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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
PO Box 47775 Olympia, Washington 98504-7775 360-407-6300

February 16, 2024

Keum Woo
6730 Troon Ln SE
Olympia, WA 98501
keumwoo@hotmail.com

Re: No Further Action Likely Opinion for the following Site:

- **Site Name:** Lacey Urban Center
- **Site Address:** 7131 7239 Martin Way E, Olympia, Thurston County, WA 98516
- **Facility/Site ID:** 67913
- **Cleanup Site ID:** 15414
- **VCP Project ID:** SW1745

Dear Keum Woo:

The Washington State Department of Ecology (Ecology) received your request for a No Further Action opinion on your independent cleanup of the Lacey Urban Center facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA),[1] chapter 70A.305 Revised Code of Washington (RCW).[2]

Issue Presented and Opinion

Based on the remedial investigative work that has been completed to date, **Ecology concurs with your proposed cleanup action for the Site based on installation of the vapor mitigation system and an environmental covenant (EC) which is supported by various institutional controls (IC) related to contaminated soil being left in place and long-term soil vapor/indoor air monitoring.** As such, this letter is a No Further Action (NFA) Likely, which discusses the last few details you need to resolve in order to obtain an NFA determination by opinion letter.

[1] https://apps.ecology.wa.gov/publications/SummaryPages/9406.html
[2] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305

This opinion is based on an analysis of whether the completed remedial investigation meets the substantive requirements of MTCA, Chapter 70A.305 RCW, and its implementing regulations, which are specified in chapter 70A.305 RCW and chapter 173 340 WAC[3] (collectively called "MTCA").

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the release of the following contaminants of concern (COC):

- Tetrachloroethylene (PCE) into the soil, groundwater, and sub-slab soil vapor.
- Trichloroethylene (TCE) and vinyl chloride (VC) into sub-slab soil vapor.

Enclosure A includes a detailed description and diagram of the Site, as currently known to Ecology.

The parcel(s) of real property associated with this Site are also located within the projected boundaries of the Asarco Tacoma Smelter Site (FSID: 89267963). At this time, we have no information that these parcel(s) are actually affected and as a result, this opinion does not apply to any contamination associated with the Asarco Tacoma Smelter Site facility.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. Envitechnology (Envitech), *Additional Phase II Subsurface Investigation, Lacey Urban Center, 7131-7269 Martin Way East, Olympia, Washington*, November 30, 2018.
2. Associated Environmental Group, LLC (AEG), *Remedial Investigation / Feasibility Study Report, Lacey Urban Center*, April 1, 2021.
3. AEG, *April 2021 Groundwater Sampling Results Report*, letter, addressed to Ms. Keum Woo, May 18, 2021.
4. AEG, July *2021 Groundwater Sampling Results Report*, letter, addressed to Ms. Keum Woo, August 9, 2021.
5. AEG, *Lacey Urban Center Technical Memo – Vapor Mitigation System Installation 0301222*, addressed to Ms. Keum Woo, March 1, 2022.

[3] https://app.leg.wa.gov/RCW/default.aspx?cite=173-340

6. AEG, Vapor Assessment Monitoring Event & NFA Request*, Lacey Urban Center, 7239 Martin Way East, Olympia, Washington* 98516, November 8, 2022.

7. AEG-Atlas, *Technical Memorandum – Vapor Assessment, Lacey Urban Center, 7239 Martin Way East, Olympia, Washington* 98516, November 13, 2023.

These documents are kept in the Central Files of the Southwest Region Office of Ecology (SWRO) for review by appointment only. Information on obtaining those records can be found on Ecology's public records requests web page.[4] Some site documents may be available on Ecology's Cleanup Site Search web page. This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has determined your characterization of the Site is sufficient to establish cleanup standards and select a cleanup action. Ecology concurs with the cleanup levels (CULs) and the standard points of compliance you established for the Site for the contaminants of concern (COC). Ecology also concludes that no ARARs are currently impacting the cleanup standards.

1. Characterization of the Site.

AEG has defined the Site for all environmental media and demonstrated that exposure pathways for said environmental media are incomplete, including subslab vapor and indoor air. The soil vapor and indoor air pathways were being mitigated using engineering controls in the form of the building slab and the sub-slab depressurization system (SSDS), the operation of which has been discontinued since early October 2023. Halogenated volatile organic compounds (HVOCs) are present in soil and soil vapor beneath the building with PCE and TCE migrating to indoor air within the building but not at concentrations in excess of the MTCA Method B CULs.

Site Data into EIM

All Site data uploaded through December 10, 2023, and are in the process of being accepted, reviewed, and approved.

2. Establishment of Cleanup Standards.

[4] https://ecology.wa.gov/Footer/Public-records-requests

Ecology has determined the CULs and points of compliance you established for the Site meet the substantive requirements of MTCA. Ecology also concludes that no ARARs are currently impacting the cleanup standards.

Cleanup Standards: Under MTCA, cleanup standards consist of three primary components; (a) points of compliance,[5] (b) CULs,[6] and (c) applicable state and federal laws.[7] Ecology concurs with the following proposed CULs:

(a) Points of Compliance. Standard points of compliance listed below are being applied to the Site. Points of compliance are the specific locations at the Site where CULs have been attained.

[5] WAC 173-340-200 "Point of Compliance."
[6] WAC 173-340-200 "Cleanup level."
[7] WAC 173-340-200 "Applicable state and federal laws," WAC 173-340-700(3)(c).

