ADDENDUM

to the

Final Environmental Impact Statement

for the

South Lake Union Height and Density Alternatives EIS

prepared for the

520 Westlake Ave. N. Development

Master Use Permit No.: 3017466

April 29, 2019

City of Seattle Department of Construction and Inspections

PREFACE

In 2011, the Seattle Department of Planning and Development (DPD, now SDCI) issued a Draft Environmental Impact Statement (DEIS) entitled *South Lake Union Height and Density Alternatives.* The Final Environmental Impact Statement (FEIS) for that plan was issued in 2012. The DEIS and the FEIS, collectively referred to in this EIS Addendum as the "*South Lake Union* EIS," addressed proposed land use changes for the 340-acre area that comprises the South Lake Union Neighborhood. The proposed project site is located within the geographic area that was analyzed in that EIS.

The *South Lake Union* EIS is a non-project-specific document that identifies and evaluates probable, significant environmental impacts that could result from several development alternatives. The alternatives differ based on variations in building height, location, allowable density, and other land use code considerations. The *South Lake Union* EIS served as the lead environmental (SEPA) document for zoning changes that were adopted by the Seattle City Council in 2013.[1]

The purpose of this EIS Addendum is to provide site-specific environmental impact analysis relative to the proposed ***520 Westlake Ave. N. Development.*** This analysis is in addition to that which occurred as part of the *South Lake Union* EIS. Probable environmental impacts associated with the proposed ***520 Westlake Ave. N. Development*** do not substantially change the analysis of significant impacts and alternatives that are analyzed in the existing *South Lake Union* EIS. As such, SDCI has determined that an EIS Addendum is an appropriate environmental document for this project.[2]

This EIS Addendum is not an authorization for an action, nor does it constitute a decision or a recommendation for action. This EIS Addendum will accompany the ***520 Westlake Ave. N. Development*** through Seattle's Master Use Permit and other review processes and will be considered by City officials in making permitting/approval decisions for the project.

The EIS Addendum is organized into three major sections. The **Fact Sheet** (starting on page *i*) provides an overview of the proposed project and location, permits required, and points of contact for additional information; ***Section I*** (beginning on page 1) is a comprehensive description of the *Proposed Action*; and ***Section II*** (page 21) contains an analysis of environmental impacts associated with the *Proposed Action* compared with those described in the *South Lake Union* EIS.

1 Ordinance No. 124172
2 Seattle Municipal Code 25.05.600D.3

FACT SHEET

Name of Proposal — ***520 Westlake Ave. N. Development***

Proponent — City Investors IX LLC

Location — 520 Westlake Ave. N.

Proposed Action — The *Proposed Action* would involve a half-block, 12-story mixed-use development that includes 322,000 sq. ft. of office, 25,241 sq. ft. of retail, 6,800 sq. ft. of landscaped plaza/open space, and below-grade parking for approximately 348 vehicles.

Lead Agency — City of Seattle, Department of Construction and Inspections

Responsible Official

Nathan Torgelson, Director
City of Seattle, Department of Construction and Inspections
Seattle Municipal Tower – 700 Fifth Ave., Suite 2000
P.O. Box 34019
Seattle, WA 98124-4019

Contact Person

Abby Weber, Land Use Planner
Department of Construction and Inspections
Seattle Municipal Tower – 700 Fifth Ave., Suite 2000
P.O. Box 34019
Seattle, WA 98124-4019
Telephone: 206-684-7188
Fax: 206-386-0027
E-Mail: abby.weber@seattle.gov

Availability/Cost of EIS Addendum

Notification of the availability of this EIS Addendum has been sent to agencies, organizations and individuals noted in the Distribution / Notification List (**Appendix A** to this document).

Copies of this document are also available for review at the Seattle Department of Construction and Inspections Public Resource Center, which is located in Suite 2000 of Seattle Municipal Tower in Downtown Seattle (700 Fifth Ave.) and at the Seattle Public Library (1000 Fourth Ave.) and online by entering the MUP application numbers (3017466) at: http://dpdweb/edms/

The *South Lake Union Height and Density Alternatives* EIS is available for review online at: https://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/SouthLakeUnion/SouthLakeUnionEnvironmentalImpactStatement.pdf

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SECTION I

PROJECT DESCRIPTION

PROJECT LOCATION and EXISTING CONDITIONS

The project site is located in Seattle's South Lake Union Neighborhood on a half-block site that is bounded by Mercer Street on the north, Westlake Avenue N. on the west, Republican Street on the south, and a 16-18-foot wide[1] mid-block alley on the east (see **Figures 1 and 2** for a regional and vicinity maps). The block is platted as Block 94, David T. Denny's First Addition to North Seattle.

Currently, the site is entirely developed and contains three buildings, as described below (see **Figure 3** for a map of existing conditions):

- **534 (536)[2] Westlake Ave. N.** – This is a 3-story building containing approximately 12,600 sq. ft. of gross floor area. Located in the north portion of the site, the structure contains 3 floors of office space and a basement level that provides parking. This building was built in 1920 and is currently referred to as the Clements & Rice Building.

- **520 Westlake Ave. N.** – This is a 2-story, 45,271 sq. ft. retail structure that is located in the central portion of the site; it is currently referred to as the Guitar Center. The building provides rooftop parking with ingress/egress from Westlake Ave. N. This building was built in 1964.

- **500 Westlake Ave. N.** – This is a 3-story, 40,686 sq. ft. retail/warehouse building that is located on the south portion of the site. Existing street-level retail uses include: Uptown Espresso, Blue Moon Burgers, and The Wurst Place restaurant. The structure was originally built in 1919 and an addition was added in 1947. A wooden trestle that originally supported a railroad spur is attached to the east portion of this building and extends into the alley. The elevated structure and provides access between the first floor of the 500 and the 520 Westlake Ave. N. buildings and Republican St.

Development would require removal of these buildings and demolition of all other existing site uses.

The project site is located in Seattle's South Lake Union Urban Center. The site was recently rezoned in 2017 from Seattle Mixed SM 160/85-240 to SM 175/85-280[3]. A portion of the ***520 Westlake Ave N Development*** site is currently subject to a turnaround agreement recorded under King County Recording Number 20030516002101.

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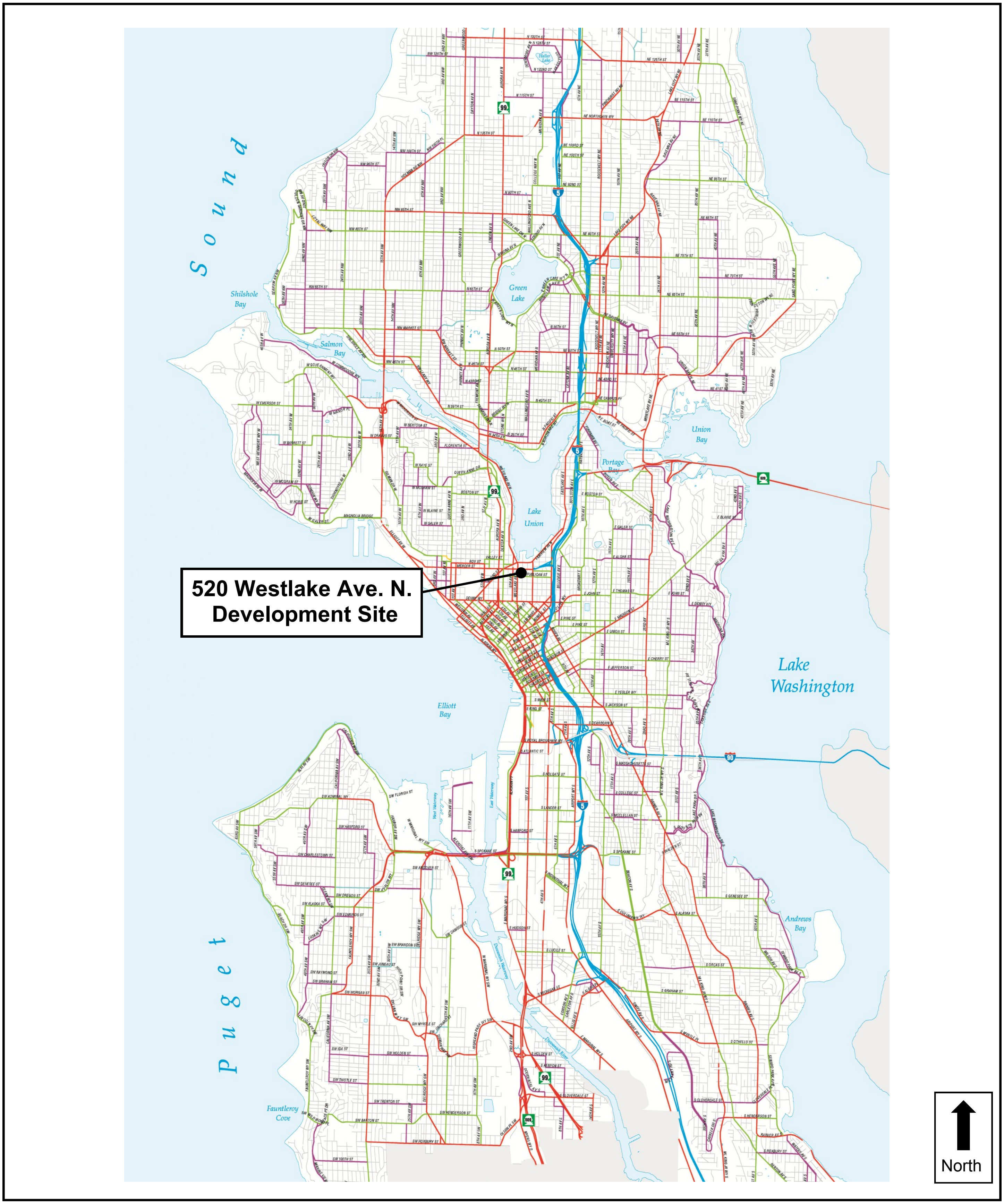
1 With recent development of roughly the northern 70 percent of the east-half of this block, the alley was widened (on the east-half of the block) to 18 ft. The Rosen Building, which occupies the south 30 percent of the east-half of the block is a designated City Landmark and alley width proximate to this building is 16 feet.

2 Over the years, the building has been identified as 534 or 536 Westlake Ave. N.

3 The project is vested to the prior SM 160/85-240 zone.

520 Westlake Ave. N. Development
EIS Addendum

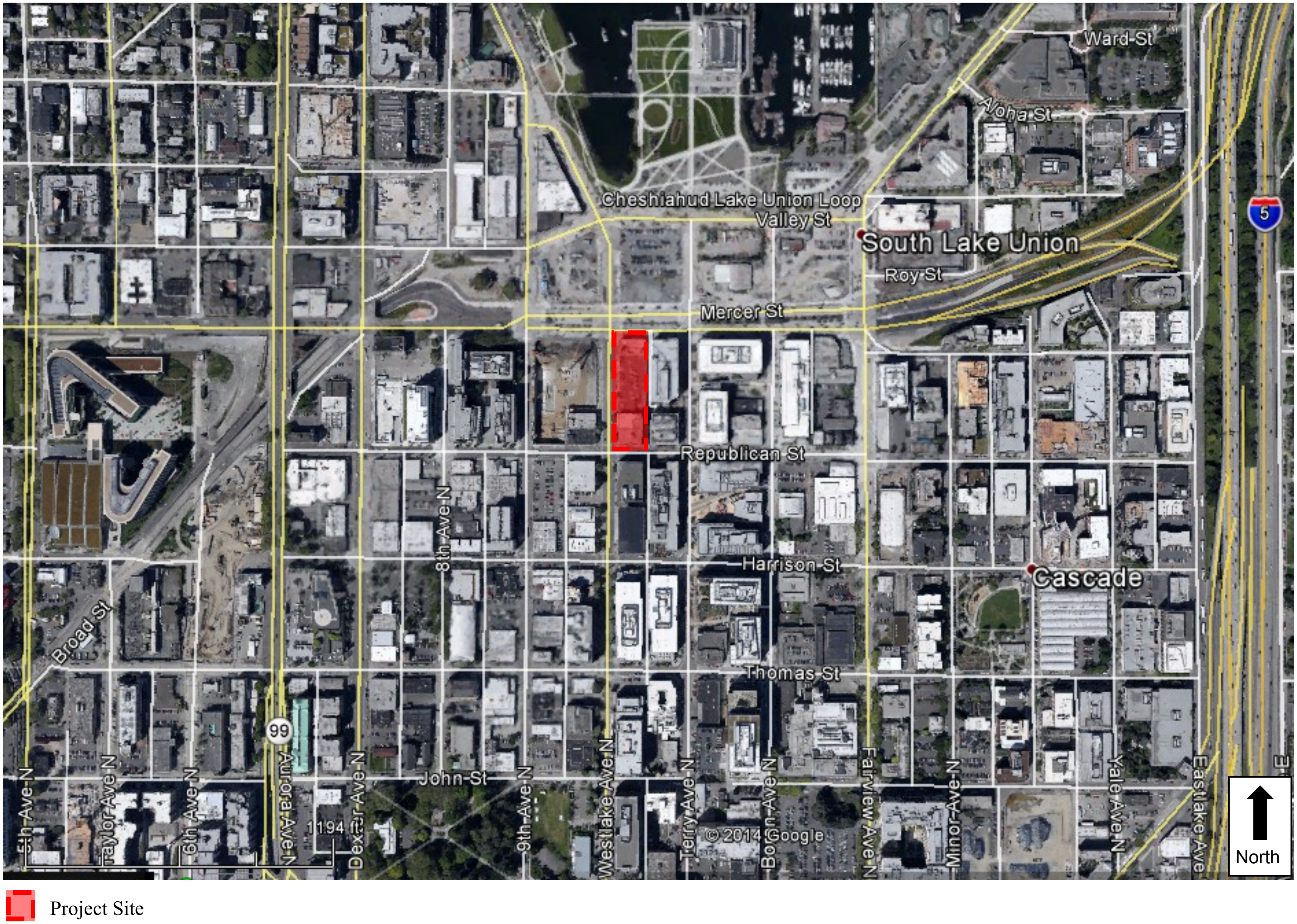


Source: EA, 2014

Figure 1
Regional Map

EA Engineering, Science, and Technology, Inc.

520 Westlake Ave. N. Development
EIS Addendum

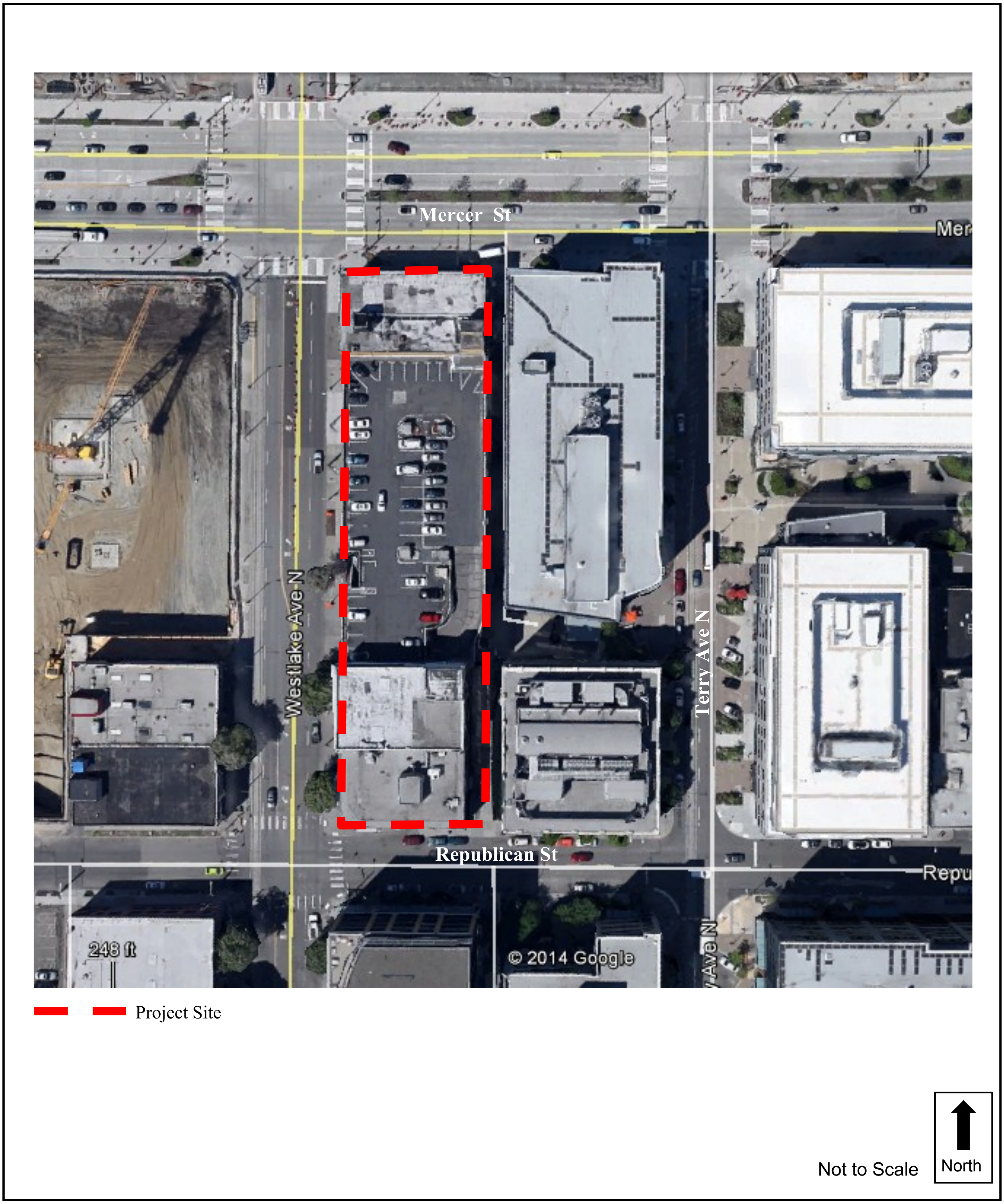


Source: EA, Google Earth, 2014

EA Engineering, Science, and Technology, Inc.

Figure 2

Vicinity Map



Source: EA, Google Earth, 2014

EA Engineering, Science, and Technology, Inc.

Figure 3
Existing Site Conditions

DESCRIPTION OF THE PROPOSED ACTION

The proposed project would be a 12-story office building with street-level retail/restaurant space. Office space would comprise approximately 322,000 sq. ft. of gross floor area. The retail/restaurant space would approximate 25,241 sq. ft. of gross floor area. Below-grade parking is proposed for approximately 348 vehicles with access from the mid-block alley. Loading would also occur from the mid-block alley. Four loading berths are proposed; an SDCI Type 1 decision is requested to authorize a reduction in the length of three of the four berths -- from 35 feet to 25 feet. The existing turnaround easement area on the ***520 Westlake Ave. N Development*** site is accommodated on Level P1 of the proposed development. See **Figure 4** for a site plan.

It is proposed that the alley be widened by 2 ft. on the west-half of the block and improved to provide ingress and egress from Republican St. Ingress from Mercer St. and egress (right-out) to Mercer St. would remain.

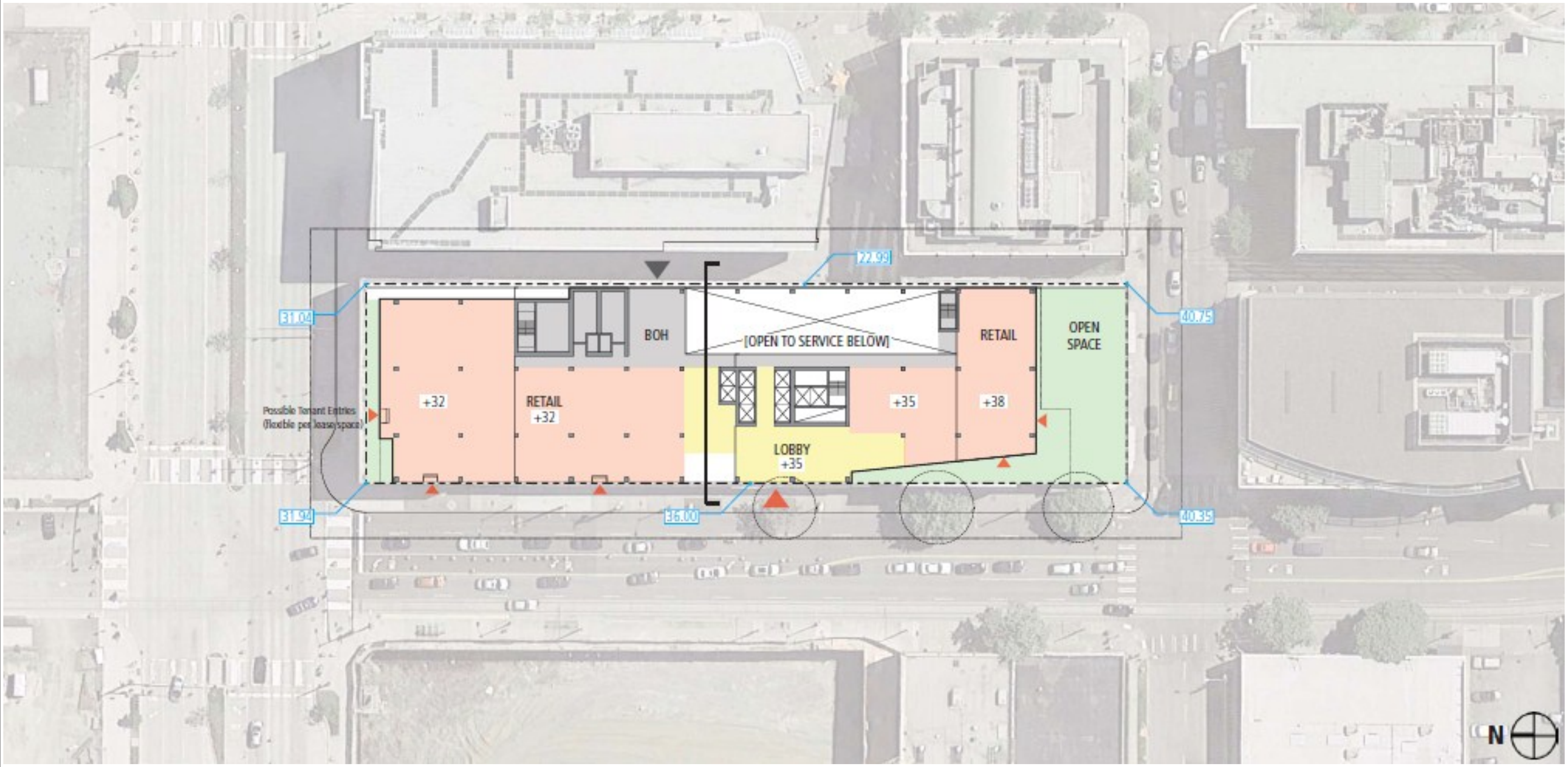
A total of approximately 6,800 sq. ft. of street-level open area with landscaping is proposed for the south portion of the site, at the corner of Westlake Avenue N and Republican Street.

Information such as site plan, proposed pedestrian connections, elevations, landscape plans, street improvements, vehicular access, and other graphics and may be viewed in the MUP plans available at SDCI or at the SCDI website by entering the MUP number at this web page: http://web6.seattle.gov/dpd/edms/

Construction of the project could begin in Summer 2019 with building occupancy by Summer 2021.

The proposed ***520 Westlake Ave. N. Development*** would require demolition of the three buildings on-site and the trestle/elevated structure in the alley; site preparation, grading/excavation; and construction of the proposed development.

520 Westlake Ave. N. Development
EIS Addendum



Source: NBBJ, 2014

EA Engineering, Science, and Technology, Inc.

Figure 4

Site Plan

SECTION II

COMPARISON of ENVIRONMENTAL IMPACTS

A. Geology and Soils

South Lake Union EIS

The *South Lake Union* EIS noted that while the proposal itself would not directly result in impacts to geology and soils, future site-specific development proposals under all alternatives could result in impacts as a result of excavation associated with grading, soil removal, placement of structural fill, and construction of new foundations. Additional potential impacts identified included: removal and replacement of native soils unsuitable for construction; slope instability or landslides resulting from excavation near existing slopes; impacts to surface water and groundwater flow; and, impacts to new construction resulting from steep slopes, landslides and liquefaction.

The EIS noted that no mitigation measures were necessary or proposed to address potential impacts associated with the proposal or alternatives, but depending on the nature of future site-specific development, mitigation could be necessary including reducing the size of a project, limits on timing and schedule or requiring additional practices during construction.

EIS Addendum – Project Specific Impacts

The project site is mapped as a Category II Peat Settlement Prone area on the City of Seattle Environmentally Critical Area (ECA) maps. Per SMC 25.09.110, “No development shall occur within a peat settlement-prone area below the annual high static groundwater level except to the minimum extent the Director deems necessary to allow…” The code (SMC 25.09.110.I) also states that the Director can waive compliance with some or all of the requirements for a project in a Category II peat settlement-prone area, to the extent the applicant demonstrates to the satisfaction of the Director that the project has been designed to avoid adverse impacts to off-site parcels from peat settlement.

The geotechnical report prepared for this development is included in **Appendix B**. Proposed development of the site would require excavation to extend two to three levels below current site grades and approximately 10 to 20 feet below static groundwater elevations. Excavation would, therefore, remove the fill, peat and wood debris from the building footprint so that the proposed structure would bear on shallow foundations supported on either recent deposits or glacially-consolidated soils. Therefore, peat settlement would not occur, and no adverse impacts are anticipated.

Temporary construction dewatering associated with the proposed ***520 Westlake Ave. N Development*** project is anticipated to have a low risk of causing dewatering induced settlement to off-site buildings and improvements. This is due to significant dewatering events that have already occurred in the site vicinity, which compressed soils to the extent that they have already experienced the full increase in effective stress that results from lowering the groundwater table.[1]

Potential Mitigation Measures

Potential mitigation measures associated with the peat soils on the proposed project site could include the following:

- Removal of the fill, peat and wood debris from the building footprint so that the proposed structure would bear on shallow foundations.

- Compliance with City of Seattle ECA requirements.

Significant Unavoidable Adverse Impacts

With implementation of appropriate mitigation measures, no significant unavoidable adverse geology or soils impacts are anticipated.

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[1] See GeoEngineers Feb. 1, 2019, *SDCI Comment Response No. 1* for additional information.

B. ENVIRONMENTAL HEALTH

South Lake Union EIS

The *South Lake Union* EIS noted that while the proposal itself would not directly result in impacts to environmental health, future site-specific development proposals under all alternatives could result in impacts as a result of excavation associated with construction activities.

The *South Lake Union* EIS noted that no mitigation measures were necessary to address potential impacts associated with the proposal or alternatives, but that depending on the nature of future site-specific development, mitigation could be necessary and could include: further site investigation to determine the potential for contamination; soil and groundwater investigations to evaluate the type, concentration and extent of contamination; cleanup of contamination sources (e.g. removal of USTs, excavation of contaminated soil); and, handling and disposing of contaminated soil and groundwater according to state and location regulations.

EIS Addendum – Project Specific Impacts

A preliminary environmental site assessment update[2] was prepared for the ***520 Westlake Ave. N*** site in 1999 in order to assess the condition of existing buildings and identify potential adverse environmental conditions from historic site uses (**Appendix C**). The following conditions were identified in the report:

- Potential for petroleum hydrocarbon, solvent and metals contamination on the site due to former blacksmith shop operations (present on the site in the early 1900s). However, much of the potential contamination may have been excavated for foundations and basements.
- Asbestos-containing materials in existing buildings.
- Lead-based paint in existing buildings.
- Polychlorinated biphenols (PCBs) in existing buildings.

A subsequent subsurface investigation (Farallon Consulting, L.L.C., 2018) included collection of soil and groundwater analytical data at the project site. The technical memorandum is included in **Appendix C** and provides a description of the work performed and a summary of the analytical data collected during the subsurface investigation. The analytical data indicate that concentrations of petroleum-related constituents exceed applicable cleanup levels for soil and groundwater in limited areas of the project site.

Additionally, a *Subsurface Investigation Report and Environmental Media Management Plan (EMMP)* (Farallon Consulting, L.L.C., 2018) was prepared for the ***520 Westlake Avenue N*** site and included collection of additional soil and groundwater analytical data at the project site. The EMMP is included in **Appendix C** and provides a description of the work performed and a summary of the analytical data collected during the subsurface investigation. Hazardous substances were detected in soil and groundwater samples collected from some locations at the project site during the subsurface investigations.

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[2] prepared by Hart Crowser, April 1999.

The *Proposed Action* would involve demolition of all existing buildings on-site and appropriate remediation of soil on the project site contaminated by previous site uses or from contaminant migration from off-property releases. Prior to building demolition, any asbestos, PCBs, lead-based paint, and other similar hazardous building materials that are encountered during demolition would be removed by a qualified abatement contractor in accordance with State and Federal guidelines. Groundwater extracted during construction dewatering will be treated to applicable discharge criteria before disposal.

Mitigation Measures

Construction of the ***520 Westlake Avenue N*** project will require managing soil and groundwater impacted with hazardous substances. At some locations sampled during subsurface investigations at the project site, hazardous substances were detected in soil or groundwater samples at concentrations exceeding Method A cleanup levels specified in the Washington State Model Toxics Control Act Cleanup Regulation (MTCA), as established in Chapter 173-340 of the Washington Administrative Code (WAC 173-340). Cleanup of contaminated soil and groundwater will be conducted in conjunction with construction of the proposed project as an independent action in accordance with MTCA without direct oversight or approval by the Washington State Department of Ecology (Ecology).

