STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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February 18, 2020

Lauren Ross
Kilroy Realty
12200 W. Olympic Boulevard, Suite 200
Los Angeles, CA 90064

Re: Opinion pursuant to WAC 173-340-515(5) on Remedial Action for the following Hazardous Waste Site:

- **Site Name:** Lake View at Fremont
- **Address:** 837 North 34th Street, Seattle, WA 98103
- **Facility/Site No.:** 5471899
- **VCP No.:** NW2977
- **Cleanup Site ID No.:** 11902

Dear Lauren Ross:

The Washington State Department of Ecology (Ecology) received your request for an opinion on monitoring well installation and sampling at the **Lake View at Fremont** facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW. This opinion applies only to the Site described below.

Description of the Site

The Site is defined by the nature and extent of contamination associated with the following releases:

- Total petroleum hydrocarbons in the diesel (TPH-D) and oil (TPH-O) ranges; chromium and arsenic into the Soil;

- TPH-D, TPH-O and pentachlorophenol (PCP) into the Ground Water.

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

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel associated with this Site is affected by other sites.

Basis for the Opinion

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

1. AEI Consultants, 2019. *Well Installation and Sampling Report, 837 North 34th Street, Seattle, Washington 98103.* November 25.

2. AEI Consultants, 2019. *Workplan for Monitoring Well Installation, 837 North 34th Street, Seattle, Washington 98103.* June 19.

3. McRoberts and Associates, PC, 2017. *Response to Ecology's Opinion Pursuant to WAC 173-340-515(5) on Remedial Action for the Following Hazardous Waste: Fremont Lake View, 837 N. 34th Street, Seattle, Washington 98103.* January 31.

4. AEI Consultants, 2014. *Subsurface Investigation, Lakeview Building.* September 26.

5. AEI Consultants, 2012. *Phase I Environmental Site Assessment, Lakeview Building.* April 27.

6. Associated Earth Sciences, Inc., 2008. *Independent Remedial Action Report, Lakeview Building.* July 7.

7. Associated Earth Sciences, Inc., 2007. *Environmental Closure Letter, Lakeview Building, Seattle, Washington.* September 7.

8. Associated Earth Sciences, Inc., 2001. *Lakeview Building Dewatering Profiles, Lakeview Building, 801 North 34th Street, Seattle, Washington.* February 21.

9. IT Group, 2001. *Groundwater Analytical Results from December 26, 2000 Sampling Event, Proposed Lakeview Building, Quadrant Lake Union Center.* January 30.

10. Associated Earth Sciences, Inc., 2000. *Subsurface Exploration and Geotechnical Engineering Report, Quadrant Lake Union Center Lakeview Building, University Place, Washington.* May 10.

11. Geotech Consultants, Inc., 1997. *Geotechnical Engineering Considerations, Proposed Building 3 of East Development, Quadrant Lake Union Center, Seattle, Washington.* November 25.

12. Geotech Consultants, Inc., 1996. *Geotechnical Engineering Study, Adobe Systems at the Quadrant Lake Union Center, Seattle, Washington.* July 3.

13. Environmental Management Resources, Inc., 1995. *Subsurface Exploration Summary, Quadrant Lake Union Center, 659 North 34th Street, Seattle, Washington.* April 3.

14. Geotech Consultants, Inc., 1989. *Preliminary Environmental Study of Parcels A, B & C, Quadrant Lake Union Waterfront Center, Seattle, Washington.* April 18.

15. Geotech Consultants, Inc., 1988. *Preliminary Geotechnical Engineering Study, Proposed Quadrant Lake Union Center, Seattle, Washington.* September 20.

Those documents are kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. You can make an appointment by completing a Request for Public Record form (https://www.ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests) and emailing it to PublicRecordsOfficer@ecy.wa.gov, or contacting the Public Records Officer at (360) 407-6040. A number of these documents are accessible in electronic form from the Site web page:
https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=11902

This opinion is void if any of the information contained in those documents is materially false or misleading.