Media	Points of Compliance
Soil-Direct Contact	Based on human exposure via direct contact, the standard point of compliance is throughout the Site from ground surface to fifteen feet below the ground surface.[8] Not met; but presence of concrete slab foundation and institutional controls (IC) in EC to maintain protectiveness.
Soil - Protection of Groundwater	Based on the protection of groundwater, the standard point of compliance is throughout the Site.[9] Standard met via empirical demonstration from groundwater data and IC's in the EC
Soil-Protection of Plants, Animals, and Soil Biota	Based on ecological protection, the standard point of compliance is throughout the Site from ground surface to fifteen feet below the ground surface.[10] Standard met by exemption.
Groundwater	Based on the protection of groundwater quality, the standard point of compliance is throughout the site from the uppermost level of the saturated zone extending vertically to the lowest most depth which could potentially be affected by the site.[11] Standard empirically met with shallow and deep groundwater data to date.
Air Quality	Based on the protection of air quality, the point of compliance is indoor and ambient air throughout the Site.[12] Standard currently met without SSDS operation and IC as long-term monitoring in the EC. With statement of soil vapor and indoor air concentrations as remediation levels protective of commercial workers, this predicates maintaining commercial use in the area as an IC which the EC will restrict.

[8] WAC 173-340-740(6)(d)
[9] WAC 173-340-747
[10] WAC 173-340-7490(4)(b)
[11] WAC 173-340-720(8)(b)
[12] WAC 173-340-750(6)

The exposure pathways for the Site as Ecology currently understands them are:

Soil-Direct Contact: Ecology concurs that there is an incomplete pathway to receptors of concern by direct contact with HVOC-impacted subsurface soil beneath the concrete building floor slab. While the subsurface soil remaining on the Site contains contaminants that are above the MTCA Method A CUL for unrestricted land use, they occurred below the selected MTCA Method B CUL for direct contact exposure. As these data were based on a finite soil sample dataset, the potential exists for unsampled subsurface soil to contain contaminants above the Method B CUL. Further, the disposition of these soils would need to be addressed via implementation of a Contaminated Media Management Plan (CMMP) should the slab and/or building ever be removed.

Soil-Vapor: Current 2023 sub-slab soil vapor and indoor air data collected with SSDS operation suspended indicated PCE less than the MTCA Method B CUL for Commercial Worker (CW). The indoor air sample data also indicated the recent presence of TCE although the level was also below the MTCA B CUL-CW. Based on the presence of similar concentrations of TCE in 2020 and 2023, additional long-term data under the EC will provide a better understanding of potentially chronic vapor intrusion risk.

Soil-Leaching to Groundwater/Groundwater: Ecology concurs that there are incomplete pathways of soil leaching to groundwater and to receptors of concern by groundwater. Shallow groundwater in wells MW-1 through MW-3 has not been impacted by PCE since October 2021 and then at levels less than both the MTCA Method B and CW CULs. In addition, deep wells MW-4 and MW-5 have not exhibited HVOC at or above the laboratory method reporting limits during sampling events conducted in January, April, and July 2021. Additionally, although in-situ soil PCE concentrations in soil beneath the concrete slab exceed the Soil Protective of Groundwater CUL, the area directly above the contaminated soil is covered by a building and most of the property is covered by buildings and asphalt. Ecology thereby concurs that the pathway as incomplete as met by empirical demonstration.

As a result, Ecology acknowledges that long-term groundwater monitoring is not necessary.

Ecological: Ecology concurs that there is an incomplete pathway to ecological receptors of concern. No further evaluation is necessary under WAC 173-340-7492(2)(c), “no

contaminant listed in MTCA Table 749-2 is, or will be present in the upper 15 feet at concentrations that exceed the values listed in the MTCA Table 749-2."[13]

(b) Cleanup Levels (CULs). CULs are the concentrations of a hazardous substance in soil, water, air, or sediment that are determined to be protective of human health and the environment.

At this site, MTCA Method A and B CULs are appropriate for the direct contact soil, sub-slab vapor, and indoor air exposure pathways. However, in-situ soil exceeds the groundwater protection standards. For air and of note, it has been demonstrated that the HVOCs present in soil vapor have not migrated into indoor air within the building at levels above the MTCA Method B CUL/CW. Cleanup levels are met for groundwater at the Site and the MTCA Method A and B CULs for all media are included for reference. These cleanup levels are based on the most stringent values for each exposure pathway and are considered appropriate for the Site COCs. The proposed MTCA CULs for the Site COCs for the matrices of concern at the Site include:

Hazardous Substance	MTCA A Soil (mg/kg)	MTCA A Groundwater (µg/l)	MTCA B Sub Slab Soil Gas (µg/m^3)	MTCA B Indoor Air (µg/m^3)	MTCA B Indoor Air Commercial Worker (µg/m^3)
Tetrachloroethylene (PCE)	0.05	5	320	9.62*	44.9*
Trichloroethylene (TCE)	0.03	5	11	0.334*	.85*
Cis-1,2-dichloroethene (cDCE)	160*	16*	NL	NL	NL
Trans-1,2-dichloroethene (tDCE)	1,600*	160*	610	18 (NL)	NL
Vinyl chloride (VC)	0.67*	0.2	9.5	0.284*	1.33*

[13] WAC 173-340-900

mg/kg = milligrams per kilogram.
µg/m3 = micrograms per cubic meter.
NL = Not Listed; no cleanup/screening levels have been promulgated for these constituents.
*Method B CUL (Method A CUL not established); cancer cleanup/screening level.