Mitigation measures associated with the proposed project include the following:

- All identified environmental site hazards associated with the buildings and contents would be removed prior to building demolition.
- Site cleanup will be conducted in accordance with applicable MTCA[3] requirements.
- Where contaminated soils and/or groundwater are encountered during redevelopment of the site, proper precautions will be exercised, including the following:
    - require contractors present during excavation to have health and safety plans in-place that address risks associated with contaminated soils and/or groundwater;
    - require excavation contactors to have 40-hour HAZWOPER trained individuals available, if necessary, to excavate contaminated soils;
    - have an environmental consulting firm on retainer to oversee any special handling and disposal that becomes necessary in response to contaminated soils or groundwater; and
    - comply with all applicable laws and regulations in the handling, removal, transport, and disposal of any contaminated soils and/or groundwater.

The impacted areas of the shallow groundwater-bearing zone at the project site will be excavated to the base of the building foundation. It is expected that any groundwater impacts emanating from on-property releases will be remediated by source removal, elimination of the shallow groundwater bearing zone within the building footprint, and vapor mitigation measures incorporated into the building design.

Following the completion of construction, a Cleanup Action Completion Report will be prepared that documents the Cleanup Action, per WAC 173-340-400(6)(b). The Cleanup Action Completion Report, in addition to reporting documenting the remedial investigation, feasibility study, and Cleanup Action Plan, will provide the technical basis to support a request for a No Further Action determination from Ecology, and a summary of the Cleanup Action, including the

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[3] Model Toxics Control Act (RCW Chapter 70.105D).

limits of the contaminated soil excavation, quantities of contaminated soil disposed of off the site, treatment of groundwater, and results from compliance monitoring.

Significant Unavoidable Adverse Impacts

With implementation of appropriate mitigation measures, no significant unavoidable adverse environmental health impacts are anticipated.

C. AESTHETICS - Urban Design (Height, Bulk, and Scale)

South Lake Union EIS

The *South Lake Union* EIS addresses the aesthetics-related impacts of increased height and density in the South Lake Union neighborhood. No site-specific development was identified in the EIS for the site of the proposed ***520 Westlake Ave. N. Development***.

Mitigation measures included in the *South Lake Union* EIS to reduce impacts associated with height, bulk, and scale include requirements for public open space, increasing building modulation, discouraging above-grade parking, increasing street-level transparency for buildings, incentivizing mid-block pedestrian connections and public open space, allowing TDRs for older structures, and incentivizing ground-level housing with street setbacks (i.e., 15 feet) to create porches or stoops. Upper-level setbacks imposed to reduce impacts to views within the neighborhood would also ameliorate the impacts of height, bulk and scale.

EIS Addendum – Project Impacts

The *Proposed Action* is described in the ***Section I*** of this EIS Addendum.

Potential Mitigation Measures

Per SMC 25.05.675.G.2.c, "The Citywide design guidelines (and any Council-approved, neighborhood design guidelines) are intended to mitigate the same adverse height, bulk and scale impacts addressed in these policies. A project that is approved pursuant to the design review process is presumed to comply with these height, bulk and scale policies. This presumption may be rebutted only by clear and convincing evidence that height, bulk and scale impacts documented through environmental review have not been adequately mitigated. Any additional mitigation imposed by the decision maker pursuant to these height, bulk and scale policies on projects that have undergone design review shall comply with design guidelines applicable to the project."

The *Proposed Action* would adhere to the zoning standards adopted by the City Council for the South Lake Union area. The proposed project is subject to the City of Seattle's Design Review process and has been designed to be consistent with the *South Lake Union Design Guidelines*.[4] Per SMC 25.05.675.G, the Design Review process is presumed to be sufficient mitigation for any height bulk and scale impacts. The Early Design Guidance and Final Recommendation of the West Design Review Board is included in the City's project file.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated relative to urban design.

[4] Seattle, adopted 2005, revised 2013..

AESTHETICS - Shadows

South Lake Union EIS

Comparison of the alternatives in the *South Lake Union* EIS reveals slight differences in the shadow impacts to Denny Park, Cascade Park, and Lake Union Park, as well as other SEPA-protected places. The location and extent of shadows vary, with the impacts associated with *Alternative 1* representing greater impacts than the other alternatives. The *South Lake Union* EIS notes that shadows would generally be longest during winter afternoons when the sun is lower on the horizon. At noon on winter solstice, when the sun angle is low on the horizon, shadow impacts could extend great distances and result from each alternative. Conversely, in the noon timeframe on summer solstice, when the sun is at its greatest height above the horizon, shadow impacts would be shorter and would be less likely to cause impacts. However, overall, the EIS concluded that shadow impacts are not expected to result in significant adverse environmental impacts. The impacts are typical of an urbanizing area that is transitioning from lower intensity development to that of more intensive development.

In addition to measures identified in SMC 25.05.675Q2e to limit shadow impacts to key open spaces, mitigation identified in the *South Lake Union* EIS includes tower separation and consideration of upper level setbacks on certain streets.

EIS Addendum – Project Specific Impacts

Seattle's SEPA policies aim to "minimize or prevent light blockage and the creation of shadows on open spaces most used by the public."[5] Since the project site is north of Denny Way, areas outside of Downtown that are to be protected[6] include:

- publicly-owned parks;
- public schoolyards;
- private schools which allow public use of schoolyards during non-school hours; and
- publicly owned street ends in shoreline areas.

The nearest such area that is proximate to the project site is Lake Union Park (2 blocks north). This park is well-used by the public during daytime hours. **Appendix D** contains shadow diagrams which demonstrate potential impacts to Lake Union Park that could result from the proposed development. As described in more detail in **Appendix D**, the proposed development would not contribute to shading of Lake Union Park and no shadow impacts associated with the *Proposed Action* would occur.

Potential Mitigation Measures

No mitigation is proposed.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated.

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5 Seattle Municipal Code Chapter 25.05.675 Q2.
6 25.05.675.Q.2

AESTHETICS - Viewshed

South Lake Union EIS

The *South Lake Union* EIS notes that all of the alternatives assume that every vacant or underdeveloped site is built out to its maximum potential. A number of views inside and outside the South Lake Union neighborhood will be potentially impacted by all alternatives at full build-out, although none of the protected views are significantly impacted. It was noted that the most significant changes would involve views from Lake Union Park and the I-5/Mercer Off-ramp; less significant changes would occur to views from Volunteer Park.

The *South Lake Union* EIS notes that while no significant impacts were identified relative to protected viewpoints, there would be notable impacts to views valued within the neighborhood, which could be partially mitigated by the setback provisions recommended in the Urban Design Framework as well as upper level setbacks at some locations.

EIS Addendum – Project Impacts

The proposed development is located on a SEPA Scenic Corridor (Westlake Ave N**) Appendix E** contains photosimulations showing the existing and proposed view from City designated viewpoints, Space Needle viewpoints and scenic routes, as described below:

- Viewpoint 1 – Volunteer Park Water Tower (City-designated Viewpoint)
- Viewpoint 2 – Bhy Kracke Park (City-designated Viewpoint)
- Viewpoint 3 – Gas Works Park (City-designated Viewpoint)
- Viewpoint 4 – Volunteer Park Reservoir (Space Needle Viewpoint)
- Viewpoint 5 – Mercer Street Off-Ramp (Scenic Route)
- Viewpoint 6 – Westlake Avenue N. looking north (Scenic Route)
- Viewpoint 7 – Westlake Avenue N. looking south (Scenic Route)

For informational purposes and to provide greater context for how the proposed building will fit into the urban fabric of the South Lake Union neighborhood, one additional photosimulation of the proposed ***520 Westlake Ave. N.*** building is provided from Lake Union Park (looking south) - **Viewpoint 8**.

Overall, the proposed **520 Westlake Ave. N.** would result in impacts similar to those described in the South Lake Union EIS. The proposed project has been designed to be consistent with provisions of the South Lake Union Urban Center Plan and the City's Land Use Code. Generally, the project would blend into the skyline in the South Lake Union neighborhood and would represent a continuation of the existing urban density in the vicinity and further vertical definition of the South Lake Union Neighborhood. The project would not affect views to Lake Union from the Westlake Ave. N scenic route. From some viewpoints, the project would not be visible at all. See **Appendix E** for further details.

Potential Mitigation Measures

No significant adverse impacts are anticipated and no mitigation is necessary.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse aesthetic-related impacts are anticipated.

D. HISTORIC RESOURCES

South Lake Union EIS

The *South Lake Union* EIS indicates that there are 13 designated City Landmark buildings in the South Lake Union area that could be affected by the proposed height and density changes. In addition, there are 34 buildings that are not designated City Landmarks, but are identified as potentially eligible for local, state, and/or National Register listing. City Landmarks identified in the general vicinity of the ***520 Westlake Ave. N. Development*** site include: the Terry Avenue Building (located along Terry Avenue between Harrison and Thomas streets) and the West Earth Co. Street Clock (located near the intersection of Harrison Street and Dexter Avenue). None of these Landmarks are located on or adjacent to the project site.

The *South Lake Union* EIS indicates that there are potential incentives for the preservation of City Landmarks -- in addition to local, state and federal tax incentives for rehabilitation – that could be studied and implemented within South Lake Union. These include incentives to encourage preservation, adaptive reuse, and rehabilitation of historically significant structures; incentives to encourage adaptive use of older, character-providing buildings; incentives to support property owners who wish to maintain existing buildings; and the *South Lake Union* EIS explores the use of a transfer of unused development rights - a process by which if a Landmark is retained, developers may be able to build taller commercial buildings.

EIS Addendum – Project Impacts

Overall, the City has designated 13 structures or objects in the South Lake Union area as official City Landmarks. Each of these structures is at least 25 years old and each meets one or more of the City's designation criteria.[7]

Designated historic structures that are proximate to the project site include:

- **Pacific McKay and Ford McKay Buildings** – Portions of these buildings at 601-615 Westlake Ave. N were designated as a City Landmark in 2006. This location is kitty-corner, to the northwest across Mercer Street, from the 520 Westlake Ave. N Development. The expansion of Mercer Street necessitated the removal of these buildings, and the Landmarks Preservation Board granted a Certificate of Approval for removal of the buildings, and incorporation of the designated portions of the buildings in new development on the 601-615 Westlake Ave. N site.

As indicated in ***Section I*** of this EIS Addendum, there are currently three existing buildings on the ***520 Westlake Ave. N. Development*** site. None are designated Landmarks, but all three meet the City's 50-year threshold criterion for historical consideration under SEPA – <u>534 Westlake Ave. N</u> (built in 1920), <u>520 Westlake Ave. N</u> (built in 1963), and <u>500 Westlake Ave. N.</u> (built in 1919).

As part of the *Proposed Action*, all existing buildings on the site would be demolished. *Appendix A* analyses were prepared for each of the three buildings and submitted to the Department of Neighborhoods (DON) for review. These analyses are included as **Appendix F**

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[7] Refer to Seattle Municipal Code Chap. 25.12.350 for the specific standards associated with designation.

to this EIS Addendum. In general, the *Appendix A* submittals contain information regarding each building, including the architect and builder (if known), previous land uses that occupied the facilities, and noteworthy events that occurred at the site. Based on this and supplemental information, the City's Historic Preservation Officer has determined that the structures do not meet the criteria for City Landmark nomination or designation – please see the letter from DON contained in **Appendix F**. Thus, demolition of the structures would not be considered a significant impact.

Potential Mitigation Measures

No significant impacts are anticipated and no mitigation is necessary.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated.

E. CULTURAL RESOURCES

South Lake Union EIS

The *South Lake Union* EIS indicates that the potential for the EIS study area to contain archaeological sites is generally considered to be low. This is due primarily to the long history of disturbance, including construction and demolition of buildings, transportation developments, major earthmoving projects (i.e. Denny Regrade), and installation of buried utilities. While the area could have potentially been the location of repeated or regular pre-contact and early historic-period activities, extensive construction and landform modifications since the 1880s have most likely destroyed the integrity of any archaeological evidence of these activities that may have been present, seriously compromising their potential significance.

The *South Lake Union* EIS indicates that depending on the location and nature of future site-specific development, mitigation may be necessary to address site-specific impacts that could occur under any of the EIS alternatives. Mitigation measures could potentially include archaeological monitoring, testing, or data recovery excavations; development of interpretive signs, markers, or exhibits; and/or minimization or avoidance of further impacts through redesign.

EIS Addendum – Project Impacts

The south portion of the ***520 Westlake Ave. N. Development*** site is located within the area designated by the City of Seattle as the Government Meander line buffer that marks the historic Lake Union shoreline. In accordance with City of Seattle Director's Rule 2-98, a Cultural Resources Assessment was prepared for the site. The assessment concluded that there is potential for both pre-contact and historic-period remains to be present on the site. Additionally, archaeological monitoring of geotechnical boring work occurred at the site in summer 2018 to collect additional data and further refine the Cultural Resources Assessment's conclusions and recommendations. This monitoring concluded that although no significant historical material was identified in the borings, the presence of glass, brick, and wood within the fill in most borings suggest that historical archaeological material may yet be present. Subsequently, a Monitoring and Inadvertent Discovery Plan was prepared for the project site (Perteet, 2018) that establishes specific policies and protocols to follow if potentially significant archaeological resources or human remains are discovered during project activities and facilitates compliance with state laws in the treatment of any such discoveries.

The final reports were submitted to the Washington State Department of Archaeology and Historic Preservation (DAHP). Following review of the reports, DAHP concurred with the recommendations made in the Monitoring and Inadvertent Discovery Plan dated October 24, 2018.

Potential Mitigation Measures

Recommendations identified in the Monitoring and Inadvertent Discovery Plan (MIDP) would be followed including:

- An Archaeological Monitor will be present during ground-disturbing investigations and construction activities in areas and at depths with potential for cultural materials to be encountered. The MIDP specifies in further detail the areas and depths that should be monitored, as well as monitoring methods.

- If potentially significant archaeological resources are identified during archaeological monitoring of construction, the Archaeological Monitor will request a pause in excavation around the discovery, and will take appropriate steps as outlined in the MIDP, including: identifying the nature of the discovery, conducting a preliminary evaluation, notifying appropriate parties, documenting cultural material with a focus on establishing the nature, provenience and integrity of the discovery, ensuring the Project Manager is fully briefed, who will then consult with affected Tribes, SDCI and DAHP, and submitting a report on monitoring results to DAHP and consulting parties.

- In accordance with RCW 27.44, RCW 68.60, and RCW 68.50, if ground disturbing activities encounter human skeletal remains during the course of construction, then all activities that may cause further disturbance to those remains will cease and the steps outlined in the MIDP will be taken.

- If cultural resources are identified during construction when the archaeological monitor is not present, it will be the responsibility of the Construction Superintendent, or their designated representative, to contact the Project Manager and Project Archaeologist to evaluate the discovery. The Project Manager will contact the affected Tribes, and DAHP if the discovery is significant.

The project would abide by all regulations pertaining to the discovery and excavation of archaeological resources.

Conditions will be placed on permits for this proposal, as described in Section B of Director's Rule 2-98.

Significant Unavoidable Adverse Impacts

With implementation of the above identified mitigation measures, no significant unavoidable adverse impacts would be anticipated.

F. TRANSPORTATION

South Lake Union EIS

The *South Lake Union* EIS evaluated future traffic conditions for the year 2031, which reflects growth associated with the land use alternatives as well as many infrastructure improvements that are underway or planned in the neighborhood. The EIS's transportation analysis concluded that many corridors in the neighborhood would experience significant impacts due to growth, even if existing zoning is retained. In the near-site vicinity, congested corridors included Mercer Street, Fairview Avenue, Harrison Street, Eastlake Avenue and Denny Way. Impacts were also noted for several transit routes and neighboring parking.

The project site was considered in the land use alternatives for the *South Lake Union* EIS and the proposed development on this site is within the range of land use alternatives that were evaluated in that document.

EIS Addendum Project Impacts

Detailed transportation analysis for this project is presented in the *Block 38 Transportation Impact Analysis*,[8] provided in **Appendix G.** This analysis prepared detailed trip generation estimates for the proposed project, forecast traffic volumes for the year 2030 to reflect completion of major infrastructure projects in the area plus 38 other planned development projects, and evaluated level of service for six intersections in the site vicinity. It also evaluated traffic safety conditions, transit availability, non-motorized travel, and prepared detailed parking demand estimates. It augments the transportation analysis performed for the *South Lake Union* EIS, and provides detail about specific project impacts in the immediate vicinity of the project site.

It is noted that in the immediate vicinity of the project site, the transportation analysis prepared for Block 38 is more detailed than provided in the *South Lake Union* EIS in that it includes forecast intersection volumes (whereas the *South Lake Union* EIS projected only link volumes at select locations), and prepared intersection level of service (whereas the *South Lake Union* EIS estimated level of service for roadway segments based on an overall roadway capacity). Future baseline traffic forecasts used for the Block 38 analysis also takes into account the effect of the SR 99 Tunnel project and North Surface Streets project, which were not reflected in the *South Lake Union* EIS forecasts. The following sections summarize the transportation impact analysis for the ***520 Westlake Ave. N. Development*** project detailed in **Appendix G.**

Vehicle Trip Generation

Trip generation for the proposed ***520 Westlake Ave. N. Development*** project was determined using the methodology and trip rates in the Institute of Transportation Engineers (ITE) *Trip Generation Handbook*[9] and *Trip Generation Manual.*[10] The methodology accounts for the higher level of transit and non-automobile mode use in the South Lake Union neighborhood compared to a typical suburban neighborhood that the ITE rates reflect. The calculation takes credit for

8 Heffron Transportation, Inc., *Block 38 Transportation impact Analysis*, January 16, 2019.
9 Institute of Transportation Engineers, 3rd Edition, September2017.
10 Institute of Transportation Engineers [ITE], 10th Edition, 2017.

trips generated by the site's existing uses that will be removed by the project. Detailed information related to the trip generation methodology and assumptions is presented in **Appendix G.**

The net change in vehicle trips is summarized in **Table 1**. As shown, the proposed project is anticipated to generate 660 net new vehicle trips per day, with 60 net new vehicle trips during the AM peak hour, and 73 net new vehicle trips during the PM peak hour.

Table 1
Net Change in Vehicle Trips Generated by the Proposed Project

Land Use	Daily Trips	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Proposed Project	1,410	101	20	121	42	107	149
Existing Uses	-750	-45	-16	-61	-32	-44	-76
Net Change	**660**	**56**	**4**	**60**	**10**	**63**	**73**

Source: Heffron Transportation, Inc., November 2014.

Intersection Operations

Detailed intersection operations analysis was performed for the project and considers the effect of recent changes to the street system associated with completion of the Mercer Corridor Project and new transit lanes on Westlake Avenue N. It also considers the effect of two additional projects are planned for the neighborhood: completion of the SR 99 Tunnel project and its North Surface Street connections as well as completion of the Roosevelt RapidRide project that will add transit lanes to parts of Fairview Avenue N. These projects and the effect on the future travel patterns in the neighborhood is described in **Appendix G.**

Traffic operations analysis for the Block 38W project was performed for year 2030 conditions, which reflect completion of the major infrastructure projects described above as well as traffic generated by 38 planned development projects (known as pipeline projects). This provides a benchmark for comparison against the long-term traffic forecasts that were evaluated in the South Lake Union EIS as well as forecasts developed by Washington State Department of Transportation (WSDOT) for the SR 99 project. Future traffic volumes reflect conditions with all of the new infrastructure in place. It is noted that the future forecasts prepared for the *South Lake Union EIS* did not assume the improvements proposed by the new SR 99 Bored Tunnel or the full widening of Mercer Street under Aurora Avenue N. Nor did it consider the Westlake Avenue N or Fairview Avenue N transit priority projects.

Level of service (LOS) analysis was performed for the six intersections in the vicinity of the site. AM and PM peak hour conditions were evaluated. Level of service is a qualitative measure used to characterize traffic operating conditions. Six letter designations, "A" through "F," are used to define level of service. LOS A is the best and represents good traffic operations with little or no delay to motorists. LOS F is the worst and indicates poor traffic operations with long delays.

Levels of service for the study area intersections were analyzed using methodologies presented in the *Highway Capacity Manual*.[11]

Detailed results, presented in **Appendix G,** show that intersections along Mercer Street and Fairview Avenue N would operate at LOS F in the year 2030 without or with the proposed project. The project-generated traffic would add less than five seconds of delay to each of these locations during peak hours and no mitigation is recommended.

Although the *South Lake Union EIS* did not perform intersection level of service, it did predict that the many corridors would experience significant impacts to traffic operations as a result of the various rezone alternatives. In the near-site vicinity, this included:

- Mercer Street from Fairview Avenue N to Dexter Avenue N
- Fairview Avenue N from Eastlake Avenue to Yale Avenue N
- Westlake Avenue N from Valley Street to Denny Way
- Dexter Avenue N from Valley Street to Denny Way
- 9th Avenue N from Roy Street to Republican Street

The traffic operations results determined for the proposed project are consistent with the findings from the *South Lake Union EIS.*

Traffic Safety

No high collision locations have been identified in the study area and the project is not expected to adversely affect safety conditions in the area.

Site Access and Truck Loading

The existing alley on the east side of the site currently connects only to Mercer Street. The project proposes to construct a structural ramp that will connect the existing alley to Republican Street. This connection would allow vehicles to enter or exit on-site parking from either Mercer Street or Republican Street.

The project would be required to provide five truck loading berths for a "low demand" office use. The project will request a code exception to reduce the length of four of the five berths from 35-feet to 25-feet in length. Loading dock use estimates, presented in **Appendix G,** determined that the building would generate an average of 26 visits per day with 31 visits on a peak day. The vast majority of the visits (96%) are smaller than a medium-size truck that would fit into a 25-foot long space. The peak concurrent demand is estimated to be three vehicles at once. Therefore, the five loading berths would be sufficient to accommodate the peak demand.

Parking

The project proposes to provide up to about 340 parking spaces. Detailed analysis of the project's parking demand is presented in **Appendix G.** It is noted that in order to fit into the proposed parking supply, the office component of the project would need to reduce the percentage of commuters who drive and park to 33% (assuming 30% single-occupant vehicles and 3% carpool), and would achieve that reduction with a Transportation Management Plan.

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11 Transportation Research Board, 6th Edition, 2016.

With a TMP, the cumulative peak demand for the project is estimated at 351 vehicles, which would nearly be accommodated by the on-site supply. The potential overspill of 8 vehicles is expected during the midday peak due to restaurant demand, and could be accommodated by on-street parking. Even if space is available in the garage, many customers and office visitors may choose to park on street.

The parking analysis is consistent with the findings in the *South Lake Union EIS,* which was the basis for the new maximum parking supply rates in the Land Use Code. The EIS predicted that a limited parking supply would cause some travelers to change modes.

The project would eliminate parking for approximately 50 vehicles from the roof of the Guitar Center building. This lot is currently available for public parking at a fee. However, the project would also eliminate existing uses on the block that generate existing parking demand. Therefore, removal of this parking is not expected to adversely affect other parking in the neighborhood.

On-street parking along the north curb of Republican Street would be eliminated to accommodate the future Center City Connector Streetcar turnaround facility. There is no on-street parking adjacent to the site on Westlake Avenue N. There are approximately four on-street parking spaces along Mercer Street that have a 10-hour parking limit. These spaces would not be affected, although it is recommended that the 10-hour limit be changed to a 2-hour limit to better accommodate short-term parking associated with neighborhood commercial uses that have increased since the parking on Mercer Street was originally created as part of the Mercer East project.

Non-Motorized

All roadways in the immediate site vicinity have sidewalks on both sides of the street. The project will rebuild the sidewalk and add landscaping along its Westlake Avenue N and Republican Street frontages; the completed pedestrian facilities along Mercer Street will remain.

The proposed project is estimated to generate approximately 3,790 pedestrian, bicycle and transit trips per day, the latter of which would also be walking trips close to the site. Of these, about 310 would occur in the AM peak hour and 380 would occur in the PM peak hour. This reflects a net increase of about 75 non-motorized trips during the peak hours compared to those generated by the site's existing uses. No adverse impacts to non-motorized facilities are expected to result from the project.

The project would provide at least 108 bicycle parking stalls, and would also provide on-site showers and lockers for employees who commute to the site by bicycle.

Transit

The site vicinity is well served by transit. The proposed project is expected to generate a net increase of 1,040 transit trips per day with up to 125 of those in the PM peak hour.

The *South Lake Union EIS* predicted that five transit routes would be overcapacity in the future with any of the rezone alternatives the EIS evaluated. Since that EIS was completed, substantial transit improvements and additional services have been implemented for the neighborhood, and

King County Metro continues to evaluate service needs. Overall, the proposed project is not expected to adversely affect transit operations.

Transportation Concurrency

The City of Seattle developed a Transportation Concurrency policy as part of its *Comprehensive Plan*,[12] which was updated with the more recent *Director's Rule 5-2009*. Three screenlines were evaluated for the project, the Ship Canal/Aurora Ave N (Screenline 5.13), the Ship Canal/University/Montlake Bridges (Screenline 5.16), and South of Lake Union (Screenline 8.00). With the project, the volume-to capacity ratios (v/c) for the screenlines evaluated would remain below the established City standards. Therefore, transportation concurrency would be met for this project.

Potential Mitigation Measures

The Transportation Management Plan (TMP) would be enacted consistent with the City of Seattle's Director's Rule (Director's Rule 27-2015). The goal for this TMP should be to reduce commute trips by employees of the project's office tenants such that no more than 30% of all commute trips are by single-occupant vehicle. This goal would reduce office trips associated with the project and would eliminate parking overspill. It would also reduce vehicle trips generated by the site.

The City of Seattle has established a transportation mitigation payment system for development in and around the South Lake Union neighborhood.[13] The project's payment was determined based on the pro-rata share mitigation calculation spreadsheet developed by the City. The project's mitigation payment, which is detailed in **Appendix G**, was calculated to be $64,982.

Significant Unavoidable Adverse Impacts

With the identified transportation mitigation in place, no significant unavoidable adverse transportation impacts are expected to result from the proposed project.

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12 City of Seattle, 1994.
13 See DPD Tip #243 (previously identified as *Client Assistance Memo [CAM]* #243, October 4, 2012.

G. CONSTRUCTION

South Lake Union EIS

Because of the programmatic/non project-specific nature of the *South Lake Union* EIS, specific impacts related to construction activity were only addressed in the *Air Quality* and *Noise* sections of that document. With regard to air quality impacts, the *South Lake Union* EIS states that with implementation of the controls required for the various aspects of construction activities and consistent use of best management practices to minimize on-site emissions, construction activity would not be expected to significantly affect air quality. With regard to noise impacts, the *South Lake Union* EIS states that the temporary nature of construction coupled with compliance with the City of Seattle Noise Ordinance would minimize the potential for significant impacts from construction activities and equipment.

EIS Addendum – Project Impacts

The proposed ***520 Westlake Ave. N. Development*** could be expected to generate short-term construction-related impacts associated with air quality, noise, light/glare and transportation parking.

The pattern of land use in the general vicinity of the site area includes a mix of uses – surface parking and construction staging (to the north), office buildings (to the east), retail/commercial and office uses (to the west), and office and lab uses (to the south).

Site preparation, excavation and construction would generate short-term,[14] localized environmental impacts that include: noise and vibration, air quality, light and glare, and transportation. While the majority of all construction activity would occur during the daytime, at times it may be necessary for some construction activity to occur during evening hours. Such may be necessary to reduce the duration of the overall construction timeframe and/or because the City requires certain construction activities to occur at that time in order to lessen impacts to pedestrians and vehicles during the day. As such, construction activity associated with the ***520 Westlake Ave. N. Development*** would be noticeable to some adjacent land uses, particularly to residential land uses to the north, south and west. Construction is expected to begin in mid-to-late 2019 and be completed by mid-to-late April 2021. Since all construction activity would be temporary in nature and subject to the limits in the Seattle Code, no significant impacts would be anticipated. See **Appendix H** for a copy of the draft construction Management Plan.

Potential Mitigation Measures

Noise from construction activities would be subject to the limits in the Seattle Noise Code (SMC 25.08) and construction contractors would be required to comply with provisions of this code.

- Site development would adhere to Puget Sound Clean Air Agency's regulations and the City's construction best practices regarding demolition activity and fugitive dust emissions.

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[14] For that portion of the approximately 31.5-month construction timeframe that includes demolition, excavation and through enclosure of the proposed building.

- Construction-related lighting would be shielded and directed away from adjacent land uses.

- The project would be required to prepare a Construction Management Plan consistent with the requirements of the City's *Construction Hub Coordination Program*.[15] It would also comply with Director's Rule 1-2011 related to Pedestrian Mobility during construction. The construction team will coordinate with Metro relative to construction activity that could affect transit service, and the streetcar line and station on Westlake.

Significant Unavoidable Adverse Impacts

While some construction-related noise and vibration, air quality, light and glare and transportation and parking impacts would be unavoidable, none would result in significant unavoidable adverse impacts.

15 Seattle Department of Transportation, *Construction Hub Coordination Program Brochure*, July 2014, and SDOT website at https://www.seattle.gov/transportation/projects-and-programs/programs/project-and-construction-coordination-office/construction-hub-coordination, accessed November 14, 2014.

REFERENCES

City of Seattle. Draft Environmental Impact Statement for the South Lake Union Height and Density Alternatives. February 24, 2011.

City of Seattle. Final Environmental Impact Statement for the South Lake Union Height and Density Alternatives. April 5, 2012.

City of Seattle. Seattle Municipal Code.

