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Re: Comments on Data Gaps Data Report

- **Site Name:** Taylor Way and Alexander Avenue Fill Area (TWAAFA)
- **Site Address:** 1500 Block Taylor Way E, Tacoma, Pierce County, WA 98409
- **Agreed Order:** DE 14260
- **Enforcement Order:** DE 19410
- **Facility/Site ID:** 1403183
- **Cleanup Site ID:** 4692

Dear Tasya Gray and Scott Hooton:

Thank you for submitting the Data Gap Data Report (Report) for review by the Department of Ecology (Ecology).[1] Ecology has the following comments on the Report:

1. Table 1, Data Gaps Status Summary: The table states that the indoor air assessment protocol would be used if the final remedy leaves contamination in place that could cause a possible vapor mitigation issue. Please note that as stated in Ecology's vapor intrusion (VI) guidance, Ecology does not expect mitigation systems to achieve VI media cleanup or screening levels.[2] If subsurface contamination threatens indoor air quality for existing or future buildings, then remedial action will be needed. Therefore, Ecology expects that the Feasibility Study alternatives for portions of the Site that have elevated soil gas concentration (such as portions of the former CleanCare facility and Burlington Environmental facility) will need to include active cleanup methods (for example excavation

[1] Dalton, Olmsted, & Fuglevand (DOF), *Data Gaps Data Report*, November 2022.
[2] Ecology, *Guidance for Evaluating Vapor Intrusion in Washington State: Investigation and Remedial Action*, Toxics Cleanup Program Publication No. 09-09-047, March 2022.

or in-situ remediation) rather than only relying on institutional controls/indoor assessment protocol.

2. Section 3.0, 2nd paragraph: As noted in a previous comment letter, Ecology does not agree that that the "NJ" qualifier is appropriate from the results where the "x" flag was the only reason noted.[3] Please remove the NJ qualifier from all future report tables and from EIM data submittals when it is only based on the laboratory's "x" flag.

   Ecology has reviewed the additional information justifying for the NJ qualifier that was provided in the Third Quarter 2022 Groundwater Data Analysis Report (3Q report).[4] Reasons given in the 3Q report include:

   - *Since there is not a definitive chromatographic confirmation of the DRO/RRO results reported using the referenced analytical method all results should be considered only as tentative (N).*

   - *Since the concentrations reported as detected for DRO/RRO are based on mismatched chromatographic patterns there is an inherent indeterminate bias associated with the concentration quantified and reported. Therefore, at a minimum, the DRO/RRO results reported as detected should be considered as estimated (J).*

   - *The analyses completed for DRO/RRO are obtained using a solvent extraction technique with analysis completed by gas chromatography/flame ionization detection (GC/FID) using the Washington Department of Ecology NWTPH-Dx (extended) method (Ecology 1997). The FID is a non-selective detector that will respond to many compounds that can ionize (e.g., detection of ions formed during combustion of organic compounds in a hydrogen flame) and elute within the boiling point range equivalent to a diesel and/or oil range product (e.g., DRO/RRO) will yield a chromatographic response. All chromatographic responses detected could be associated with a petroleum product (weathered or unweathered) but may also be due to the presence of any number of non-petroleum-related compounds (e.g., naturally occurring biogenic compounds, sulfur containing compounds; plasticizers such as various phthalate esters, organic solvents, etc.). Therefore, based on the use of a method using a single non-selective detector without the use of another confirmatory analytical method, all chromatographic interpretations based on chromatographic responses that do not directly (or closely) match a specific*

[3] Ecology, *Comments on First and Second Quarter Groundwater Reports, Request for Work Plan, and Resolution of Internal Dispute*, December 7, 2022.
[4] DOF, *Third Quarter 2022 Groundwater Data Analysis Report*, November 23, 2022.

petroleum product are subjective and the results reported should be considered as tentatively identified (N) at an estimated concentration (J).

Ecology still does not agree with the judgment and rationale of the data validator's use of the NJ qualifier for the following reasons:

a. As noted in Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Petroleum Guidance), total petroleum concentrations are measured using the NWTPH-Gx method for gasoline range organics and NWTPH-Dx method for diesel and oil range organics.[5] Results from the NWTPH-Gx and -Dx methods are compared to MTCA Method A Cleanup Levels. To minimize the potential for interferences by naturally occurring non-petroleum organic matter, the -Dx method provides for a silica gel cleanup procedure for removing these naturally occurring organics during the extraction process. Silica gel works by attaching to and removing polar organics, which are characteristic of natural organic matter (NOM). Petroleum products such as heavy fuel oil and Bunker C contain significant amounts of polar organics, thought to be due to organically bound sulfur. This can result in as much as a 10% to 20% loss when subjected to silica gel cleanup. Over time, as petroleum degrades through microbial and chemical reactions, some petroleum components will be transformed to intermediary degradation by-products that are polar organics. This can result in an unknown amount of product loss during silica gel cleanup. These intermediary by-products are considered part of the petroleum mixture since they are typically not otherwise considered in a petroleum risk evaluation. Therefore, since most groundwater does not contain significant levels of NOM, silica gel cleanup should not be used for -Dx analysis of groundwater samples unless uncontaminated background samples indicate that NOM is a significant component of the TPH being detected in the groundwater samples.

