ENVIRONMENTAL CHECKLIST

Implementation of Cleanup Action Plan (CAP) at the Port of Seattle
Terminal 91 (T-91) Tank Farm Affected Area (TFAA)

A. BACKGROUND

1. **Name of proposed project, if applicable:** Implementation of Cleanup Action Plan (CAP) at the Port of Seattle Terminal 91 (T-91) Tank Farm Affected Area (TFAA)

2. **Name of applicant:** Port of Seattle – POS SEPA 10-06

3. **Address and phone number of applicant and contact person:**

Kathy Bahnick
Port of Seattle
2711 Alaskan Way
Seattle, Washington 98121
206-787-3128

Galen Tritt
Bellingham Field Office
1440 10th Street, Suite 102
Bellingham, Washington 98225-7028
360-715-5232

4. **Date checklist prepared:** July 2, 2010

5. **Agency requesting checklist:** Washington State Department of Ecology (Ecology)

6. **Proposed timing or schedule (including phasing, if applicable):** In 1998, Ecology, the Port of Seattle (Port), Pacific Northern Oil Corporation (PNO) and Burlington Environmental, doing business as Philip Services Corp. (PSC), entered into a legal agreement called an Agreed Order (AO). Under this AO, the Port, PNO, and PSC agreed to conduct a Remedial Investigation and Feasibility Study (RI/FS) for the tank farm affected area (TFAA).[1] Subsequently, PNO went out of business and PSC filed for bankruptcy protection. The Port has continued on its own to complete the RI/FS work.

   Between 2009 and 2010, the Port and Ecology re-negotiated and revised the 1998 AO. Among other things, the new AO removes PNO and PSC from the AO and incorporates cleanup requirements for the rest of the Port's T-91 facility adjacent to the former tank farm site. The 2010 AO provides that the Port will complete a Draft and Final CAP for the site. This checklist reviews the environmental impacts anticipated from the CAP proposed for the site.

   Once the CAP is final, the Port and Ecology will negotiate another AO to address responsibilities for the required cleanup construction and other elements of the remedy. The remaining cleanup decisions and actions will be completed in accordance with the schedule below. This schedule anticipates the cleanup construction will occur during the 2012 to 2013 timeframe.

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[1] The RI identified the nature and extent of contamination at the former tank farm site. The FS assessed alternative ways of cleaning up the contamination.

Cleanup Action Task	Estimated Completion Date
Finalize 2010 AO and Permit	July 2010
Public Review of Draft CAP	October 2010
Finalize CAP	November 2010
Finalize Cleanup Order	February 2011
Cleanup Action Construction	2012 to 2013

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Following implementation of the cleanup remedy, the Port will maintain the project area in a manner consistent with the terms of the Final Cleanup Order. Any future development following cleanup will be proposed to be consistent with cleanup objectives, to provide necessary institutional controls to maintain the integrity of the containment structure, and to be consistent with current land use designations and zoning.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

The following documents have been prepared:

- 1998 and 2010 AOs
- Resource Conservation and Recovery Act (RCRA) permit
- Draft RI/FS
- Public Participation Plan (Exhibit D of the 2010 AO)

In addition, Appendix E of the 2010 AO contains a complete list of all of the reports that have been prepared for the site since 1998. The Draft CAP for the TFAA, which is the subject of this SEPA checklist, has been prepared and will undergo public comment concurrent with the SEPA public comment period.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

The 2010 AO was signed in June 2010 and the RCRA permit is anticipated to be signed before the SEPA public notice is published., The RI/FS is still pending final approval from Ecology; however, it is anticipated that this document will be finalized when the SEPA public notice for the TFAA is published. Additionally, the Draft CAP will need to be approved by Ecology and finalized after it goes through a public comment process, which will occur concurrently with the SEPA public notice process.

10. List any government approvals or permits that will be needed for your proposal, if known.

Remedial actions at a facility under an AO are exempt from state and local government permits or approvals for the remedial actions. Ecology ensures substantive compliance with requirements of state and local authorization and permits.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site.

There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The site covered in the Draft CAP is defined as the TFAA, which includes "the Tank Farm Lease Parcel and areas where releases of dangerous constituents originating from the Tank Farm Lease Parcel operations have come to be located." The Tank Farm Lease Parcel (Lease Parcel) is a contiguous parcel, approximately 4 acres in size, located within the confines of the Port's T-91 Complex. This project to implement the CAP involves two main elements: the

presumptive cleanup actions that address areas outside the Lease Parcel and adjacent areas, and the Lease Parcel cleanup action. A vicinity map is provided as Figure 1 and a site plan as Figure 2.

Historically, chemicals of concern at the Lease Parcel included petroleum products, which are considered hazardous substances under the Model Toxics Control Act (MTCA), as well as volatile organic compounds, semi-volatile organic compounds including polycyclic aromatic hydrocarbons, metals, and polychlorinated biphenyls. These substances were released to soil and groundwater primarily from aboveground storage tanks, fuel distribution piping systems, and other activities associated with historical operations at the Lease Parcel. These activities included storage of petroleum products and treatment and storage of dangerous waste. Results from soil and groundwater investigations performed over the past 20 years, along with results from current annual groundwater monitoring, have been submitted to Ecology and the U.S. Environmental Protection Agency (EPA).

Two of the primary contaminants found at the TFAA are Light Non-Aqueous Phase Liquid (LNAPL) and Total Petroleum Hydrocarbon (TPH). LNAPLs are liquids that are sparingly soluble in water and less dense than water. For example, oil is an LNAPL because it "floats" on top of water and does not mix with water. TPH is a term used to describe a large family of several hundred chemical compounds that originally come from crude oil.

Presumptive Cleanup Actions

A series of presumptive cleanup actions were identified to address the following aspects of the TFAA:

- Preventing exposure via direct contact with contaminated soil and inhalation of vapors by future subsurface workers
- Preventing exposure of future workers and trespassers via inhalation of indoor air impacted by migration of vapors originating from contaminated soil and groundwater
- Secondary sources
- Groundwater downgradient of the Lease Parcel

Institutional controls are proposed to be implemented to address potential future exposure of subsurface workers to Indicator Hazardous Substances (IHSs) in soil and groundwater via the direct contact, vapor inhalation, and particulate inhalation pathways and the potential future exposure of workers or trespassers via the indoor air pathway. The institutional controls proposed to be implemented to address these potential pathways are detailed in the Draft CAP.

Lease Parcel Cleanup Action

The Lease Parcel cleanup action that is considered in this SEPA checklist is the Draft CAP's Alternative 4 – Containment, Subsurface Structure Removal, and Enhanced LNAPL Recovery. The primary objective of Lease Parcel Alternative 4 is to prevent migration of LNAPL from the Lease Parcel source area and to prevent future surface product seeps from occurring.