City of Seattle, Viewpoints Locater Map.

King County Parcel Viewer: Interactive Property Research Tool. http://www.kingcounty.gov/operations/GIS/PropResearch/ParcelViewer.aspx.

NOAA. Atmospheric Data for Seattle, WA. 2005.

US Environmental Protection Agency (EPA). 2006. 40 CFR Part 50: National Ambient Air Quality Standards for Particulate Matter. EPA-HQ-OAR-2001-0017; FRL-RIN 2060-AI44. Sept. 21, 2006.

Washington Administrative Code.

APPENDICES

Appendix A

DISTRIBUTION LIST

U.S. Dept of Housing & Urban Development,
909 First Avenue, Ste 200
Seattle, WA 98104-1000
Attn: John Myers

U.S. Environmental Protection Agency
Region 10, EIS Coordinator
1200 Sixth Avenue, MS ECO-088
Seattle, WA 98101

U.S. Fish & Wildlife Service
Field Office
510 Desmond Drive SE, Ste. 102
Lacey, WA 98503

Muckleshoot Indian Tribe
39015 172nd Ave. SE
Auburn, WA 98092-9763
Attn: Planning staff

Duwamish Tribe
4717 W. Marginal Way SW
Seattle, WA 98106

Suquamish Tribe
Port Madison Indian Reservation
PO Box 498
Suquamish, WA 98392

Wa. State Dept. of Fish & Wildlife
600 Capitol Way N.
Olympia, WA 98501-1091

Wash. Dept of Social & Health Services
Lands & Buildings Division
P.O. Box 45848
Olympia, WA 98504-5848
Attn: Elizabeth McNagny

Wash. State Dept. of Archaeology and Historic Preservation
1063 S. Capitol Way, Suite 106
Olympia, WA 98501
Attn: Greg Griffith

Wa. State Dept. of Community Development
906 Columbia St. SW.
PO Box 42525
Olympia WA 98504-2525
Attn: Nancy Ousley

Wa. State. Dept. of Natural Resources
DNR SEPA Center
1111 Washington St.
PO Box 47015
Olympia, WA 98504-7015

Tulalip Tribes of Washington
6700 Totem Beach Road
Tulalip, WA 98271

Puget Sound Regional Council
1011 Western Avenue, Ste 500
Seattle, WA 98104-1035
Attn: Ivan Miller

Puget Sound Clean Air Agency
1904 Third Avenue, Suite 105
Seattle, WA 98101
Attn: Paul Carr

Sound Transit
401 S. Jackson St.
Seattle, WA 98104
Attn: Steve Kennedy

Seattle Housing Authority
120 Sixth Avenue N.
PO Box 19028
Seattle, WA 98109-1028

United Indians of All Tribes Foundation
PO Box 99100
Seattle, WA 98199

Wa. State Dept. of Transportation
401 Second Ave. S., Suite 300
Seattle, WA 98104-2887
Attn: Thomas Noyes

Seattle Indian Services Commission
606 12th Avenue S.
Seattle, WA 98144

King County Dept. of Design and Environmental Services
900 Oakesdale Ave. SW
Renton, WA 98055
Attn: Stephanie Warden, Director

King County Housing and Community Development
821 Second Avenue, #500
Seattle, WA 98104
Attn: Linda Peterson

Wa. State Dept. of Transportation
PO Box 47322
Olympia, WA 98504-7322
Attn: Barbara Ivanov

Wa. State Dept. of Transportation
Urban Corridors Office
999Third Avenue, Suite 2424
Seattle, WA 98104
Attn: John White

Freight Mobility Strategic Investment Board
PO Box 40965
Olympia, WA 98504-0965
Attn: Karen Schmidt

King County Dept. of Transportation
201 S. Jackson St., KSC-TR-0815
Seattle, WA 98104-3856
Attn: Harold Taniguchi

King County Dept of Natural Resources
201 S. Jackson St.
King Street Center, KSC-NR-0700
Seattle, WA 98104-3855
Attn: Bob Burns

King County Executive's Office
Room 400, KC Courthouse
701 Fifth Avenue, Ste. 3210
Seattle, WA 98104
Attn: Carolyn Duncan

King County Dept. of Transportation
201 S. Jackson St., KSC-TR-0415
Seattle, WA 98104-3856
Attn: Kevin Desmond

Washington State Dept. of Ecology
SEPA Unit
PO Box 47703
Olympia WA 98504-7703
Attn: Peg Plummer

National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115-0070

Appendix B

GEOTECHNICAL REPORT

Preliminary Geotechnical Engineering Services

Block 38 – South Lake Union Development
Seattle, Washington

for
City Investors IX, LLC

August 18, 2014

GeoEngineers
Earth Science + Technology

Preliminary Geotechnical Engineering Services

Block 38 – South Lake Union Development
Seattle, Washington

for
City Investors IX, LLC

August 18, 2014

GeoEngineers

8410 154th Avenue NE
Redmond, Washington 98052
425.861.6000

Preliminary Geotechnical Engineering Services

Block 38 – South Lake Union Development Seattle, Washington

File No. 7087-028-00

August 18, 2014

Prepared for:

City Investors IX, LLC
c/o Vulcan, Inc.
505 5th Avenue South, Suite 900
Seattle, Washington 98104

Attention: Scott Lien

Prepared by:

GeoEngineers, Inc.
8410 154th Avenue NE
Redmond, Washington 98052
425.861.6000

Daniel P. Ciani, PE
Senior Geotechnical Engineer

Matthew W. Smith, PE
Principal

8/18/14

DPC:MWS:nld

GEOENGINEERS

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INTRODUCTION

This report presents the results of GeoEngineers' preliminary geotechnical engineering services for the proposed Block 38 – South Lake Union Development. The project site is located in Seattle's South Lake Union neighborhood and is bounded by Mercer Street to the north, Westlake Avenue North to the west, Republican Street to the south, and an existing five-story reinforced concrete and three-story masonry structure adjacent to the alley to the east. The two parcels located along the east side of the block (535 Terry Avenue North and 964 Republican Street) are not included in the project. The site is shown relative to surrounding physical features on the Vicinity Map (Figure 1) and the Site Plan (Figure 2).

The purpose of this report is to provide preliminary geotechnical engineering conclusions and recommendations for the design of the new development. Our geotechnical engineering services have been completed in general accordance with our Master's Service Agreement for the project, dated April 10, 2014 and our addendum No. 1 dated July 7, 2014. Our scope of work includes:

- Jointly log an additional boring at the site to characterize soil and groundwater conditions;
- Review available reports and studies for the site and surrounding area;
- Providing International Building Code (IBC) 2012 seismic design criteria;
- Providing preliminary foundation, temporary shoring, slab-on-grade and permanent below-grade wall recommendations;
- Providing preliminary recommendations for temporary and permanent dewatering and groundwater seepage estimates; and
- Preparing this report.

PROJECT DESCRIPTION

The planned Block 38 development will consist of a half block, multistory office building with two to three below grade levels. The purpose of this evaluation is to provide preliminary geotechnical information to the design team regarding the soil and groundwater conditions that will have a significant impact to the constructability and scope of this project.

Temporary shoring will be required around the perimeter of the planned excavation and is anticipated to consist of soldier piles and tiebacks with timber lagging. Given that the planned building configuration will extend below the static groundwater table and that the site is capable of generating a significant dewatering flow rate, it is anticipated that the lower portion of the building will need to resist hydrostatic pressures. Variable soil conditions are present across the site at the anticipated foundation elevation and structural mat foundations bearing on native soils or on improved ground, where necessary, is anticipated for foundation support.

FIELD EXPLORATIONS AND LABORATORY TESTING

Field Explorations

The subsurface conditions at the site were evaluated by logging one boring, F-MW-130, completed by the project environmental consultant, Farrallon Consulting. The boring was completed to a depth of approximately 61½ feet. A monitoring well was installed in the boring to observe groundwater conditions. The well was also instrumented with an automated datalogger to provide continuous groundwater measurements over time. The approximate locations of boring F-MW-130 and borings completed as part of previous studies in the site vicinity are shown in Figure 2. Descriptions of the field exploration program and the boring log are presented in Appendix A.

Laboratory Testing

Soil samples were obtained during drilling and were taken to GeoEngineers' laboratory for further evaluation. Selected samples were tested for the determination of grain size distribution, fines content and moisture content. A description of the laboratory testing and the test results are presented in Appendix B.

PREVIOUS SUBSURFACE INFORMATION

Logs of selected explorations from previous site evaluations in the project vicinity were reviewed. The logs of explorations from previous projects referenced for this study are presented in Appendix C. The existing subsurface information includes:

- The logs of 10 borings and six test pits (B-1 through B-8, DW-2, MW-5, and TP-1 through TP-6) completed by GeoEngineers for the project (Interurban Exchange 2) located to the east of the proposed development (on the east side of the alley).
- The logs of two borings (B-44-1 and B44-4) completed by GeoEngineers for Block 44, located to the west of the Block 38 project (on the west side of Westlake Avenue North).
- The logs of two borings (B-1-01 and B-2-01) completed by GeoEngineers of the block located to the south of the Block 38 project (on the south side of Republican Street)
- The logs of three borings (KMW-4, GEO-8, and B-43-1) completed by Kane Environmental and GeoEngineers for Block 43, located to the northwest of the Block 38 project (on the north side of Mercer Street).
- The logs of two borings (B-37-1 and B-37-2) completed by GeoEngineers for Block 37, located to the north of the Block 38 project (on the north side of Mercer Street)
- The log of two borings (B-5-67 and B-6-67) completed by Seattle Engineering Department located west of the site along Westlake Avenue North.

SITE CONDITIONS

Surface Conditions

The site is bounded by Mercer Street to the north, Westlake Avenue North to the west, Republican Street to the south, and an alley to the east. Block 38 currently is occupied by two- to three-story reinforced concrete/masonry structures. A city alley bisects Block 38 in the north-south direction. Site grades slope gently across the site, dropping about 10 feet from south to north across the site (Elevations 40 to 30 feet, respectively). Locally, site grades are lower in portions of the alley (as low as approximately Elevation 24 feet).

The 72-inch-diameter Lake Union Tunnel sewer is located in the Republican Street right-of-way to the south of the site. Buried utilities consisting of combined sewer, gas, power, and water are shown on the site survey. Overhead power is present in the City right-of-way adjacent to the site.

Subsurface Soil Conditions

The soils encountered at the site consist of loose fill, peat and wood debris, recent sand, silt and clay deposits, and glacially consolidated soils. Wood debris is present near the transition between the fill soils and recent deposits (a lumber mill previously operated in the site vicinity), recent clay, and recent granular deposits overlying very dense/hard glacially consolidated deposits. Interpreted subsurface conditions are presented in Cross Sections A-A' and B-B' (Figure 3 and 4).

The fill, wood debris and organic soil (peat) are unsuitable for foundation support. The recent silt, clay, and granular deposits are compressible and may not be suitable bearing soils for new structures with significant foundation loading and/or stringent static/seismic settlement tolerances. The glacially consolidated soils represent competent bearing soils for shallow foundations and/or deep foundations.

The fill generally consists of loose to medium dense silty sand with variable gravel, cobble, and boulder content and soft to medium stiff silt and sandy silt. Significant wood debris is present in the lower portion of the fill soils. The thickness of fill encountered in the explorations completed for this study ranged up to approximately 20 feet.

Below the fill, peat, recent silt and clay, recent granular deposits, and glacially consolidated soils were encountered. A layer of peat, ranging up to approximately 5 feet thick, was encountered below the fill. Recent granular deposits were encountered in several borings and consisted of loose to dense sand with varying amounts of silt, gravel, and cobbles. Recent silt and clay soils are also present below the fill and are interbedded with the recent granular deposits. The recent silt and clay layer consists of stiff to very stiff silt and clay. The thickness of the recent silt and clay deposit ranges up to 15 feet thick.

The glacially consolidated soils consist of till-like deposits and cohesionless sand and gravel. Till-like deposits were encountered below the recent granular deposits and recent silt and clay and consist of very dense silty sand and sandy silt with variable gravel and cobble content. The till-like deposits ranged up to approximately 15 feet thick. Cohesionless sand and gravel was encountered below the till-like deposits, where present, and below the recent deposits. The cohesionless sand and gravel soils consist of very dense sand and gravel with silt and occasional cobbles with isolated layers of silty sand with gravel. The cohesionless sand and gravel layer extended to the depth explored.

Groundwater Conditions

An automatic datalogger was installed in the monitoring well F-MW-130 to observe the variability in groundwater levels due to temporary dewatering of nearby projects, seasonal fluctuations, and precipitation. Measurements of depth to groundwater in the monitoring well installed in boring F-MW-130 indicate that the site groundwater level varied between approximately Elevation 7.4 and 7.8 feet during the period from July 17 and August 8, 2014.

The table below provides a summary of the monitoring well and recent groundwater measurements at the site.

Well ID	Ground Surface Elevation (feet)	Top of Casing Elevation (feet)	Bottom of Casing Elevation (feet)	Well Screen Elevation (feet)	Measured Groundwater Elevation (7/24/14 and 8/8/14) (feet)	Range in Groundwater Elevations (7/24/14 to 8/8/14) (feet)
F-MW-130	21.95	21.58	-33	-23 to -33	5.02/5.09	5.0 to 5.14

Additional groundwater measurements will be taken during the design phase of the project to further assess variations in groundwater elevations. Groundwater level readings taken to date are anticipated to be at a significantly lower level than typical due to recent dewatering on nearby projects in the site vicinity.

ENVIRONMENTALLY CRITICAL AREAS

We reviewed the City of Seattle ECA Folios and found the project site is mapped as a Category II Peat Settlement Prone area. According to Section 25.09.110 of the Seattle Municipal Code "No development shall occur within a peat settlement-prone area below the annual high static groundwater level except to the minimum extent the Director deems necessary to allow…" Section 25.09.110.I states that the Director may waive compliance with some or all of the requirements for a project in a Category II peat settlement-prone area to the extent the applicant demonstrates to the satisfaction of the Director that the project has been designed to avoid adverse impacts to off-site parcels from peat settlement.

General

Groundwater levels have been measured at the site during previous geotechnical evaluations and recently at projects currently in construction in the site vicinity. Typically, static groundwater levels range from Elevation 17 to 21 feet. Recent dewatering in the immediate vicinity of Block 38 has lowered the groundwater table significantly (measured as low as Elevation 5 feet).

Proposed Development

Currently the building is planned to extend two to three levels below current grade and approximately 10 to 20 feet below static groundwater elevations. The excavation for the proposed building will effectively remove the peat and wood debris so that the building can bear on shallow foundations supported on either recent deposits or glacially consolidated soils. Additionally, the building will be designed to resist hydrostatic pressures, essentially "building a boat," so that permanent dewatering of the building is not necessary.

Adjacent Development Impacts

Interurban Exchange 2

The Interurban Exchange 2 building is located across the alley and occupies two thirds of the east half block. The building was constructed in 2008/2009. GeoEngineers provided geotechnical recommendations for the project which are summarized in our report dated August 8, 2005 and geotechnical special inspection during construction. The building extends one level below grade with a lowest finished floor elevation of approximately Elevation 19 feet and is supported on deep foundations. A large mat foundation along the western portion of the building was required with a bottom of foundation located at Elevation 12.25 feet. Temporary dewatering consisting of vacuum well points was necessary to complete the excavation. It can be assumed that it was necessary to lower the groundwater 2 to 3 feet below the lowest foundation or approximately Elevation 9 to 12 feet. The drawdown of the groundwater table would have locally lowered the groundwater table in the vicinity and partially dewatered the peat and wood debris on the west half of Block 38.

Rosen Building

The Rosen building is located at the southeast portion of the east half of Block 38 and consists of a three-story masonry building built in 1928. Based on our knowledge and research for the Interurban Exchange 2 building, the Rosen building is supported on timber piles.

Blocks 43/44 Dewatering

There has been substantial dewatering events in the South Lake Union area throughout the development history of Seattle, and most recently with Blocks 43 and 44. Block 44 is located at the southwest corner of Westlake Avenue North and Mercer Street, west of Block 38, and is currently under construction. The excavation for Block 44 extended to Elevation 10 feet along Westlake Avenue North. Temporary dewatering consisting of both deep wells and vacuum well points was necessary to construct the below grade portions of the building. During construction, an observation well was installed along the northern portion of building adjacent to Mercer Street and readings were taken every hour using a pressure transducer. The plot of the data shows that the groundwater level was drawn down to Elevation 7 feet. Dewatering at the site began March 12, 2013 and continued through September 18, 2013.

The structures present on Block 44 bear on glacially consolidated soils or on medium dense to dense or very stiff to hard recent deposits located below the static groundwater table. As a result, temporary dewatering on Block 38 is not anticipated to result in dewatering induced settlement on Block 44.

Block 43 is located at the northwest corner of Mercer Street and Westlake Avenue North and consists of full block development with an excavation depth as low as Elevation -12 feet. Temporary dewatering was necessary to complete the below grade portions of the building and consists of shallow and deep wells. The groundwater elevation has been continually monitored throughout the duration of construction with elevations measured between -9.8 to 5 feet. Dewatering began November 8, 2013 and will continue until the structure tops out.

Justification for ECA Peat Exemption

There has been significant dewatering events adjacent to and in the vicinity of Block 38 that have fully dewatered the peat zone soils present on Block 38. As a result, temporary dewatering during construction of the planned Block 38 project will have a reduced potential for dewatering induced settlement of adjacent improvements.

The planned building will essentially remove all the peat and wood debris within the building footprint, eliminating the potential for adverse impacts due to peat settlement for the Block 38 development.

Furthermore, the adjacent buildings, Interurban Exchange 2 and the Rosen building, are pile supported and are not prone to settlement impacts due to dewatering remaining peat soils present below these structures. Additionally, structures on Blocks 43 and 44 are not considered to be prone to dewatering induced settlements.

Based on the above information, it is our opinion that the Block 38 project can be designed and constructed within the peat settlement prone area to avoid adverse impacts to off-site parcels and improvements.

CONCLUSIONS AND RECOMMENDATIONS

Summary

A summary of the primary geotechnical considerations is provided below. The summary is presented for introductory purposes only and should be used in conjunction with the complete recommendations presented in this report.

- The site meets the characteristics of Site Class F in the 2012 IBC due to the presence of potentially liquefiable soils. For preliminary design purposes, we recommend that the design response spectrum developed through a site-specific seismic response analysis for the Block 43 (located a block to the northwest) be used for the Block 38 site (see Figure 9). Once the building configuration, foundation elevation, and foundation type has been more clearly defined, a site specific seismic response analysis will be completed for the Block 38 site to develop the design response spectrum.
- Based on review of the site specific groundwater levels collected at the site and in the site vicinity since 2011, a design groundwater table of Elevation 20 feet is recommended for Block 38 for the design of the permanent below grade walls and structural mat foundations. The planned excavation will extend below approximate Elevation 20 feet; therefore, temporary dewatering will be required to complete the planned excavation.
- Temporary dewatering can be completed using vacuum wellpoints or deep dewatering wells. The type of dewatering system and the system's configuration will depend on the type of temporary shoring system implemented and on the contractor's preferences for completing excavation and construction of the below grade portion of the building. Significant dewatering flows are anticipated where excavations extend below the groundwater level. The depth of the excavation, the type of temporary shoring system, and the type dewatering system design will influence the dewatering flow rates.
- Excavation support can be provided by either conventional soldier pile and tieback shoring system or through the use of an anchored diaphragm shoring wall. Several options for anchored diaphragm walls are feasible for Block 38 including secant pile walls, cutter soil mix (CSM) walls, sheet pile walls, cast in-situ reinforced concrete walls using slurry trench techniques, or ground freezing. Due to the presence of water bearing sands near the base of the planned excavation, diaphragm shoring walls are not anticipated to reduce temporary dewatering flow rates significantly and therefore, may not warrant the additional cost compared to dewatered conventional soldier pile and tieback shoring systems.
- Because the tiebacks will extend into the public right-of-way, these elements will be required to be temporary. The permanent below-grade building walls will be required to resist the permanent lateral earth pressures. The City of Seattle requires that tieback anchors extending into the public right-of-way be de-stressed once the temporary shoring is no longer required. The permanent below-grade building

walls should be designed and constructed to facilitate de-stressing of temporary tieback anchors, where present.

- For a building with two to three levels below grade, permanent dewatering flows are anticipated to be significant and designing the below grade portion of the building to resist hydrostatic pressures is recommended due to life cycle pumping costs, effluent discharge constraints, and soil and groundwater conditions at the site.
- Recent deposits or glacially consolidated soils are anticipated at the foundation elevation. Given the depth of the planned building below the groundwater table, the need for a structural mat designed to resist hydrostatic pressure, and the variable soil conditions at the foundation elevation, a structural mat foundation bearing on improved ground, where necessary, is the preferred foundation system. For preliminary design purposes, an allowable bearing pressure of 4 to 6 kips per square foot (ksf) can be assumed. The allowable bearing is highly dependent on the foundation elevation, the type and extent of ground improvement and the settlement tolerances of the building and will be further evaluated during design.
- Ground improvement can be implemented to provide uniform foundation bearing across the variable soil conditions at the foundation elevation and to limit settlement to acceptable levels. Several options for ground improvement are available including rigid inclusions, compaction grouting, soil mixed columns, and driven timber piles. Stone columns or similar permeable ground improvement options may also be considered, provided that dewatering requirements are not increased.
- Buoyant pressures acting on the portion of the building extending below the groundwater table should be evaluated to determine if tiedown anchors are required and to determine when the temporary dewatering system can be turned off.

Our specific geotechnical recommendations are presented in the following sections of this report.

Earthquake Engineering

Liquefaction

Liquefaction refers to the condition by which vibration or shaking of the ground, usually from earthquake forces, results in the development of excess pore pressures in saturated soils with subsequent loss of strength in the deposit of soil so affected. In general, soils that are susceptible to liquefaction include very loose to medium dense clean to silty sands and some silts that are below the water table.

The results of our preliminary analyses indicate that the very loose to medium dense sandy fill and recent deposit soils have a moderate potential for liquefaction during a design earthquake event. At this time, it is not known whether these soils will be present below the foundation elevation.

Depending on the foundation elevation, ground improvement may be required to mitigate the potential for differential settlement and to transfer the building loads through the potentially liquefiable soils to the underlying bearing soils.

Lateral Spreading

Lateral spreading involves lateral displacement of large, surficial blocks of soil as the underlying soil layer liquefies. Because there is a potential for liquefaction, there is also risk of lateral spreading. However, given that the liquefiable fill and recent granular deposit layers are relatively thin, combined with the geographic distance to Lake Union, the potential for lateral spreading is considered to be low for the Block 38 site.

Other Seismic Hazards

Due to the location of the site and the site's topography, the risk of adverse impacts resulting from seismically induced slope instability, differential settlement, or surface displacement due to faulting is considered to be low.

Seismic Design Information

The site meets the characteristics of Site Class F in the 2012 IBC due to the presence of potentially liquefiable soils. GeoEngineers completed a site specific seismic response analyses for the Block 43 project site located one block to the northwest of the Block 38 site to develop design spectra for use in the design of the building. For preliminary design purposes, we recommend that the Block 43 design response spectrum presented on Figure 9 be used for Block 38. Once the building configuration, foundation elevation, and foundation type has been more clearly defined, a site specific seismic response analysis will be completed for the Block 38 site to develop the design response spectrum.

Temporary Dewatering

Temporary dewatering is anticipated to be required to complete the planned excavation. Temporary dewatering may be accomplished using a variety of means; however, the use of either deep dewatering wells, vacuum wellpoints, or a combination of these two methods, is anticipated for this site. The type of temporary dewatering system will depend on the depth of excavation, type of temporary shoring system, extent of offsite drawdown, constructability considerations, and other factors.

Deep wells can be located either inside or outside the temporary shoring system where conventional shoring is implemented. If a diaphragm type shoring system is used, the deep wells should be located within the excavation in order to reduce dewatering flows. Deep well locations should be coordinated with the foundation design to allow for foundation construction prior to decommissioning of the wells. Where the deep wells are located within the excavation, careful detailing of the structural mat foundation/dewatering well penetration is required to provide a reliable and watertight seal following well decommissioning.

Vacuum wellpoints will be effective where the groundwater table is to be lowered by up to 15 to 20 feet below current levels. Where conventional shoring is used, the vacuum wellpoints should be installed from within the perimeter of the excavation and extend through the shoring wall at a steeply inclined angle. Where a diaphragm type shoring system is used, the wellpoints should be installed within the excavation to reduce dewatering flows. The header pipe should be located near the static groundwater table elevation prior to completing the excavation below this elevation. Vacuum wellpoints should be designed with an appropriately graded filter pack of sufficient thickness to promote groundwater inflow while limiting the migration fines, and should be constructed by an experienced dewatering contractor who is also a licensed well driller registered with the State of Washington (per WASC 173-162). Depending on the depth of the planned excavation, deep dewatering wells in addition to the vacuum wellpoints may be necessary at the center of the excavation.

The temporary dewatering system should be designed to maintain the groundwater level at least 3 feet below the foundation subgrade elevation until the below-grade portion of the structure is capable of withstanding the hydrostatic pressures resulting in uplift on the bottom of the foundation and structural slab and lateral pressures against below-grade walls.

Most of the groundwater flow into the planned excavation is anticipated to be produced from the recent granular deposits and the glacially consolidated cohesionless sand and gravel deposits. Based on previous temporary dewatering experience at Block 43 and similar soil conditions, we anticipate similar dewatering flow rates, which may be up to 600 gallons per minute (gpm). Once the depth of excavation and type of shoring system has been determined, a more refined estimate of dewatering flow rates can be developed.

GeoEngineers recommends that groundwater monitoring wells or piezometers be installed throughout the excavation in order to monitor groundwater levels inside and outside of the planned excavation during construction. The purpose of the groundwater monitoring wells is to confirm that the dewatering system is performing as intended and to confirm that dewatering is functioning to reduce the potential for excessive buoyant pressures acting on the building until sufficient structural loads are present to resist buoyancy.

Settlement Impacts to Adjacent Improvements

Settlement of the adjacent streets, buildings and utilities caused by increases in effective stress as groundwater levels are lowered by temporary dewatering is possible given that potential groundwater drawdown will occur in the fill, recent granular deposits, and recent silt and clay deposits. Based on review of the subsurface information for the Block 38 site, the soils that are considered to be prone to dewatering induced settlement consist primarily of the fill, wood waste and portions of the recent deposits located above approximate Elevation 5 feet. Previous temporary dewatering in the site vicinity has lowered water levels to below Elevation 5 feet in the Block 38 vicinity. As a result, the majority of potential settlement associated with temporary dewatering has likely already occurred.

On the Block 43 project (one block northwest of Block 38), settlement in the rights-of-way around the site was determined to result from three factors: (1) dewatering induced settlement, (2) settlement resulting from shoring wall deformation, and (3) settlement resulting from installation of tieback anchors (high pressure compressed air was used to drill the tiebacks on Block 43). Given that the majority of settlement associated with dewatering has likely occurred, the settlement related shoring wall movement and tieback drilling can be managed by the selection of the earth pressures for the temporary shoring wall design and methodology used to install tieback anchors.

It is recommended that a settlement monitoring program be implemented to confirm that dewatering induced settlements do not adversely impact existing facilities. Settlement monitoring can be combined with the optical survey monitoring typically implemented as part of the construction of temporary shoring.

Excavation Support

Based on the current design, excavation depths will extend approximately up to 35 feet below existing grades. Excavation support can be provided by conventional soldier pile and tieback shoring system. Anchored diaphragm shoring wall systems, such as secant pile walls, CSM, and sheet piles, can also provide excavation support, but it is our opinion that the use of a diaphragm shoring system will not result in a significant reduction in temporary dewatering flow rates and offsite drawdown of the groundwater table and therefore, may not warrant the additional cost (compared to conventional soldier pile and tieback shoring). The soldier pile and tieback shoring system will require temporary dewatering during construction where the excavation extends below the groundwater table.

The shoring system should be designed to limit lateral deflection to less than 1 inch in order to reduce the risk of damage to existing improvements. The City of Seattle requires that remedial measures be evaluated when lateral deflections exceed 1 inch.

Ground anchors should be designed to maintain an acceptable clearance from buried utilities. The shoring system will be required to be temporary because the ground anchors will extend into the City of Seattle right-of-way and a street use permit will be required.

We provide geotechnical design and construction recommendations for soldier pile and tieback walls below. GeoEngineers can develop geotechnical design recommendations for diaphragm type shoring systems, as necessary. The City of Seattle will require that GeoEngineers review the shoring design once it is complete.

Excavation Considerations

The site soils may be excavated with conventional excavation equipment, such as trackhoes or dozers. The contractor should be prepared for occasional cobbles and boulders in the site soils. Likewise, the surficial fill may contain foundation elements and/or utilities from previous site development, debris, rubble and/or cobbles and boulders. Significant wood debris and timber piling were encountered in the northeast portion of the excavation for the building at Block 44, along the eastern half of Block 43 excavation, and wood debris was noted in the explorations for the Block 38 project. Wood debris was observed in many of the soil samples obtained from the borings and it is known that a saw mill operated in the site vicinity.

The fill and recent deposits have a significant amount of fine grained soils with high moisture contents. These soils are anticipated to provide poor support for construction equipment and to be highly susceptible to disturbance due to construction traffic and wet weather. The earthwork and shoring contractors should be prepared to operate equipment on poor subgrade conditions and to excavate soils disturbed by equipment loading or wet weather.

