light ballasts and HID lamp ballasts may contain PCBs. In Washington State, even non-electronic ballasts labeled with "No PCBs" may have regulated amounts of PCBs and therefore should be handled in accordance with Washington Department of Ecology requirements. Employers must inform their employees of mercury and PCB hazards in accordance with WAC 296-800-170.

Fluorescent light tubes must be removed and recycled or disposed of prior to demolition or renovation as per 40 CFR 262, 40 CFR 265, and WAC 173-303.

LIMITING CONDITIONS

AECOM's assessment was limited to observation and minimal destructive sampling and analysis of potentially regulated building materials in accessible portions of the Building. However, common construction techniques render portions of any building inaccessible. As a result, additional asbestos-containing building materials or lead-containing coatings may be present in inaccessible areas (i.e., between walls, ceiling spaces enclosed by wallboard, interior of metal fire doors, etc.) of the Building that were not observed during the assessment. Inaccessible areas should be assumed to contain asbestos until extensive destructive sampling is performed in those areas.

6.4 Limitations of the Assessment

The conclusions of this report are AECOM's professional opinions, based solely upon visual site observations and interpretations of laboratory analyses, as described in this report. The opinions presented herein apply to the site conditions existing at the time of AECOM's assessment and interpretation of current regulations pertaining to lead-containing paint, PCB-containing ballasts, mercury-containing components, and asbestos-containing materials. Therefore, AECOM's opinions and recommendations may not apply to future conditions that may exist at the site which we have not had the opportunity to evaluate. All applicable state, federal, and local regulations should always be verified prior to any work that will disturb materials containing asbestos.

AECOM has performed the services set forth in the Scope of Work in accordance with generally accepted industrial hygiene practices in the same or similar localities, related to the nature of the work accomplished, at the time the services were performed.

Suspect regulated building materials located at Building 167A that are not included in this regulated building materials assessment are assumed to be asbestos-containing unless they are sampled by an AHERA-accredited asbestos building inspector and analyzed by a NVLAP-accredited laboratory to confirm the presence of asbestos prior to the disturbing of such materials.

The regulated building materials and conditions presented in this report represent those observed on the dates we conducted the sampling. This sampling is intended for the exclusive use of Port Construction Services for specific application to the proposed renovation. This assessment is not intended to replace construction or demolition plans, specifications, or bidding documents. This report is not meant to represent a legal opinion.

Prepared by:

Mike Kosoff
Environmental Scientist
AECOM Technical Services, Inc.

Reviewed by:

Shannon MacKay
Sr. Environmental Scientist
AECOM Technical Services, Inc.

Attachment 7:

Regulated Building Materials Assessment Report for Cargo 6 (Swissport)
Building 167B
(Report Only)

AECOM

Environmental Compliance

Submitted to
Port Construction Services
17900 International Boulevard,
Suite 400-C
Seattle, Washington
98168

Submitted by
AECOM
1111 3rd Avenue
Suite 1600
Seattle, Washington
98101

Regulated Building Materials Assessment Report

Building 167B
Port Construction Services
Seattle-Tacoma International Airport
16749 Air Cargo Road
SeaTac, Washington

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Project Title:	Regulated Building Materials Assessment Building 167B 16749 Air Cargo Road SeaTac, Washington 98004
Prepared for:	Mr. Scott Rinear Construction Manager Port Construction Services 17900 International Boulevard, Suite 400-C Seattle, Washington 98168
Assessment Conducted by:	AECOM Technical Services 1111 3rd Avenue, Suite 1600 Seattle, Washington 98101-3241
AECOM Project Number:	60614488
Assessment Personnel:	Ms. Shannon MacKay AHERA-Accredited Building Inspector Number ABIR0726190006N18984 (exp. 7/26/2020) Mr. Mike Kosoff AHERA-Accredited Building Inspector Number 174631 (exp. 9/10/2020)
Assessment Date:	September 25, 2019
Report Prepared by:	Mike Kosoff Environmental Scientist AECOM Technical Services, Inc.
Report Reviewed by:	Shannon MacKay Sr. Environmental Scientist AECOM Technical Services, Inc.
Report Issue Date:	October 23, 2019

EXECUTIVE SUMMARY

Port Construction Services retained AECOM Technical Services, Inc. (AECOM), to conduct a regulated building materials assessment for Building 167B (the Building) located at 16749 Air Cargo Road in SeaTac, Washington. AECOM's representatives, Ms. Shannon MacKay and Mr. Mike Kosoff, conducted the assessment on September 25, 2019. This assessment included the interior, exterior, and did not include the roof.

AECOM assessed the Building for the following:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials;
- Lead-containing coatings (paints);
- Mercury-containing light tubes; and
- Polychlorinated biphenyls (PCBs)-containing light ballasts.

Thirty-six bulk samples of suspect asbestos-containing materials were collected and analyzed using Polarized Light Microscopy (PLM). None of the materials were found to contain greater than one percent asbestos, one of the materials was assumed to contain asbestos, and none of the materials were found to contain less than one percent asbestos. In addition, four materials were visually assessed and determined to be non-suspect.

Six paint chip samples were collected and analyzed for total lead content. One of the paint chip samples were found to contain detectable levels of lead.

Mercury-containing fluorescent light tubes and PCB-containing light ballasts were identified in the Building.

1.0 INTRODUCTION

Port Construction Services retained AECOM Technical Services, Inc. (AECOM), to conduct a regulated building materials assessment for Building 167B (the Building) located at 16749 Air Cargo Road in SeaTac, Washington. AECOM's representatives, Ms. Shannon MacKay and Mr. Mike Kosoff, conducted the assessment on September 25, 2019. This assessment included the interior, exterior, and did not include the roof.

AECOM assessed the Building for the following:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials;
- Lead-containing coatings (paints);
- Mercury-containing light tubes; and
- Polychlorinated biphenyls (PCBs)-containing light ballasts.

2.0 PROJECT BACKGROUND

This report presents the results of our regulated building materials assessment conducted for Building 167B located at 16749 Air Cargo Road in SeaTac, Washington. The purpose of the assessment was to identify potential lead-containing coatings (paints), PCB-containing ballasts, mercury-containing components, and asbestos-containing materials for purposes of hazard communication and on-going management. The assessment included the interior, exterior, and did not include the roof.

The purpose of the inspection was to assist Port Construction Services with communicating the presence of lead-containing coatings (paints), PCB-containing ballasts, mercury-containing sources, and the presence, location, and quantity of ACM and assumed ACM to employees, vendors, and contractors working in the Building and to meet the requirements for an asbestos survey for the Puget Sound Clean Air Agency (PSCAA) and a good faith inspection as required by Washington State Department of Labor and Industries' Division of Occupational Safety and Health (DOSH) regulations prior to renovation.

2.1 Sources of Information

During the course of the assessment, the following personnel and documents provided assistance to the AECOM inspector:

- Mr. Scott Rinear, Construction Manager, Port Construction Services
- Mr. Joel Astley, Construction Manager, Port Construction Services
- Port of Seattle Sea-Tac International Airport, *Delta Airlines GSE Building Alterations As-Built Drawings*, dated 12/07/2006

2.2 Project Area Descriptions

Building 167B is approximately 8,000 square feet with a first floor and mezzanine level. The Building consists of vehicle work bays, office spaces, communication room, break room, restrooms, locker rooms, storage rooms, and a shop. Flooring consists of glued-down floor tiles, glued-down vinyl floor sheeting, ceramic floor tiles, and bare concrete. Walls consist of gypsum wallboard with joint compound and concrete. Ceilings consist of suspended ceiling tiles and gypsum wallboard. The Building is heated via heating, ventilating, and air conditioning (HVAC) systems with observed ductwork being insulated with paper and foil-wrapped fiberglass insulation. Pipe insulation consists of paper and foil-wrapped fiberglass insulation with plastic-wrapped fiberglass fittings.

The Building exterior consists of metal siding. The roof was not included as part of this assessment.

3.0 ASBESTOS ASSESSMENT

3.1 Building Assessment

Ms. MacKay and Mr. Kosoff, both Asbestos Hazard Emergency Response Act (AHERA)-accredited building inspectors, (Certification No. ABIR0726190006N18984, expiration date: 7/26/2020 and Certification No. 174631, expiration date: 9/10/2020, respectively), from AECOM, performed the sampling on September 25, 2019. The AECOM inspectors collected 36 samples of materials identified as suspect ACM.

This assessment was conducted using a modified protocol adapted from AHERA. The protocol is as follows:

- Identify suspect asbestos-containing materials.
- Group materials into homogeneous sampling areas/materials.
- Quantify each homogeneous material and collect representative samples. The number of samples collected of miscellaneous materials was determined by the inspector.
- Samples of each material were taken to the substrate, ensuring that all components and layers of the material were included.
- Sample locations are referenced on the field data forms according to sample number.
- Sampling was performed by an AHERA-accredited building inspector, and the use of proper protective equipment and procedures was followed.

3.2 Sampling Procedures

This sampling was conducted using the following procedures:

1) Spread the plastic drop cloth (if needed) and set up other equipment, e.g., ladder.
2) Don protective equipment (respirator and protective clothing if needed).
3) Label sample container with its identification number and record number. Record sample location and type of material sampled on a sampling data form.
4) Moisten area where sample is to be extracted (spray the immediate area with water).
5) Extract sample using a clean knife, drill capsule, or cork boring tool to cut out or scrape off approximately one tablespoon of the material. Penetrate all layers of material.
6) Place sample in a container and tightly seal it.
7) Wipe the exterior of the container with a wet wipe to remove any material that may have adhered to it during sampling.
8) Clean tools with wet wipes and wet mop; or vacuum area with HEPA vacuum to clean all debris.
9) Discard protective clothing, wet wipes and rags, cartridge filters, and drop cloth in a labeled plastic waste bag.

3.3 Analytical Methodology

Suspect ACMs were sampled in general accordance with 40 Code of Federal Regulations (CFR) 763.86 by an Environmental Protection Agency (EPA) AHERA-accredited building inspector. Each sample was collected and stored in a heavy-duty, self-sealing plastic bag, and delivered to NVL Laboratories, Inc. in Seattle, Washington. Samples were analyzed via polarized light microscopy (PLM) in accordance with EPA/600/M4-82-020 and EPA/600/R-93/116. NVL Laboratories, Inc. is accredited to perform PLM analysis by the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program (NVLAP).

3.4 Asbestos Sampling Results

Table 3.4-1 provides a list of suspect homogeneous sampling area (HSA) material descriptions, material locations, and results for this sampling. ACMs are presented in bold. Refer to the attached Figures in Appendix A for sample locations and Photographs in Appendix B for additional material information.

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
167B-1: Gray vinyl floor sheeting with pebble pattern and off-white fibrous backing with thin yellow mastic and debris (M)	Flooring in Men's Locker Rooms 115/116, 208/209, and Women's Locker Room 206/207	Vinyl: ND Backing with mastic and debris: ND
167B-2: 4" dark brown rubber cove base and off-white mastic with debris, trace gypsum paper, and paint (M)	At base of predominant interior walls throughout the Building	Cove base: ND Mastic with debris, paper, and paint: ND
167B-3: 2'x4' ceiling tiles with pinholes, fissures, and paint (M)	Suspended ceilings in Men's Locker Room 115/116, Women's Locker Room 113/114, and throughout Mezzanine Level	ND
167B-4: Off-white joint compound with paint, off-white joint compound with paper, and white gypsum wallboard with paper (M)	Predominant interior walls throughout the Building	Joint compound with paint: ND Joint compound with paper: ND Gypsum with paper: ND
167B-5: Off-white mastic, trace white joint compound with paint, and white gypsum wallboard with paper (M)	Associated with plastic wall panels on lower walls Men's Locker Rooms 115/116 and 208/209 and Women's Locker Rooms 113/114 and 206/207	Mastic: ND Joint compound with paint: ND Gypsum with paper: ND
167B-6: Red fire stop sealant and trace white joint compound with trace gypsum paper (M)	Where top of walls meets the metal pandecking throughout the Building	Sealant: ND Joint compound with paper: ND
167B-7: Gray sealant with black coating and debris (M)	At seams of concrete flooring	ND
167B-8: 12"x12" black vinyl floor tile with white streaks, black rubbery material, yellow adhesive with debris, white vinyl floor sheeting, beige fibrous backing with white mastic and trace gray leveling compound, and white rubbery material (M)	Flooring in Women's Locker Room 113/114	Floor tile: ND Black rubbery material: ND Adhesive with debris: ND Vinyl: ND Backing with mastic and leveling compound: ND White rubbery material: ND
167B-9: Black vinyl floor sheeting with debris, yellow mastic with thin gray leveling compound, white vinyl floor tile, and black asphaltic mastic with thin beige leveling compound (M)	Flooring in Room 112	Vinyl: ND Yellow mastic with gray leveling compound: ND Floor tile: ND Black mastic with beige leveling compound: ND
167B-10: 6" black rubber cove base and yellow mastic (M)	At base of walls in Room 112	Cove base: ND Mastic: ND
167B-11: Gray sink undercoating (M)	Sink in Room 112	ND
167B-12: White caulking (M)	At sink in hallway between first floor Locker Rooms	ND

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
167B-13: Paper and foil-wrapped yellow fiberglass pipe insulation with plastic-wrapped yellow fiberglass insulation fittings (T)	Observed 8” to 12” OD piping throughout the Building	Visually assessed and determined to be non-suspect
167B-14: Paper and foil-wrapped yellow fiberglass pipe insulation with plastic-wrapped yellow fiberglass insulation fittings (T)	Observed 2” to 4” OD piping throughout the Building	Visually assessed and determined to be non-suspect
167B-15: Gaskets (M)	**At pipe flanges throughout the Building**	**Assumed to be asbestos-containing**
167B-16: Residual white fibrous paper with white sealant and residual foil (M) and residual yellow fiberglass insulation (T)	At ends of pipe insulation (HSAs 13 and 14)	Paper, sealant, and foil: ND Insulation: ND
167B-17: Black grip tape with clear adhesive, brown rubber tread, white soft material, and thin gray leveling compound (M)	Flooring on ramps and stairs at Entries 110 and 118	Grip tape with adhesive: ND Tread: ND White material: ND Leveling compound: ND
167B-18: 4” black rubber cove base, yellow mastic with debris, and thin off-white joint compound with paper and paint (M)	At base of walls in Room 106	Cove base: ND Mastic: ND Joint compound with paper and paint: ND
167B-19: 12”x12” black vinyl floor tile with white streaks, yellow adhesive with debris, white vinyl floor tile with debris, and yellow adhesive with debris (M)	Flooring in Room 106	Black floor tile: ND Yellow adhesive with debris: ND White vinyl floor tile: ND Yellow adhesive with debris: ND
167B-20: White caulking with brown coating with wood and debris (M)	At perimeter of interior door frames in places throughout the Building	ND
167B-21: Yellow mastic with debris (M)	At threads of compressed air piping throughout the Building	ND
167B-22: White vinyl floor sheeting with blue squares, white vinyl floor tile, and black asphaltic mastic (M)	Flooring in Room 117	Vinyl: ND Floor tile: ND Mastic: ND
167B-23: 12”x12” off-white vinyl floor tile with gray streaks and black asphaltic mastic with thin yellow adhesive (M)	Predominant flooring throughout the Mezzanine Level	Floor tile: ND Mastic and adhesive: ND
167B-24: 12”x24” light gray vinyl floor tile with white vinyl surface and debris and white adhesive with debris (M)	In front of sink in Men’s Locker Room 208	Floor tile with vinyl coating: ND Adhesive: ND
167B-25: Dark gray sink undercoating (M)	Sink in Men’s Locker Room 208	ND

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
167B-26: Dark gray sealant with trace paper (M)	At seams of HVAC ducting above suspended ceilings	ND
167B-27: Black sink undercoating (M)	Sink in Break Room 205	ND
167B-28: 12”x12” red ceramic floor tile with beige surface and debris, thin white brittle grout, and off-white mortar with debris (M)	Flooring in Break Room 205	Ceramic: ND Grout: ND Mortar: ND
167B-29: Gray sealant with debris (M)	At perimeter of exterior door frames on east side of the Building	ND
167B-30: Foil and paper-wrapped yellow fiberglass insulation (T)	HVAC ductwork in places throughout the Building	Visually assessed and determined to be non-suspect
167B-31: Yellow fiberglass batt insulation (T)	Wall cavities throughout the Building	Visually assessed and determined to be non-suspect

ND: none detected, HSA: material that is uniform in color, texture, general appearance, and construction and application date, M: Miscellaneous material per AHERA, T: Thermal System Insulation material per AHERA, OD: Outer diameter

Additional suspect ACMs may be present in inaccessible or concealed spaces. These spaces include, but are not limited to, areas not assessed, areas not accessible at the time of the assessment, freight elevators, fire doors, Electrical systems, pipe chases, spaces between wall/ceiling/door/floor cavities, interior of mechanical components, beneath foundation pads, etc. If future maintenance, renovation, and/or demolition activities make these areas accessible, AECOM recommends that a thorough assessment of these spaces be conducted at that time to identify and confirm the presence or absence of additional suspect ACMs. Until then, all such unidentified materials must be treated as assumed ACMs in accordance with applicable federal, state, and local regulations.

If the analytical results indicate that all the samples collected per HSA do not contain asbestos, then the HSA (material) is considered a non-ACM. If the analytical results of one or more of the samples collected per HSA indicate that asbestos is present in quantities of greater than one percent asbestos as defined by the EPA, all of the HSA (material) is considered to be an ACM regardless of any other analytical results.

Any material that contains greater than one percent asbestos is considered an ACM and must be handled according to Occupational Safety and Health Administration (OSHA), EPA, and applicable state and local regulations. The EPA National Emission Standard for Hazardous Air Pollutants (NESHAP) 40 CFR 61, Subparts A and M has a requirement related to assessment of suspect ACM in buildings. When the asbestos content of a friable material is visually estimated by PLM to be detectable but less than ten percent, your firm may elect to (1) assume the amount is greater than one percent and treat the material as asbestos-containing or (2) require verification of the amount by the PLM point counting technique. If the results obtained by point counting and visual estimation are different, the point count result must be used. When no asbestos is detected by PLM, point counting is not required.

4.0 LEAD ASSESSMENT

4.1 Sampling Methodology

Homogeneous painted surfaces were defined by substrate, application, and color. The paint chip samples were collected to the substrate to ensure that all layers present on the substrate were included in the laboratory analysis. The samples were collected and stored in a heavy-duty, self-sealing plastic bag and delivered to NVL Laboratories, Inc. The samples were

analyzed via Atomic Absorption Spectrophotometry in accordance with Method EPA 3051/7000B. NVL Laboratories, Inc. is accredited by American Industrial Hygiene Association (AIHA) for lead analysis.

4.2 Lead Sampling Results

Six paint chip samples were collected and analyzed for total lead content. One of the samples were found to contain reportable levels of lead. The result of the analysis is presented in Table 4.2-1.

Table 4.2-1. Paint Chip Sample Result

Sample Number and Description	Paint Location	Sample Result in parts per million (ppm)
167B-Pb1: White paint on gypsum wallboard	Predominant interior walls throughout the First Floor	<47
167B-Pb2: Purple paint on metal	Predominant interior doors and door frames throughout the Building	76
167B-Pb3: White paint on concrete	Interior perimeter walls throughout the Building	<54
167B-Pb4: Off-white paint on metal	Exterior walls throughout the Building	<61
167B-Pb5: Light yellow paint on gypsum wallboard	Predominant interior walls throughout the Mezzanine Level	<47
167B-Pb6: Red paint on gypsum wallboard	Interior accent walls in places	<46

< below laboratory reportable level

5.0 OTHER REGULATED BUILDING MATERIALS

5.1 Methodology

An inventory of fluorescent light tubes, and potential PCB-containing ballasts was conducted in all accessible areas of the Building.

Where fluorescent light fixtures were accessible, the ballast covers were removed, and the ballast labels were visually examined. Different types of fluorescent fixtures were distinguished by shield shape, fixture dimension, diffuser type, and the manner in which the ballast covers were connected to the fixture. Inspectors attempted to visually inspect at least two of each type of fluorescent light fixture.

Where fluorescent light fixtures could not be visually examined, the number of potential PCB-containing ballasts in each fixture was estimated based on the following assumptions:

- Each single light tube fluorescent fixture contains one ballast;
- Each multiple light tube fluorescent fixture contains one ballast for every pair of light tubes; and
- All light ballasts are assumed to contain PCBs unless the ballasts are electronic.

5.2 Results

An inventory of fluorescent light tubes, and potential PCB-containing ballasts was conducted in all accessible areas of the Building The results of the inventory are presented in Table 5.2-1.

Table 5.2-1. Other Regulated Building Materials Findings

Sample Number and Description Material Description	Quantity
Mercury-containing fluorescent light tubes (4’ length)	242 EA
PCB-containing light ballasts (magnetic)	121 EA
HIDs	26 EA

EA: Each

6.0 CONCLUSIONS AND RECOMMENDATIONS

On September 25, 2019, AECOM conducted a regulated building materials assessment of suspect regulated building materials associated with the Building 167B located at16749 Air Cargo Road in SeaTac, Washington.

6.1 Asbestos

Table 6.1-1 identifies the assumed ACM.

Table 6.1-1. Assumed ACM

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Quantity (approximate)
167B-15: Assumed asbestos-containing gaskets (M)	At pipe flanges throughout the Building	25 EA

HSA: material that is uniform in color, texture, general appearance, and construction and application date
M: Miscellaneous material per AHERA, EA: Each

During demolition activities, inaccessible materials may be uncovered which were not identified or sampled during this assessment. Personnel in charge of demolition should be alerted to note materials uncovered during these activities which were not identified in this report. The following are AECOM’s recommendations.

- The results of this sampling should be communicated to any Contractors working in the Project Areas and a copy of the assessment report must be on-site during demolition activities.
- Any concealed building materials discovered during demolition activities, which are suspected to contain asbestos, should be sampled by an AHERA-accredited building inspector and analyzed by a NVLAP-accredited laboratory to confirm the presence of asbestos prior to the disturbing such materials.
- The Washington State Department of Labor and Industries requires an exposure assessment be conducted during operations that may disturb the lead paint in such a way that the airborne exposure may reach or exceed the Action level of 30 micrograms per cubic meter (µg/m3) or the Permissible Exposure Limit of 50 µg/m3. The worker protection requirements of WAC 296-155 "Lead in Construction" may apply.

6.2 Lead

Six paint chip samples were collected and analyzed for total lead content. One of the samples were found to contain reportable levels of lead. If lead-containing paint is impacted, the Washington State Department of Labor and Industries requires an exposure assessment be conducted during operations that may disturb the lead paint in such a way that the airborne exposure may reach or exceed the Action level of 30 micrograms per cubic meter (µg/m^3) or the Permissible Exposure Limit of 50 µg/m^3. The worker protection requirements of WAC 296-155 "Lead in Construction" and 29 CFR 1926.62 Lead may apply.

6.3 Other Regulated Building Materials

Mercury-containing fluorescent light tubes and HID lamps were identified in the Building. Fluorescent light tubes, switches, and thermostats may contain mercury. Fluorescent light ballasts and HID lamp ballasts may contain PCBs. In Washington State,

even non-electronic ballasts labeled with "No PCBs" may have regulated amounts of PCBs and therefore should be handled in accordance with Washington Department of Ecology requirements. Employers must inform their employees of mercury and PCB hazards in accordance with WAC 296-800-170.

Fluorescent light tubes must be removed and recycled or disposed of prior to demolition or renovation as per 40 CFR 262, 40 CFR 265, and WAC 173-303.

LIMITING CONDITIONS

AECOM's assessment was limited to observation and minimal destructive sampling and analysis of potentially regulated building materials in accessible portions of the Building. However, common construction techniques render portions of any building inaccessible. As a result, additional asbestos-containing building materials or lead-containing coatings may be present in inaccessible areas (i.e., between walls, ceiling spaces enclosed by wallboard, interior of metal fire doors, etc.) of the Building that were not observed during the assessment. Inaccessible areas should be assumed to contain asbestos until extensive destructive sampling is performed in those areas.

6.4 Limitations of the Assessment

The conclusions of this report are AECOM's professional opinions, based solely upon visual site observations and interpretations of laboratory analyses, as described in this report. The opinions presented herein apply to the site conditions existing at the time of AECOM's assessment and interpretation of current regulations pertaining to lead-containing paint, PCB-containing ballasts, mercury-containing components, and asbestos-containing materials. Therefore, AECOM's opinions and recommendations may not apply to future conditions that may exist at the site which we have not had the opportunity to evaluate. All applicable state, federal, and local regulations should always be verified prior to any work that will disturb materials containing asbestos.

AECOM has performed the services set forth in the Scope of Work in accordance with generally accepted industrial hygiene practices in the same or similar localities, related to the nature of the work accomplished, at the time the services were performed.

Suspect regulated building materials located at Building 167B that are not included in this regulated building materials assessment are assumed to be asbestos-containing unless they are sampled by an AHERA-accredited asbestos building inspector and analyzed by a NVLAP-accredited laboratory to confirm the presence of asbestos prior to the disturbing of such materials.

The regulated building materials and conditions presented in this report represent those observed on the dates we conducted the sampling. This sampling is intended for the exclusive use of Port Construction Services for specific application to the proposed renovation. This assessment is not intended to replace construction or demolition plans, specifications, or bidding documents. This report is not meant to represent a legal opinion.

Prepared by:

Mike Kosoff
Environmental Scientist
AECOM Technical Services, Inc.

Reviewed by:

Shannon MacKay
Sr. Environmental Scientist
AECOM Technical Services, Inc

Attachment 8:

Asbestos and Lead Survey for United Airlines Maintenance Building
(Report Only)

Asbestos and Lead Survey

United Airlines Maintenance Building

2230 South 161st Street

Seattle, Washington

December 12, 2019

Terracon Project No.81197429

Prepared for:

Hensel Phelps Construction Company
Seattle, Washington

Prepared by:

Terracon Consultants, Inc.
Mountlake Terrace, Washington

Offices Nationwide Established in 1965
Employee-Owned terracon.com

Terracon

Geotechnical Environmental Construction Materials Facilities

Project Title:	Asbestos and Lead Survey United Airlines Maintenance Building 2230 South 161st Street Seattle, Washington
Prepared for:	Mr. Ted Maines Hensel Phelps Construction Company 2100 4th Avenue North Seattle, Washington 98109
Assessment Conducted by:	Terracon Consultants 21905 64th Avenue West Mountlake Terrace, Washington 98043
Terracon Project Number:	81197429
Assessment Personnel:	Mr. Daniel Sheppard AHERA-Accredited Building Inspector Number 174292 (exp. 8/9/2020) Mr. Jacob Lindberg AHERA-Accredited Building Inspector Number 174287 (exp. 8/9/2020)
Assessment Date:	November 26, 2019
Report Prepared by:	_____ *Christina Anderson for* Daniel Sheppard Field Scientist Terracon Consultants
Report Reviewed by:	_____ Scott Parker Department Manager Terracon Consultants
Report Issue Date:	December 12, 2019

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EXECUTIVE SUMMARY

Hensel Phelps Construction Company retained Terracon Consultants (Terracon) to conduct a targeted asbestos and lead assessment of the United Airlines Maintenance Building, located at 2230 South 161st Street in Seattle, Washington. Terracon's representatives, Mr. Daniel Sheppard and Mr. Jacob Lindberg, conducted the assessment on November 26, 2019. The scope of the services provided is described in Terracon Proposal Number P81197629 dated November 12, 2019.

Terracon assessed the building for the following regulated building materials:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials; and
- Lead-containing coatings (paints).

Twenty-three bulk samples of suspect asbestos-containing materials were collected and analyzed using Polarized Light Microscopy (PLM). None of the materials were found to contain greater than one percent asbestos and none of the materials were assumed to contain asbestos.

Five paint chip samples were collected and analyzed for total lead content. None of the of the paint chip samples were found to contain detectable levels of lead.

1.0 INTRODUCTION

Hensel Phelps Construction Company retained Terracon Consultants (Terracon) to conduct a targeted asbestos and lead assessment of the United Airlines Maintenance Building, located at 2230 South 161st Street in Seattle, Washington. Terracon's representatives, Mr. Daniel Sheppard and Mr. Jacob Lindberg, conducted the assessment on November 26, 2019. The scope of the services provided is described in Terracon Proposal Number P81197629 dated November 12, 2019.

Terracon assessed the building for the following regulated building materials:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials; and
- Lead-containing coatings (paints).

2.0 PROJECT BACKGROUND

This report presents the results of our asbestos and lead assessment of the United Airlines Maintenance Building located at 2230 South 161st Street in Seattle, Washington. The purpose of the assessment was to identify potential asbestos-containing material and lead-containing coatings, prior to and for purposes of hazard communication and on-going management. This assessment is limited to interior areas of two locker rooms, a ready room, and a break room. This survey did not include other areas above the ceiling grid, other areas of the building interior, the exterior, or the roof.

This assessment will assist Hensel Phelps Construction Company with communicating the presence of regulated building materials, and the presence, location, and quantity of ACM to employees, vendors, and contractors working in the project area and to meet the requirements for an asbestos survey for the Puget Sound Clean Air Agency (PSCAA) and a good faith inspection as required by Washington State Department of Labor and Industries' Division of Occupational Safety and Health (DOSH) regulations prior to building renovation. Regulations require that a complete copy of this assessment be kept in a conspicuous location on-site at all times during activities that may impact known and suspect ACM.

2.1 Sources of Information

During the course of the assessment, the following individuals and drawings provided assistance to the Terracon inspector:

- Mr. Ted Maines, Project Superintendent, Hensel Phelps Construction Company

2.2 Building Description

The United Airlines Maintenance Building is located at 2230 South 161st Street in Seattle, Washington and was constructed in 1990. the project area consisted of interior areas of two locker rooms, a break room, and a ready room. The project area contains approximately 1,500 square feet of interior floor space.

The building is concrete and metal construction that sits on a concrete slab. The building is heated by a forced air heating, ventilating, and air conditioning (HVAC) system. Interior floors consist of glued-down vinyl floor tiles. Interior walls consist of gypsum board, wood panels, fiberglass panels in the locker rooms, and diamond cut steal in the break room. Interior ceilings consist of suspended ceiling tiles.

The observed piping is insulated with paper-wrapped fiberglass. The observed HVAC ducting is insulated with black plastic-wrapped fiberglass.

3.0 ASBESTOS ASSESSMENT

3.1 Building Assessment

Mr. Daniel Sheppard and Mr. Jacob Lindberg, both Asbestos Hazard Emergency Response Act (AHERA)-accredited building inspectors (Certification 174292, expiration date: 8/9/2020 and Certification 174287, expiration date: 8/9/2020, respectively) from Terracon, performed the sampling on November 26, 2019. Terracon's inspector collected 23 samples of materials identified as suspect ACM.

This assessment was conducted using a modified protocol adapted from AHERA. The protocol is as follows:

- Identify suspect asbestos-containing materials.
- Group materials into homogeneous sampling areas/materials.
- Quantify each homogeneous material and collect representative samples. The number of samples collected of miscellaneous materials was determined by the inspector.
- Samples of each material were taken to the substrate, ensuring that all components and layers of the material were included.
- Sample locations are referenced on the field data forms according to sample number.
- Sampling was performed by an AHERA-accredited building inspector, and the use of proper protective equipment and procedures was followed.