(c) Applicable Laws and Regulations. Applicable local, state, and federal laws were evaluated within the *AEG 2021 Remedial Investigation / Feasibility Study Report*. Ecology concurs that these requirements have been correctly identified and are legally applicable or relevant and appropriate.[14,15]

3. Selection of cleanup action.

Ecology has determined the cleanup action you selected for the Site meets the substantive requirements of MTCA.

Based on the Disproportionate Cost Analysis (DCA) in AEG's April 1, 2021, Remedial Investigation and Feasibility Study RI/FS[16] report, AEG proposed Alternative 3 Closure with Vapor Mitigation Installation and Environmental Covenant was proposed as the least costly and equally beneficial alternative. To that end, with the subsequent installation of the sub-slab depressurization system (SSDS) and presentation of sufficient analytical data from sub-slab vapor and indoor air samples collected from November 2019 through October 2023, Ecology concurs that the preferred remedial alternative is sufficient to meet the requirements of MTCA and is protective of human health and the environment. Ecology would concur with cessation of the SSDS operation with long-term monitoring of indoor air for a period of 5 years.

Environmental Covenant. Beyond installation of the SSDS, an Environmental Covenant (EC) will need to be completed and filed with Thurston County. When the EC is filed and approved, **the Site will be considered to have achieved cleanup standards for all media, and no further remedial action will be warranted, with the exception of the Post-Cleanup Controls and Monitoring requirements noted below.**

The EC will place a deed restriction on the Site that will restrict certain uses of the Site (such as excavation of impacted sub-slab soil and groundwater usage) and exclusive commercial usage.

[14] WAC 173-340-710(2)
[15] Note – MTCA Method A includes ARARs and concentration-based tables (WAC 173-340-700(5)(a)) If MTCA Method A remains in use as proposed Site cleanup levels, identify non-concentration based technical and procedural requirements. If Method B or C cleanup levels are proposed, also include concentration-based requirements.
[16] AEG, *Remedial Investigation/Feasibility Study Report*, April 1, 2021.

The process for drafting and filing the EC include the following steps:

1. Conduct a title search to identify all persons holding an interest in the real property subject to the EC. To save time later, you should conduct the search as early in the process as possible. Generally, Ecology will not sign the EC unless all interest holders are willing to sign on as grantors or subordinate their interests. See step 5 below.

   Draft the EC using the boilerplate document available on the VCP web site: https://apps.ecology.wa.gov/publications/documents/1509054.pdf. Please note that any changes to the boilerplate language in the EC must be approved by the Attorney General's Office.

2. Submit the draft EC for review and comment to the appropriate land use planning authority in your jurisdiction. When requesting such review, please do the following:

   - Send a copy of your written request.
   - Provide the authority with my contact information.
   - Request that the authority send me a copy of any written response.

   Ecology will not approve the EC unless the authority has been adequately consulted.

3. Upon completing your consultations with the local land use planning authority, submit the draft EC to Ecology for review and approval. Unless already submitted, also submit to Ecology any comments provided by the planning authority or, if none were provided, documentation of your consultation.

4. Upon Ecology approval, obtain the signatures of all grantors of the EC and obtain subordination agreements with any persons holding an interest in the real property subject to the EC who are not signing the EC as a grantor.

5. Upon obtaining the signatures of the grantors and any necessary subordination agreements, submit the EC to Ecology for its signature as the grantee.

6. Upon obtaining Ecology's signature, record the EC in every county where the real property subject to the EC is located. For detailed recording instructions, please refer to Chapter 65.04 RCW.

7. Upon recording, **return the original signed and recorded EC to Ecology** and provide a copy of the recorded EC to the following persons:

- Each person that signed the EC.
- Each person holding a recorded interest in the real property subject to the EC.
- Each person in possession of the real property subject to the EC at the time the EC is executed.
- Each municipality or other unit of local government in which real property subject to the EC is located.
- Any other persons Ecology requires.

The copy must be legible, and the recording number must be evident.
For more information on how to create an EC, please refer to the Uniform Environmental Covenants Act (UECA), Chapter 64.70 RCW, and WAC 173-340-440 of the MTCA Cleanup Regulation.

Further the components of an EC are presented under **Enclosure B**.

Post-Cleanup Controls and Monitoring

Post-cleanup controls and monitoring are remedial actions performed after the cleanup to maintain compliance with cleanup standards. This opinion is dependent on the continued performance and effectiveness of the following:

1. Compliance with IC's.

IC's prohibit or limit activities that may interfere with the integrity of IC's or result in exposure to hazardous substances. The following IC's are necessary at the Site:

- Restrictions on groundwater use.
- Land use restrictions, such as modifying the existing building footprint/surface without prior approval from Ecology.
- Future building usage/application shall provide for vapor intrusion protection.

2. Performance of confirmational monitoring.

If SSDS operation is to remain suspended, a long-term Confirmational Monitoring Plan must be in place to confirm the long-term effectiveness of the cleanup action once cleanup standards and, if appropriate, remediation levels or other performance standards, have been attained[17]. The soil vapor monitoring data will be used by Ecology during periodic reviews of post-cleanup

[17] WAC 173-340-410(1)(c)

conditions. The plan should be referenced in the EC but is a separate document that does not get recorded with the EC.

