



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Northwest Regional Office • 3190 160th Avenue SE • Bellevue, Washington 98008-5452 • (425) 649-7000

August 12, 2010

Kevin Daniels
Daniels Development Co, LLC
2401 Utah Ave South, Suite 305
Seattle, WA 98134

Re: Opinion pursuant to WAC 173-340-515(5) on Draft Feasibility Study for the following Hazardous Waste Site:

- Name: North Lot Development
- Property Address: 201 South King Street, Seattle, WA 98104
- Facility/Site No.: 5378137
- VCP Project No.: NW1986

Dear Mr. Daniels:

Thank you for submitting documents regarding your proposed remedial action for the North Lot Development facility (Site) for review by the Washington State Department of Ecology (Ecology) under the Voluntary Cleanup Program (VCP). Ecology appreciates your initiative in pursuing this administrative option for cleaning up hazardous waste sites under the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

This letter constitutes an advisory opinion regarding a review of submitted documents/reports pursuant to requirements of MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following release(s) at the Site:

- Gasoline-range petroleum hydrocarbons (TPH-G), diesel-range petroleum hydrocarbons (TPH-D), motor oil-range petroleum hydrocarbons (TPH-O), benzene, toluene, ethylbenzene, xylenes (BTEX) in soil;
- TPH-G, TPH-D, TPH-O and benzene in ground water;
- Polycyclic aromatic hydrocarbons (PAHs) in soil and ground water;
- Arsenic and mercury in soil;
- Arsenic in ground water;
- Dioxins and furans in soil.

Ecology is providing this advisory opinion under the specific authority of RCW 70.105D.030(1)(i) and WAC 173-340-515(5).

This opinion does not resolve a person's liability to the state under MTCA or protect a person



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from contribution claims by third parties for matters addressed by the opinion. The state does not have the authority to settle with any person potentially liable under MTCA except in accordance with RCW 70.105D.040(4). The opinion is advisory only and not binding on Ecology.

Ecology's Toxics Cleanup Program has reviewed the following information regarding your proposed remedial action(s):

1. Ecology Review Draft Report Feasibility Study, North Lot Development, Seattle, Washington, prepared by Landau Associates dated May 21, 2010.

The report listed above will be kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Appointments can be made by calling the NWRO resource contact at (425) 649-7190.

The Site is defined by the extent of contamination caused by the following release(s):

- TPH-G, TPH-D, TPH-O and BTEX in soil;
- TPH-G, TPH-D, TPH-O and benzene in ground water;
- PAHs in soil and ground water;
- Arsenic and mercury in soil;
- Arsenic in ground water;
- Dioxins and furans in soil.

The Site is more particularly described in Enclosure A to this letter, which includes a Site description and diagram. The description of the Site is based solely on the information contained in the document listed above.

Based on a review of supporting documentation listed above, pursuant to **requirements contained in MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC**, Ecology has determined that another remedial alternative should also be evaluated in the feasibility study to address the release(s) at the Site. Ecology's comments are included in Enclosure B.

Please note that this opinion is based solely on the information contained in the documents listed above. Therefore, if any of the information contained in those documents is materially false or misleading, then this opinion will automatically be rendered null and void.

The state, Ecology, and its officers and employees make no guarantees or assurances by providing this opinion, and no cause of action against the state, Ecology, its officers or

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employees may arise from any act or omission in providing this opinion.

Again, Ecology appreciates your initiative in conducting independent remedial action and requesting technical consultation under the VCP. As the cleanup of the Site progresses, you may request additional consultative services under the VCP, including assistance in identifying applicable regulatory requirements and opinions regarding whether remedial actions proposed for or conducted at the Site meet those requirements.

If you have any questions regarding this opinion, please contact me at (425) 649-4310.

Sincerely,



Jing Liu
NWRO Toxics Cleanup Program

jl: kp

Enclosures (2): A – Description and Diagram of the Site
B – Ecology's Comments on the Draft Feasibility Study Report

Cc: Kathy Brown, King County
Russ Olsen, Ecology
Mark Adams, Ecology
Tim Syverson, Landau Associates, Inc.
Kristy Hendrickson, Landau Associates, Inc.
Charles R. Wolfe, Counsel for North Lot Development, LLC

Enclosure A

Description and Diagram of the Site

Site Description and Historical Use:

The North Lot Development Property (the Property) is comprised of approximately 3.85 acres owned by King County at the southeast intersection of South King County Street and Occidental Avenue South in Seattle. The Property is located north of Qwest Field, south of King Street Center, east of the Florentine Condominiums, and west of Union Station as shown on the attached Site Diagram.