3.2 Sampling Procedures

This sampling was conducted using the following procedures:

1. Spread the plastic drop cloth (if needed) and set up other equipment, e.g., ladder.
2. Don protective equipment (respirator and protective clothing if needed).
3. Label sample container with its identification number and record number. Record sample location and type of material sampled on a sampling data form.
4. Moisten area where sample is to be extracted (spray the immediate area with water).
5. Extract sample using a clean knife, drill capsule, or cork boring tool to cut out or scrape off approximately one tablespoon of the material. Penetrate all layers of material.
6. Place sample in a container and tightly seal it.
7. Wipe the exterior of the container with a wet wipe to remove any material that may have adhered to it during sampling.
8. Clean tools with wet wipes and wet mop; or vacuum area with HEPA vacuum to clean all debris.
9. Discard protective clothing, wet wipes and rags, cartridge filters, and drop cloth in a labeled plastic waste bag.

3.3 Analytical Methodology

Suspect ACMs were sampled in general accordance with 40 CFR 763.86 by an Environmental Protection Agency (EPA) AHERA-accredited building inspector. Each sample was collected and stored in a heavy-duty, self-sealing plastic bag, and delivered to NVL Laboratories in Mountlake Terrace, Washington. Samples were analyzed via polarized light microscopy (PLM) in accordance with EPA/600/R-93/116 and are accredited to perform PLM analysis by the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program (NVLAP).

3.4 Asbestos Results

Table 3.4-1 provides a list of suspect homogeneous sampling area (HSA) material descriptions, material locations, and results for this sampling. Refer to the attached Figures for sample locations and room number designations (as applicable). Refer to the attached photographs for HSA pictures.

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
UA-1: White joint compound and white gypsum wall board (M)	Walls throughout break room, ready room, and locker rooms	Joint compound: ND Gypsum: ND
UA-2: 2”x4” off-white suspended ceiling tiles with pin holes and fissures (M)	Ceiling throughout break room, ready room, and locker rooms	ND
UA-3: 4” brown rubber cove base and beige mastic (M)	In places throughout break room and ready room	Cove base: ND Mastic: ND
UA-4: Off white sink undercoating (M)	Sink in break room	ND
UA-5: 12”x12” tan with black speckles vinyl floor tiles, yellow mastic, and grey leveling compound (M)	Flooring throughout break room and ready room	Vinyl floor tile: ND Mastic: ND Leveling compound: ND
UA-6: 12”x6” off-white with black speckles vinyl floor tiles and yellow mastic (M)	Threshold flooring of both locker rooms	Vinyl floor tile: ND Mastic: ND
UA-7: 4” black rubber cove base and beige mastic (M)	In places throughout both locker rooms	Cove base: ND Mastic: ND
UA-8: Gray fireproofing debris on back of suspended ceiling tiles (S)	On backside of suspended ceiling in places throughout breakroom, ready room, and both locker rooms	Fireproofing: ND
UA-9:12”x12” gray pebbled pattern vinyl floor tiles and yellow and orange mastic (M)	Flooring throughout locker rooms	Vinyl floor tile: ND Mastic: ND

ND: none detected, HSA: material that is uniform in color, texture, general appearance, and construction and application date, S: Surfacing material per AHERA, M: Miscellaneous material per AHERA

If the analytical results indicate that all the samples collected per HSA do not contain asbestos, then the HSA (material) is considered a non-ACM. However, if the analytical results of one or more of the samples collected per HSA indicate that asbestos is present in quantities of greater than one percent asbestos as defined by the EPA, all of the HSA (material) is considered to be an ACM regardless of any other analytical results (unless a representative number of samples have been analyzed by PLM point counting as described below, and the results indicate the material contains less than one percent asbestos).

Any material that contains greater than one percent asbestos is considered an ACM and must be handled according to Occupational Safety and Health Administration (OSHA), EPA, and applicable state and local regulations. The EPA National Emission Standard for Hazardous Air Pollutants (NESHAP) 40 CFR 61, Subparts A and M has a requirement related to assessment of suspect ACM in buildings. When the asbestos content of a friable material is visually estimated by PLM to be detectable but less than ten percent, your firm may elect to (1) assume the amount is greater than one percent and treat the material as asbestos-containing or (2) require verification of the amount by the PLM point counting technique. If the results obtained by point counting and visual estimation are different, the point count result must be used. When no asbestos is detected by PLM, point counting is not required.

4.0 LEAD ASSESSMENT

Homogeneous areas of suspected lead-containing coatings (paints) were identified and sampled in accessible areas throughout the United Airlines Maintenance Building located at 2230 South 161st Street in Seattle, Washington. Homogeneous painted surfaces were defined by substrate, application, and color.

4.1 Sampling Methodology

Paint chip samples were collected to the substrate to ensure that all layers present on the substrate were included in the laboratory analysis. Each sample was collected and stored in a heavy-duty, self-sealing plastic bag and delivered to NVL Laboratories in Seattle, Washington. Samples were analyzed via Atomic Absorption Spectrophotometry in accordance with Method EPA 7000B. NVL Laboratories in Seattle, Washington is accredited by the American Industrial Hygiene Association (AIHA) for lead analysis.

4.2 Lead Sampling Results

Five paint chip samples were collected and analyzed for lead. None of the samples had reportable levels of lead. The results of the analyses are presented in Table 4.2-1.

Table 4.2-1. Paint Chip Sample Results

Paint Number and Description	Paint Location	Sample Result in parts per million (ppm)
UA-Pb1: Tan paint on gypsum	Interior walls of ready room	<50
UA-Pb2: Gray paint on gypsum	Interior walls of break room	<52
UA-Pb3: Brown paint on metal	interior doors in break room	<71
UA-Pb4: Light gray paint on gypsum	Walls throughout locker rooms	<50

Table 4.2-1. Paint Chip Sample Results

Paint Number and Description	Paint Location	Sample Result in parts per million (ppm)
UA-Pb5: Tan paint on metal	Ends of lockers in locker room	<100

<: below the reporting limit

5.0 CONCLUSIONS AND RECOMMENDATIONS

On November 26, 2019, Terracon conducted a targeted asbestos and assessment of the United Airlines Maintenance Building located at 2230 South 161st Street in Seattle, Washington.

5.1 Asbestos

No asbestos was detected in the materials sampled.

Additional suspect ACMs may be present in areas not assessed or that were inaccessible or concealed. These spaces include, but are not limited to, areas outside of the project area, material above the suspended ceiling grid, the hallway between project areas, restroom fixtures, areas behind and below lockers, above hard ceiling decks, electrical systems, pipe chases, spaces between wall/ceiling/door/floor cavities, interior of mechanical components, beneath foundation pads, etc. If future maintenance, renovation, and/or demolition activities make these areas accessible, Terracon recommends that a thorough assessment of these spaces be conducted at that time to identify and confirm the presence or absence of additional suspect ACMs. Until then, all such unidentified materials must be treated as assumed ACMs in accordance with applicable federal, state, and local regulations.

Asbestos-related work must be performed in compliance with Washington State worker protection and environmental protection regulations. See WAC 296-62, WAC 296-65, and PSCAA Regulation III, Article 4 for additional information.

5.2 Lead

None of the paints sampled and analyzed contained detectable levels of lead.

The Washington State Department of Labor and Industries requires an exposure assessment be conducted during operations that may disturb the lead paint in such a way that the airborne exposure may reach or exceed the Action level of 30 micrograms per cubic meter (µg/m^3) or the Permissible Exposure Limit of 50 µg/m^3. The worker protection requirements of WAC 296-155-176 "Lead in Construction" may apply.

The lead paint chip sampling and reporting conducted as a part of this assessment may be used to meet the requirements of the Environmental Protection Agency's Lead; Renovation, Repair, and Painting rule (RRP). Refer to 40CFR745 for additional information.

6.0 LIMITATIONS

This report presents the results of the targeted asbestos and lead assessment conducted at the United Airlines Maintenance Building located at 2230 South 161st Street in Seattle, Washington. The assessment was for the purposes of identifying ACM and lead-containing paint prior to renovation.

Regulated building material assessments are non-comprehensive and subject to many limitations, including those presented below. Our assessment has considered risks pertaining to asbestos and lead in coatings; however, this assessment is limited to only those locations and materials assessed. This assessment was not designed to identify all potential concerns or to eliminate all risks associated with renovation, demolition, material removal, construction, or transferring of property title. Evaluation of other risks not specifically described in the Scope of Work have not been included; for example: structural integrity; engineering loads; electrical; mechanical; radon gas; slope stability; building settlement; and evaluation of toxic and hazardous substances in, or in contact with, soil and groundwater. No warranty, expressed or implied, is made.

Terracon has performed the services set forth in the Scope of Work in accordance with generally accepted industrial hygiene practices in the same or similar localities, related to the nature of the work accomplished, at the time the services were performed.

The regulated building materials and conditions presented in this report represent those observed on the dates we conducted the sampling. This sampling is intended for the exclusive use of Hensel Phelps Construction Company for specific application to the referenced property. This assessment does not replace nor can be used as professionally developed construction or demolition plans, specifications, or bidding documents. This report is not a legal opinion.

Prepared by:	Reviewed by:
Christina Anderson for Daniel Sheppard	Scott Parker
Field Scientist	Department Manager
Terracon Consultants	Terracon Consultants

Attachment 9:

Targeted Regulated Building Materials Assessment Report for Westside Offices
(Report Only)

ARGUS PACIFIC
TRAINING • CONSULTING

Targeted Regulated Building
Materials Assessment Report
Construction Logistics
Expansion Project (CLEP)
(U00177: PCSRMM1)
Port of Seattle, Port Construction
Services
SeaTac, Washington

February 9, 2015

PROVIDING
ORGANIZATIONS
WITH
HEALTH
AND
SAFETY
SOLUTIONS

Project Title:	Targeted Regulated Building Materials Assessment Construction Logistics Expansion Project SeaTac, Washington
Prepared for:	Ms. Debra Reeves-Orth Port of Seattle, Port Construction Services AOB 3rd Floor, Seattle-Tacoma International Airport Seattle, Washington 98168
Assessment Conducted by:	Argus Pacific, Inc. 1900 W. Nickerson Street, Suite 315 Seattle, Washington 98119
Service Agreement: ***Service Directive ID:***	P-00316909 9135
Assessment Personnel:	Mr. Kyle Fitzpatrick AHERA-Accredited Building Inspector Number 147941 (exp. 8/13/2015)
Assessment Dates:	January 28 and 29, 2015
Report Prepared by:	 Kyle Fitzpatrick Industrial Hygienist Argus Pacific, Inc.
Report Reviewed by:	 Scott Rinear Project Manager Argus Pacific, Inc.
Report Issue Date:	February 9, 2015

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EXECUTIVE SUMMARY

Port of Seattle, Port Construction Services retained Argus Pacific, Inc. (Argus Pacific) to conduct a targeted regulated building materials assessment of multiple buildings as part of the Construction Logistics Expansion Project, located at multiple sites in SeaTac, Washington. Argus Pacific's representative, Mr. Kyle Fitzpatrick, conducted the assessment on January 28 and 29, 2015. The scope of the services provided is described in Argus Pacific Fee Agreement Number 641124P dated December 18, 2014 and Service Directive 9135 executed January 27, 2015.

Argus Pacific assessed the targeted areas for the following regulated building materials:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials;
- Lead-containing coatings (paints); and
- Mercury-containing thermostats.

Forty-four bulk samples of suspect asbestos-containing materials were collected and analyzed using Polarized Light Microscopy (PLM). None of the materials were found to contain greater than one percent asbestos and none of the materials were assumed to contain asbestos. In addition, two materials were visually assessed and determined to be non-suspect.

Eight paint chip samples were collected and analyzed for total lead content. Three of the paint chip samples were found to contain detectable levels of lead.

The existing thermostats in the buildings are not suspected of containing mercury.

1.0 INTRODUCTION

Port of Seattle, Port Construction Services retained Argus Pacific, Inc. (Argus Pacific) to conduct a targeted regulated building materials assessment of multiple buildings as part of the Construction Logistics Expansion Project, located at multiple sites in SeaTac, Washington. Argus Pacific's representative, Mr. Kyle Fitzpatrick, conducted the assessment on January 28 and 29, 2015. The scope of the services provided is described in Argus Pacific Fee Agreement Number 641124P dated December 18, 2014 and Service Directive 9135 executed January 27, 2015.

Argus Pacific assessed the targeted areas for the following regulated building materials:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials;
- Lead-containing coatings (paints); and
- Mercury-containing thermostats.

2.0 PROJECT BACKGROUND

This report presents the results of our targeted regulated building materials assessment of multiple buildings as part of the Construction Logistics Expansion Project located at multiple sites in SeaTac, Washington. The purpose of the assessment was to identify potential asbestos-containing material, lead-containing coatings, and mercury-containing thermostats prior to renovation and for purposes of hazard communication and on-going management. The assessment included the following sites, buildings, and general areas:

- Water Tower Field Offices (16135 Host Road)
  -Main Building: targeted interior and exterior areas; targeted roof areas
  -Annex Building: entire roof
- West Side Field Offices (1006 South 170th Street)
  -Main Building: targeted interior and exterior areas; targeted roof areas
- Logistics Field Offices (2529 South 194th Street)
  -CPO Construction Building: targeted interior and exterior areas; targeted roof areas
  -Vacant #3 (SSO Building): targeted interior and exterior areas

The targeted scope of work for this assessment was based on the document titled *C800688 Construction Logistics Expansion, Project Notebook Scope of Work (Field Offices)*, provided by PCS (undated).

This assessment will assist Port of Seattle, Port Construction Services with communicating the presence of lead-containing paint and the presence, location, and quantity of ACM to employees, vendors, and contractors working in the project area and to meet the requirements for an asbestos survey for the Puget Sound Clean Air Agency (PSCAA) and a good faith inspection as required by Washington State Department of Labor and Industries' Division of Occupational Safety and Health (DOSH) regulations prior to building renovation. Regulations require that a complete copy of this assessment be kept in a conspicuous location on-site at all times during activities that may impact known and suspect ACM.

2.1 Sources of Information

During the course of the assessment, the following individual provided assistance to the Argus Pacific inspector:

- Mr. Joel Astley, Port of Seattle, Port Construction Services, personnel to provide access
- Ms. Debra Reeves-Orth, Port of Seattle, Port Construction Services

2.2 Project Area Description

The Construction Logistics Expansion Project area includes targeted areas at multiple sites in SeaTac, Washington. See Section 2.0, Project Background, for a list of sites, buildings, and general project areas assessed.

Interior finishes assessed consisted of gypsum wallboard (with texture in places) and suspended ceiling tiles. Roofing consisted primarily of membrane roofing and various caulkings and sealants associated with existing heat pumps and heat pump components.

The observed hot water tanks are un-insulated. The observed restroom exhaust fan ducting is insulated with plastic-wrapped fiberglass duct insulation in places.

3.0 ASBESTOS ASSESSMENT

3.1 Building Assessment

Mr. Fitzpatrick, an Asbestos Hazard Emergency Response Act (AHERA)-accredited building inspector (Certification 147941, expiration date: 8/13/2015) from Argus Pacific, performed the sampling on January 28 and 29, 2015. Argus Pacific's inspector collected 44 samples of materials identified as suspect ACM.

This assessment was conducted using a modified protocol adapted from AHERA. The protocol is as follows:

- Identify suspect asbestos-containing materials.
- Group materials into homogeneous sampling areas/materials.
- Quantify each homogeneous material and collect representative samples. The number of samples collected of miscellaneous materials was determined by the inspector.
- Samples of each material were taken to the substrate, ensuring that all components and layers of the material were included.
- Sample locations are referenced on the field data forms according to sample number.
- Sampling was performed by an AHERA-accredited building inspector, and the use of proper protective equipment and procedures was followed.

3.2 Sampling Procedures

This sampling was conducted using the following procedures:

1. Spread the plastic drop cloth (if needed) and set up other equipment, e.g., ladder.
2. Don protective equipment (respirator and protective clothing if needed).
3. Label sample container with its identification number and record number. Record sample location and type of material sampled on a sampling data form.
4. Moisten area where sample is to be extracted (spray the immediate area with water).
5. Extract sample using a clean knife, drill capsule, or cork boring tool to cut out or scrape off approximately one tablespoon of the material. Penetrate all layers of material.
6. Place sample in a container and tightly seal it.
7. Wipe the exterior of the container with a wet wipe to remove any material that may have adhered to it during sampling.
8. Clean tools with wet wipes and wet mop; or vacuum area with HEPA vacuum to clean all debris.
9. Discard protective clothing, wet wipes and rags, cartridge filters, and drop cloth in a labeled plastic waste bag.

3.3 Analytical Methodology

Suspect ACMs were sampled in general accordance with 40 CFR 763.86 by an Environmental Protection Agency (EPA) AHERA-accredited building inspector. Each sample was collected and stored in a heavy-duty, self-sealing plastic bag, and delivered to 641124R in Bellevue, Washington. Samples were analyzed via polarized light microscopy (PLM) in accordance with EPA/600/R-93/116. Seattle Asbestos Test, LLC is accredited to perform PLM analysis by the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program (NVLAP).

3.4 Asbestos Results

Table 3.4-1 provides a list of suspect homogeneous sampling area (HSA) material descriptions, material locations, and results for this sampling. Refer to the attached Figures for sample locations and room number designations (as applicable). Refer to the attached photographs for HSA pictures.

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
	LOGISTICS FIELD OFFICES	
	CPO Construction Building	
CPO-1: 2'x4' white suspended ceiling tiles with wormhole and pinhole pattern (M)	Interior suspended ceilings	ND

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
CPO-2: White joint compound and white gypsum wallboard (M)	Interior gypsum walls; interior ceiling at restroom exhaust fans	Joint compound: ND Gypsum: ND
CPO-3: White textured surfacing (S)	Interior walls (on HSA CPO-2)	ND
CPO-4: White membrane roofing, clear mastic, off-white insulation material, grey fibrous vapor barrier with mastic, and yellow foam insulation (M)	Predominant roofing	ND (all layers)
CPO-5: Grey sealant (M)	Various seams associated with rooftop heat pumps	ND
CPO-6: Clear sealant and black foam (M)	At PVC pipe penetration on rooftop heat pumps	Sealant: ND Foam: ND
CPO-7: Beige sealant and white sealant (M)	Associated with rooftop heat pump conduit penetrations and where membrane roofing wraps around conduit	Beige sealant: ND White sealant: ND
CPO-8: Plastic-wrapped fiberglass insulation (T)	Associated with restroom exhaust fans	Visually assessed and determined to be non-suspect
Vacant #3 (SSO Building)		
V3-1: 2'x4' white suspended ceiling tiles with wormhole and pinhole pattern (M)	Interior suspended ceilings	ND
V3-2: White joint compound and white gypsum wallboard (M)	Interior gypsum walls; interior ceiling at restroom exhaust fans	Joint compound: ND Gypsum: ND
V3-3: Plastic-wrapped fiberglass insulation (T)	Associated with restroom exhaust fans	Visually assessed and determined to be non-suspect
WATER TOWER FIELD OFFICES		
Main Building		
WTMB-1: 2'x4' white suspended ceiling tiles with wormhole and pinhole pattern (M)	Interior suspended ceilings	ND
WTMB-2: White joint compound and off-white gypsum wallboard (M)	Interior gypsum walls; interior ceiling at restroom exhaust fans	Joint compound: ND Gypsum: ND
WTMB-3: Grey sealant, clear sealant, and white sealant (M)	At seams associated with curb below roof top heat pumps	ND (all layers)

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
WTMB-4: White/grey sealant (M)	Associated with rooftop heat pump conduit penetrations and where membrane roofing wraps around conduit	ND
WTMB-5: White membrane roofing, grey fibrous vapor barrier with mastic, and yellow foam insulation (M)	Predominant roofing	ND (all layers)
WTMB-6: Grey fibrous filter with yellow fiberglass (M)	Filters inside rooftop heat pumps	Filter: ND Fiberglass: ND
WTMB-7: Plastic-wrapped fiberglass insulation (T)	Associated with restroom exhaust fans	Visually assessed and determined to be non-suspect
	Annex Building	
WTA-1: White membrane roofing and off-white powdery insulation (M)	Predominant roofing	ND (all layers)
WTA-2: Black seam tape, grey soft/elastic material, and clear/beige adhesive (M)	Running along center of roof	ND (all layers)
WTA-3: White sealant and black sealant (M)	Associated with vent pipe penetration	ND (all layers)
WTA-4: Grey sealant (M)	In places throughout roof	ND
	WEST SIDE FIELD OFFICES	
	Main Building	
WST-1: 2'x4' white suspended ceiling tiles with wormhole and pinhole pattern (M)	Interior suspended ceilings	ND
WST-2: White joint compound and off-white gypsum wallboard (M)	Interior gypsum walls; interior ceiling at restroom exhaust fans	Joint compound: ND Gypsum: ND
WST-3: White membrane roofing, yellow mastic, off-white powdery insulation material, grey fibrous vapor barrier with mastic, and yellow foam insulation (M)	Predominant roofing	ND (all layers)
WST-4: White/beige sealant (M)	Associated with rooftop heat pump conduit penetrations and where membrane roofing wraps around conduit	ND

Table 3.4-1. Results of Bulk Sample Analyses

HSA ID, Material Description, and AHERA Classification	Material Location	HSA Results
WST-5: Beige sealant (M)	At various seams in membrane roofing	ND
WST-6: Plastic-wrapped fiberglass insulation (T)	Associated with restroom exhaust fans	Visually assessed and determined to be non-suspect

ND: none detected, HSA: material that is uniform in color, texture, general appearance, and construction and application date, S: Surfacing material per AHERA, T: Thermal system insulation per AHERA, M: Miscellaneous material per AHERA

Additional suspect ACMs may be present in inaccessible or concealed spaces. These spaces include, but are not limited to, interior, exterior, and roof areas outside the targeted project areas, fire doors, electrical systems, pipe chases, spaces between wall/ceiling/door/floor cavities, interior of mechanical components, beneath foundation pads, etc. If future maintenance, renovation, and/or demolition activities make these areas accessible, Argus Pacific recommends that a thorough assessment of these spaces be conducted at that time to identify and confirm the presence or absence of additional suspect ACMs. Until then, all such unidentified materials must be treated as assumed ACMs in accordance with applicable federal, state, and local regulations.

If the analytical results indicate that all the samples collected per HSA do not contain asbestos, then the HSA (material) is considered a non-ACM. However, if the analytical results of one or more of the samples collected per HSA indicate that asbestos is present in quantities of greater than one percent asbestos as defined by the EPA, all of the HSA (material) is considered to be an ACM regardless of any other analytical results (unless a representative number of samples have been analyzed by PLM point counting as described below, and the results indicate the material contains less than one percent asbestos).

Any material that contains greater than one percent asbestos is considered an ACM and must be handled according to Occupational Safety and Health Administration (OSHA), EPA, and applicable state and local regulations. The EPA National Emission Standard for Hazardous Air Pollutants (NESHAP) 40 CFR 61, Subparts A and M has a requirement related to assessment of suspect ACM in buildings. When the asbestos content of a friable material is visually estimated by PLM to be detectable but less than ten percent, your firm may elect to (1) assume the amount is greater than one percent and treat the material as asbestos-containing or (2) require verification of the amount by the PLM point counting technique. If the results obtained by point counting and visual estimation are different, the point count result must be used. When no asbestos is detected by PLM, point counting is not required.

4.0 LEAD ASSESSMENT

Homogeneous areas of suspected lead-containing coatings (paints) were identified and sampled in accessible areas throughout the Construction Logistics Expansion Project located at in SeaTac, Washington. Homogeneous painted surfaces were defined by substrate, application, and color.

4.1 Sampling Methodology

Paint chip samples were collected to the substrate to ensure that all layers present on the substrate were included in the laboratory analysis. Each sample was collected and stored in a heavy-duty, self-sealing plastic bag and delivered to NVL Laboratories in Seattle, Washington. Samples were analyzed via Atomic Absorption Spectrophotometry in accordance with Method EPA 7000B. NVL Laboratories in Seattle, Washington is accredited by the American Industrial Hygiene Association (AIHA) for lead analysis.

4.2 Lead Sampling Results

Eight paint chip samples were collected and analyzed for lead. Three samples had reportable levels of lead. The results of the analyses are presented in Table 4.2-1.

Table 4.2-1. Paint Chip Sample Results

Paint Number and Description	Paint Location	Sample Result in parts per million (ppm)
LOGISTICS FIELD OFFICES		
CPO-Pb1: White paint gypsum wallboard	CPO Construction Building: interior gypsum walls and ceilings	<47
CPO-Pb1: Black paint metal	CPO Construction Building: exterior roof ladder	<100
V3-Pb1: White paint on wood	Vacant #3 (SSO Building): exterior siding	<49
V3-Pb2: Green paint on wood	Vacant #3 (SSO Building): exterior trim	<46
WATER TOWER FIELD OFFICES		
WTMB-Pb1: Blue paint on wood	Main Building: exterior siding	<46
WTMB-Pb2: Green paint on gypsum wallboard	Main Building: interior gypsum walls and ceilings in places	86
WEST SIDE FIELD OFFICES		
WST-Pb1: Yellow paint on metal	Main Building: exterior roof ladder	200
WST-Pb2: White paint on gypsum wallboard	Main Building: interior gypsum walls and ceilings	180

<: below the reporting limit

5.0 CONCLUSIONS AND RECOMMENDATIONS

On January 28 and 29, 2015, Argus Pacific conducted a targeted regulated building materials assessment of multiple buildings for the Construction Logistics Expansion Project located at multiple sites in SeaTac, Washington.

5.1 Asbestos

No asbestos was detected in the materials sampled. Additional suspect ACMs may be present in areas not assessed or that were inaccessible or concealed. These spaces include, but are not limited to, interior, exterior, and roof areas outside the targeted project areas, fire doors, electrical systems, pipe chases, spaces between wall/ceiling/door/floor cavities, interior of mechanical components, beneath foundation pads, etc. If future maintenance, renovation, and/or demolition activities make these areas accessible, Argus Pacific recommends that a thorough assessment of these spaces be conducted at that time to identify and confirm the presence or absence of additional suspect ACMs. Until then, all such unidentified materials must be treated as assumed ACMs in accordance with applicable federal, state, and local regulations.

5.2 Lead

Three of the eight paints sampled and analyzed contained detectable levels of lead. The Washington State Department of Labor and Industries requires an exposure assessment be conducted during operations that may disturb the lead paint in such a way that the airborne exposure may reach or exceed the Action level of 30 micrograms per cubic meter ($\mu g/m^3$) or the Permissible Exposure Limit of 50 $\mu g/m^3$. The worker protection requirements of WAC 296-155-176 "Lead in Construction" may apply.

Some of the coatings contained detectable levels of lead. If this building or portions of it will be demolished and disposed of, a toxicity characteristic leachate procedure (TCLP) sample that is representative of the waste stream must be collected and analyzed per the requirements of WAC 173-303. If the results of the TCLP analysis determine the waste to be a "dangerous waste" as defined by WAC 173-303, it must be disposed of accordingly.

The lead paint chip sampling and reporting conducted as a part of this assessment may be used to meet the requirements of the Environmental Protection Agency's Lead; Renovation, Repair, and Painting rule (RRP). Refer to 40CFR745 for additional information.

5.3 Other Regulated Building Materials

The observed existing thermostats are not suspected of containing mercury.

6.0 LIMITATIONS

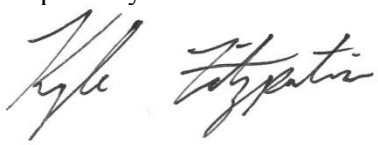
This report presents the results of the regulated building materials assessment conducted at multiple buildings for the Construction Logistics Expansion Project located at multiple sites in SeaTac, Washington. The assessment was for the purposes of identifying ACM, lead-containing paint, and mercury-containing thermostats prior to renovation.

Regulated building material assessments are non-comprehensive and subject to many limitations, including those presented below. Our assessment has considered risks pertaining to asbestos, lead in coatings, and mercury thermostats; however, this assessment is limited to only those locations and materials assessed. This assessment was not designed to identify all potential concerns or to eliminate all risks associated with renovation, demolition, material removal, construction, or transferring of property title. Evaluation of other risks not specifically described in the Scope of Work have not been included; for example: structural integrity; engineering loads; electrical; mechanical; radon gas; slope stability; building settlement; and evaluation of toxic and hazardous substances in, or in contact with, soil and groundwater. No warranty, expressed or implied, is made.

Argus Pacific has performed the services set forth in the Scope of Work in accordance with generally accepted industrial hygiene practices in the same or similar localities, related to the nature of the work accomplished, at the time the services were performed.

The regulated building materials and conditions presented in this report represent those observed on the dates we conducted the sampling. This sampling is intended for the exclusive use of Port of Seattle, Port Construction Services for specific application to the referenced property. This assessment does not replace nor can be used as professionally developed construction or demolition plans, specifications, or bidding documents. This report is not a legal opinion.

Prepared by:



Kyle Fitzpatrick
Industrial Hygienist
Argus Pacific, Inc.

Reviewed by:

Scott Rinear
Project Manager
Argus Pacific, Inc.