Under WAC 173-340-410(3), compliance monitoring plans should include monitoring for chemical constituents, biological testing, and physical parameters as appropriate for the site. Where the cleanup action includes engineered controls or IC's, the monitoring may need to include not only measurements but also documentation of observations on the performance of these controls. Long-term monitoring shall be required if on-site disposal, isolation, or containment is the selected cleanup action for a site or a portion of a site. Such measures shall be required until residual hazardous substance concentrations no longer exceed the site cleanup levels as established under WAC 173-340-700 through 173-340-760.

Compliance monitoring plans shall be specific for the media being tested and shall contain the following elements:

(a) Sampling and Analysis Plan meeting the requirements of WAC 173-340-820 which shall explain in the statement of objectives how the purposes of WAC 173-340-410(1) subsection (1) of this section are met;

(b) Data analysis and evaluation procedures used, to demonstrate and confirm compliance and justification for these procedures, including:

(i) A description of any statistical method to be employed; or

(ii) If sufficient data is not available before writing the plan to propose a reliable statistical method to demonstrate and confirm compliance, a contingency plan proposing one or more reliable statistical methods to demonstrate and confirm compliance, and the conditions under which the methods would be used at the facility; and

(c) Other information as required by the department.

As the VCP customer, you are responsible for ensuring the integrity of these controls over the long term. As part of future Periodic Reviews (see below), Ecology may inspect these areas and require you to conduct any needed maintenance to ensure protection to human health and the environment.

Financial assurance is currently not required for ECs recorded on VCP cleanup Sites.

Periodic Review of Post-Cleanup Conditions

Ecology will conduct periodic reviews of post-cleanup conditions at the Site to ensure that they remain protective of human health and the environment. If Ecology determines, based on a periodic review, that further remedial action is necessary at the Site, then Ecology will withdraw this opinion.

Listing of the Site

Based on this opinion, Ecology will initiate the process of removing the Site from our lists of hazardous waste sites, including:

- Contaminated Sites List.

4. Cleanup

Ecology has determined that the cleanup you completed, combined with the cleanup you propose, is sufficient to meet the substantive requirements of MTCA. It is Ecology's opinion that the existing soil vapor pin network provides for sufficient evaluation of boundary conditions and are appropriately placed to intercept any contaminated vapor that may occur within the subsurface at the Site.

As a result, please note that the existing vapor pin network will need to be preserved during the EC period of performance to allow for confirmational soil vapor monitoring. If any monitoring pin is damaged, the EC will have specific requirements for repair and/or replacement, and reporting. Failure to maintain a sufficient vapor pin network at the Site may result in any NFA determination issued to be rescinded by Ecology.

To receive an NFA letter, please complete the following:

1. Ecology recommends sufficient soil vapor/indoor air monitoring to evaluate any potential long-term impact from Site hazardous substance concentrations.

    a. Ecology proposes an initial round of soil vapor/indoor air monitoring occur as soon as possible followed by a second and third event separated by 18-month intervals, for a total of 54 months. Based on the analytical results, the monitoring frequency could be reviewed and updated as appropriate, during the first periodic review.[18]

    b. Each periodic review will occur once every five years, with the first periodic

[18] WAC 173-340-420

review scheduled from 5 years from the date of issuance of any no further action opinion letter.

2. Presume a worst-case scenario for soil contamination.[19] A "worst case scenario" for this Site is equivalent to the "soil management area" from figure 5-1 in the August 2019 *Independent Cleanup Report*, and any other historical Site hazardous substances in soil less than 15 feet bgs (standard point of compliance for soil direct contact) at concentrations which exceeded cleanup levels. You do not need to draft another deliverable, just ensure that appropriate figures are attached to the EC depicting these areas.

   Those soil sampling locations which historically exceeded cleanup levels should be mapped for the purposes of the EC. These locations should be presumed to represent residual soils contamination until confirmatory soil data indicates otherwise. Document the maximum possible areal and vertical extent of contaminated soils in figures and cross-sections included with the EC and monitoring reports. Existing figures, with some modification, are likely sufficient.

3. **Work with the Ecology VCP cleanup project manager to resolve comments and finalize word processing versions of the EC and supporting plan document.**

4. Contingency planning for exceedances of Site cleanup levels in soil vapor/indoor air during confirmatory sampling should be added to the proposed long-term monitoring plan. The frequency of cap monitoring and reporting on cap monitoring could be the same as soil vapor/indoor air monitoring.

5. Site-specific general EC information requirements are summarized in **Enclosure C**. Please provide the most recent title document for the Site which shows the survey platting and dedications for the Site's respective tax parcel. Confirm whether any subordination agreements (for easements on the Property which intersect residual contamination exceeding cleanup levels) are needed.

Unencumbered "clean" NFA.

To remove the need for the EC and receive a "clean" NFA for the Site, you will need to provide sufficient soil and soil vapor/indoor air data which demonstrates compliance with your selected cleanup standards. Currently, no soil confirmatory data have been submitted to Ecology to show that Site hazardous substances in soil have been reduced to less than

[19] See p. 32-33 in Ecology Publication No. 08-09-044, Guidelines for Property Cleanups under the Voluntary Cleanup Program, Revised July 2015. https://fortress.wa.gov/ecy/publications/SummaryPages/0809044.html

Site cleanup levels. Site cleanup levels would need to be met at standard points of compliance.