A site, as defined under MTCA, is typically understood to be an area contaminated by a specific release or releases. The release may affect an area entirely within one property or an area extending over several properties. For the North Lot Development property, there have been a number of different types of releases, some of which appear to have been derived from off-Property sources, some of which may represent area-wide contamination, and some of which originated on-Property but extend off-Property. The various contaminant types also overlap.

North Lot Development (NLD), as prospective purchaser, is planning to develop the Property as part of an Inter-Modal regional transit hub at King Street Station with approximately 1.2 million gross square feet of buildable area. The development will encompass two full city blocks and include two podiums (east and west blocks) that contain residential/North Lot replacement parking, and ground-level retail uses. The base of the development is not expected to extend below the water table, at about 5 feet below the ground surface (bgs).

The Property was originally undeveloped tideflat of Elliott Bay, and was filled in the late 1890s and early 1900s. It was then used as a rail yard from the late 1800s until the late 1960s. Structures associated with the rail yard included engine maintenance buildings, paint shops, track switching areas, and materials storage areas. In addition, two gasoline stations were formerly located in the northwestern portion of the Property at different times between the late 1930s and approximately 1966. King County purchased the Property in the 1970s to facilitate construction of the Kingdome stadium to the south of the Property. The Kingdome was later demolished and replaced with the current Qwest Field development. The Property has been used as a parking lot since the 1970s, and as a staging area during the construction of the Kingdome and Qwest Field stadiums.

The Property is approximately 10 to 15 feet above sea level, generally level, and approximately 1000 feet east of Puget Sound (Elliott Bay).

Geology and Hydrogeology:

The soils underlying the Property consist of fill overlying estuarine sediments, alluvial sediments, and glacial deposits.

Fill extends from land surface to between 18 and 30 feet bgs, and consists of fine to coarse sand, silty sand, and silty gravel with intermixed wood chips, sawdust, coal, ash, construction debris, and metal debris. The western portion of the Property was filled and developed by 1888, before the eastern portion. In general, the fill encountered in the eastern portion of the Property appears more uniform in composition and has less debris than the fill encountered in the western portion of the Property.

A 2 to 18 foot-thick native tideflat estuarine sediment layer lies directly beneath the fill. This layer generally consists of a medium stiff to very soft silt with varying percentages of sand and shell fragments.

Alluvial deposits, consisting of silty sand, with interbedded gravel, silt, clay, or peat, underlie the tideflat sediments. This alluvial deposit ranges from 11 to 26 feet thick, and was generally encountered at 30 to 40 feet bgs.

Underlying the alluvial deposits is dense glacial till, which extends to a depth of 80 feet, the maximum depth explored.

A shallow water table aquifer occurs within the fill, and is separated from deeper aquifers by the low permeability estuarine sediment. The depth to water varies, but is typically about 5 to 11 feet bgs. Ground water elevation data indicates flow direction varies within the Property. However, in the central and eastern portions of the Property, the flow regime appears to be dominated by a hydraulic sink generated by a foundation drain system at the King Street Center building north of the Property. The water collected in the drain system is pumped to the sanitary sewer for disposal. Ground water beneath the marine sediment has not been evaluated so far.

Soil and Groundwater Contamination:

Soil and ground water has been contaminated at the Property as described below. The source of the contamination is likely historical industrial and railroad operations at the Property and adjoining Properties, and possible placement of contaminated fill.

- **Northwestern Portion of the Property (former gasoline station area):** Has elevated concentrations of TPH-G and related BTEX constituents in soil. The lateral off-Property boundary of the TPH contaminated soil is not fully defined, but data from B-55 and B-56 does suggest a limit as to how far it extends. TPH-contaminated soils extended vertically to the water table and to a depth of at least 17 feet bgs locally.

The only compound exceeding the cleanup level in ground water in this area was TPH-G, which was detected in one grab sample (B-18). No other petroleum compounds were detected in ground water at concentrations greater than their cleanup levels. It is not clear how ground water can be "clean" when in contact with soil containing up to several thousand parts per million gasoline-range petroleum hydrocarbons. Additional information collected during cleanup activities may help to explain this conundrum.

- **Northeastern Portion of the Property:** Elevated PAHs, gasoline-, diesel-, and motor oil-range hydrocarbons are present in soil in this area where up to about 3 feet of coal tar-like product is present at the base of the fill (18 to 23 feet bgs). Elevated BTEX concentrations were also detected in this area.

