



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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February 25, 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 Remedial Investigation 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.

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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 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. Revised Ecology Review Draft Remedial Investigation Report, North Lot Development, Seattle, Washington, prepared by Landau Associates dated October 16, 2009.
2. Ecology Review Draft Report, Remedial Investigation/Feasibility Study, North Lot Development, Seattle, Washington, prepared by Landau Associates dated February 24, 2009.

The reports 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.

Ecology issued an opinion letter on April 21, 2009 on the draft Remedial Investigation Report (Landau, February 24, 2009), and required further action to characterize and address the contamination at the Site. Additional Site investigation has been conducted in response to Ecology's opinion letter, and the results have been incorporated in the revised Draft Remedial Investigation Report (Landau, October 16, 2009).

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 an updated Site description and diagram. The description of the Site is based solely on the information contained in the documents listed above.

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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, for characterizing and addressing the release(s) at the Site, Ecology has determined that sufficient information has been collected to establish cleanup standards and select a cleanup action. However, there are some data gaps as identified in Enclosure B. These data gaps can be addressed and included as part of the Feasibility Study.

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 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  
B – Data Gaps

Cc: Kathy Brown, King County  
Russ Olsen, 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 tidelflat 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 marine sediment. 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. The flow regime appears to be dominated by a mound in the western portion of the Property, and a hydraulic sink in the eastern portion of the Property. It is not currently clear what subsurface feature is causing the hydraulic sink. 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.

- **Former Gasoline Station:** Located in the northwestern corner of the Property. 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. The vertical extent of soil contamination also remains undetermined, but extends 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.

- **Coal Tar Contamination:** Located within the northeast corner 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 has been determined on the Property, but not off-Property to the north although data from MW-16D 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 extent and nature of ground water contamination in this area remains unclear. The data gathered to date would suggest that gasoline, BTEX, and motor oil are the primary ground water contaminants. But only one well (MW-9D) is completed at the depth of the soil contamination, and unfortunately is completed directly within the contaminated soil. The rest of the data comes from either grab samples (which tend to be biased high), or from wells completed above the zone of contamination. It is likely that ground water contamination is very limited in the area, and that if present, is not migrating laterally off-Property, but is being captured in the hydraulic sink. However, it should be noted that additional information is needed to confirm how this would affect contaminants transport through ground water.

- **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 limited 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 (assuming the detection limit was above 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 more likely to contaminated ground water migrating into the area from an upgradient source. Background arsenic concentration in ground water in this upgradient area is above the arsenic concentration at MW-5. It should be noted that the arsenic concentration at that location is below the background-based screening level. The lack of significant arsenic impact in ground water is generally consistent with the soil data.

It should be noted that further evaluation of other metals may be necessary if cleanup levels are revised as described in Enclosure B.

- **Dioxins/Furans:**

Only 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. Native soils below the fill are not expected to be contaminated, although that has not been proven. The source of this contamination is likely historical industrial and railroad operations at the Property and adjoining Properties, or imported contaminated fill.

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.