The proposed Lease Parcel cleanup action includes:

- Constructing a subsurface containment wall around the perimeter of the former tank farm
- Removing the remaining subsurface structures and tank bases that appear to be the source of the current seeps
- Removing highly contaminated soil encountered during the tank bottom removal process
- Installing an enhanced passive LNAPL recovery system
- Replacing the existing asphalt paving with new asphalt paving
- Completing site drainage improvements
- Conducting annual asphalt paving inspections and repair

- Performing LNAPL monitoring and passive recovery
- Conducting compliance monitoring and reporting

The purpose of the containment wall is to prevent migration of LNAPL from the Lease Parcel and to prevent groundwater from flowing through the source area. Removing the existing subsurface structures and highly contaminated soil, along with replacing the existing asphalt paving, will prevent future direct contact with impacted soils, minimize infiltration of precipitation, and effectively eliminate the potential for surface LNAPL seeps to occur. Improvements will be made to existing site drainage infrastructure to prevent stormwater from ponding on the asphalt paving.

Prior to commencing the containment wall construction activities described below, all 16 monitoring wells within the footprint of the former tank farm are proposed to be decommissioned and the existing asphalt paving removed and hauled off site for disposal. In addition to the pavement, all of the remaining subsurface structures, including concrete containment wall footings, steel tank bases, concrete tank bottom "floors," and other structures are proposed to be removed. This will require removal of all of the subgrade and fill between the existing asphalt paving and the former tank bottom floor and tank bases (approximately 6,250 cubic yards [cy], or 9,400 tons). The steel tank bases will be decontaminated as necessary and transported off site for recycling as scrap metal.

The containment wall will be approximately 2 feet wide and 1,550 feet long, and will extend to an average depth of approximately 20 feet below ground surface. The wall will be constructed based on site soil types and compatibility with site groundwater and LNAPL. The depth of the wall was established to be approximately 10 feet below the low water table to prevent migration of LNAPL and minimize contact of groundwater from outside the wall with the most impacted source material.

It is anticipated that once the existing paving and subsurface structures (including tank bases) are removed and the underlying soil is exposed, there will likely be one or more areas of surface soil that are visibly and highly contaminated with petroleum. In order to minimize the potential for these soils to act as a source of future seeps, these areas of highly contaminated surface soil are proposed to be removed. It is assumed that approximately 240 tons of soil (10 areas each measuring 12 feet square and 3 feet deep) need to be removed, characterized, and disposed of off site.

The enhanced LNAPL recovery system will be designed to remove the recoverable LNAPL to the extent practicable using passive recovery techniques. The five trenches would be approximately 50 to 75 feet long, 2 feet wide, and completed approximately 10 feet below the surrounding grade. Each trench would be backfilled with pea gravel, with a section of 6-inch slotted pipe running the length of the trench installed at average low water table elevation. At both ends of the trench, a cleanout well will be installed. These wells would be completed to the bottom of the trench and also connected to the slotted pipe within the trench. As LNAPL collects within the gravel backfill and the slotted piping and cleanout wells, it would be removed either by bailing or pumping depending on the quantity of LNAPL present.

Once the containment wall and asphalt paving have been installed, ongoing operation and maintenance (O&M) activities will be necessary. The enhanced LNAPL recovery system is assumed to be operated and maintained on a monthly basis for 3 years, bimonthly (every 2 months) for an additional 2 years, and quarterly for 5 years (for a 10 year total operation period). Recovered LNAPL and water will be disposed of as approved by Ecology. In addition to the operation of the enhanced LNAPL recovery system, O&M activities will include annual asphalt paving inspections and maintenance and LNAPL monitoring and passive recovery outside the area of influence of the enhanced LNAPL recovery system.

The improvements in Alternative 4 are proposed because they effectively eliminate the potential for product seeps through the asphalt paving by removing all of the remaining subsurface structures, including all of the remaining tank bases, as well as remove highly contaminated surface soil from the former tank farm area and constructing new asphalt paving. The enhanced LNAPL recovery system would further reduce the potential for surface seeps.

Alternative 4 would address the cleanup standards related to LNAPL by using a combination of the enhanced LNAPL recovery system to remove recoverable LNAPL from the Lease Parcel and adjacent areas, and construction of a containment wall around the former tank farm. Outside the area affected by the enhanced

LNAPL recovery system, monitoring and passive recovery activities are proposed to be implemented. By removing the recoverable LNAPL and surrounding the former tank farm area with a containment wall, Alternative 4 will greatly reduce the potential for migration of LNAPL from the source area. Because all of the subsurface structures and the highly contaminated surface soil are proposed to be removed in this alternative, many of the potential soil sources for LNAPL migration to groundwater are removed and the potential for future groundwater contamination at the TFAA is significantly reduced.

Secondary Source Areas

The three secondary source areas within the Site are Solid Waste Management Unit (SWMU) 30, Area of Concern (AOC) 11, and the former fuel transfer pipelines.

The presumptive remedy for SMWU 30 includes excavating two areas with evidence of LNAPL to a depth of 9 to 12 feet, totaling approximately 4,300 square feet and approximately 1,000 cy. The LNAPL- and TPH-impacted soil will be stockpiled and profiled for off-site disposal at an approved facility. As part of the excavation, three monitoring wells will be decommissioned.

AOC 11 generally does not contain LNAPL or extensive areas of significant soil contamination that may lead to future LNAPL accumulation. Therefore, aggressive source removal actions similar to those proposed for SWMU 30 are not currently proposed for AOC 11. The proposed approach for addressing the residual contamination present in AOC 11 will be to implement a Monitored Natural Attenuation (MNA) program consistent with Ecology's MNA guidance document (Ecology 2005a, 2005b). To monitor both the primary (TFAA) and secondary sources, wells along three flowpaths are proposed to be included in the program: a well (or wells) upgradient of the Lease Parcel to confirm the background water quality over time; a well or wells representative of the tank farm source water quality will be included to determine changes in the source area water quality; and wells along the Pier 90, Pier 91, and AOC 11 flowpaths will be included to determine plume water quality and sentinel well water quality. Additional wells may be needed to monitor the source area after remediation, or if wells at the site are damaged. Groundwater downgradient of the Lease Parcel will also be addressed under this MNA program.

A number of subsurface fuel and wastewater transfer pipelines remain in place, running between the Lease Parcel and Piers 90 and 91. Although some of these remaining pipelines have been recently cleaned or otherwise decommissioned in place and in some cases removed, there may be pipelines that remain in place that have not been cleaned and could contain residual petroleum products. To prevent residual product in the remaining pipelines from becoming a future LNAPL source, the following actions are proposed:

- Prepare an inventory of pipelines known to be remaining in place that have not been properly cleaned and abandoned
- Develop and implement a plan to clean and abandon in place the identified pipelines

The plan to clean and abandon identified pipelines in place will include specific procedures for characterizing and managing residual materials in the pipelines, cleaning and decommissioning techniques, and reporting and documentation requirements. Unless a pipeline needs to be physically removed for development reasons, it is assumed that all pipelines will be cleaned and decommissioned in place. The plan also will identify procedures for handling currently unidentified pipelines that may be discovered in the future during maintenance or site development activities. Although the exact lineal footage of pipelines remaining is unknown, available information suggests that there could be as much as 22,000 feet of pipelines in and around the Lease Parcel and extending to the piers.

