Responsiveness Summary

SeaTac Development
aka MasterPark Lot C

Public Comment Period
May 8 – June 8, 2009

Washington State Department of Ecology
Northwest Regional Office
3190-160th Avenue SE
Bellevue, Washington 98008

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Introduction

A public comment period was held May 8 – June 8, 2009 on the SeaTac Development site.

Details of the site and documents are available at the Washington State Department of Ecology (Ecology) website:

http://www.ecy.wa.gov/programs/tcp/sites/seaTacDev/seaTacDev_hp.html

Ecology received one comment in response to the public notice for the SeaTac Development site.

Comment #1: From Ms. Barbara Trejo – Washington Department of Ecology. See attached.

Ecology's Response: See attached.

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

July 1, 2009

Barbara Trejo
Washington Department of Health
Division of Environmental Health
Office of Health Assessments
234 Israel Road SE Towncenter 3
PO Box 47846
Olympia, WA 98504-7846

Dear Ms. Trejo:

Re: Draft Health Consultation – Agreed Order Review
SeaTac Development Site (aka MasterPark Site)
SeaTac, King County, Washington

Please find attached Ecology's responses to your draft memo. Ecology appreciates your comments and hopes to work collaboratively with your office with regard to any relevant environmental health assessments relating to this Model Toxics Control Act (MTCA) site. Ecology will keep you informed with any developments as site investigation and cleanup progress.

Ecology has determined that the Agreed Order for the SeaTac Development site will be implemented following the revisions detailed in the following set of responses.

Please don't hesitate to contact me if you have any questions or comments.

Sincerely,

Jerome B. Cruz, Ph.D., L.G., L.H.G.
Toxics Cleanup Program

JBC

Attachments

cc: Robert Warren, WA State Department of Ecology
Ching-Pi Wang, WA State Department of Ecology
Ed Jones, WA State Department of Ecology

Elmer Diaz, WA State Department of Health
Harry Grant, Riddell Williams P.S.
Douglas Morell, Golder Associates

Ecology responses to DOH draft memo on SeaTac Development Agreed Order and Work Plan exhibit[1]:

Comment 1:
The SeaTac Development property, which is approximately seven acres, is located at 16025 International Boulevard, SeaTac, King County, Washington. The site overlies the regional, unconfined Vashon Advance Outwash (QVA) aquifer, which is a potable drinking water source. The WP indicates that only one well is located immediately downgradient of the site. That well, which is reportedly used for irrigation, is owned by the Washington Memorial Park Cemetery. The City of Seattle reportedly has a backup water supply well located about 0.5 miles east of the site, which appears to be upgradient of the site. The Work Plan also indicates that there are no water supply wells located within a mile downgradient of the site. However, there is no information provided in the report explaining how that was determined.

Ecology response:
A map showing the location and distribution of groundwater supply wells in the vicinity of the site will be put in the Work Plan.

Comment 2:
Soil and groundwater below the SeaTac Development property is contaminated with gasoline components. The extent of soil contamination at the property has reportedly been defined but no information has been provided in the Agreed Order to support this conclusion. Most of the northern third of the property is underlain by gasoline contaminated groundwater. The southern boundary of the gasoline contaminated groundwater on the SeaTac Development property has not been determined (i.e., MW-5, the southernmost monitoring well contains 1,600 ug/l, which exceeds the 800 ug/l MTCA Method A cleanup level for gasoline). Releases at the SeaTac Development property have affected other properties to the north and west, which are also underlain by gasoline contaminated groundwater and potentially contaminated soil gas, which poses an indoor air health threat. The properties to the east may also be affected by contaminated soil gas. The extent of that groundwater and soil gas contamination associated with the site, however, is unknown.

Ecology response:
The Report of Investigation/Feasibility Study (RI/FS) will obtain data (implemented in a phased approach) that will characterize the extent of contamination in soil and groundwater, in order to define the site and to adequately reduce uncertainty for decision making. Previous investigations that characterized soil contamination at the site were conducted with Ecology interaction and oversight. The RI/FS Phase 1 and subsequent phases will address any data gaps for contamination sources if discovered during the course of work or if review by Ecology necessitates this.

The source(s) of petroleum groundwater contamination were investigated. Surface soils have residual petroleum hydrocarbons typifying small leaks from construction equipment storage

[1] Full text of the DOH draft memo with numbered comments may be found at the end of this document.

and automobile parking on unpaved parking areas. These residual near- surface petroleum impacts are addressed in institutional controls (deed restrictions) for any trenching/grading beneath the pavement. Data do not indicate that these impacts are the cause of the site groundwater impacts. Groundwater is at about a 50 foot depth beneath the site. The Potentially Liable Persons (PLPs) did an extensive investigation locating the facility source of groundwater impacts and discovered an old leak from a former underground gasoline storage tank. The PLPs investigated the extent of this facility source and delineated the vadose zone soil impacts.

Regarding soil vapor intrusion concerns, the PLPs obtained preliminary soil vapor concentration data for common petroleum organic compounds, specifically for benzene, toluene, ethylbenzene and xylenes (BTEX) at the facility from about 8 to 10 foot depths. The soil vapor sampling was conducted to aid in the screening and characterization of the soil gas sources. However, the lowest possible analytical detection limits were not used. Benzene, which is a carcinogenic compound of concern at the site, had too high detection limits to compare the soil gas readings to inhalation cleanup levels. Ecology is now requiring that additional soil gas samples be obtained and analyzed using analytical methods that will provide the lowest detection limits for benzene and other compounds of concern. Also, the potential for vapor intrusion into nearby buildings will be further evaluated in the RI/FS.

Comment 3:
Typically, when planning a RI for such a site, existing site information, of acceptable quality (i.e., collected and analyzed used acceptable methods and procedures), is compiled, analyzed, and interpreted; a site conceptual model is developed; and data gaps identified before proceeding with plans for additional investigation work. However, such an approach was not taken for this site. Instead, according to the work plan, these steps will occur during the RI – Phase I. It is unclear why such an approach was taken when, as noted above, the focus of the RI is to address data gaps.

Ecology response:
As stated in the Agreed Order and Work Plan, a phased approach will be taken to complete the RI/FS and data gaps for the site. Further work will not be precluded and the plan for Phase 2 will be submitted to Ecology for approval at a later time. Previous investigations cited in the Order will be used in conjunction with the RI/FS work to confirm the final site conceptual model.