The lateral extent of the coal tar in soil has not been fully determined to the north and east although data from MW-16D and MW-18D provides some limit on the lateral boundary. The coal tar contamination is expected to terminate at the top of the native marine silt underlying the fill.

The data collected from the two wells (MW-16D and MW-18D) to the north of the property boundary had non-detectable cPAHs. This data suggests that coal tar impact on ground water is limited. Another well (MW-9D) is completed right within the coal tar and likely being compromised; therefore, it can't provide an accurate estimate of the ground water quality.

- **Property-wide:**

- **PAH Contamination:**

Elevated concentrations of PAHs have been detected in fill soil across the entire Property, including throughout the gas station area and the coal tar area. In the western portion of the Property, PAHs are elevated throughout the fill extending to about 17 feet bgs. However, in the eastern portion of the Property, PAHs are elevated primarily at the base of the fill although two out of ten soil samples collected at 1-2 feet bgs had cPAHs above applicable cleanup levels. The vertical extent of PAH contamination in soil has not been fully determined, but is expected to terminate at the top of the native marine silt underlying the fill.

Ground water impact from PAHs is minimal despite the widespread occurrence of elevated PAH concentrations in fill soil.

- **Metals Contamination:**

Like the PAHs, the vertical extent of metals contamination in soil has not been fully determined, but is expected to terminate at the top of the native marine silt underlying the fill.

There are widespread exceedences for mercury in the fill soil, but no detectable impact on ground water (It should be noted that the detection limit for mercury in ground water was higher than the cleanup level). The mercury concentrations appear to be highest closer to the surface, as indicated by the few locations where samples were collected at different depths.

The concentrations of arsenic in fill soil are below or slightly above the cleanup level, except at one location (B-65) within the southeast corner of the Property. The concentrations of arsenic in ground water are also below the cleanup level, except at one location, MW-5 (near B-65). The arsenic detection at MW-5 may be related to elevated arsenic in fill soil, or related to contaminated ground water migrating into the area from an upgradient source. The lack of significant arsenic impact in ground water is generally consistent with the soil data, and indicates that the elevated arsenic near MW-5 is not migrating off-Property.

- **Dioxins/Furans:**

Two soil samples were analyzed for dioxins/furans to check for the possibility of these compounds being present at the Property. The fact that dioxins/furans were detected in both samples, and in one at a concentration above the soil cleanup level, indicates these compounds may be present in fill soils across the Property.

In summary, fill soils across the Property, other than those associated with specific sources in the northwest and northeast corners, are contaminated with PAHs, dioxins/furans, and mercury at concentrations above cleanup levels. Arsenic and lube oil are also locally elevated. The source of this contamination is likely historical industrial and railroad operations at the Property and adjoining Properties, or imported contaminated fill. Native soils below the fill are not expected to be contaminated, although that has not been proven.

Specific areas of the Property also have additional petroleum hydrocarbon and coal tar contamination associated with, respectively, former gas station operations and other indeterminate industrial operations. The area of soil contamination associated with the former gas station may extend off-Property to the northwest. The coal tar contamination probably also extends off-Property, given that it may have been derived from an off-Property source.

Selection of Remedial Alternatives:

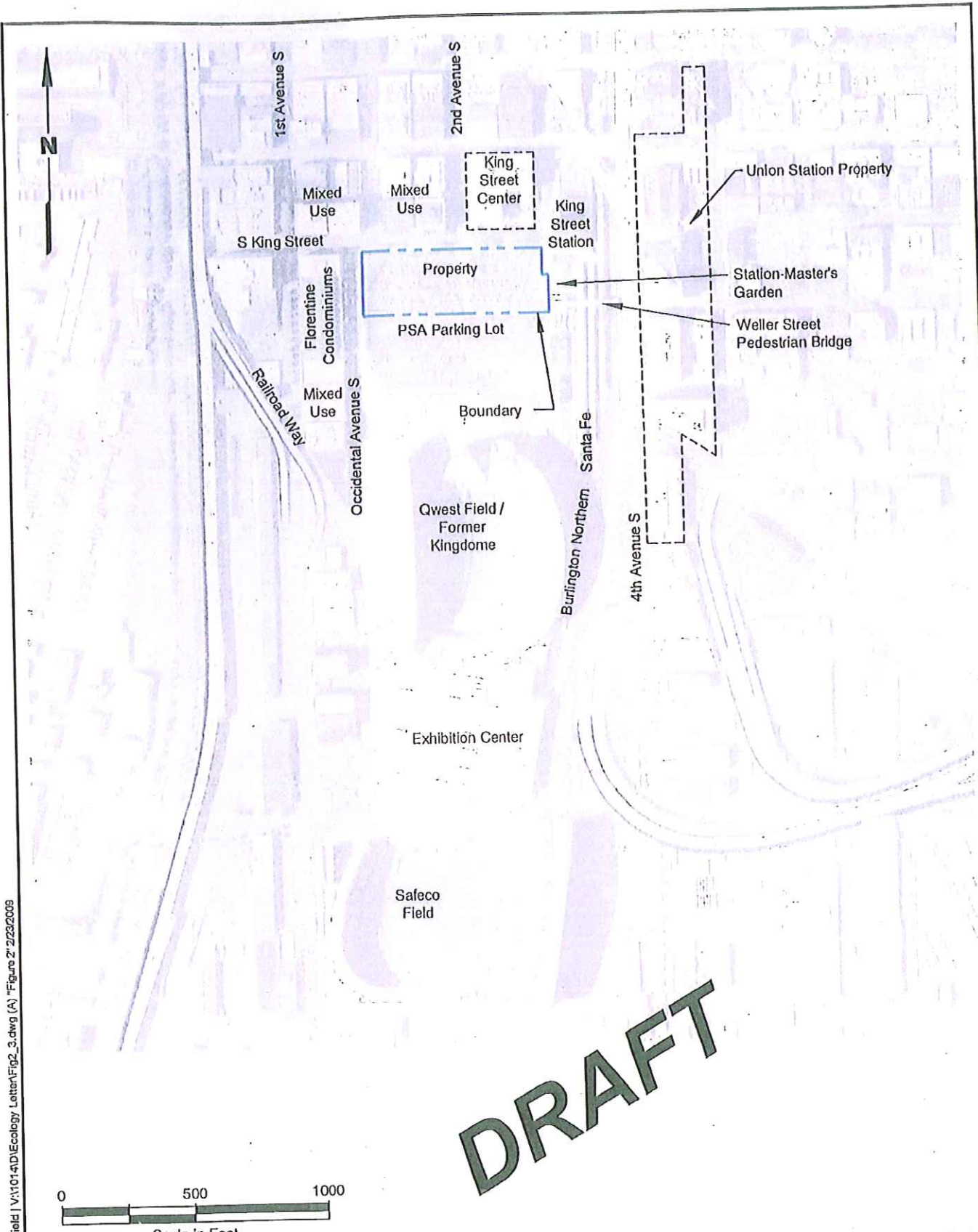
Five remedial alternatives have been evaluated and the selected remedial alternative include hot spot excavation of contaminated soil in the northwestern portion of the Property from the land surface to the ground water table, enhanced bioremediation to treat residual soil/ground water

Enclosure A

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impacted by gasoline-related constituents in the vicinity of the hot spot excavation area, a surface cap over the entire property, and institutional controls.

Qwest Field | V:\1014\1014\Ecology\Letter\Fig2_3.dwg (A) *Figure 2* 2/23/2009



DRAFT

North Lot Development Site Diagram

Copied from Figure 2, Ecology Review Draft Report, Remedial Investigation/Feasibility Study, North Lot Development, Seattle, Washington, prepared by Landau Associates dated February 24, 2009.



Enclosure B

Ecology's Comments on the Draft Feasibility Study Report

Page 2-1 Section 2.0: Add the purpose of the data gaps investigation:

- To verify ground water flow direction;
- To evaluate whether PAHs and volatile compounds are being picked up and moving off-Property in ground water passing over and through the coal tar-saturated fill; and
- To evaluate whether arsenic in ground water is declining at MW-5, and if not, to determine whether it is migrating off-Property.

Page 3-3 Tables for soil and ground water cleanup levels (Table 1 & 4) should be updated by adding detection limits for all the compounds, including the non-detected compounds. The detection limits should be as low as the preliminary cleanup levels unless the Practical Quantitation Limit (PQL) is above the cleanup level. Since the laboratory reporting limit for mercury is above the proposed ground water cleanup level (Table C-2 and Table 4), then the cleanup level should be adjusted upward to the PQL.