Please ensure that any environmental data generated for this cleanup is submitted pursuant to Ecology Toxics Cleanup Program Policy 840.[20] Please upload Site data to Ecology's Environmental Information Management (EIM) database each time a report is submitted as required by the EC and supporting long-term monitoring plans. Be sure to submit all data collected to date, as well as any future data, in this format.

Limitations of the Opinion

1. Opinion Does Not Settle Liability with the State.

Liable persons are strictly liable, jointly, and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70A.305.040(4).

2. Opinion Does Not Constitute a Determination of Substantial Equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination.
See RCW 70A.305.080 and WAC 173-340-545.

3. State is Immune from Liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70A.305.170(6).

[20] https://fortress.wa.gov/ecy/publications/SummaryPages/1609050.html

Contact Information

Thank you for choosing to clean up the Site under the VCP. After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our Voluntary Cleanup Program web site.[21] If you have any questions about this opinion, please contact me at (360) 489-5347 or joe.hunt@ecy.wa.gov.

Sincerely,

Joseph B. Hunt, LHG
Toxics Cleanup Program
Southwest Region Office

JBH/at

Enclosure A: Site Description
Enclosure B: Environmental Covenant and Supporting Plans

cc: Scott Rose, AEG, srose@aegwa.com
Jerome Lambiotte, CPG, Ecology; jerome.lambiotte@ecy.wa.gov
Ecology Site File

[21] https://www.ecy.wa.gov/vcp

Enclosure A

Description of the Site

Site Description

The Site is located within Thurston County Tax Parcel 78801200000, a 4.66-acre lot improved with the Lacey Urban Shopping Center. A former dry cleaner operated from 1965 to 1997, in a slab-on-grade, single-story masonry building located in the western portion of the shopping center. The former dry cleaner space is now operated as Lacey Laundry, a coin-operated laundromat. Occupancy of the current multi-tenant shopping center has primarily been for retail, office, and service tenants, and have included a bank, barber shop, post office, donut shop, drapery shop, hair salon, drug store, restaurants, shoe repair, floral and gift shops, nail shops, bakery, dentist, and chiropractic center.

Site Geology/Hydrogeology

The Site is situated at the southern end of the Puget Sound Lowlands physiographic province of the State of Washington. During the Quaternary, the Puget Lowland was covered a number of times by continental ice sheets. The most recent glaciation (Fraser) reached its peak about 14,000 years ago. The uppermost geologic formation underlying the soils at the subject property parcel is Pleistocene continental glacial drift, mostly Vashon Shade recessional outwash. The unit consists mostly of recessional and proglacial stratified, moderately to well-rounded, poorly to moderately sorted outwash sand and gravel of northern or mixed northern and Cascade source.

According to the information obtained from the USDA Natural Resources Conservation Service Web Soil Survey online database, the Site is mapped as Spanaway gravelly sandy loam. The Spanaway series consists of deep and moderately deep, moderately well and well drained soils with moderately coarse textures that formed on outwash plains and terraces from volcanic ash over gravelly outwash of Pleistocene age. Slopes range from 0 to 3 percent.

Soils encountered at the Site during subsurface investigations generally consisted of silt with gravel to approximately 35 feet bgs, underlain by dense, sandy gravel with fine- to coarse-sized gravels, and cobbles to about 85 feet bgs. Groundwater at the time of drilling was encountered at various depths from 30 to 33 feet bgs. Depth to water measured in Site wells ranges from about 17 to 25 feet bgs. Groundwater flow direction is generally to the west-southwest and varies seasonally to the north. Lake Lois is located about 5,000 feet southwest of the Site.

Depth to water measurements for the shallow Site wells on July 30, 2020, ranged from 30 to 31 feet bgs, on October 16, 2020, ranged from 21.8 to 24.2 feet bgs, and on January 7, 2021 ranged from 17.44 to 20.89 feet bgs. The groundwater flow direction for the July 2020 sampling event is primarily towards the southwest with an approximate gradient of

0.01 feet per foot (ft/ft). The groundwater flow direction for the October 2020 sampling event is primarily towards the southwest with an approximate gradient of 0.02 ft/ft. The groundwater flow direction for the January 2021 sampling event is primarily towards the southwest with an approximate gradient of 0.03 ft/ft.

Depth to water measurements for the deep Site wells on January 7, 2021, ranged from 23.90 to 24.82 feet bgs.

Environmental Investigations and Site Cleanup

In July 2018, Envitech advanced 18 soil borings (B-1 through B-18) and collected 11 soil gas borings (SG1 through SG11) to determine whether a release had occurred from the former dry-cleaning operation. Soil samples were collected from each boring, soil gas samples were collected from ten borings (B-1 through B-8, B-10, and B-11), and groundwater was sampled from one boring (B-14) at about 26 feet below ground surface (bgs). Analytical results indicated the presence of PCE in soil and soil gas samples above MTCA Method A or Method B cleanup screening levels.

