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TCP-NRNG

October 13, 2017
Project No. T-6552

Ms. Heather Vick
Washington State Department of Ecology
Voluntary Cleanup Program
3190 - 160th Avenue SE
Bellevue, Washington 98008

Subject: Response to WDOE Opinion Letter, dated September 29, 2017
C and C Paints
5221 Ballard Avenue NW
Seattle, Washington
VCP NW 3030

Dear Ms. Vick:

We have received your opinion letter regarding the materials submitted for the C and C Paints facility at 5221 Ballard Avenue Northwest. This letter presents our responses to your letter. To ease review, we have retained the bullet list format from the opinion letter.

- Site ground water following the gradient reversal due to dewatering nearby needs additional characterization. The new monitoring wells were placed along a line making it difficult to verify the direction of the lowered hydraulic gradient using triangulation.

The site layout with the narrow parking lot along the western margin limited monitoring well placement at 5221 Ballard Avenue NW. The groundwater data at 5221 Ballard Avenue NW is supported by the groundwater monitoring wells placed along the Shilshole Parcels.

- A soil vapor extraction system operating on the Site from 2012 to 2014 recovered approximately 180 gallons of paint thinner from the subsurface. It is expected that additional hydrocarbon mass was degraded in place through enhanced biodegradation.

Agreed.

ent 10/19

- Sub slab soil gas contains elevated concentrations of aliphatics which were not detected in indoor air samples collected in 2015. Due to the potential for vapor intrusion into the new residential spaces, Ecology requests additional indoor samples be collected to confirm these results. Please provide a detailed cross-section(s) that shows the locations of detected concentrations in soil near the USTs and the locations of soil vapor probes advanced thus far.

Noted.

- This Site is complex with several releases of multiple chemicals. Ecology suggests using current guidance to present Site characterization data in a Remedial Investigation (RI) report format that consolidates all pertinent Site historical information, collected soil and ground water data, and completed soil cleanup data. See the following Ecology web page for RI report format and content requirements: <http://www.ecy.wa.gov/programs/tcp/policies/checklists>.

The site has had a release of only one group of hydrocarbons, paint thinner.

GROUNDWATER SUMMARY REPORT (October 21, 2016)

- Ecology's previous opinion letter dated April 10, 2014 requested a Rose diagram plotted with available ground water elevation data. This information was not provided in subsequent submittals. Since more sampling and monitoring has been done since 2014, Ecology now requests two Rose diagrams demonstrating all of the hydraulic gradient data before and after operation of the Hotel Ballard permanent dewatering system that was initiated in 2012.

Noted.

- All figures that show ground water elevation contours such as Figures 5 and 6 of the Groundwater Summary report dated 10/21/15 need to show the ground water elevations used in the contouring plotted beside the well locations.

Noted.

- In the Groundwater Summary report and other reports, please plot ground water elevation data on all figures showing ground water elevation contours. The placement and siting of the new monitoring wells is somewhat linear. Ecology recommends that the proposed new wells be more spatially distributed so that ground water elevations can be triangulated to confirm the flow direction.

The site layout with the narrow parking lot along the western margin limited monitoring well placement at 5221 Ballard Avenue NW. The groundwater data at 5221 Ballard Avenue NW is supported by the groundwater monitoring wells placed along the Shilshole Parcels.

- Please include ground water elevation data from all wells including MW-6 in the ground water elevation contour diagrams. If the ground water elevation at MW-6 is consistently anomalous, the reason needs to be determined rather than eliminating the data point.

MW-6 has been determined to represent a groundwater divide that separates an area that flows to the south from the area that now flows towards the basement dewatering system in the new building north of 5221 Ballard Ave NW.

- In Table 1 of the Groundwater Summary report dated 10/21/15, the measuring point elevations of wells MW-107 and MW-201 through MW-205 are shown with "+/-" symbols following the elevation. There is no note below the table to account for this notation. Please provide an explanation in the figure. The measuring point elevations for ground water need to be surveyed by a Washington state-licensed land surveyor to the nearest 0.01-foot.

The earlier tables show the approximate elevations, the current data that was provided includes the survey data, nothing changed with the addition of the survey data. The tables will be updated with the surveyed information.