Comment 4:
Information provided in the work plan suggests that the soil contamination has been defined (see page 5) so no soil investigation work is planned for the RI. However, no data (e.g., tables, maps, laboratory data sheets) are provided in the work plan to support that conclusion. Given this lack of information about the nature and extent of soil contamination, DOH cannot verify this conclusion nor determine possible health threats. However, the cross section presented in Figure 3 in the work plan does suggest that a potential health threat is possible if a construction or utility worker encountered the gasoline and benzene contaminated soil shown on that figure.

Ecology response:
The work done to characterize soil contamination is cited in the Agreed Order. These reports and data therein are available at the Department of Ecology in Central Records. The data and the summary for soil characterization will be incorporated in the final RI/FS report. Based on past subsurface investigations conducted with Ecology oversight, the source is believed to be in a limited zone where former underground storage tanks were located at the north-northeast portion of the property (see Attachment A: Figure 2 from Golder associates report, "On-site Source and Groundwater Investigation Summary – June to November 2007"). Data on soil contamination were collected using several methods including soil borings, test pits, monitoring wells, and geophysical surveys (ground-penetrating radar, magnetometry, and TDEM – Time Domain Electromagnetic Method).

Comment 5:
The contaminated groundwater associated with this site lies within the regional aquifer, which is a current and potential future drinking water source. Neither the lateral nor the vertical extent of the site groundwater contamination in the regional aquifer has been determined. This is clearly depicted for the upper portion of the regional aquifer in work plan Figure 4, which shows that the extent of the groundwater contamination associated with the site has not been defined to the northeast, north, northwest, west or south.1 One well (MW-10), which was installed in the past in the deeper portion of the regional aquifer at the site, at one time contained 1,600 ug/l gasoline suggesting that the deeper portion of the aquifer is also contaminated.2 Neither the horizontal nor vertical extent of the deeper contamination can be determined with one monitoring well. These are significant data gaps not mentioned in the work plan.

Ecology response:
Ecology acknowledges the comments on data gaps. Ecology will require these data gaps to be addressed in the remedial investigation. Ecology had already flagged data gaps that will be addressed in subsequent investigations after the Phase 1 work is executed. In order to prevent further delay, the Agreed Order and Work Plan were written in a phased approach. This phased approach allows Ecology to require additional work during implementation of the Order and under the authority of Ecology under MTCA, and the binding legal agreement between Ecology and the PLPs. Ecology will keep DOH informed on the planning and decision making as it proceeds where relevant to the scope of DOH health consultations.

The RI/FS will provide sufficient data as required by MTCA for decision making. The RI/FS Work Plan identifies the major exposure pathways mentioned by the Health Department, including groundwater use (current and future) and soil vapor intrusion. Groundwater will be adequately delineated through a phased approach. For soils, previous soil gas analytical results are not considered by Ecology to be adequate for evaluation of potential soil vapor intrusion because the detection limits were high. The vapor intrusion exposure pathway will be further investigated as stated in the RI/FS Work Plan.

Comment 6:
Only one additional downgradient monitoring well is planned to be installed to the west of the SeaTac Development property during the RI. However, additional monitoring wells also need

to be installed to the northeast, north, northwest, and south to define the lateral extent of the plume in the shallow portion of the regional aquifer. Some deeper monitoring wells are necessary to assess the vertical extent of the contamination.

Ecology response:
See Ecology's responses to Comments 3 and 5. By the conclusion of the RI/FS, Ecology expects the investigation to achieve sufficient characterization as required under MTCA of contaminant impacts in all environmental media (soil, vapor, air, groundwater) and a site conceptual model that will guide the decision-making for a preferred cleanup alternative at the site.

Comment 7:
There is no information provided in the WP that indicates whether a well survey was done to determine whether private or public wells exist in the area. If a well survey has already been done, that information should be added to the work plan. If not done, DOH considers this a data gap that needs to be filled.

Ecology response:
In 2001, Golder Associates and Ecology sampled the Washington Memorial Park water supply well (cemetery well) located southwest and downgradient to regional groundwater flow beneath the site. In their survey of well receptors potentially at risk from the site, this well was the closest downgradient well in the regional aquifer (approximately 50 feet below ground surface). No gasoline, diesel, oil range or BTEX contamination was found at that time. See also response to Comment 1.

Comment 8:
There was also no information included in the work plan that suggests that steps have been taken to prevent the installation of new public or private water supply wells at or near the site. This should be done as soon as possible to prevent potential exposures. If not already done, City of SeaTac - Public Works and utility companies should also be notified about the contamination particularly since it has migrated off the SeaTac Development property and appears to underlie S. 160th Street to the north. This would be done to prevent potential exposures to subsurface vapors.

Ecology response:
Previous reports and follow up work show no well drilling in the area at or near the site. With one exception, the Washington Memorial Park (cemetery) well.

Comment 9:
Four temporary soil gas probe installations are planned along the outside of the single family residence located to the northwest on the Washington Memorial Park Cemetery property. The rationale for temporary soil probes is unclear given that it is known that gasoline and benzene levels near this residence exceed MTCA cleanup levels and that additional soil gas testing might be necessary in the future.

As noted above, the work plan indicates that "[i]f the results of the soil vapor analyses shows groundwater contaminants at potential levels of concern for indoor air impacts (consultation with Ecology), an air sample of the crawl space will be considered."[3] The rationale for only considering air sampling rather than taking samples is unclear. However, it is not an approach acceptable to DOH when there is a potential health concern. If soil gas levels exceed levels of concern, DOH strongly suggests that Ecology require the PLPs to collect air samples from the crawlspace and living space.

Other buildings, including SeaTac Development buildings and buildings on adjacent properties (e.g., Louden) may also be at risk from vapor intrusion. This fact and how it will be addressed is not mentioned in the WP or the SAP. DOH considers this a significant omission that needs to be addressed.

Ecology response:
Ecology will correct the language to state, "A crawl space exists at the property. It will be examined for potential artifacts that could bias results and crawlspace air evaluated for suitability as a soil vapor sampling point. If the results of the soil vapor analyses shows groundwater contaminants at levels that can potentially cause a risk for indoor air (consultation with Ecology), various options for moving forward with the assessment will be considered, such as sampling indoor air, modeling (Johnson & Ettinger if there is no crawlspace), collecting sub-slab gas, or mitigation."