12. **Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

The TFAA is generally located at 2001 West Garfield Street, Seattle, Washington 98119 (latitude 47 degrees 38 minutes 08 seconds North and longitude 122 degrees 22 minutes 50 seconds West). A vicinity map is provided as **Figure 1**.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other .....

The TFAA is generally flat.

b. What is the steepest slope on the site (approximate percent slope)?

The TFAA is entirely covered by impervious surfaces including asphalt and concrete. The steepest slope on site varies between 2% to 5%.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any primefarmland.

Studies undertaken by the Port in the TFAA and at T-91 in general have identified several geologic units. Most of T-91 is covered with undifferentiated fine-grained fill material designated as the "Shallow Sand Unit" that overlies native glacial sediment. The fill material layer extends to depths of 15 to 20 feet below ground surface in the Lease Parcel vicinity and thickens to the south of the piers. The TFAA is completely covered by this unit. Two areas are designated for excavation under this proposal:

1) SWMU 30, on Pier 91, is proposed to be excavated to a maximum depth of 12 feet below ground surface. This area is in an area of thicker fill material, and the excavation is not expected to intersect native material.
2) At the Lease Parcel, shallow hotspot excavations are not expected to encounter native material, although the final depth of those potential excavations has not yet been determined and will depend on field conditions.

The LNAPL recovery trenches are proposed to be excavated to a depth of approximately 10 feet and it is unlikely that native material will be encountered. However, the containment wall proposed in the Draft CAP extends to a depth of 20 feet below ground surface. The containment wall excavation could embed into native material, depending on the location of the containment wall and actual field conditions.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Filling and grading activities proposed at the TFAA include excavating two areas at SMWU 30 that have evidence of LNAPL, removing all of the subgrade and fill between the existing asphalt paving and the former tank bottom floor and tank bases at the Lease Parcel, removing soils underlying the subgrade at the Lease Parcel, and excavating trenches for the enhanced LNAPL recovery system and containment wall. In total, an estimated 12,000 cy of soil, asphalt, and concrete are proposed to be excavated from the TFAA. All excavated materials will be evaluated and either sent off site to an appropriate and Ecology-approved disposal facility, or reused onsite as backfill material. It is anticipated that approximately 2,500 cubic yards of contaminated materials would be sent to an off-site Ecology-approved disposal facility.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

The site is located in an urban environment; the erosion hazard is slight because all areas to be affected by this cleanup action are currently covered with impervious surfaces. Construction associated with planned cleanup could have erosion impacts on soils exposed during construction and temporary soil stockpiles needed during construction, which could cause on-site and off-site transport of sediment.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

The Lease Parcel and any other areas of existing impervious surfaces disturbed during remedial actions will be covered with impervious surfacing after project construction.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

During construction, temporary erosion and sediment control measures and Best Management Plans (BMPs) meeting the substantive requirements of the City of Seattle stormwater control and grading regulations and the Construction General National Pollutant Discharge Elimination System (NPDES) permit will be implemented as necessary to control erosion. Any exposed soils will be within an excavated area, below grade, and unlikely to cause off-site sediment transport. Any stockpiled materials from the project will be contained or covered using appropriate erosion control BMPs. Removing contaminated soils and replacing them with clean backfill will reduce impacts to the earth.

2. Air

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Because of the nature of this project, emissions associated with the project are due almost entirely of short-term construction-related emissions. There are three potential sources of air emissions that could result from construction of the project: emissions from construction equipment, fugitive dust, and emissions from contaminated soils that are exposed during construction. Additionally, air emissions could result from exposure related to future, post-project implementation, site development activities. However, there are currently no plans for the property after the paving is completed and no way to estimate what air emissions may be associated with future use of the property.

Emissions from Construction

Greenhouse Gas Emissions

The project would generate GHG emission through the operation of diesel- and gasoline-powered equipment and transport of materials, soil and workers to and from the site. For this project, GHG emissions are estimated in terms of carbon CO2e (Carbon dioxide emissions). CO2e is the term used to express the global warming potential of all greenhouse gases, as their equivalent in CO2 emissions. Diesel emits approximately 26.55 lbs CO2e/gallon and gasoline emits approximately 24.3 lbs CO2e/gallon. Values are typically calculated in pounds or metric tons of CO2e. The GHG emissions are calculated in addition to lifecycle GHG emission (see Attachment A - Greenhouse Gas Emission Worksheet) based on conservatively expected equipment usage and project duration for construction is assumed to be approximately 6 months. Based on this analysis approximately 1,791,450 lbs CO2e or 812 metric tons CO2e will be produced during construction.

Following construction the site will be covered with asphalt. Using the City of Seattle GHG emissions worksheet, the lifespan emissions for 124,000 square feet of paving equal 6,200,000 lbs CO2e or 2812 metric tons CO2e.

Air Emissions from Exposed Soils

Air emissions resulting from exposed soils during construction could also occur, specifically from the excavations at SWMU 30 and the Tank Farm Lease Parcel. The quantity of emissions related to these excavations are unknown but will be limited by the relatively short duration that soils would be exposed, the nature of the majority of the contaminants (diesel or oil range hydrocarbons), and by construction sequencing that will limit the area of contaminated soil exposed at any one time.

The Draft CAP addresses the potential pathways for air emissions resulting from the project and specifically considers Soil to Indoor Air and Groundwater to Indoor Air pathways. For both of these potential pathways,

inhalation of indoor air from soils or groundwater does not represent an unacceptable risk to workers at the site under current conditions. However, the Draft CAP notes that potential future exposures via this pathway could result from future site development activities. The site will be covered with impervious surface that will limit the potential for air emission exposures after construction of the project.

Worker exposure to air emissions could result from exposing remediated areas during future site development activities. The Port will review any proposed development activities at the TFAA to ensure that the potential for exposure to air emissions is minimized and that proper safety measures and BMPs are employed to minimize risks associated with air emissions.

Fugitive Dust emissions during construction

Fugitive dust impacts associated with construction are not anticipated to be significant. Construction contractors would comply with the regulatory requirements and implement appropriate dust control measures, as necessary.