- The installation of five new monitoring wells (MW-201 through MW-205) related to the Site is not described in either of the two reports that are both dated October 21, 2015. Only monitoring well (MW-205) is mentioned in a sentence on page 2 in Section 3.3. Although boring logs are provided, the monitoring well installations need to be summarized in the text and a table provided showing the construction specifications including the date of installation. The Groundwater Summary report dated 10/21/2015 recommends that two new wells be installed which are shown on Figure 9 (not Figure 8 as shown).

Noted.

- Please provide a table of all Site monitoring wells that includes construction details and specifications, date of installation, date of decommissioning, if applicable and identification of the replacement well, if applicable.

Noted.

- Ecology recommends installation of at least one additional monitoring well on the Property that would replace MW-101 and MW-102 and also be downgradient (and north of) the USTs that are closed in place in addition to MW-205.

We are evaluating establishing a new monitoring well near the former location of MW-102.

- The Groundwater Summary report should include figures that show previous and current contaminant concentrations in ground water on the Site.

Noted.

- In the Groundwater Summary report, please provide actual table and figure titles in the Table of Contents (TOC). Tables 5 and 6 are mislabeled in the TOC; Table 7 needs to be added to the TOC.

Noted.

- Please explain why the samples from only one monitoring well, MW-205, were analyzed for polycyclic aromatic hydrocarbons (PAHs)? Ecology recommends at least two groundwater sampling rounds in which all monitoring wells are analyzed for PAHs, preferably 6 months apart and representative of dry and wet seasons.

PAHs have not been identified as being a contaminant of concern (COC) on the site. No coal tar or used oil releases are known or suspected to have occurred on-site. Initial testing in 2011 was done as part of a broader screening to evaluate the COCs for the site. Two samples of soils with elevated hydrocarbons were tested for PAHs, MW-102 at 10 feet and MW-103 at 10 feet. The results of both soil samples show levels below the MTCA Method A cleanup level when the Toxicity Equivalence Factors were added to the data. The levels of PAHs are below the vadose level of 2.33 mg/kg for protection of groundwater for benzo a pyrene. In addition, the levels of PAHs are below the saturated soils level for the protection of groundwater of 0.116 mg/kg when the TEF area incorporated into the data.

cPAHs were only identified as a COC in the Ecology review of the initial data. The initial data presented in 2011 did not include the correction factors using the TEF values. The data is summarized below in Table 1. The sample from B-103 at a depth of 8 feet had a raw total of cPAHs of 0.261 mg/kg, using the TEF factors from Table 708-2 of the MTCA show the actual values to be below the cleanup value of 0.1 mg/kg.

cPAHs have been measured twice in the current downgradient monitoring well, MW-205. The groundwater data is summarized in Table 2.

Table 1
Carcinogenic Polycyclic Aromatic Hydrocarbons-Soil
All units are mg/kg

B-102
at 10 feet

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.014	1	0.014
benzo(a)anthracene	0.0093	0.1	0.00093
benzo(b)fluoranthene	0.0084	0.1	0.00084
benzo(k)fluoranthene	0.0087	0.1	0.00087
chrysene	0.011	0.01	0.00011
dibenz(a,h)anthracene	0.0078	0.1	0.00078
indeno(1,2,3-cd)pyrene	0.0078	0.1	0.00078
TOTAL CPAH	0.067		0.01831

B-103
at 8 feet

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.067	1	0.067
benzo(a)anthracene	0.035	0.1	0.0035
benzo(b)fluoranthene	0.039	0.1	0.0039
benzo(k)fluoranthene	0.035	0.1	0.0035
chrysene	0.046	0.01	0.00046
dibenz(a,h)anthracene	0.0092	0.1	0.00092
indeno(1,2,3-cd)pyrene	0.03	0.1	0.003
TOTAL CPAH	0.2612		0.08228

Table 2
Carcinogenic Polycyclic Aromatic Hydrocarbons-Groundwater
All units are µg/l
PAHs-MW-205

Well Number	Date	Benzo[a]pyrene	Benzo[a]anthracene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Indeno[1,2,3-cd]pyrene	Total cPAHs
MW-205	1/12/15	0.0094U	0.0094U	0.0094U	0.0094U	0.0094U	0.0094U	0.0094U	0.066U
	11/23/16	0.0097U	0.0097U	0.0097U	0.0097U	0.0097U	0.0097U	0.0097U	0.068U
MTCA	0.1 for sum of cPAHs								

Notes: All units are µg/liter.