Opinion

Based on a review of the *Well Installation and Sampling Report* dated November 25, 2019 (report), Ecology has determined:

- The *Workplan for Monitoring Well Installation* dated June 19, 2019 states that the well development will take place at least 24 hours after completion of well installation. A schedule update dated August 8, 2019 stated that drilling work would occur on August 24, 2019; well and development and sampling would occur within approximately 1 week thereafter.

  The report indicates that new monitoring wells MW-1 and MW-2 installed on August 24 were then developed using surging and pumping and sampled immediately, following water level recovery. U.S. EPA guidance indicates that well development should not occur any sooner than 48 hours after grouting is completed, especially if a vigorous well development method (i.e. surging) is used. This amount of time allows the bentonite and cement seals used in the well completion to set up and cure properly.

Ecology's *Guidance for Remediation of Petroleum Contaminated Sites* (Publication No. 10-09-057 dated June 2016) states that wells should not be sampled for at least 48 hours following well development. This period allows the natural flow regime to return to static conditions and the stabilization of ground water geochemistry so that representative samples can be collected.

Because monitoring well development and sampling were both conducted immediately following well installation, Ecology does not consider the ground water samples collected on August 24 to be representative of Site conditions. The wells need to be resampled.

- The August 2019 ground water sampling results in the report suggest that ground water on the Site is contaminated with TPH-D and TPH-O at concentrations exceeding Method A cleanup levels. PCP was not detected in either of the monitoring wells. These preliminary results need to be verified with representative ground water sampling data.

- If verification of the preliminary analytical results in the two monitoring wells indicate exceedances of Method A cleanup levels in either MW-1 or MW-2, Ecology would conclude that the Site most likely extends off the Property in that location and would need to be further characterized. In addition, Ecology previously recommended installing three monitoring wells in an email exchange with AEI Consultants dated October 22, 2018 so that triangulation of water level elevation data could be used to interpret the direction of ground water flow. If ground water monitoring results indicate the potential for off-Property contaminant migration, the actual rather than an inferred hydraulic gradient direction will be needed.

- The text (page 5) states that turbidity was monitored as a parameter during well development but no recorded values are provided in the well development logs in Appendix D. Please add the turbidity measurements to the well development logs.

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 70.105D.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 70.105D.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 70.105D.030(1)(i).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (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 web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me at (425) 649-7064 or heather.vick@ecy.wa.gov.

Sincerely,

Heather Vick

Heather Vick, LHg
NWRO Toxics Cleanup Program

Enclosure (1): A – Description and Diagrams of the Site

cc: Peter McIntyre, AEI Consultants

Enclosure A

Description and Diagrams of the Site

Site Description

This section provides Ecology's understanding and interpretation of Site conditions, and is the basis for the opinions expressed in the body of the letter.

Site: The Site is defined by the releases of total petroleum hydrocarbons in the diesel (TPH-D) and oil (TPH-O) ranges and arsenic to soil that is most likely associated with backfill materials. The Site is also defined as TPH-D, TPH-O and pentachlorophenol (PCP) in ground water. The Site is located at 837 North 34th Street in Seattle, Washington (Property) (see Figure 1).

Area and Property Description: The Property corresponds to King County parcel number 1973200389 which is 1.79 acres in size. The Property is occupied by Fremont Lake View, a four-story, multi-tenant, commercial office building with three floors of associated sub-grade parking that was constructed in 2008. The Property is bounded by North 34th Street to the north, the Plaza building and Fremont Avenue to the west; Aurora Avenue North/State Route 99 (elevated bridge), commercial buildings and a marina to the east; and the Adobe Waterfront building to the south. Land use surrounding the Site consists of commercial businesses and residential apartment buildings.