Post-construction emissions

Air emissions could result from exposure related to future, post-project implementation and site development activities. However, there are currently no plans for the property after the paving is completed and no way to estimate what air emissions may be associated with future use of the property. For the purposes of this analysis the site will largely remain unused except for occasional outdoor storage or intermittent parking for tenants currently working in T91. Any new development will require additional SEPA analysis of environmental impacts.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no off-site sources of emissions or odor that will affect the proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:
Measures to minimize fugitive dust emissions from construction may include:

- Spraying exposed soil and storage areas with water during dry periods.
- Covering exposed earth stockpiles and loads of excavated material being transported from the site.

Vehicular emissions associated with construction are anticipated to be short-term in nature. Measures to minimize vehicular emissions would be implemented as required and may include:

- Requiring contractors to use best available control technologies.
- Proper vehicle maintenance.
- Minimizing vehicle and equipment idling.

Measures will be taken to minimize emissions and worker exposure to contaminated soil exposed during construction.

- The Health and Safety Plan (HASP) developed for the project will address potential worker exposure to air emissions resulting from construction activities. The HASP will include a vapor monitoring component and all workers on the project will be required to adhere to the elements of the HASP to limit potential exposure to air emissions.
- BMPs will be implemented during construction to minimize the potential for exposure to air emissions.
- After construction, the TFAA will be covered with impervious surfacing and institutional controls will be implemented to minimize exposure to indoor air emissions.

Institutional controls will be implemented to address potential future exposure of subsurface workers to IHSs in soil and groundwater via the direct contact, vapor inhalation, and particulate inhalation pathways and the potential future exposure of workers or trespassers. BMPs will be implemented to reduce or control air emissions from the project, including limiting the amount of exposed soils to the greatest extent practicable.

3. **Water**

a. Surface:

1) **Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.**

The Smith Cove Waterway is located to the south of the proposed project. This waterway is located in Smith Cove, which is associated with Elliott Bay. Additionally, an isolated impoundment known as the Short Fill Impoundment is located immediately south of the project area.

2) **Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

The project will not require any in- or over-water work. Portions of the project, including the remediation activities at SWMU 30 and the southern portion of the Lease Parcel, and cleaning and abandoning identified pipelines will occur within 200 feet of either the Smith Cove Waterway or the Short Fill Impoundment.

3) **Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

No fill or dredged material will be placed in or removed from surface waters or wetlands.

4) **Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.**

The proposal will not require surface water withdrawals or diversions.

5) **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

The proposal is outside of the 100-year floodplain.

6) **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

The proposal does not involve any discharges of waste materials to surface waters.

b. Ground:

1) **Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.**

A portion of the trenching and excavation will occur below the water table. Any required dewatering activities necessary to complete construction will assume the recovered material (groundwater, stormwater, and soil/sediment) is contaminated. Efforts will be made to limit the volume and duration of dewatering. The contractor will be responsible for managing and disposing of all materials removed during excavations. If groundwater is encountered and dewatering becomes necessary, groundwater will be detained on site until testing and treatment can occur. After collected water has been adequately profiled and treated according to the requirements for the disposal method selected, the water will be disposed of either through discharge to the sanitary sewer under a King County discharge permit or off site at a licensed disposal facility.

2) **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing thefollowing chemicals. . . ; agricultural;**

etc.). Describe the general size of the system, thenumber of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material will be discharged into the ground.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collectionand disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Stormwater generated by precipitation during construction will be collected and detained within the work area until tested and profiled for appropriate disposal. Analytical testing performed on collected stormwater will be focused on sanitary discharge requirements or off-site disposal requirements. Other stormwater management controls include requirements to minimize or eliminate stormwater contact to exposed, potentially contaminated soils, by covering stockpiles to protect from weather; minimizing the footprint of the open work area; and protecting existing catchbasin inlets and sweeping the ground surface in work areas to avoid migration of soils from the work area. A construction Stormwater Pollution Prevention Plan/Temporary Erosion and Sedimentation Control Plan will be prepared that will detail the proposed plan for stormwater management, containment, and control; protection of catchbasin inlets; and methods of covering soil stockpiles. Some stormwater falling into the excavated area may infiltrate into the ground.

2) Could waste materials enter ground or surface waters? If so, generally describe.

The purpose of the project is to implement the Ecology-approved cleanup action at the TFAA. A containment wall will be installed around the perimeter of the Lease Parcel to prevent LNAPL and impacted groundwater inside the containment wall from interacting with groundwater outside the wall; some contaminated soils will be excavated. Once the excavation and fill activities are completed, the site will be paved with asphalt to prevent materials from entering ground or surface waters.

The project addresses cleanup standards related to LNAPL by using a combination of the enhanced LNAPL recovery system to remove recoverable LNAPL from the Lease Parcel and adjacent areas, and through construction of a containment wall around the former tank farm. By removing the recoverable LNAPL and surrounding the former tank farm area with a containment wall, the project will greatly reduce the potential for migration of LNAPL from the source area. Because all of the subsurface structures and the highly contaminated surface soil are proposed to be removed in this alternative, many of the potential soil sources for LNAPL migration to groundwater would be removed and the potential for future groundwater contamination at the TFAA would be significantly reduced.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

A containment wall will be installed around the perimeter of the Lease Parcel to prevent LNAPL from interacting with groundwater. All excavated and fill areas will be capped with asphalt to prevent surface water or precipitation from coming in contact with any remaining contaminated soils. All stormwater from the site will be collected, routed, and treated in accordance with Ecology and City of Seattle requirements. BMPs will be implemented during construction to minimize surface water, groundwater, and runoff water impacts

EFFECTS OF POTENTIAL SEA LEVEL

Scientists at the University of Washington Climate Impacts Group project that sea level will rise in the Puget Sound region as a result of climate change. In a range of possible scenarios, the medium estimate is that the sea level will rise approximately six inches by 2050 (Ecology's August 19, 2010 news release "*Ecology helps communities plan for rising sea level*").

This proposal looked at the impacts of such an event on the finished project. The post-cleanup monitoring of groundwater was projected to continue for a period of 30 years, during which time the projected medium estimate of sea level rise would be less than 6 inches. Excavation of contaminated soil, subsurface structure removal, cleaning

and decommissioning of fuel pipelines, and establishment of institutional and engineering controls are activities that are not expected to be impacted by the projected rise in sea level. The subsurface containment wall proposed in the CAP already is expected to extend well below the current water table, so minimal changes in groundwater levels that might be associated with a 6-inch rise in water levels are not anticipated to require changing the containment wall design. Likewise, fuel product recovery would not be significantly impacted by a minimal rise in groundwater levels. The groundwater sampling program will monitor potential changes in the chemistry of groundwater leaving the site so that the potential for impacts to surface water can be addressed.

4. Plants

a. Check or circle types of vegetation found on the site:

No vegetation exists where the work will occur on the TFAA.