Note total cPAHs shown does not take 708-2 TEF into account and is a conservative number.

Non-carcinogenic PAHs are not shown for brevity, all PAHs in the analysis were below the PQL.

This table is Table 2 in the memo dated July 12, 2017. The original table had typos that listed the PQLs as being 0.094 and 0.097 µg/l, a typographical error.

ENVIRONMENTAL SUMMARY REPORT (October 21, 2016)

- The known soil contamination extends from a depth of 10 to 14 feet bgs in the vicinity of the USTs. Contamination characteristics from the ground surface to a depth of 10 feet bgs are undefined. One soil sample has been analyzed near the surface (B-104 at 2.5 feet bgs) and was collected approximately 15 feet to the northwest on the opposite side of the concrete retaining wall, instead of near the UST fill ports and along UST piping where a shallow release, if present, would likely be detected. Further characterization of soil to the north of the center UST, and to the east, south, southeast, and west of the UST cluster, including characterization of soil near any UST associated piping, is necessary to determine the lateral and vertical extent of contamination.

Analytical testing of soil samples was done based on field screening in accordance with Ecology Publication 10-09-57. Shallow samples did not exhibit elevated hydrocarbons. This is a standard decision tree element. The best illustration of the field screening is on the logs of DPT 1 through DPT 10 where a higher density of vertical sampling was completed. There are a total of 18 explorations within the area of the UST cavity in an area that measures about 23 by 100 in feet.

Analytical data tables are large, difficult to read and compare the results for different locations. Please consider using a larger-sized (i.e. 11" x 17") page in landscape orientation and a smaller font so that more data can be tabulated on a single page. For example, Table 3 could all be on a single page and much more accessible to the reader.

Noted.

- This report proposed using MTCA Method B air cleanup levels for a commercial exposure scenario. Land uses other than residential and industrial cannot be used as a basis for a reasonable maximum exposure scenario for the purpose of establishing a cleanup level (see WAC 173-340-708). The proposed MTCA Method B air cleanup levels modified for a commercial exposure scenario are not appropriate cleanup standards for this Site. Also, the Property is currently being redeveloped to include residential dwelling units on the top floor, so residential exposure has to be assumed. Ecology recommends sampling the indoor air in the residential apartment, following construction. Indoor air cleanup levels should be used for comparison.

Noted. The apartments that are under construction draw their air from the exterior, no interior air exchange between separate living units is allowed by the code. Two levels of retail and commercial space separate the basement area from the apartments.

- In Table 5.1.2 of the Supplemental Site Sampling and Discussion report, please use milligrams per kilogram as the units. Also, the actual value of the calculated cleanup level in Table 5.1.1 for TPH-G needs to be included.

Noted.

- In Table 5.2.2 of the same report, please use micrograms per liter as the units.

Noted.

- In Figures 5 and 6 of the Supplemental Site Sampling and Discussion report, please add concentrations used to draw the boundary of "Approximate limit of release impacts to soil from 5221".

Noted.

- Please provide figures displaying the sub-slab vapor samples results shown in Tables 3A and 3B of the Supplemental Site Sampling and Discussion report.

Noted.

- Section 4.2 of the Supplemental Site Sampling and Discussion report should be revised to state that total lead was detected in ground water samples. The report needs to provide a table of analytical data from soil sample locations analyzed for lead and if available, other metals.

No testing for lead was done at 5221 since there was not any leaded gasoline present nor any lead suspected of being present. Lead testing was done in the paint mixing area in the lab and dry goods buildings since pigments were present at those locations. No lead above the MTCA Method A Cleanup Value has been found in the soils beneath the paint mixing areas. The presence of an isolated occurrence of total lead in MW-7 is not unusual and reflects a low level of sediment that was present in the unfiltered sample. Additional monitoring for total lead will occur during future groundwater sampling in the paint mixing areas on the site at 5232 Shilshole Ave NW.

- Tetrachloroethene (PCE) was detected at a concentration of 4,400 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in a sub slab vapor sample from VP-1 in 2015. This concentration exceeds the Method B sub slab air cleanup value of $96.2 \text{ lg}/\text{m}^3$. What is the source of the PCE in sub slab vapor?