Ecology acknowledges the presence of other receptors at this site. Past work on this site, including the reports cited in the Order, recognized this. Due to access difficulties, the "Tier I"[2] screening process for air vapor threats will be accomplished by investigating the area at and/or near the cemetery building to determine if there is indeed a threat. Based on previous gas sampling, there is some indication that soil gas concentrations measured will not be sufficient to trigger further investigation, i.e. no issue. Therefore, Ecology will look at the groundwater contaminant results (which will include other chemicals of concern in addition to BTEX) in conjunction with the results from the soil gas sampling to evaluate the next steps to protect human health. For example, Ecology may require installation of permanent soil gas monitoring probes for continued testing, and indoor air testing.

If the RI/FS screening process identifies that a potential indoor vapor intrusion health threat is present at the cemetery building, other properties will be included. Ecology believes indoor air sampling to be a premature response at this point given known site conditions and constraints. Furthermore, the cleanup effort will focus on plume remediation which will decrease any vapor intrusion threat (if they exist) at buildings situated above the contaminant plume.

Comment 10:
<u>Agreed Order</u>

1. Item 7, Page 6 – It is noted that "[t]he [DOH] Health Consultation identified a general class of historic activities at the Site that used or handled petroleum products or generated

[2] As per Ecology's draft VI guidance, unpublished draft document

wastes containing petroleum, but concluded that none of the environmental investigations done at or near the 'Master Park properties indicate they are the source of petroleum contamination discovered in the regional aquifer.' " The sentence segment "at or" was incorrectly included in the health consultation report. The Agreed Order should be revised to say instead ". . . none of the environmental investigations done near the site indicates they are the source of petroleum contamination discovered in the regional aquifer."

Ecology response:
Ecology will make the correction in the Agreed Order.

Comment 11:
Work Plan

1. **Section 1.2, Objectives for an RI/FS, last paragraph** – WAC 173-340-360(2)(b)(iii) indicates that public concerns should be considered. This requirement was omitted from the work plan but should be added.

Ecology response:
The cited WAC is already incorporated in the last paragraph where it states that the "FS will be conducted according to the MTCA regulation, specifically WAC 173-340-350 and WAC 173-340-360.

A Public Participation Plan was prepared and will be followed throughout the RI/FS investigation process. The consideration of public concerns will be addressed during the public comment period on the Draft Cleanup Action Plan. The selection of the cleanup action will give due consideration of the public concerns that will be through public comments received during the public review period.

Comment 12:
2. **Section 3, RI Investigation Approach, first bullet** – The cross section on Figure 3 indicates that some shallow contaminated soils exist at the site; contaminated soil gas also exists. As a result, the site or utility worker receptor should be addressed during the RI.

Ecology response:
Ecology agrees with this statement.

There are some areas that contain petroleum hydrocarbons (oil leaks from automobiles and construction equipment) from past use as a parking lot on former dirt/gravel surfaces. The site has an institutional control on the property deed that restricts disturbance of the surface and requires Ecology's approval of the proposed work in order to take necessary precautions to handle and dispose impacted soils properly and to protect worker safety.

Comment 13:
Section 3, RI Investigation Approach, second bullet – It is noted in the work plan that "The Facility and neighbors to the east, north, and south are also commercial/industrial land uses."

However, it appears that none of the nearby properties would be considered industrial, as defined under the MTCA cleanup regulation. The work plan should be revised appropriately.

Ecology response:
Ecology agrees and will make the correction.

Comment 14:
Section 3, RI Investigation Approach, page 6, last paragraph - DOH recommends that all the existing and new monitoring wells be tested for naphthalene, ethylene dibromide (EDB), 1,2-dichloroethane (EDC) and methyl tertiary-butyl ether (MTBE) as well as gasoline and BETX (i.e., benzene, ethylbenzene, toluene, and xylenes) compounds for four quarters to determine if there are seasonal changes in contaminant concentrations.

Ecology response:
The work plan will do a preliminary analysis to identify chemicals of concern including those listed in the comment. MTCA requires a minimum of four quarters of groundwater monitoring.

As indicated in the SAP, a sufficient number of groundwater samples from new and existing wells will be tested for all appropriate parameters listed in MTCA Table 830-1 to understand if any of these constituents are chemicals of concern at the site.

Comment 15:
5. **Section 4.1.1, Soil Vapor Sampling** – It is noted that "The [soil gas] probes will extend to a depth below land surface to be specified at a later time." However, those details need to be worked out and included in the plan to ensure that they are placed appropriately.

Ecology response:
The depth of the soil gas probes will be 10 feet, about 45 feet above the water table in this location. This will be specified in the Work Plan and Sampling and Analysis Plan.

Comment 16:
6. **Section 4.1.1, Soil Vapor Sampling** – It is noted that "[t]he crawl space will be inspected for possible storage of chemicals, paints, solvents and fuels. If no storage is evident of volatile organic materials, an atmospheric sample of the crawl space at an appropriate access location will be obtained in a SUMMA canister for analysis." Storage of chemicals in a building alone should not prevent air testing if those chemicals can be removed by the owner or tenant. The crawl space should be allowed to air out before crawl space samples are collected.

Ecology response:
Ecology agrees with this observation, however, it should also be noted that there is a possibility of spills or leaks from these storage items that may still bias results. Sampling crawl spaces can provide biased results if the crawl space was used for fuel or solvent storage in the past, even when such storage practices are not evident today. Crawl space conditions will be recorded.

Comment 17:
Section 4.1.1, Soil Vapor Sampling – A background air sample is planned to be collected 20 feet west of the residence and four feet above ground. This is not an appropriate location because it could be influenced by the plume. The background sample should be collected upwind and outside the plume boundary instead.

Ecology response:
Ecology will direct the PLPs to take three ambient air samples around the site that would represent ambient air conditions around the site with changing wind directions. The Work Plan and Sampling and Analysis Plan will incorporate this addition for background air sampling.

Ecology and the PLPs understand the concern that the emission of volatile organics from the groundwater will emanate through the vadose zone and emit into the atmosphere. It has been shown that the emission to the atmosphere from the soil gas results in at least a 10,000 to 100,000 fold dilution factor of the soil gas concentration in near surface of the vadose zone, even at low wind velocities. Mixing with the atmosphere, in reality, has no detectable effect on the atmospheric concentration four feet above land surface. We want the background atmospheric air sample to represent an average ambient concentration occurring during the duration of the soil gas sampling event. Therefore, an average time of 6 to 8 hours was chosen for the ambient air sampling. Wind direction will likely change during the 6-8 hour sampling period, so placement of the background sample at a location that is always upwind will be difficult.

The ambient air concentration results will be compared with soil gas sample and crawlspace air sample results, and reported in the RI report.