APPENDIX F

Hazardous Materials and Solid Waste

References

Cedar Hills Landfill Expansion
SEA Construction General Requirements
2022 Annual Waste Summary
USEPA PFAS Explained
SEA Construction Safety Manual
WA PFAS Testing Results Dashboard

King County
Department of
Natural Resources and Parks
Solid Waste Division

Cedar Hills Regional Landfill
2020 Site Development Plan

Preferred Alternative (November 2022)

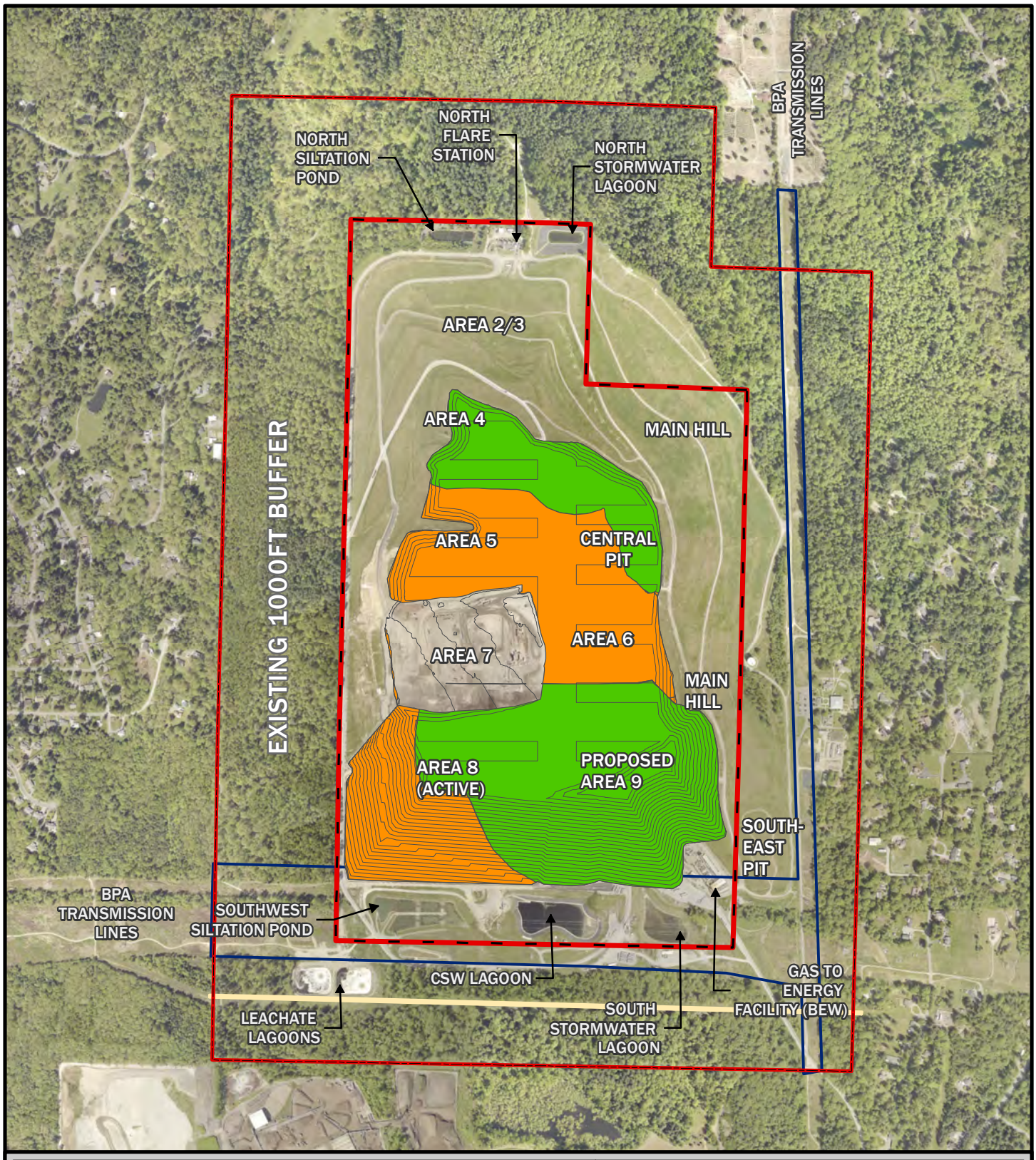
Landfill Development

- No additional landfilling in Main Hill and Southeast Pit
- Landfilling in the southern portion of Areas 2/3, 4, and Central Pit up to 788 feet
- Landfilling in Areas 5 and 6 up to 788 feet
- No additional landfilling in Area 7 – currently reached 788 feet
- Landfilling in Area 8 to no more than 830 feet
- New Area 9 development in southeast area and landfilling to no more than 830 feet
- Pursue a Special Use Permit to place the new facilities within the existing northern or southern buffer zone. This permit is only needed if an on-site facilities relocation option is chosen.

Landfill Support Facilities Relocation

- If a Special Use Permit is approved, then relocate and build main landfill support facilities in the south (including, but not limited to the scale/scalehouse, truck wash, heavy equipment maintenance facility (cat shack), some tractor and trailer parking, the truck maintenance building, employee parking, office space, and laboratory space)

Estimated Landfill Life under Preferred Alternative Early 2038



Legend

- Existing Landfill Property Line
- Existing 1000ft Buffer
- Action Alternative Grading (10ft)
- BPA Easement
- Northwest Pipeline Easement
- Planned Filling Under No Action
- Proposed Filling for Preferred Alternative

*AERIAL PHOTO 2019. LOT LINES ARE APPROXIMATE, NOT FOR LEGAL PROPERTY DELINEATION.

Cedar Hills Regional Landfill 2020 Site Development Plan: Preferred Alternative (November 2022)

0 562.5 1,125 2,250 Feet

N

King County

King County (2019)

K:\Projects\Y2014\14-05971-001\Project\Report\EIS\Chapter2\Figure2_5_ActionAlternative2.mxd

King County

News

Metropolitan King County
Council News

Council approves expansion of Cedar Hills Landfill

April 24, 2019

Summary

The legislation may extend the life of the facility for up to 20 years

Story

The King County Council has authorized the expansion of the Cedar Hills Regional Landfill.

Passed this afternoon, the legislation may extend the life of the facility for up to 20 years.

The measure is a piece of the 2019 Comprehensive Solid Waste Management Plan, which passed by a vote of 5-to-2, with Councilmembers Rod Dembowski, Jeanne Kohl-Welles, Dave Upthegrove, Claudia Balducci, and Joe McDermott voting in favor of the legislation.

Councilmembers Kathy Lambert and Reagan Dunn voted against the ordinance.

Councilmembers Larry Gossett and Pete von Reichbauer were absent and did not vote.

CONTACT THE COUNCIL

Main phone:
206-477-1000

TTY/TDD:
Relay: 711

Contact all 9 Councilmembers directly:
Click Here

2019 EDITION

CONSTRUCTION GENERAL REQUIREMENTS

SEATTLE -TACOMA INTERNATIONAL AIRPORT
ENGINEERING CONSTRUCTION SERVICES
POST OFFICE BOX 68727
SEATTLE, WA 98168

Port of Seattle

TABLE OF CONTENTS

CONSTRUCTION GENERAL REQUIREMENTS (CGR)		
NUMBER	***SECTION TITLE***	***PREPARER***
01 11 00	Summary of Work	Mach 09/09/19
01 14 13	Airport Personnel Identification/Access Control	Mach 09/09/19
01 31 13	Project Coordination	Mach 09/09/19
01 32 19	Preconstruction Submittals	Mach 09/09/19
01 35 13.13	Operational Safety on Airports During Construction	Mach 09/09/19
01 35 29T	Safety Management (Tenant Projects)	Mach 09/09/19
01 35 43	Environmental Regulatory Requirements	Mach 09/09/19
01 50 00	Temporary Facilities and Controls	Mach 09/09/19
01 55 16	Haul Routes	Mach 09/09/19
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01 57 13	TESC Planning and Execution	Mach 09/09/19
01 57 23	Pollution Prevention, Planning and Execution	Mach 09/09/19
01 73 29	Cutting and Patching/Removal and Re-Installation	Mach 09/09/19
01 74 00	Cleaning	Mach 09/09/19
01 74 19	Construction Waste Management	Mach 09/09/19
01 78 23.13	Operations and Maintenance Data	Mach 09/09/19
01 78 29	As-Built Redline Drawings	Mach 09/09/19
01 78 39	Construction Document Management System	Mach 09/09/19
01 79 00	Training	Mach 09/09/19
01 91 00.13	Commissioning Activities	Mach 09/09/19
02 61 13	Handling Contaminated Soil	Mach 09/09/19
02 84 16	Light Ballast and Lamp Removal and Management	Mach 09/09/19

NOTE:
These Seattle-Tacoma International Airport (STIA) Tenant Improvement Construction General Requirements are all inclusive and intended to address a wide variety of projects. Information within certain sections may not be applicable to the project. The Port construction project representative (Construction Manager, Project Manager, Engineer or Inspector) will clarify which requirements, if any, are not required for a project.

PART 1 GENERAL

1.01 CONTRACTOR FULLY RESPONSIBLE FOR SAFETY

A. The Contractor assumes full and sole responsibility for and shall comply with all laws, regulations, ordinances, and governmental orders pertaining to safety in the performance of this Work. The Contractor shall conduct all operations for this project to offer the least possible obstruction and inconvenience to the Port, its tenants, the public and abutting property owners. The Contractor shall be responsible for employing adequate safety measures and taking all other actions reasonably necessary to protect the life, health, and safety of employees, the public, and to protect adjacent and Port-owned property in connection with the performance of the Work.

B. The Contractor shall have the sole responsibility for the safety, efficiency, and adequacy of the Contractor's plan, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and completely responsible for the conditions of the Project Site, including safety of all persons and property in performance of the Work. This requirement shall apply continuously, and is not limited to normal working hours. Nothing the Port may do, or fail to do, with respect to safety in the performance of the Work shall relieve Contractor of this responsibility.

1.02 REFERENCES

A. The Contractor shall comply with the provisions found in the Port of Seattle Construction Safety & Health Manual, the Federal Occupational Safety and Health Act of 1970 (OSHA), including all revisions and amendments thereto; the provisions of the Department of Safety & Health (DOSH) Washington Industrial Safety Act of 1973 (WISHA); and the requirements of the following chapters of the Washington Administrative Code:

1. Chapter 296-24 WAC General Safety and Health Standards.
2. Chapter 296-62 WAC Occupational Health Standards.
3. Chapter 296-155 WAC Safety Standards for Construction Work.
4. Chapter 296-800 WAC Core Safety & Health Standards
5. ANSI/ASSE Standards

B. In addition, the Contractor shall comply with the following requirements when they are applicable:

1. Local Building and Construction Codes.
2. POS Fire Department Standards
3. Latest FAA Advisory Circular regarding Operational Safety On Airports During Construction.
4. NFPA 70E
5. National Electrical Code

NOTE: In cases of conflict between different safety regulations, the more stringent regulation shall apply.

1.03 DEFINITIONS

A. Manager, Construction Safety Services

An employee of the Port or designated consultant who is responsible for the day-to-day management of the Port of Seattle's Construction Safety Program, and such agents, including the Field Safety Manager, as authorized to act in his/her behalf.

B. Field Safety Manager

An employee of the Port or designated consultant who conducts and monitors jobsite inspections and verifies Contractor compliance with identified corrective actions.

C. Contractor

Normally the General Contractor hired by the Tenant. However, in the case where a Tenant directly hires more than one Contractor to be on site at one time, the responsibility of the Contractor shall apply to the Tenant as well as the contractors on site.

1.04 SUBMITTALS

A. Site Specific Safety Plan per paragraph 1.05 A

B. Site Specific Chemical Exposure Plan prepared by a Certified Industrial Hygienist for any products containing isocyanates, methylene chloride, Hydrofluoric Acid, lead, silica, and processes involving floor sealers, traffic coatings, terrazzo sealers, or specialty paints. The plan shall include employee exposure control methods, isolation methods to prevent spread of chemicals outside the work area and safeguarding of the public.

1.05 CONTRACTOR RESPONSIBILITIES

A. SITE SPECIFIC SAFETY PLAN

1. The Contractor shall submit, for the Port’s review and comment, a Site-Specific Safety Plan in connection with the Work. The submittal shall be made in accordance with Section 01 32 19, Pre-Construction Submittals. An outline of the matters to be address in the Safety Plan is set forth in Appendix A to this Division. The Port’s review of, or comment on, the Safety Plan shall not, in any way, relieve the Contractor of any responsibility or liability for the Safety Plan. Delay in submitting a written safety plan will not constitute grounds for a contract schedule extension or delay claim.

2. The Port will not issue a Notice to Proceed (NTP), until the Safety Plan has been received and accepted by the TCI and Manager of Construction Safety Services.

B. GENERAL OBLIGATIONS

The Contractor is responsible for accident prevention and job site safety. This responsibility cannot be delegated to Subcontractors, suppliers, the Port, or other persons. To this end, the Contractor shall:

1. Promote a safe and healthy work environment.

2. Provide an accident prevention program.

3. Promote training programs to improve the skill and competency of all employees in the field of occupational safety and health.
4. Instruct all employees of safe work methods and practices when assigning work.
5. Ensure that employees have and use the proper protective equipment and tools for the job.
6. Ensure that all heavy equipment operators (i.e. cranes, loaders, and forklifts) are properly qualified and trained on the specific piece of equipment in use.
7. Plan and execute all work to comply with the stated objectives and safety requirements contained in the contract provisions, Federal, State, local laws and regulations, and industry standards.
8. Cooperate fully with the Port and its Consultants and insurers (if applicable) in connection with all matters pertaining to safety.
9. Maintain an orientation program for new employees, including subcontractor employees, that includes at a minimum, a review of:
    a) Potential hazards in the work areas
    b) Required personal protective equipment and apparel
    c) The following prohibited conduct shall result in the immediate removal from the project: gambling, fighting or horseplay, possession of firearms, alcohol or illegal use, possession or sale of a controlled substance or being under their influence.
    d) Emergency procedures
10. Perform documented daily inspections of the project in the Contractor Daily Report. Review and direct immediate action to correct any substandard safety conditions or practices, including those of any Subcontractor, regardless of classification.
11. Hold a minimum of one weekly scheduled safety meetings with its employees. Such meetings shall include a discussion of all observed unsafe work practices or conditions, a review of the accident experience and all corrective actions. The Contractor shall encourage safety suggestions from employees.
12. Hold a minimum of one monthly all-hands safety meeting with its employees, and subcontractor employees - subcontractors at any tier. An agenda shall be prepared and distributed for this meeting. The meeting shall include a safety update, and pertinent safety information for upcoming work. The Contractor shall encourage input and involvement from the subcontractors.
13. Ensure prompt medical treatment is administered to any injured employee.
14. Undertake a complete investigation of all accidents and implement corrective action to prevent a recurrence.
15. Prepare and implement a site safety plan as set forth in Paragraph 1.05. A hereof.

16. Comply with the Administrative Procedures set forth in Paragraph 1.08 hereof.

17. Provide the TCI and Manager of Construction Safety Services with copies of all DOSH citations immediately upon receipt.

18. Ensure that all of its subcontractors, suppliers, etc., are provided with a copy of this specification and are informed of their obligations regarding safety.

19. Ensure that all Contractor and subcontractor personnel at any tier have completed a one and one-half (1 ½) hour Port of Seattle Construction Safety Orientation to be held by the Port of Seattle at a time and location to be to be specified by the Port, prior to commencing work. The time expended and any associated costs such as travel time, parking, and other expenses are to be borne by the Contractor.

C. CONTRACTOR SAFETY REPRESENTATIVE

1. It is recognized that the responsibility for safety lies with the Contractor. Each Contractor shall appoint an individual (s) responsible for safety on each contract. This individual (s) must be employed in a supervisory position, empowered by their employer to take corrective action; be present on the project while work is being performed; and spend the amount of time necessary to ensure the Contractor's compliance with safety requirements.

2. A safety inspection shall be performed and documented for each shift worked, by the Contractor's safety representative.

3. The Contractor shall submit a resume of the experience and qualifications for the proposed Safety Representative(s) as part of the Safety Plan submittal. Please refer to part D. Definitions, subparagraphs 1 and 2 below. The Port will review the resumes and a personal interview may be required. The Port may reject anyone it deems "Not Qualified." It is the responsibility of the Tenant to enforce the determination.

D. FOREMAN SAFETY RESPONSIBILITIES:

1. Foremen are key individuals in an effective safety program. Their pro-active efforts toward accident prevention on their daily assignments help determine the degree of safety that exists on the job. A foreman's safety responsibilities include the following as a minimum:

a) Inspect his/her assigned job areas to ensure that unsafe acts or conditions are identified and corrected

b) Ensure that safety requirements are adhered to and enforced

c) Provide and require the use of proper personnel protective equipment and suitable tools for the job

d) Set a good example for his/her crew in the matter of safety

e) Ensure that orderliness and good housekeeping are maintained

f) See that his/her assigned crew is properly instructed in the safe work practices when assigned to job tasks

g) Investigate all accidents that occur in areas under their direction to determine facts necessary for corrective actions

h) Promptly assist in the completion of accident reports per contract requirements

i) Conduct weekly toolbox safety meetings with personnel to discuss unsafe work practices and conditions identified

j) Review accident investigations and corrective actions implemented

k) Encourage personnel to make suggestions regarding safety and to pass these on to supervision

l) Ensure that prompt first aid is administered

E. DEFINITIONS

1. Fulltime Safety Professional qualifications include:

a) Shall have no other duties.

b) An individual possessing a minimum of five years progressive experience managing safety programs on large construction projects comparable to this contract in scope and complexity.

c) Be knowledgeable concerning all federal, state, and Port of Seattle regulations applicable to construction safety.

d) Possess “Competent Person” certification in construction safety disciplines related to the work performed and possess verifiable training. This individual shall also be responsible for identifying “Competent Persons” required by State and Federal safety standards for which they are not certified.

e) Have successfully completed the OSHA 500 Safety and Health Course. This requirement may be waived in lieu of a safety and health degree or professional safety certification.

f) Training and current certification for CPR and First Aid is preferred.

g) Be capable of performing accident investigations and developing a concise report.

h) Is proficient in the development and presentation of “tool box” meetings and safety training.

2. Site Safety Officer qualifications include:

a) An individual assigned to perform safety functions on any contract not requiring a Fulltime Safety Professional. This can be a collateral duty position held by a supervisor. Safety duties shall take priority over other collateral duties.

b) Possess a minimum 5 years progressive experience in their trade.

c) Be knowledgeable concerning all federal, state, and Port of Seattle regulations applicable to safety.

d) Have successfully completed the OSHA 10-hour Safety & Health Course.

e) Possess “Competent Person” certification in construction safety disciplines related to the work performed and possess verifiable training. This individual shall also be responsible for identifying “Competent Persons” required by State and Federal safety standards for which they are not certified.

f) Be trained in, and possess current certification for CPR and First Aid.

g) Possess verifiable training and be capable of performing accident investigations and developing a concise report.

h) Possess verifiable training in the development and presentation of “tool box” meetings and safety training.

F. DETERMINATION

1. When the number of personnel on any shift is under 40 (including Subcontractor employees), the Contractor’s safety representative will meet the definition of “Site Safety Officer” as defined above for each shift.

2. For Contractors with a total of 40 or more personnel (including Subcontractor employees) on any shift, a Fulltime Safety Professional as defined above shall be required for each shift.

3. For each additional 75 employees (including Subcontractors employees) on any shift, a second Fulltime Safety Professional shall be required.

4. At the Port’s discretion the requirements for Contractor safety personnel can be reviewed and action taken to decrease or increase the number of individuals.

5. The Contractor Safety Officer/Professional (s) shall be primarily responsible for ensuring Contractor’s compliance with the safety requirements provided in this Document. Without limiting the generality of the foregoing, the Contractor Safety Officer/Professional (s) shall:

a) Review all subcontractor and sub-tier contractor’s Site Specific Safety Programs and Job Hazard Analysis (JHA) for compliance with applicable POS Construction Safety, State, and Federal Standards and ensure that they receive a copy and are briefed on Document 01860 - Safety Management.

b) Perform a site-specific safety orientation for all employees, subcontractors and sub tier contractors prior to beginning work. This is in addition to the Port’s safety orientation.

c) Perform daily safety inspections of the Contractor and Subcontractor’s project to evaluate the project for unsafe conditions and/or practices, and take the appropriate corrective action when required.

d) Immediately report all injuries of personnel, vehicles, “Near Miss” incidents, and property damage and insure immediate corrective action is taken. Assist in the preparation of all accident investigations and ensure reports are submitted within 24-hours.

e) Ensure meaningful, weekly safety meetings are held for all on-site employees. Provide the job foremen with appropriate training materials to conduct weekly “tool box” safety meetings and attend safety meetings to evaluate their effectiveness. Maintain documentation of topics discussed and attendees, with copies submitted to the TCI or included with Contractors Daily Report.

f) Be responsible for the control, availability, and use of necessary safety equipment, including personal protective equipment and apparel for the employees.

g) Shall attend a monthly safety committee meeting scheduled by the Manager of Construction Safety Services to discuss and resolve relevant issues related to safety and health on Port of Seattle projects.

6. Contractor Safety Officer/Professional (s) not performing their duties in accordance with this document, shall be replaced at the Port’s discretion by an individual meeting the requirements of this section. In addition, the Contractor Safety Officer/Professional (s) may not be removed from this contract or replaced without the Port’s advanced written approval. The Contractor shall notify the TCI and Manager of Construction Safety Services when this person cannot be on duty while work is being performed and shall submit the name(s) and qualifications of the individual assigned to perform said duties. It is the responsibility of the Tenant to enforce this requirement.

G. ACCIDENT PREVENTION

1. The Contractor has the responsibility to correct hazardous conditions and practices. When more than one Contractor is working within a given job site, any project management personnel shall have the authority to take action to prevent physical harm or significant property damage. If it is determined there is “Imminent Danger” the Contractor shall:

a) Take immediate action to remove workers from the hazard and stabilize or stop work until corrective actions can be implemented to eliminate the hazard.

b) Immediately identify and implement corrective action to eliminate the hazard.

c) Immediately notify the TCI, and Manager of Construction Safety Services or others as necessary. The TCI will notify the proper authorities if the damage cannot be promptly corrected and could develop into an emergency.

d) Each worker shall immediately report any condition suspected to be unsafe or unhealthy to his or her job foreman or safety representative. If there is no resolution of the concern at that

level, the employee shall report the concern to the TCI and Manager of Construction Safety Services.

H. ON SITE FIRST AID

1. This section is designed to assure that all employees in this state are afforded quick and effective first-aid attention in the event of an on the job injury. To achieve this purpose the presence of personnel trained in first-aid procedures at or near those places where employees are working is required. Compliance with the provisions of this section may require the presence of more than one first-aid trained person.

a) Each employer must have available at all worksites, where a crew is present, a person or persons holding a valid first-aid certificate.

b) All crew leaders, supervisors or persons in direct charge of one or more employees must have a valid first-aid certificate.

c) For the purposes of this section, a crew means a group of two or more employees working at any worksite.

Additionally, the Contractor shall:

d) Post emergency procedures which shall include telephone numbers and locations of facilities including, but not limited to, hospitals, physicians, police, fire and emergency medical services, in conspicuous locations at the job site and at all telephone locations.

e) Provide in a readily accessible location, first-aid supplies of sufficient size and number to handle common first-aid incidents.

f) Identify personnel qualified to render first aid with suitable emblems affixed to the rear of their hard hats for identification.

g) Regularly discuss actions to be taken during emergencies with the Contractor's supervisory personnel and at "tool box" safety meetings.

1.06 PORT OF SEATTLE'S RIGHTS

A. INSPECTIONS/INVESTIGATIONS

1. The Port may, in any reasonable manner, observe and inspect the Contractor's safety and accident prevention procedures for all activities and personnel working at the construction sites, including the Contractor, subcontractors, visitors, and materials or equipment suppliers. This specifically includes, but is not limited to, the right to attend all safety meetings.

2. The Port shall receive written copies of accident or incident reports completed by the Contractor within 24-hours of occurrence, using the accident investigation reports found in the Port of Seattle Construction

Safety & Health Manual. This reporting shall include but not be limited to those reports prepared pursuant to OSHA and/or DOSH regulations.

3. The Port may, in any reasonable manner, observe or participate in any accident investigation conducted by the Contractor or anyone performing work for, on behalf of, or under the Contractor. The Port may also, at its sole discretion and in any reasonable manner, undertake its own accident investigation.

B. CORRECTIVE ACTIONS/STOP-WORK

1. The Port shall have the right to require the Contractor to address unsafe working conditions, including taking corrective action when unsafe working conditions are observed (i.e., lack of good housekeeping practices, use of equipment in obviously poor condition, failure to adhere to statutory construction regulations, etc.).

2. The Port shall have the right to require the removal from the work site of any person, property, or equipment that, in the Port's opinion, is deemed unsafe.

3. The Port shall have the right to require the Contractor to immediately cease any action and/or stop the Work (or any portion thereof) in the event that any condition exists that, in the Port's opinion, constitutes an imminent danger or serious harm.

4. The Port shall have the right to suspend the Work (or any portion thereof) pending the completion of any accident/incident investigation, whether undertaken by Contractor, the Port or others.

C. PORT'S ACTION/INACTION DOES NOT RELIEVE CONTRACTOR

1. Nothing the Port may do, or fail to do, with respect to safety in the performance of the Work shall relieve the Contractor of its responsibility to comply strictly with this Division and all standards referenced in Section 1.02 of this document.

D. PORT'S ACTION/INACTION NO BASIS FOR ADJUSTMENT

1. The Port's exercise of any rights under this Paragraph 1.06 shall not be a basis for any adjustment in the Contract Price or Time.

E. PORT OF SEATTLE INCLUDES CONSULTANTS

1. As used in these requirements, the terms "Port of Seattle" and "Port" specifically includes the Port's designated consultants.

1.07 PORT MANDATED SAFETY REQUIREMENTS

A. Prior to mobilization, the Contractor's Project Manager and Safety Representative shall meet with the TCI and Manager of Construction Safety Services to review and discuss the safety requirements of this contract.

B. SPECIFIC SAFETY PROVISIONS

1. In addition to Federal, State, and Local regulations pertaining to operations and safety, the Contractor shall adhere to the following Port mandated safety requirements:

a) Asbestos and Contractor Personnel Asbestos Training: Ensure that all workers have received the initial and annual Asbestos Awareness training prior to the start of work.

b) Entry into Confined Spaces: Work on this project may require entry into confined spaces as defined by WAC 296-809. The Contractor shall read and follow the requirements of the Port of Seattle's Confined Space Entry Program, as found in the Port of Seattle Construction Safety and Health Manual. The Contractor's Confined Space Entry Program must meet or exceed these requirements.

1) The Contractor shall provide the TCI a copy of its Confined Space Entry Program as part of the Contractor's Safety Plan Submittal. As part of this submittal, the Contractor shall complete the "Confined Space Entry Program Certificate" (Appendix B).

2) Should the Contractor employ subcontractors to work in confined spaces it shall be the Contractor's responsibility to submit the required documentation for each subcontractor.

3) No work shall be allowed to start in a confined space until the required submittals have been made. In the event the Contractor does not comply with these regulations, ACCESS WILL BE DENIED and the TCI notified. Delays caused by failure to submit the required documentation shall not be considered a reason for extension of contract time.

c) Electrical - Safe Clearance Procedures

1) Entry into High Voltage Areas: Work on this project may require entry into manholes, vaults, electrical rooms or other High Voltage areas.

2) In the event entry is required, the Contractor is obligated to identify any High Voltage areas that may be involved in the project and immediately notify the TCI if they have not been properly identified. Before entry into a High Voltage work area the Contractor shall notify the TCI and contact STIA Electrical Shop at (206) 433-5311.

d) Fire Prevention: The Contractor shall ensure that fire prevention measures on-site are in accordance with OSHA, DOSH, and NFPA standards. Approved safety cans shall be used for flammable and combustible liquids. Signs and fire extinguishers shall be provided where required.

e) Traffic Control: Ensure compliance with Section 01 55 26 - Traffic Control.

f) Hazardous Materials: Ensure compliance with Section 01 57 23 - Pollution Prevention Planning and Execution.

g) Open Flame Devices: Prohibit the use of unapproved fuel-burning types of lanterns, torches, flares or other open-flame devices on Port property.

h) Hot Work Permit: Open Flame Welding and spark producing equipment and tasks require the Contractor to secure a “Hot Work Permit” from the Port Of Seattle Fire Department in accordance with Supplementary Conditions 00 80 00, Article SC-04.11 Permits, Licenses, Fees and Notices.

1) Seaport: Open Flame Welding and spark producing equipment and tasks require the Contractor to implement a formal “Hot Work Permit” Program outlined in the Port of Seattle Construction Safety and Health Manual. Cutting and Welding tasks also require the Contractor to secure a “Hot Work Permit” from the Seattle Fire Department in accordance with Supplementary Conditions 00 80 00, Article SC-04.11 Permits, Licenses, Fees and Notices.

2) Airport: Open Flame Welding and spark producing equipment and tasks require the Contractor to secure a “Hot Work Permit” from the Port Of Seattle Fire Department in accordance with Supplementary Conditions 00 80 00, Article SC-04.11 Permits, Licenses, Fees and Notices.

i) Liquid propane storage and use below grade is prohibited.

j) Excavating & Trenching: Coordination with the TCI shall be required for work performed on the site.

k) Construction activities that pose a potential risk of exposure to contaminated soil (such as excavations) shall be supervised by personnel who have both a current 40-hour Hazardous Waste certification, and an 8-hour Hazardous Waste Supervisor’s certification. These individuals shall be able to identify the potential need for upgrading the level of health and safety protection. All personnel working in direct contact with contaminated soil shall have a current 40-hour Hazardous Waste certification and medical monitoring, as required in Standards For General Safety & Health, Chapter 296-843 WAC and in accordance with OSHA regulations. The plan shall also include emergency procedures and medical treatment, fire protection, Job Hazard Analysis (JHA), and PPE requirements.

l) The Contractor is responsible for soil sampling and air monitoring to determine hazards and exposures to their employees.

m) Safety plan shall include requirements for daily stretching and flexing of on-site personnel.

n) Individuals who operate hoisting equipment, including but not limited to cranes, boom trucks, and forklifts so configured, shall possess certification from the National Commission for the Certification of Crane Operators (NCCO). A copy of the certification (s) shall be submitted in accordance with Section 01 32 19 Pre-Construction Submittals.

o) Personal Protective Equipment Policy: To reduce the possibility of injuries, the Contractor shall implement a policy that requires

100% use of hardhats, safety glasses, and gloves for all personnel under their control (except when inconsistent with a reasonable site accommodation that complies with applicable L&I, worker safety, and jobsite safety laws and regulations). It is the responsibility of the Contractor to supply the proper personal protective equipment for the task.

p) Reasonable Site Accommodations

1) Contractors shall provide reasonable site accommodation(s) for personnel, including Port forces, that cannot wear required Construction Site PPE due to disability or religious beliefs. Reasonable notice will be provided by the Port's construction project representative to coordinate site visits for individuals requiring an accommodation.

2) The Contractor shall cooperate and coordinate an alternate site PPE policy to accommodate non-construction job duties by Port forces or Tenants within the work area, as directed by the Port's construction project representative.

3) These accommodations may include but are not limited to: providing access to the job site when no construction work is being performed and no construction hazards are present, and providing construction free corridors and work spaces free of all recognized construction hazards.

q) Protection of the Public: The Contractor shall submit a plan for the protection of the public on or adjacent to construction and demolition operations. This plan shall include, but not be limited to, barricades, fencing, and signage. "Public" is defined, as anyone not associated with the project - general public, POS and tenant employees.

r) AOA Operations: Ensure compliance with Section 01 35 13.13 Operational Safety on Airports during construction.

s) Foreign Objects Debris (FOD): Ensure compliance with Section 01 35 13.13 Operational Safety on Airports During Construction.

C. DISCIPLINARY ACTION MATRIX:

1. Defining "The Plan"

a) The object of this matrix is to consistently and effectively control safety hazards such as unsafe acts, and unsafe conditions that lead to injuries of employees, the general public, or that cause property damage.

b) The matrix also provides a basis for the Contractor's program by standardizing how safety infractions committed by those employees will be handled.

c) All employees of the Contractor, subcontractor, sub tier contractor, vendor, or tenant are covered under this matrix regardless of classification.

d) Damage to equipment or property due to unsafe act or using damaged equipment.

e) Listed are the minimum requirements for discipline. The Contractor has the right to incorporate more stringent procedures from their corporate policy into this matrix. The Contractor shall not submit two Disciplinary Action Programs.

f) Individuals observed by the Contractor's management shall be disciplined under this matrix.

g) Individuals observed by the Port of Seattle management shall also be subject to disciplinary action. POS management shall immediately contact the Contractor's management or provide written information to the Contractor's management as to violation, time, date, employer, and employee.

h) The Contractor's Safety Manager shall perform the act of documenting and distributing the "Written Violation Notice."