In July 2020, AEG advanced additional borings to complete the remedial investigation. Two borings (B-19 and B-20) were advanced inside the laundromat adjacent to borings B-3 and B-1, respectively, to define the vertical extent of PCE in soil. Borings B-21, B-22, and B-23, and monitoring well MW-1 were advanced on the south and southwest sides of the building to laterally define the extent of PCE in soil. Three soil gas borings (SG-1, SG-2, and SG-3) were advanced west of the former leach field to laterally define soil gas impacts in this area, and soil gas samples SG-4, SG-5, and SG-6 were collected from borings B-23, B-22, and B-21, respectively, on the south side of the building to laterally define soil gas impacts in this area.

Three monitoring wells (MW-1, MW-2, and MW-3) were installed to determine potential impacts to shallow groundwater. Groundwater was encountered at about 31 feet bgs, and the monitoring wells were screened from 25 to 35 feet bgs. All samples were submitted for analysis for PCE and daughter products. Laboratory results for all constituents analyzed in soil, groundwater, and soil gas samples were either non-detect or were detected below their respective MTCA Method A/B cleanup screening levels. In October 2020, AEG installed two deep monitoring wells (MW-4 and MW-5) to evaluate the potential presence of dense non-aqueous phase liquid (DNAPL) that may not have been detected in shallow groundwater. Groundwater flow in the shallow groundwater unit was determined to be to the southwest, so the monitoring wells were installed on the south (MW-4) and west (MW-5) sides of the building. The well borings were advanced until a confining layer was encountered. A confining layer was encountered at about 75 to 80 feet bgs, and the monitoring wells were installed with 5 feet of screen. Soil samples collected and analyzed for PCE, and daughter products were non-

detect for all constituents.

In October 2020, AEG also completed a Tier II Vapor Assessment, which included sampling indoor air from two locations (Indoor-1 and Indoor-2), ambient air from one location outside and upwind (ambient), and sub-slab vapor from two locations (SS-1 and SS-2). The assessment was completed to determine if the PCE detected in the soil beneath the building is present and/or has the potential to migrate into the indoor air inside the Lacey Urban Center facility. Analytical results indicated PCE, and daughter products were non-detect in the indoor and ambient air samples; however, PCE was detected above the MTCA Method B sub-slab screening level at both sampling locations (SS-1 and SS-2). All other daughter products were below the laboratory detection limits for each compound.

Concurrent with the installation of wells MW-1 through MW-3 in July 2020, AEG performed three rounds of groundwater monitoring at the site. Deep wells MW-4 and MW-5 were incorporated into the sampling during the January 2021 event. To date, neither PCE nor daughter products have been detected in the groundwater monitoring well network.

The aggregate RI/FS activities were summarized in AEG's Remedial Investigation and Feasibility Study report dated April 1, 2021. AEG proposed the following cleanup alternatives in their 2021 RI/FS:[22]

- Alternative 1: No Action
- Alternative 2: In-Situ Soil Treatment via Vapor Extraction.
- Alternative 3: Closure with Vapor Mitigation Installation and Environmental Covenant.

Based on the results of the Disproportionate Cost Analysis (DCA), Alternative 3 Closure with Vapor Mitigation Installation and Environmental Covenant was proposed as the least costly and equally beneficial to Alternative 2. Sufficient information has been presented to Ecology for us to concur that the preferred remedial alternative is sufficient to meet the requirements of MTCA and are protective of human health and the environment.

On September 14, 2021, Ecology issued an opinion stating that upon completion of the proposed cleanup (installation of a vapor mitigation system and institutional controls memorialized by an environmental covenant), no further remedial action would likely be necessary to clean up contamination at the site. As part of the vapor mitigation system, Ecology recommended a network of sub-slab monitoring points should be installed so that differential pressure and sub-slab soil gas concentrations can be measured over time to evaluate the effectiveness of the passive system and whether an active system would be needed. If an active

[22] AEG, *Remedial Investigation/Feasibility Study Report*, April 1, 2021.

system was determined to be needed, then these monitoring points could also be used to monitor its effectiveness. Indoor air concentrations would also need to be measured concurrently with sub-slab soil gas concentrations.

AEG subsequently submitted a technical memo on March 1, 2022, that summarized the vapor mitigation system installation activities conducted on December 8, 2021. The objective of the system was to mitigate potential vapor intrusion risk.

The vapor mitigation system was constructed as a sub-slab depressurization system (SSDS) and was located near the southwest corner of the building. It included the installation of two 2-inch-slotted, polyvinyl chloride, vapor mitigation points SSD-1 and SSD-2 to depths of 14 inches below the concrete floor within the laundromat. SSD-1 is located in the southwest corner near boring B-11, while SSD-2 is located approximately 10 feet east of the former sub-slab vapor sample location SS-1. The point sumps were backfilled with clean pea gravel followed by a concrete seal and were located to i) provide a pressure differential (vacuum) using vertical collection points installed through the concrete floor and ii) connect the points to air conveyance piping via an outlet pipe on the building roof. The conveyance piping is connected to an in-line, weatherproof radial blower equipped with a condensation bypass, explosion-proof motor and control box with status display, and electrical power. The system exhaust stack terminates approximately 3 feet above the roof line.

AEG performed a follow-up round of indoor air sampling on October 12, 2022, to determine whether sub-slab vapor conditions had changed since the previous sampling rounds and confirm that PCE and its daughter products were still below MTCA cleanup levels. In addition, AEG also collected samples from the active SSDS at points SSD-1 and SSD-2. The sample analytical results indicated PCE in the indoor air sample at a concentration below the MTCA Method B cleanup level. PCE was also detected in both SSD-1 and SSD-2 system vapor samples at concentrations exceeding the Method B cancer sub-slab screening levels, but below Method B sub-slab screening levels for commercial workers. All other constituents were non-detect.