Comment 18:
Section 4.2.4, Groundwater Quality Sampling – The work plan indicates that a "down-hole impeller driven pump (GrunFos pump)" will be used to collect groundwater samples. If this is one of the GrunFos low volume submersible pumps that is water cooled, it could result in heating of samples when used during low flow sampling. This could drive off some of the volatile components. An appropriate pump should be selected to collect groundwater samples.

Ecology response:
Although the GrunFos pump can slightly increase water temperature at low flow levels, the positive displacement pump system remains thoroughly saturated and closed, thus not allowing any increase in volatilization of VOCs. The only place where volatilization could occur is during the filling of the vials which is a very short time period with slight overflow.

Comment 19:
Section 4.2.4, Groundwater Quality Sampling – The work plan indicates that a log of repeated field test data recorded during the purge process for each well are maintained in the

project files." These results should also be provided in the RI to support the use of the data for making site decisions.

Ecology response:
Ecology will direct the PLPs to provide a record of the purge logs as an appendix to the RI/FS Report.

Comment 20:
Sampling and Analysis Plan

> **Section 3, Remedial Investigation Tasks** - None of the technical or sampling procedures or methods mentioned in the SAP are provided. These are critical pieces of information that need to be reviewed and added to the SAP.

Ecology response:
The SAP indicates that the sampling procedures will be provided upon request.

Comment 21:
Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses – A photo-ionization detector (PID) will be used along with other field screening methods to check for the presence of petroleum at the soil vapor locations. The results of this field screening should be documented and provided along with the soil gas results.

Ecology response:
Ecology will direct the PLPs to provide this field information in the RI/FS report.

Comment 22:
Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses – Soil gas samples are planned to be collected for 6 to 8 hours. The rationale for this sampling interval should be provided.

Ecology response:
Ecology will direct the PLPs to clarify the duration of time for obtaining soil vapor samples. The SAP indicated that the entire time to collect all four soil vapor samples will be between 6 to 8 hours. The time to extract a single sample of soil vapor from a single probe will be specified in the SAP to between 0.5 and 1 hour depending on the permeability of the media.

Comment 23:
Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses – Isopropyl alcohol is planned to be used for leak testing during soil vapor testing. However, Columbia Analytical Lab reports that isopropyl alcohol can interfere with the T015 method and notes that helium is a better choice (http://www.caslab.com/News/tag/isopropyl-alcohol). This issue needs to be addressed before sampling occurs.

Ecology response:
The PLP's technical consultant states that:

"The purpose in using isopropyl alcohol (volatile liquid) is to spray on the ground around the soil vapor probe to detect atmospheric air intrusion and dilution of the soil vapor sample. This results in a simple indicator of a faulty probe seal and tests for atmospheric dilution through the faulty seal. The helium test recommended by the Heath Department/Columbia Analytical is certainly a good test for the same problem, but is difficult to administer. Helium is a gas that is lighter than air and needs to be contained in a closed system above the soil vapor probe, especially at ground surface. If the helium is not properly contained or air flows into the container system along the uneven ground surface, the air could occupy the ground surface (heavier than helium) and block the infiltration of the helium into the subsurface during the test.

Isopropyl alcohol is an easy test and does not interfere with the identification or quantification of the other TO-15 compounds, unless too much isopropyl alcohol enters the summa canister. High concentrations of isopropyl alcohol may be outside the calibration limits and require sample dilution to adequately quantify isopropyl alcohol. Quantification of isopropyl alcohol or helium can be used to "back calculate" the concentrations of the other TO-15 compounds as a correction for the atmospheric dilution. Sample dilution will increase the reporting limits on the other TO-15 compounds."

If the soil vapor results from probes have detectable isopropyl alcohol in the soil vapor sample, the data will be rejected by Ecology.

Comment 24:
Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses – Only EPA Method TO-15 is planned for testing soil vapor. However, this analytical method will not measure the gasoline range petroleum fractions. Given that this site contains high levels of gasoline in soil and groundwater and that there are nearby buildings at potential risk, DOH recommends that Ecology require the PLPs to <u>also use</u> the Massachusetts APH method when testing soil vapors.

Ecology response:

Ecology requests clarification on why the Massachusetts APH method is being recommended in addition to the EPA Method TO-15. Additional methods should be used if it provides additional value to the scope and objectives of the investigation.

When requested of the analytical laboratory, gasoline range hydrocarbons can be analyzed using EPA Method TO-15. EPA Method TO-15 can analyze and quantify individual aromatic and straight –chain C-5 through C10 and even up to C-12. Although some states require the Massachusetts APH, Air Toxics LTD. does not run the method. The BTEX analysis and C-5 to C12 quantification will be sufficient to characterize soil vapors at the site using the TO-15 analytical method.

Comment 25:
6. **Section 3.2.2, Groundwater Quality Sampling** – It is noted in the SAP that "[s]everal of the wells historically have had seasonal low groundwater levels that were below

the well screen preventing the collection of groundwater samples. If this condition is observed in any of the wells during the next four groundwater sampling events, groundwater samples will not be collected from that well and the condition will be documented in field logbooks and sample logs." It should also be determined whether the well needs replacement because it is a critical part of the groundwater monitoring system.

Ecology response:
Ecology will make such decisions in the course of management of the site under MTCA.

Comment 26:
7. **3.2.2.3 Chemical Analysis of Groundwater Quality Samples** – Only a subset of the site monitoring wells is planned to be tested for all analytes. DOH recommends complete testing for all wells for all four quarters because the purpose of the groundwater testing is to determine if there are seasonal differences in contaminant levels.

Ecology response:
As mentioned before, Ecology is aware of this fundamental consideration for characterizing and cleaning up contaminated sites. The RI/FS will use a phased approach to address coverage, analytical suites, and seasonal variations following MTCA requirements.

The selected wells should be adequate to determine the presence of chemicals of concern, for example, fuel additives or other gasoline associated compounds. If any of these compounds are present, Ecology will evaluate the need to sample groundwater from all wells in subsequent sampling events. Detected fuel additives may also be added to the soil gas sample analysis, if necessary.

Comment 27:
Quality Assurance Project Plan

1. **Table QAPP 1** – The regional aquifer is a current and potential future drinking water source. Therefore, federal and state maximum contamination levels and/or health advisories should be added to the table so it can be verified that the proposed reporting limits are low enough to compare with these standards or levels.