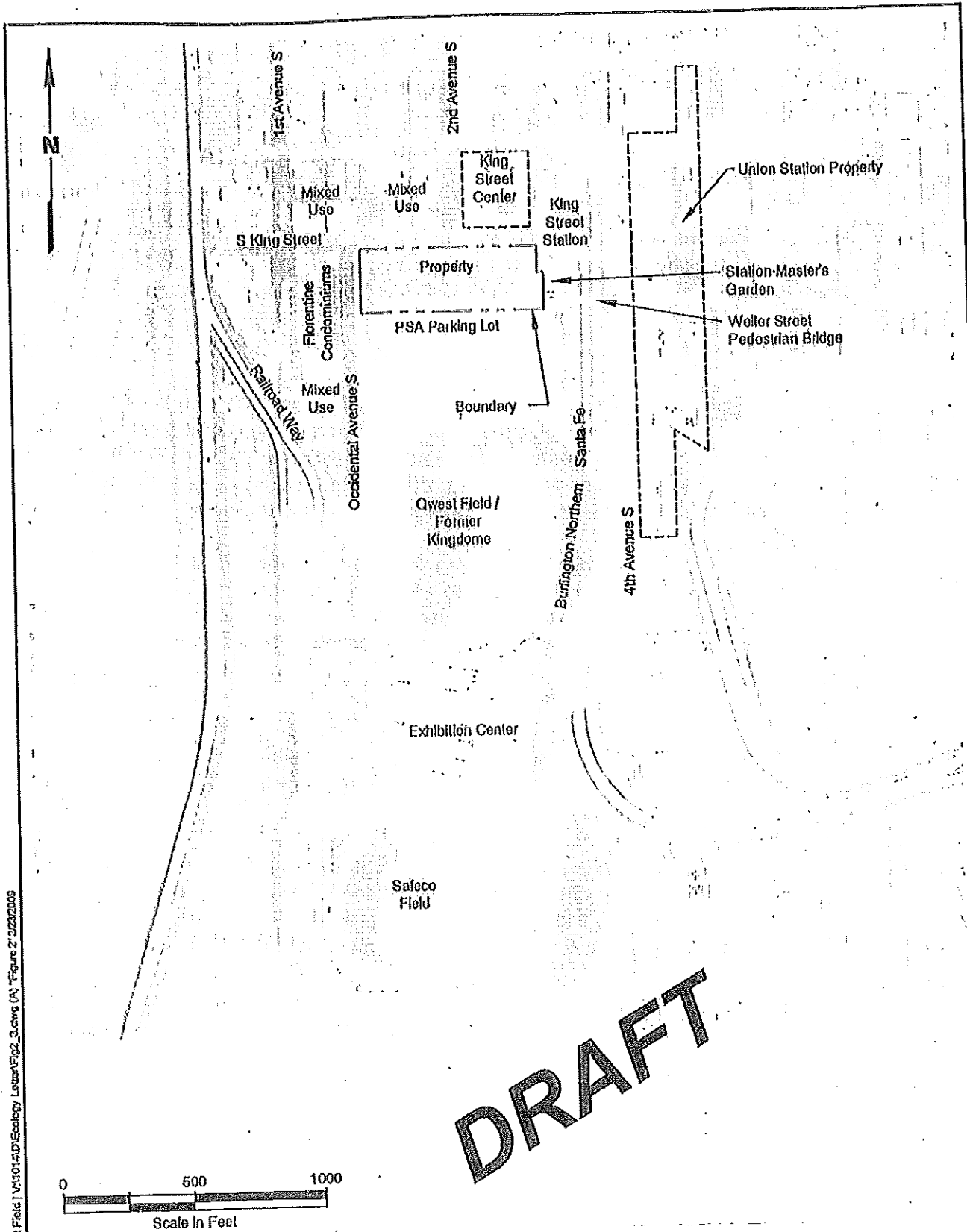
It is not clear that any area of the Site requires clean up of the ground water:

- Much of the arsenic data that exceeds cleanup levels was collected via grab sample collection methods or reflects first-time sample collection from monitoring wells, all of which tends to be biased high. The second round of samples from the monitoring wells showed significantly lower arsenic concentrations. Only ground water collected from one well in the southeastern portion of the Property showed arsenic above the cleanup level in

the second sampling round. However, this area is impacted by arsenic-contaminated water arriving from upgradient sources to the east.

- The data gathered to date would also suggest that gasoline, BTEX and motor oil are above cleanup levels in the coal tar area of the Site. Only one well (MW-9D) is completed at a depth appropriate to monitor ground water passing through the coal tar, and unfortunately it is completed directly within the contaminated soil. The rest of the data comes from either grab samples (which tend to be biased high), or from wells completed above the zone of contamination. It is likely that little ground water contamination actually exists in the area, even though the available data suggests otherwise.
- In the northwestern part of the Property in the former gas station area, there is only one monitoring well located "downgradient" of the TPH soil contamination, and it shows little water quality impact. It is difficult to understand this result given the high concentrations of benzene and gasoline in soil in the area. However, the result is consistent with previous sampling results from a different well (MW-10) and one grab sample (B-26), both of which were situated in the area with high soil TPH. Only one grab sample from the area (B-18) exceeded cleanup levels.