——— deciduous tree: alder, maple, aspen, other
——— evergreen tree: fir, cedar, pine, other
——— shrubs
——— grass
——— pasture
——— crop or grain
——— wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
——— water plants: water lily, eelgrass, milfoil, other
——— other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

No vegetation will be removed or altered.

c. List threatened or endangered species known to be on or near the site.

No threatened or endangered plant species are known to occur on the T-91 site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

None

5. Animals

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, other: osprey, geese, ducks
mammals: deer, bear, elk, beaver, other: raccoons,
fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

No threatened or endangered animal species are known to occur on the TFAA. Elliott Bay is known to, or may, be used by federally listed animal species including the Georgia Basin/Puget Sound Distinct Population Segments (DPSs) of bocaccio rockfish (*Sebastes paucispinis*), canary rockfish (*S. pinniger*), and yelloweye rockfish (*S. Ruberrumis*); the Puget Sound Evolutionary Significant Unit (ESU) of Chinook salmon (*Oncorhynchus tshawytscha*); the Puget Sound DPS of steelhead (*O. mykiss*); and the Coastal-Puget Sound DPS of bull trout (*Salvelinus confluentus*). No additional Washington State listed species are known to occur in Elliott Bay.

c. Is the site part of a migration route? If so, explain.

The site is within the Pacific Flyway, a major north-south route of travel for migratory birds in the Americas.

d. Proposed measures to preserve or enhance wildlife, if any:

BMPs will be employed to prevent deleterious materials resulting from remedial activities from entering Elliott Bay.

6. Energy and atural resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meetthe completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity or gasoline may be required for the completed project to run the pumps for the enhanced LNAPL recovery system. The need to pump out LNAPL will be dependent on the amount of LNAPL recovered from the trenches. LNAPL will be bailed out of the recovery trenches if the recovered volume does not warrant use of pumps.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

None

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, riskof fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

The proposed CAP has been designed to protect human health and the environment from TFAA-related contamination. The project will remove approximately 2,500 cy of contaminated soil, isolate LNAPL sources and recover LNAPL within the Lease Parcel, clean and decommission identified pipelines in place, and set in place institutional controls to limit human and environmental exposure to remaining contaminants. Depending on the extent of soil contamination discovered during construction, additional contaminated soil may need to be removed to meet the project objectives. The full extent of contaminated soils will not be known until construction commences. All contaminants to be removed from the site during these activities will be disposed of as approved by Ecology.

To address potential risks to workers, a HASP will be developed prior to, and implemented during, construction of the project. Public safety concerns have been considered during the development of the Draft CAP and safeguards are included as part of the project to minimize risks to the public. Access to and from the areas to be remediated will be controlled to limit the potential for the public to enter the site.

1) Describe special emergency services that might be required.

No special emergency services are required for the project.

2) Proposed measures to reduce or control environmental health hazards, if any:

The HASP for the project will be strictly followed throughout construction to minimize human and environmental exposure to contaminated soils and groundwater. Site access will be controlled to prevent public access and limit public safety concerns.

b. Noise

1) What types of noise exist in the area which may affect your project (for example:traffic, equipment, operation, other)?

The existing acoustic environment varies throughout the site due to a variety of existing sources. The Burlington Northern Santa Fe (BNSF) mainline and rail yard located adjacent to the site are major sources of intermittent, high-energy train noise and truck traffic, affecting the entire project area. Other noise sources include street traffic noise from the Magnolia Bridge directly overhead from the project site and commercial and car noise generated from operations traveling to the cruise terminal and piers directly south of the project area. No noise exists in the area that will affect the project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Noise from traffic, and construction equipment, will occur during construction of the project. This noise will occur for approximately 3 to 6 months. Noise from large equipment such as cranes, loaders, and trucks would likely be audible from the nearest homes in Magnolia. Construction would likely include the use of smaller pieces of equipment like generators, compressors, and pumps, all of which would create noise. Such noise could increase the general drone from activity during construction. Noise generated by construction is proposed to be in substantive compliance with the timing restrictions and the noise limits included in the Seattle noise rule (Seattle Municipal Code [SMC] 25.08). Noise from construction is proposed to be limited to between the hours of 7 a.m. and 10 p.m. on weekdays and between 9 a.m. and 10 p.m. on weekends and legal holidays per SMC Chapter 25.08.

Future development of the site consistent with existing industrial allowed land uses and zoning could increase noise levels compared with current levels, depending on use. The types of uses permitted in the project area under current zoning include manufacturing, marine retail sales and services, warehouse, food processing, research and development/laboratory, and outdoor storage. No specific plans for development have been determined. In the near term, the site will be paved and used for light duty outdoor equipment storage or will remain unused.

3) Proposed measures to reduce or control noise impacts, if any:

Noise generated by construction is proposed to be in substantive compliance with the timing restrictions and the noise limits included in the Seattle noise rule (SMC 25.08). These regulations limit hours of construction and place limits on noise levels from construction impacts and ongoing operations.

8. Land and Shoreline use

a. What is the current use of the site and adjacent properties?

T-91 is a marine terminal used for the receipt and shipment of foodstuffs and frozen food; dry cargo storage; and moorage of barges, factory trawlers, and cruise ships. The proposed cleanup area is industrial in nature and bordered by other portions of T-91. Beyond the terminal boundaries, the site is bordered to the north by residential areas, the Interbay Golf Center, and rail lines; to the south by the Smith Cove Waterway; to the east by residential areas; and to the west by the Burlington Northern rail yard. A business corridor and major arterial corridor along 15th Avenue is approximately a 1/3 mile east of the TFAA. The Magnolia Bridge spans and bisects the TFAA, varying from 30 to 60 feet over the TFAA.

b. Has the site been used for agriculture? If so, describe.

The site has not been used for agriculture.

c. Describe any structures on the site.

The Magnolia Bridge, Building M-28, Building 19, portions of the City Ice building, Snider Petroleum warehouse, and temporary Port construction trailers occur within the TFAA. Only the Snider Petroleum warehouse, located directly north of the proposed main construction area, occurs within the Lease Parcel within the TFAA.

d. Will any structures be demolished? If so, what?

The Tank Farm tanks in the Lease Parcel were demolished in 2005. The Lease Parcel contains existing tank bases and piping that will be demolished and removed as part of the clean up action. The state Dangerous Waste regulations provide the framework for how to manage the various wastes, debris, and associated environmental media generated during cleanup actions at the TFAA. Two memoranda contained in Appendix B of the CAP, *Guidance for Waste Designation Procedures at Terminal 91* and *Management of the Port of Seattle's T91 Tank Farm Site Subsurface Debris*, provide guidance on debris removal encountered during cleanup.

e. What is the current zoning classification of the site?

General Industrial 1 (IG1) - U/45
The site is also part of the Ballard-Interbay-Northend Manufacturing Industrial area.

f. What is the current comprehensive plan designation of the site?