Property History and Current Use: In the late 1800s, the southern two-thirds of the Property was submerged under Lake Union. The northern part of the Property had railroad lines running east-west just north of the lake shoreline. Fill materials consisting of spoils from dredging and construction of the Lake Washington Ship Canal were reportedly placed on the Property to raise it above lake level for development. From 1905 to 1918, the Property was occupied by the Magnesium Asbestos Supply Company and Pacific Iron and Steel Works. The 1905 Sanborn map shows a small area labeled "tank farm" between a foundry and an asbestos grinding mill; it does not appear on the 1919 Sanborn map. From approximately 1919 to 1957, a lumberyard occupied the Property. Between the 1950s and 1990s, the Property was part of a larger commercial/industrial office park including a general store and warehouses for plumbing supplies and roofing materials. Historical land use information for the Property is summarized in the table below:

Date Range	Former and Current Property Use
Late 1800s	Southern two-thirds of the Property was submerged in Lake Union
1905 to 1918	Railway; Magnesium Asbestos Supply Co.; Pacific Iron and Steel Works
1919 to 1950	Lumberyard
1950 to 1998	The Property was a portion of a larger commercial/industrial office park which included a general store and warehouses for plumbing supplies and roofing materials.
1998 to 2007	Vacant lot; parking for buildings on adjacent properties
2008 to present	Fremont Lake View, a multi-tenant office building

The Property was formerly a part of a proposed development project known as the Quadrant Lake Union Center (QLUC) which was not built.

Redevelopment of the Property occurred in 2008. The Property redevelopment included excavating soil to a maximum depth of 30 feet below ground surface (bgs) for construction of the three-level parking garage that underlies the majority of the building; the southern portion of the Property is underlain by only one story of underground parking. Currently, the Property is the location of the Fremont Lake View building. The lower three floors of the Fremont Lake View building are used for parking and the top three floors are used for office space.

Contaminant Source and History: Soil contaminated with TPH-D and TPH-O associated with fill material was left in place under the southeast corner of the parking garage during the 2008 redevelopment. Creosote post piles were also reportedly left in place at the southwest corner of the building and central 1/3 of the Property, near the fill/native contact.

Physiographic Setting: The Property is located within the Puget Lowland physiographic province, a broad, low-lying region situated between the Cascade Range to the east and the Olympic Mountains to the west. The elevation of the Property ranges from approximately 20 to 38 feet above mean sea level (amsl) and slopes to the south.

Surface Water/Storm Water: The Lake Washington Ship Canal is located approximately 325 feet south of the Property. Surface water runoff in the area is captured in municipal storm drains and transported to the nearest surface water drainage, likely Lake Union. Rainfall not captured in the storm drain system infiltrates yard areas and likely moves downslope in near-surface soils.

Ecological Setting: The Property is mostly covered with a building and paved areas. Land surrounding the Site is primarily covered with buildings, asphalt and concrete with small landscaped areas that are unlikely to attract wildlife.

Geology: The southern two-thirds of the building is directly underlain by up to 40 feet of historic fill material which reportedly consists of sand, silt and gravel intermixed with clay, concrete rubble, coal fragments, cobbles, sawdust and wood. A more recent generation of fill material was removed from the northern third of the Property during the 2007 redevelopment excavation. Native soil directly underlies the northern portion of the building and typically consists of stiff, hard silt and dense to very dense sand and gravel (over-consolidated Vashon glacial till).

Ground Water: Based on topography and the close proximity of the Lake Washington Ship Canal (also the fact that most of the Property was formerly in Lake Union), the direction of ground water flow on the Site is inferred to be generally to the south-southwest toward the Lake Union Ship Canal which flows to the west towards Puget Sound. Perched ground water occurs at depths of approximately 4 to 10 feet bgs. Ground water levels on the Site are governed by the level of the Lake Washington Ship Canal which is controlled by the Ballard Locks.

Water Supply: Seattle Public Utilities (SPU) provides drinking water to the Property building. The Cedar River and the South Fork Tolt River watersheds in eastern King County are sources for potable water supplied by SPU.