2. Defining "Violation"

a) Violations are defined as:

b) "General Violations" are considered to be those infractions that may not cause serious injury or illness to an individual but are still violations of written safety policies and procedures. Examples include housekeeping, unregulated ACM incidents, property damage, mushroomed tools, etc. "General Violations" do not necessarily require a written warning unless they become classified as "Repeat Violations."

c) "Serious Violations" are those violations that if left uncorrected could cause serious injury or illness to an individual. Examples include employees exposed to fall or impalement hazards or serious bodily harm.

d) "Imminent Danger" is violations/situations that will most likely cause permanent disability or death to an individual. Examples can include falls, electrical, or trenching hazards and unsafe equipment.

e) "Repeat Violations" are situations that arise as a result of a previously identified infraction not being abated in the time frame required or numerous violations of the same classification. "Repeat Violations" can also be defined as a situation where one supervisor has multiple employees working under their direction who are in violation of a written Federal, State, project, or company policy.

f) Violations are not limited to the examples listed above.

NOTE: An "employee" may be removed from the project at any time for a safety violation that endangers his life or the life of a fellow employee.

3. Defining "Employee"

a) As mentioned earlier, all employees of the Contractor, subcontractor, vendor, or tenant are included in this program.

b) Job title classifications can include but are not limited to trades person, foreman, supervisor, superintendent, etc.

c) Any person (s) directly reprimanded for his or her own actions or inactions, regardless of their position, shall be reprimanded as a "Worker."

4. Defining the "Procedure"

a) Individuals observed committing infractions of written Federal, State, site, or company safety policies shall be brought to the attention of the Contractor's management.

b) The contractor shall in a timely manner, notify the identified employee(s) that they are in violation of written safety rules or procedures and shall abate the hazard.

c) In the event of "Imminent Danger or" a "Serious Violation," the Contractor or POS shall immediately notify and remove the employee(s) from the hazardous situation.

d) The Contractor shall provide timely written warning to the identified individual(s), as well as the direct supervisor and superintendent of that individual(s). The supervisor's names shall be recorded on the "Written Violation Notice."

e) To discourage "Repeat Violations" or supervisor apathy, the supervision is subject to disciplinary action as stated in the matrix.

f) The Contractor shall utilize the "Written Violation Notice" provided in this section.

5. Defining the "Results"

a) Personnel (including supervisors) receiving a Written Violation Notice shall be retrained in the appropriate standard or procedures. Said training shall be documented in writing and submitted to the TCI.

b) Written Violation Notices received will remain in force for the duration of the project.

c) Removal from the project of an "employee" for a minimum of 3 working days.

d) Removal of an "employee" from any port of Seattle project for one year.

e) Written notice sent to the appropriate corporate president.

f) Copies of all "written violation notices" are to be submitted to the TCI with a copy forwarded to the Manager of Construction Safety Services within 24-hours of issuance of notice.

DISCIPLINARY ACTION MATRIX

FOCUS POINT /INCIDENT	1ST VIOLATION	2ND VIOLATION	3RD VIOLATION	NOTES
Worker	Verbal & Written Notice	3 Days Off	Removed From POS Projects For One Year	
Worker's Direct Foremen	Written Notice	Written Notice	3 Days Off	3 Worker Lay-offs = Removal From POS Projects For One Year
Worker's Direct Superintendent	Written Notice	Written Notice	Written Notice to Sub/Prime Superintendent and President of Sub/Company	3 Worker Lay-offs = 3 Days Off For Superintendent
Prime Contractor's Superintendent	Written Notice	Written Notice	Written Notice to President of Prime Company	3 Worker Lay-offs = 3 Days Off For Superintendent*

*Document 01 35 29 - Safety Management this individual may also be removed from the project.

D. SAFETY PERFORMANCE

If the Contractor experiences ongoing safety concerns such as a Lost Work Day Case or Recordable Incident Rate greater than the Bureau of Labor Statistics National Average for Construction, experiences repeated violations of safety & health rules and regulations or “Imminent Danger” situations, or fails to abate violations in a timely manner, the Contractor shall be subject to the following action at the Ports discretion:

1. Removal and replacement of management personnel.
2. Submit a written Safety Recovery plan to the TCI and Manager of Construction Safety Services detailing what changes will be made to their safety program and a timeline as to when the changes will be implemented.
3. Hiring an independent safety consultant who shall audit the Contractor’s procedures and operations. The consultant shall compile a plan detailing what changes the Contractor shall implement. This report shall be submitted to the TCI, Construction Manager, and Manager of Construction Safety Services.
4. Notwithstanding 01860 paragraph 1.05 (B)(9)(c), Disciplinary Action Matrix, above in 1.07 (C)(2), shall be used for determining the appropriate corrective action.
5. Conduct a “Safety Stand Down” (suspend all work or any portion thereof). Suspended work shall not be allowed to resume until the Contractor has completed the following actions for review and acceptance by the TCI:
    a) Hazardous conditions leading up to the Safety Stand Down shall be abated.
    b) Training of such type and duration shall be conducted to educate personnel on the awareness of, identification of, and correction of hazards leading up to the stand down.
    c) Document the completion of items a. and b. above.

It is the responsibility of the Tenant to enforce these requirements.

E. TOUR GUIDELINES

1. It is imperative that the highest degree of protection is afforded to all individuals touring any Port construction site. The following guidelines have been prepared as general instructions for the organization, direction and safe conduct of such tours:
    a) Escorted Visitors: While on the job site, non-construction personnel or groups shall be accompanied at all times by an authorized representative, the TCI, the Contractor, or other designee familiar with the job site.
    b) Notification and Tours: Personnel tours including technical inspections need to be cleared through the TCI, allowing maximum advance notice. The TCI shall be consulted to coordinate the tour plan, identify specific rules, and to ensure necessary safety precautions are taken.

c) Safety Enforcement: Before entering a job site, all visitors must be informed regarding the need for careful, orderly conduct and notified of any special hazards that may be encountered.

d) Personal Protective Equipment: All visitors and tour groups must comply with proper dress, footwear, personal protective equipment or other safety requirements deemed appropriate.

1.08 CONTRACTOR ADMINISTRATIVE PROCEDURES

A. PROJECT SAFETY INSPECTIONS

1. Unsafe conditions or acts having the potential to cause bodily injury or property damage are classified as either “Imminent Danger” or “Serious.” In either case, action shall be taken immediately to correct the situation. Any item(s) that cannot be corrected immediately are required to be abated within 24-hours of notification. In the interim, other steps shall be taken to insure the safety of employees or the public.

2. The Construction Safety Inspection Report (CSIR) will be used by the Port Construction Safety Management as the field report for recording the Safety Manager’s observations in Section One(see Appendix D).

The following instructions apply to the use of this form:

a) Contractor’s Corrective Action (Section Two): The Contractor shall note the action taken to abate the observation. If an item is abated immediately, it will be so noted in Section One by the Port Safety Manager.

b) Date Corrected: The Contractor, upon completion, shall enter the date in the appropriate column.

c) Submittal Procedure:

1) Projects utilizing CMS will use this system to transmit the CSIR Form between the Port and the Contractor until the observation is satisfactorily resolved.

i. Email will be used on projects not utilizing CMS

2) When corrective action has been completed, the Contractor’s Project Manager or Designee will electronically sign and date the form and return it to the Port’s construction project representative.

3) The Port’s construction project representative will review the form and follow-up to ensure the “Contractor’s Corrective Action” has been addressed, verifying each item corrected.

4) The Port’s construction project representative will discuss the noted observations at the Weekly Contractor Progress Meeting.

5) The completed CSIR form shall be returned to the Manager of Construction Safety Services within five working days.

B. ACCIDENT INVESTIGATION AND REPORTING PROCEDURES

1. All accidents and incidents occurring from operations or work performed under the contract shall be reported, verified, investigated, and analyzed as prescribed by the Port of Seattle Construction Safety & Health Manual. Contractors and other individuals involved in the work shall instruct employees and other personnel to follow these procedures if someone is injured.

    a) Seek medical assistance for anyone injured. The injured person's supervisor will see that first aid is administered.

    b) When a serious accident or emergency occurs/exists, secure the incident area tightly and quickly except for rescue and emergency personnel.

    c) Send individuals as required, to assist or direct any emergency personnel arriving on the site.

    d) The accident scene shall not be disturbed until released by the Incident Command or Manager of Construction Safety Services, except for circumstances where "Imminent Danger" exists to those performing any emergency services.

    e) Immediately notify the TCI and Manager of Construction Safety Services (or designee) regarding any accident or injury requiring more than First Aid treatment, any third-party incident, or any equipment or property damage estimate in excess of $1,000. Notify the Manager of Construction Safety Services of all other incidents including near miss incidents as soon as possible following the event.

    f) Washington State Department of Labor and Industries must be notified immediately by the Contractor in the event of an accident involving the death or in-patient hospitalization of any employee.

    g) Employees must report all injuries or occupational-related illnesses as soon as possible to their employer or immediate supervisor.

    h) A detailed written report, identifying causes and recommending corrective action, must be submitted to the TCI and Manager, Construction Safety Services within 24 hours. No supervisor may decline to accept a report of an injury from a subordinate.

    i) Within 48-hours of a Recordable or Lost Work Day Case Injury, incident involving 3rd party, or property damage incident, the Contractor shall meet with the TCI and Manager of Construction Safety Services. The meeting shall discuss the status of the injured employee, the root cause of the incident, corrective action implemented, the Job Hazard Analysis, and retraining of the employee and supervisor.

    j) Report all accident exposures and near miss incidents that occur on the job site. These records are to be maintained and submitted to the TCI or other designated authority upon request and shall include but not be limited to:

        1) First-aid injuries not reported on the OSHA No. 300 Form.

2) The Contractor's OSHA 300 Form.

k) The above information shall be provided only to authorized personnel including the TCI and Manager of Construction Safety Services.

l) All questions from the media regarding any incident occurring on site shall be referred to the Port's Public Affairs Manager via the TCI.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

End of Document

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. This item shall consist of planning, installing, inspecting, maintaining, upgrading and removing temporary erosion and sediment control Best Management Practices (BMPs) as shown in the Contract Documents, in the Contractor's Erosion and Sediment Control Plan (CESCP), or as ordered by the Port construction project representative to prevent pollution of air and water, and control, respond to, and manage eroded sediment, turbid water and process water during the life of the contract.

B. This project may require management as a no-discharge project. All stormwater shall be diverted away from work areas. All project and process water shall be collected, stored and discharged off Port property.

C. This work shall apply to all areas associated with contract work including, but not limited to the following:

1. Work areas
2. Equipment and material storage areas
3. Staging areas
4. Stockpiles
5. Access Roads

1.02 GOVERNING CODES, STANDARDS, AND REFERENCES

A. The following rules, requirements and regulations specified may apply to this work:

1. Surface Water Design Manual, King County, Department of Natural Resources, (Current Edition).
2. Washington State Department of Ecology Stormwater Management Manual for Western Washington (2014), Vol. 2 Washington State Stormwater Quality Standards (WAC 173-201A).
3. National Pollution Discharge Elimination System (NPDES) Waste Discharge Permit No. WA 002465-1.
4. Port of Seattle Regulations for Airport Construction (current edition).
5. Sea-Tac International Airport Rules and Regulations (current edition).
6. Projects with one or more acres of disturbance may need to obtain this permit. Port will determine if it will obtain and transfer coverage to the Contractor or the Contractor will obtain the permit.

   Construction General NPDES Permit #[_____]

1.03 SUBMITTALS

A. As part of the required Preconstruction Submittals, Section 01 32 19 - Preconstruction Submittals and before Notice to Proceed is given, when required the Contractor shall submit the following:

1. Contractor Erosion and Sediment Control Plan (CESCP)
    (1) Including CESCL Certification Cards and ECL Qualifications

B. The following may be required for submittal:

1. Oil Absorbent Pads
2. Silt Fence
3. Straw Wattle
4. Erosion Control Blanket
5. Bonded Fiber Matrix
6. Catch Basin Protection
7. Temporary Piping Connections / Plugs
8. Construction Limits Fencing
9. Wheel Wash
10. Geotextile Fabric Check Dam
11. Plastic Sheeting
12. Temporary Organic Mulch
13. Water Filled Diversion Berm
14. Biofence

PART 2 MATERIALS

2.01 PROJECT INFORMATION

2.02 PREPARATION FOR MATERIALS

2.03 FABRICATION, PRODUCTION, & SUPPLY OF MATERIALS

2.04 MATERIAL REQUIREMENTS

A. GENERAL:

A. All products used to construct the Contractor selected BMPs shall be suitable for such use and submitted to the Port construction project representative for approval.

B. OIL ABSORBENT PADS:

A. Oil absorbent pads shall be made of white, 100% polypropylene fabric that absorbs oil-based fluids and repels water-based fluids. Each pad shall be a minimum of 15x19 inches in size and absorb no less than 50 ounces of oil-based fluids.

C. TESC – ASPHALT CURB & ASPHALT BERM:

A. Asphalt curb and asphalt berm shall be constructed as directed by the Port construction project representative. The asphalt concrete shall meet the requirements of Section 32 12 16 – Bituminous Concrete Pavement.

D. SILT FENCE:

A. Geotextile material shall meet the requirements of WSDOT Specification Section 9-33 Table 6. Geotextile material shall be backed by 2”x4” wire mesh and shall be attached to steel “T” posts using wire or zip ties. Dimensions and spacing shall be as detailed on the drawings.

E. STRAW WATTLE:

A. Wattles shall consist of cylinders of biodegradable plant material, such as straw, coir, or compost encased within biodegradable or photodegradable netting. Wattles shall be a minimum of 5 inches in diameter, unless otherwise specified. Encasing material shall be clean, evenly woven, and free of debris or any contaminating material, such as preservative and free of cuts, tears or damage. Compost filler shall meet material requirements specified in WSDOT Section 9-14.4(8) Coarse Compost. Straw filler shall be 100% free of weed seeds.

F. EROSION CONTROL BLANKET:

A. Erosion Control Blanket shall meet the requirements of WSDOT Specification Section 9-14, paragraph 9-14.5(2) “Erosion Control Blanket”. Installation in ditches and swales shall be per WSDOT Standard Plan I-60.20-00 “Erosion Control Blanket Placement in Channel”. Installation on slopes shall be per WSDOT Standard Plan I-60.10-00 “Erosion Control Blanket Placement on Slope”.

G. BONDED FIBER MATRIX SOIL STABILIZATION:

A. Bonded Fiber Matrix soil stabilization shall be labeled as such on the unopened bags furnished by the manufacturer. Bonded fiber matrix shall be installed with seed and fertilizer included in the homogenous mix. Seeding shall be as specified in Section 32 92 19.16 – Hydroseeding for Erosion Control and Landscaping.

H. CATCH BASIN PROTECTION:

A. Catch basin protection shall be designed and installed for the purpose of preventing sediment from entering the storm system. Protection shall:

B. Be constructed of non-woven geotextile fabric with sewn seams;

C. Contain a built-in lifting strap;

D. Have a built-in, high flow bypass;

Be sized such that all water draining to the catch basin flows into the insert and does not flow directly into the storm drain.

E. Catch basin covers shall be 30 mil PVC liner material.

I. TEMPORARY PIPING/CONNECTIONS:

A. Temporary piping shall meet the requirements of the storm drain pipe as specified in Section 33 41 13 – Pipe for Storm Drains and Culverts. Temporary catch basin shall meet the requirements of Section 33 49 13 – Manholes, Catch Basins, Inlets and Inspection Holes.

J. TEMPORARY PIPING PLUGS:

A. Installation in Pipe/Structure to be Demolished/Abandoned. Plug shall be concrete as specified in Section 03 30 00 – Cast-in-Place Concrete.

B. Installation in Pipe/Structure to Remain. Plug shall be a mechanical secured plug.

K. STORMWATER STORAGE TANK:

A. The tank shall be a fixed axle weir tank with a minimum 21,000 gallon.

L. STORMWATER STORAGE TANK PADS:

A. The stormwater storage tank pads shall be as detailed on the drawings.

M. CONSTRUCTION LIMITS FENCING:

A. Fencing material shall be standard size orange plastic mesh construction safety fence. Posts shall be steel “T” posts.

N. ROCK CHECK DAMS:

A. Rock check dams shall be constructed of quarry spalls per the details shown in the project drawings and as specified in Section 31 23 00 - Excavation and Embankment.

O. STABILIZED CONSTRUCTION ENTRANCE

A. Stabilized construction entrance(s) shall be constructed of stabilization geotextile fabric and quarry spalls as specified in Section 31 23 00 – Excavation and Embankment.

P. WHEEL WASH

A. The wheel wash shall be a high water pressure, low water volume system long enough to allow for at least two full tire rotations. Spray nozzles shall be directed at inner and outer side walls for all tires including duals, all treads from two directions, wheel wells and flaps, and truck sides up to the bottom of the windshield. For water line material and construction requirements shall be as specified in Section 33 10 00 – Water Distribution.

Q. GEOTEXTILE FABRIC CHECK DAMS

A. Geotextile check dam shall be a urethane foam core encased on Geotextile material. The minimum length of the unit shall be 7 feet. The foam core shall be a minimum of 8 inches in height, and have a minimum base width of 16 inches. The geotextile material shall overhang the foam by at least 6 inches at each end, and shall have apron type flaps that extend a minimum of 24 inches on each side of the foam core. The geotextile material shall meet the requirements for silt fence.

R. PLASTIC SHEETING

A. Plastic sheeting shall be clear, reinforced, and a minimum of 6 mil thick. Sandbags or other Port construction project representative -approved material shall be used to secure the plastic sheeting in place. Black plastic may be used to cover stockpiles.

S. TEMPORARY ORGANIC MULCH

A. Temporary organic mulch shall consist of straw, wood chips, hog fuel, compost or other material approved by the Port construction project representative.

T. WATER FILLED DIVERSION BERM

A. Berm shall be a minimum 6 inches high and 10 feet long and made of 10 mil polyurethane or 22 oz. PVC.

U. BIOFENCE

A. Biofence shall consist of 7 ounce or heavier uncoated burlap fabric at least 36 inches wide and 100 feet long. Wood stakes dimensions shall be a minimum 1 1/8 x 11/8 inches by 42 inches high.

2.05 MATERIAL HANDLING, DELIVERY, & STORAGE

2.06 DELIVERABLES

2.07 QUALITY ASSURANCE

PART 3 EXECUTION

3.01 PROJECT INFORMATION

A. GENERAL

1. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other Federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

2. No discharge of water shall be allowed that increases volume, velocity, or peak flow rate of receiving water background conditions, or that does not meet state of Washington water quality standards.

3. The Contractor's Erosion and Sediment Control Plan (CESCP) required by this section shall be based upon the Temporary Erosion and Sediment Control (TESC) requirements of the contract but shall specifically phase, adjust, improve and incorporate the TESC requirements into the Contractor's specific schedule and plan for accomplishing the work. The CESCP shall be modified as changes are made to improve, upgrade and repair best management practices used by the Contractor and as the work progresses and TESC needs change.

4. The Contractor shall be wholly responsible for control of water onto and exiting the construction site and/or staging areas, including groundwater, stormwater, and process water. Stormwater from offsite shall be intercepted and conveyed around or through the project and shall not be combined with onsite construction stormwater.

5. Design of, and modifications to, project hydraulic conveyances, detention facilities, and TESC plan sheets shall be stamped by a Professional Engineer (P.E.) licensed by the State of Washington. All other changes to the CESCP shall be signed by the ECL.

B. PROJECT REQUIREMENTS

1. DESCRIPTION OF WORK

a. In order to comply with the requirements of this section, the Contractor shall:

(1) Develop the Stormwater Pollution Prevention Plan (SWPPP) and submit a Contractor's Erosion and Sediment Control Plan (CESCP). The CESCP shall, at a minimum, include and address the following:

(a) Site Description and Drawings

(b) Contractor Erosion and Sediment Control Personnel

(c) Schedule and Sequencing

(d) BMP Installation

(e) BMP Maintenance

(f) BMP Inspection

(g) Record keeping

(h) BMP Removal

(i) Emergency Response

(j) Construction Dewatering

(k) Fugitive Dust Planning

(l) Utilities Planning

(m) Education

(2) Revise and modify the CESCP during the life of the contract and maintain records.

(3) Install, maintain, and upgrade all erosion prevention, containment, and countermeasures BMPs during the life of the contract, and removal at the end of the project.

(4) Contain, cleanup and dispose of all sediment and convey turbid water to existing or proposed detention/treatment facilities.

(5) Perform other work shown on the project drawings, in the Contractor Erosion and Sediment Control Plan, or as directed by the Port construction project representative.

(6) Inspect to verify compliance with the CESCP requirements including BMPs; facilitate, participate in, and implement directed corrective actions resulting from inspections conducted by others including outside Agencies and Port employees/consultants.

(7) Educate all Contractor and sub-contractor staff about environmental compliance issues at weekly meetings and document attendance and content.

2. DEFINITIONS

a. Process Water: All water including, but not limited to, that used for washing, cleaning, fire proofing and hydrodemolition is defined by the Department of Ecology as “process water” and shall be collected and disposed of in a manner that complies with all local, state and federal regulations. Disposal tickets shall be provided to the Port construction project representative.

(1) Process water shall not be discharged to the IWS or SDS

3. PERMITS

   a. Work shall be conducted in accordance with NPDES permit No. WA- 002465-1.

   b. When the project requires a Construction General NPDES Permit and the contractor is to be completely responsible for compliance, the Port will obtain the permit and contractor shall have to accept transfer of permit from the Port.

      The Contractor shall accept from the Owner complete transfer of Construction General NPDES Permit #[ ]. The Contractor shall submit a signed Notice of Transfer before Notice to Proceed. The form can be obtained at: http://www.ecy.wa.gov/biblio/ecy02087a.html

4. ADMINISTRATIVE REQUIREMENTS

   a. The provisions of this section shall apply to the Contractor, subcontractors at all tiers, suppliers and all others who may have access to the work site by way of the contractor's activities.

   b. Failure to install, maintain, and/or remove BMPs shown on the drawings, in the approved Contractor Erosion and Sediment Control Plan and specified herein, or by order of the Port construction project representative; or failure to conduct project operations in accordance with Section 01 57 13 - Temporary Erosion and Sediment Control Planning and Execution will result in the suspension of the Contractor's operations by the Port construction project representative.

   c. The Contractor shall be solely responsible for any damages, fines, levies, or judgments incurred as a result of Contractor, subcontractor, or supplier negligence in complying with the requirements of this section.

   d. Any damages, fines, levies, or judgments incurred as a result of Contractor, subcontractor, or supplier negligence in complying with the requirements of this section will be deducted from payment due by Modification.

   e. Any time and material costs incurred by the Port due to damages, fines, levies, or judgments incurred as a result of Contractor, subcontractor, or supplier negligence in complying with the requirements of this section will be deducted from payment due by Modification.

   f. The Contractor shall be solely responsible for any schedule impacts from damages, fines, levies, judgments, or stop work orders incurred as a result of Contractor, subcontractor, or supplier negligence in complying with the requirements of this section. The project schedule will not be changed to accommodate the time lost.

   g. Contractor shall not clear, grub, grade, demolish, or perform any earthwork after Notice to Proceed until the following has been

installed per the project drawings, the approved Contractor Erosion and Sediment Control Plan, or as directed by the Port construction project representative:

(1) Silt Fence or other perimeter controls are in place.

(2) Areas not to be disturbed are delineated with construction fence.

(3) Temporary ponds and ditches are installed and vegetated or covered.

(4) Permanent ponds used for sediment control during construction have been installed and vegetated or covered and modified with riser.

(5) Water flows from off site are tight lined and directed away from work area.

(6) All construction entrances are stabilized and wheel wash systems in place and operational.

(7) Catch basin inserts are installed in all catch basins that receive drainage from the Work area and haul roads.

(8) Stormwater storage tanks are located onsite to provide for additional storage volume and/or treatment volume required for treatment by settlement.

(9) Materials on hand, in quantities sufficient to cover all bare soil, divert all flows, contain all sediments, and prevent turbid discharges from the site during all stages of construction. These materials include, but are not limited to the following:

(a) Reinforced 6 mil plastic sheeting

(b) Straw Wattles

(c) 6” pipe

(d) 8” pipe

(e) Sand bags, filled

(f) Wire-backed silt fence

(g) Steel “T” posts

5. AUTHORITY OF PORT CONSTRUCTION PROJECT REPRESENTATIVE

a. The Port construction project representative has the authority to limit the surface area of erodible earth material exposed by clearing, excavation, and fill operations, and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams or other watercourses, lakes, ponds, wetlands or other areas of water impoundment.

b. In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or

failure to install permanent controls as a part of the work as scheduled or are ordered by the Port construction project representative, such work shall be performed by the Contractor at his/her own expense.

c. The Port construction project representative may increase or decrease the area of erodible earth material to be exposed at one time as determined by analysis of project conditions.

d. In the event that areas adjacent to the work area are suffering degradation due to erosion, sediment deposit, water flows, or other causes, the Port construction project representative may stop construction activities until the situation is rectified.

e. In the event that the Washington State Department of Ecology issues an Inspection Report, a Notice of Non-Compliance, Notice of Violation or Enforcement Action, the Port construction project representative may stop all construction activities until it has been determined that the project is in compliance. The Port construction project representative may require the Contractor to send additional staff to successfully complete Contractor Erosion and Sediment Control Lead (CESCL) training before construction activities may begin. The number of working days will not be changed to accommodate the work stoppage. All costs associated with work stoppages, mitigation of the event, and/or training shall be paid by the Contractor.

f. In the event that the Contractor discharges storm water, ground water, or process water to storm drains, ditches, gutters or any conveyance that discharges to a receiving water as defined by the Department of Ecology without prior approval of the Port construction project representative, the Port construction project representative may stop all construction activities and require additional Contractor staff training and may require that all parties involved in the unapproved discharge be removed from the project for a time determined by the Port construction project representative. The project schedule will not be changed to accommodate the time lost. All costs associated with mitigation of the unauthorized discharge, work stoppages, training and/or removal of personnel from the project shall be paid by the Contractor.

6. COORDINATION MEETINGS

a. The Contractor shall be available, at a minimum, for a weekly coordination meeting with the Port construction project representative, other Port Staff and outside agency representatives to review the ongoing contract work for compliance with the provision of this specification.

b. The Contractor’s Erosion Control Lead (ECL) shall attend a quarterly environmental staff meeting scheduled by the Erosion Control/Stormwater Port construction project representative to

discuss and resolve relevant environmental, stormwater and erosion control issues on Port of Seattle projects.

3.02 PREPARATION FOR EXECUTION OF WORK

A. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

1. The Contractor shall prepare a Stormwater Pollution Prevention Plan (SWPPP). The contents of a construction SWPPP may vary with the amount of new or replaced impervious surface, acres of land disturbing activity and the classification of water.

2. The Contractor shall prepare a CESCP. The contents of a CESCP may vary with the amount of new or replaced hard surface, acres of land disturbing activity and the classification of water. The CESCP shall comply with the Director's Rules based on the City of Seattle "Stormwater Code", SMC Chapters 22.800 through 22.808, and must contain enough detail to demonstrate controls sufficient to determine compliance with City of Seattle Stormwater Code SMC 22.805.020.D.

3. The SWPPP shall consist of the following documents:

   a. Temporary Erosion and Sediment Control Plan sheets in the Contract documents;

   b. Section 01 57 13 - Temporary Erosion and Sediment Control Planning and Execution;

   c. Section 01 57 23 - Pollution Prevention, Planning and Execution;

   d. Contractor's Erosion and Sediment Control Plan (CESCP), submitted by the Contractor;

   e. Pollution Prevention Plan per Section 01 57 23, submitted by the

   f. Construction Storm Water Monitoring Plan, development to be determined if by the Port or by the Contractor.

4. Contractor's Erosion and Sediment Control Plan (CESCP)

   In order to comply with these requirements, the Contractor shall include and address the following in the CESCP portion of the SWPPP:

   a. Site Description and Drawings

      (1) Included in the CESCP shall be a written description of the construction site, including location of staging areas, stockpile areas, material storage areas, natural and constructed drainage systems within the work area and staging areas, and proximity to other construction projects.

      (2) Drawings shall be included in the CESCP which show the location of the construction site, including location of staging areas, stockpile areas, material storage areas, natural and constructed drainage systems within the work area and staging areas, and proximity to other construction projects.

      (3) The drawings shall show locations of BMPs during each phase of construction as identified by the Contractor in the Project Schedule.

(4) The drawings and written description shall detail temporary stormwater conveyance facilities and other measures proposed by the Contractor to limit the contributing drainage areas to not exceed the capacity of each of the stormwater ponds.

b. Contractor Erosion and Sediment Control Personnel

(1) The Contractor shall designate sufficient employees as the responsible representatives in charge of erosion and sedimentation control. These employees' responsibility will be the oversight of all water and air quality issues.

(2) The designated employees responsible for erosion and sedimentation control as discussed above shall be the Erosion Control Lead(s) (ECL) responsible for developing, maintaining and modifying the CESCP for the life of the Contract and ensuring compliance with all requirements of this section.

(3) An ECL shall be onsite at all times when any work activity is taking place. An ECL shall be required for each shift.

(4) The ECL shall be qualified in the preparation of erosion and sediment control plans, in the installation, inspection, monitoring, maintenance of BMP's, and documentation required for NPDES permits as well as sensitive resource identification, water treatment, and restoration and stabilization of unstable slopes, shorelines, stream banks, and wetlands.

(5) The ECL shall have authority to direct all Contractor and sub-contractor personnel.

(6) The ECL shall have no other duties aside from developing, maintaining, modifying, inspecting, implementing the CESCP and ensuring compliance with all requirements of this section, and, all other environmental regulations, or as directed by the Port construction project representative.

(7) Qualifications of the ECL shall be as follows:

(a) Have successfully completed Contractor Erosion and Sediment Control Lead (CESCL) training given by a Washington State Department of Ecology-approved provider, and have five years experience in construction site erosion and sediment control regulatory requirements and BMPs, erosion and sediment control plan development, and stormwater/water quality monitoring, or

(b) Currently certified as a Certified Professional in Erosion and sediment Control (CPESC) offered by CPESC, Inc. (www.cpesc.org) and have one year experience in state of Washington construction site erosion and sediment control regulatory requirements and BMPs, erosion and sediment control plan development and stormwater monitoring.

(8) The ECL shall also have done the following:

(a) Coordinated, developed, and implemented erosion and sediment control plans for NPDES permit compliance in the State of Washington.

(b) Completed at least two erosion and sediment control plans for earthwork projects.

(c) Developed phased construction work schedules addressing all ground disturbing activities.

(d) Designed temporary and permanent erosion and sediment control measures (BMPs) during clearing, demolition, existing road improvement, and for emergency situations.

(e) Designed excavation dewatering plans.