Soldier Pile and Tieback Walls

Conventional shoring systems consisting of soldier pile walls with timber lagging and tieback anchors are considered an option for this project. Conventional shoring will require temporary dewatering to allow for the shoring system to be designed for fully dewatered conditions (no hydrostatic pressures acting on the shoring wall).

Soldier pile walls consist of steel beams that are concreted into drilled vertical holes located along the wall alignment, typically about 8 feet on center. After excavation to specified elevations, tiebacks are installed, if necessary. Once the tiebacks are installed, the pullout capacity of each tieback is tested, and the tieback is locked off to the soldier pile at or near the design tieback load. Tiebacks typically consist of steel strands that are installed into pre-drilled holes and then either tremie or pressure grouted. Timber lagging is typically installed behind the flanges of the steel beams to retain the soil located between the soldier piles. Geotechnical design recommendations for each of these components of the soldier pile and tieback wall system are presented in the following sections.

Soldier Piles

We recommend that soldier pile walls be designed using the earth pressure diagram presented in Figure 6. The earth pressures presented in Figure 6 are for full-height cantilever soldier pile walls and soldier pile walls with single or multiple levels of tiebacks, and the pressures represent the estimated loads that will be applied to the wall system for various wall heights.

The earth pressures presented in Figure 6 include the loading from traffic surcharge. Other surcharge loads, such as cranes, construction equipment or construction staging areas, should be considered by GeoEngineers on a case-by-case basis. No seismic pressures have been included in Figure 6 because it is assumed that the shoring will be temporary.

We recommend that the embedded portion of the soldier piles be at least 2 feet in diameter and extend a minimum distance of 10 to 15 feet below the base of the excavation to resist "kick-out." The axial capacity of the soldier piles must resist the downward component of the anchor loads and other vertical loads, as appropriate. We recommend using an allowable end bearing value of 40 ksf for piles supported on the glacially consolidated soils and 10 ksf in the fill or recent granular and recent silt and clay deposits. The allowable end bearing value should be applied to the base area of the drilled hole into which the soldier pile is concreted. This value includes a factor of safety of about 2.5. The allowable end bearing value assumes that the shaft bottom is cleaned out immediately prior to concrete placement. If necessary, an allowable pile skin friction of 1.5 ksf may be used on the embedded portion of the soldier piles within the glacially consolidated soils to resist the vertical loads.

Lagging

We recommend that the temporary timber lagging be sized using the procedures outlined in the Federal Highway Administration's Geotechnical Engineering Circular No. 4. The site soils are best described as competent soils. The following table presents recommend lagging thicknesses (roughcut) as a function of soldier pile clear span and depth.

Depth (feet)	Recommended Lagging Thickness (roughcut) for Clear Spans of:					
	5 feet	6 feet	7 feet	8 feet	9 feet	10 feet
0 to 25	2 inches	3 inches	3 inches	3 inches	4 inches	4 inches
25 to 50	3 inches	3 inches	3 inches	4 inches	4 inches	5 inches

Lagging should be installed promptly after excavation, especially in areas where perched groundwater is present or where clean sand and gravel soils are present and caving soils conditions are likely. The workmanship associated with lagging installation is important for maintaining the integrity of the excavation.

The space behind the lagging should be filled with soil as soon as practicable. The City of Seattle requires that voids be backfilled immediately or within a single shift, depending on the selected method of backfill. Placement of this material will help reduce the risk of voids developing behind the wall and damage to existing improvements located behind the wall.

Material used as backfill in voids located behind the lagging should not cause buildup of hydrostatic pressure behind the wall. Lean concrete is a suitable option for the use of backfill behind the walls. Lean concrete will reduce the volume of voids present behind the wall. Alternatively, lean concrete may be used for backfill behind the upper 15 to 20 feet of the excavation to limit caving and sloughing of the upper soils, with on-site soils used to backfill the voids for the remainder of the excavation. Based on our experience, the voids between each lean concrete lift are sufficient for preventing the buildup of hydrostatic pressure behind the wall.

Tiebacks

Tieback anchors will be required to resist the lateral pressures acting on the shoring wall. Tieback anchors should extend far enough behind the wall to develop anchorage beyond the "no-load" zone and within a stable soil mass. The anchors should be inclined downward at 15 to 45 degrees below the horizontal. Steeper anchor declinations may be required to achieve higher tieback capacities. Corrosion protection will not be required for the temporary tiebacks.

Centralizers should be used to keep the tieback in the center of the hole during grouting. Structural grout or concrete should be used to fill the bond zone of the tiebacks. A bond breaker, such as plastic sheathing, should be placed around the portion of the tieback located within the no-load zone if the shoring contractor plans to grout both the bond zone and unbonded zone of the tiebacks in a single stage. If the shoring contractor does not plan to use a bond breaker to isolate the no-load zone, GeoEngineers should be contacted to provide recommendations.

It is anticipated that the tiebacks will be drilled with casing. Holes drilled for tiebacks should be grouted/filled promptly to reduce the potential for loss of ground. Additionally, based on our experience of shoring installation at Block 43, it was discussed that some of the settlement along the perimeter of the excavation was attributed to high pressure compressed air during installation of the tiebacks. We recommend the contractor develop tieback installation procedures or methods to reduce excessive air pressure during tieback installation.

Tieback anchors should develop anchorage in the recent deposits or glacially consolidated soils. We recommend that spacing between tiebacks be at least three times the diameter of the anchor hole to minimize group interaction. We recommend a preliminary design load transfer value between the anchor and soil of 4 kips per foot for glacially consolidated soils and 1.5 kips per foot for recent deposits. Higher adhesion values may be developed, depending on the anchor installation technique. The contractor should be given the opportunity to use higher adhesion values by conducting performance tests prior to the start of installing the production tieback anchors.

The tieback anchors should be verification- and proof-tested to confirm that the tiebacks have adequate pullout capacity. The pullout resistance of tiebacks should be designed using a factor of safety of 2. The pullout resistance should be verified by completing at least two successful verification tests in each soil type and a minimum of four total tests for the project. Each tieback should be proof-tested to 133 percent of the design load. Verification and proof tests should be completed as described in Appendix D, Ground Anchor Load Tests and Shoring Monitoring Program.

The tieback layout and inclination should be checked to confirm that the tiebacks do not interfere with adjacent buried utilities. The City of Seattle minimum clearances between ground anchors and existing utilities should be maintained.

Drainage

A suitable drainage system should be installed to prevent the buildup of hydrostatic groundwater pressures behind the soldier pile and lagging wall. It may be necessary to cut weep holes through the lagging in wet areas. Seepage flows at the bottom of the excavation should be contained and controlled. Drainage should be provided for permanent below-grade walls as described below in the "Below-Grade Walls" section of this report.

Construction Considerations

Temporary casing or drilling fluid may be required to install the soldier piles and tiebacks where:

- Loose fill or recent granular deposits are present;
- The native soils do not have adequate cementation or cohesion to prevent caving or raveling; and/or
- Perched groundwater is present.

GeoEngineers should be allowed to observe and document the installation and testing of the shoring to verify conformance with the design assumptions and recommendations.

Foundation Support

Recent deposits overlying the glacially consolidated soils are present at the anticipated foundation elevation across the site. Given the depth of the planned building below the groundwater table, the need for a structural mat designed to resist hydrostatic pressure, and the variable soil conditions at the foundation elevation, a structural mat foundation bearing on improved ground, where necessary, is the preferred foundation system.

The glacially consolidated soils represent competent bearing and foundation elements bearing in these soils will have high capacities. The recent silt and clay soils represent a bearing layer with a reduced capacity, but likely still adequate for a structural mat foundation. The consistency of the recent deposits is variable across the site and ground improvement may be necessary to provide a consistent bearing across the site. Given that the glacially consolidated soils are present below the recent granular soils, ground improvement can be implemented to transfer the structural mat loading to the glacially consolidated soils.

For preliminary design purposes, an allowable bearing pressure of 4 to 6 ksf can be assumed. The allowable bearing is highly dependent on the foundation elevation, the type and extent of ground improvement and the settlement tolerances of the building and will be further evaluated during design. For preliminary design purposes, the use of ground improvement can be assumed for foundations bearing above approximate Elevation 5 feet.

Once the lowest finish floor elevations have been established for the project, the type/location of foundation elements should be reviewed by the project team. Additional explorations can be completed to reduce uncertainty with the extent of ground improvement required. More detail regarding recommended subgrade preparation and allowable bearing pressures for shallow foundations are presented below.

Allowable Bearing Pressure

Where foundations bearing directly on improved ground, stiff to hard recent silt and clay deposits, or on glacially consolidated soils, a preliminary allowable bearing pressure of 4 to 6 ksf can be assumed.

The allowable soil bearing pressure applies to the total of dead and long-term live loads and may be increased by up to one-third for wind or seismic loads. The allowable soil bearing pressures are net values.

Settlement

Provided that all loose soil is removed and that the subgrade is prepared as recommended under "Construction Considerations" below, we estimate that the total settlement of the structural mat foundations will be about 1 inch or less. The static settlements will occur rapidly, essentially as loads are applied. Differential settlements between footings could be half of the total settlement. Note that smaller settlements will result from lower applied loads.

Lateral Resistance

Given the planned deep excavation and structural mat foundation, lateral resistance of the planned building is anticipated to be high. GeoEngineers can provide design recommendations for lateral resistance upon request during final design of the project.

Construction Considerations

We recommend that the condition of all subgrade areas be observed by GeoEngineers to evaluate whether the work is completed in accordance with our recommendations and whether the subsurface conditions are as anticipated.

If soft areas are present at the footing subgrade elevation, the soft areas should be removed and replaced with lean concrete or structural fill at the direction of GeoEngineers. In such instances, the zone of structural fill should extend laterally beyond the footing edges a horizontal distance at least equal to the thickness of the fill.

Ground Improvement

Ground improvement is recommended to provide uniform foundation support across the site, where necessary. Feasible ground improvement options include rigid inclusions, compaction grouting, soil mixed columns, and driven timber piles and would be completed within the recent granular and silt/clay soils. Each of these ground improvement systems would be completed on a grid pattern, where necessary, to transfer the foundation loading to the bearing soils Stone columns or similar permeable ground improvement options may also be considered provide temporary dewatering requirements are not increased significantly. The type of ground improvement technique should be reviewed with the project team to identify constructability issues, provide a range of cost, and to establish the allowable bearing that can be achieved using the method selected. GeoEngineers can design the ground improvement system in collaboration with the general contractor and structural engineer.

Structural Slab

The lowest level of the planned building will extend below the groundwater table and permanent dewatering is not planned due to significant dewatering pumping rates, life cycle pumping costs, and effluent discharge constraints. As a result, the building should be designed to resist hydrostatic/uplift pressures.

Based on review of the site specific groundwater levels collected at the site and in the site vicinity since 2011, a design groundwater table of Elevation 20 feet is recommended for Block 38 for the design of the structural mat foundation.

A relief drain is recommended to be installed at the design groundwater elevation (Elevation 20 feet) and typically consists of a series of weepholes located along the permanent exterior below grade wall at a constant elevation. These weepholes are connected to a collector pipe and directed to a suitable discharge point. The benefit of the relief drain system is that it will limit the hydrostatic pressure that the building will need to be designed for and will reduce the risk to the building associated with unanticipated fluctuations in the groundwater table elevation.

The design groundwater elevation may be modified based on the structural aspects of the building and the location of floor levels. This may be desirable to keep the relief drain collection pipe from becoming damaged by vehicles in the below grade parking garage. The ideal location for the collector pipe is typically just below and elevated building diaphragm.

The structural slab should be designed to resist the hydrostatic uplift force. The uplift force acting on the proposed structure can be estimated by multiplying the volume of the structure located below the design groundwater elevation, in cubic feet, by the unit weight of water, 62.4 pounds per cubic foot (pcf). We assume that resistance to the uplift force will be provided by the weight of the structure. If necessary, tiedown anchors can be used to resist the hydrostatic uplift pressure acting on the structural mat foundation. Tiedown anchors for this application typically consist of small diameter vertical anchors constructed similar to a soil nail. GeoEngineers can assist the project team with design recommendations and capacities of tiedown anchors, should these elements be necessary.

Permanent below-grade walls that extend below the design groundwater table should be designed to resist hydrostatic pressures, as discussed in “Permanent Subsurface Walls” below.

Below-Grade Walls

Permanent Subsurface Walls

Permanent subsurface walls should be designed using the earth pressure diagram presented in Figure 7. The static and seismic earth pressures presented in Figure 7 represent the best estimate of actual loads and do not include a factor of safety. Other surcharge loads, such as from foundations, construction equipment or construction staging areas, should be considered on a case-by-case basis.

As discussed in Structural Slab above, a relief drain system consisting of weep pipes located around the perimeter of the permanent below grade building wall at the design groundwater table elevation. The purpose of the weep pipes/drainage system is to allow for wall drainage in the event that groundwater levels rise above the design groundwater elevation over the life of the structure.

Other Cast-in-Place Walls

Conventional cast-in-place walls may be necessary for small retaining structures located on-site. The lateral soil pressures acting on conventional cast-in-place subsurface walls will depend on the nature, density and configuration of the soil behind the wall and the amount of lateral wall movement that can occur as backfill is placed.

For walls that are free to yield at the top at least 0.1 percent of the height of the wall, soil pressures will be less than if movement is limited by such factors as wall stiffness or bracing. Assuming that the walls are backfilled and drainage is provided as outlined in the following paragraphs, we recommend that yielding walls supporting horizontal backfill be designed using an equivalent fluid density of 35 pcf (triangular distribution), and that non-yielding walls supporting horizontal backfill be designed using an equivalent fluid density of 55 pcf (triangular distribution). For seismic loading conditions, a rectangular earth pressure equal to 8H pounds per square foot (psf), where H is the height of the wall, should be added to the active/at-rest pressures. Other surcharge loading should be applied as appropriate. Lateral resistance for conventional cast-in-place walls can be provided by frictional resistance along the base of the wall and passive resistance in front of the wall in accordance with the "Lateral Resistance" discussion earlier in this report.

The above soil pressures assume that wall drains will be installed to prevent the buildup of hydrostatic pressure behind the walls, as discussed in the paragraphs below.

Drainage

Drainage behind the permanent below-grade walls is typically provided using prefabricated drainage board attached to the temporary shoring walls. For the Block 38 project, the prefabricated drainage board should extend at least 5 feet below the design groundwater elevation. If a diaphragm type shoring system that will act as the permanent below grade wall and temporary shoring (for instance sheet piles or a slurry wall) is used, prefabricated drainage material is not necessary.

Weep pipes that extend through the permanent below-grade wall should be installed around the perimeter of the building at the design groundwater elevation. The weep pipes should have a minimum diameter of 2 inches. The weep pipes should be considered as a safety valve that is activated only when groundwater builds up to the weep pipe elevation. The weep pipes should be connected to a collector pipe and directed to a suitable discharge location. The weep pipes should be spaced approximately 20 feet on center or less.

Positive drainage should be provided behind cast-in-place retaining walls by placing a minimum 2-foot-wide zone of Mineral Aggregate Type 17 (bank run gravel), City of Seattle Standard Specification 9-03.10, with the exception that the percent passing the U.S. No. 200 sieve is to be less than 3 percent. A perforated or slotted drainpipe should be placed near the base of the retaining wall to provide drainage. The drainpipe should be surrounded by a minimum of 6 inches of Mineral Aggregate Type 22 (¾-inch crushed gravel) or Type 5 (1-inch washed gravel), City of Seattle Standard Specifications 9-03.11 and 9-03.12(6), respectively, or an alternative approved by GeoEngineers. The Type 22 or Type 5 material should be wrapped with a geotextile filter fabric meeting the requirements of construction geotextile for underground drainage, Washington State Department of Transportation (WSDOT) Standard Specification 9-33. The wall drainpipe should be connected to a header pipe and routed to a sump or gravity drain. Appropriate cleanouts for drainpipe maintenance should be installed. A larger-diameter pipe will allow for easier maintenance of drainage systems.

Earthwork

Structural Fill

Fill placed to support structures, placed behind retaining structures, and placed below pavements and sidewalks will need to be specified as structural fill as described below:

- If structural fill is necessary beneath building foundations, Seattle Mineral Aggregate Type 2 (1¼-inch minus crushed rock) or controlled density fill (CDF) should be used, unless approved otherwise by GeoEngineers.

- Structural fill placed behind cast-in-place retaining walls should meet the requirements of Mineral Aggregate Type 17 (bank run gravel), City of Seattle Standard Specification 9-03.16.
- Structural fill placed around cast-in-place wall drains should meet the requirements of Mineral Aggregate Type 5 (1-inch washed gravel), or Type 22 (⅝-inch crushed gravel), City of Seattle Standard Specification 9-03.16, with the exception that the percent fines be less than 3 percent.
- Structural fill placed within utility trenches and below pavement and sidewalk areas should meet the requirements of Mineral Aggregate Type 17 (bank run gravel), City of Seattle Standard Specification 9-03.16.
- Structural fill placed as crushed surfacing base course below pavements and sidewalks should meet the requirements of Mineral Aggregate Type 2 (1¼-inch minus crushed rock), City of Seattle Standard Specification 9-03.16.

On-site Soils

The on-site soils are moisture-sensitive and generally have natural moisture contents higher than the anticipated optimum moisture content for compaction. As a result, the on-site soils will likely require moisture conditioning in order to meet the required compaction criteria during dry weather conditions and will not be suitable for reuse during wet weather. Furthermore, most of the fill soils required for the project have specific gradation requirements, and the on-site soils do not meet these gradation requirements. Therefore, imported structural fill meeting the requirements described above should be used where structural fill is necessary.

Fill Placement and Compaction Criteria

Structural fill should be mechanically compacted to a firm, non-yielding condition. Structural fill should be placed in loose lifts not exceeding 1 foot in thickness. Each lift should be conditioned to the proper moisture content and compacted to the specified density before placing subsequent lifts. Structural fill should be compacted to the following criteria:

- Structural fill placed in building areas (below and around foundations) and in pavement and sidewalk areas (including utility trench backfill) should be compacted to at least 95 percent of the maximum dry density (MDD) estimated in general accordance with ASTM International (ASTM) D 1557.
- Structural fill placed against subgrade walls should be compacted to between 90 and 92 percent. Care should be taken when compacting fill against subsurface walls to avoid overcompaction and hence overstressing the walls.

We recommend that GeoEngineers be present during probing of the exposed subgrade soils in building and pavement areas, and during placement of structural fill. We will evaluate the adequacy of the subgrade soils and identify areas needing further work, perform in-place moisture-density tests in the fill to verify compliance with the compaction specifications, and advise on any modifications to the procedures that may be appropriate for the prevailing conditions.

Weather Considerations

During wet weather, some of the exposed soils could become muddy and unstable. If so affected, we recommend that:

- The ground surface in and around the work area should be sloped so that surface water is directed to a sump or discharge location. The ground surface should be graded such that areas of ponded water do not develop.
- Slopes with exposed soils should be covered with plastic sheeting or similar means.
- The site soils should not be left uncompacted and exposed to moisture. Sealing the surficial soils by rolling with a smooth-drum roller prior to periods of precipitation will reduce the extent to which these soils become wet or unstable.
- Construction activities should be scheduled so that the length of time that soils are left exposed to moisture is reduced to the extent practicable.

Temporary Slopes

Temporary slopes may be used around the site to facilitate early installation of shoring or in the transition between levels at the base of the excavation. We recommend that temporary slopes constructed in the fill be inclined at 1½H:1V (horizontal to vertical) and that temporary slopes in the glacially consolidated soils be inclined at 1H:1V. Flatter slopes may be necessary if seepage is present on the face of the cut slopes or if localized sloughing occurs. For open cuts at the site, we recommend that:

- No traffic, construction equipment, stockpiles or building supplies be allowed at the top of the cut slopes within a distance of at least 5 feet from the top of the cut;
- Exposed soil along the slope be protected from surface erosion by using waterproof tarps or plastic sheeting;
- Construction activities be scheduled so that the length of time the temporary cut is left open is reduced to the extent practicable;
- Erosion control measures be implemented as appropriate such that runoff from the site is reduced to the extent practicable;
- Surface water be diverted away from the slope; and
- The general condition of the slopes be observed periodically by the geotechnical engineer to confirm adequate stability.

Because the contractor has control of the construction operations, the contractor should be made responsible for the stability of cut slopes, as well as the safety of the excavations. Shoring and temporary slopes must conform to applicable local, state and federal safety regulations.

Recommended Additional Geotechnical Services

GeoEngineers will complete a design-level geotechnical engineering evaluation for the project, which is anticipated to confirm or modify as appropriate the preliminary design recommendations presented in this report. GeoEngineers should also be retained to review the project plans and specifications when complete to confirm that our design recommendations have been implemented as intended.

During construction, GeoEngineers should observe the installation of the shoring system, review/collect shoring monitoring data, evaluate the suitability of the foundation subgrades, observe installation of subsurface drainage measures, evaluate structural backfill, observe the condition of temporary cut slopes, and provide a summary letter of our construction observation services. The purposes of GeoEngineers construction phase services are to confirm that the subsurface conditions are consistent with those observed in the explorations and other reasons described in Appendix E, Report Limitations and Guidelines for Use.

LIMITATIONS

We have prepared this report for the exclusive use of City Investors IX, LLC and their authorized agents for the Block 38 – South Lake Union Development project in Seattle, Washington.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to Appendix E titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

REFERENCES

City of Seattle, 2014, "Standard Specifications for Road, Bridge and Municipal Construction."

City of Seattle, "Seattle Building Code," 2012.

City of Seattle, GIS database, accessed April 21, 2014, http://web1.seattle.gov/dpd/maps/dpdgis.aspx.

GeoEngineers. "Geotechnical Engineering Services, Block 43 – South Lake Union Development," May 22, 2013.

GeoEngineers, "Geotechnical Engineering Services, Interurban Exchange 2."

International Code Council, 2012, "International Building Code."

Ishihara, K., and Yoshimine, M., "Evaluation of Settlements in Sand Deposits Following Liquefaction During Earthquakes," Soils and Foundations, 32(1), 1992, pp. 173-188.

U.S. Department of Transportation, Federal Highways Administration, 1999, "Geotechnical Engineering Circular No. 4, Ground Anchors and Anchored Systems," FHWA Report No. FHWA-IF-99-015.

U.S. Geological Survey – National Seismic hazard Mapping project Software "Earthquake Ground Motion Parameters, Version 5.0.9a," 2002 data, 2009.

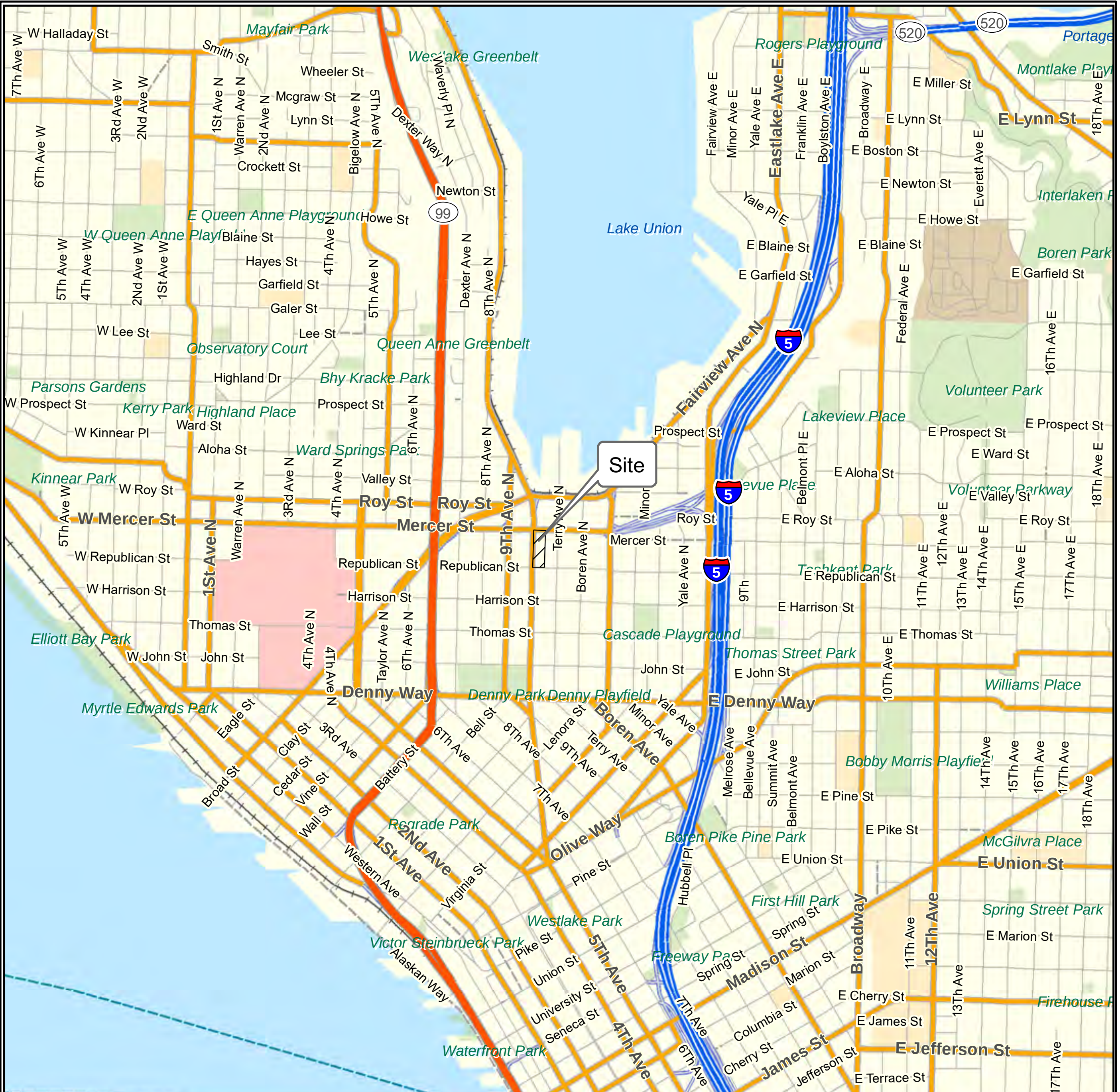
Tokimatsu, K., and Seed, H.B., "Evaluation of Settlements in Sands Due to Earthquake Shaking," Journal of Geotechnical Engineering, ASCE, 113(GT8), 1987, pp. 861-878.

Washington State Department of Transportation, 2014, "Standard Specifications for Road, Bridge and Municipal Construction."

Youd, et al., "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils," Journal of Geotechnical and Geoenvironmental Engineering, ASCE, October 2001, pp. 817-833.

FIGURES

GeoEngineers



N
W E
S

2,000 0 2,000

Feet

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps, Street Maps 2005

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Vicinity Map

Block 38 – South Lake Union Development
Seattle, Washington

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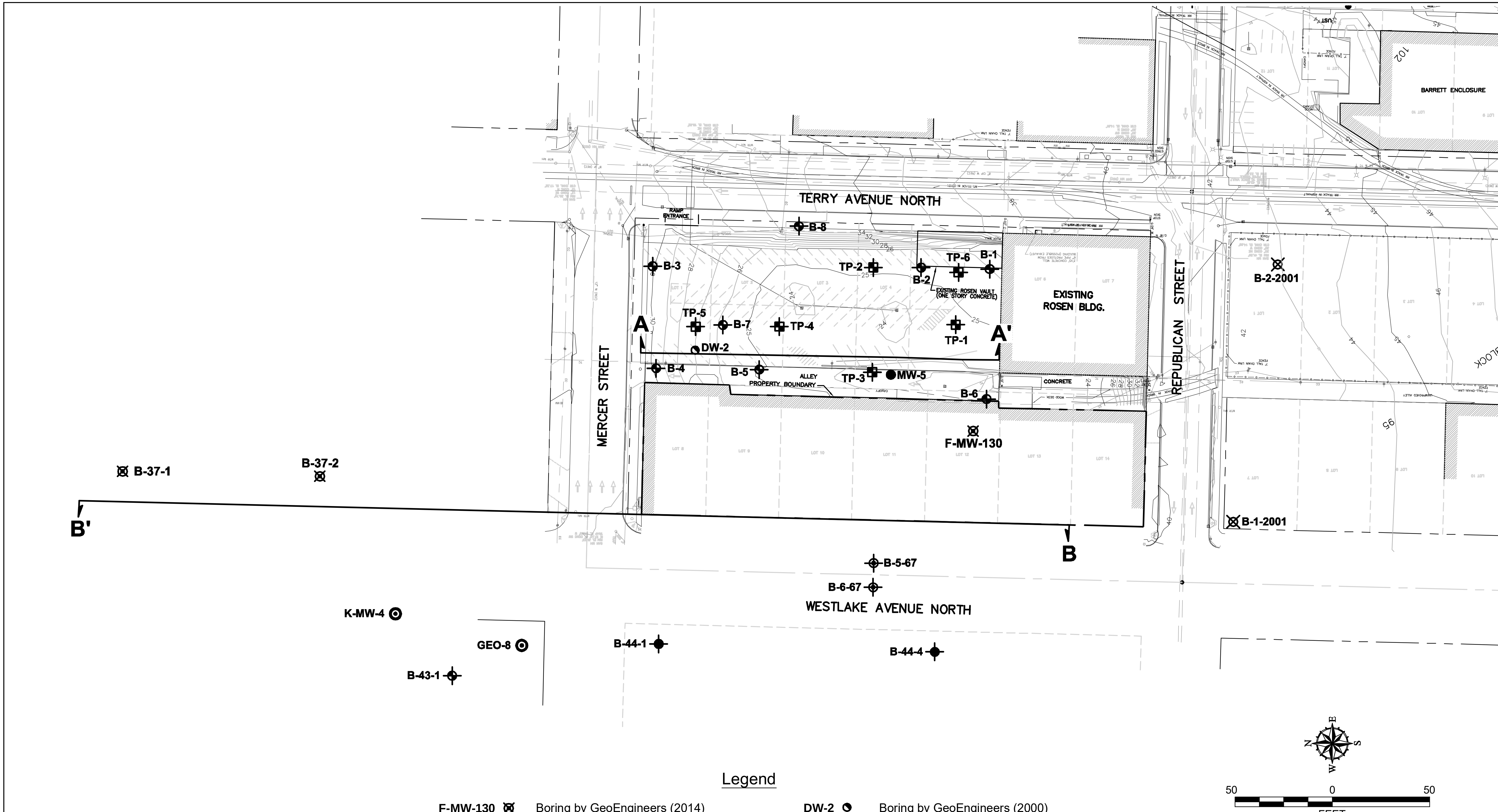
Figure 1

Map Revised: 4/23/2014 EL
Path: \\red\projects\7\7087028\GIS\708702800_F1_VicinityMap.mxd
Office: Redmond



Legend

F-MW-130	Boring by GeoEngineers (2014)	DW-2	Boring by GeoEngineers (2000)
B-1	Boring by GeoEngineers (2012)	TP-4	Test Pit by GeoEngineers (1999)
B-44-1	Boring by GeoEngineers (2011)	B-1	Boring by GeoEngineers (1998)
MW-5	Boring by GeoEngineers (2003)	B-5-67	Boring by Seattle Engineering Department (1967)
K-MW-4	Boring by Kane Environmental (2003)	A A	Cross-Section Location
B-1-01	Boring by GeoEngineers (2001)		

Notes

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Drawing entitled "Boundary & Topographic Survey, South Lake Union" by Bush, Roed & Hitchings, Inc., dated 12/04/98.