Release and Extent of Soil and Ground Water Contamination:

Soil. In 1988, eight test borings were drilled on the Lake Union Center property including several borings on the Property. Soil samples selectively analyzed for oil and grease, priority pollutant metals and/or pentachlorophenol were not found to contain contaminant concentrations that exceeded MTCA cleanup levels in effect at the time.

A preliminary environmental assessment conducted in 1989 included sampling of near-surface soil from selected locations along the railroad right-of-way in the Quadrant Lake Union Center. Twelve soil samples were selectively analyzed for petroleum hydrocarbons, polychlorinated biphenyls, organic halides and chlorinated herbicides. Samples 8 and 9 in the general area of the Property were analyzed for total petroleum hydrocarbons only with concentrations of 111 to 183 mg/kg detected. These results, which were below MTCA cleanup levels at the time, were attributed to the presence of coal fragments.

In 1995, 27 soil borings were advanced to depths of three to five feet to characterize the Quadrant Lake Union Center (QLUC) project which included seven borings (B-19 through B-25) the Property. None of the borings encountered ground water. Soil samples collected in the borings were analyzed for TPH-D and TPH-O. Selected samples were analyzed for polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs); however none of those were collected on the Property. None of the soil samples contained TPH above the Method A cleanup level, which at the time was 200 mg/kg.

In 1996, a geotechnical engineering study investigated subsurface conditions for the planned Adobe Building. The investigation was performed to further define the depth to suitable foundation-bearing soils and used results from three borings performed in 1988. Five additional borings (B-1 through B-5) were advanced within the investigation area, with B-1 and B-5 located within the area of the Property. B-1 was located in the extreme southeast corner of the Property; B-5 was located within the railroad right-of-way adjacent to the base of the existing retaining wall. The geotechnical study report does not indicate any contamination was encountered in either of these borings.

A second assessment in 1996 documented additional sampling along the railroad right of way included one sample, C3, which appeared to be on the Property. The soil sample which was collected at a depth of 0.5 feet bgs contained TPH at a concentration of 240 mg/kg.

A geotechnical engineering study in 1997 used borings B-1 and B-5 described above and included two additional borings, B-1A and B-2A, and three test pits (TP-1, TP-2 and TP-3). A letter report indicated that no contamination was encountered in the study.

In 1998, the Property was a vacant lot and was investigated as part of the Adobe proposed development project (at QLUC) with eight test pits (DTP-30 through DPT-37) excavated to depths of 7 to 9.5 feet bgs. Soil samples collected from the test pits contained TPH-G, TPH-D, TPH-O and carcinogenic PAHs (cPAHs).

All of the concentrations were below MTCA Method A cleanup levels at the time, except for one sample collected at a depth of 8 feet bgs in DTP-38 which contained cPAHs at a concentration of 1.44 mg/kg and was attributed to wooden timbers encountered in the test pit. Benzene, toluene, ethylbenzene, xylenes and halogenated volatile organic compounds were not detected in any of the soil samples. A test pit, TP-11, was also excavated on the Property. Soil samples collected at 0.5 to 2 and 2 to 4 feet bgs and analyzed for TPH-D and TPH-O only contained concentrations of both below Method A cleanup levels in place at the time.

In April 2000, three geotechnical soil borings (EB-1 through EB-3) were advanced to depths of 25 to 45 feet bgs on the Property. The report does not mention that contamination was encountered in any of the three borings.

In August 2000, seven supplementary test pits (EP-101 to EP-107) were excavated on the Property. At depths corresponding to elevations of 8 to 10 feet amsl, several of the test pits encountered a layer rich in building wastes that may represent a previous building demolished in place and filled over.

Hydrocarbon odors were noted in test pits EP-105 and EP-107 and discreet soil samples were obtained and transferred to the consultant for the Quadrant Lake Union Center campus projects. This data was not found in any Quadrant Lake Union Center reports in Ecology's file. In addition, the location of test pit EP-107 was not shown in Figure 1 of the corresponding report.