Industrial Area

g. If applicable, what is the current shoreline master program designation of the site?

The shoreline of the Smith Cove Waterway is designated Urban Industrial.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

No part of the site has been classified as an environmentally sensitive area. Smith Cove, as part of Elliott Bay, is designated as a shoreline of statewide significance.

i. Approximately how many people would reside or work in the completed project?

No people would reside or work in the area under this proposal. Future development of the site may include as of yet unidentified industrial uses, parking, or light open storage of equipment. Future uses will be addressed under a separate SEPA process when those uses are identified.

j. Approximately how many people would the completed project displace?

None

k. Proposed measures to avoid or reduce displacement impacts, if any:

None

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposal will remediate an existing industrial area that will remain an industrial area after construction. Existing and projected land uses for the area are also industrial in nature. Therefore, the project is compatible with existing and projected land uses and plans.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any:

None

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

No structures are proposed for the project.

b. What views in the immediate vicinity would be altered or obstructed?

None

c. Proposed measures to reduce or control aesthetic impacts, if any:

None

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

No light or glare will be produced by the completed project.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No

c. What existing off-site sources of light or glare may affect your proposal?

None

d. Proposed measures to reduce or control light and glare impacts, if any:

None

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

There are no recreation opportunities immediately adjacent to the site. Four parks, Magnolia Park, Elliott Bay Park, Smith Cove Park, and Kinnear Park, are within 1 mile of the project area. Smith Cove and Elliott Bay provide for a variety of water-related recreational opportunities.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

None

13. Historic and cultural preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

There are no places or objects listed on or proposed for national, state, or local registers on the site. The only recorded resources within 1 mile of the site are several historic structures on Queen Anne hill, out of visual range of the project area. The nearest archaeological site is KI00001, a reported lithic scatter and short-term habitation site just southeast of Fort Lawton. It is approximately 1.5 miles northwest of the project area.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

Two cultural resources surveys have been conducted near the project area (Hodges 2007). Both consisted of sonicore sampling of offshore sediments prior to the in-water work near T-91. The surveys did not locate any archaeological materials. No surveys have been conducted within the project area. An overview of the area has indicated that the area has an elevated probability for archaeological resources (Boyle et al. 2005); however, the majority of proposed work in the Lease Parcel will be limited to areas previously disturbed and/or within fill material. The bottom of the containment wall may be embedded in glaciofluvial sediments that underlie the fill material covering the entire site.

c. Proposed measures to reduce or control impacts, if any:

No measures are proposed to reduce or control impacts to cultural or historic resources.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to theexisting street system. Show on site plans, if any.

The T-91 site is served by West Garfield Street and 16th Avenue West. Access to the T-91 site will be provided via these roadways.

b. Is site currently served by public transit? If not, what is the approximate distance to thenearest transit stop?

The site is currently served by public transit. The Magnolia Bridge & Pier 91 King County Metro bus stop is located adjacent to the site.

c. How many parking spaces would the completed project have? How many would theproject eliminate?

The site is currently paved and is not used for parking. Future interim uses following cleanup could include a component of parking and/or light outdoor storage of equipment. Any future development for eventual industrial use consistent with current land use designations and zoning will be consistent with cleanup objectives and will provide any necessary institutional controls to meet the presumptive cleanup actions.

d. Will the proposal require any new roads or streets, or improvements to existing roads orstreets, not including driveways? If so, generally describe (indicate whether public orprivate).

No

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The project will occur at the Port's T-91. The terminal is used to moor various ships and vessels including cruise and commercial ships. The terminal is also served by a rail yard and contaminated soils may be transported via rail to an Ecology-approved off-site disposal facility.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

The completed project will not generate any additional vehicular trips.

g. Proposed measures to reduce or control transportation impacts, if any:

None

15. Public services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

No

b. Proposed measures to reduce or control direct impacts on public services, if any.

None

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

Intra-facility electrical, gas, water transmission lines, and stormwater conveyance pipes and catch basins rim the perimeter of the Lease Parcel where the majority of the construction work is proposed to take place. Utility lines will not be disrupted during construction or will be relocated if necessary to complete work. Additional active utility lines cross the TFAA that supply Piers 90 and 91, but no construction is planned near these locations.

A number of subsurface fuel and wastewater transfer pipelines running between the Lease Parcel and Piers 90 and 91 remain in place. Although some of these remaining pipelines have been recently cleaned or otherwise decommissioned in place, and in some cases removed, there may be pipelines that remain in place. To prevent residual product in the remaining pipelines from becoming a future LNAPL source, it is proposed to inventory the remaining pipelines and develop and implement a plan to clean and abandon in the remaining pipelines in place.

b. Describe the utilities that are proposed for the project, the utility providing the service,and the general construction activities on the site or in the immediate vicinity which mightbe needed.

No new utilities are proposed for the project. The finished grade is proposed to meet current perimeter grade and slopes such that stormwater will flow off of new impervious surface towards existing stormwater facilities.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Date Submitted: 9-16-2010

Attachments:

Figure 1: Project location Map

Figure 2: Project location Map

Attachment A: Greenhouse Gas Emissions worksheet

References

Boyle, Susan, Beth Dodrill, and Charles M. Hodges, 2005. Port of Seattle North Bay Project Draft Environmental Impact Statement: Historical and Cultural Resources. Submitted to the Port of Seattle, Pier 69. BOLA Architects and Planning, and Northwest Archaeological Associates, Inc., Seattle, Washington.

Ecology (Washington State Department of Ecology), 2005a. Guidance on Remediation of Petroleum-Contaminated Grouhdwater by Natural Attenuation. July 2005.

Ecology, 2005b. User's Manual: Natural Attenuation Analysis Tool Package for Petroleum-Contaminated Ground Water. July 2005.

Hodges, Charles M., 2007. Technical Memorandum: Archaeological Resources Assessment for the Proposed Pier 91 Berth Dredging, Smith Cove, Seattle, Washington. Submitted to the Port of Seattle, Pier 69, Seattle. Report WA06-32, Northwest Archaeological Associates, Inc., Seattle, Washington.

ATTACHMENT A
GREENHOUSE GAS EMISSIONS WORKSHEET

Appendix A – Greenhouse Gas Emissions Worksheet and Calculations

GHG Emission Sources (CO2, CH4, N2O, HFCs, PFCs, SF6)i	**What are the likely sources of emissions in the proposal? List specific type of emissions and durations of exposure.**	**What is the quantitative calculation or qualitative assessment of those emissions?**	**What available mitigation will avoid or reduce those emissions and what is the calculation or assessment of those reductions?**
Construction	Construction emissions from leased or contractor on-road mobile sources used as part of construction for up to 6 months.	See calculations below	See text of Checklist for proposed mitigation [Section B. 2. Air. (c).]
Employee Commute	Combustion emissions from employee commuting during construction for up to 6 months.	See calculations below	See text of Checklist for proposed mitigation [Section B. 2. Air. (c).]
Waste Management	Emissions from transportation of waste during construction for up to 6 months.	See calculations below	See text of Checklist for proposed mitigation [Section B. 2. Air. (c).]