Ecology response:
The MTCA Method A and B cleanup standards inclusive of federal MCLs are flagged in the table. If in the course of the evaluation of cleanup levels in the RI a more stringent federal or state standard exist, or will become a target cleanup level, the PLPs will have to refine the characterization or feasibility study appropriately. However, it should be noted that if the QAPP PQLs meet MTCA requirements they will also meet Federal and State MCLs. Therefore, Federal and State MCLs are included in evaluation of necessary detection or quantification limits in the QAPP.

Comment 28:
2. **Table QAPP 1** – The PQL for EDB, using EPA Method 8260, exceeds the MTCA cleanup levels and the MCL (0.05 ug/l). However, it looks like EPA Method 504.1 can

achieve a reporting limit for EDB of 0.01 to 0.05 ug/l. This method should be considered instead for EDB.

Ecology response:
The analytical method will be specified that meets the MTCA Cleanup Level of 0.01 µg/L for EDB.

Comment 29:

3. **Table QAPP 1** – NIOSH worker exposure limits are included on the table. However, these levels are not appropriate for assessing site health risks for this site and should be removed from this table.

Ecology response: Ecology will direct the PLPs to enter inhalation MTCA levels for residents and commercial workers in the Table QAPP-1. NIOSDH worker exposure limits will be removed from this table.

Comment 30:

4. **Table QAPP 1** – "Gasoline range organics" is one of the analytes planned for soil vapor testing using TO-15. It is not clear what will be measured (e.g., fractions, total gasoline). This should be clarified and reconsidered as a method, if not appropriate.

Ecology response:
The choice of analytes for soil vapor testing will be based on the results of groundwater sampling specific to the areas of investigation. The groundwater samples will be analyzed according to the suite found in Table QAPP-1, which follows Table 830-1 in the MTCA cleanup regulation. The Air Toxics laboratory will analyze the standard EPA Method TO-15 analytes in addition to fuel additives, if found to be present in the groundwater. The BTEX and petroleum fuel aromatic and straight-chain C-5 through C-12 compounds will be quantified using the method.

Comment 31:
Conclusions

The Washington Department of Health cannot currently conclude whether the SeaTac Development site could harm people's health because data gaps remain. However, the site poses a potential indoor air health threat via the soil and groundwater to indoor air pathway. The contaminated groundwater could also pose a health concern if people are drinking it. The proposed remedial investigation work, as described in the draft Agreed Order, will not provide the necessary data for assessing the site health threat.

Ecology response:
The work plan outlines preliminary and phased activities for an RI/FS. This information will support the necessary tiered protocol to determine if increased vapor intrusion and groundwater ingestion risks exist that would require a higher level of investigation followed

by mitigation. The comments, while prescriptive, are acknowledged and Ecology will take them into consideration especially when preparing the Cleanup Action Plan for this site.

Ecology believes that due to past investigative work and documented site conditions, the Agreed Order should proceed to expedite the remediation of the groundwater plume and contaminant source(s) at the site. This will reduce the petroleum hydrocarbon concentrations in groundwater to the point where the indoor air threats (if they exist) and groundwater risks are expected to diminish to levels protective of human health and the environment.

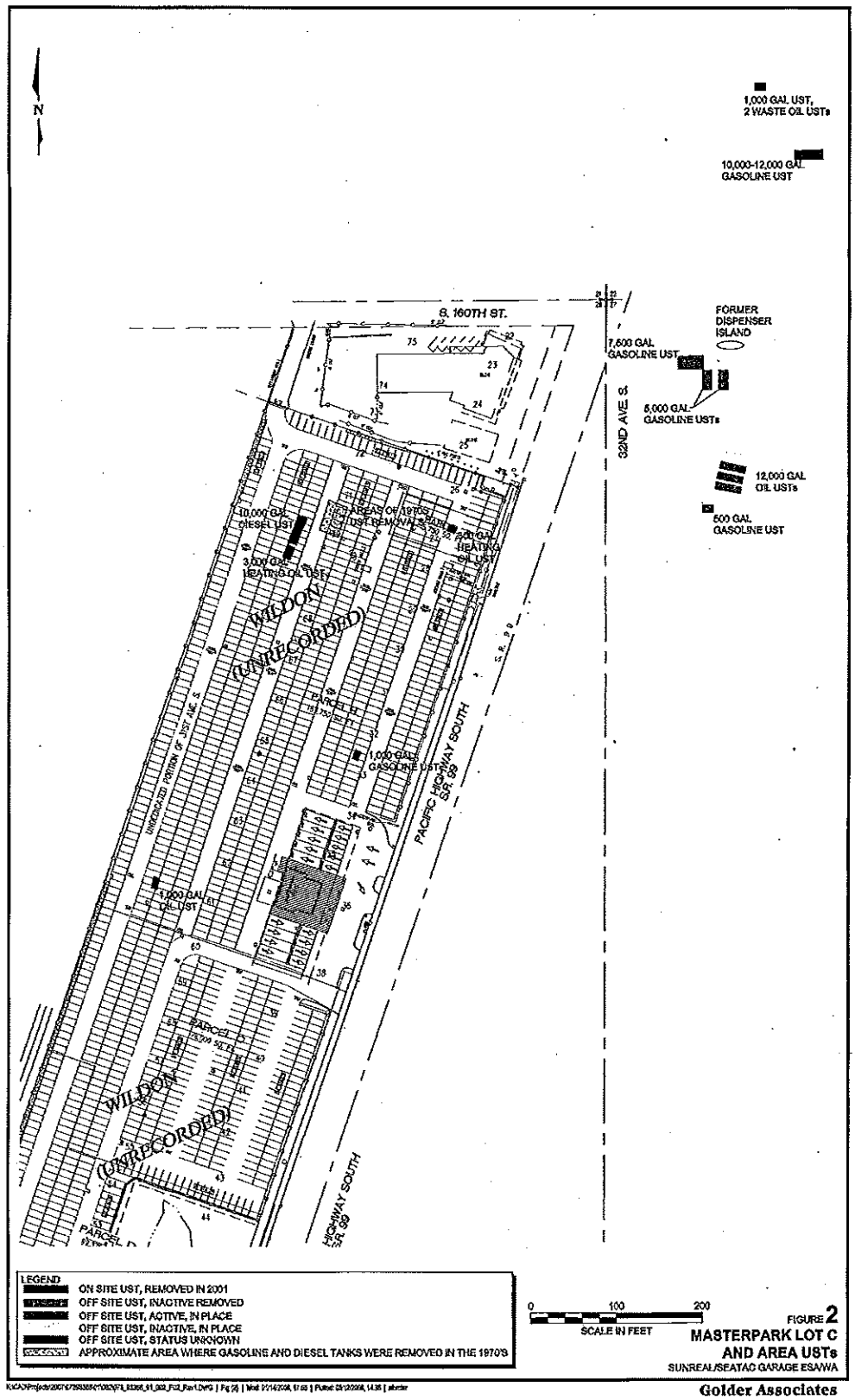
Comment 32:
We are continuing to work with the Washington Department of Ecology to gather the needed information.