In 2007, the Property was redeveloped; excavation for construction of the Lake View at Fremont building occurred. Twelve test pits (TP-201 through TP-212) were dug prior to the main excavation for Site characterization. Soil samples collected from the 12 test pits contained TPH-D, TPH-O, RCRA metals and PCP at concentrations that were non-detectable or below Method A or Method B cleanup levels except for the following:

- Test pit TP-205 contained TPH-O at a concentration of 10,000 mg/kg in a soil sample collected at an elevation of 9.5 to 10.5 feet amsl and 18,000 mg/kg in a soil sample collected at an elevation of 8 feet amsl. The soil sample collected at 8 feet amsl also contained TPH-D at a concentration of 6,300 mg/kg. These levels all exceeded the respective Method A cleanup levels.

- Test pit TP-211 contained arsenic at a concentration of 40.8 mg/kg which exceeds the Method A cleanup level of 20 mg/kg.

The excavation boundary was not shown on the remedial action report figures. Based on the location of the current building within the Property lines, it is assumed that most of the Property was excavated approximately lot-line to lot-line to a minimum elevation of 8.25 feet amsl.

During the course of the general excavation, two previously unknown underground storage tanks (USTs) and a third UST known to be present were removed. All of the USTs were believed to have been used for the storage of fuel oil and all appeared to be of steel construction with capacities of 500 to 1,100 gallons.

After the USTs were removed, and impacted soil was excavated, soil confirmation samples were collected from each tank basin. Confirmation soil sample laboratory results indicated that residual TPH concentrations in soil were below MTCA Method A cleanup levels for two of the three USTs.

Additional excavation was needed at the third UST basin. Final confirmation sampling of the third UST basin identified a TPH-D concentration of 249 mg/kg which exceeded the Method A cleanup level at the time of 200 mg/kg but is below the current Method A cleanup level of 2,000 mg/kg.

Twenty confirmation soil samples collected following the excavation contained either non-detectable levels or concentrations below Method A or B of TPH-D, TPH-O, RCRA metals and PCP except for the following:

- Soil sample ES-48, which was collected as a confirmation sample 0.75 foot below the bottom of test pit TP-205 (described above) contained 63,000 mg/kg of TPH-D and 46,000 mg/kg of TPH-O. Metals and PCP were not tested for in this sample.

The exceedances described above indicated that arsenic, TPH-D and TPH-O at concentrations soil above MTCA Method A cleanup levels was left in place in 2008 below the northeast corner of the building and beneath the southeastern corner of the building (See Figure 2).

In the northeast corner of the Property, arsenic above Method A was left in place at an elevation of 13.5 feet amsl. Because the bottom of the excavation was at 9 feet amsl, it is likely that the arsenic in this location was removed by the redevelopment excavation.

In the southeast corner of the building, the bottom of the excavation for the building was terminated at approximately 9 feet amsl. The floor of the parking garage is at approximately 10 feet amsl. Soil contaminated with TPH-D and TPH-O above Method A was left in place below

the lower level of the concrete parking slab in the south half of the Site. Therefore, the contamination identified at an elevation of 9.5 to 10.5 feet amsl was removed, but contamination at 8 to 8.25 feet amsl remained in place and the vertical and lateral extent of that contamination was not defined.

In July 2014, six soil borings (SB-1 through SB-6) were advanced on the Site. Soil borings SB-1 through SB-5 were advanced within the interior of the parking garage and SB-6 was advanced outside and south of the southeast corner of the building. The borings were drilled to depths of 6 to 15 feet bgs except for SB-1, which met refusal just below the floor of the parking garage. Two soil samples were collected from each boring except for SB-1 (no samples due to shallow refusal) and SB-5 where a single sample was collected due to poor recovery.