On April 3, 2023, Ecology submitted a Further Action opinion letter that recommended installation of additional vapor pins and a follow-up vapor assessment. This was based on the presence of 1,800 ug/m^3 of PCE in the sub-slab vapor at boring B-3 which may have been indicative of either PCE-impacted soil exceeding the respective CUL or a potential undiscovered body of DNAPL. Given this potential and the presence of relatively impermeable silt/clayey silt

deposits that occur as depicted on Figures 6, 7, and 8 of the AEG 2021 RI/FS Report[23], Ecology presumed that it was reasonable that such deposits could have contained such impacts.

Further, Ecology's prior 2021 opinion[24] discussed several components that should accompany the installation of either a passive (no blower) or an active (blower-initiated) vapor mitigation system at the site. These components included:

- Installation of a network of sub-slab monitoring points to measure differential pressure and sub-slab soil gas concentrations over time to evaluate and monitor the effectiveness of the system. Indoor air concentrations would also need to be measured concurrently with sub-slab soil gas concentrations.

- Differential pressures should be measured using a micro-manometer that is auto-zeroing and has a pressure differential sensitivity to 0.001 inches of water (such as a CLK-Zephyr II+ data logging micro-manometer). Differential pressures should be recorded using a data logger for at least 48 hours (preferably one week) prior to sampling to assess fluctuations (if any) of cross-slab differential pressure.

At the time of Ecology's 2023 opinion, only two active SSDS points SSD-1 and SSD-2 had been installed to date and connected to a blower to provide both depressurization and vapor extraction. However, as Ecology suggested, no surrounding sub-slab monitoring points were installed to assess subaerial sub-slab system coverage, performance, and effectiveness across the SSDS field. Further, no manometer data has been supplied to enable assessment of differential pressure fluctuations and operational effectiveness.

In response to Ecology's 2023 Further Action opinion, AEG-Atlas conducted installation of additional vapor pins SS-3 through SS-5 and performed a follow-up round of additional vapor sampling on October 13, 2023. The additional vapor pins were installed to expand the network of sub-slab vapor points throughout the building slab to monitor for the potential build-up of vapors associated with PCE-impacted soils detected beneath the building. Concurrent with the sub-slab vapor sampling, AEG collected two indoor air samples in the employee office room and the laundry facility, and one ambient air sample collected upwind and away from any known contamination. The samples were analyzed for PCE and daughter products by Method TO-15 SIM.

The analytical results of both indoor air samples indicated the singular presence of PCE at concentrations below MTCA Method B cleanup levels. One indoor air sample indicated the

[23] Remedial Investigation/Feasibility Study Report – Lacey Urban Center; April 1,2021; Associated Environmental Group, LLC

[24] Ecology Opinion on Proposed Cleanup of Lacey Urban Center, September 14, 2021

presence of trichloroethylene (TCE) at a concentration below MTCA Method B cleanup levels. Analytical results of the sub-slab vapor samples indicated the presence of PCE at concentrations below MTCA Method B cleanup levels. All other constituents analyzed for were non-detect for both sample suites.

AEG Conclusions and Recommendations

Vapor assessment activities performed at the Site to date have identified the presence of PCE in only one soil gas sample (in 2018) and one sub-slab vapor sample (in 2020) at concentrations exceeding the MTCA Method B screening level of 1,500 micrograms per cubic meter (µg/m3) for commercial workers. All other results have been below the MTCA Method B screening level. Further, no exceedances were detected during the most recent October 2023 vapor assessment investigation, which was performed after the existing SSD system had been turned off for at least a week.

To date, PCE has been detected in soil above the MTCA Method A cleanup level in 6 out of 66 soil samples. The concentrations above the MTCA Method A cleanup level of 0.05 milligrams per kilogram (mg/kg) ranged from 0.06 to 0.25 mg/kg, which are well below the MTCA Method B cleanup level of 480 mg/kg for protection of direct contact.

For MTCA Method B cleanup levels to be applicable for Site closure, both the leaching to groundwater and soil to vapor pathways were evaluated. The results indicated that no HVOCs have been detected in either shallow or deep groundwater above MTCA Method A cleanup levels to date. Further, as summarized above, the limited residual soil impacts do not appear to be generating enough vapor to create a potential vapor intrusion scenario, especially under the commercial worker exposure scenario.

As such, AEG concluded that based on the work performed at the Site to date, MTCA cleanup standards have been achieved for all media, and continued operation of the SSD system does not appear to be warranted.

Enclosure B

Environmental Covenant and Supporting Plans

Environmental Covenant Requirements

The AEG 2021 RI/FS Report includes a feasibility study of remedial alternatives. The preferred remedial alternative requires an environmental covenant to memorialize:

- Monitoring the building sub-slab PCE-impacted soil.
- Maintaining commercial site use.
- Prohibiting use of groundwater for drinking water purposes at the Site.
- Implementing a soils management plan should the building slab be disturbed or whereby contaminated soil is exposed.

Please provide an environmental covenant and supporting plans in a word processing version on which for Ecology to comment.