Ecology response:
Ecology will keep you and any relevant agencies informed of activities at the site.

Comment 33:
Recommendations

DOH recommends that Ecology require the PLPs to compile, analyze, and interpret existing site data and develop a site conceptual model. [Note: only data that has been collected and analyzed using appropriate analytical methods that meets appropriate data quality objectives should be used for characterizing the site and assessing potential health risks.] All this information should be presented in a background summary report, which should accompany a revised, draft Agreed Order addressing the issues described by DOH in this health consultation letter.

Ecology response:
Ecology will implement the requirements for site characterization, conceptual site models, and other content as found in WAC 173-340-350(7)(c). Following the MTCA process, Ecology will proceed with the Agreed Order with revisions if Ecology determines it is merited. The information recommended by the Health Department is valuable. This information is provided in previous investigation reports that are referenced in the work plans. All previous investigation reports are available in Ecology's Northwest Regional Office for you and the public to review. Furthermore, the RI/FS Report will compile all past data that meets Ecology's QA/QC criteria and will be available for decision making, public comment, and moving this site forward for cleanup.



Attachment A. Figure 2 from Golder Associates report, "On-site Source and Groundwater Investigation Summary – June to November 2007

Attachment B:
Draft Health Consultation Memorandum
Department of Health
June 2, 2009

STATE OF WASHINGTON
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Draft Health Consultation Memorandum

June 2, 2009

TO: Jerome Cruz
Washington Department of Ecology

FROM: Barbara Trejo
Washington Department of Health

SUBJECT: Draft Health Consultation – Agreed Order Review
SeaTac Development Site (aka MasterPark Site)
SeaTac, King County, Washington

Background and Statement of Issues

The Washington Department of Health (DOH) has completed its review of the draft Agreed Order for the SeaTac Development site (aka MasterPark site).[3] The draft Agreed Order requires the potentially liable parties (PLPs) to complete a site remedial investigation and feasibility study (RI/FS) and draft cleanup action plan pursuant to the Model Toxics Control Act (MTCA). This work will be done under Washington Department of Ecology (Ecology) oversight. A RI/FS work plan (WP), sampling and analysis plan (SAP), quality assurance project plan (QAPP), and Health and Safety plan (HASP) are integral parts of the Agreed Order. DOH reviewed all but the HASP, which was prepared to address health and safety issues for the PLPs' consultants.

The draft Agreed Order and associated plans were made available to DOH during the Ecology public comment period, which runs from May 8, 2009, through June 8, 2009. DOH reviewed these documents as a follow-up to its January 2006 health consultation, which recommended that the following actions be taken at the site:

- Determine the nature and extent of the groundwater contamination.

[3] Washington Department of Ecology, Draft Agreed Order No. DE [*to be assigned*], Sea-Tac Investments LLC, a Washington limited liability company; ANSCO Properties, LLC, a Washington limited liability company; and Scarsella Bros. Inc., a Washington corporation, May 2009.

- Conduct a well survey to identify whether nearby private or public water supply wells are potentially affected by the contaminated groundwater.
- Evaluate the groundwater to indoor air pathway to ensure that no one is being exposed to harmful levels of groundwater contaminants via indoor air.
- Ensure that no drinking water wells are installed at or immediately downgradient of the site.[4]

Comment 1 The SeaTac Development property, which is approximately seven acres, is located at 16025 International Boulevard, SeaTac, King County, Washington. The site overlies the regional, unconfined Vashon Advance Outwash (QVA) aquifer, which is a potable drinking water source. The WP indicates that only one well is located immediately downgradient of the site. That well, which is reportedly used for irrigation, is owned by the Washington Memorial Park Cemetery. The City of Seattle reportedly has a backup water supply well located about 0.5 miles east of the site, which appears to be upgradient of the site. The work plan also indicates that there are no water supply wells located within a mile downgradient of the site. However, there is no information provided in the report explaining how that was determined.

Most of the SeaTac Development property is paved except for the southern portion, which is undeveloped. The property is currently occupied by a public valet parking facility, known as MasterPark Lot C, which serves as a parking area for airline passengers. Two buildings are located near the east central portion of the property. How those buildings are constructed or are being used is unknown. In the past, the property was reportedly used as a base for construction and heavy equipment operations. It is also reported that small industrial and manufacturing activities and some residential and commercial uses occurred at the property in the past.[3]

Comment 2 Soil and groundwater below the SeaTac Development property is contaminated with gasoline components. The extent of soil contamination at the property has reportedly been defined but no information has been provided in the Agreed Order to support this conclusion. Most of the northern third of the property is underlain by gasoline contaminated groundwater. The southern boundary of the gasoline contaminated groundwater on the SeaTac Development property has not been determined (i.e., MW-5, the southern most monitoring well contains 1,600 ug/l, which exceeds the 800 ug/l MTCA Method A cleanup level for gasoline). Releases at the SeaTac Development property have affected other properties to the north and west, which are also underlain by gasoline contaminated groundwater and potentially contaminated soil gas, which poses an indoor air health threat. The properties to the east may also be affected by contaminated soil gas. The extent of that groundwater and soil gas contamination associated with the site, however, is unknown.[3]

According to the WP, the purpose of the RI is to "collect, develop and evaluate sufficient information regarding [s]ite releases to define the extent and magnitude of the contamination and evaluate the risk to human health and the environment." It is also noted that "[b]ecause many investigations and data have been obtained regarding the Facility, the RI will focus on data gaps that exist for completing the RI/FS Report. The data gaps will be identified with

[4] Washington Department of Health, Health Consultation, Master Park Site (Near Intersection of South 160 Street and International Boulevard)SeaTac, King County, Washington, January 6, 2006.

respect to the major potential exposure pathways for the [s]ite releases and groundwater." The SAP indicates that "Phase I will be the primary information gathering phase of the RI. Phase 2 will only be conducted if additional data gaps are identified after the completion of Phase I."[3]

Two groups of objectives are proposed for RI – Phase 1. The first objective group includes compiling existing information including:

- Historical uses and operations at the site and surrounding area.
- Classification of the types of materials stored and used at the site and surrounding area.
- Evaluation of previous investigations and cleanup actions conducted at the site and surrounding area.
- Characterization of the nature, extent, and potential sources of hazardous substance releases at the site and surrounding area that have impacted or have the potential to impact groundwater.