West Field / V15101-5D Ecology Lab/Fig 2\_Schem (A) Figure 2/2/2009

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**

### **Data Gaps**

Ecology has determined that sufficient information has been collected to move the Site forward for a Feasibility Study. However, there are some data gaps as identified below. These data gaps can be addressed and included as part of the Feasibility Study.

#### **Hydrogeology**

- The ground water elevation recorded in August 2009 at the new well MW-14 has a disproportionate influence on the water table surface and on consequent interpretation of ground water flow directions. It also creates a mound (discussed previously) where none would be expected. The measuring point elevation for this well should be resurveyed to confirm it is accurate, and the implications discussed.
- Only one round of water level data is available for all of the existing monitoring wells. Because that one round shows a flow pattern distinctively different from prior monitoring rounds, at least two more monitoring rounds using all of the wells is necessary to confirm the new flow pattern, and the results discussed.

#### **Nature and Extent of Contamination:**

- For the former gasoline station area, additional explorations may be necessary as part of remedial design to define the actual off-Property area of soil contamination requiring cleanup.
- Additional investigation is needed to identify the possible subsurface feature which causes the hydraulic sink, and how this would impact contaminant transport in ground water. Specifically, further thought should be given on how to resolve what contaminants associated with MW-9 may or may not be entering the hydraulic sink.
- Further evaluation of zinc and copper distribution in soil and ground water may be necessary if cleanup levels are revised as stated in the Cleanup Level Section below.
- The second round of samples from the monitoring wells showed significantly lower arsenic concentrations. An additional two rounds of ground water sampling spread out over the year to reflect seasonal variations are necessary to confirm the trend.

#### **Cleanup Levels:**

- Ecology does not accept 1 mg/Kg as the background value for cadmium, given that almost all analyses for this metal show it present at less than 0.2 mg/kg, and none exceed 1 mg/Kg. Soil cleanup level for cadmium should be re-evaluated.

- For zinc and copper, the background appears to have been derived from a PTI 1989 draft report. Ecology does not accept this report as an appropriate reference since the report has never been finalized, and the data set used in the report may not represent the specific situation at this Property. Soil cleanup level for zinc and copper should be re-evaluated. If the soil cleanup levels need to be revised, then ground water cleanup levels for zinc and copper should be re-evaluated too since the proposed ground water cleanup levels are established using the soil cleanup levels.
- Marine water quality standards appear to have been discounted for lead. Ecology believes the most stringent of the marine standards should be retained as the cleanup level (8.1 µg/L).
- Ecology does not accept the arsenic background value of 25 µg/L derived from upgradient concentration at the Union Station Site as the preliminary ground water cleanup level because the August 2009 data from all of the monitoring wells within the Property, except one, shows arsenic at or below 5 µg/L. The exception is 17 µg/L at MW-5. Arsenic concentrations may rebound to the higher levels reflected in the November 2008 data. However, it appears more likely that arsenic concentrations will remain near the lower August 2009 levels. If then ground water at the Site is already cleaner than “background”, it does not make sense to impose a less stringent cleanup level that potentially allows degradation of ground water quality.

There is also a hydrologic reason not to adopt arsenic concentrations from upgradient areas to the east as background – ground water flowing onto the Property from these areas would be largely captured in the eastern hydraulic sink, and would not reach the rest of the Property. The only exceptions are the eastern and southeastern edges of the Property. Ecology therefore recommends using the MTCA Method A ground water cleanup level of 5 µg/L, based on the state background concentration as the ground water cleanup level at this Site.

The southeast corner of the Property has elevated arsenic concentrations in both soil and ground water, and arsenic appears to be migrating into ground water onto this portion of the Property from an upgradient source to the east. Therefore, Ecology recognizes that the water quality in this area is being impacted by an upgradient source with a background concentration of 21.3 µg/L.

- Tables for soil and ground water cleanup levels should be updated by adding detection limits for all the compounds, including the non-detected compounds. It should be noted that detection limits should be as low as the preliminary cleanup levels unless the Practical Quantitation Limit (PQL) is above the cleanup level.