(f) Designed plans for dust abatement, embankment stabilization, and restoration

(g) The Contractor shall submit for approval all documentation listed above necessary to prove ECL qualifications including but not limited to resumes, certificates, degrees, recommendation letters, and plan examples.

(9) Duties and responsibilities of the ECL shall include:

(a) Maintaining permit file on site at all times which includes the SWPPP, and any associated permits and plans;

(b) Directing BMP installation, inspection, maintenance, modification, and removal;

(c) Shall be onsite at all times when work is taking place.

(d) Availability 24 hours per day, 7 days per week by telephone throughout the period of construction;

(e) Updating all drawings with changes made to the plan;

(f) Keeping daily logs, one report per ECL is to be submitted;

(g) Prepare and submit for approval a Contractor Erosion and Sediment Control Plan (CESCP) as part of the SWPPP;

(h) Immediately notify the Port construction project representative should any point be identified where storm water runoff potentially leaves the site, is collected in a surface water conveyance system (i.e., road ditch, storm sewer), and enters receiving waters of the State;

(i) If water sheet flows from the site, identify the point at which it becomes concentrated in a collection system.

(j) Inspect CESCP requirements including BMPs as required to ensure adequacy; facilitate, participate in, and take corrective actions resulting from inspections performed by outside agencies, Port employees, and Port consultants.

(k) Set up and maintain a construction stormwater monitoring plan that includes monitoring locations and procedures. At a

minimum, the plan will include monitoring points everywhere construction stormwater discharges from the project.

(l) The ECL shall have authority to act on behalf of the Contractor.

(m) The CESCP shall include the name, office and mobile telephone numbers, fax number, and address of the designated ECL and all Contractor personnel responsible for erosion and sediment control.

(n) In addition to the ECL, at a minimum, the Contractor's superintendent, foremen, and lead persons shall have successfully completed "Contractor Erosion and Sediment Control Lead" (CESCL) training given by a Washington State Department of Ecology-approved provider. On matters concerning erosion control, they shall report to the ECL.

c. Schedule and Sequencing

(1) Schedules for accomplishment of temporary and permanent erosion control work, that include as a minimum all specific work items as are applicable for clearing and grubbing; grading; construction; paving; structures at watercourses, sawcutting, and dewatering, underground utilities; Stormwater conveyances, and seeding.

(2) Proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials;

(3) Estimated removal date of all temporary BMPs;

(4) Estimated date of final site stabilization.

(5) Dates of earthwork activities.

(6) Dates when construction activities temporarily or permanently cease on any portion of the site.

(7) Dates when any stabilization measures are installed.

(8) Dates when structural BMPs are initiated.

(9) Dates for all work performed within 200 feet of sensitive environmental areas including wetlands, streams and ponds.

(10) Erosion control work activities consistent with the CECSP shall be included in the Project Schedule for each work area and project activity as shown on the drawings.

d. BMP Installation

(1) The CESCP shall include installation instructions and details for each BMP used during the life of the Project;

(2) To prepare or modify Contractor's Erosion and Sediment Control Plans, use BMPs from the Washington State Department of Ecology, Stormwater Management Manual for Western Washington, Vol. 2, and (Current Version). May be downloaded at: http://www.ecy.wa.gov/programs/wq/stormwater/manual.html

(3) The ECL shall certify that all BMP installers are trained in proper installation procedures.

e. BMP Maintenance

(1) The CESCP shall include a description of the maintenance and inspection procedures to be used for the life of the project.

(2) BMPs shall be maintained for the life of the project, the completion of a work phase and/or until removed by direction of the Port construction project representative;

(3) BMPs shall be maintained during all suspensions of work and all non-work periods;

(4) BMPs shall be maintained and repaired as needed to assure continued performance of their intended function and in accordance with the approved CESCP;

(5) Sediments removed during BMP maintenance shall be placed away from natural and constructed storm water conveyances and permanently stabilized.

(6) All maintenance shall be completed within 24 hours of inspection

f. BMP Inspection

(1) The ECL shall inspect all TESC best management practices daily during workdays and anytime 0.5” of rainfall has occurred within 24 hours on weekends, holidays, and after hours. Rainfall amounts can be determined by contacting the National Weather Service.

(2) Deficiencies identified during the inspection shall be corrected within 24 hours or as directed by the Port construction project representative.

(3) Observe runoff leaving the site during storms, checking for turbid water;

(4) Implement additional BMPs, if needed, to address site-specific erosion control;

(5) Inspect streets surrounding site for dirt tracking;

(6) Inspect for dust.

(7) The ECL shall visually inspect all stormwater runoff that discharges from the project for petroleum or chemical sheen, or “rainbow”. Occurrences of sheen shall be reported immediately to the Port construction project representative and shall follow procedures specified in Section 01 57 23 – Pollution Prevention, Planning & Execution.

(8) The ECL shall collect samples and test all stormwater runoff that discharges from the project for turbidity using a calibrated turbidimeter, and for pH using test strips that measure from pH 0 - 14. Turbidity that exceeds 25 NTUs or pH that is below 6.5 or above 8.5 shall be reported immediately to the Port construction project representative.

g. Record keeping

(1) Reports summarizing the scope of inspections, the personnel conducting the inspection, the date(s) of the inspection, major observations relating to the implementation of the CESCP, and actions taken as a result of these inspections shall be prepared and retained as a part of the CESCP;

(2) All inspection reports shall be kept on-site during the life of the project and available for review upon request of the Port construction project representative.

(3) Copies of all inspection records and updated CESCP shall be submitted to the Port construction project representative weekly.

(4) The CESCP shall include the Contractor's inspection form which includes the following:

(a) All best management practices to be inspected and monitored for all work areas and work activities identified in the schedule for the life of the contract.

(b) Inspection time and date.

(c) Weather information including current conditions, total rainfall since last inspection and rainfall in the 24 hours prior to the current inspection.

(d) Locations of BMPs inspected.

(e) Locations of BMPs that need maintenance and reasons why.

(f) Locations of BMPs that failed to operate as designed or intended.

(g) Locations where additional or different BMPs are needed and reasons why.

(h) A description of stormwater discharged from the site. The ECL shall note the presence of suspended sediment, turbid water, discoloration, and/or petroleum sheen.

(i) Any water quality monitoring performed during inspection.

(j) General comments and notes, including a description of any BMP repairs, maintenance or installations made as a result of the inspection.

(k) A statement that, in the judgment of the person conducting the site inspection, the site is either in compliance or out of compliance CESCP. If the site inspection indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance, as well as a schedule of implementation. If the site inspection indicates that the site is out of compliance, the ECL shall notify the Port construction project representative immediately.

(l) Name, title, and signature of the ECL conducting site inspection and the following statement: “I certify that this report is true, accurate, and complete, to the best of my knowledge and belief.”

h. BMP Removal

(1) After cleaning and removal, the drainage system shall not be used for temporary construction stormwater conveyance or storage.

(2) Sediment removed shall be placed away from drainage conveyances and permanently covered with hydro seed or other material as directed by the Port construction project representative.

(3) Stormwater ponds used to contain construction stormwater runoff shall be returned to elevations shown on the plans.

(4) Temporary BMPs shall be removed upon permanent stabilization or as directed by the Port construction project representative.

(5) Areas disturbed during removal of temporary BMPs shall be permanently stabilized.

(6) Permanent stabilization shall occur upon installation of:

(a) Concrete or asphalt pavement.

(b) On grades 3:1 and less, soil is covered by a minimum of 85% grass growth, as determined by the Port construction project representative.

(c) On grades greater than 3:1 soil is covered by an approved erosion control blanket or bonded fiber matrix and a minimum of 85% grass growth, utilizing the “Line Intercept Method”.

(d) All stormwater discharges from the project meet the following criteria:

(i) 0-25 NTUs.

(ii) 6.5-8.5 pH.

(iii) No visible sheen.

(iv) No settleable solids.

(v) Washington State Stormwater Quality Standards (WAC 173-201A) at the receiving water, as determined by the Port construction project representative.

i. Emergency Response

(a) The CESCP shall contain information on how the Contractor shall control and respond to turbid water discharges, sediment movement, and fugitive dust. At a minimum, the Contractor’s employee responsible for, or first noticing, the discharges shall take appropriate immediate action to protect the work area, private property, and the environment

(e.g., diking to prevent pollution of state waters). Appropriate action includes but is not limited to the following:

(i) Hazard Assessment - assess the source, extent, and quantity of the discharge.

(ii) Securement and Personal Protection - If the discharge cannot be safely and effectively controlled, then immediately notify the ECL and the Port construction project representative. If the discharge can be safely and effectively controlled, proceed immediately with action to protect the work area, private property, and the environment.

(iii) Containment and Elimination of Source - Contain the discharge with silt fence, pipes, sand bags or a soil berm down slope from the affected area. Eliminate the source of the discharge by pumping turbid water to a controlled area, building berms, piping clean water away from the area or other means necessary.

(iv) Cleanup - when containment is complete, remove sediment, stabilize, dispose of contaminated water and prevent future discharge.

(v) Notification - report all discharges immediately to the Port construction project representative.

j. Construction Stormwater Management

Designer may need to verify specific discharge requirements and modify this section accordingly. In some cases, no construction stormwater discharge is allowed and alternative disposal methods, such as sanitary sewer or trucking off site need to be included.

(1) Storm water and construction dewatering operations shall not discharge to the Storm Drain System (SDS) unless free from pollutants. Before discharge, water shall be measured using a properly calibrated, approved turbidity meter. Discharged water shall not exceed 25 Nephelometric Turbidity Units (NTUs) and pH levels shall be between 6.5 and 8.5.

(2) Storm water and construction dewatering water shall not be discharged to the Industrial Wastewater System (IWS) unless free from pollutants. Before discharge, water shall be measured using a properly calibrated, approved turbidity meter. Discharged water shall not exceed 200 Nephelometric Turbidity Units (NTUs) and pH levels shall be between 6.0 and 9.0. There shall be no discharge to any catch basin without specific approval of the Port construction project representative.

(3) The CESCP shall address how the Contractor plans to manage clean and polluted water during the life of the project. Specific procedures shall be developed and included in the CESCP when work includes excavation within 10 feet of any water, sewer, or storm system. Procedures shall address, at a minimum, locating,

protecting, and connecting to existing pipes, as well as response plans for broken pipes.

(4) The Port construction project representative shall be notified before any disposal, hauling, pumping, or treatment of water occurs. Notification shall include location of disposal and methods of treatment. Disposal tickets shall be provided to the Port construction project representative upon request.

(5) Water shall not be pumped into ditches, gutters, drainage conveyance, catch basins, or any area that drains to one of these unless it meets the specifications outlined in this section and with prior approval of the Port construction project representative.

(6) Chlorinated water used for disinfecting water pipes shall not be discharged to the storm drain system.

k. Fugitive Dust Planning:

(1) The CESCP shall detail the Contractor proposed approach to fugitive dust management. The plan shall include the following:

(a) Identification of all fugitive dust sources for each work activity.

(b) Description of the fugitive dust control measures to be used for each source.

(c) Schedule, rate of application and calculations to identify how often, how much, and when the control method is to be used.

(d) Provisions for monitoring and recordkeeping.

(e) Contingency plan in case the first control plan does not work or is inadequate.

(f) Name and telephone number of the person responsible for fugitive dust control.

(g) Source and availability of fugitive dust control materials.

(2) The Contractor shall provide whatever means is necessary to keep fugitive dust on site and at an absolute minimum during working hours, non-working hours and any shut-down periods.

(3) The Contractor’s methods for fugitive dust control will be continuously monitored and if the methods are not controlling fugitive dust to the satisfaction of the Port, the Contractor shall improve the methods or utilize new methods at no additional cost.

(4) The Contractor shall maintain as many water trucks on a site during working and non-working hours as required to maintain the site free from fugitive dust.

(5) During time periods of no construction activity, water trucks must be ready with on-site Contractor’s personnel available to respond immediately to a dust or debris problem as identified by the Port construction project representative.

(6) At no time shall there be more than a 10 minute response time to calls concerning fugitive dust/debris problems during work hours and a 90 minute response at all other times on a 24 hour basis.

l. Utilities Planning:

(1) The CESCP shall identify when and how all underground utility work will be conducted so that water quality compliance is maintained. At a minimum, the Contractor shall:

(a) Have all shut off valves located and have procured the means to shut off valves within 10 minutes of a water line break.

(b) Before cutting into an existing water line, the Contractor shall verify to the Port construction project representative that the water line is not pressurized.

(c) The Contractor shall not cut into an existing storm drain or connect new stormwater conveyance systems into existing systems until it has been verified to the Port construction project representative there will be no discharge of non-compliant water during and after cutting and connection operations.

(d) The Contractor shall grout all holes, seams, cracks, joints, cast iron rings and grates within 24 hours of installation of each item.

(e) Storm systems to be demolished in place shall be first blocked at the point of connection to existing section to prevent contamination of existing storm system.

(f) Chlorinated water shall be discharged to sanitary sewer or removed from the site.

(g) Air plugs shall not be utilized for more than 24 hours and shall be in new condition with no leaks and monitored daily for proper air pressure.

(h) Mechanical plugs shall not be utilized for more than 5 calendar days and shall be used according to the manufacturer’s instructions and engineering parameters. The Contractor shall submit instructions and engineering documentation before use.

(i) When a plug needs to remain in place longer than 5 days, the Contractor shall utilize grout. The grout shall be installed so that the length is one and a half times the diameter of the pipe.

m. Low Impact Development (LID) Protection Planning

(1) The CESCP shall identify how all LID BMPs are to be protected from sedimentation, pollution and compaction.

n. Education:

(1) The Contractor shall provide narrative in the CESCP on how they will educate all personnel including subcontractors. At a minimum, the Contractor shall:

(a) Train staff through regularly scheduled meetings to discuss environmental protection subjects as related to this project. This may be added to any existing weekly meetings (such as safety meetings).

(b) Training shall emphasize water quality compliance, BMP installation and maintenance, sensitive areas, emergency response, spill prevention, and inspections.

(c) Minutes of the meetings detailing attendees and subjects discussed shall be kept and submitted to the Port construction project representative weekly.

(d) Prior to commencing work, all Contractor and subcontractor personnel at any tier shall complete a Port of Seattle Environmental Compliance Orientation given with the required Safety Orientation.

3.03 EXECUTION OF WORK

A. CONSTRUCTION REQUIREMENTS

1. Saw cutting

a. Saw cut slurry and cuttings shall be vacuumed during cutting operations;

b. Saw cut slurry and cuttings shall not remain on permanent concrete or asphalt pavement overnight;

c. Saw cut slurry and cuttings shall not drain to SDS, IWS, or any other natural or constructed drainage conveyance;

d. Collected slurry and cuttings are the responsibility of the Contractor and shall be disposed of off site in a manner that does not violate groundwater or surface water quality standards.

2. Soil and Construction Debris Stockpiles

a. Soils and construction debris, including broken concrete and asphalt paving, shall be stockpiled within the work site or off site.

b. Stockpiles shall be covered with plastic and secured from blowing wind and/or jet blast.

c. Plastic shall be a minimum thickness of 6 mil.

d. Materials to be stockpiled on pavement shall be placed on plastic and contained within a bermed area.

e. Clean storm water runoff from the plastic covering shall be directed away from bare soil using pipes, sandbags, or other temporary diversion devices.

f. Stockpiles shall be covered so that no soil or debris are visible and shall be covered at the end of each work day, weekends and holidays

g. Stockpiles on the AOA shall not be allowed unless approved by the Port construction project representative.

3. Construction Entrances, Exits and Haul roads

a. Before leaving project site, all trucks and equipment shall be inspected for mud and debris.

b. At no time shall mud, debris, or visible sediment be allowed outside of the project boundaries and on any Port-owned and public roads.

c. Mud and debris shall be removed from pavement by vacuum sweeping and shoveling and transported to a controlled sediment disposal area identified in the CESCP.

d. Mud and debris shall be considered contaminated by fuels, grease, metals or other pollutants and shall be disposed of in accordance with Section 01 57 23 - Pollution Prevention, Planning and Execution.

e. Use of water to wash concrete or asphalt pavement shall be allowed only after sediment has been removed by vacuum sweeping and shoveling, and a Road Wash Plan has been submitted and accepted by the Port construction project representative.

f. Washing pavement, shall first be approved by the Port construction project representative. Wash water shall not drain into the SDS, IWS or any other natural or constructed storm water conveyance and shall be contained and removed from Port property and disposed of off-site in accordance with local, state, and federal regulations. Disposal tickets shall be provided to the Port construction project representative.

g. Power brooms shall not be utilized without prior approval by the Port construction project representative.

h. Contractor shall have sufficient working vacuum sweepers on site at all times work is being performed. All sweepers shall have on-board water spray systems that shall be operating at all times.

i. Vacuum sweepers shall be dedicated to this project and shall not be utilized by any other contract, nor be hired out to another contractor.

j. Sweeper systems shall function per manufacturer specifications, including, but not limited to, spray water systems, blowers, vacuum nozzles, hoses, debris hopper, hydraulics and electrical.

k. At no time shall debris hopper seals leak debris and or liquids.

l. At least one driver shall be assigned to a vacuum sweeper and shall do no other work.

m. Coverage shall be provided during lunch breaks, and during unfilling activities.

n. If, in the Port construction project representative's opinion, the Contractor does not adequately manage the tracking of sediment, the Port may subcontract out the control of sediment tracking at the Contractor's expense.

4. Asphalt Curb and Asphalt berm

a. Asphalt curbs or asphalt berms shall be constructed on project perimeters, when the project is surrounded by impervious surfaces.

b. Asphalt curb and berm shall be a minimum height of four inches.

c. Diesel shall not be used to clean tools and equipment

5. Catch Basin Protection

a. All catch basins within the project limits, and outside the project limits but within the project drainage basin, including haul roads, shall be protected.

b. Catch basin protection shall be installed where shown in the project drawings, in all storm drainage structures within the work area, or as otherwise directed by the Port construction project representative.

6. Concrete Truck and Equipment Washing

a. Concrete truck chutes, concrete pumps, hand tools, screeds, floats, trowels, rollers and all other tools shall be washed out only into Washington State Department of Ecology (WDOE)-approved covered steel containers.

b. All contained concrete waste shall be disposed of offsite in a manner that does not violate groundwater or surface water quality standards.

c. All water used for washing, is defined by the WDOE as "process water" and shall be collected and disposed of in a manner that complies with all local, state and federal regulations.

7. Wheel Washes

a. All haul vehicles exiting the work site to public roads shall pass through a wheel wash system to control sediment tracking. Any required modification, alteration or improvement needed on the existing wheel wash systems or supplemental vehicle washing for the successful control of dirt, debris or sediment tracking beyond the wheel wash, either on Port haul roads or public roads, for the duration of the contract shall be the responsibility of the Contractor.

b. No modifications of the wheel wash system are allowed that alter the design of a contained operation with recycled wash water with no release of sediment laden wash water. The sediment shall be

contained and disposed of at an appropriate disposal facility off Port Property.

c. Wheel wash water shall be replaced weekly with fresh, clean water.

d. The wash water is “process water” and shall not be released on site or to the storm drain system and shall be disposed of in accordance with all water quality regulations.

e. Wheel wash water shall not exceed 100 NTU.

f. Contractor shall sample wheel wash water for turbidity 2 hours after start and 2 hours before shutdown of the system. Sampling results shall be entered into Contractor’s daily inspection report.

8. Silt Fence

a. Silt fence shall be constructed at the locations shown in the project drawings, in the approved Contractor Erosion and Sediment Control Plan, or otherwise directed by the Port construction project representative.

b. The geotextile shall be attached to the up-slope side of the posts and the wire mesh using staples, wire rings, or in accordance to the manufacturer’s recommendations.

c. Where seams are required to join two sections of fence material, the seams shall be taped together, wrapped three times around a 2” steel post and the post driven into the ground. All rips, tears, holes, and other damage to silt fences shall be repaired within 24 hours of locating the damage When sediments deposits reach approximately one-third the height of the silt fence, the deposits shall be removed and disposed of outside Port property.

9. Straw Wattle

a. The installation of straw wattles shall be per WSDOT Standard Plan I-30.30-00 “Wattle Installation on Slope”, or as directed by the Port construction project representative.

b. Straw Wattles shall not be installed on impervious surfaces.

10. Bonded Fiber Matrix Soil Stabilization

a. The installation of Bonded Fiber Matrix Soil Stabilization shall be applied at a minimum rate of 3,000 pounds per acre and provide a minimum of 95% soil cover. Seed and fertilizer shall be included.

b. Contractor shall provide all Bonded Fiber Matrix, seed and fertilizer bags to the Port construction project representative upon request.

11. Temporary Organic Mulch

a. Temporary organic mulch shall be applied at a minimum rate of 1.5 tons per acre.

12. Swale Construction

a. Grass-lined swales shall be constructed to the lines and grades shown on the drawings. The swale includes excavating, grading,

placement of topsoil, placement of erosion control blanket, and hydroseeding as detailed on the drawings. Excavated material from the swale construction shall be considered Excess Soil as defined in Section 31 23 00 – Excavation and Embankment.

13. Temporary Piping/Connections

    a. The Contractor shall install temporary piping, catch basins and connections to the existing storm drain system in locations shown on the drawings. At the completion of the work, the piping shall be removed and the temporary connections plugged.

14. Temporary Pipe Plugging

    a. The locations of piping to be temporarily plugged are indicated on the drawings. At the completion of the work, the plugs shall be removed.

15. Construction Stormwater Management

    a. The Contractor shall construct stormwater tank pads in the size, location and as detailed on the drawings.

    b. The Contractor shall install stormwater storage tanks, as specified, in the locations and quantities shown on the drawings.

    c. The Contractor is responsible for conveying construction stormwater within each work area to the stormwater storage tank area shown on the drawings.

    d. Temporary piping, structures and pump facilities required for the conveyance are the responsibility of the Contractor.

    e. The construction stormwater shall be held in the storage tanks until hauled and disposed of by the Contractor on a Force Account basis.

    f. The storage tank facilities including pads, access roads, ramps, temporary structures and piping shall be removed at the completion of the work or as directed by the Port construction project representative

16. Surface Roughening:

    a. All soil shall be roughened, loose and friable, by ripping or with equipment tracks before being permanently stabilized.

17. Water Filled Diversion Berms

    a. Water filled diversion berms shall be installed such that offsite water is prevented from entering the job site and site water is kept within the project boundary.

    b. Berms may be used to prevent contaminants and water from entering catch basins.

    c. Berms may be used on impervious surfaces.

18. Biofence

a. Stakes shall be driven into the ground a minimum of 12 inches and be spaced no more than 6 feet apart.

b. Fence ends shall be joined by wrapping ends together around a post 3 times and driven into the ground.

c. Burlap fabric shall be attached to the post in at least 3 places using staples or other method approved by the Port construction project representative.

d. When used as a barrier fence, fabric shall not be trenched into the ground. When used as a silt fence, a minimum 8 inch flap shall be left at the bottom and held in place with straw wattles staked in as detailed in item 9 above.

19. Process Water Collection, Storage and Disposal

a. The Contractor shall provide and install stormwater storage tanks of sufficient size and volume to enable collection of 100% of the process water generated by the project.

b. The Contractor is responsible for conveying process water within each work area to storage tank(s).

c. Temporary piping, structures and pump facilities required for the conveyance are the responsibility of the Contractor.

d. The storage tank facilities including pads, temporary structures and piping shall be removed at the completion of the work or as directed by the Port construction project representative.

e. Contractor shall provide process water disposal locations to the Port construction project representative for review.

20. Low Impact Development (LID) Protection

a. At a minimum, the Contractor shall:

1) At no time shall water exceeding 25 NTUs drain into bioretention, rain garden, or pervious pavement BMPs.

2) At no time shall water exceeding pH range of 6.5 to 8.5 drain into bioretention, rain garden, or pervious pavement BMPs.

3) At no time shall water containing sheen drain into bioretention, rain garden, or pervious pavement BMPs.

4) Upon reaching final grade, native soils below infiltration BMPs shall be maintained such that designed infiltration is not impacted. Areas shall be fenced to prevent vehicle and foot traffic from entering.

5) Pervious pavement BMPs fouled with sediment or debris such that designed infiltration rates are reduced shall be cleaned to the satisfaction of the Port construction project representative or replaced at the Contractor’s expense.

3.04 DELIVERABLES

3.05 QUALITY ASSURANCE

End of Section

PART 1 GENERAL

1.01 SUMMARY

A. This section consists of planning for and implementing the temporary measures indicated herein, shown on the Contract Documents, or as ordered by the Port's construction project representative to prevent pollution of soil and water, and control, respond to, and dispose of potential pollutants or hazardous materials during the life of the Contract.

B. This work shall apply to all areas associated with Work including, but not limited to the following work areas:

1. Jobsite
2. Equipment and material storage areas
3. Staging/Laydown areas
4. Stockpiles

1.02 DESCRIPTION OF WORK

A. In order to comply with this specification the Contractor shall:

1. Develop and submit a site specific Pollution Prevention Plan
2. Revise the Pollution Prevention Plan during the life of the Contract
3. Install, maintain, and remove all spill prevention, containment, countermeasures, and pollution prevention Best Management Practices during the life of the Contract
4. Contain, cleanup and dispose of all hazardous materials or potential pollutants
5. Perform other work shown on the Contract Documents or as directed by the Port's construction project representative.
6. Maintain any required Contractor pollution liability insurance including insurance liability for the transportation of hazardous materials for the duration of the Contract
7. Maintain a proper Hazardous Material Endorsement for any driver that is transporting hazardous material in a vehicle that requires the driver to maintain a valid and current Commercial Driver's License in the State of Washington

1.03 POLLUTION PREVENTION PLAN

A. The Contractor shall develop and submit to the Port a site specific Pollution Prevention Plan. The Pollution Prevention Plan must be a site-specific document that outlines the administrative, operational, and structural Best Management Practices that will be implemented on the project. Approved BMPs may be found in the Stormwater Management Manual for Western Washington, Department of Ecology, August 2001, or current edition.

B. The Pollution Prevention Plan must, at a minimum, include the following:

1. Site specific description and drawings
2. Contractor pollution prevention contact personnel

3. Known or potential hazardous materials inventory list
4. Safety Data Sheets (SDSs) for hazardous materials identified on the inventory list
5. Hazardous material containers labeling system
6. Hazardous material container storage and handling procedures
7. Hazardous material spill prevention planning and execution
8. Hazardous material spill control and response planning and execution
9. Hazardous material cleanup and disposal planning and execution
10. Subcontractor's acknowledgment

1.04 SUBMITTALS

A. As part of the required Preconstruction Submittals, Section 01 32 19 - Preconstruction Submittals, and before Notice to Proceed is issued, the Contractor shall submit the following information:

1. Pollution Prevention Plan and the required contents
2. Insurance Endorsements verifying liability coverage for job-site work and any transportation of hazardous materials to or away from the jobsite.
3. Copy of a completed MCS-90 Certificate if required under the Motor Carrier Act of 1980 for transportation of hazardous material which verifies compliance with the financial responsibility requirements of the Act;
4. A list of all drivers who will be hauling hazardous material in a vehicle that requires the driver to maintain a Commercial Driver's License in the State of Washington under RCW 46.25.080. These drivers must show evidence of a proper Hazardous Material Endorsement in accordance with Washington RCW 46.25.070 and 46.25.085.

1.05 DEFINITIONS

A. Absorbent: Any material capable of absorbing oils, water-based materials, solvents, acids, and other hazardous materials. Absorbent materials include: pads, kitty litter, floor dry, and other commercially available materials.

B. Best Management Practice (BMP): The variety of administrative, operational, and structural measures that will be implemented to prevent and reduce the amount of contaminants in stormwater and the environment. (Example: Providing secondary containment for liquid storage is a BMP).

C. Container: Any portable device, in which a material is stored, transported, treated, disposed of, or otherwise handled.

D. Dangerous Waste: Solid wastes designated by the State of Washington Under Chapter 173-303 WAC and regulated as Dangerous Waste, Extremely Hazardous Waste, or Mixed Waste. (The State of Washington is authorized to implement Federal Hazardous Waste Regulations - see also Hazardous Waste Definition)

E. Hazardous Material: A substance or material, including a hazardous substance, hazardous waste, marine pollutant, including but not limited to: diesel, gasoline, petroleum products, solvents, paints, acids, lubricants, curing compounds, form

release agents, adhesives, sealants, and epoxies. (See also Hazardous Waste definition)

F. Hazardous Material Storage Area: The area used by the Contractor to store hazardous material.

G. Hazardous Material Container Labeling System: The system used by the Contractor for identifying the secondary containers used to store hazardous materials or wastes. Acceptable methods include: Department of Transportation (DOT), Hazardous Material Information System (HMIS); National Fire Protection Association Fire Diamond (NFPA Hazard Rating).

H. Hazardous Waste: Solid wastes designated by 40 CFR Part 261, and regulated as hazardous or mixed waste by the United States EPA.

I. Safety Data Sheet (SDSs): Written or printed material available for each chemical that includes information on: the physical properties, hazards to personnel, fire and explosion potential, safe handling recommendations, health effects, fire-fighting techniques, and reactivity and disposal.

J. Secondary Container: Any container, other than the original container that is used for transferring, holding, storing or otherwise containing hazardous materials or wastes.

K. Secondary Containment: A device designed, installed, or operated to prevent any migration of wastes or accumulated liquid to the soil, ground water, or surface water. The device must, at minimum, hold 110 percent of the volume of the largest container being stored. The device must have the strength to contain a spill and be made of materials that will not be degraded by the wastes or accumulated liquids it is intended to contain.

L. Sorbent: A material used to soak up free liquids by either adsorption or absorption, or both.

M. Storm Drainage System (SDS): Consists of any drain, inlet, catch basin, slot drain, pipe, gully, fissure, ditch, or other form of conveyance that collects and transports stormwater.

1.06 REFERENCES

A. The following rules, requirements and regulations specified may apply to this work:

1. Washington State Dangerous Waste Regulations: Chapter 173-303 WAC, February 1998 Edition.

2. National Pollution Discharge Elimination System Waste Discharge Permit No. WA-002465-1 (Seattle-Tacoma International Airport)

3. Part C - Hazardous Communication: Chapter 296-62-054 WAC, “Right to Know”

4. Port of Seattle Regulations for Airport Construction, (Current Edition).

5. Puget Sound Stormwater Management Plan, Puget Sound Water Quality Action Team; 1998.

6. Title 40 Code of Federal Regulation Subchapter I - Solid Wastes 261, 262, 263, 265, 268, 273, 279, 370 (Federal Hazardous Waste Regulations)

7. Sea-Tac International Airport Rules and Regulations (Current Edition).

8. Sea-Tac Airport Stormwater Pollution Prevention Plan, as required by NPDES permit No. WA-002465-1.
9. Seattle-Tacoma International Airport Spill Prevention Control and Countermeasure (SPCC) Plan: January 2003. Kennedy/Jenks Consultants.
10. Stormwater Management Manual for Western Washington, Department of Ecology; August 2001 (or Current Version)
11. Surface Water Design Manual, King County Public Works, September 1998
12. WAC 173-201 A, Water Quality Standards of the State of Washington.
13. Revised Code of Washington - 46.25.085, 46.25.080, 46.25.070, 46.48.170, 4.24.314

1.07 PERMITS

A. Work shall be conducted in accordance with STIA NPDES Permit WA-002465-1

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 SITE DESCRIPTION AND DRAWINGS

A. A written site description shall be included in the Pollution Prevention Plan that addresses the following:
   1. Physical description and location of the construction site and staging areas;
   2. Construction activities that will involve the use of hazardous materials or generate hazardous waste;
   3. Location of material storage areas and project staging areas;
   4. Designated fueling areas;
   5. Proximity to any natural or manmade drainage conveyance including ditches, catch basins, ponds, wetlands, and pipes;
   6. Public areas relating to construction project;
   7. Proximity to other construction sites;

B. Drawings shall be included in the Pollution Prevention Plan that show the construction site(s), location of fueling areas, equipment storage areas, catch basins and other man-made and natural drainage conveyances within the work area and storage areas. The drawings may be hand drawn sketches but must include the appropriate spatial information.