b. The NWTPH-Dx method is applicable for a range of semi-volatile petroleum products including kerosenes, jet fuels, diesel oils, fuel oils, lubricating oils, hydraulic fluids, mineral oils, and insulating oils.[6] The method description states that when the type of petroleum product is unknown, #2 diesel will initially be used as the default petroleum standard. The method also states that the analyst shall use #2 diesel as the default petroleum product for reporting purposes when no petroleum products were identified in any initial screening or when the type(s) of petroleum products are unknown prior to analysis. The method also states that when reporting results, the terms such as "diesel range" or "motor oil range", or derivations of them, should only be used when the analyst is unable to identify the petroleum product(s) present. Motor oils, hydraulic

[5] Ecology, *Guidance for Remediation of Petroleum Contaminated Sites*, Toxics Cleanup Program, Publication No. 10-09-057, June 2016.

[6] Ecology, *Analytical Methods for Petroleum Hydrocarbons*, Publication No. ECY 97-602, June 1997.

fluids and other similar petroleum products which consist primarily of an unresolved chromatographic envelope of compounds originating at, or extending beyond tetracosane, may be reported using the collective term "lube oil" unless specific identification is possible. Also, heavy fuel oil, such as #6 fuel oil or Bunker C, which contain a diesel range component as well as a lube oil range, may be reported using he collective term "heavy fuel oil" unless specific identification is possible. The use of GC/MS (mass spectroscopy) or GC/AED (atomic emission detector) may be substituted for GC/FID as long as all other method parameters are met.

c. Use of the "NJ" qualifier for this type of situation is not in the NWTPH-Dx method.

d. There is no reason to qualify the data as estimated based on the "x" flag that was added by the analytical laboratory. This laboratory flag is a common practice when the sample does not match the standard and the result is reported as diesel range organics.

3. Section 2.4.4, Burlington Stabilization Building: Please provide Ecology with an explanation of the following two questions:

   a. Why there were fluctuations in pressure differential of up to 20.9 Pascals within a time interval of approximately 3 minutes during a period when the blower was not operating (March 1, 2022, 7:25 AM to 7:28 AM)?

   b. Why does the pressure differential data for the Stabilization Building show much more fluctuations ("noise") compared to data from the Transportation Building and the Potter Property?

   Ecology's opinion is that the fluctuations in the Stabilization Building data call into question the reliability of these data. **Therefore, Ecology is requiring the collection of sub-slab samples and additional pressure differential data from this building**.

4. Table 2, Soil Sample Results Summary: This table shows separate screening levels of 2,000 milligrams per kilogram (mg/kg) each for total petroleum hydrocarbons – diesel range organics (TPH-D) and TPH – motor oil range (TPH-O). As stated in the Petroleum Guidance, many laboratories split the results of the NWTPH-Dx method into "diesel" and "oil" values since there are separate values for diesel and oil in the Method A tables. Where this split occurs can vary between laboratories as this split is not called for in the analytical method. Furthermore, the Method A values were derived using the entire range of TPH fractions present in each type of product, not based on splitting the test results. Therefore, it is incorrect to split the NWTPH-Dx analytical results into diesel and oil fractions and compare each fraction to the MTCA Method A table value. Rather, the sample diesel and oil fractions

should be added together and compared against the diesel or heavy fuel oil Method A value.

5. Submittal of Site data to Ecology's Environmental Information Management System (EIM) database in accordance with Toxic Cleanup Program Policy 840 (Data Submittal Requirements) is required by Agreed Order section VIII.E and Enforcement Order section VIII.F. Data after August 1, 2005, the effective date of Policy 840, need to be entered. Several batches of data were uploaded to EIM from June to December 2022; thank you for uploading these data. However, the following older data still need to be uploaded:

   a. Soil data from FS-TP-1 through -8 from July 2006.[7]

   b. Soil data from PSE gas alignment September 2015.[8]

   c. CleanCare groundwater data from September 2005 and March 2006.[9]

   d. Burlington Environmental/Stericycle/PSE groundwater data from September 2005 and December 2007.[10]

   e. Groundwater data from PSE gas alignment.[11]

   f. Stericycle Property soil vapor data, 4/21/2016.[12]

   g. 2019 Hylebos Marsh soil and groundwater data collected by Crete. All analytical data need to be included, even if the results were below reporting limits.

If you have any questions regarding this letter, please contact me at 360-890-0059 or steve.teel@ecy.wa.gov.

Sincerely,

Steve Teel, LHG
Cleanup Project Manager/Hydrogeologist
Toxics Cleanup Program
Southwest Region Office

[7] See Final Data Gap Work Plan (DOF, 2020), Table 12.
[8] See DOF (2020), Table 15.
[9] See DOF (2020), Table 16.
[10] See DOF (2020), Table 18.
[11] See DOF (2020), Table 21.
[12] See DOF (2020), Table 22.

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