This is discussed in the comments beneath the summary table as being carry over from a cylinder that did not get adequate cleaning by the lab before being re sent out to the field and is a laboratory QC error. As seen in the data, prior and subsequent testing did not find any PCE in sub slab vapors at that location. PCE is not a COC for the project.

- Analysis of volatile organic compounds should be included for at least one or two ground water sampling rounds to determine the potential presence of PCE and related degradation compounds in groundwater.

The spring 2011 groundwater sampling of MW-1, MW-6, MW-7, MW-101, MW-102, MW-103, and MW-104 did not encounter any halogenated compounds above their MTCA cleanup levels. The testing included degradation products. In addition, selected soils from MW-101, MW-102, and MW-103 as well as Vapor Point VP-2 were analyzed for halogenated volatiles. None of the compounds was found to be present above MTCA cleanup values.

- The vapor pathway needs to be introduced and discussed prior to Section 5.3 of the Supplemental Site Sampling and Discussion report. An earlier section should be added that discusses the characterization, nature and extent of soil vapor on the Site. Due to the depths of soil contamination potentially remaining in place, vapors could enter the building via basement walls rather than the basement floor.

The possibility for vapor intrusion through the walls is addressed by sampling the direct breathing zone within the finished basement space.

- The proposed Method B soil cleanup levels are based on direct contact. As Site ground water has been impacted, soil cleanup levels based on the leaching pathway are required.

The parking lot was in very poor shape and acted as a permeable pavement allowing surface runoff to infiltrate the pavement and address the leaching pathway. In addition, incidental to remodeling, areas of pavement were removed allowing increased infiltration of rain water. The catch basin at the northeast corner of the parking lot has typically been clogged increasing the amount of precipitation allowed to infiltrate in the parking area.

- A Method B groundwater cleanup level for TPH of 226 micrograms per liter ($\mu\text{g/L}$) was calculated by Ecology using the MTCA TPH spreadsheet with Site data.

Noted.

- The vapor pathway needs to be introduced and discussed prior to Section 5.3 of the Supplemental Site Sampling and Discussion report. An earlier section should be added that discusses the characterization, nature and extent of soil vapor on the Site.

Noted.

- The ground water cleanup levels for BTEX appear to be based on the Method B equations only without consideration of ARARs. Please research potential ARARs that may apply to this Site as that could affect the Site cleanup levels.

Noted.

- The soil vapor screening levels and indoor air cleanup levels listed in Table 3A do not match the values in the current version of Ecology's CLARC. There are more exceedances when the current values are used.

The updated report will use the CLARC values that are published at the date of the report.

- In Appendix E, the Method B spreadsheet for soil sample 'B-301 at 10' is not valid. Data from another location cannot be used in the calculation. The value for this location in Table 5.1.1 needs to be removed and the median rather than the average calculated for the remaining 5 cleanup values.

Noted. The requested change raises the soils cleanup value to 2,119 mg/kg. The addition of the cPAH data was done as a sensitivity analysis of the sample.

- Please refer to Ecology's Implementation Memo #14 regarding assessing potential petroleum vapor intrusion available at the following link:

<https://fortress.wa.gov/ecy/publications/SummaryPages/1609046.html>

Ms. Heather Vick
October 13, 2017

To evaluate whether Site buildings are outside the lateral exclusion zone or if the contamination is deeper than the vertical separation distance. If either of these conditions is true, vapor intrusion does not need to be assessed for the current buildings. An environmental covenant may still be needed to protect potential future buildings.

Noted.

- Please provide a revised version of the report in hard copy and electronic format.


Noted.

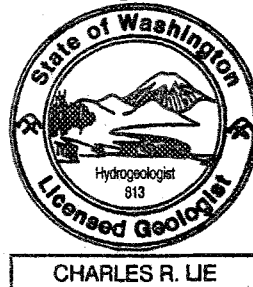
- If contaminated soil above cleanup levels remains and is not migrating off the Site, an environmental covenant may be needed for Site closure. This would require a Feasibility Study and an acceptable disproportionate cost analysis. Some continued ground water monitoring would be required as well.

Noted.

We will address the concerns in the opinion letter dated September 29, 2017 and will resubmit the project for additional review by the VCP. If you have any questions or require additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.


Charles R. Lie, L.H.G.
Project Manager



cc: Mr. Steve Cowman and Mr. Brett Cowman, HALCO Properties, LLC