Page 4-1 Section 4.1, Figure 12. It is difficult for the reader to understand why the extent of soil contamination exceeding the cleanup level in the northwestern portion of the Property, as shown on this figure, is much bigger than the proposed hotspot excavation area as shown on Figure 13 & 14. It would be helpful to provide a figure(s) showing the area that exceeds direct contact cleanup levels versus the area that exceeds soil cleanup levels protective of vapor intrusion.

Page 6-1, Section 6.0, another remedial alternative should be evaluated for the FS. This alternative should include all the remedial actions proposed as part of Alternative 3, plus excavation and disposal of the upper five feet of soil across the property outside the hotspot excavation. There are a number of reasons Ecology is requiring an evaluation of this additional alternative.

- First, construction activities are likely to disrupt and displace soils within the upper 4 to 5 feet, and these displaced soils will need to be disposed of off-Property as contaminated material. It is therefore reasonable to include this defacto remediation element as part of a cleanup alternative.
- Second, any future construction or maintenance activities that follow after the proposed development is completed, will likely occur within the upper 5 feet. By cleaning up these soils now, future workers, who may not be aware of the contamination, would have greater protection.

- Third, MTCA requires that cleanup actions involving institutional controls have implemented a more permanent cleanup action for all or a portion of the site where it is technically possible to do so. Excavating contaminated soils to a depth of 5 feet is a permanent action and is technically possible.
- Fourth, excavating upwards of 25% of the contaminated soil now may partially relieve future homeowners and small business owners of a cleanup liability responsibility they will likely have to assume, when they purchase a condominium or commercial space in the proposed development.
- Fifth, this proposed development involving a substantial construction effort, represents a unique opportunity to complete a correspondingly substantial environmental cleanup. It is a unique opportunity because for the last time (at least for the foreseeable future), the entire Property will be open to and easily accessible for remediation. Once the Property is covered by tall buildings and concrete structures, a more complete cleanup would likely be much more difficult and costly to perform.

Page 6-2, Section 6.1, estimated cost for Alternative 1, asphalt cap should not be included since it will be part of the construction activities anyway. This comment also applies to alternative 2, 3 and 4.

Page 6-3, Section 6.1, Ecology believes that an institutional control to prohibit use of ground water as a potable water supply at the Property is necessary though the Property will be connected to Seattle's water supply system.

Page 6-4, Section 6.2, Alternative 2. This alternative includes hotspot excavation in the vicinity of the former gasoline station area as shown on Figure 13. Petroleum contaminated soil outside the hotspot will not be removed during excavation under this alternative (except for off-Property areas to the north and west, as discussed below). Results from J&E modeling indicated that the remaining petroleum contaminated soil will not impact indoor air. However, a number of default values were changed in the modeling, and this needs to be explained. For example, the default value for the breathing rate was changed, resulting in a less stringent benzene soil cleanup level, which may not be protective of indoor air. Per WAC 173-340-708(10) (b), the default value of breathing rate shall not be changed when calculating cleanup levels. The indoor air exchange rate and exposure frequency were also changed. Though the default values of these two parameters can be changed, a justification should be provided. Also, it should be noted that the J& E model has not been calibrated. Conclusions drawn from soil to air modeling are particularly unreliable, and should be verified with actual soil gas data. This data is particularly important in this case, because the model is being used to define the area of soil that needs to be removed in order to protect indoor air.

Page 6-4, Section 6.2 states that a plan will be developed to allow for removal of contaminated soil beyond the Property boundary, if necessary and if feasible prior to excavation as part of the PPA/CD negotiations, based on the locations of existing utilities

and discussions with the city of Seattle. It should be noted that Ecology expects some excavation off-Property, but understands that the exact boundary of that excavation has not been established. The plan referenced above will need to outline the methodology for establishing that boundary, whether it is with data obtained beforehand, or during construction. If utility lines or other subsurface features in the street ultimately limit the extent of any excavation, Ecology will require a written justification, including a cross-sectional drawing showing the locations and depths of all the utility lines. Ecology may also require a letter from the City of Seattle confirming that excavation will not be allowed in the right-of-way due to the presence of utility lines.

Table 1: Soil cleanup level for benzene based on protection of indoor air should be provided.

Table 10: The assignment of weights and rankings results in unreasonable total environmental benefits for Alternative 5. There is no way that totally removing the contaminated soil (Alternative 5) is less beneficial than dealing with some TPH contamination, and covering over the rest of the contamination with asphalt or concrete (Alternative 3).

General Note: All of the alternatives involving instructional controls should include the preparation of a contingency plan to be implemented should future ground water monitoring show contaminants migrating off the Site.