Site Plan

Block 38 - South Lake Union Development
Seattle, Washington

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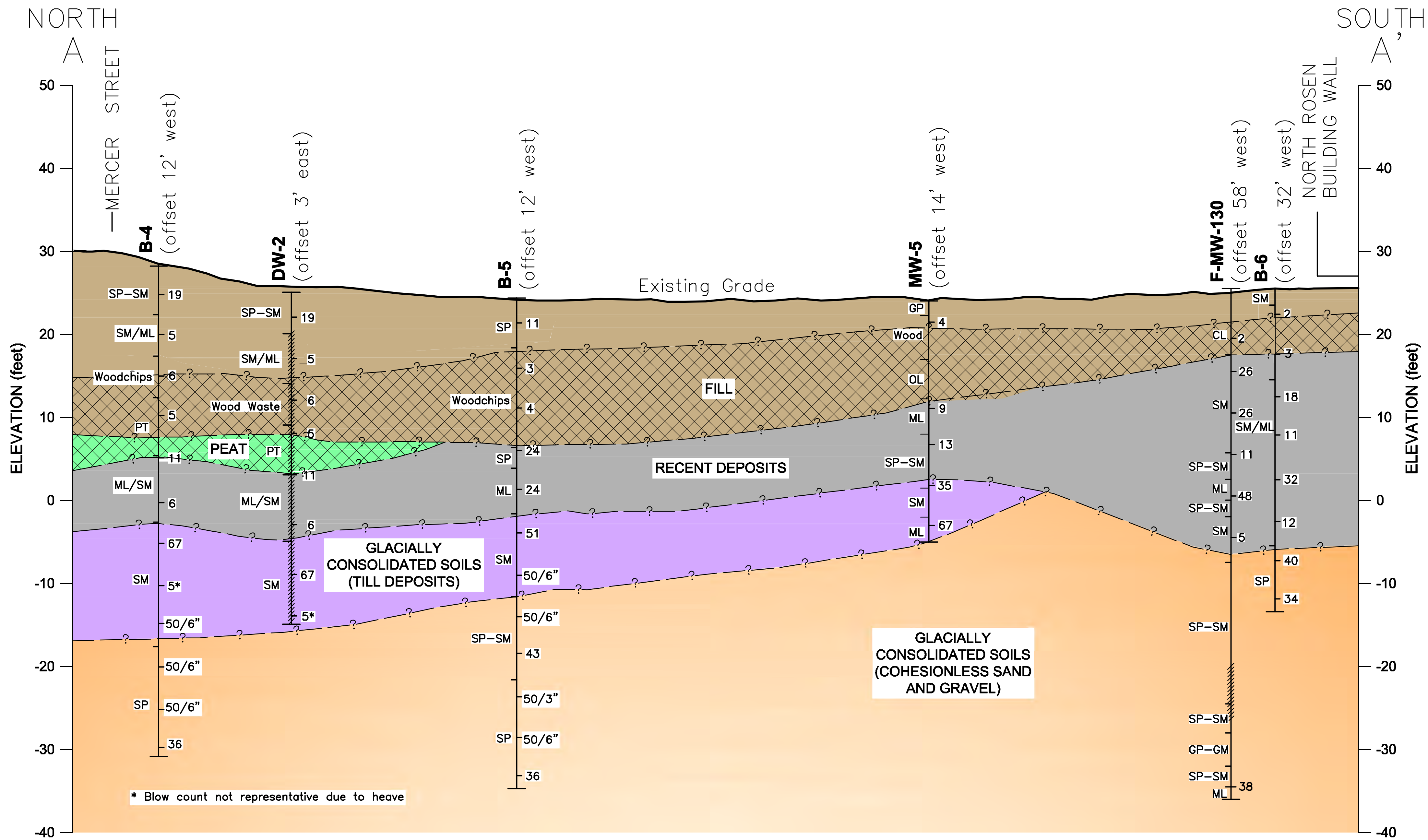
Figure 2



Notes

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. Refer to Figure 2 for location of Cross Section.
3. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.
4. Groundwater interpreted at time of drilling.

EXPLANATION:

B-3 — BORING NUMBER AND APPROXIMATE LOCATION
7 — BLOW COUNT
SM — SOIL TYPE AT SAMPLE LOCATION
WELL SCREEN INTERVAL
? — APPROXIMATE SOIL CONTACT (SEE NOTE 1)

ZONE OF WOODY DEBRIS/ORGANIC SOILS
FILL
RECENT DEPOSITS (INTERBEDDED SAND, SILT AND CLAY)
GLACIALLY CONSOLIDATED SOILS (TILL DEPOSITS)
GLACIALLY CONSOLIDATED SOILS (COHESIONLESS SAND AND GRAVEL)
PEAT

30 0 30
Horizontal Scale in Feet
15 0 15
Vertical Scale in Feet
Vertical Exaggeration: 2X

Cross-Section A-A'

Block 38 - South Lake Union Development
Seattle, Washington

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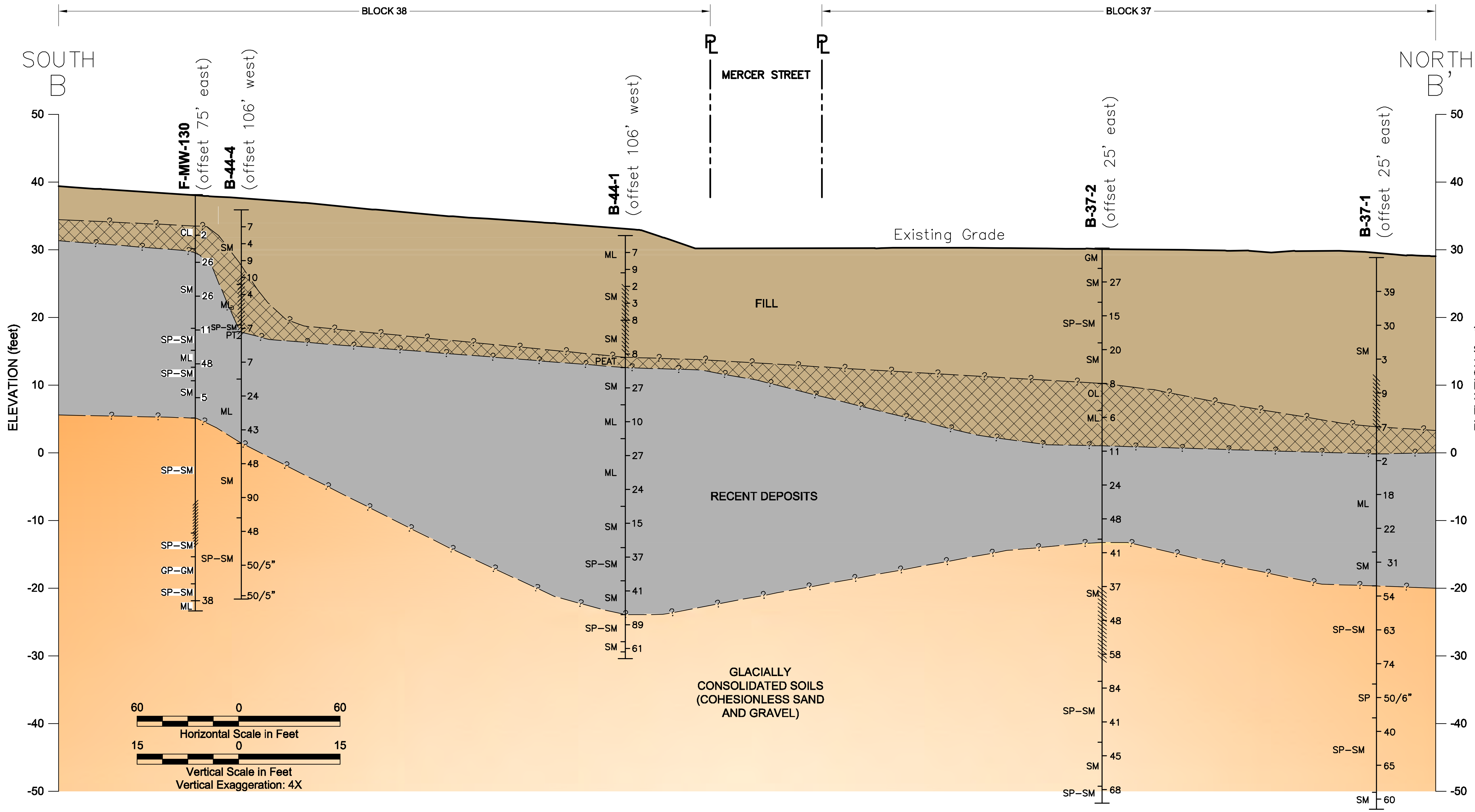
Figure 3

W:\REDMOND\PROJECTS\7\7087028\00\CAD\7087028-00 SITE PLAN AND CROSS-SECTIONS.DWG\TAB:CROSS-SECTION MODIFIED BY TMICHAUD ON AUG 15, 2014 - 11:30



Notes

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2. Refer to Figure 2 for location of Cross Section.
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SM — SOIL TYPE AT SAMPLE LOCATION
WELL SCREEN INTERVAL
?— APPROXIMATE SOIL CONTACT (SEE NOTE 1)

ZONE OF WOODY DEBRIS/ORGANIC SOILS
FILL
RECENT DEPOSITS (INTERBEDDED SAND, SILT AND CLAY)
GLACIALLY CONSOLIDATED SOILS (COHESIONLESS SAND AND GRAVEL)

Cross-Section B-B'

Block 38 - South Lake Union Development
Seattle, Washington

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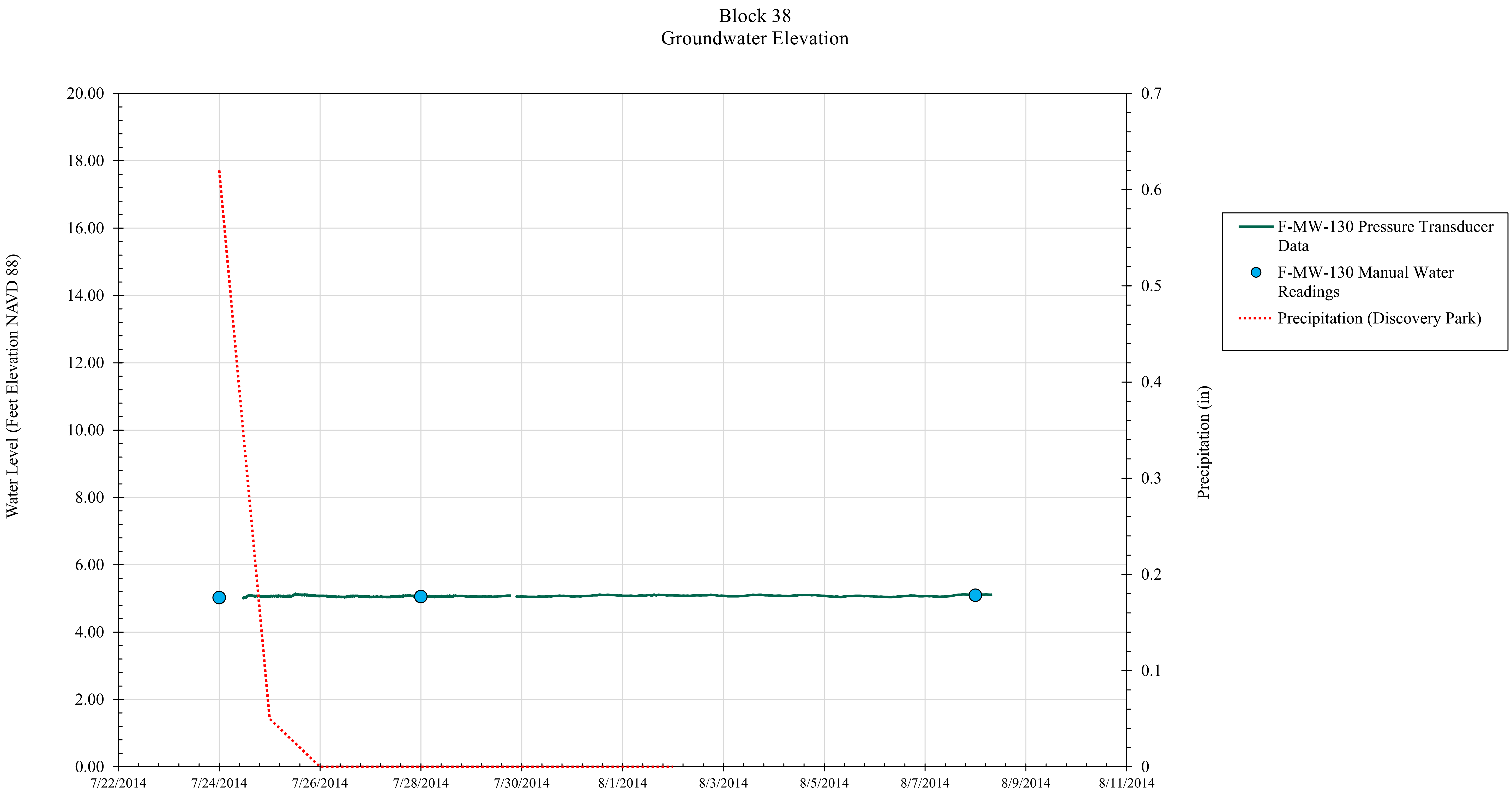
Figure 4

W:\REDMOND\PROJECTS\7\7087028\00\CAD\7087028-00 SITE PLAN AND CROSS-SECTIONS.DWG\TAB:CROSS-SECTION BB MODIFIED BY TMICHAUD ON AUG 15, 2014 - 11:32



Notes:

1. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

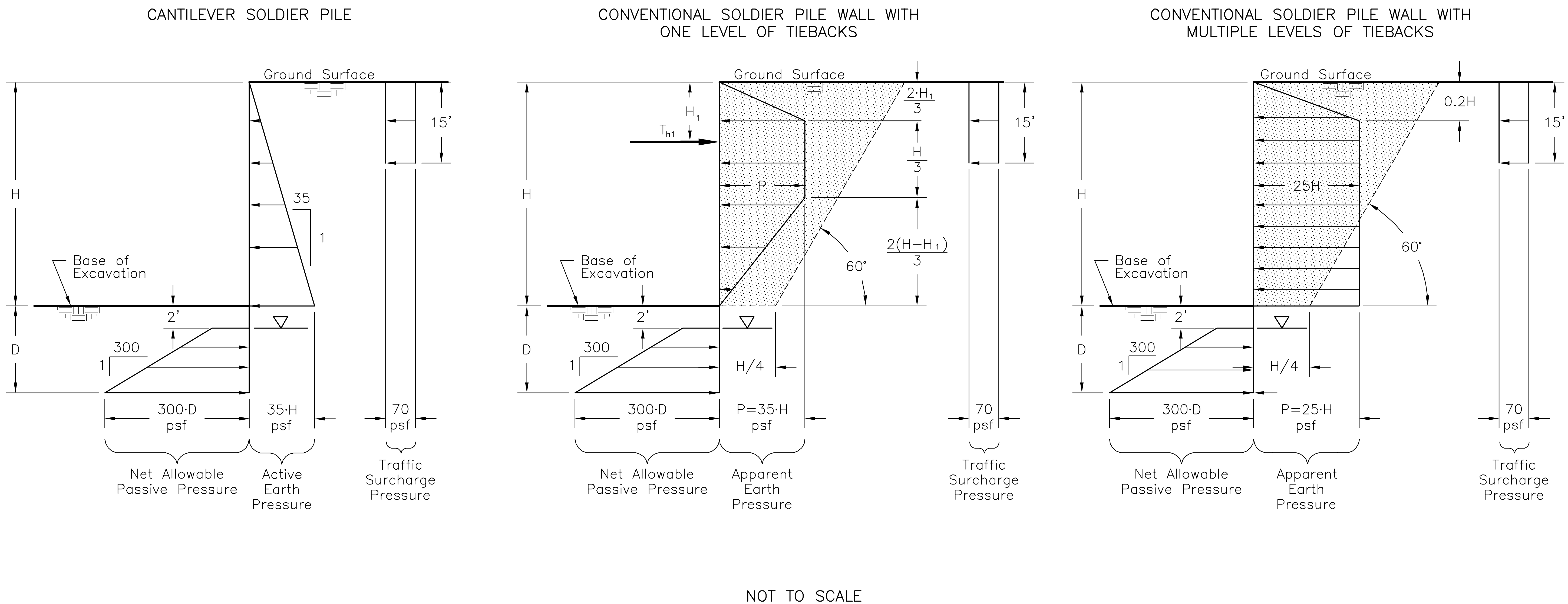
RED:S P:\7\7087027\00\finals\Figure 5 – GW Elev Data.ppt DPC 07/31/14

Groundwater Elevation Data

Block 38
Seattle, Washington

GeoEngineers

Figure 5



Legend

No Load Zone

H = Height of Excavation, Feet

D = Soldier Pile Embedment Depth, Feet

H_1 = Distance From Ground Surface to Uppermost Tieback, Feet

T_{h1} = Horizontal Load in Uppermost Ground Anchor

P = Maximum Apparent Earth Pressure Pounds per Square Foot

▽ Design Groundwater Elevation for Drained Walls/ Passive Resistance Design

Notes:
1. Apparent earth pressure and surcharge act over the pile spacing above the base of the excavation.
2. Passive earth pressure acts over 2.5 times the concreted diameter of the soldier pile, or the pile spacing, whichever is less.
3. Passive pressure includes a factor of safety of 1.5
4. Additional surcharge from footings of adjacent buildings should be included in accordance with recommendations provided on Figure 10.
5. This pressure diagram is appropriate for temporary soldier pile and tieback walls. If additional surcharge loading (such as from soil stockpiles, excavators, dumptrucks, cranes, or concrete trucks) is anticipated, GeoEngineers should be consulted to provide revised surcharge pressures.

Earth Pressure Diagrams - Permeable Walls
Temporary Soldier Pile & Tieback Wall

Block 38 - South Lake Union Development
Seattle, Washington

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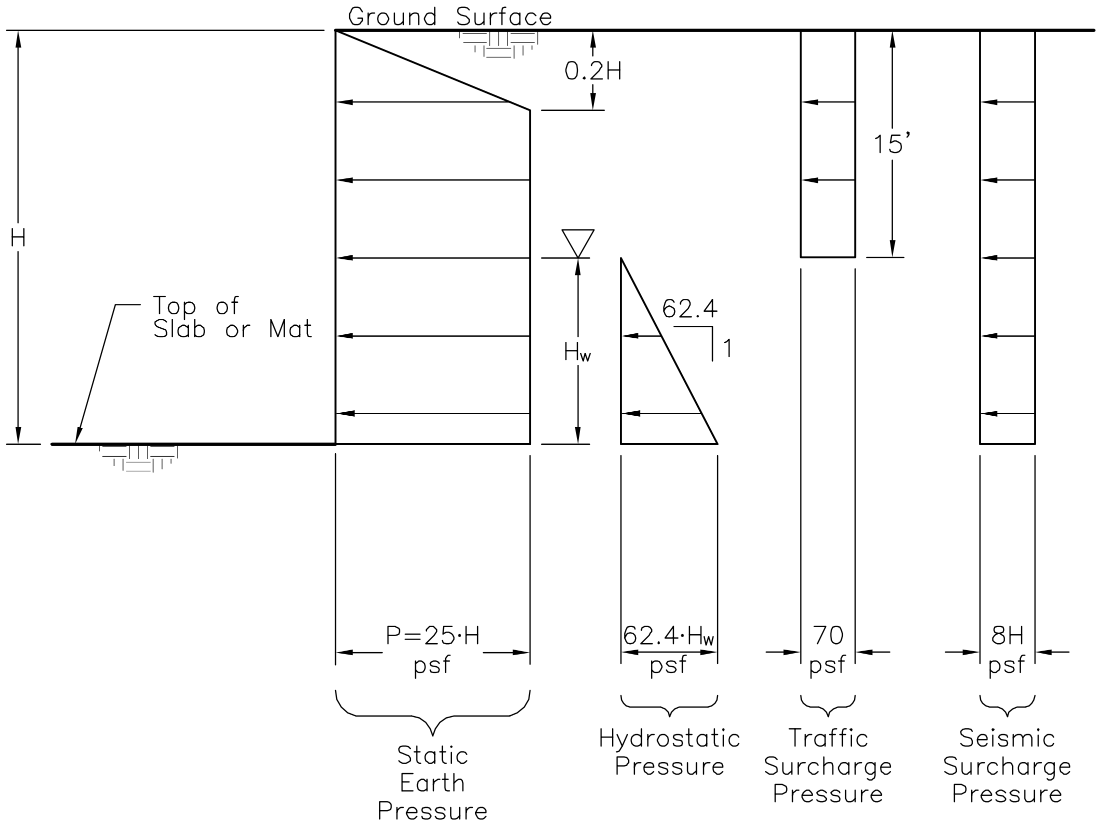
Figure 6

W:\REDMOND\PROJECTS\7\7087028\00\CAD\7087028-00 EPDS.DWG\TAB:FIGURE 6 MODIFIED BY TMICHAUD ON AUG 15, 2014 - 9:19

W:\REDMOND\PROJECTS\7\7087028\00\CAD\7087028-00 EPDS.DWG\TAB:FIGURE 7 MODIFIED BY TMICHAUD ON AUG 15, 2014 - 9:16

PERMANENT BASEMENT WALL DESIGN PRESSURES



NOT TO SCALE

Notes

1. This pressure diagram is appropriate for permanent basement walls. If additional surcharge loading (such as from soil stockpiles, excavators, dumptrucks, cranes, or concrete trucks) is anticipated, GeoEngineers should be consulted to provide revised surcharge pressures.
2. The static earth pressure does not include a factor of safety and represents the actual anticipated static earth pressure.

Legend

H	=	Height of Basement Wall, Feet
D	=	Foundation Embedment Depth, Feet
P	=	Maximum Static Earth Pressure Pounds per Square Foot
H_w	=	Design Height of Excavation Located Below Design Ground Water Table, Feet
▽	=	Design Ground Water Table at Elevation 21 Feet

Earth Pressure Diagram
Permanent Below Grade Walls

Block 38 - South Lake Union Development
Seattle, Washington

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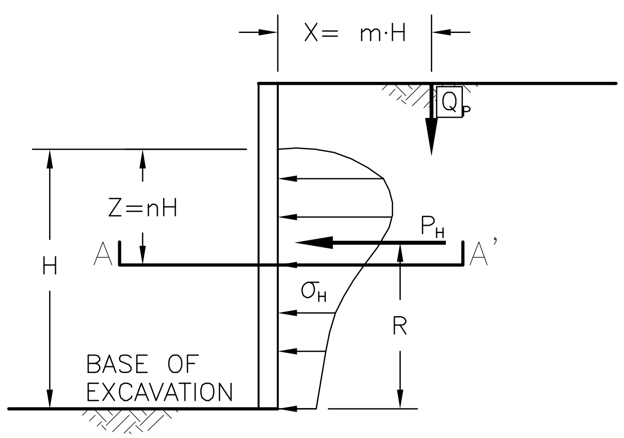
Figure 7

LATERAL EARTH PRESSURE FROM POINT LOAD, Q_P (SPREAD FOOTING)



FOR $m \leq 0.4$

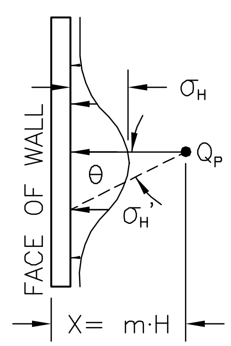
$$\sigma_H = \frac{0.28 Q_P n^2}{H^2 (0.16 + n^2)^3}$$

FOR $m > 0.4$

$$\sigma_H = \frac{1.77 Q_P m^2 n^2}{H^2 (m^2 + n^2)^3}$$

$$\sigma_H' = \sigma_H \cos^2 (1.1\theta)$$

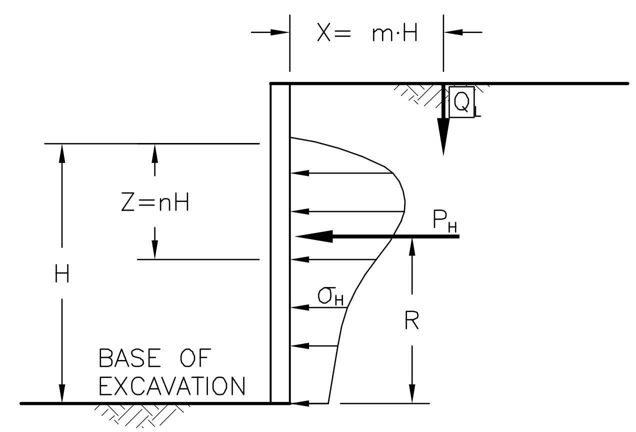
m	$P_H\left(\frac{H}{Q_P}\right)$	R
0.2	0.78	0.59H
0.4	0.78	0.59H
0.6	0.45	0.48H



SECTION A–A'

Pressures from Point Load Q_P

LATERAL EARTH PRESSURE FROM LINE LOAD, Q_L (CONTINUOUS WALL FOOTING)



FOR $m \leq 0.4$

$$\sigma_H = \frac{0.2 n \cdot Q_L}{H (0.16 + n^2)^2}$$

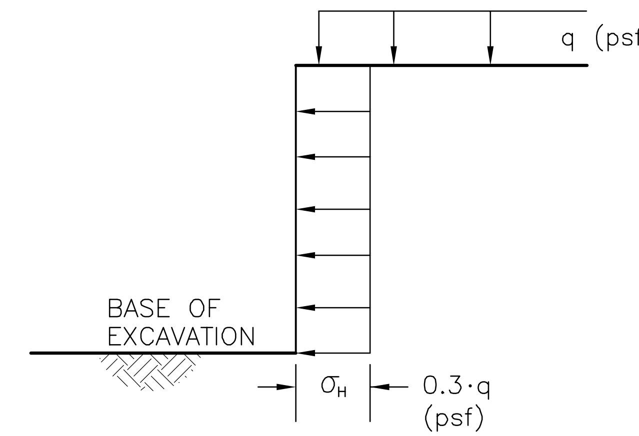
FOR $m > 0.4$

$$\sigma_H = \frac{1.28 m^2 n \cdot Q_L}{H (m^2 + n^2)^2}$$

$$\text{RESULTANT } P_H = \frac{0.64 Q_L}{(m^2 + 1)}$$

m	R
0.1	0.60H
0.3	0.60H
0.5	0.56H
0.7	0.48H

UNIFORM SURCHARGES, q (FLOOR LOADS, LARGE FOUNDATION ELEMENTS OR TRAFFIC LOADS)



σ_H = LATERAL SURCHARGE PRESSURE FROM UNIFORM SURCHARGE

Definitions:

- Q_P = Point load in pounds
- Q_L = Line load in pounds/foot
- H = Excavation height below footing, feet
- σ_H = Lateral earth pressure from surcharge, psf
- q = Surcharge pressure in psf
- θ = Radians
- σ_H' = Distribution of σ_H in plan view
- P_H = Resultant lateral force acting on wall, pounds
- R = Distance from base of excavation to resultant lateral force, feet

Notes:

1. Procedures for estimating surcharge pressures shown above are based on Manual 7.02 Naval Facilities Engineering Command, September 1986 (NAVFAC DM 7.02).
2. Lateral earth pressures from surcharge should be added to earth pressures presented on Figures 6, and 7.
3. See report text for where surcharge pressures are appropriate.