Project GHG emissions are estimated based on projected construction vehicle and fuel usage for the proposed project construction. Each piece of equipment will only be used during particular phases of the construction and will not be used each day during the phase. Conservative estimates have been made on number of days each piece of equipment will be used during construction:
Diesel used by:

- One-pass trencher (similar to excavator): 9600 gallons
  assume 60 days x 8 hours/day x 20 gallons/hour (345 HP engine)
- Excavators: 9600 gallons
  assume 60 days x 8 hours/day x 20 gallons/hour (345 HP engine)
- Paving machine: 3200 gallons
  assume 20 days x 8 hours/day x 20 gallons/hour (345 HP engine)
- Front end loader: 9600 gallons
  assume 60 days x 8 hours/day x 20 gallons/hour (345 HP engine)
- Roller compactor: 9600 gallons
  assume 60 days x 8 hours/day x 20 gallons/hour (345 HP engine)
- Drill rig: 3200 gallons
  assume 20 days x 8 hours/day x 20 gallons/hour (345 HP engine)
- Concrete breaker: 9600 gallons
  assume 60 days x 8 hours/day x 20 gallons/hour (345 HP engine)
- Concrete mixer: 3200 gallons
  assume 20 days x 8 hours/day x 20 gallons/hour (345 HP engine)
- Vacuum truck: 9600 gallons
  assume 60 days x 8 hours/day x 20 gallons/hour (345 HP engine)

Approximate GHG emissions due to *diesel* use over 6-month project construction:
(9600 + 9600 + 3200 + 9600 + 9600 + 3200 + 9600 + 3200 + 9600) gallons x 26.55 lbs CO2e/gallon = **1,784,160 lbs CO2e**

G*asoline* used for demolition and waste management collection:

- Haul trucks: 120 gallonsassume 60 days x 2 trucks 10-mile RT/project x 10 mpg

G*asoline* used for employee transportation:

- Pickup trucks or crew vans: 180 gallonsassume 180 days x 2 trucks/vans x 10-mile RT/project x 20 mpg

Approximate GHG emissions due to *gasoline* use over 6-month project construction:

(120 + 180) gallons x 24.3 lbs CO2e/gallon = **7,290** lbs CO2e

Approximate GHG emissions due to pavement construction: See City of Seattle GHG Worksheet below for calculation of **6,200,000** lbs **CO2e**

Total (approximate) GHG emissions over 6-month project construction and including paving for post-construction:

1,784,160 + 7,290 + 6,200,000 = *7,991,450 lbs CO2e*

City of Seattle Greenhouse Gas Emissions Worksheet

Section I: Buildings

			Emissions Per Unit or Per Thousand Square Feet (MTCO2e)			
Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet (in thousands of square feet)	Embodied	Energy	Transportation	Lifespan Emissions (MTCO2e)
Single-Family Home	0		98	672	792	0
Multi-Family Unit in Large Building	0		33	357	766	0
Multi-Family Unit in Small Building	0		54	681	766	0
Mobile Home	0		41	475	709	0
Education		0.0	39	646	361	0
Food Sales		0.0	39	1,541	282	0
Food Service		0.0	39	1,994	561	0
Health Care Inpatient		0.0	39	1,938	582	0
Health Care Outpatient		0.0	39	737	571	0
Lodging		0.0	39	777	117	0
Retail (Other Than Mall)		0.0	39	577	247	0
Office		0.0	39	723	588	0
Public Assembly		0.0	39	733	150	0
Public Order and Safety		0.0	39	899	374	0
Religious Worship		0.0	39	339	129	0
Service		0.0	39	599	266	0
Warehouse and Storage		0.0	39	352	181	0
Other		0.0	39	1,278	257	0
Vacant		0.0	39	162	47	0