The soil samples were analyzed for total petroleum hydrocarbons in the gasoline range (TPH-G), TPH-D, TPH-O, benzene, toluene, ethylbenzene, xylenes and total chromium. Soil samples collected in SB-4 at 5 feet bgs in SB-5 at 3.5 feet bgs contained toluene at 0.6 and 0.33 mg/kg respectively which are below the Method A cleanup level. In addition, the sample from SB-4 also contained benzene at 0.03 mg/kg which is equal to but does not exceed the Method A cleanup level.

Ground Water. In November 2000, five dewatering wells (W-1 through W-5) were installed adjacent to the eastern and southern borders of the Property. The dewatering wells were originally called P-1 through P-5; the well names were later changed to W-1 through W-5 respectively. The five dewatering wells were installed to depths of 20 to 30 feet bgs in existing fill soil that was variable in composition and density.

The dewatering wells were pilot-tested; however, no records are available for the testing or the dewatering operations that were subsequently conducted including pumping duration, pumping rates, radii of influence or volume pumped. Three piezometers (PZ-1 through PZ-3) were also installed to measure water levels.

On November 28, 2000, ground water samples collected from two of the dewatering wells, W-2 and W-5, located just outside the eastern and southern borders of the Property (see Figure 2) contained PCP at concentrations of 1.26 and 1.22 micrograms per liter (µg/L) respectively. These concentrations exceeded the Method B cleanup level for PCP (0.73 µg/L) at the time. Samples collected on December 20 contained non-detectable levels of PCP. Samples collected on December 26 contained 1.20 and 0.67 µg/L respectively which both exceeded the MTCA Method B cleanup level. The current Method B cleanup level for PCP is 0.219 µg/L. The source of the PCP was not identified. No PCP was detected in 42 soil samples collected across the Property at various depths.

In May 2007, after dewatering activities had presumably ceased and prior to construction of the Lake View building, a ground water sample collected from dewatering well W-4 under static

conditions was named MW-S1 and analyzed for TPH-D, TPH-O, chromium, arsenic, selenium, silver, cadmium, barium, lead, mercury and PCP. Only barium was detected at a concentration of 63.8 µg/L which is below the Method B cleanup level. Former dewatering well W-4 was located along the eastern Property boundary (see Figure 2). The dewatering wells were removed during redevelopment of the Property in 2008.

In August 2019, two monitoring wells (MW-1 and MW-2) were installed in the lowest level (P3) of the parking garage (see Figure 2). MW-1 was installed in parking stall #420 and MW-2 was installed in parking stall #720. The wells were drilled to a total depth of 12 feet bgs using a direct-push rig; continuous soil samples were collected in 5-foot intervals using a coring system.

Soil samples were collected for head space screening but no discrete soil samples were submitted for laboratory analysis. A composited soil sample from a drum containing drill cuttings was submitted for waste characterization analysis.

The monitoring wells are constructed of 0.75-inch diameter PVC and screened from 2 to 12 feet bgs. The monitoring wells were drilled and installed on August 24, 2019. Well development and ground water sampling immediately followed well installation.

The ground water samples were analyzed for TPH-D, TPH-O and PCP. TPH-D and TPH-O were detected in both wells with concentrations in MW-1 exceeding Method A. Neither of the wells contained detectable PCP. Because the monitoring wells were developed immediately following installation and sampled immediately following well development, Ecology does not consider the August 24, 2019 sampling results representative of Site conditions.