Recommended Surcharge Pressure

Block 38- South Lake Union Development
Seattle, Washington

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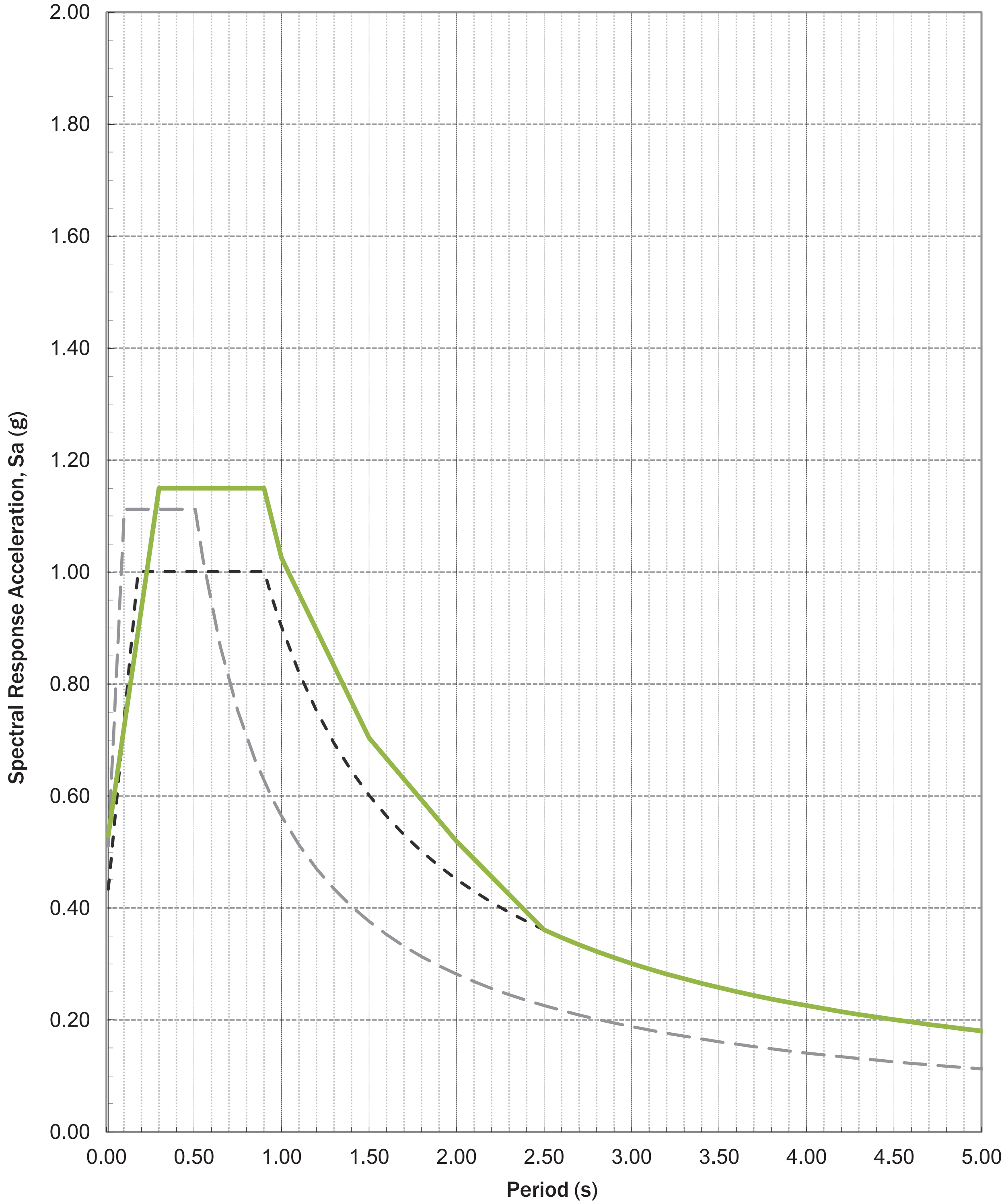
Figure 8



0.8 x Site Class D Generalized Response Spectrum (ASCE 7-05)

0.8 x Site Class E Generalized Response Spectrum (ASCE 7-05)

Recommended Site Specific MCE Response Spectrum

Recommended Site Specific MCE Response Spectrum (5% Damped)

Block 43 - South Lake Union Development
Seattle, Washington

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Figure 9

APPENDICES

APPENDIX A
Field Explorations

APPENDIX A
FIELD EXPLORATIONS AND LABORATORY TESTING

Subsurface conditions were explored at the site by logging one boring (F-MW-130). The drilling was coordinated and contracted by Farrallon Consulting. The Borings were completed to a depth of 61.5 feet below the existing ground surface. The drilling was performed by Cascade Drilling on July 21, 2014.

The locations and elevation of the exploration were surveyed by the general contractor, GLY Construction. The approximate exploration locations are shown on the Site Plan, Figure 2.

Borings

Boring F-MW-130 was completed using sonic drilling equipment. The boring was continuously monitored by a geotechnical engineer or geologist from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each exploration.

The soils encountered in the boring was generally sampled at 5-foot vertical intervals with a 2-inch outside diameter split-barrel standard penetration test (SPT) sampler. The disturbed samples were obtained by driving the sampler 18 inches into the soil with a 140-pound auto-hammer free-falling 30 inches. The number of blows required for each 6 inches of penetration was recorded. The blow count ("N-value") of the soil was calculated as the number of blows required for the final 12 inches of penetration. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. Where very dense soil conditions precluded driving the full 18 inches, the penetration resistance for the partial penetration was entered on the logs. The blow counts are shown on the boring log at the respective sample depths.

Soils encountered in the boring were visually classified in general accordance with the classification system described in Figure A-1. A key to the boring log symbols is also presented in Figure A-1. The logs of the boring is presented in Figure A-2. The boring log is based on our interpretation of the field and laboratory data and indicate the various types of soils and groundwater conditions encountered. The log also indicates the depths at which these soils or their characteristics change, although the change may actually be gradual. If the change occurred between samples, it was interpreted. The densities noted on the boring log are based on the blow count data obtained in the borings and judgment based on the conditions encountered.

Observations of groundwater conditions were made during drilling. The groundwater conditions encountered during drilling are presented on the boring logs. Groundwater conditions observed during drilling represent a short-term condition and may or may not be representative of the long-term groundwater conditions at the site. Groundwater conditions observed during drilling should be considered approximate.

Groundwater Measurements

Groundwater levels were measured on July 24, July 28, and August 8, 2014, in the monitoring well installed at the site (F-MW-130). Additionally, groundwater readings were taken continuously between July 24, 2014 to August 8, 2014 in the boring by means of an automated datalogger (refer to the following table for groundwater information).

Well ID	Ground Surface Elevation (feet)	Top of Casing Elevation (feet)	Bottom of Casing Elevation (feet)	Well Screen Elevation (feet)	Measured Groundwater Elevation (7/24/14 and 8/8/14) (feet)	Range in Groundwater Elevations (7/24/14 to 8/8/14) (feet)
F-MW-130	21.95	21.58	-33.05	-23.05 to -33.05	5.02/5.09	5.0 to 5.14

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	TS	Topsoil/ Forest Duff/Sod

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata or geologic units

Approximate location of soil strata change within a geologic soil unit

Material Description Contact

Distinct contact between soil strata or geologic units

Approximate location of soil strata change within a geologic soil unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

Laboratory / Field Tests

%F	**Percent fines**
AL	**Atterberg limits**
CA	**Chemical analysis**
CP	**Laboratory compaction test**
CS	**Consolidation test**
DS	**Direct shear**
HA	**Hydrometer analysis**
MC	**Moisture content**
MD	**Moisture content and dry density**
OC	**Organic content**
PM	**Permeability or hydraulic conductivity**
PI	**Plasticity index**
PP	**Pocket penetrometer**
PPM	**Parts per million**
SA	**Sieve analysis**
TX	**Triaxial compression**
UC	**Unconfined compression**
VS	**Vane shear**

Sheen Classification

NS	**No Visible Sheen**
SS	**Slight Sheen**
MS	**Moderate Sheen**
HS	**Heavy Sheen**
NT	**Not Tested**

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

KEY TO EXPLORATION LOGS

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FIGURE A-1

Drilled	Start: 7/21/2014	End:	Total Depth (ft)	61.5	Logged By: DTM / Checked By: DPC	Driller: Cascade Drilling	Drilling Method: Sonic

Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop	Drilling Equipment	Boart Longyear V576 Spider
Surface Elevation (ft) / Vertical Datum	21.95 / NAVD88	Top of Casing Elevation (ft)	21.58
Easting (X) / Northing (Y)	1269395.886 / 231129.143	Horizontal Datum	NAD83

A 2 (in) well was installed on 7/22/2014 to a depth of 55 (ft).

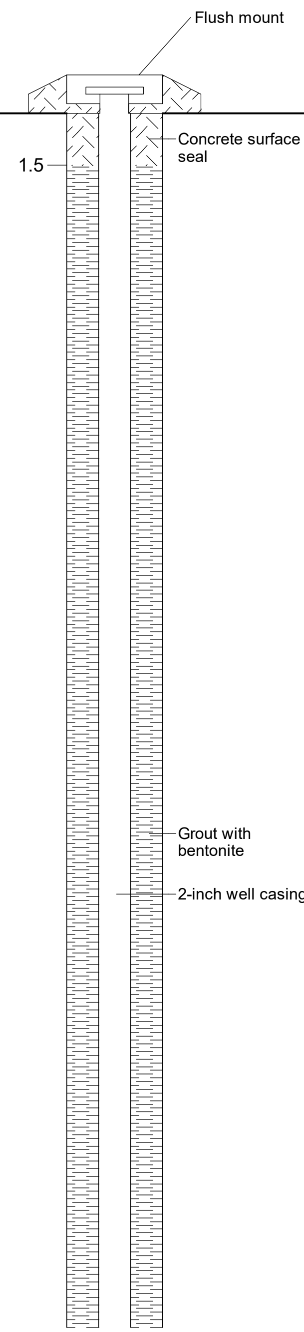
Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
8/8/2014	16.5	5.1

Notes: Air knife and vactor to 5.7 feet

FIELD DATA

Elevation (feet)	Depth (feet)	Interval / Recovered (in)	Blows/foot	Collected Sample / Sample Name / Testing	Water Level	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)
	0					AC	Approximately 2 inches asphalt concrete pavement		
20						GP-GM	Approximately 6 inches base course		
						CL	Dark brown clay with wood waste (soft, moist) (fill) (layered)		
	5	12	2	1					
15						SM	Gray silty fine to medium sand interbeds (medium dense, moist) (recent deposits)		
	10	15	26	2					
10									
	15	16	26	3			With interbedded silt layers		
5					▼				
	20	16	11	4		SP-SM	Gray fine to medium sand with silt (medium dense, wet) (moderate petroleum odor)		
0						ML	Gray silt with sand (very stiff, moist)		
	25	15	48	5 %F				21	74
-5						SP-SM	Gray silty fine sand (dense, moist to wet)		
						SM	Grayish-brown silty fine to medium sand (loose, wet)		
	30	18	5	6					
-10						SP-SM	Grayish-brown fine to medium sand with silt (medium dense to dense, moist to wet)		
	35								

WELL LOG



Note: See Figure A-1 for explanation of symbols.

Redmond: Date:8/15/14 Path:\\RED\PROJECTS\7\7087028\00\GINT\708702800.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_GEOTECH_WELL

Log of Boring F-MW-130

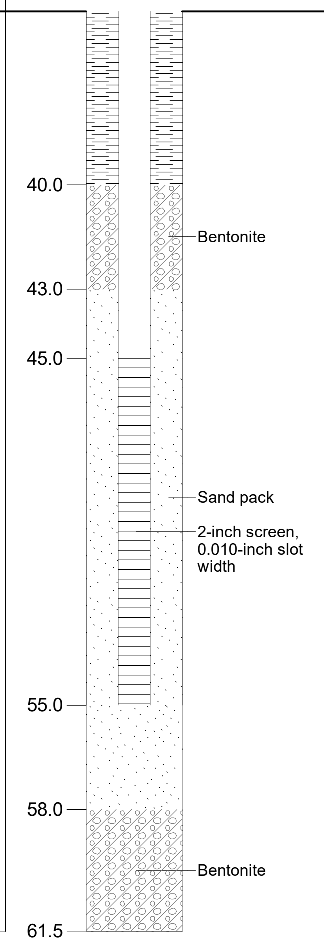
GEOENGINEERS

Project: Block 38 - South Lake Union Development
Project Location: Seattle, Washington
Project Number: 7087-028-00

Figure A-2
Sheet 1 of 2

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)
	35					7				(glacially consolidated soil) Heave; no SPT sample at 35 feet		
-15												
	40					8 / %F				Significant heave	20	9
-20												
	45					9 / %F					18	10
-25												
	50					10 / %F			SP-SM	Gray fine to coarse sand with silt, gravel and cobbles (very dense, moist to wet)	16	10
-30												
									GP-GM	Gray fine to coarse gravel with silt and sand (very dense, moist to wet)		
	55					11 / SA					7	9
-35												
									SP-SM	Gray fine to coarse sand with silt and gravel (very dense, moist to wet)		
						12 / %F					34	59
	60			38		13			ML	Brown silt with fine to coarse sand and occasional gravel (hard, moist to wet)		

WELL LOG



Note: See Figure A-1 for explanation of symbols.

Redmond: Date:8/15/14 Path:\\RED\PROJECTS\7\7087028\00\GINT\708702800.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_GEOTECH_WELL

Log of Boring F-MW-130 (continued)

GEOENGINEERS

Project: Block 38 - South Lake Union Development
Project Location: Seattle, Washington
Project Number: 7087-028-00

Figure A-2
Sheet 2 of 2

APPENDIX B
Laboratory Testing

APPENDIX B
LABORATORY TESTING

General

Soil samples obtained from the explorations were transported to GeoEngineers' laboratory and evaluated to confirm or modify field classifications, as well as to evaluate engineering properties of the soil samples. Representative samples were selected for laboratory testing to determine the moisture content, percent fines (material passing the U.S. No. 200 sieve), and grain size distributions (sieve analyses). The tests were performed in general accordance with test methods of ASTM International (ASTM) or other applicable procedures.

The sieve analysis test results are presented in Figure B-1. The results of the moisture content and percent fines determinations are presented at the respective sample depths on the exploration logs in Appendix A.

Moisture Content

Moisture content tests were completed in general accordance with ASTM D 2216 for representative samples obtained from the explorations. The results of these tests are presented on the exploration logs in Appendix A at the depths at which the samples were obtained.

Percent Passing U.S. No. 200 Sieve (%F)

Selected samples were "washed" through the U.S. No. 200 mesh sieve to estimate the relative percentages of coarse- and fine-grained particles in the soil. The percent passing value represents the percentage by weight of the sample finer than the U.S. No. 200 sieve. These tests were conducted to verify field descriptions and to estimate the fines content for analysis purposes. The tests were conducted in accordance with ASTM D 1140, and the results are shown on the exploration logs in Appendix A at the respective sample depths.

Sieve Analyses

Sieve analyses were performed on selected samples in general accordance with ASTM D 422. The wet sieve analysis method was used to determine the percentage of soil greater than the U.S. No. 200 mesh sieve. The results of the sieve analyses were plotted, and were classified in general accordance with the Unified Soil Classification System and are presented in Figure B-1.

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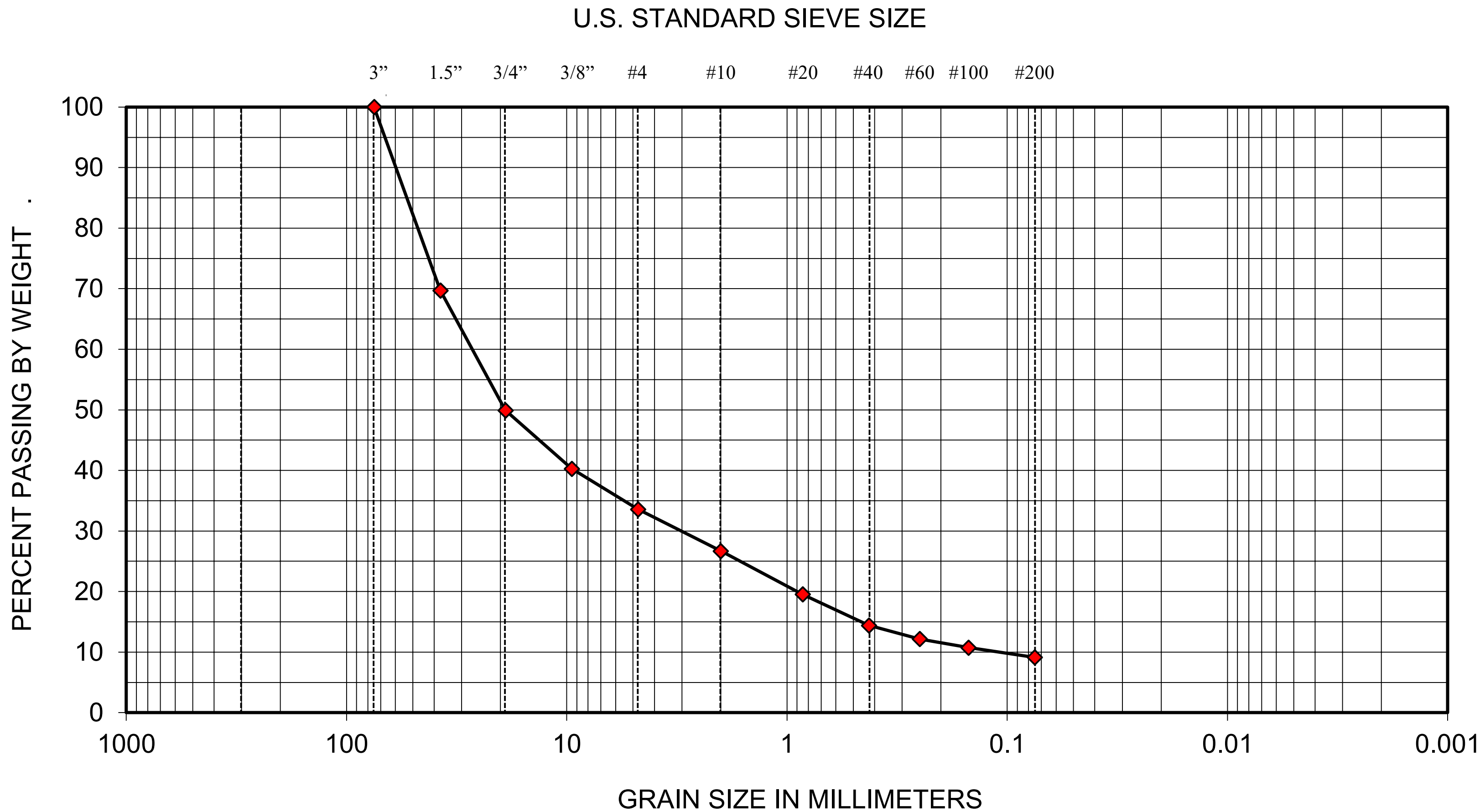
SIEVE ANALYSIS RESULTS

FIGURE B-1



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

SYMBOL	EXPLORATION NUMBER	DEPTH (ft)	SOIL CLASSIFICATION
◆	F-MW-130	55	Poorly graded gravel with silt and sand (GP-GM)

APPENDIX C
Boring Logs from Previous Studies

APPENDIX C
BORING LOGS FROM PREVIOUS STUDIES

Included in this section are logs from previous studies completed in the immediate vicinity of the project site.

- The logs of 10 borings and six test pits (B-1 through B-8, DW-2, MW-5, and TP-1 through TP-6) completed by GeoEngineers for the lot located to the east of the proposed development (on the east side of the alley).
- The logs of two borings (B-44-1 and B44-4) completed by GeoEngineers for the block located to the west of the Block 38 project (on the west side of Westlake Avenue North).
- The logs of two borings (B-1-01 and B-2-01) completed by GeoEngineers of the block located to the south of the Block 38 project (on the south side of Republican Street).
- The logs of three borings (KMW-4, GEO-8, and B-43-1) completed by Kane Environmental and GeoEngineers for Block 43, located to the northwest of the Block 38 project (on the north side of Mercer Street).
- The logs of two borings (B-37-1 and B-37-2) completed by GeoEngineers for Block 37, located to the north of the Block 38 project (on the north side of Mercer Street).
- The log of two borings (B-5-67 and B-6-67) completed by Seattle Engineering Department located west of the site along Westlake Avenue North.

BORING B-1

TEST DATA

DESCRIPTION

Surface Elevation (ft.): 26.0

Lab Tests	Moisture Content (%)	Dry Density (pcf)	Blow Count	Group Symbol	Description
				AC	Asphalt concrete pavement, 2 inches thick
				ML	Brown and gray sandy silt (soft to medium stiff, moist) (fill)
MD	58	49	5		Wood chips (soft, moist) (fill)
SM	269		4		
				PT	Brown peat (soft, moist to wet)
MD,AL	47	79	8	ML	Gray silt (medium stiff, wet)
			36	SP	Gray fine to medium sand (medium dense to dense, wet)
MD	16	112	12		
			24		
MD	21	108	53		grades to very dense
			66		

DEPTH IN FEET: 0–40 | DEPTH IN METERS: 0–12

Note: See Figure A-2 for explanation of symbols

DCO:ja 1/15/99

7131-001-00a

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LOG OF BORING

FIGURE A-3

TEST DATA

BORING B-1
(Continued)

Lab Tests	Moisture Content (%)	Dry Density (pcf)	Blow Count	Samples	Group Symbol	DESCRIPTION
					SP	Brown fine to medium sand with gravel (medium dense, wet)
MD	8	133	25	■		
					GW	Brown fine to coarse gravel with sand (dense, wet)
			50/4"	■		
					GM	Brownish gray silty fine to coarse gravel with sand (dense, wet)
MD	22	101	50/2"	■	SP	Gray fine to medium sand (very dense, wet)
					GM	Brownish gray silty fine to coarse gravel with sand (very dense, wet)
			50/3"	■		

Boring completed at 59.0 feet on 12/14/98
Ground water encountered at 13.0 and 22.0 feet during drilling

DEPTH IN FEET: 40, 45, 50, 55, 60, 65, 70, 75, 80

DEPTH IN METERS: 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Note: See Figure A-2 for explanation of symbols

7131-001-00a DCO:ja 1/15/99

GeoEngineers

LOG OF BORING

FIGURE A-3

TEST DATA

BORING B-2

DESCRIPTION

Surface Elevation (ft.): 26.0

Depth (ft)	Lab Tests	Moisture Content (%)	Dry Density (pcf)	Blow Count	Samples	Group Symbol	Description
0						AC	Asphalt concrete pavement, 2 inches thick
						SM	Gray silty fine to medium sand with organic matter and brick fragments (loose, moist) (fill)
	MD	24	97	10	■		
						PT	Dark brown peat (very soft, moist)
	CS,TX	459	12	2	■		
	MD	19	95	3	■	ML	Gray sandy silt with a trace of organic matter (soft to medium stiff, moist)
	DS			7	■		
						SP	Brownish gray fine to medium sand (dense, wet)
	MD,DS,GS			37	■		
				37	■		
				31	■		
				61	■		

Boring completed at 39.0 feet on 12/14/98

Ground water encountered at 21.0 feet during drilling

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40

DEPTH IN METERS: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Note: See Figure A-2 for explanation of symbols

7131-001-00a DCO:ja 2/9/99

GeoEngineers

LOG OF BORING

FIGURE A-4

TEST DATA

BORING B-3

Lab Tests	Moisture Content (%)	Dry Density (pcf)	Blow Count
MD	2	120	13
DS			4
MD			9
			9
MD	33	86	5
MD,TX	16		40
			53
			41

DESCRIPTION

Surface Elevation (ft.): 34.0

Group Symbol	Description
AC	Asphalt concrete pavement, 2 inches thick
SP-SM	Brown fine to medium sand with silt (medium dense, moist) (fill)
WOOD	Dark brown wood chips (medium stiff, moist to wet)
ML	Gray sandy silt with wood fragments (medium stiff, wet)
SP-SM	Gray fine sand with silt (dense, wet)

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40

DEPTH IN METERS: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Note: See Figure A-2 for explanation of symbols

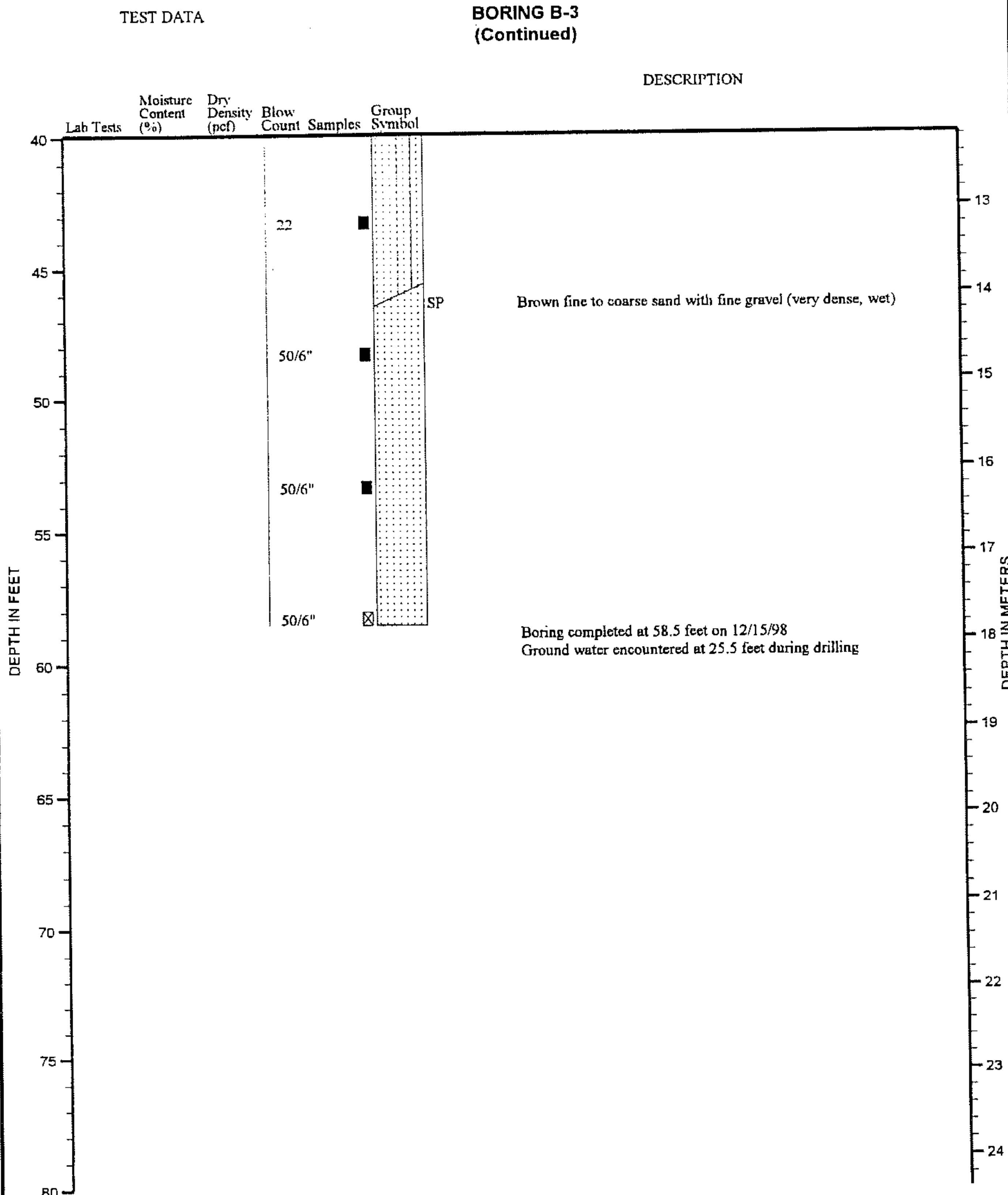
7131-001-00a DCO:ja 2/25/99

GeoEngineers

LOG OF BORING

FIGURE A-5

BORING B-3
(Continued)



Note: See Figure A-2 for explanation of symbols

DCO:ja 2/9/99

7131-001-00a

GeoEngineers

LOG OF BORING

FIGURE A-5

BORING B-4

TEST DATA

DESCRIPTION

Surface Elevation (ft.): 29.5

Lab Tests	Moisture Content (%)	Dry Density (pcf)	Blow Count	Group Symbol	Description
				AC	Two inches asphalt concrete
			19	SP-SM	Gray brown fine to medium sand with fine silt and gravel (medium dense, moist) (fill)
				SM/ML	Gray silty fine sand and fine sandy silt (loose to medium stiff, moist) (fill)
MD	12	102	5		grades to loose
			6	WOOD	Dark brown wood chips (soft, moist)
MD	349	15	5	PT	Dark brown peat (soft, moist)
			11	ML/SM	Gray sandy silt with layers of gray silty fine sand (loose to medium stiff, wet)
MD	23	98	6		
MD,GS,DS	8	112	67	SM	Gray silty fine sand (very dense, wet)
			5*		

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40

DEPTH IN METERS: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Note: See Figure A-2 for explanation of symbols