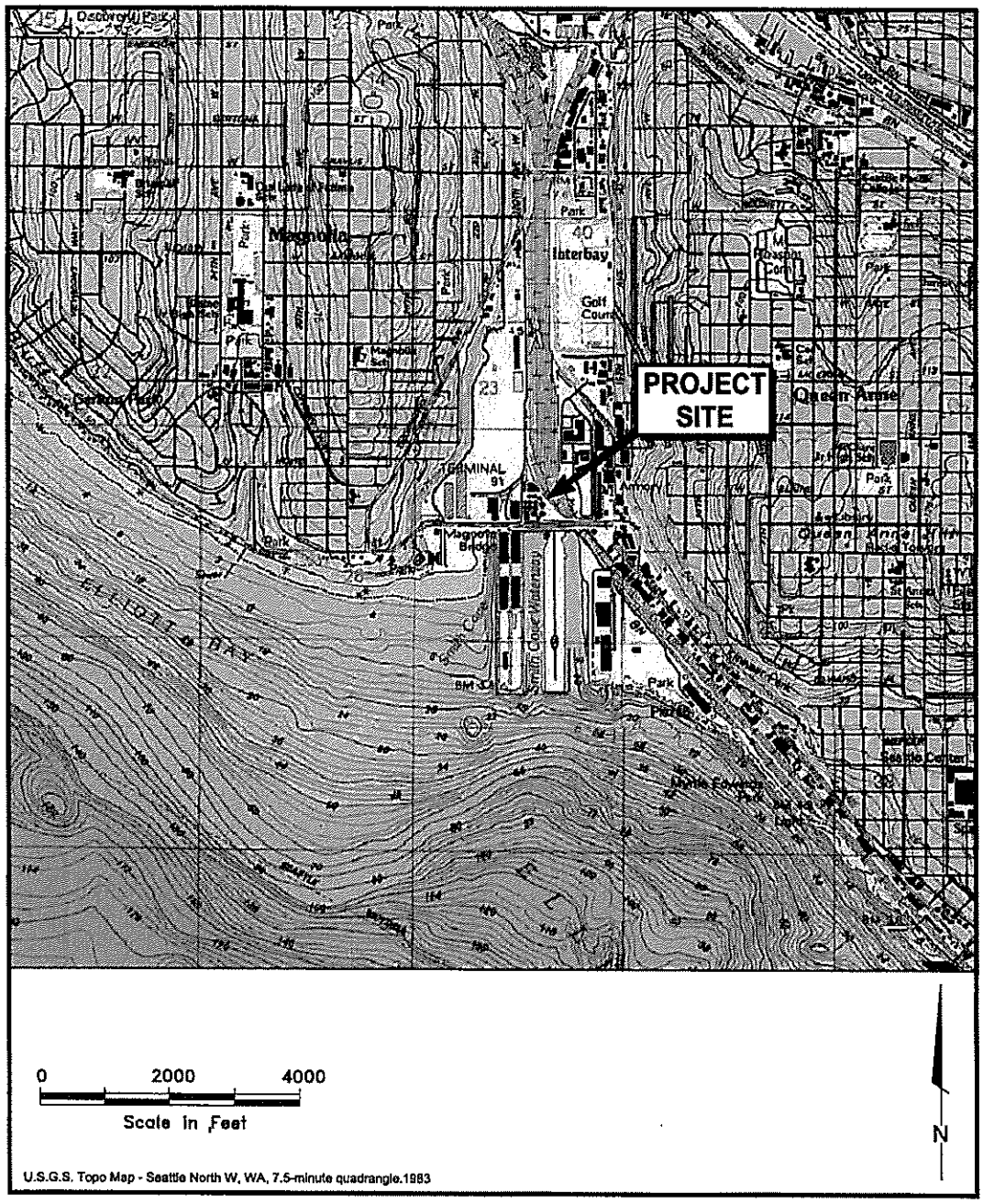
Section II: Pavement

Pavement		124,000				6200000

Total Project Emissions: 6200000

Construction		0.0				0

Total (approximate) GHG emissions during construction: **1,784,160 + 7,290 = *1,791,450 lbs CO2e***



PES Environmental, Inc.
Engineering & Environmental Services

Site Location Map
Port of Seattle Terminal 91
Seattle, Washington

FIGURE
1

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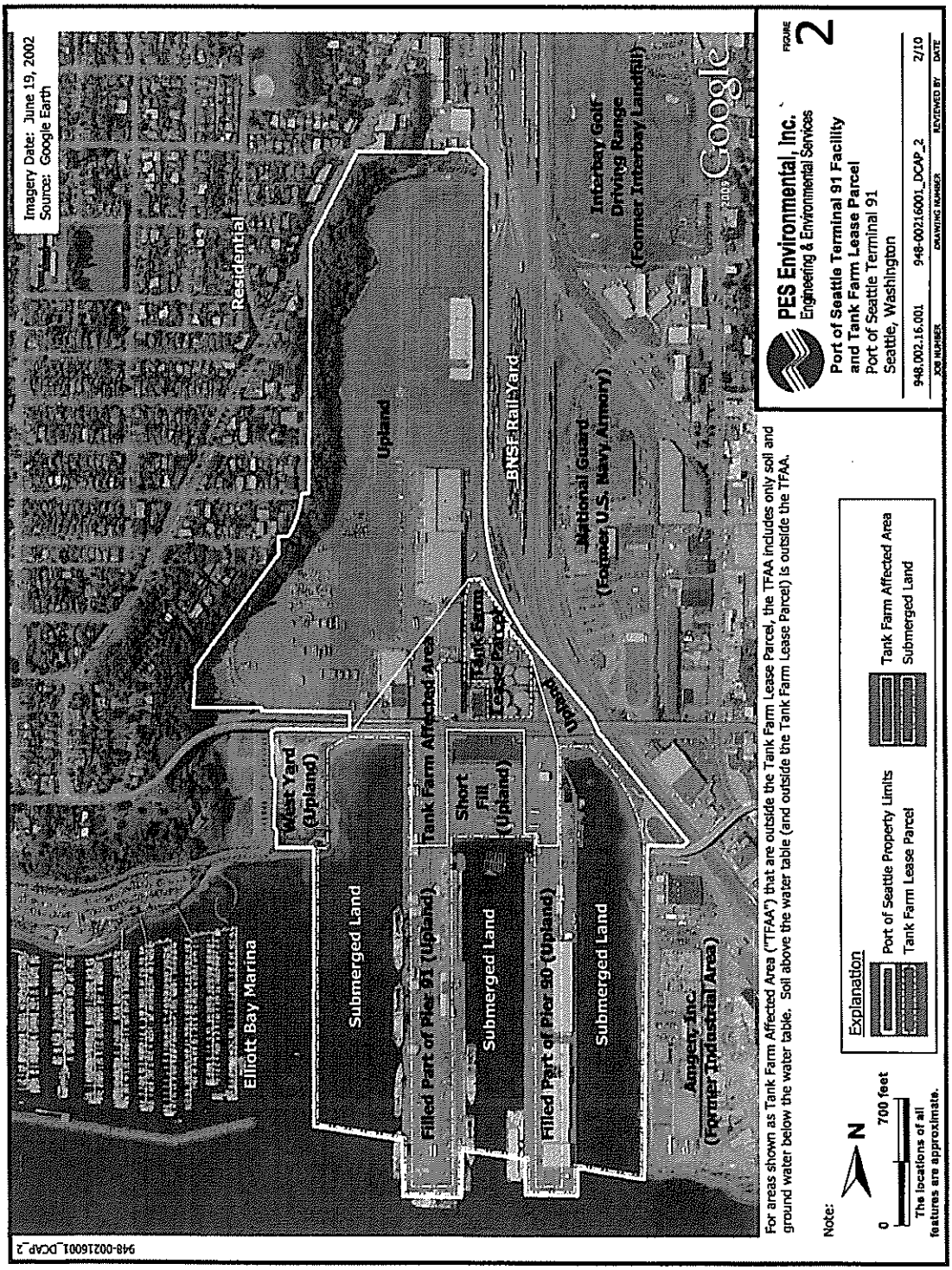
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE


Imagery Date: June 19, 2002
Source: Google Earth
Residential
Upland
Elliott Bay Marina
West Yard (Upland)
Submerged Land
Filled Part of Pier 91 (Upland)
Tank Farm Affected Area
Short Fill (Upland)
Tank Farm Lease Parcel
Submerged Land
Filled Part of Pier 90 (Upland)
BNSF Rail Yard
National Guard (Former U.S. Navy Armory)
Fairway Golf Driving Range (Former Interbay Landfill)
Submerged Land
Ameron Inc (Former Industrial Area)
Google
Note:
N
0
700 feet
The locations of all features are approximate.
Explanation
Port of Seattle Property Limits
Tank Farm Lease Parcel
Tank Farm Affected Area
Submerged Land
For areas shown as Tank Farm Affected Area ("TFAA") that are outside the Tank Farm Lease Parcel, the TFAA includes only soil and ground water below the water table. Soil above the water table (and outside the Tank Farm Lease Parcel) is outside the TFAA.
PES Environmental, Inc.
Engineering & Environmental Services
Port of Seattle Terminal 91 Facility
and Tank Farm Lease Parcel
Port of Seattle Terminal 91
Seattle, Washington
FIGURE 2
948.002.16.001
948-002160001_DCAP_2
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JOB NUMBER
DRAWING NUMBER
REVIEWED BY
DATE
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