3.02 CONTRACTOR POLLUTION PREVENTION CONTACT PERSONNEL

A. The Contractor shall identify in the Pollution Prevention Plan at least one project personnel that will be available 24 hours a day to administer and respond to hazardous materials management requirements of the Contract and provide the following information:
   1. Contact Name

2. Contact Phone Number
3. Contact E-mail Address
4. Contact Fax Number
5. Contact Address

B. Duties

1. Maintain permit file on site at all times which includes the Pollution Prevention Plan, Contractor Erosion and Sediment Control Plan and any associated permits and plans;
2. Direct BMP installation, inspection, maintenance, modification and removal;
3. Available 24 hours per day, 7 days per week by telephone;
4. Update all drawings with changes made to the Pollution Prevention Plan;
5. Maintain daily logs;
6. Immediately notify the fire department (911) of any hazardous material spill.
7. Inspect for Pollution Prevention Plan requirements including BMPs as required to ensure adequacy, facilitate, participate in, and take corrective actions resulting from inspections performed by outside agencies, Port employees and Port consultants.

C. Qualifications

1. The Pollution Prevention Plan Inspector shall have the following experience:
    a. Prevention, control and clean-up of construction caused pollution from petroleum, hazardous materials and construction wastes.
    b. Knowledge of basic hazard and risk assessment techniques.
    c. An understanding of basic hazardous materials terms.
    d. Ability to perform basic control, containment or confinement operations within the capabilities of the resources and personnel protective equipment available.
    e. Installation, inspection, maintenance and removal of Pollution Prevention BMPs.

3.03 HAZARDOUS MATERIAL INVENTORY LIST

A. A complete list of all known or potential hazardous materials or waste to be used or generated during all phases of the construction project shall be included in the Pollution Prevention Plan.

3.04 SAFETY DATA SHEETS (SDSs)

A. SDSs shall be included in the Pollution Prevention Plan for all materials on the Hazardous Material Inventory List.

B. For all hazardous materials not submitted in the original Hazardous Material Inventory List, the Contractor shall provide SDSs to the Port’s construction project

representative prior to bringing the material on site and submit a revised inventory list (or plan if required) within 7 days.

1. Hazardous materials shall be permitted on the work site only with prior written acknowledgement of receipt of SDSs by the Port's construction project representative.

3.05 HAZARDOUS MATERIAL CONTAINERS LABELING SYSTEM

A. The Pollution Prevention Plan shall address and the Contractor shall implement the following:

1. Identification of container with a legible label containing the materials product name, as was written on the material's original container label.

2. Include the name of the material's manufacturer, as was written on the chemicals original container label.

3. Include appropriate hazard warnings, which identify the chemicals associated risks to health, flammability, or reactivity.

4. Contractor shall mark each container with the Contract project number and company owner of the container.

5. The mark shall be permanent, easily identifiable and placed with care to prevent defacing of the marker through abrasion, chemical reaction, or other means that would hinder marker identification.

6. At all times during the Work, the Contractor shall assure that proper and identifiable labels are attached to all hazardous materials and secondary containment

3.06 HAZARDOUS MATERIAL CONTAINER STORAGE AND HANDLING

A. Solid Chemicals, chemical solutions, paints, petroleum products, solvents, acids, caustics solutions, and any waste materials, including used batteries, shall be stored in a manner that will prevent the inadvertent entry of these materials into waters of the state, including groundwater. Storage shall be in a manner that will prevent spills due to overfilling, tipping, or rupture. In addition, the Pollution Prevention Plan shall address and the Contractor shall implement the following specific requirements:

1. All liquid products must be stored on durable, impervious surfaces and within a berm or other means of secondary containment capable of containing 110% of the largest single container volume in the storage area.

2. Waste liquids shall be stored under cover, such as tarps of roofed structures, in addition to secondary containment. Any waste storage areas, whether for waste oil or hazardous waste, shall be clearly designated as such and kept segregated from products to be used on the site.

3. In the event that the Contract Document Drawings designate a hazardous material storage area, the Contractor shall be restricted to storing hazardous materials or waste specific to the Project work to the area designated in the Contract Document Drawings.

4. All hazardous materials and waste containers shall be stored with the container lid secured, to prevent spills or leaking.

5. Upon completion of a specific task for which hazardous material(s) were used, the Contractor shall document in the Daily Report (Form CM03), the amount of hazardous material removed from the site, and the product and manufacturer name(s) of such material(s).

3.07 HAZARDOUS MATERIAL SPILL PREVENTION

A. The Pollution Prevention Plan shall address and the Contractor shall implement the following:

1. Hazardous Material Transfer

a. All hazardous materials shall be transferred from primary to secondary containers using secondary containment with spill kits in close proximity.

2. Vehicle and Equipment Fueling-

a. All equipment fueling operations shall utilize pumps and funnels and absorbent pads and / or drip pans;

b. Fueling shall not take place within 100 feet of any natural or manmade drainage conveyance including ditches, catch basins, ponds, wetlands, and pipes;

c. Fueling shall be restricted to designated fueling areas as shown on the Contract Documents or as submitted and accepted by the Port's construction project representative as a part of the Pollution Prevention Plan;

d. A spill kit will be located within 100 feet of the fueling operation.

e. Vehicle and Equipment Maintenance

f. Engine, transmission, and hydraulic oil may be added, as needed utilizing funnels and drip pans;

g. Absorbent pads shall be placed to prevent fluid contact with soil;

h. No fresh or used engine fluids will be stored on the project site;

i. No vehicle maintenance other than emergency repair shall be performed on the project site.

3. Small Engine Fueling and Maintenance

a. All small engine fueling operations shall utilize funnels.

b. Absorbent pads shall be placed to prevent fluid contact with soil.

c. Fueling shall not take place within 100 feet of any natural or manmade drainage area.

d. Contractor shall not drain and replace engine fluids on Port property.

e. These fluids may be added, as needed utilizing funnels.

f. Fluid addition shall be done over drip pans.

g. Absorbent pads shall be placed to prevent fluid contact with soil.

4. Equipment Storage

a. Drip pans and absorbent pads shall be placed under all equipment that is unused for more than 4 hours, overnights, weekends, and holidays.

5. Spill Response Kits

a. Spill kits shall be stored at designated locations on the project site and at the hazardous material storage areas and in close proximity to any fueling operation.

b. Spill Kits shall, at a minimum, contain the following:

(1) 1-spill response procedures sheet

(2) 12-oil absorbent pads

(3) 12-water-based absorbent pads

(4) 1-roll of Visqueen

(5) 5-gallons of loose absorbent material i.e. kitty litter or floor sweep

(6) 24-heavy duty garbage bags

(7) 1-shovel

(8) 1-broom

(9) 10-copies spill report form

3.08 HAZARDOUS MATERIAL SPILL CONTROL AND RESPONSE

A. The Plan shall contain information on how the Contractor shall control and respond to hazardous material spills. At a minimum, the Contractor's employee responsible for the spill must take appropriate immediate action to protect human health and the environment (e.g., diking to prevent contamination of state waters).

1. Hazard Assessment - assess the source, extent, and quantity of the spill.

2. Containment and personal protection - If the spill cannot be safely and effectively controlled, then evacuate the area and immediately notify outside response services (go to Step 5). If the spill can be safely and effectively controlled, secure the area and proceed immediately with spill control (impacts to waters of the state should be given the highest priority after human health and safety)

3. Containment and elimination of Source - Contain the spill with absorbent materials or a soil berm around the affected area. Eliminate the source of the spill by closing valves, sealing leaks, providing containment, or deactivating pumps.

a. Spill control measures may include damming the spill, covering floor drains, catch basins, or preventing the contaminant from entering water systems. Contaminants include turbidity as well as chemicals.

4. Cleanup - when containment is complete, clean or remove the spill with absorbents or by pumping and containerizing the material for off-site disposal.

5. Notification - Report all spills immediately to the Port of Seattle Fire Department:
    a. Port Phone: 911
    b. External Phone: (206) 787-5380
    c. Provide the Following Information:
        (1) Time spill occurred or was discovered
        (2) Location of the spill and equipment involved
        (3) Estimated amount of spill
        (4) Measures taken to contain the spill and secure the area
    d. Report all spills immediately to the Port's construction project representative.

3.09 HAZARDOUS MATERIAL CLEANUP AND DISPOSAL

A. The Plan shall contain information on how the Contractor shall characterize, cleanup and remove all hazardous material and waste generated from Contractor operations. At a minimum, the Plan shall include or communicate the following:

1. For the purposes of this section, clean shall be defined as the Work site being free of all hazardous material(s), waste(s) container(s), containment device(s), scrap material(s), used spill pads or absorbent pads, or any other hazardous material debris resulting from the Contractor activities.

2. The Port of Seattle will retain title to all hazardous waste presently on site, encountered during demolition, removal, and excavation. This does not include hazardous materials generated by the Contractor, such as used motor oils, paints, lubricants, cleaners, spilled materials, etc. Contractor will be the generator and owner of these wastes and shall clean and dispose of such waste according to the Contract Documents and follow local, State, and Federal regulations. The Port of Seattle will be shown as the hazardous waste generator and will sign all hazardous waste manifests for non-Contractor generated hazardous wastes. Nothing contained within these Contract Documents shall be construed or interpreted as requiring the Contractor to assume the status of owner or generator of hazardous waste substances for non-Contractor generated hazardous wastes.

3. Hazardous material(s) and waste(s) shall be disposed in a fully permitted disposal facility with the approvals necessary to accept the waste materials that are disposed. Use of the Port of Seattle's EPA Identification Number for disposal purposes must be coordinated with the Port's construction project representative and all documentation such as manifests, land disposal restriction forms, and profiles must be delivered to the Port's construction project representative if the Port of Seattle's EPA Identification number is being used for disposal on the project.

4. Handling of any contaminated soils shall be coordinated with the Port's construction project representative. Contaminated soil stockpiles must be on a plastic liner, covered with plastic and labeled. Unknown contaminated soils must be characterized. Use of the Airport Environmental Soil

Stockpile Facility is prohibited unless authorized by the Port's construction project representative.

5. Contaminated materials, such as absorbent materials, rags, containers, gloves, shall be collected and placed into labeled containers.

6. Any unanticipated hazardous materials, waste, or contaminated soils encountered during construction that are not generated by the Contractor shall be immediately brought to the Port's construction project representative's attention for determination of appropriate action. Contractor shall not disturb such hazardous materials or contaminated soils until directed by the Port's construction project representative.

3.10 SUBCONTRACTOR ACKNOWLEDGEMENT

A. The requirements of the Pollution Prevention Plan are the responsibility of the Contractor and compliance must be communicated at all tiers of the Contract. The Contractor must provide a written acknowledgement from all subcontractors that they have read, understand, and will comply with the requirements of the Pollution Prevention Plan. This written acknowledgement must be included in the Pollution Prevention Plan as part of the preconstruction submittal. The subcontractor acknowledgement section of the Pollution Prevention Plan must be updated as needed throughout the life of the Contract.

3.11 EDUCATION

A. The Contractor shall provide narrative in the Pollution Prevention Plan on how they will educate all personnel including subcontractors. At a minimum, the Contractor shall train staff through regularly scheduled meetings to discuss environmental protection subjects as related to this project. This may be added to any existing weekly meetings (such as safety meetings). Training content shall emphasize sensitive areas, emergency response, spill prevention and inspections. Keep minutes of the meetings detailing attendees and subjects discussed. Submit the minutes to the Port's construction project representative monthly.

End of Section

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

When contaminated soil is encountered, this specification and, as referenced below, Section 01 57 13 – Temporary Erosion and Sediment Control Planning and Execution must be used. Please contact the Port construction project representative and Aviation / Corporate Environmental Staff for assistance.

A. Soils excavated within the projects areas, as shown on the drawings, are potentially contaminated. The Contractor, using visual and olfactory methods, will identify potentially contaminated soil. **If contaminated soil is encountered, the Contractor shall notify the Port construction project representative and a Port authorized Environmental Agent will determine if the soil requires special handling.** In these areas, only soil requiring excavation for project construction will require special handling. Soil beyond construction excavation limits will not require excavation unless free draining product is observed or other special conditions exist in which case the Port construction project representative will direct the Contractor in additional excavation. Soils determined to be contaminated by the Environmental Agent will be hauled and disposed as contaminated materials in accordance with 3.02 of this Specification Section.

B. Notify the City of SeaTac prior to hauling contaminated soil to the soil disposal facility. The notification shall include:

1. An estimate of the number of truck-trips, the haul destination, and the period in which these trips will be made (e.g., 20 truck-trips to the Waste Management Facility over the two-week period beginning on March 1, 2011).

2. For scheduled haul-outs, the City shall be notified at least 24 hours, but no more than 7 days, before the scheduled hauling start time. For unscheduled haul-outs, the Contractor shall make every attempt to achieve the same notification schedule. If the schedule for unscheduled haul-outs cannot be achieved, the Contractor shall notify the City as soon as possible. All notifications and correspondence shall be made to:

   Engineering Manager
   City of SeaTac
   Public Works Department
   Engineering Division
   17900 International Blvd., Suite 401
   SeaTac, Washington 98188-4236

   Phone: 206-439-4741
   Fax: 206-241-3999

C. Cover all soil stockpiles and maintain stockpile areas in accordance with Section 01 57 13 – Temporary Erosion and Sediment Control Planning and Execution.

D. Sweep clean the surface of the active pavements outside the current Work continuously and remove all debris, rubble, or litter completely during each working shift.

1.02 HEALTH AND SAFETY

A. The Contractor is required to implement all health and safety provisions as required by Section - 01 35 29, Safety Management. These provisions include any special monitoring, personal protective equipment, or Work plans to accommodate contaminated soil or material handling. Use of environmental characterization data may not be appropriate for health and safety purposes.

1.03 SUBMITTALS

A. Prior to excavation of any subsurface materials, the Contractor shall submit a Contaminated Soils Management Plan to the Port construction project representative . The Contaminated Soils Management Plan must be approved by the Port construction project representative and Port of Seattle Environmental Programs prior to any excavation of subsurface materials. The Contaminated Soils Management Plan must include the following:

1. Identification of all soil disposal/recycling facilities to be used on the project. Acceptable facilities are identified in 3.02 of this section.

2. Identification of all fill sites, disposal facilities and/or end uses of material determined to be Type D soil in accordance with 3.02 of this section.

3. Contingency for delivery of Type C Contaminated Soil to the Port's Contaminated Soil Stockpile Facility located inside the Airport Operations Area (AOA). Access to the Contaminated Soil Stockpile Facility will require personnel with Airport Security badges.

4. Contingency for managing debris encountered during excavation that may disqualify soil for disposal or recycle at the approved facilities.

5. General description of how equipment operators, safety personnel and other applicable Contractor management will coordinate with the Port construction project representative and the Port of Seattle Environmental Agents to facilitate handling of contaminated soil in accordance with this specification.

6. Description of all haul routes to be used on the project.

B. The Contractor shall include in the Three Week Look Ahead Schedule specific time frames for excavation. Each excavation activity shall be given an individual line item description, time frame and duration.

1.04 DEFINITIONS

A. Environmental Agent (EA): Port environmental management organization representative responsible for oversight and implementation of certain Port environmental policy and procedures at Port construction sites. The EA is responsible for coordinating environmental requirements, monitoring Contractor performance relative to environmental specifications and liaison with the Port construction project representative and Contractor representatives for oversight of and/or conducting environmental monitoring and sampling. EA activities may also include field screening and documentation of excavation, transport and disposal of contaminated materials.

B. Olfactory Indications (methods): Of or relating to the sense of smell. Soils contaminated with petroleum and other volatile constituents typically exhibit characteristic odors that can be detected (and sometimes identified) by smell.

C. Response: To be reviewed by Construction Management.

D. (PID): A field instrument that is used to detect the presence of and give a relative indication of the concentration of vapors emitted from volatile constituents (contamination) in environmental media (soil and water).

E. Soil (waste) Profile: A characterization of the chemical and physical properties of a waste material including the types of contaminants and their concentrations as measured by approved laboratory analytical methods. A profile is required by the receiving permitted disposal or recycling facility.

F. Special Handling: Refers to hauling and disposal of soils that, because they are contaminated, cannot be reused in place as backfill or as general fill at another location. Such soils must be hauled to and managed at a permitted disposal or recycling facility.

G. Type A Contaminated Soil: Soil that must be removed from the Project site and has been determined by the Port construction project representative or a representative Environmental Agent to contain petroleum hydrocarbons in concentrations exceeding state or federal cleanup standards or special Port determined criteria. Type A soil requires disposal at one of the approved facilities listed in 3.02(B) of this section.

H. Type B Contaminated Soil: Soil that must be removed from the Project site and has been determined by the Port construction project representative or a representative Environmental Agent to contain petroleum hydrocarbons or other contaminants in concentrations that will require disposal or recycling at one of the approved facilities listed in 3.02(B) of this section.

I. Type C Contaminated Soil: Soil determined by Port construction project representative or representative Environmental Agent to contain unknown constituent(s) and requires further testing and classification.

J. Type D Material: Material including soil, determined by the Port construction project representative or representative Environmental Agent not to require special handling with regard to this Contract. Classification of material as Type D material by the Port is not a certification nor does it release the Contractor of liability or obligation to meet any disposal or storage facility acceptance or testing requirements.

K. Unanticipated Contamination: Contamination unexpectedly found in an excavation or in other locations where there is no prior knowledge, information, or history to indicate possible spills or releases of contamination.

L. Visual Indications (methods): A preliminary evaluation of the potential presence of contamination based on visual observation. For example, fuel contaminated soils are frequently discolored or stained relative to non-petroleum impacted native soils or clean fill. Such discoloration often appears dull gray in color.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 EXCAVATION/TESTING

A. The field-testing for contaminated soil will be performed by the Environmental Agent and will result in the following classification of material:

1. Type A Contaminated Material as defined in 1.04(G) of this Section
2. Type B Contaminated Material as defined in 1.04(H) of this Section
3. Type C Contaminated Material as defined in 1.04(I) of this Section
4. Type D Material as defined in 1.04(J) of this Section

3.02 DISPOSITION OF MATERIAL

A. Type A and B Contaminated Soil – Material determined to be Type A or B contaminated soil shall be hauled to one of the following facilities by the Contractor for disposal:

1. Waste Management Columbia Ridge Landfill – via Alaska Street Transfer Station: 70 South Alaska Street, Seattle, WA 98106
2. Allied Waste Roosevelt Regional Landfill – via Seattle Transfer Station: 2733 3rd Ave. S. Seattle, WA 98134
3. CEMEX (Formerly Rinker Materials) – 6300 Glenwood Ave., Everett, 98203

B. Type C Material – Material determined to be Type C is of unknown origin or special circumstances and shall be hauled and placed by the Contractor at the Environmental Soil Stockpile site depicted on the Contract drawings. Contractor will be relieved of responsibility for Type C material upon delivery to the Environmental Soil Stockpile.

C. Type D Material – Material determined not to require special handling (Type D) shall be hauled by the Contractor to a site determined by the Contractor. If testing or certification of this material is required by the receiving site, the Contractor shall complete these requirements. The Port will not certify or declare the material suitable for unrestricted use.

3.03 OTHER REQUIREMENTS

A. Material determined to be Type A, Type B or Type C contaminated material may be, upon approval of the Port construction project representative, temporarily stockpiled within the construction area, but must be securely covered with a waterproof covering. The Port construction project representative may require a liner beneath this soil.

B. The Port construction project representative or an authorized agent of the Port will prepare and provide the Contractor with required documentation and shipping papers for hauling and disposal of Type A and Type B Contaminated soil. Contractor should be prepared for this process to take 3-5 working days to complete. Contractor cannot consider this time as project delay and should be prepared to complete other Work during this period. Contractor should also obtain an account with chosen disposal facility at beginning of project

C. The Contractor is not to haul any Type A or B material off-site until a material profile has been developed and a bill of lading has been issued. Each load of Type A or B material will receive an individual bill of lading issued by the Port construction project representative or Environmental Agent.

D. The Contractor shall provide the Port construction project representative with all hauling receipts (or copies of receipts) from the receiving facility for all Type A and Type B Contaminated soil at least weekly.

E. Use of the Airport Environmental Soil Stockpile Facility: The Environmental Soil Stockpile facility is located adjacent to the snow equipment building at the southwest end of the airfield. Use of the Environmental Soil Stockpile Facility by the Contractor is prohibited unless approved by the Port construction project representative and coordinated with Port Environmental Staff or Agents. The facility was designed to accommodate end dumping from single dump trucks and sufficient area is not provided to allow efficient maneuvering of truck and pup combinations. The Environmental Soil Stockpile Facility is located within the AOA at Sea-Tac International Airport and associated access restrictions apply. The Environmental Soil Stockpile Facility will not accommodate soil-water slurries.

F. The Port construction project representative or Environmental Agent may require shut down of excavation should unforeseen condition warrant.

End of Section

Revision History:

05/01/2014 Conversion to 2004 CSI Numbering System

10/15/2014 Added Sole Source and Salient Characteristics Note to Part 2

Port of Seattle

SUMMARY WASTE REPORT

Shipped From: STIA [WAD980980106]

Waste Type: Hazardous

Aerosols

Manifest	Date Shipped	Pounds of Waste	Disposal Method	Disposal Site EPA ID
017253571 FLE	10/26/2022	5.00	H141	Clean Harbors (Aragonite)[UTD981552177]

Total Aerosols Pounds of Waste: 5.00

Hazardous Waste Liquid

Manifest	Date Shipped	Pounds of Waste	Disposal Method	Disposal Site EPA ID
017253571 FLE	10/26/2022	30.00	H040	Clean Harbors (Aragonite)[UTD981552177]
017253571 FLE	10/26/2022	400.00	H040	Clean Harbors (Aragonite)[UTD981552177]

Total Hazardous Waste Liquid Pounds of Waste: 430.00

Labpack: Corrosive Liquid Basic

Manifest	Date Shipped	Pounds of Waste	Disposal Method	Disposal Site EPA ID
017253571 FLE	10/26/2022	5.00	H040	Clean Harbors (Aragonite)[UTD981552177]

Total Labpack: Corrosive Liquid Basic Pounds of Waste: 5.00

labpack: Epinephrine Pens

Manifest	Date Shipped	Pounds of Waste	Disposal Method	Disposal Site EPA ID
017253571 FLE	10/26/2022	1.00	H040	Clean Harbors (Aragonite)[UTD981552177]

Total labpack: Epinephrine Pens Pounds of Waste: 1.00

Material Not Regulated by DOT (Washington State Dangerous Waste Only, Toxic)

Manifest	Date Shipped	Pounds of Waste	Disposal Method	Disposal Site EPA ID
017253571 FLE	10/26/2022	200.00	H040	Clean Harbors (Aragonite)[UTD981552177]

Total Material Not Regulated by DOT (Washington State Dangerous Waste Only, Toxic) Pounds of Waste: 200.00

Paint-Related Material

Manifest	Date Shipped	Pounds of Waste	Disposal Method	Disposal Site EPA ID
017099629 FLE	9/29/2022	350.00		Chimcial Waste Management, Inc.[ORD089452353]
017099629 FLE	9/29/2022	2,400.00		Chimcial Waste Management, Inc.[ORD089452353]
017099629 FLE	9/29/2022	2,700.00		Chimcial Waste Management, Inc.[ORD089452353]
017099629 FLE	9/29/2022	450.00		Chimcial Waste Management, Inc.[ORD089452353]
017099631FLE	9/30/2022	1,200.00	H040	Chimcial Waste Management, Inc.[ORD089452353]
017099631FLE	9/30/2022	2,850.00	H040	Chimcial Waste Management, Inc.[ORD089452353]

Shipped From: STIA [WAD980980106]

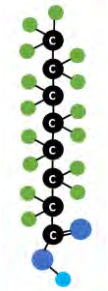
017099631FLE	9/30/2022	2,600.00	H040	Chimcial Waste Management, Inc.[ORD089452353]
017253571 FLE	10/26/2022	100.00	H040	Clean Harbors (Aragonite)[UTD981552177]
017253571 FLE	10/26/2022	700.00	H040	Clean Harbors (Aragonite)[UTD981552177]
017099629FLE	10/29/2022	2,400.00	H040	Chemical Waste Management, Inc.[ORD987173457]
017099629FLE	10/29/2022	350.00	H040	Chemical Waste Management, Inc.[ORD987173457]
017099629FLE	10/29/2022	2,700.00	H040	Chemical Waste Management, Inc.[ORD987173457]
017099629FLE	10/29/2022	450.00	H040	Chemical Waste Management, Inc.[ORD987173457]

Total Paint-Related Material Pounds of Waste: 19,250.00

Total Hazardous Pounds of Waste: 19,891.00

PFAS Explained:

Scientific studies have shown that exposure to some PFAS in the environment may be linked to harmful health effects in humans and animals.



What are PFAS?

PFAS are manufactured chemicals that have been used in industry and consumer products since the 1940s.
Because of their widespread use and their persistence in the environment, many PFAS are found in the blood of people and animals all over the world. There are thousands of different PFAS, some of which have been more widely used and studied than others.

Are PFAS safe?

Research is ongoing to determine how exposure to different PFAS can lead to a variety of health effects. Studies have shown that exposure to certain levels of PFAS may lead to:

Cancer Effects
Increased risk of some cancers, including prostate, kidney, and testicular cancers.

Weight Effects
Increased cholesterol levels and/or risk of obesity.

Immune Effects
Reduced ability of the body's immune system to fight infections.

Developmental Effects
Low birth weight, accelerated puberty, bone variations, or behavioral changes.

Reproductive Effects
Decreased fertility or increased high blood pressure in pregnant women.

The more we learn about PFAS chemicals, the more we learn that certain PFAS can cause health risks even at very low levels. This is why anything we can do to reduce PFAS in water, soil, and air, can have a meaningful impact on health. EPA is taking action to reduce PFAS in water and in the environment. You can also take action if you remain concerned about your own risk.

Read on to learn where PFAS are coming from, how EPA is taking action on PFAS, and what actions you can take.

PFAS Explained:

Where are PFAS found?

Most people in the United States have been exposed to some PFAS. People can be exposed to PFAS by touching, drinking, eating, or breathing in materials containing PFAS. PFAS may be present in:

Drinking Water
An important potential source of PFAS exposure.

Waste Sites
Soil and water at or near landfills, disposal sites, and hazardous waste sites.

Fire Extinguishing Foam
Used in training and emergency response events at airports and firefighting training facilities.

Facilities
Chrome plating, electronics, and certain textile and paper manufacturers that produce or use PFAS.

Consumer Products
Stain- or water-repellent, or non-stick products, paints, sealants, and some personal care products.

Food Packaging
Grease-resistant paper, microwave popcorn bags, pizza boxes, and candy wrappers.

Biosolids
Fertilizer from wastewater treatment plants used on agricultural lands can affect ground and surface water.

Food
Fish caught from water contaminated by PFAS and dairy products from livestock exposed to PFAS.

Very little of the PFAS in water can get into your body through your skin, so, showering, bathing, and washing dishes in water containing PFAS are unlikely to significantly increase your risk.

EPA's researchers and partners across the country are working hard to understand how much PFAS people are exposed to and how.

Keep reading to find out how EPA is taking action on PFAS.

EPA is taking action to address PFAS

In October 2021, EPA released its PFAS Strategic Roadmap, which highlights concrete actions the Agency will take across a range of environmental media and EPA program offices to protect people and the environment from PFAS contamination. The Roadmap is guided by three primary goals:

- **Research** — Invest in research, development, and innovation
- **Restrict** — Prevent PFAS from entering air, land, and water
- **Remediate** — Broaden and accelerate the cleanup of PFAS contamination

Since the Roadmap's release, EPA has taken a number of key actions including:

- **Began distributing $10 billion in funding to address emerging contaminants under the Bipartisan Infrastructure Law (BIL).**
- **Issued health advisories for PFAS and proposed new, legally, enforceable Maximum Contaminant Levels (MCLs) for six PFAS substances known to occur in drinking water.**
- **Proposed to designate two PFAS as CERCLA hazardous substances.**
- **Laid the foundation for enhancing data on PFAS.**

To learn more about the PFAS Strategic Roadmap and key actions taken by EPA scan the QR code.

SCAN ME

Turn the page to learn what actions you can take.

EPA

PFAS Explained:

Actions you can take: Protect your drinking water

1

Find out if PFAS are in your drinking water:

- If you get your water from a public drinking water system, reach out to your local water utility to see if they do testing. Or, you can choose to test the water yourself.
- If you get your water from a home drinking water well, you are responsible for conducting regular testing.
- If you choose to test your water yourself, contact your state environmental or health agency for detailed advice or to obtain a list of state-certified laboratories using EPA-developed testing methods in drinking water.

2

Compare your results to your state standards for safe levels of PFAS in drinking water or to EPA's Health Advisory Levels (HALs) for PFAS.

Scan this code for more information about HALs:

SCAN ME

3

Take protective action!

- Contact your state environmental and health agencies for recommendations.
- Consider installing an in-home water treatment (e.g., filters) that are certified to lower the levels of PFAS in your water.
- Consider using an alternate water source for activity when your family might swallow water.

EPA makes frequent updates to its PFAS website:

To learn more about PFAS, scan the QR code to the right or go to https://www.epa.gov/pfas.

SCAN ME

Port of Seattle®

Construction Safety Manual

Port of Seattle

v03.22.16

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WELCOME TO THE PORT OF SEATTLE

These Safety and Health Policies have been established to promote compliance with the Port's policy and procedures regarding site safety, health, environmental, and security standards. It also serves to explain the responsibilities of Contractors working on projects.

Please read these procedures and make sure that you fully understand all sections. More importantly, *use them* to ensure the safety and wellbeing of your employees. Safety is an essential element of construction at the Port. Each Contractor is responsible for carrying out their responsibilities under the law. As a Contractor, you are expected to maintain these high standards.

Thank you for your cooperation!

QUESTIONS

Please contact the Manager of Construction Safety Management at (206) 787-5587.

NOTE: This Manual is kept in the Construction Safety Services office and is available to anyone upon request by CD. This Manual can also be accessed online at: https://www.portseattle.org/Business/Construction-Projects/Airport-Tenants/Pages/Reference-Documents.aspx

PURPOSE

The purpose of this Safety and Health Manual is to outline a plan for preventing job-related accidents.