The second objective group includes conducting:

- A regional and site specific geologic and hydrogeologic investigation to help characterize groundwater flow at the site.
- An assessment of the groundwater impacts from the site releases, including the lateral and vertical extent of the dissolved contaminant plume.
- An evaluation of the potential routes of exposure and risks to human and ecological receptors associated with releases or threatened releases of hazardous substances.[3]

Only limited field work is proposed to be conducted during RI – Phase 1. One additional monitoring well will be installed to the west of the SeaTac Development property to help determine the western extent of the plume. According to the SAP, that new monitoring well along with the existing monitoring wells will be sampled for four quarters. Four soil vapor probes are proposed to be installed adjacent to the residence located northwest of the property. The work plan indicates that "[i]f the results of the soil vapor analyses shows groundwater contaminants at potential levels of concern for indoor air impacts (consultation with Ecology), an air sample of the crawl space will be considered."[3]

The information collected during the RI will be used to support the FS, where cleanup alternatives are evaluated.

Discussion

Soil and groundwater at the SeaTac Development site are contaminated with gasoline components, including benzene, and pose a threat to the regional aquifer, which is a current and potential future drinking water source. The contaminated soil and contamination in the upper portion of the aquifer also pose a potential indoor air health threat to buildings on the SeaTac Development property as well as on adjacent properties.

Comment 3 Typically, when planning a RI for such a site, existing site information, of acceptable quality (i.e., collected and analyzed used acceptable methods and procedures), is compiled, analyzed, and interpreted; a site conceptual model is developed; and data gaps identified before proceeding with plans for additional investigation work. However, such an approach was not taken for this site. Instead, according to the work plan, these steps will occur during the RI – Phase I. It is unclear why such an approach was taken when, as noted above, the focus of the RI is to address data gaps.

Comment 4 Information provided in the work plan suggests that the soil contamination has been defined (see page 5) so no soil investigation work is planned for the RI. However, no data (e.g., tables, maps, laboratory data sheets) are provided in the work plan to support that conclusion. Given this lack of information about the nature and extent of soil contamination, DOH cannot verify this conclusion nor determine possible health threats. However, the cross section presented in Figure 3 in the work plan does suggest that a potential health threat is possible if a construction or utility worker encountered the gasoline and benzene contaminated soil shown on that figure.

Comment 5 The contaminated groundwater associated with this site lies within the regional aquifer, which is a current and potential future drinking water source. Neither the lateral nor the vertical extent of the site groundwater contamination in the regional aquifer has been determined. This is clearly depicted for the upper portion of the regional aquifer in work plan Figure 4, which shows that the extent of the groundwater contamination associated with the site has not been defined to the northeast, north, northwest, west or south.[3] One well (MW-10), which was installed in the past in the deeper portion of the regional aquifer at the site, at one time contained 1,600 ug/l gasoline suggesting that the deeper portion of the aquifer is also contaminated.[4] Neither the horizontal nor vertical extent of the deeper contamination can be determined with one monitoring well. These are significant data gaps not mentioned in the work plan.

Comment 6 Only one additional downgradient monitoring well is planned to be installed to the west of the SeaTac Development property during the RI. However, additional monitoring wells also need to be installed to the northeast, north, northwest, and south to define the lateral extent of the plume in the shallow portion of the regional aquifer. Some deeper monitoring wells are necessary to assess the vertical extent of the contamination.

Comment 7 There is no information provided in the WP that indicates whether a well survey was done to determine whether private or public wells exist in the area. If a well survey has already been done, that information should be added to the work plan. If not done, DOH considers this a data gap that needs to be filled.

Comment 8 There was also no information included in the work plan that suggests that steps have been taken to prevent the installation of new public or private water supply wells at or near the site. This should be done as soon as possible to prevent potential exposures. If not already done, City of SeaTac - Public Works and utility companies should also be notified about the contamination particularly since it has migrated off the SeaTac Development property and

appears to underlie S. 160th Street to the north. This would be done to prevent potential exposures to subsurface vapors.

Comment 9 Four temporary soil gas probe installations are planned along the outside of the single family residence located to the northwest on the Washington Memorial Park Cemetery property. The rationale for temporary soil probes is unclear given that it is known that gasoline and benzene levels near this residence exceed MTCA cleanup levels and that additional soil gas testing might be necessary in the future.

As noted above, the work plan indicates that "[i]f the results of the soil vapor analyses shows groundwater contaminants at potential levels of concern for indoor air impacts (consultation with Ecology), an air sample of the crawl space will be considered."[3] The rationale for only considering air sampling rather than taking samples is unclear. However, it is not an approach acceptable to DOH when there is a potential health concern. If soil gas levels exceed levels of concern, DOH strongly suggests that Ecology require the PLPs to collect air samples from the crawlspace and living space.

Other buildings, including SeaTac Development buildings and buildings on adjacent properties (e.g., Louden) may also be at risk from vapor intrusion. This fact and how it will be addressed is not mentioned in the WP or the SAP. DOH considers this a significant omission that needs to be addressed.

In addition to the issues just discussed, DOH has specific comments and recommendations regarding the work plan, sampling and analysis plan, and QAPP, which are summarized in the following numbered items:

Agreed Order

Comment 10 1. Item 7, Page 6 – It is noted that "[t]he [DOH] Health Consultation identified a general class of historic activities at the Site that used or handled petroleum products or generated wastes containing petroleum, but concluded that none of the environmental investigations done at or near the 'Master Park properties indicate they are the source of petroleum contamination discovered in the regional aquifer.' " The sentence segment "at or" was incorrectly included in the health consultation report. The Agreed Order should be revised to say instead ". . . none of the environmental investigations done near the site indicates they are the source of petroleum contamination discovered in the regional aquifer."

Work Plan

Comment 11 1. **Section 1.2, Objectives for an RI/FS, last paragraph** – WAC 173-340-360(2)(b)(iii) indicates that public concerns should be considered. This requirement was omitted from the work plan but should be added.

Comment 12 2. **Section 3, RI Investigation Approach, first bullet** – The cross section on Figure 3 indicates that some shallow contaminated soils exist at the site; contaminated soil gas also exists. As a result, the site or utility worker receptor should be addressed during the RI.