DCO:ja 2/9/99

7131-001-00a

GeoEngineers

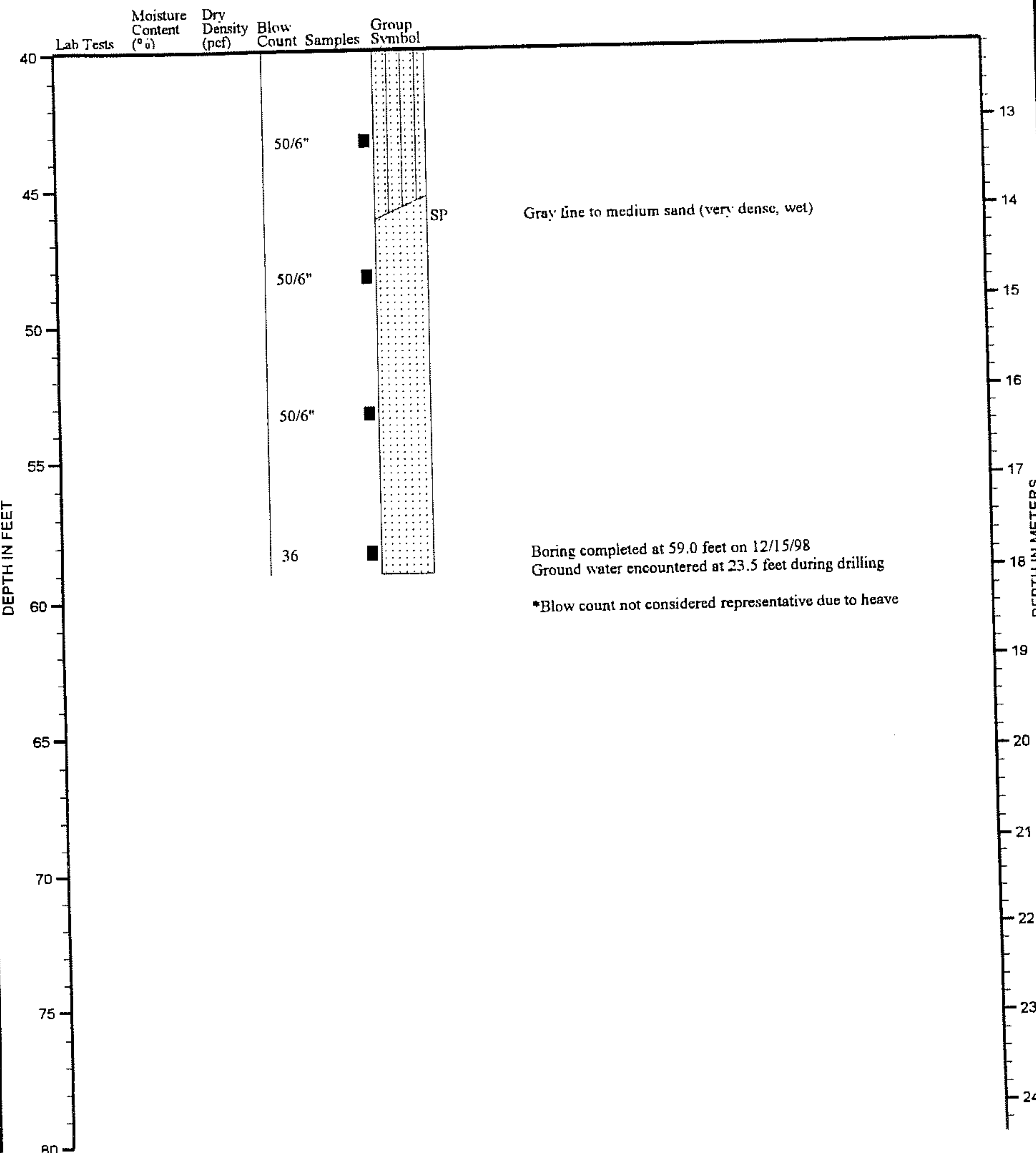
LOG OF BORING

FIGURE A-6

TEST DATA

BORING B-4
(Continued)

DESCRIPTION



Gray fine to medium sand (very dense, wet)

Boring completed at 59.0 feet on 12/15/98
Ground water encountered at 23.5 feet during drilling

*Blow count not considered representative due to heave

Note: See Figure A-2 for explanation of symbols

DCO:ja 2/9/99

7131-001-00a

GeoEngineers

LOG OF BORING

FIGURE A-6

BORING B-5

TEST DATA

Lab Tests	Moisture Content (%)	Dry Density (pcf)	Blow Count
MD	2	120	11
MD	320	15	3
			4
			24
MD	25	101	24
			51
			50/6"
			50/6"

DESCRIPTION

Surface Elevation (ft.): 25.0

Group Symbol	Description
AC	Asphalt concrete pavement, 2 inches thick
SP	Gray brown fine to medium sand with gravel (loose, moist) (fill)
WOOD	Dark brown wood chips (soft, moist to wet)
SP	Gray fine to medium sand (medium dense, wet)
ML	Gray sandy silt (very stiff, wet)
SM	Gray silty fine sand (very dense, wet)
SP-SM	Gray fine sand with silt (very dense, wet)

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40

DEPTH IN METERS: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Note: See Figure A-2 for explanation of symbols

7131-001-00a DCO:ja 2/9/99

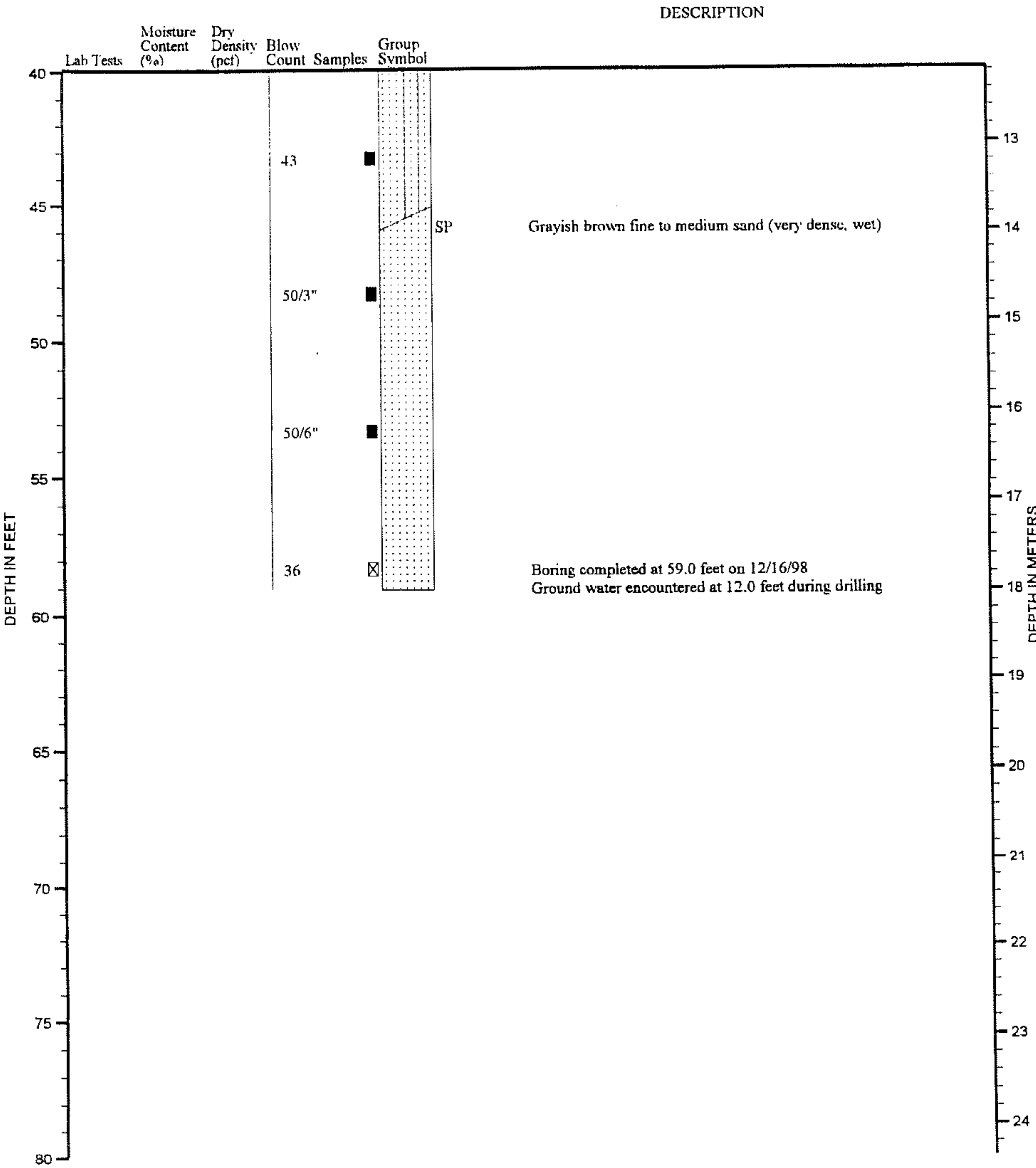
GeoEngineers

LOG OF BORING

FIGURE A-7

TEST DATA

BORING B-5
(Continued)



Note: See Figure A-2 for explanation of symbols

DCO:ja 2/9/99

7131-001-00a

GeoEngineers

LOG OF BORING

FIGURE A-7

BORING B-6

TEST DATA

DESCRIPTION

Surface Elevation (ft.): 23.5

Depth (ft)	Lab Tests	Moisture Content (%)	Dry Density (pcf)	Blow Count	Group Symbol	Description
0					CONCRETE	Approximately 8 inches of concrete
					SM	Gray and brown silty fine sand (loose, moist) (fill)
					WOOD	Dark brown wood chips (very soft, moist) (fill)
				2		
5					OL	Gray brown organic silt (soft, moist)
	MD,AL	173	28	3		
10					SM/ML	Gray silty fine sand and sandy silt (medium dense to stiff, moist to wet)
	MD	21	100	18		
15				11		
20				32		
25						
	SM	17		12		
30					SP	Brown gray fine to medium sand (dense, wet)
				40		
35				34		
40						

DEPTH IN FEET (0–40); DEPTH IN METERS (0–12)

Boring completed at 39.0 feet on 12/29/98

Ground water encountered at approximately 20.0 feet during drilling

Note: See Figure A-2 for explanation of symbols

7131-001-00a DCO:ja 2/9/99

GeoEngineers

LOG OF BORING

FIGURE A-8

TEST DATA

BORING B-7

DESCRIPTION

Surface Elevation (ft.): 26.0

Lab Tests	Moisture Content (%)	Dry Density (pcf)	Blow Count	Samples	Group Symbol	Description
					AC	Two inches asphalt concrete
					SP	Gray brown fine to medium sand with gravel (medium dense to dense, moist) (fill)
MD	2	130	52	■		
			10	■	WOOD	Dark brown wood chips (medium stiff, moist) (fill)
			9	■		
					PT-OL	Dark brown organic silt with peat (very soft, wet)
MD	227	21	1/18"	■		
CS			1/18"	■		
					ML	Gray silt (medium stiff, wet)
			7	■		
			15	■	SM	Gray silty fine sand (medium dense, wet)

Boring completed at 19.0 feet on 12/17/98

Ground water encountered at 12.2 feet during drilling

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40

DEPTH IN METERS: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Note: See Figure A-2 for explanation of symbols

DCO:ja 2/9/99

7131-001-00a

GeoEngineers

LOG OF BORING

FIGURE A-9

BORING B-8

TEST DATA

DESCRIPTION

Surface Elevation (ft.): 33.5

Lab Tests	Moisture Content (%)	Dry Density (pcf)	Blow Count	Group Symbol	Description
				SM	Light brownish gray silty fine to medium sand with gravel (medium dense, moist) (fill)
			15	SP	Brown fine to medium sand (medium dense, moist) (fill)
MD	12	98	4		grades to loose
				SM	Gray silty fine to medium sand with organic matter and occasional gravel (very loose, moist) (fill)
			2		
				WOOD	Dark brown wood chips (soft, wet)
SM	141		54*		
				SM	Gray silty fine sand with organic matter (loose, moist)
			6	ML	Gray silt with fine sand and occasional organic matter (medium stiff, moist)
				SP-SM	Gray fine to medium sand (medium dense, wet)
MD	17	114	27		
			59		grades to dense
				SP	Brown fine to medium sand (dense, wet)
			44		

DEPTH IN FEET (0–40); DEPTH IN METERS (0–12)

Note: See Figure A-2 for explanation of symbols

DCO:ja 2/9/99

7131-001-00a

TEST DATA

BORING B-8
(Continued)

DESCRIPTION

Lab Tests	Moisture Content (%)	Dry Density (pcf)	Blow Count	Samples	Group Symbol
			55	■	

Boring completed at 44.0 feet on 12/17/98
Ground water encountered at 27.0 feet during drilling

*Blow count not considered representative driving on wood

DEPTH IN FEET: 40, 45, 50, 55, 60, 65, 70, 75, 80

DEPTH IN METERS: 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Note: See Figure A-2 for explanation of symbols

DCOja 2/9/99

7131-001-00a

GeoEngineers

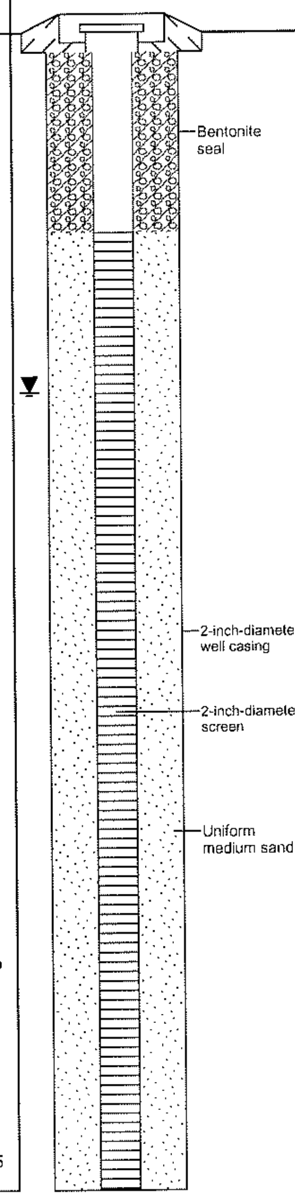
LOG OF BORING

FIGURE A-10

Date(s) Drilled	06/02/03	Logged By	MAM	Checked By	DCO
Drilling Contractor	Holt Drilling	Drilling Method		Sampling Methods	Dames & Moore
Total Boring Depth (ft)	29	Hammer Data	300 (lb) hammer/ 30 (in) drop	Drilling Equipment	
Well Depth (ft)	29	Top of Well Elevation (ft)		Groundwater Level (ft. bgs)	9
System/ Datum					

Depth feet	SAMPLES: Number	SAMPLES: Recovered (in)	SAMPLES: Blows/foot	Group Symbol	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, lbs/ft^3
0				AC	2.5 inches of asphalt concrete		
				GP	Brown fine gravel with sand and silt (loose, moist)		
				WD	Dark brown wood chips < 2 inches square with fragments of bark and occasional silty sand with gravel (very soft, moist)		
	1	12	4				
5	2	2	2			94	
				OL	Dark brown organic silt with wood fragments (very soft, wet)		
	3	4	2				
10							
				ML	Gray silt with fine sand with lenses of gray fine sand and occasional organics (medium stiff, wet)		
	4	9	9			21	104
15							
				SP-SM	Gray fine to medium sand with silt and occasional lenses of soft gray silt (medium dense, wet)		
	5	12	13			21	106
20							
				SM	Gray silty fine sand (dense, wet)		
	6	18	38			22	106
25							
				ML	Gray sandy silt (hard, wet)		
	7	18	67			17	115

WELL CONSTRUCTION



Note: See Figure A-2 for explanation of symbols

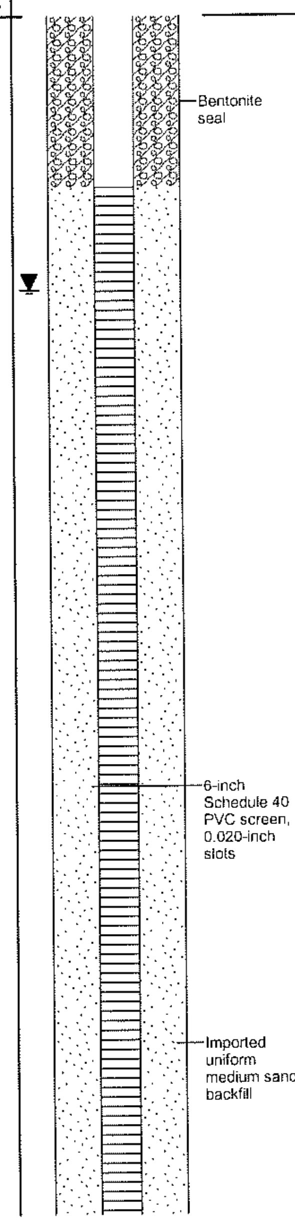
LOG OF MONITORING WELL MW-5

GeoEngineers	Project: Interurban Exchange 2 Project Location: Seattle, Washington Project Number: 7131-002-04	Figure: A-11 Sheet 1 of 1

Date(s) Drilled	07/24/00	Logged By	SJW	Checked By	
Drilling Contractor	Holt Drilling	Drilling Method	10-inch HSA	Sampling Methods	no samples
Total Boring Depth (ft)	40	Hammer Data		Drilling Equipment	
Well Depth (ft)	40	Top of Well Elevation (ft)		Groundwater Level (ft. bgs)	
System/ Datum					

Elevation feet	Depth feet	SAMPLES: Interval	SAMPLES: Number	SAMPLES: Recovered (in)	SAMPLES: Blows/6in	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, Kg/m³
	0						AC	Two inches asphalt concrete		
							SP-SM			
			1		19				19	3
	5						SM/ML			
			2		5				5	8
	10						WD	Wood waste		
			3		6				6	13
	15						PT			
			4		5				5	18
	20									
			5		11		ML/SM		11	23
	25									
			6		6				6	28
	30						SM			
			7		67				67	33
	35									

WELL CONSTRUCTION



Note: See Figure A-2 for explanation of symbols

LOG OF DEWATERING WELL DW-2

GeoEngineers

Project: Lake Union
Project Location: Seattle, Washington
Project Number: 7131-001-02

Figure: A-12
Sheet 1 of 2

Elevation feet	Depth feet	SAMPLES: Interval	Number	Recovered (in)	Blows/6in	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, Kg/m³	WELL CONSTRUCTION
	35										
			8		5*			*Blow count not representative	5	38	
	40										Base of well at 40 feet

Boring completed at approximately 40 feet below ground surface on 07/25/00
Soil sampling/conditions obtained in nearby boring B-4
Ground water measured at 8 feet on 07/31/00

LOG OF DEWATERING WELL DW-2 (continued)

GeoEngineers

Project: Lake Union
Project Location: Seattle, Washington
Project Number: 7131-001-02

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		Test Pit TP-1
		Approximate ground surface elevation = 25 feet
0.0 - 0.3		1 inch Asphalt concrete overlying 3 inches of crushed rock
0.3 - 6.0	Wood	Wood chips (sawdust with occasional pieces of wood debris) (soft, moist) (fill)
6.0 - 8.0	PT	Brown peat (very soft, wet)
8.0 - 10.0	OL	Light brown organic silt (very soft, wet)
10.0 - 11.5	SM	Gray silty fine sand (medium dense, wet)
		Test pit completed at 11.5 feet on 1/19/99
		Moderate/slight ground water seepage observed at 5.4/10.8 feet
		Moderate caving observed at 10.0 to 11.5 feet
		Disturbed soil samples obtained at 2.0, 4.0, 6.0, 8.0 and 11.5 feet
		Test Pit TP-2
		Approximate ground surface elevation = 25.5 feet
0.0 - 0.3		1 inch Asphalt concrete overlying 2 inches of brown fine to coarse sand
0.3 - 2.0	SM/ML	Gray silty sand with layers of gray silt and occasional organic matter (loose, moist) (fill)
2.0 - 4.5	SM	Black silty fine to medium sand with wood and brick debris (loose, moist) (fill)
4.5 - 9.0	Wood	Wood chips (sawdust and chips, 2 to 4 inches in size) (soft, moist)
9.0 - 12.5	PT	Brown peat (very soft, moist)
12.5 - 13.5	PT/OL	Brown peat with organic silt lenses (soft, moist)
13.5 - 14.5	ML	Brown fine sandy silt (loose, wet)
		Test pit completed at 14.5 feet on 1/18/99
		Slight ground water seepage observed at 13.5 feet
		Slight caving observed at 13.5 feet
		Disturbed soil samples obtained at 2.0, 4.0, 6.0, 8.0, 10.0 and 12.0

THE DEPTHS OF THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		Test Pit TP-3
		Approximate ground surface elevation = 24.5 feet
0.0 - 0.5		2 inches asphalt concrete overlying 4 inches of crushed rock
0.5 - 2.0	SM	Gray silty fine sand with bricks and occasional organic matter (loose, moist) (fill)
2.0 - 4.5	SM	Black-brown silty fine to medium sand with abundant wood debris (timber pieces) (loose, moist) (fill)
4.5 - 7.0	Wood	Wood debris 3 to 5 inches in diameter, several feet long (loose, wet) (fill)
		Test pit completed at 7.0 feet on 1/18/99
		Rapid ground water seepage observed at 5.7 feet
		No caving observed
		Disturbed soil samples obtained at 2.0 and 4.0 feet
		Test Pit TP-4
		Approximate ground surface elevation = 24 feet
0.0 - 0.3		1 1/2 inches asphalt concrete overlying 2 inches of crushed rock
0.3 - 1.0	SP-SM	Brown fine to medium sand with silt (loose, wet) (fill)
1.0 - 2.0	SM	Gray silty sand with gravel, brick and occasional organic matter (loose, moist) (fill)
2.0 - 3.5	SM	Dark brown silty fine sand with organic matter (loose, moist) (fill)
3.5 - 8.5	Wood	Brown wood debris (sawdust chips with occasional pieces up to 8 inches in diameter) (very soft, moist) (fill)
		Test pit completed at 8.5 feet on 1/19/99
		Rapid ground water seepage observed at 5.15 feet
		Slight caving observed at 5.0 feet
		Disturbed soil samples obtained at 2.0, 4.0, 6.0 and 8.0 feet

THE DEPTHS OF THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT

LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
		<u>Test Pit TP-5</u> Approximate ground surface elevation = 27 feet
0.0 - 0.6		1 1\2 inches asphalt concrete overlying 6 inches of crushed rock
0.6 - 7.5	SP	Brown fine to medium sand with coarse gravel (medium dense, moist) (fill)
7.5 - 10.5	Wood	Wood debris (sawdust with occasional layer of debris (soft, wet) (fill)
		Test pit completed at 10.5 feet on 1/19/99 Rapid ground water seepage observed at 8.5 feet Moderate caving observed at 8.0 feet No disturbed soil samples obtained
		<u>Test Pit TP-6</u> Approximate ground surface elevation = 26 feet
0.0 - 0.3		2 inches asphalt concrete overlying 2 inches of crushed rock
0.3 - 2.5	SM	Black silty sand with abundant wood and brick debris (loose, moist) (fill)
2.5 - 7.0	Wood	Wood chips (sawdust with occasional wood debris 2 to 10 inches in diameter) (soft, moist) (fill)
7.0 - 9.0	PT	Brown peat (very soft, moist)
9.0 - 10.0	OL	Light gray organic silt (very soft, moist)
10. 0 - 12.0	ML	Gray fine sandy silt (medium stiff, wet)
		Test pit completed at 12.0 feet on 1/18/99 Slight ground water seepage observed at 10.15 feet Minor caving observed from 10.0 to 12.0 feet Disturbed soil samples obtained at 2.0, 4.0, 6.0 and 8.0 feet.

THE DEPTHS OF THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT

Drilled	Start 3/23/2011	End 3/23/2011	Total Depth (ft)	62.5	Logged By CTB / Checked By DPC	Driller	Geologic Drill	Drilling Method	Hollow-stem Auger/SPT

Hammer Data	Rope & Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	XL Trailer
Surface Elevation (ft) Vertical Datum	32.1	Top of Casing Elevation (ft)	31.8
Easting (X) Northing (Y)		System Datum	NAVD 88

Licencing agency well number: **BCA-816**
A 2 (in) well was installed on 3/23/2011 to a depth of 17.5 (ft).

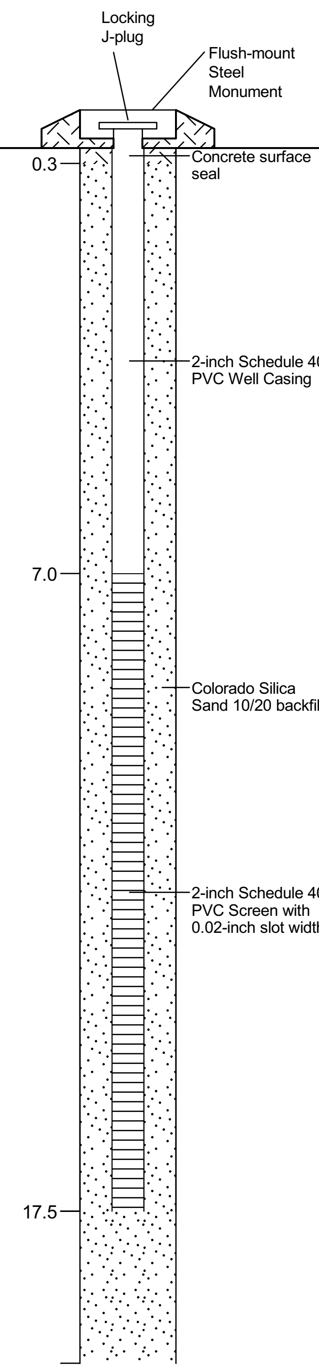
Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
4/5/2011	7.5	24.3

Notes:

FIELD DATA

Elevation (feet)	Depth (feet)	Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor
	0						AC	2 inches of asphalt concrete pavement (no base course)		
							ML	Gray silt (medium stiff, moist) (fill)		
30										
		12	7		1				NS	<10
								- rough drilling		
	5	6	9		2				NS	<10
							ML	Brownish-gray sandy silt with occasional gravel (soft, moist to wet)		
25										
		6	2		3 CA	▼		MC=28%; %F=62	NS	<10
	10	12	3		4				NS	<10
20						▽				
		3	8		5		SM	Gray silty fine to medium sand with gravel and occasional cobbles (loose, wet) - poor recovery MC=17%; %F=19	NS	<10
	15									
15										
		10	8		6				NS	<10
							PEAT	Dark brown peat (soft, wet) MC=114%		
							SM	Gray silty fine to medium sand with gravel		
	20									

WELL LOG



Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well B-44-1

GeoEngineers

Project: Block 44 - South Lake Union Development
Project Location: Seattle, Washington
Project Number: 7087-014-00

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor	WELL LOG
	20								(medium dense, wet) (recent granular deposits)			20.0
10		12	27		7					NS	<10	
	25							ML	Gray silt with trace sand (very stiff, wet) (recent clay and silt)			
5		12	10		8				MC=38%; %F=73	NS	<10	
	30							ML	Gray sandy silt (very stiff, wet)			
0		12	27		9				MC=23%; AL	NS	<10	
	35											
-5		8	24		10				MC=18%; %F=55			
	40							SM	Gray silty fine to medium sand with gravel and occasional cobbles (medium dense, wet) (recent granular deposits)			Bentonite Chips
-10		18	15		11							

Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well B-44-1 (continued)

GEOENGINEERS

Project: Block 44 - South Lake Union Development
Project Location: Seattle, Washington
Project Number: 7087-014-00

Figure A-2
Sheet 2 of 3

WELL LOG

Elevation (feet)	Depth (feet)	Recovered (in)	Blows/foot	Sample Name	Group Classification	MATERIAL DESCRIPTION
	45					
-15					SP-SM	Gray fine to medium sand with silt and occasional gravel (dense, wet)
		18	37	12		MC=22%; %F=5
	50					
-20					SM	Gray silty fine to medium sand with occasional gravel (dense, wet)
		18	41	13		MC=19%; %F=33
	55					- harder drilling
-25					SP-SM	Brownish-gray fine to medium sand with silt (very dense, wet) (glacially consolidated soils) - 12 inches of heave
		18	89	14		MC=18%; %F=9
	60				SM	Gray silty fine to medium sand with occasional gravel (very dense, wet)
-30		18	61	15		

62.5

Note: See Figure A-1 for explanation of symbols.

Redmond: Date:4/29/11 Path:W:\REDMOND\PROJECTS\7\708701400\GINT\708701400 EXPLORATION LOGS.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL

Log of Monitoring Well B-44-1 (continued)

GEOENGINEERS

Project: Block 44 - South Lake Union Development
Project Location: Seattle, Washington
Project Number: 7087-014-00

Figure A-2
Sheet 3 of 3

Drilled	Start	End	Total Depth (ft)	Logged By	Checked By	Driller	Drilling Method
	3/24/2011	3/24/2011	57.5	RBM	DPC	Geologic Drill	Hollow-stem Auger/SPT

Hammer Data	Rope & Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	XL Trailer
Surface Elevation (ft) Vertical Datum	35.9	Top of Casing Elevation (ft)	35.4
Easting (X) Northing (Y)		System Datum	NAVD 88

Licencing agency well number: **BCA-817**
A 2 (in) well was installed on 3/24/2011 to a depth of 21 (ft).