Draft Covenant: Provide the environmental covenant in electronic word-processing-compatible format.[25] Ensure that the following information is included with the draft covenant:

1. Ecology recommends you limit the environmental covenant to the affected tax parcel and provide figures which show the extent of contamination on the affected parcel. This would clearly show that the maximum extent of contamination historically was limited to the area beneath the existing building slab and would also be the extent of the cap requiring monitoring and maintenance. You could also survey the affected area to show the historical extent of contamination. A survey would be beneficial to show the exact relationship between the historical extent of contaminated soil and any easements.

2. **Plan View Maps and Geologic Cross Sections:** Include delineated concentration (1) isopleth plan view maps and (2) geologic cross sections showing the extents of remaining contamination at the Site. Include the boundaries of the MTCA facility, the affected Property, and the location of any rights-of-way or easements.

3. **Title Search:** Provide a complete title search as part of Exhibit A, legal description.

4. **Review the title search to determine if existing easements include any area of proposed engineered and/or institutional controls:**

    a. Develop a plan view map or sketch of the locations of existing easements sufficient for E Ecology to concur with your evaluation of whether any easements include the areas of proposed engineered or institutional controls.

[25] See the word processing formatted document at: https://fortress.wa.gov/ecy/publications/SummaryPages/1509054.html.

b. For each easement that intersects proposed controls (the extent of contaminated media) at the Site, provide either of the following:

   i. A signed subordination agreement.

   ii. Sufficient evaluation of specific easement terms for Ecology to concur that the easement will not impact the integrity of the cleanup.

   Ecology recommends contacting easement owners prior to completing a draft environmental covenant. When reviewing easements, Ecology assumes that Property boundaries extend to the centerline of the adjacent rights-of-way.

5. **Local Government Notification Requirements:** Please document how the local government notification requirements of WAC 173-340-440(10) are completed. Ecology suggests providing the final draft EC and enclosure package to the local land use planning authority for review and comment. If comments are provided, update the draft EC based on comments, and provide Ecology the correspondence, local government comments, and how those comments were addressed. If no response is received, include sufficient information for Ecology to concur that the correct local government agency was notified, the date they were notified, and that comments were sought. At this Site, Ecology believes that the appropriate local land use planning authority is likely the City of Lacey.

6. **Long-Term Vapor/Indoor Air Monitoring and Cap Monitoring Plan:** Ecology requests the opportunity to comment on the word processing version of the proposed long-term soil vapor/indoor air and sub-slab monitoring plans. The long-term soil vapor/indoor air monitoring plan needs to also include contingency planning in the event that the remedy is not effective.

   Reporting on the cap condition may be conducted at the same time as the long-term matrix monitoring and should be detailed in the monitoring plan. An initial inspection with photographs and description of the sub-slab cap to be monitored should be included with the plan. Ecology recommends the long-term monitoring frequency every 18 consecutive calendar months for a period of 54 months, or three sampling events before the first required periodic/5-year review.

   The plan should also include provisions to ensure that all environmental data is provided in accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data

Submittal Requirements).[26] This plan can be referenced in the EC, but does not have to be recorded with the EC.

Based on sampling results, and as an option, Ecology can consider a petition to discontinue monitoring at 5 years and leave soil in place for eventual removal via the CMMP.

9. **Contaminated Media Management Plan (CMMP):** Given contaminated soil above the MTCA CUL will remain beneath the building concrete floor slab, a CMMP is recommended to be developed to document investigative and disposal protocols and methodologies and provide information regarding the management of potentially contaminated media during potential future building and/or floor slab redevelopment efforts. The CMMP may be referenced in the EC, but is not recorded with the EC.

   The components of the CMMP should generally include the following:

   -Introduction
   -Plan Objectives
   -Health and Safety Plan
   -Known Site Characteristics
   -Activities with Potential to Generate Contaminated Soil
   -Contaminated Media Management Procedures
   -Stockpiling Contaminated Media
   -Dust and Odor Control
   -Decontamination Procedures
   -Contingency Plan for Unknown or Suspect Contamination
   -Contaminated Media Transport and Off-Site Disposal
   -Contaminated Media Reuse
   -Waste Transport
   -Post-Construction Management
   -Reporting and Documentation

10. **Contingency Plan:** That plan should describe those actions that will be conducted if long-term monitoring results exceed predetermined levels, or if cap maintenance or other maintenance is needed, such as repairing soil vapor pins or a damaged cap.

    The contingency plan may be triggered during regular inspection of the cap and vapor pin integrity, or by exceedances of cleanup levels at a point of compliance during long-term monitoring. A simple and adequate contingency plan would include and detail, as

[26] https://fortress.wa.gov/ecy/publications/SummaryPages/1609050.html

applicable, that when specific levels are detected during long-term monitoring, additional confirmation sampling would be performed within 30 days of the initial receipt of results.

Additional follow-up vapor/indoor air sampling would include all required testing for detected hazardous substances and related compounds. The contingency plan should include proposed analytes for contingency sampling in an analytical schedule. Results of performance and confirmation sampling for a contingency plan would be provided to Ecology within 90 days of the laboratory result date if no exceedances of criteria are detected, or within 30 days of the laboratory report result date if exceedances are detected, or for follow-up confirmation sampling.

If confirmation sampling reveals the continued presence of contaminants above predetermined levels, the contingency plan should include that a work plan to further evaluate conditions beneath the Site would be submitted to Ecology within 60 days of receipt of results of confirmation sampling.

- **Rights-of-Way:** Confirmation at your Site that no right-of-way will be impacted.

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