Site Diagrams

LEGEND

N

Map: Seattle North
Date: 2017
Source: USGS

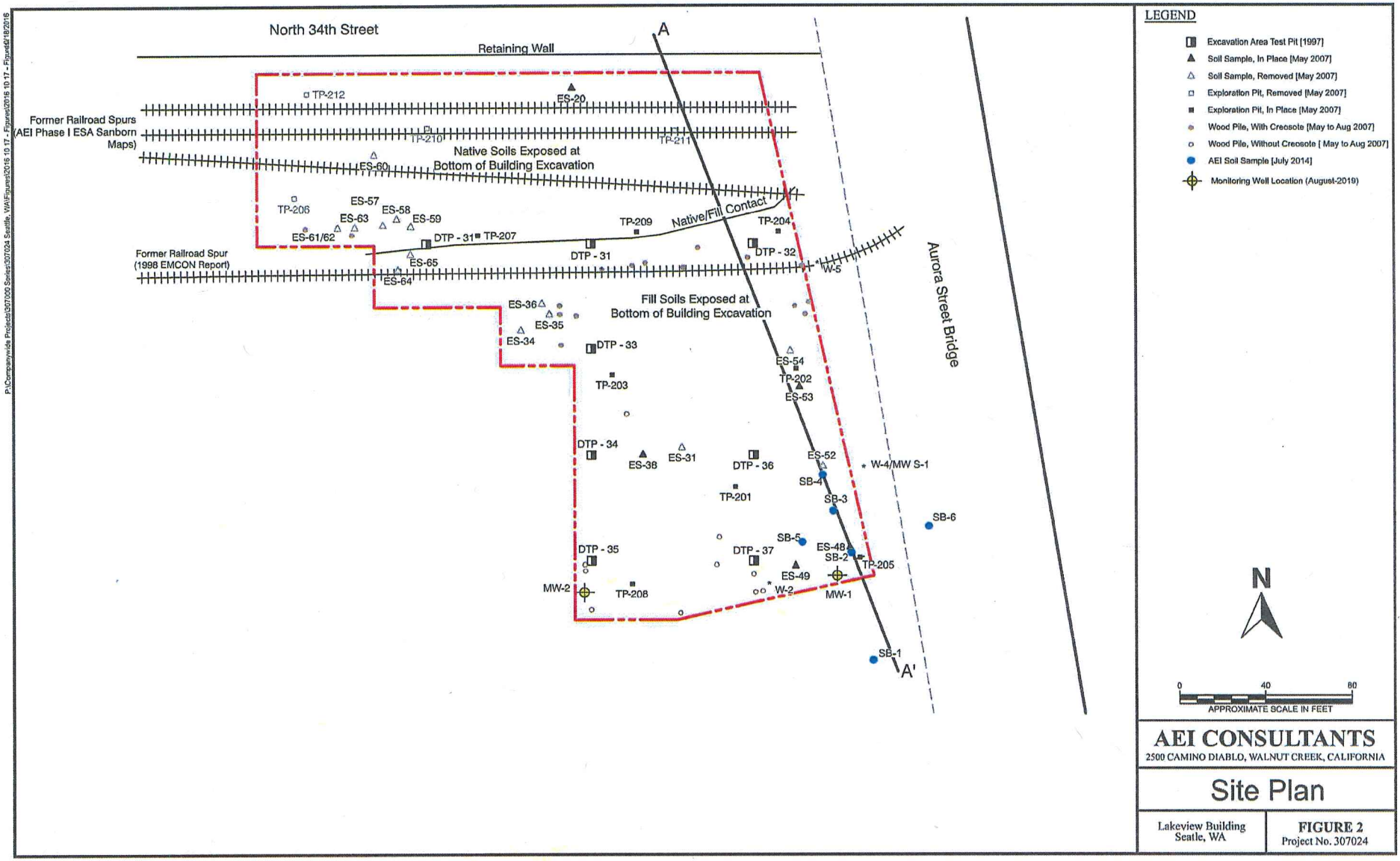
0 1,000 2,000
APPROXIMATE SCALE

AEI Consultants
2500 Camino Diablo, Walnut Creek, California

SITE LOCATION MAP

Lakeview Building
Seattle, Washington

FIGURE 1
Project No. 307024



AEI CONSULTANTS
2500 CAMINO DIABLO, WALNUT CREEK, CALIFORNIA

Site Plan

Lakeview Building
Seattle, WA

FIGURE 2
Project No. 307024