The Manual sets forth the many elements that all Contractors and Subcontractors (of every tier) must include in their safety program. This Manual is not all-inclusive. Other elements may be added or conveyed individually to Contractors to whom they expressly apply. Some Contractors, by nature of the specific type of work being performed, must integrate other essential elements within their own safety program.

The role of Construction Safety Management in achieving construction safety and health includes the oversight for project safety. This function does not supersede, override, or take precedence over that of construction Contractors, who are ultimately responsible for the safety and health of their personnel and protection of their property. The key function of Construction Safety Management, as it relates to construction safety and health, is to monitor Contractor compliance with safety and health standards required by law.

This Manual sets forth basic responsibilities, guidelines, rules, and regulations for all personnel involved in construction at the Port. The intent is to enhance and supplement any safety and health standards that are required by contract documents, or by law, and are applicable to Port construction projects. The Manual does not cover the full spectrum of published safety and health standards that are mandated by law. Consequently, Contractors shall not assume that they are responsible only for those standards, which are referenced in this Manual, or that those standards are current and quoted as published. It is the Contractor's and each employee's responsibility to ensure that they comply with all safety directives required by law, and that their own safety program includes such compliance.

In the event of a conflict between the provisions of this Manual and applicable local, State or Federal safety and health laws, regulations and/or standards, or contract documents, the more stringent shall apply. This Manual is subject to revisions and updates as the project progresses.

GOALS & OBJECTIVES

The goal of this Manual is to establish and maintain a safe working environment for our employees, Contractors, visitors, and the public. It is the responsibility of each individual to assist in accomplishing the following objectives:

- Strive toward the goal of **Zero Accidents/Injuries** by carefully and systematically planning, implementing, and enforcing proper safety procedures to avoid bodily injury, property damage, and loss of productivity.
- Create a **safety culture** by increasing the safety and environmental awareness of employees through the establishment and maintenance of an Employee Safety Training program with assistance from management and organized labor. This shall include the orientation of all new employees, regular safety meetings, pre-task planning, and ongoing safety training.
- Minimize hazards/disruptions to the traveling public by controlling access to construction areas, following established safety procedures to avoid impacts to airport operational systems, and secure work areas adjacent to those spaces frequented by the public.
- Establish and maintain a system that promptly identifies and corrects unsafe practices or conditions.
- Establish emergency procedures and communications that will minimize fire, police, or ambulance response-time in the event of an occurrence.
- As a minimum, achieve compliance with U.S. Labor Department Occupational Safety and Health Administration (OSHA) requirements, including Washington Industrial Safety & Health Act (WISHA), Washington Administrative Code (WAC), local, and site-specific safety requirements

"The safety of everyone at this facility depends directly upon individual effort and commitment to the goals and objectives of this program. We must all do our part, and encourage and demand others to do theirs."

- ***Tina Soike*, Chief Engineer**

MISSION STATEMENT

The Port of Seattle is dedicated to the principle that a safe project is a good project. The Port is committed to the safety of its employees, the surrounding community, and the environment.

While the Port has the responsibility for conducting business in a manner that strives to prevent accidents, all Contractors and their employees share that responsibility. All employees are expected to work safely and contribute to the safety of others. Contractors must make every reasonable effort to provide a safe and healthy work environment free of recognized hazards.

The effectiveness of this safety program depends on the combined efforts of the Port personnel, Contractors, and all labor organizations. To achieve this goal, a Safety Committee has been established. This Safety Committee will meet monthly to monitor projects and provide input on safety and health issues.

Contractor Safety Responsibilities

All Contractors shall be committed to the goal of **Zero Accidents/Injuries**. To achieve this goal, the safety and health of all personnel must receive primary consideration in the planning, scheduling, and execution of the work.

A. The Contractor assumes full and sole responsibility for the onsite safety of its employees performing work under this program.

B. The Contractor shall submit a copy of their Site-Specific Safety & Health Program, as specified in the 01 35 29 – Safety Management to the Engineer for review and acceptance per 01 32 19 – Pre-Construction Submittals. The Contractor is responsible for the submittal and review of their sub-tier contractor programs.

C. The Contractor shall insure that all Subcontractors and sub-tier contractors working under their direction comply with all applicable laws, regulations, ordinances, conditions of the contract, or orders of any public authority having jurisdiction relating to the safety of persons or property.

D. The Contractor shall keep a competent resident Project Manager or Superintendent at the site of the work continuously during its progress and all work shall be performed under the continuous supervision of competent and skilled personnel experienced in the task being performed.

E. The Contractor shall check for and correct any unsafe practices and conditions that exist in the performance of their work, and shall report to the CIP Safety Staff any unsafe conditions created by others.

F. Prior to a new employee starting work, all Contractor, subcontractor, and tier subcontractors shall receive a site-specific safety orientation administered by the Contractor. Additionally, they shall attend a new hire orientation that reviews the Port's site safety rules and requirements. This orientation is scheduled through the Safety Department and conducted by its Staff.

G. The Contractor shall employ at the site a qualified Site Safety Representative whose duties include the protection of persons and property and administration of the Contractor's safety program. 01 35 29 - Safety Management outlines the qualifications and duties of that individual.

H. It is the responsibility of the Contractor to review the safety program of all subcontractor and sub-tier contractors performing work on their project prior to that work beginning. They shall be made aware of the requirements found in 01 35 29 – Safety Management.

Contractor Safety Responsibilities

I. The Contractor shall conduct, at a minimum, weekly safety meetings with their personnel. Attendance and subjects discussed at these meetings shall be recorded and a copy kept on file.

J. The Contractor shall hold a minimum monthly all-hands safety meeting with its employees, subcontractor employees - subcontractors at any tier. An agenda shall be prepared and distributed for this meeting. The meeting shall include a safety update, and pertinent safety information for upcoming work. The Contractor shall encourage input and involvement from the subcontractors.

K. The Contractor's Site Safety Representative shall attend the monthly Contractor Safety Representative Meeting scheduled by the Program Safety Director. This meeting is held to discuss and resolve relevant issues related to safety and health on Port construction projects. If the Contractor's Safety Representative cannot attend this meeting they shall send a designate in their place.

L. The Contractor shall perform daily inspections of the project and correct substandard safety conditions and practices. These inspections shall be documented.

M. Contractors shall at all times enforce strict discipline and good order among all workers on the project and shall adopt procedures with provisions for disciplinary action or discharge of employees who carelessly or callously disregard these rules or other applicable safety and health regulations.

N. Alcohol, drugs, and weapons shall not be allowed onsite under any circumstances, and shall be cause for immediate removal of the employee.

O. All Contractors and Subcontractors working on Port projects shall have a Substance Abuse Prevention Program.

P. The Contractor is responsible for keeping the workplace clean and handling, on a daily basis, debris generated by the work.

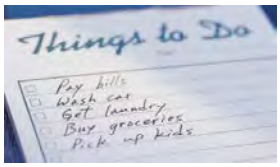
Q. The Contractor shall be responsible for the following:
    1. All personnel are to be properly trained and instructed in all jobs which require specific training and/or competency to meet all applicable OSHA, WISHA, WAC regulations and standards, Local, State, and Federal laws, and the requirements herein.
        a. Where regulations require the designation of "Competent Person" the Contractor shall submit the names of those individuals, their qualifications and/or certifications, and the discipline they are deemed competent in. These disciplines include but are not limited to welding, electrical, scaffolding,

roofing, cranes, excavations, lift slab construction, steel erection, and underground construction.

2. Prior to the performance of any work, all Contractor employees shall be instructed as to the hazards, rules/requirements that apply to the work they are to perform.
3. Supervisory personnel shall require all employees working under their supervision to comply with all applicable safety rules.
4. Personal Protective Equipment (PPE) shall be provided to employees, used where required, and maintained in proper condition.
5. The Contractor shall not tolerate practical jokes, horseplay, fighting, or unnecessary risk taken by employees.
6. The Contractor shall train employees in the proper storage and handling of hazardous materials (i.e., flammable, combustible, toxic) and hazardous wastes.
7. The Contractor shall immediately report unsafe acts or conditions observed that are not under their control to the Engineer and Construction Safety to ensure abatement.
8. The Contractor shall make 72-hour notification to the Resident Engineer prior to any work involving water systems, water lines, or fire alarm systems.
9. The Contractor shall assure that all vehicles and equipment working on the Air Operations Area (AOA) are equipped with appropriate warning lights or flags meeting FAA requirements found in Advisor Circular #AC150/5370-2C.
10. The Contractor shall notify the Engineer and Construction Safety immediately in the event of a site inspection by Labor & Industry (L&I) to ensure the Port's representation at such meetings or inspections. Copies of any documentation, citations or correspondence received from L&I concerning the visit shall be forwarded to the Engineer.
11. The Contractor shall comply with the Confined Space Entry Requirements found in this Manual.
12. The Contractor shall report all accidents or injuries requiring more than first aid treatment to the Engineer and Construction Safety immediately. A written report shall be submitted within 24 hours, using the Accident Investigation, Equipment & Property Damage Reports, and Near Miss Report forms found in this Manual.
13. Within 48-hours of a Recordable or Lost Work Day Case Injury, incident involving 3rd party, or property damage incident, the Contractor shall meet with the Engineer and Manager of Construction Safety Services. The meeting shall discuss the status of the injured employee, the root cause of the incident, corrective action implemented, the Job Hazard Analysis, and retraining of the employee and supervisor.

Contractor Safety Responsibilities

14. The Contractor shall complete a written Job Hazard Analysis (JHA) for work to be performed, outlining the equipment to be used, the identified hazards that may exist or be created and what procedures or safety equipment will be used to eliminate or reduce those hazards. Completed JHAs are to be reviewed with the workforce and shall contain their signatures as an acknowledgement. It is the responsibility of the Contractor to ensure subcontractors and sub-tiered contractors are completing written JHAs. The Contractor shall use the form provided in this Manual.
15. The Contractor shall submit the names of employees trained in CPR and First Aid to the Engineer.
16. Contractors shall provide appropriate first aid/CPR supplies for their employees and personnel trained to administer first aid/CPR as required.
17. The Contractor shall identify Heat Related Illness Training, outlining program requirements according to WAC 296-62-095.



Basic Safety Rules

All Contractors under contract with the Port performing construction or construction related activities on the Port of Seattle Construction Project are responsible for compliance with site safety policies/procedures and are directly responsible for the safety of their employees and those of their subcontractors. General responsibilities include:

A. The Contractor shall permit only qualified, trained personnel to operate aerial lifts, forklift, or motorized equipment and machinery.

B. Ladders shall be properly constructed and kept in good repair. They shall be the proper length and type for the task and secured to prevent displacement.

C. All scaffolding will be constructed in accordance with 29 CFR 1926 OSHA/Subpart L, and WAC 296-874.

D. Compressed gas cylinders shall be stored upright, secured, and separated, with protective caps in place at all times when not in use. Gauges shall be removed prior to transportation of cylinders. (WAC 296-155-400)

E. All guards on equipment for the protection of personnel shall be kept in place during usage and maintained in good mechanical order.

F. No modifications or additions, which affect the capacity or safe operation of equipment, shall be made without the manufacturers or professional engineers written approval.

G. Proper lighting and illumination of work areas shall be provided.

H. Employees shall avoid working, driving, or walking under suspended loads.

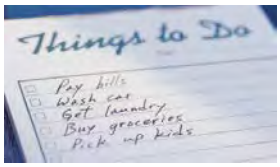
I. All excavations shall be in accordance with the requirements found in 29 CFR 1926 OSHA Subpart P and WAC 296-155-650. Adequate access and egress must be provided for excavations that are 4 feet or more in depth.

J. Post, observe, and comply with Safety, Danger, Warning, and Caution tags or signs. Tags and signs shall not be removed unless authorized.

K. Contractors shall maintain good general housekeeping in their work area to minimize all fire hazards, and trip/slip and fall hazards.

L. Contractors shall ensure that proper tools for each task are used and maintained in safe operating condition.

M. All Contractors shall submit a Safety Data Sheet (SDS) on any hazardous substance brought onto Port property. Prior to bringing materials on site, the SDSs shall be submitted to the Engineer for review and documentation purposes, as specified in



N. 01 57 23 – Pollution Prevention, Planning and Execution. The SDSs shall be the most current edition but no more than 3 years old.

O. Locate utilities prior to the start of any work.

P. Traffic control and the use of flaggers shall comply with WAC 296-155-305 Part E Signaling and Flaggers. Certified flaggers shall be utilized when construction operations impact traveled roadways, ramp and baggage operations. Contractors shall maintain records of flagger certifications.

Q. Firearms are strictly forbidden on the project.

R. The use of AM/FM radios, CD or tape players is prohibited along with the use of personal headsets.

S. Makeshift work platforms such as 5-gallon pails or crates shall not be utilized.

T. Glass bottles are prohibited on the project.

U. Graffiti of any type will not be tolerated on the project in conjunction with the Port's Zero Tolerance Policy.

V. SEAPORT PROJECTS: The following basic safety rules shall apply to operations involving transferring to and from boats, barges, and floating platforms. Transferring between boats, barges and floating platforms can be dangerous, particularly in rough weather. Be extremely cautious each and every time you make a transfer. Never become complacent about this. Getting caught between vessels, even in calm seas, can be deadly.

1. Boat captain alert to move boat or to keep from crushing anyone in water.
2. Only one designated person to give orders for boat movement.
3. Man overboard to swim in a direction to clear boat and platform. Then swim to nearest climb-out point.
4. Do not ever fight a current.
5. Life ring with line attached to be standing by close to point of departure from boats.
6. Hold on to swing rope high enough up to ensure clearing boat landing.
7. Use rope with a knot whenever available to prevent hands from slipping.
8. Use both hands.
9. Never attempt to carry anything.
10. Time your swing to leave the boat when it is on the peak of a wave.
11. Deck personnel on both vessels must assist in making transfers.
12. Transferring personnel must all wear life jackets.
13. Do not hurry transfer. Take your time!
14. Bring vessels together side to side, bow to stern.
15. Be prepared to stow or lash equipment/material after completion of transfer.

Earthwork & Heavy Equipment

A. Scope

This section defines minimum safety requirements for earth moving operations, maintenance and fueling, site conditions and the safety of the general public. Equipment is defined to include motor vehicle, earthmoving equipment and over the road and onsite haul trucks.

B. Purpose

To safeguard employees and members of the public, and to eliminate equipment and property damage.

The Federal Motor Carriers Safety Administration in 2006 estimated that truck crashes cost an average of $91,000 per crash.

According to a 1991 NIOSH report, there were 841 road construction fatalities between 1992-1998. Of those 493 occurred *"inside"* work zones with the leading cause of death to construction workers on foot being trucks (61%), followed by construction equipment (30%).

C. Reference

29 CFR Subparts O, P & W, WAC 296-155-605, WAC 296-155 Part E & M, and Excavation & Trenching section of this Manual.

D. General Requirements

1. The Contractor shall insure that only experienced, trained and qualified personnel are allowed to operate equipment.
    a. Proper licensing requirements such as Commercial Driver's License (CDL) shall be met.
    b. The operator must:
        i. Know, understand, and demonstrate the working limits and safe operation of the equipment, including any attachments.
        ii. Must be physically, emotionally, and mentally fit.
        iii. Must know and comply with the safety rules and attend at a minimum at least one toolbox safety meeting per week.
        iv. Must have read and understood the manufacturers operating instructions for the equipment they are operating.
        v. Must be qualified and checked out on the specific equipment they will be operating.
2. The operator is personally responsible for the safe operation/movement of the equipment.
3. All personnel on the project shall utilize proper Personal Protective Equipment (PPE) as referenced in this Manual.

4. All equipment shall be inspected and serviced by a qualified mechanic on a pre-determined schedule. Such inspections shall be documented. A sample "Daily Checklist" is included in this section.
5. In the course of the work shift, it shall be operator's responsibility to report unsafe conditions that arise with the equipment or on the site.
6. Any equipment unsafe to operate shall be taken out of service and repaired.
7. All cab glass shall be safety glass, or the equivalent, that introduces no distortion.
8. Smaller vehicles such as pick-up and maintenance trucks shall be equipped with strobe/beacon lights to enhance visibility around equipment.
9. The use of seat belts is mandatory while operating equipment or riding in vehicles.
10. Vehicles used to transport employees shall have seats firmly secured and adequate for the number of employees to be carried.
11. All equipment and heavy-duty vehicles shall be equipped with a reverse signal alarm distinguishable from the surrounding noise level. Ambient noise sensing variable volume alarms may be required for night operations.
12. Backing of trucks with limited visibility shall have a spotter or video device to allow the vehicle operator to ensure that no workers are present in the area behind the vehicle and subject to being struck.
13. When parked on an incline where there is no curb or berm, the wheels shall be chocked or blades or dump bodies lowered.
14. Operators shall climb up and down from the equipment using the proper steps/handholds.
15. No person other than the operator shall ride on equipment or in a vehicle that is not specifically designed to carry passengers.
16. No employee shall be allowed to ride in or work from an end-loader bucket.
17. Equipment shall not be moved until the operator is sure that all individuals are clear of the equipment.
18. Equipment operated near energized power lines shall follow the guidelines in WAC 296-155-428 (1) (E). All power lines shall be considered energized until supervision has verified that they are de-energized.
19. All vehicles shall have a service brake system capable of stopping and holding the equipment fully loaded an emergency brake system, and a parking brake system.
20. Equipment shall not be loaded beyond their rated capacities and all loads shall be secured to prevent shifting or loss.
21. When "breaker point", brush cutting, or other specialty attachments are utilized the Contractor shall follow the manufacturer's recommendations for cab/operator protection. Manufacturer's safety precautions shall be incorporated in the JHA.
22. No persons shall be permitted to remain in equipment that is being loaded by excavating equipment unless the cab is adequately protected against heavy impact.

23. Contractors shall have a procedure in place to deal with the hazards associated with "quick release" bucket mechanisms. A positive locking pin shall be placed to prevent accidental release if so equipped.

E. Maintenance, Repair, & Fueling

1. All equipment and vehicles in use shall be inspected at the beginning of each shift to assure that equipment and accessories are in safe operating condition and free of apparent damage that could cause failure. Items to be checked shall include, but are not limited to:
   a. Operating Controls
   b. Brakes
   c. Seat and Seat Belt
   d. Windshields and Wipers
   e. Tires
   f. Reverse Alarm
   g. Horn
   h. Steering Mechanism
   i. Lights
   j. Steps and Handholds
   k. Hydraulic Hoses
   l. Fire Extinguisher

2. Heavy equipment or vehicles which are suspended or held aloft by the use of slings, hoists, or jacks shall be substantially blocked or cribbed to prevent falling or shifting before employees are permitted to work under or between them. Likewise, bulldozer and scraper blades, end-loader buckets, dump bodies, and similar equipment shall be either fully lowered or blocked when being repaired or not in use.
3. Equipment being repaired or adjusted shall have the key removed and a tag-out device placed on the control panel.
4. Only maintenance persons trained in the operation of equipment shall be allowed to move such equipment.
5. Equipment with obvious hydraulic, coolant, or oil leaks shall be promptly repaired.
6. Fuel storage and maintenance areas shall be kept clean and free of debris and spilled material. Oily and greasy rags shall be properly stored.
7. Proper fire protection, flammable liquid storage, and cutting and welding procedures shall be followed.
8. Gasoline powered engines shall be shut off to refuel!
9. No smoking or ignition sources shall be allowed within 35 feet of a fueling operation.

F. Site Control

1. Yield the right-of-way to all equipment!
2. All visitors to the site shall check in with the Contractor's supervision or grading supervisor.

3. Haul routes shall be built in accordance with WAC standards. Turnouts, emergency ramps, and berms shall be provided where needed.
4. Haul routes shall be properly maintained to prevent injury to employees and damage to equipment.
5. Where haul routes cross established roads or other haul routes, flaggers or warning signs shall be posted.
6. Berms or barricades shall be provided and maintained on roadways where drop –offs of sufficient grade or depth exist. They shall be at least mid-axle height of the largest equipment that travels the roadway.
7. Equipment speeds shall be appropriate to site and weather conditions if speed limits are not posted.
8. All equipment left unattended at night adjacent to a roadway in normal use, or adjacent to construction areas where work is in progress, shall be barricaded in conformance with the Uniform Traffic Code.
9. Everyone on the ground working around moving equipment shall wear high visibility vests or garments.
10. Before driving through or within an equipment operation, stop and observe long enough to become familiar with what equipment is working, or how much equipment is working.
11. When stopped to observe, be aware that material can come off of the top of the haul units, especially when they are in a turn.

G. Compaction Testing in Active Earthwork Fills

1. Technicians working among active earthmoving equipment shall utilize proper PPE including hard hats, high-visibility vest, and appropriate footwear.
2. Technicians will be required to communicate with the grading supervisor to determine when fill areas are ready for testing, and the best routes for entering and leaving the fill area.
3. In large fills, if at all possible, tests should be performed at a safe distance from equipment traffic. Technicians shall enter the fill areas by traveling with the flow of the equipment traffic, and take all prudent steps to avoid unsafe situations.
4. Technicians shall make contact with equipment operators and shall not proceed into the paths of equipment unless the operator has given them a positive hand signal to do so.
5. Technicians and grading supervision shall communicate to ensure test pits are located and quantified in accordance with project requirements for testing.
6. Technicians should place their vehicles at the open end of the test pit, place a signal flag in the spoil pile at the closed end while keeping their strobe/beacon light “on” at all times while in the fill.
7. When leaving the test pit, technicians should check the immediate surroundings to ensure no obstacles are in the way of making a safe vehicle exit. If such obstacles are present, they shall promptly inform the grading supervisor of the situation and remain at the test pit until it is safe to exit.

8. Technicians shall leave the fill by traveling with the flow of the equipment traffic.

H. Public Safety

1. No employer shall move or cause to be moved construction equipment or vehicles upon any access roadway or grade unless the access roadway or grade is constructed and maintained to accommodate safely, the movement of the equipment or vehicles involved.
2. Where trucks enter public highways, or cross-established routes, warning signs or flaggers shall be posted to alert the traveling public.
3. Equipment operated on public roads shall be equuipped with functioning lights, overhead beacon or strobe, and a slow moving vehicle placard. In addition, equipment shall be escorted by a vehicle liscensed for public roads when traveling from one location to another.
4. Before vehicles exit the project, they shall have had all loose or excess material removed.
5. All roadways used by the traveling public shall be kept clear of spilled material.
6. Drivers shall obey all posted speed limits and operate their vehicles in accordance with road/weather conditions.
7. Loads in or on vehicles shall be secured or covered in regard to RCW 46.61.655.

Daily Equipment Safety Inspection

	OK	N/A	REPAIR
Operating Controls			
Brakes			
Seat / Seat Belts			
Tires / Wheels			
Windshield / Wipers			
Lights			
Reverse Alarm			
Horn			
ROPS Canopy			
Fenders / Flaps			
Steering Mechanism			
Fire Extinguisher			
Hydraulic Hoses			
Steps / Handholds			

Equipment #: _____

Operator: _____

Date/Shift: _____

Excavation & Trenching

A. Scope
This section defines minimum safety requirements for all open excavations made in the earth's surface located on the Port of Seattle construction projects. Excavations are defined to include trenches.

B. Purpose
To ensure that methods of protecting employees against cave-ins and safe work practices for employees during excavation and trenching operations are in place prior to work.

C. Reference
OSHA 29 CFR Subparts P & S, WAC 296-155 Parts N & Q, the Earthwork Activities and Confined Space Entry section of this Manual.

D. Definitions
Accepted Engineering Practices – Requirements that are compatible with standards of practice required by a Professional Engineer.

Aluminum Hydraulic Shoring – Pre-engineered shoring system comprised of aluminum hydraulic cylinders (cross-braces) used in conjunction with vertical rails (uprights) or horizontal rails (walers), designed specifically to support the side-walls of an excavation and prevent cave-ins.

Bell Bottom Pier Hole – Type of shaft or footing excavation, the bottom of which is made larger than the cross-section above to form a bell shape.

Benching (Benching System) – Method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near vertical surfaces between levels.

Cave-in – Separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.

Competent Person - A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, who has the authorization to take prompt corrective measures to eliminate them and is knowledgeable of WAC 296-155-650 .

Cross Braces – Horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

Excavation – Any man-made cut, cavity, trench, or depression in the earth's surface formed by earth removal.

Faces or Sides – The vertical or inclined earth surfaces formed as a result of excavation work.

Failure – Breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and support capabilities.

Hazardous Atmosphere – Atmosphere which, by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic or otherwise harmful, may cause death, illness, or injury.

Kick-Out – The accidental release or failure of a cross-brace.

Protective System – A method of protecting employees from cave-ins, from material that could fail or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support or shield systems that provide necessary protection.

Qualified Person - One who, by possession of a recognized degree, certificate, or professional standing, or by extensive knowledge, training and experience, has successfully demonstrated their ability to solve or resolve problems related to the subject matter, work, or project.

Ramp – Inclined walking or working surface that is used to gain access to one point from another, constructed from earth or structural materials such as steel or wood.

Sheeting – Large surface area members used to retain soil supported by structural members of a shoring system.

Shield (Shield System) – A structure that is able to withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or be designed to be portable and moved along as work progresses. Additionally, they can be either pre-manufactured or job built in accordance with 29 CFR Part 1926-652. Shields used in trenches are usually referred to as “trench boxes” or “trench shields”.

Shoring (Shoring System) – A structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and is designed to prevent cave-ins.

Sloping (Sloping System) – A method of protecting employees from cave-ins by excavating to form sides that are inclined away from the excavation. The angle of incline required to prevent a cave-in varies depending on the differences in such factors as soil type, environment conditions and application of surcharge loads.

Stable Rock – Natural, solid, mineral material that can be excavated with vertical sides and remains intact while exposed. Unstable rock is considered to be stable when the rock minerals on the side(s) of the excavation is secured against caving in or movement by rock bolts, or by a protective system that was designed by a Registered Professional Engineer.

Structural Ramp – A ramp built of steel or wood, usually for vehicle access. Ramps made of soil or rock are not considered structural ramps.
Support System – A structure such as underpinning, bracing, or shoring that provides support to an adjacent structure, underground installation, or the sides of an excavation.

Tabulated Data – Tables and charts approved by a Professional Engineer and used to design and construct a protective system.

Trench – A narrow excavation in relation to its length made below the surface of the ground. In general, the depth is greater than the width, but the width (measured at the bottom) is not greater than 15 feet (4.6 m) (measured at the bottom of the excavation).

Uprights – The vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed in such a way that individual members are closely spaced; in contact with, or inter-connected to each other are often called “sheeting”.

Waler – Horizontal members of a shoring system placed parallel to the excavation face and whose side bears against the vertical members of the shoring system or earth.

E. General Requirements
   1. Surface encumbrances that are located so as to create a hazard to employees shall be removed or supported.
   2. Underground installations such as sewer, telephone, fuel, electric, water lines or any other installations that reasonably may be expected to be encountered during excavation shall have their location determined prior to opening an excavation/trench.
   3. When underground utility lines are being located, “hand digging” in these locations shall be required. While the excavation/trench is open, underground lines shall be protected, supported, or removed as necessary to safeguard employees and the utilities.
   4. Employees in an excavation/trench shall be protected from cave-ins by proper sloping, benching or an adequate protective system.
   5. Pits or excavations with vertical drops that expose employees to fall hazards over 6 foot shall be guarded by warning lines, standard guard rails or personal fall protection systems.
   6. Access and egress from excavation/trenches such as a stairway, ladder, ramp or other safe means shall be located in excavations/trenches so as to require no more than 25 feet of lateral travel for employees.
   7. Employees exposed to vehicular traffic shall wear high visibility vests or garments.
   8. No employee shall be permitted underneath loads handled by lifting or digging equipment. No worker shall be permitted to remain in equipment that is being loaded unless the cab is adequately protected against heavy impact.
   9. Where the stability of adjoining buildings, walls, or other structures may be endangered by excavation/trench operations, an engineered support system such as shoring, bracing, or underpinning shall be provided to ensure the stability of such structures for the protection of employees.

10. Adequate protection shall be provided from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of scaling to remove loose material and stockpiling excavated materials at least 2 foot back from the excavation.
11. Warning systems such as warning lines, guardrails, barricades, hole covers, signals, or signs shall be utilized around trenches and excavations.
12. If the excavation is exposed to vehicle or equipment traffic, berms or barricades shall be provided and maintained that will divert or stop vehicles or equipment from driving into the excavation. Berm or barricade height shall be at least mid-axle of the largest equipment.
13. Walkways shall be provided where employees are required or permitted to cross over excavations. Standard guardrails shall be provided on walkways where the depth is 4 foot or greater. Ramps shall comply with WAC 296-155-24619 (1).
14. Upon completion of exploration and similar operations, temporary excavations, and shafts shall be back-filled.
15. Employees shall not work in excavations where there is accumulated water or in excavations where water is accumulating, unless adequate precautions have been taken to protect against hazards posed by water accumulations.
16. Employees shall not enter bell-bottom pier holes, caissons, shafts or other similar deep and confined footing excavations unless a protective system/sleeve is in place.

F. Competent Person

1. Per the Contractor Safety Responsibilities & Requirements section, the Competent Person shall be identified by name in the Contractor's Safety Program.
2. The Competent Person shall meet the definition set forth by OSHA.
3. The Competent Person shall be located on the project and be capable of classifying soils.
4. The Competent Person shall, as a minimum, perform and document daily inspections of the excavation and additional inspections as required due to changing conditions.
5. The Competent Person shall be present at the excavation during periods of accumulated water or when dewatering equipment is in use.
6. The Competent Person shall take appropriate action as site conditions dictate.

G. Inspections

1. Daily inspections of excavations, adjacent areas, protective systems, and surface encumbrances shall be performed by the Competent Person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions.
2. Inspections shall be conducted prior to the start of work and as required throughout the shift.
3. Inspections shall be performed after every rainstorm or as required by changing site conditions.
4. If conditions that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions are found, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

5. All inspections shall be documented using the initial assessment and daily inspection forms located in this section.

H. Confined Space Entry
   1. Excavations, pits, and trenches may be classified as confined spaces. The Contractor's Competent Person shall make the determination. The Port's procedures for Confined Space Entry can be found in this Manual.
   2. Emergency rescue equipment such as breathing apparatus, safety harness, lines, and basket stretcher shall be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation.
   3. Where oxygen deficiency (atmospheres containing less than 19.5% oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmosphere in the excavation shall be tested before employees enter excavations.
   4. The Contractor shall submit for acceptance a Contractor Health and Safety Plan (CHASP) for handling contaminated soils outlined within 02 61 13 – Handling Contaminated Soil 1.08.B.1.K.

NOTE: Port of Seattle Environmental may have important information regarding site conditions.