Comment 13 3. **Section 3, RI Investigation Approach, second bullet** – It is noted in the work plan that "The Facility and neighbors to the east, north, and south are also commercial/industrial land uses." However, it appears that none of the nearby properties would be considered industrial, as defined under the MTCA cleanup regulation. The work plan should be revised appropriately.

Comment 14 4. **Section 3, RI Investigation Approach, page 6, last paragraph** - DOH recommends that all the existing and new monitoring wells be tested for naphthalene, ethylene dibromide (EDB), 1,2-dichloroethane (EDC) and methyl tertiary-butyl ether (MTBE) as well as gasoline and BETX (i.e., benzene, ethylbenzene, toluene, and xylenes) compounds for four quarters to determine if there are seasonal changes in contaminant concentrations.

Comment 15 5. **Section 4.1.1, Soil Vapor Sampling** – It is noted that "The [soil gas] probes will extend to a depth below land surface to be specified at a later time." However, those details need to be worked out and included in the plan to ensure that they are placed appropriately.

Comment 16 6. **Section 4.1.1, Soil Vapor Sampling** – It is noted that "[t]he crawl space will be inspected for possible storage of chemicals, paints, solvents and fuels. If no storage is evident of volatile organic materials, an atmospheric sample of the crawl space at an appropriate access location will be obtained in a SUMMA canister for analysis." Storage of chemicals in a building alone should not prevent air testing if those chemicals can be removed by the owner or tenant. The crawl space should be allowed to air out before crawl space samples are collected.

Comment 17 7. **Section 4.1.1, Soil Vapor Sampling** – A background air sample is planned to be collected 20 feet west of the residence and four feet above ground. This is not an appropriate location because it could be influenced by the plume. The background sample should be collected upwind and outside the plume boundary instead.

Comment 18 8. **Section 4.2.4, Groundwater Quality Sampling** – The work plan indicates that a "down-hole impeller driven pump (GrunFos pump)" will be used to collect groundwater samples. If this is one of the GrunFos low volume submersible pumps that is water cooled, it could result in heating of samples when used during low flow sampling. This could drive off some of the volatile components. An appropriate pump should be selected to collect groundwater samples.

Comment 19 9. **Section 4.2.4, Groundwater Quality Sampling** – The work plan indicates that a log of repeated field test data recorded during the purge process for each well are maintained in the project files." These results should also be provided in the RI to support the use of the data for making site decisions.

Comment 20 Sampling and Analysis Plan

1. **Section 3, Remedial Investigation Tasks** - None of the technical or sampling procedures or methods mentioned in the SAP are provided. These are critical pieces of information that need to be reviewed and added to the SAP.

Comment 21 2. **Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses** – A photo-ionization detector (PID) will be used along with other field screening methods to check for the presence of petroleum at the soil vapor locations. The results of this field screening should be documented and provided along with the soil gas results.

Comment 22 3. **Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses** – Soil gas samples are planned to be collected for 6 to 8 hours. The rationale for this sampling interval should be provided.

Comment 23 4. **Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses** – Isopropyl alcohol is planned to be used for leak testing during soil vapor testing. However, Columbia Analytical Lab reports that isopropyl alcohol can interfere with the T015 method and notes that helium is a better choice (http://www.caslab.com/News/tag/isopropyl-alcohol). This issue needs to be addressed before sampling occurs.

Comment 24 5. **Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses** – Only EPA Method TO-15 is planned for testing soil vapor. However, this analytical method will not measure the gasoline range petroleum fractions. Given that this site contains high levels of gasoline in soil and groundwater and that there are nearby buildings at potential risk, DOH recommends that Ecology require the PLPs to also use the Massachusetts APH method when testing soil vapors.

Comment 25 6. **Section 3.2.2, Groundwater Quality Sampling** – It is noted in the SAP that "[s]everal of the wells historically have had seasonal low groundwater levels that were below the well screen preventing the collection of groundwater samples. If this condition is observed in any of the wells during the next four groundwater sampling events, groundwater samples will not be collected from that well and the condition will be documented in field logbooks and sample logs." It should also be determined whether the well needs replacement because it is a critical part of the groundwater monitoring system.

Comment 26 7. **3.2.2.3 Chemical Analysis of Groundwater Quality Samples** – Only a subset of the site monitoring wells is planned to be tested for all analytes. DOH recommends complete testing for all wells for all four quarters because the purpose of the groundwater testing is to determine if there are seasonal differences in contaminant levels.

Comment 27 Quality Assurance Project Plan

1. **Table QAPP 1** – The regional aquifer is a current and potential future drinking water source. Therefore, federal and state maximum contamination levels and/or health

advisories should be added to the table so it can be verified that the proposed reporting limits are low enough to compare with these standards or levels.

Comment 28 2. **Table QAPP 1** – The PQL for EDB, using EPA Method 8260, exceeds the MTCA cleanup levels and the MCL (0.05 ug/l). However, it looks like EPA Method 504.1 can achieve a reporting limit for EDB of 0.01 to 0.05 ug/l. This method should be considered instead for EDB.

Comment 29 3. **Table QAPP 1** – NIOSH worker exposure limits are included on the table. However, these levels are not appropriate for assessing site health risks for this site and should be removed from this table.

Comment 30 4. **Table QAPP 1** – "Gasoline range organics" is one of the analytes planned for soil vapor testing using TO-15. It is not clear what will be measured (e.g., fractions, total gasoline). This should be clarified and reconsidered as a method, if not appropriate.

Comment 31 *Conclusions*

The Washington Department of Health cannot currently conclude whether the SeaTac Development site could harm people's health because data gaps remain. However, the site poses a potential indoor air health threat via the soil and groundwater to indoor air pathway. The contaminated groundwater could also pose a health concern if people are drinking it. The proposed remedial investigation work, as described in the draft Agreed Order, will not provide the necessary data for assessing the site health threat. We are continuing to work with the Washington Department of Ecology to gather the needed information.

Comment 32

Comment 33 *Recommendations*

DOH recommends that Ecology require the PLPs to compile, analyze, and interpret existing site data and develop a site conceptual model. [Note: only data that has been collected and analyzed using appropriate analytical methods that meets appropriate data quality objectives should be used for characterizing the site and assessing potential health risks.] All this information should be presented in a background summary report, which should accompany a revised, draft Agreed Order addressing the issues described by DOH in this health consultation letter.

Please feel free to contact me if you want to discuss any of the comments or recommendations.

cc: Elmer Diaz, DOH