I. Protective Systems Requirements
   1. All employees in an excavation shall be protected from cave-ins by proper sloping, benching, shoring or an adequate protective system designed in accordance with sloping and benching configurations. Exceptions are:
      a. Excavations/trenches are made entirely in stable rock.
      b. Excavations/trenches are less than 4 feet in depth and examination of the ground by the Competent Person provides no indication of a potential cave-in.
   2. Protective systems shall have the capacity to resist without failure all loads that are intended, or could reasonably be expected to be applied, or transmitted to the system.
   3. Tabulated Data for such systems shall bear the stamp of a Professional Engineer and be located on the project.
   4. A Professional Engineer shall design excavations or shoring systems that will be located at 20 feet or more below grade.

J. Materials and Equipment
   1. Materials and equipment used for protective systems shall be free from damage or defects that may impair proper function.
   2. Manufactured materials and equipment used for protective systems shall be used and maintained consistent with manufacturer recommendations.
   3. When material or equipment that is used for protective systems is damaged, the Competent Person shall examine the material or equipment and evaluate its suitability for continued use.

K. Installation and Removal of Support
    1. Members of support systems shall be securely connected together to prevent sliding, failing, kick-outs, or other predictable failure.
    2. Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.
    3. Removal shall begin at and progress from the bottom of the excavation. Members shall be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in or the sides of the excavation.
    4. Back filling of the excavation shall progress together with the removal of support systems.

L. Additional Requirements for Support Systems
    1. Excavation of material to a level no greater than two feet below the bottom of the members of the support system shall be permitted, but only if the system is designed to resist forces calculated for the full depth of the trench and there is no indication while the trench is open of a possible loss of soil from behind or below the bottom of the support system.
    2. When placed in an excavation the top of the shield shall extend 18” above the slope of the excavation to prevent material from rolling into the shield.
    3. Employees shall not be permitted to work on the faces of sloped or benched excavations at levels above other employees, except when employees at the lower levels are adequately protected from hazards of falling material.
    4. Shield systems shall not be subjected to loads exceeding those that the system was designed to withstand.
        a. Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.
        b. Employees shall not be allowed in shields when shields are being installed, removed or moved vertically.

Appendix A

Soil Classification

A. Scope

This section describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. The rule contains definitions, sets forth requirements, and describes acceptable visual and Manual tests for use in classifying soil.

B. Definitions

Cemented Soil – A soil in which particles are held together by a chemical agent, such that a hand-size sample cannot be crushed into a powder or individual soil particles by finger pressure.

Cohesive Soil – Clay (fine-grained) or soil with a high clay content and that has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical slide slopes, and has plasticity when moist.
Confined Compressive Strength – The load per unit area at which a soil will fail in compression.

Dry Soil – Soil that does not exhibit visible signs of moisture content.

Fissured – Soil material that has a tendency to break along definite planes of fracture with little resistance.

Granular Soil – Gravel, sand, or silt (coarse gravel soil) with little or no clay content, and no cohesive strength.

Layered System – Two or more distinctly different soil or rock types arranged in layers.

Moist Soil – A condition where a soil looks and feels damp.

Plasticity – A property of a soil that allows the soil to be deformed or molded without cracking or experiencing appreciable volume change.

Saturated Soil – A soil in which the voids are filled with water. Saturation does not require flow.

Stable Rock – Natural solid mineral that can be excavated with vertical sides and remains intact while exposed.
Submerged Soil – Soil that is underwater or is free seeping.

Wet Soil – Soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated; granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

C. Soil Classification

1. Each soil and rock deposit shall be classified by a Competent Person as Stable Rock, Type A, Type B, or Type C in accordance with the standard.
2. The classification of the deposits shall be made based on the results of at least on visual and at least one Manual analysis. Such analysis shall be conducted by the Competent Person using recognized forms of testing.
3. Visual and Manual analysis shall be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to properly identify the properties, factors, and conditions affecting the classification.
4. In a layered system, the system shall be classified in accordance with its weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer.

D. Acceptable Visual and Manual Tests
   1. Observe soils that are have been excavated. Fine-grained material is cohesive material. Soil composed primarily of coarse-grained sand or gravel is granular material.
   2. Observe soil as it is being excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.
   3. Observe the side of the opened excavation. Crack-like openings could indicate fissured material.
   4. Observe the side of the excavation to identify a layered system.
   5. Observe the area adjacent to the excavation for surface encumbrances to identify previously disturbed soil.
   6. Observe the area adjacent to the excavation and side of the excavation for evidence of surface water or seeping water and evidence of the water table level.
   7. Observe the adjacent area for any signs of vibration.

E. Manual Tests
   1. Plasticity. Mold a moist or wet sample of soil into a ball and attempt to roll it into threads. Cohesive material can be successfully rolled into threads without crumbling.
   2. Dry Strength. If the soil is dry and crumbles on its own or with moderate pressure into individual grains or powder, it is granular. If the soil is dry and falls into clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in combination with gravel, sand or silt.
   3. Thumb Test. Take a soil sample and press upon it with your thumb and note the following:
   4. Type A: Cohesive soil with an unconfined compressive strength of 1.5 ton per square foot or greater. The soil can be easily indented by the thumb; however, it can be penetrated by the thumb only with very great effort. Examples of cohesive soils are: clay, silty clay, sandy clay, and clay loam. Cemented soils such as caliche and hardpan are also considered Type A. No soil is Type A if:
      a. It is fissured; or
      b. Subject to heavy vibration from heavy traffic, pile driving, or similar effects; or
      c. The material is subject to other factors that would require it to be classified as a less stable material.

5. Type B: Cohesive soil with an unconfined compressive strength greater than 0.5 ton per square foot but less than 1.5 ton per square foot. Type B soil would include previously disturbed soil or those subject to vibration.
6. Type C: Cohesive soil with an unconfined compressive strength of 0.5 ton per square foot or less. Type C soil can easily be penetrated several inches by the thumb. Examples of this soil would be granular such as sand, gravel, submerged rock or soil from which water is freely seeping.

Sloping and Benching

A. Scope

This section contains specifications for sloping and benching when used as methods of protecting employees working on excavations from cave-ins.

B. Requirements

1. Stable Rock is the only allowable classification that allows for vertical walls.
2. The maximum allowable slope for Type A soil in an excavation less than 20 ft. is ¾:1.
3. The maximum allowable slope in Type B soil in an excavation that is less than 20 ft. is 1:1.
4. The maximum allowable slope in Type C soil in an excavation less than 20 ft. is 11/2:1. than 20 ft. is 11/2:1.
5. Type A and Type B soils can be benched with a maximum allowable bench dimension of 4 ft. Type C soil cannot be benched.

NOTE: For other sloping and benching configurations, please consult the OSHA or WISHA regulations.

Excavation/Trenching Checklist

To be completed prior to any excavation or trenching work. This is an initial review of required procedures.

Job Name: _____ Date: _____ Time: _____

Competent Person: _____ Soil Type: _____

Excav./Trench Depth: _____ Excav./Trench Width: _____ Protective System: _____

General Site Conditions

Description	Yes	No	NA
Excavation, adjacent areas, and protective systems inspected by a designated competent person daily prior to start of work, or as hazards warrant.	❑	❑	❑
Competent person has the authority to remove employees from the excavation immediately and stop work.	❑	❑	❑
Surface encumbrances removed or supported.	❑	❑	❑
Employees protected from loose rock/soil that could pose a hazard by falling or rolling into the excavation.	❑	❑	❑
Spoils, materials, and equipment set back as least 2' from the edge of the excavation.	❑	❑	❑
Barriers provided at all remotely located excavations, wells, pits, shafts, etc.	❑	❑	❑
Walkways and bridges over excavations 6' (4' for WA) or more in depth are equipped with standard guardrails and toeboards.	❑	❑	❑
Warning vests or other highly visible clothing provided and worn by all employees exposed to vehicular traffic.	❑	❑	❑
Employees required to stand away from vehicles/equipment being loaded or unloaded.	❑	❑	❑
Employees are prohibited from going under suspended loads.	❑	❑	❑
Employees prohibited from working on the faces of sloped or benched excavations above other employees.	❑	❑	❑

Utilities

Description	Yes	No	NA
Utility company contacted and/or utilities located.	❑	❑	❑
Exact locations of utilities marked.	❑	❑	❑
Underground installations protected, supported, or removed when excavation is open.	❑	❑	❑

Means of Access & Egress

Description	Yes	No	NA
Unobstructed lateral travel to means of egress no greater than 25' in excavations 4' or more in depth.	❑	❑	❑
Ladders used in excavations secured and extended 3' above the edge of the trench.	❑	❑	❑
Structural ramps used by employees designed by a competent person.	❑	❑	❑
Structural ramps used for equipment designed by a registered professional engineer.	❑	❑	❑
Ramps constructed of materials of uniform thickness, cleated together on the bottom, and equipped with a no-slip surface.	❑	❑	❑
Employees protected from cave-ins when entering or exiting excavations.	❑	❑	❑

Wet Conditions

Description	Yes	No	NA
Precautions taken to protect employees from the accumulation of water.	❑	❑	❑
Water removal equipment monitored by a competent person.	❑	❑	❑

Surface wear or runoff diverted or controlled to prevent accumulation in the excavation.	❑	❑	❑
Inspections made after every rainstorm or other hazard increasing occurrence.	❑	❑	❑

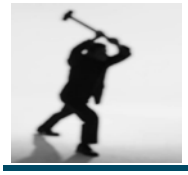
Hazardous Atmospheres

Description	Yes	No	NA
Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible, or other harmful contaminant posing a hazard.	❑	❑	❑
Adequate precautions taken to protect employees from exposure to an atmosphere containing less than 19.5 % or more than 23.5% oxygen and/or other hazardous atmosphere.	❑	❑	❑
Ventilation provided to prevent employee exposure to an atmosphere containing flammable gas in excess of 10% of the lower explosive limit of the gas.	❑	❑	❑
Testing conducted often to ensure that the atmosphere remains safe.	❑	❑	❑
Emergency equipment, such as breathing apparatus, safety harness and lifeline, and/or basket stretcher readily available where hazardous atmospheres could or do exist.	❑	❑	❑
Employee trained to use PPE and rescue equipment	❑	❑	❑
Safety harness and lifeline used and individually attended when entering bell bottom or other deep confined excavations.	❑	❑	❑

Support Systems

Description	Yes	No	NA
Materials and/or equipment for support systems selected based on soil analysis, depth, width, and expected loads.	❑	❑	❑
Materials and equipment used for protective systems inspected and in good condition.	❑	❑	❑
Materials and equipment not in good condition have been tagged and removed from service.	❑	❑	❑
Damaged materials and equipment used for protective systems inspected by a registered professional engineer after repairs and before being placed back into service.	❑	❑	❑
Protective systems installed without exposing employees to the hazards of cave-ins, collapse, or threat of being struck by materials or equipment.	❑	❑	❑
Members of support system securely fastened to prevent failure.	❑	❑	❑
Support systems provided to insure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.	❑	❑	❑
Excavations below the level of the base or footing supported and approved by a registered professional engineer.	❑	❑	❑
Removal of support systems progresses from the bottom and members are released slowly as to note and indication of possible failure.	❑	❑	❑
Backfilling progresses with removal of the support system.	❑	❑	❑
Excavation material to a level no greater than 2’ below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth.	❑	❑	❑
Shield system placed to prevent lateral movement.	❑	❑	❑
Employees are prohibited from remaining in shield system during vertical movement.	❑	❑	❑

Comments



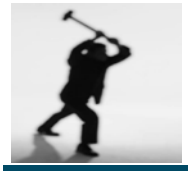
Demolition

A. Scope
This section defines minimum safety requirements for Contractor personnel performing any alteration, demolition, dismantling or renovation of existing structures.

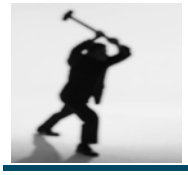
B. Purpose
To prevent injury to employees or members of the public and eliminate property damage during such operations.

C. Reference
29 CFR Subpart T; WAC 296-155-775 Part S; ANSI/ASSE A10.6-1990 and Master Specifications/Division 2 - Site Work/02 41 13 – Site Demolition

D. General
1. Prior to permitting employees to start demolition operations, an engineering survey shall be performed, by a Qualified Person, of the structure to determine structural integrity and the possibility of unplanned collapse of any portion of the structure. Any adjacent structure where workers may be exposed shall also be similarly checked. An Industrial Hygiene or other survey identifying regulated material or other hazardous materials such as gases, explosives, flammable materials or similarly dangerous substances shall be obtained and those materials abated prior to demolition activities begin. The employer shall have, in writing, evidence that such a survey has been performed.
2. The Contractor shall utilize, as a minimum, the National Association of Demolition Contractors Engineering Survey.
3. In addition, the Contractor shall submit for acceptance, a demolition plan and Job Hazard Analysis to the Engineer that as a minimum addresses the following:
    a. Worker Safety.
    b. Protection of the public in areas surrounding the demolition site.
    c. Emergency procedures and fire protection.
    d. Work sequence.
    e. Protection of the environment.
    f. Means and methods to minimize waste and maximize salvage.
    g. Disposal procedures.
    h. Fall protection methods.
    i. Hazardous Materials procedures, including Contractor Health and Safety Plan (CHASP) for handling contaminated / hazardous material.
    j. Employee protection while operating heavy equipment and / or mobile equipment.
4. A copy of the survey report and of the plans and/or methods of operation shall be maintained at the job site for the duration of the demolition operation.
5. Federal and state codes, safety standards, rules, regulations and ordinances governing any and all phases of demolition work shall be afforded the employee.



6. Before any demolition begins all utilities such as electric, gas, water, steam, sewer, and other service lines shall be de-energized, shut off, capped, or otherwise controlled.
7. A survey shall be performed to determine whether asbestos, hazardous materials, gases, explosives, flammable materials, or similarly dangerous substances are present at the work site. When the presence of any such substance is apparent or suspected, testing and removal or purging shall be performed and the hazard eliminated before demolition is started. A copy of the survey shall be kept on the project.
8. Demolition of all buildings and structures shall be conducted under the supervision of a Competent Person. The Competent Person shall conduct field inspections as the work progresses, to ensure that the demolition plan is being implemented and adhered to by the Contractor and to detect hazards that may have developed during the course of the demolition process. A daily inspection shall be documented and any deficiencies corrected immediately.
9. Prior to concrete cutting operations where energized utilities may be present, the employer shall ascertain by inquiry or direct observation, or by instruments, whether any part of an energized electrical power circuit, exposed or concealed, is so located that the performance of the work may bring a person, tool, or machine into physical or electrical contact with the electrical power circuit and marked.
10. The Contractors shall implement and follow their submitted dust control plan throughout the demolition process as required.
11. All floor and wall opening created during the course of demolition shall be guarded and posted according requirements set forth in this program.
12. All protruding nails or other sharp objects shall be pulled, bent over, or rendered harmless.
13. No demolition debris shall be dumped from heights greater than 10 feet without the use of enclosed debris chutes. Use of barricades, delineation or spotters shall be used whenever debris is being dumped from any height. Delineation or barricades shall be placed at a distance far enough to prevent exposure from falling debris.
14. All stairways, passageway, and ladders being used for access and egress shall be positively identified. All others shall be barricaded and closed entirely.
15. Housekeeping shall be maintained at all times. Walkways and passages shall be kept clear and defined.
16. The Contractor shall follow the Personal Protective Equipment requirements found in this Manual.
17. The Contractor shall have a Fire Protection/Hot Work policy in place.
18. Additional fire protection requirements may be required when direct area suppression systems have been deactivated.
19. The following is a National Association of Demolition Contractors Engineering Survey.



Demolition Engineering Survey

Type of Structure _____

Location _____ Basement _____

Stories or Height _____ Size of Structure _____

Locate Party Walls _____

Are wall ties required? _____ How many? _____ What type? _____

Structural Hazard _____

Is shoring of walls or floors required? _____

Type of shoring and location(s) _____

Protection for adjacent properties _____

Existing damage in adjacent structures (include photos) _____

Protection for the public _____

Methods of demolition _____

Utilities and their locations (power lines, telephone, cable lines, etc.) _____

Location of tanks _____

Previous use of tanks _____

Have tanks been purged & tested? _____ By whom/date? _____

Safety Data Sheets provided by Owner (attach all SDSs) _____

PCBs _____

Asbestos (attach survey) _____

Lead (attach survey) _____

Location of pits or open holes (attach map if necessary) _____

Special hazards and remedies _____

Comments _____

_____ _____

Signature Date

Public Hazard Control

A. Scope
This section defines minimum requirements for the protection of the general public subject to hazards arising from operations connected with the construction, maintenance and repair, and demolition of structures in the vicinity there of.

B. Purpose
To evaluate and prevent or reduce to a minimum injury to persons or their property while assessing the Port facilities.

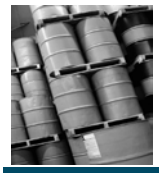
C. Reference
Port of Seattle Project Manual Division 1, 01 50 00 – Temporary Facilities and Controls, Uniform Manual of Traffic Control Devices, & ANSI A10.34-2001.

D. General Requirements
1. Port properties are operating facilities that must remain in full operation throughout the term of this contract. The Contractor shall conduct all operations with the least possible obstruction and inconvenience to the Port, its tenants and the public.
2. The Contractor shall develop a Public Hazard Control Plan for the project.
3. The Plan shall ensure the safety of passengers, tenants, employees, suppliers or vendors traveling on Port property, roadways, sidewalks, or any area accessed by the public where work is being performed. All operations taking place above or adjacent to vehicular, pedestrian, or air traffic areas shall be addressed.
4. The plan shall communicate to all employees, including subcontractor employees at any tier, their responsibilities under the plan.
5. The Contractor shall appoint one employee as the Contractor's point of contact. The appointed representative shall have the authority to act on behalf of the Contractor and shall be available, on call, twenty-four hours a day, throughout the duration of the contract. A twenty-four hour telephone number shall be provided to the Engineer for use in case of an off-hour emergency. The Contractor shall provide immediate response to correct all deficiencies upon notification.
6. The Contractor shall be responsible for the placement and maintenance of all devices and signage required for the protection of the public.
7. The Contractor shall perform daily inspections of the work to ensure their plan is fully implemented and operational. All inspections shall be documented.
8. All necessary measures shall be taken to prevent any materials from migrating from the work site into areas occupied by the public. This includes, but is not limited to dust, mud track-out, debris, construction materials, liquids, mists, vapors, and fumes.
9. Barricades shall be provided to delineate the work area from areas used by the public. The barricades shall be suitable for the hazard and location and shall be constructed in accordance with the requirements found in Division 1 –01 50 00 – Temporary Facilities and Controls.

10. The Contractor shall construct dust, vapor, fume, and smoke-proof enclosures to separate the work area from the central HVAC and public whenever welding, dust, vapor, or fume generating activities take place.
11. The Contractor shall perform daily inspections of the work to ensure their plan is fully implemented and operational. All inspections shall be documented.
12. In the event an accident occurs involving the public, the Contractor shall notify the Engineer and Program Safety Director immediately. The Contractor shall conduct an investigation and submit a written report within 24-hours to the Engineer and Program Safety Director.
13. The plan shall also include the names and phone numbers of fire, police, ambulance, and Port personnel.
14. Any statements to the news media shall be made through the Port of Seattle's Public Affairs Department.

E. Hazards to Consider
   1. Traffic Hazards
      a. The Contractor shall prepare a traffic control plan. The plan shall be in accordance with 01 55 26 – Traffic Control as found in the Port of Seattle Project Manual / Division 1.
      b. The Contractor shall provide and maintain controls as required to warn and protect the public, tenants, and Port employees from injury or damage caused by the Contractor's operations. No work shall be performed on or adjacent to any vehicular or pedestrian roadway/walkway until all necessary signage and traffic control devices have been approved and are in place.
   2. Pedestrian Hazards
      a. At all times during construction, areas designated for pedestrian traffic shall be clearly delineated and maintained so that no hazard to the public exists.
      b. Public areas adjacent to the work shall be protected to reduce hazards to pedestrians from falling objects or debris.
      c. Pedestrian barriers and enclosures shall be built to the specifications found in Division 1 / 01 50 00 – Temporary Facilities and Controls/ Part 1.08.
      d. Where pedestrian access is impacted, suitable safe access shall be provided. The pathway shall be clearly marked with lighting provided.
      e. Ensure that hazards that may cause slipping, tripping, or falling are eliminated or minimized.
      f. Non-level surfaces shall be delineated with high visibility markings and/or signage.
      g. Stairs, ramps, and elevated walkways shall be provided with standard guardrails. Those exposed to weather shall be constructed with non-slip surfaces.
      h. All welding, cutting or grinding operations shall be provided with shields. Welding fumes shall be mitigated by the use of high efficiency filtration units such as the Plymo Vent MK 800.

3. Illumination
    a. In public areas, the Contractor shall provide temporary lighting to maintain lighting levels present prior to the beginning of work during the duration of operations.
    b. All walking surfaces, pathway, stairs, tunnels, ramps, and bridges, and bridge crossings shall be adequately illuminated at all times.
    c. All construction lighting shall be directed or shielded so as not to become a hazard to vehicular or pedestrian traffic.
    d. Daily inspections of these areas shall be performed.
4. Construction Equipment and Vehicles
    a. Access to all equipment and vehicle operations shall be restricted by the Contractor by the use of barricades, fencing, warning signs, or personnel.
    b. When equipment or other vehicles must enter or exit the construction site, the Contractor shall warn the public by use of electric reader boards, flaggers and traffic control devices.
    c. The Contractor shall provide and maintain crushed rock roadway traffic zones at staging areas and site access locations to ensure entrance, staging areas and surrounding roads are free from mud.
    d. Contractor's equipment that is operated on public roadway traffic areas shall be equipped with "slow moving vehicle" placards and overhead warning lighting.
    e. The Contractor shall not hoist any loads over any active public roadway, sidewalks, or areas utilized by the public.
    f. All construction vehicles and equipment on the project operating between 10:00 PM and 7:00 AM shall be equipped with an ambient noise sensing variable volume reverse alarm system in compliance with WAC 296-155-615.
5. Falling objects and windblown objects
    a. Where there is a possibility of objects, tools, construction materials, or debris to fall, be blown, or otherwise be propelled into public areas or onto roadways, the Contractor shall install barriers, catch platforms, enclosures, debris netting, or implement other administrative or engineering controls.
    b. Controls that are implemented shall be of sufficient strength to prevent public impact.
6. Security
    a. Provide security and facilities to protect the work and the Port's operations from unauthorized entry, vandalism, and theft.
    b. The construction area shall be closed to the public at all times.
    c. For outdoor areas, a 6-foot chain link fence with gates shall be provided around the perimeter of the site during the entire length of construction unless approved otherwise by the Port.
    d. The 24-hour contact number(s) of the person(s) responsible for security of the work area shall be furnished.



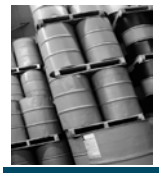
Material Handling & Storage

A. Scope
This section defines the minimum requirements for material handling and storage on all Port of Seattle construction projects.

B. Purpose
To reduce or eliminate the potential of injury to Contractor employees and visitors performing work on Port of Seattle construction projects.

C. Reference:
WAC 296-155 Part F [Storage, use, and disposal] and Part F-1 [Rigging requirements for material handling].

D. General material storage safety
1. Make sure that all materials stored in tiers are stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse.
2. Post conspicuously the maximum safe load limits of floors within buildings and structures, in pounds per square foot, in all storage areas, except for floor or slab on grade. Do not exceed the maximum safe loads.
3. Keep aisles and passageways clear to provide for the free and safe movement of material handling equipment or employees. Keep these areas in good repair.
4. Do not store materials on scaffolds or runways in excess of supplies needed for immediate operations.
5. Use ramps, blocking, or grading when a difference in road or working levels exists to ensure the safe movement of vehicles between the two levels.
6. Do not place materials stored inside buildings under construction within 6 feet of any hoistway or inside floor openings, or within 10 feet of an exterior wall that does not extend above the top of the material stored.
7. Segregate non-compatible materials in storage.
8. Stack bagged materials by stepping back the layers and cross-keying the bags at least every ten bags high
9. Do not stack bricks more than 7 feet high. When a loose brick stack reaches a height of 4 feet, taper it back 2 inches for every foot of height above the 4-foot level.
    a. Never stack bricks, for storage purposes, on scaffolds or runways.
    b. Always stack blocks; do not throw in a loose pile.
10. When stacking masonry blocks higher than 6 feet, taper back the stack one-half block per tier above the 6-foot level.
    a. When stacking inside a building, distribute the piles to prevent overloading the floor.
    b. Do not drop or throw blocks from an elevation or deliver blocks through chutes.
11. Do not stack lumber more than 20 feet high; if handling lumber Manually, do not stack more than 16 feet high.
    a. Remove all nails from used lumber before stacking.
    b. Stack lumber on level and solidly supported sills, and such that the stack is stable and self-supporting.



   c. Stack stored lumber on timber sills to keep it off the ground. Sills must be placed level on solid supports.
   d. Place cross strips in the stacks when they are stacked more than 4 feet high.
12. If not racked, stack and block structural steel, poles, pipe, bar stock, and other cylindrical materials as to prevent spreading or tilting.
   a. Wear heavy gloves when handling reinforcing steel.
   b. When bending reinforcing steel on the job, use a strong bench set up on even dry ground or a floor to work on.
   c. Carefully pile structural steel to prevent danger of members rolling off or the pile toppling over.
   d. Keep structural steel in low piles, giving consideration to the sequence of use of its members.
   e. Stack corrugated and flat iron in flat piles, with the piles not more than 4 feet high; place spacing strips between each bundle.
13. General Rigging Equipment Safety shall comply with WAC 296-155 Part F-1 [Rigging requirements for material handling]:
   a. Inspect rigging equipment for material handling prior to use on each shift and as necessary during its use to ensure that it is safe. Remove defective rigging equipment from service.
   b. Never load rigging equipment in excess of its recommended safe working load.
   c. Remove rigging equipment when not in use from the immediate work area so as not to present a hazard to employees.
   d. Mark special rigging accessories (i.e., spreader bars, grabs, hooks, clamps, etc.) or other lifting accessories with the rated capacity. Proof test all components to 125% of the rated load prior to the first use. Maintain permanent records on the job site for all special rigging accessories.
14. Disposal of waste materials:
   a. Whenever materials are dropped more than 20 feet to any point lying outside the exterior walls of the building, use an enclosed chute of wood or equivalent material.
   b. When debris is dropped without the use of chutes, make sure that the area onto which the material is dropped is completely enclosed with barricades at least 42 inches high and 20 feet back from the projected edge of the opening above. Post at each level warning signs of the hazard of falling materials. Do not remove debris in this lower area until debris handling ceases above.
   c. Remove all scrap lumber, waste material, and rubbish from the immediate work area as the work progresses.
   d. Make sure to comply with local fire regulations if disposing of waste material or debris by burning.
   e. Keep all solvent waste, oily rags, and flammable liquids in fire-resistant covered containers until removed from the work site.

Washington State Department of HEALTH

Washington State Department of Health

PFAS Testing Results Dashboard

PFAS in Drink

This map shows PFAS results from drinking water testing at Group A public water syster
including test results (results will display in the table below the map). Flow patterns in
mean that your home receives water from that source. Please contact your water syste
altered slightly from their actual location for security reasons, but still provide general l
first time, a second confirmation sample is required. The initial and confirmation sample
are not shown on this map or table.

View State Action Levels

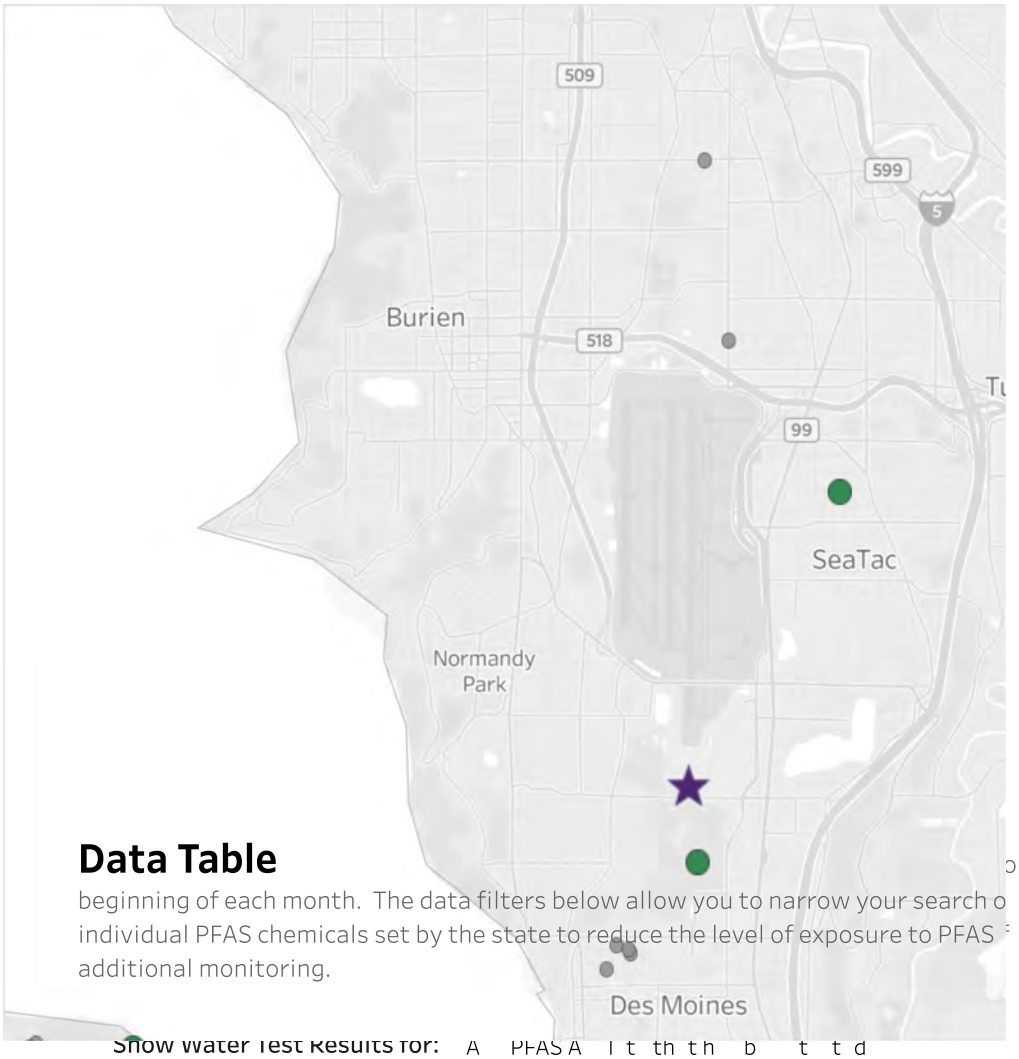
Click to learn more about PFAS water testing data in Washington

MAP LEGEND

Selections made determine which water source data are inc

- (•) Map the most recent PFAS test result for each water source
- ( ) Map the highest PFAS test result for each water source

Not Tested	No PFAS detected	PFAS detected at levels below State Action Level (SAL)
Include	Include	Exclude



Data Table

beginning of each month. The data filters below allow you to narrow your search o
individual PFAS chemicals set by the state to reduce the level of exposure to PFAS
additional monitoring.

Show water test results for: A PFAS A t th th b t t d