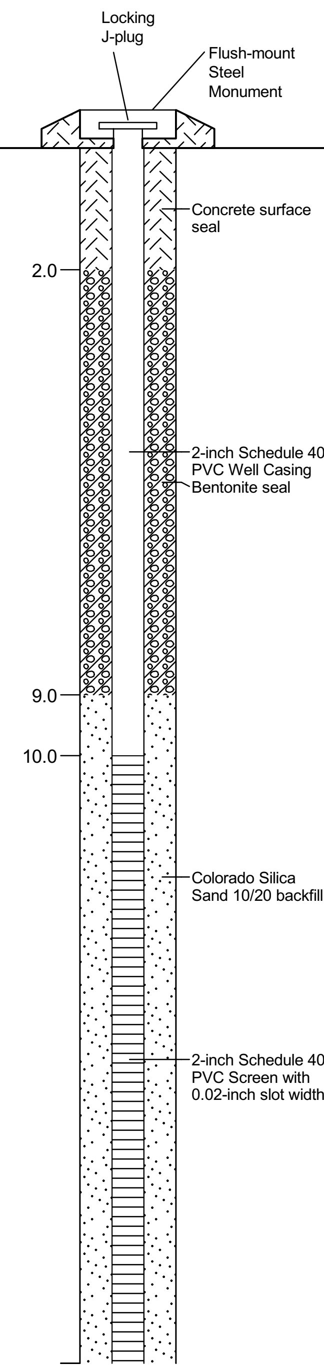
Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
4/5/2011	13.6	21.8

Notes:

FIELD DATA

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample / Sample Name	Water Level	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor
	0					AC	2 inches of asphalt concrete pavement		
35						SM	Light brown silty fine to medium sand with gravel (loose, moist) (fill)		
		6	7	1				NS	<10
30	5	8	4	2 CA			- brick fragment in sample	NS	<10
		6	9	3				NS	<10
25	10	18	10	4				NS	<10
						ML	Gray sandy silt (soft, moist to wet)		
		18	4	5				NS	<10
20	15								
						SP-SM	Gray fine to medium sand with silt (loose, wet) (recent granular deposits)		
		18	7	6 CA				NS	<10
						PT	Dark brown peat (soft, wet) MC=183%		
						CH	Gray clay with sand (medium stiff, moist) (recent clay and silt)		
	20								

WELL LOG



Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well B-44-4

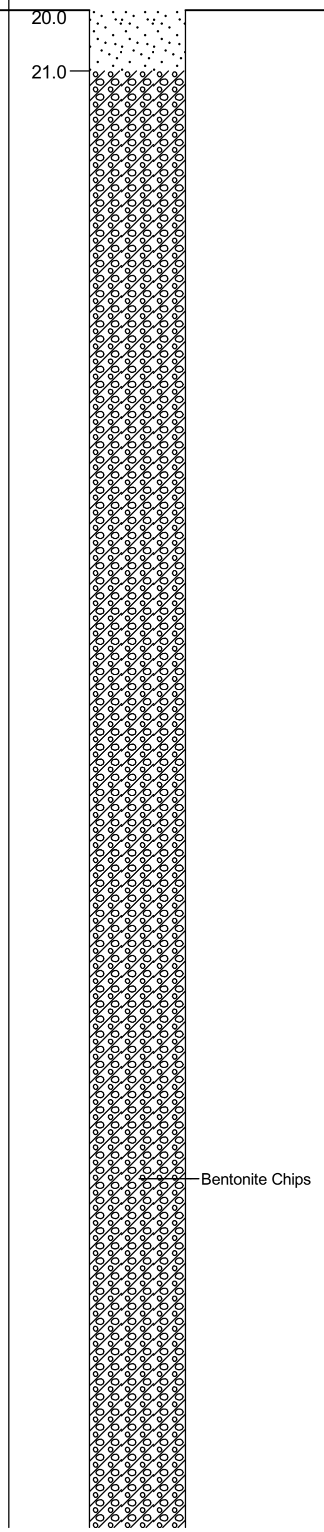
GeoEngineers

Project: Block 44 - South Lake Union Development
Project Location: Seattle, Washington
Project Number: 7087-014-00

Figure A-5
Sheet 1 of 3

WELL LOG

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor
	20										
15											
		18	7		7					NS	<10
	25							ML	Gray silt with sand (very stiff to hard, wet)		
10											
		18	24		8					NS	<10
	30										
5											
		18	43		9				- grades to trace sand MC=26%; %F=82	NS	<10
	35							SM	Grayish-brown silty fine sand (dense, wet) (glacially consolidated soils)		
0											
		18	48		10				MC=18%; %F=22	NS	<10
	40										
-5											
		18	90		11				- heave	NS	<10



Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well B-44-4 (continued)

GeoEngineers

Project: Block 44 - South Lake Union Development
Project Location: Seattle, Washington
Project Number: 7087-014-00

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor	WELL LOG
	45												
-10									SP-SM	Grayish-brown fine to coarse sand with silt and gravel (dense, wet)			
			18	48		12				MC=16%; %F=6	NS	<10	
	50									- rough drilling			
-15													
			5	50/5"		13				- grades to fine to coarse sand and occasional gravel	NS	<10	
	55												
-20													
			4	50/5"		14							57.5

Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well B-44-4 (continued)

GEOENGINEERS

Project: Block 44 - South Lake Union Development
Project Location: Seattle, Washington
Project Number: 7087-014-00

Figure A-5
Sheet 3 of 3

Date(s) Drilled	08/31/01	Logged By	KHC	Checked By	KHC
Drilling Contractor	Holt Drilling	Drilling Method	HSA	Sampling Methods	D&M
Auger Data	4 1/4" ID	Hammer Data	300 (lb) hammer/ 30 (in) drop	Drilling Equipment	Truck Mounted Rig
Total Depth (ft)	41.5	Surface Elevation (ft)	41.5	Ground Water Level (ft. bgs)	23
Datum/ System					

Elevation feet: 40, 35, 30, 25, 20, 15, 10

Depth feet: 0, 5, 10, 15, 20, 25, 30, 35

SAMPLES

Number	Recovered (in)	Blows/foot
1	10	3
2	8	11
3	16	3
4	14	4
5	18	5
6	18	9
7	18	16
8	18	22
9	14	12
	0	62

MATERIAL DESCRIPTION

Group Symbol	Material Description
AC	2 inches asphalt concrete
SM	Brown silty fine to medium sand (loose, moist) (fill)
	Grades with concrete debris
SP-SM	Gray fine to medium sand with silt (loose, moist) (fill)
SM	Brown silty fine to medium sand (loose, moist) (fill)
SP-SM	Brown and gray fine to medium sand with silt (medium dense, moist)
SM	Brown silty fine to medium sand with gravel (medium dense, wet)
SP-SM	Grayish brown fine to medium sand with silt and fine gravel (very dense, wet)

Water Content, %	Dry Unit Weight, lbs/ft^3	OTHER TESTS AND NOTES
24	94	
14	104	CA
26	85	TX
14	116	
20	99	
11	100	
		CA
		CA

Note: See Figure A-2 for explanation of symbols

LOG OF BORING B-1

GeoEngineers

Project: 428 Westlake

Project Location: Seattle, Washington

Project Number: 5279-003-00/01

Figure: A-3

Sheet 1 of 2

Elevation feet	Depth feet	Interval	Number	Recovered (in)	Blows/foot	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, lbs/ft^3	OTHER TESTS AND NOTES
	35		10	18	63					20	110	
	40		11	16	85/10"							
									Boring completed at 41.5 feet below ground surface on 08/31/01 Ground water was observed at approximately 23 feet during drilling			

LOG OF BORING B-1 (continued)

Geo Engineers

Project: 428 Westlake

Project Location: Seattle, Washington

Project Number: 5279-003-00/01

Figure: A-3

Sheet 2 of 2

Elevation feet	Depth feet	SAMPLES Interval	Number	Recovered (in)	Blows/foot	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, lbs/ft³	OTHER TESTS AND NOTES
	35		9	18	45							
-5												
	40		10	18	70				Grades to very dense			
-0									Boring completed at 41.5 feet below ground surface on 08/31/01 Ground water was observed at approximately 24 feet during drilling			
	45											
-5												
	50											
-10												
	55											
-15												
	60											
-20												
	65											
-25												
	70											
-30												
	75											
-35												

BORING 2.1.0 P:\5\5279003\5279003.GPJ GEIV2_2.GDT 10/4/01

LOG OF BORING B-2 (continued)

GeoEngineers

Project: 428 Westlake
Project Location: Seattle, Washington
Project Number: 5279-003-00/01

Figure: A-4
Sheet 2 of 2

5279-003-00/01

Date(s) Drilled	08/31/01	Logged By	KHC	Checked By	KHC
Drilling Contractor	Holt Drilling	Drilling Method	HSA	Sampling Methods	D&M
Auger Data	4 1/4" ID	Hammer Data	300 (lb) hammer/ 30 (in) drop	Drilling Equipment	Truck Mounted Rig
otal Depth (ft)	41.5	Surface Elevation (ft)	41.8	Ground Water Level (ft. bgs)	24
Datum/ System					

Elevation feet: -40, -35, -30, -25, -20, -15, -10

Depth feet: 0, 5, 10, 15, 20, 25, 30, 35

SAMPLES Number	Recovered (in)	Blows/foot	Water Content, %	Dry Unit Weight, lbs/ft³	OTHER TESTS AND NOTES
	0	8			
	2	9			
1	14	7	16	105	
2	18	9			CA
3	12	5			
4	12	4	13	120	
5	18	14			CA
6	18	17			
7	18	30	35	67	
8	18	48	18	113	

Group Symbol	MATERIAL DESCRIPTION
	1 to 2 inches of crushed rock
SM/ML	Grayish brown silty fine to medium sand with gravel and occasional layers of sandy silt (loose, moist) (fill)
SM/ML	Dark brown silty fine to medium sand/sandy silt (loose, moist) (fill)
SM	Gray silty fine to medium sand with occasional wood debris (1 to 2 inch pieces in sample) (loose, moist) (fill)
SM	Gray silty fine sand with organic matter (wood debris and occasional peat lenses) (medium dense, moist)
SM	Gray silty fine sand (dense, moist)
SP	Gray and brown fine to medium sand with a trace of silt (dense, wet)

Note: See Figure A-2 for explanation of symbols

BORING 2.1.0 P:\5\5279003\5279003.GPJ GEIV2_2.GDT 10/4/01

LOG OF BORING B-2

GeoEngineers

Project: 428 Westlake

Project Location: Seattle, Washington

Project Number: 5279-003-00/01

Figure: A-4
Sheet 1 of 2

5279-003-00/01

CS 7.241

SEATTLE ENGINEERING DEPARTMENT
MATERIALS LABORATORY

DOCID 8328

LOG OF TEST BORING

DATE 9-21-67 HOLE NO. 5

PROJECT Westlake I.B.M. NO.

LOCATION Westlake b/t Republic & Mercer ℄

GRD. EL.	SAMPLE NO.	BLOW COUNT	STD. PEN	DESCRIPTION OF MATERIAL	ELEV. WATER TABLE
	A	5-7-6	13	Sand (Fine) Moist Gray (Fill?)	
5					
	B	6-7-10	17	Silty Sand w/ organic Gravel Moist Gray (Rock in Grow)	
10					
Bottom	C	2-3-2	5	Silty Sand w/ organic Gravel Moist Gray	
15					

INSPECTOR: HWK

7698

1 of 2

CS 7.241

DocID 8328

SEATTLE ENGINEERING DEPARTMENT
MATERIALS LABORATORY

LOG OF TEST BORING

DATE 9-21-67 HOLE NO. 6

PROJECT Westlake I.B.M. NO.

LOCATION Westlake b/t Republic & Mercer 5' W of ℄

GRD. EL.	SAMPLE NO.	BLOW COUNT	STD. PEN	DESCRIPTION OF MATERIAL	ELEV. WATER TABLE
	A	10-8-8	16	Sand (fine) Moist Gray (Fill?)	
5					
	B	4-4-5	9	Silty Sand w/organic gravel Moist Gray	
10					
	C	4-4-6	10	Silty Sand w/gravel Moist Gray	
15					
	D	15-6-7	13	No Sample Recover - Wood in Tip (Trace of Peat on Tip)	
20					
	E	3-4-6	10	Clayey Silt w/organic layers of sand Moist Bl	
25					
	F	10-26-35	61	6" Clayey Silt Moist Bl. / 6" Sand (fine) Wet Brn	
30					

INSPECTOR: HWK

7698

CS 7.241

SEATTLE ENGINEERING DEPARTMENT
MATERIALS LABORATORY

Doc ID 8328

2 of 2

LOG OF TEST BORING

DATE 9-21-67 HOLE NO. 6

PROJECT WESTLAKE I.B.M. NO.

LOCATION WESTLAKE B/T REPUBLIC & MERCER 5' W of ℄

GRD. EL.	SAMPLE NO.	BLOW COUNT	STD. PEN	DESCRIPTION OF MATERIAL	ELEV. WATER TABLE
30					
BOTTOM	G	5-22-32	54	SAND (FINE) MOIST BRN.	
35				HEAVED - STOPPED DRILLING	
	H				
40					
	I				
45					
	J				
50					

INSPECTOR: HWK

Drilled	Start 3/14/2012	End 3/14/2012	Total Depth (ft) 61.5	Logged By TML / Checked By DPC	Driller Geologic Drill	Drilling Method HSA

Hammer Data	Manual 140 (lbs) / 30 (in) Drop	Drilling Equipment	XL Trailer Mounted
Surface Elevation (ft) Vertical Datum	31.8	Top of Casing Elevation (ft)	30.40
Easting (X) Northing (Y)	1222019.21 473730.19	Horizontal Datum	NAD83

A 2 (in) well was installed on 3/14/2012 to a depth of 30 (ft).

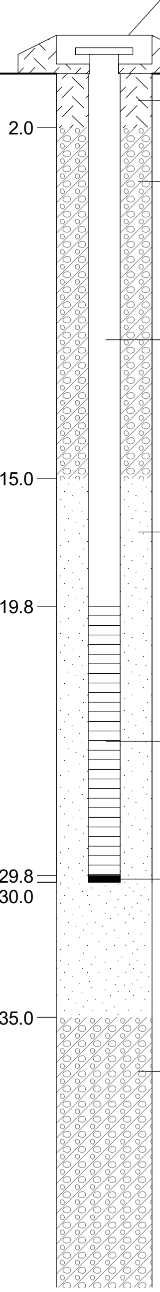
Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
3/19/2012	10.6	21.2

Notes: 4.25" I.D./4.75" O.D.

FIELD DATA

Elevation (feet)	Depth (feet)	Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Group Classification	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)
	0						SM	Light brown silty fine to coarse sand with gravel and wood debris (medium dense, moist to wet)		
30		3		⊢	1			Brick fragments		
		6	17		2		GP-GM	Gray fine to coarse gravel with silt and sand (very loose, wet)		
	5	6	20		3			Sample is wet		
25										
	10	5	2		4	▼				
							CC	Concrete from 11 to 12 feet; brick fragments		
20		4	3		5		GP-GM	Gray fine to coarse gravel with silt and sand (very loose, wet) (fill)		
	15	4	1		6					
15		5	2		7		ML	Gray silt with sand (soft, wet)		
	20	18	5		8		SM	Gray silty fine to medium sand (loose, wet) (recent deposits)		
10							SP-SM	Gray fine to coarse sand with silt (loose, wet)		
	25	9	10		9					
5										
	30	14	5		10		ML/CL	Gray silt/clay with sand (medium stiff, wet)		
0										
	35	14	28		11 %F		ML	Gray silt with sand (stiff to very stiff, wet) %F = 74	23	
-5										
	40	6	10		12 %F			Grades to with occasional sand %F = 89	28	
-10										
	45									

WELL LOG



Note: See Figure A-1 for explanation of symbols.

Redmond: Date:5/17/13 Path:P:\7\7087017\00\GINT\708701700_LOGS 43-1 - 43-4.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_GEOTECH_WELL

Log of Monitoring Well B-43-1

GEOENGINEERS

Project: Block 43 - South Lake Union Development
Project Location: Seattle, Washington
Project Number: 7087-017-00

Figure A-2
Sheet 1 of 2

WELL LOG

Elevation (feet)	Depth (feet)	Recovered (in)	Blows/foot	Sample Name	Group Classification	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)
	45	15	31	13 %F	ML	Grades to with sand %F = 71	19	
-15								
	50	7	50	14 %F	SP-SM	Gray fine to medium sand with silt (very dense, wet) (glacially consolidated soils) %F = 6	20	
-20								
	55	10	86/11"	15				
-25								
	60	18	57	16		Heave at 60 feet		

Well log: Bentonite; 60.0

Note: See Figure A-1 for explanation of symbols.

Redmond: Date:5/17/13 Path:P:\7\7087017\00\GINT\708701700_LOGS 43-1 - 43-4.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_GEOTECH_WELL

Log of Monitoring Well B-43-1 (continued)

GeoEngineers

Project: Block 43 - South Lake Union Development
Project Location: Seattle, Washington
Project Number: 7087-017-00

Figure A-2
Sheet 2 of 2

Depth Below Ground Surface (bgs) in feet

Depth (ft)	Sample Number	Blow Counts	Soil Log	Soil Description
0				Concrete – 4".
			GP	Brown sandy GRAVEL, moist.
5		5 7 10	ML	Brown-grey clayey SILT, moist. Interbedded brown and grey.
10		4 7 7	CL	Grey silty CLAY, moist.
15	K-MW-4-15.5	4 3 3	ML	Grey clayey SILT, damp to wet.
20		2 3 2	SM	Grey silty medium to coarse-grained SAND, wet.
25		17 21 16	SP	Grey medium to coarse-grained SAND, wet.
30				

Column headings: Sample Number, Sample Interval, Groundwater, Blow Counts, PID (ppm), Well Construction, Soil Log, Soil Description

(continued on next page)

Logged by: IY
Driller: Cascade Drilling, Inc.
Drilling Method: Hollow Stem Auger
Sampling Method: Split spoon
Casing Type: 2-inch PVC
Annular Pack: 2/12 Silica sand
Slot Size: 0.010 inch

Hammer Size: 130 lbs.
Date Drilled: 3/31/03
Hole Diameter: 8 inches
Hole Depth: 31.5 feet
Well Diameter: 2 inches
Well Depth: 30 feet
Screened Interval: 10 – 30 feet

Soils classified visually using the Unified Soils Classification System

KANE
Environmental, Inc.

Seattle Investment Properties
601 Westlake North
Seattle, Washington

Soil Boring and Groundwater Monitoring Well Logs

Depth (feet bgs)	Sample Number	Sample Interval	Groundwater	Blow Counts	PID (ppm)	Well Construction	Soil Log	Soil Description
30		X		19 21 18			SP	Grey fine to medium-grained SAND, wet.
								End of Boring at 31.5' bgs.
35								
40								
45								
50								
55								
60								

Depth Below Ground Surface (bgs) in feet

Logged by: IY
Driller: Cascade Drilling, Inc.
Drilling Method: Hollow Stem Auger
Sampling Method: Split spoon
Casing Type: 2-inch PVC
Annular Pack: 2/12 Silica sand
Slot Size: 0.010 inch

Hammer Size: 130 lbs.
Date Drilled: 3/31/03
Hole Diameter: 8 inches
Hole Depth: 31.5 feet
Well Diameter: 2 inches
Well Depth: 30 feet
Screened Interval: 10 - 30 feet

Soils classified visually using the Unified Soils Classification System

Depth Below Ground Surface (bgs) in feet	Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
	GEO-8@ 0-3'			100			SM	Grey slightly silty fine-grained SAND, loose to dense, damp to wet.
							SM	Grey slightly silty fine-grained SAND, loose, wet.
5								End of Boring at 4' bgs - Probe Refusal.
								Temporary well screen set from 0 - 4' bgs. Water sample GEO-8-W1 collected from temporary screen.
								Temporary well screen pulled and boring backfilled with bentonite following completion.
10								
15								
20								
25								
30								

Logged by: TC
Driller: ESN Northwest
Drilling Method: Hydraulic direct-push probe
Sampling Method: 3-foot split spoon
Casing Type: NA
Annular Pack: NA
Slot Size: NA

Hammer Size: NA
Date Drilled: 4/1/03
Hole Diameter: 2 inches
Hole Depth: 4 feet
Well Diameter: NA
Well Depth: NA
Screened Interval: NA

No permanent well installed.

Soils classified visually using the Unified Soils Classification System

KANE
Environmental, Inc.

Seattle Investment Properties
601 Westlake North
Seattle, Washington

Soil Boring and Groundwater Monitoring Well Logs

APPENDIX D
Ground Anchor Load Tests and Shoring Monitoring Program

APPENDIX D
GROUND ANCHOR LOAD TESTS AND SHORING MONITORING PROGRAM

Ground Anchor Load Testing

General

The locations of the load tests shall be approved by the Engineer and shall be representative of the field conditions. Load tests shall not be performed until the nail/tieback grout and shotcrete wall facing, where present, have attained at least 50 percent of the specified 28-day compressive strengths.

Where temporary casing of the unbonded length of test nails/tiebacks is provided, the casing shall be installed to prevent interaction between the bonded length of the nail/tieback and the casing/testing apparatus.

The testing equipment shall include two dial gauges accurate to 0.001 inch, a dial gauge support, a calibrated jack and pressure gauge, a pump and the load test reaction frame. The dial gauge should be aligned within 5 degrees of the longitudinal nail/tieback axis and shall be supported independently from the load frame/jack and the shoring wall. The hydraulic jack, pressure gauge and pump shall be used to apply and measure the test loads.

The jack and pressure gauge shall be calibrated by an independent testing laboratory as a unit. The pressure gauge shall be graduated in 100 pounds per square inch (psi) increments or less and shall have a range not exceeding twice the anticipated maximum pressure during testing unless approved by the Engineer. The ram travel of the jack shall be sufficient to enable the test to be performed without repositioning the jack.

The jack shall be supported independently and centered over the nail/tieback so that the nail/tieback does not carry the weight of the jack. The jack, bearing plates and stressing anchorage shall be aligned with the nail/tieback. The initial position of the jack shall be such that repositioning of the jack is not necessary during the load test.

The reaction frame should be designed/sized such that excessive deflection of the test apparatus does not occur and that the testing apparatus does not need to be repositioned during the load test. If the reaction frame bears directly on the shoring wall facing, the reaction frame should be designed so as not to damage the facing.

Verification Tests

Prior to production soil nail/tieback installation, at least two soil nails/tiebacks for each soil type shall be tested to validate the design pullout value. All test nails/tiebacks shall be installed by the same methods, personnel, material and equipment as the production anchors. Changes in methods, personnel, material or equipment may require additional verification testing as determined by the Engineer. At least two successful verification tests shall be performed for each installation method and each soil type. The nails/tiebacks used for the verification tests may be used as production nails/tiebacks if approved by the Engineer.

For soil nails, the unbonded length of the test nails shall be at least 3 feet unless approved otherwise by the Engineer. The bond length of the test nails shall not be less than 10 feet and shall not be longer than the bond length that would prevent testing to 200 percent of the design load while not exceeding the allowable bar load. The allowable bar load during testing shall not exceed 80 percent of the steel ultimate strength for Grade 150 bars or 90 percent of the steel ultimate strength for Grade 60 and 75 bars. The allowable tieback load should not exceed 80 percent of the steel ultimate strength.

For soil nails, the design test load shall be determined by multiplying the bond length of the nail times the design load pullout resistance (load transfer). Tieback design test loads should be the design load specified on the shoring drawings. Verification test nails/tiebacks shall be incrementally loaded and unloaded in accordance with the following schedule:

Load	Hold Time
Alignment Load	1 minute
0.25 Design Load (DL)	1 minute
0.5DL	1 minute
0.75DL	1 minute
1.0DL	1 minute
1.25DL	1 minute
1.5DL	60 minutes
1.75DL	1 minute
2.0DL	10 minutes

The alignment load shall be the minimum load required to align the testing apparatus and should not exceed 5 percent of the design load. The dial gauge should be zeroed after the alignment load is applied. Nail/tieback deflections during the 1.5DL test load shall be recorded at 1, 2, 3, 5, 6, 10, 20, 30, 50 and 60 minutes.

Proof Tests

Proof tests shall be completed on approximately 5 percent of the production nails at locations selected by the owner's representative. Additional testing may be required where nail installation methods are substandard. Proof tests shall be completed on each production tieback.

For soil nails, the unbonded length of the test nails shall be at least 3 feet unless approved otherwise by the Engineer. The bond length of the test nails shall not be less than 10 feet and shall not be longer than the bond length that would prevent testing to 200 percent of the design load while not exceeding the allowable bar load. The allowable bar load during testing shall not exceed 80 percent of the steel ultimate strength for Grade 150 bars or 90 percent of the steel ultimate strength for Grade 60 and 75 bars. The allowable tieback load should not exceed 80 percent of the steel ultimate strength.

For soil nails, the design test load shall be determined by multiplying the bond length of the nail times the design load pullout resistance (load transfer). Tieback design test loads should be the design load specified on the shoring drawings. Proof test nails/tiebacks shall be incrementally loaded and unloaded in accordance with the following schedule.

<table>
<tr><th>Load</th><th>Hold Time</th></tr>
<tr><td>Alignment Load</td><td>1 minute</td></tr>
<tr><td>0.25 Design Load (DL)</td><td>1 minute</td></tr>
<tr><td>0.5DL</td><td>1 minute</td></tr>
<tr><td>0.75DL</td><td>1 minute</td></tr>
<tr><td>1.0DL</td><td>1 minute</td></tr>
<tr><td>1.25DL (soil nails)</td><td>1 minute</td></tr>
<tr><td>1.33DL (tiebacks)</td><td rowspan="2">10 minutes</td></tr>
<tr><td>1.5DL (soil nails)</td></tr>
</table>

The alignment load shall be the minimum load required to align the testing apparatus and should not exceed 5 percent of the design load. The dial gauge should be zeroed after the alignment load is applied. Nail/tieback deflections during the 1.33DL and 1.5DL test loads shall be recorded at 1, 2, 3, 5, 6 and 10 minutes.

Depending upon the nail/tieback deflection performance, the load hold period at 1.33DL (tiebacks) or 1.5DL (soil nails) may be increased to 60 minutes. Nail/tieback movement shall be recorded at 1, 2, 3, 5, 6 and 10 minutes. If the nail/tieback deflection between 1 minute and 10 minutes is greater than 0.04 inches, the 1.33DL/1.5DL load shall be continued to be held for a total of 60 minutes and deflections recorded at 20, 30, 50 and 60 minutes.

Test Nail/Tieback Acceptance

A test nail/tieback shall be considered acceptable when:

1. For verification tests, a nail/tieback is considered acceptable if the creep rate is less than 0.08 inches per log cycle of time between 6 and 60 minutes and the creep rate is linear or decreasing throughout the creep test load hold period.
2. For proof tests, a nail/tieback is considered acceptable if the creep rate is less than 0.04 inches per log cycle of time between 1 and 10 minutes or the creep rate is less than 0.08 inches per log cycle of time between 6 and 60 minutes, and the creep rate is linear or decreasing throughout the creep test load hold period.
3. The total movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.
4. Pullout failure does not occur. Pullout failure is defined as the load at which continued attempts to increase the test load result in continued pullout of the test nail/tieback.

Acceptable proof-test nails/tiebacks may be incorporated as production nails/tiebacks provided that the unbonded test length of the nail/tieback hole has not collapsed and the test nail/tieback length and bar size/number of strands are equal to or greater than the scheduled production nail/tieback at the test location. Test nails/tiebacks meeting these criteria shall be completed by grouting the unbonded length. Maintenance of the temporary unbonded length for subsequent grouting is the contractor's responsibility.

The Engineer shall evaluate the verification test results. Nail/tieback installation techniques that do not satisfy the nail/tieback testing requirements shall be considered inadequate. In this case, the contractor shall propose alternative methods and install replacement verification test nails/tiebacks.

The Engineer may require that the contractor replace or install additional production nails/tiebacks in areas represented by inadequate proof tests.

Shoring Monitoring

Preconstruction Survey

A shoring monitoring program should be established to monitor the performance of the temporary shoring walls and to provide early detection of deflections that could potentially damage nearby improvements. Additionally, the shoring monitoring program shall provide early detection of settlement associated with temporary groundwater drawdown due to the dewatering wells. We recommend that a preconstruction survey of adjacent improvements, such as streets, utilities and buildings, be performed prior to commencing construction. The preconstruction survey should include a video or photographic survey of the condition of existing improvements to establish the preconstruction condition, with special attention to existing cracks in streets or buildings.

Optical Survey

The shoring monitoring program should include an optical survey monitoring program. The recommended frequency of monitoring should vary as a function of the stage of construction as presented in the following table.

Construction Stage	Monitoring Frequency
During excavation and until wall movements have stabilized	Twice weekly
During excavation if lateral wall movements exceed 1 inch and until wall movements have stabilized	Three times per week
After excavation is complete and wall movements have stabilized, and before the floors of the building reach the top of the excavation	Twice monthly

Monitoring should include vertical and horizontal survey measurements accurate to at least 0.01 feet. A baseline reading of the monitoring points should be completed prior to beginning excavation. The survey data should be provided to GeoEngineers for review within 24 hours.

For shoring walls, we recommend that optical survey points be established: (1) along the top of the shoring walls; (2) along the adjacent curb, centerline, and opposite curb along Westlake Avenue North, Mercer Street, Republican Street, and (3) on existing buildings/settlement sensitive facilities located within a horizontal distance of the shoring walls equal to the height of the wall. The survey points should be located on every other soldier pile along the wall face for soldier pile and tieback shoring and the points along the curb line/existing buildings should be located at an approximate spacing of 25 feet. If lateral wall movements are observed to be in excess of ½ inch between successive readings or if total wall movements exceed 1 inch, construction of the shoring walls should be stopped to determine the cause of the movement and to establish the type and extent of remedial measures required.

APPENDIX E
Report Limitations and Guidelines for Use

APPENDIX E
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of City Investors IX, LLC and other project team members for the Block 38 – South Lake Union Development project. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Report Is Based on a Unique Set of Project-specific Factors

This report has been prepared for the Block 38 – South Lake Union Development project in Seattle, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

---

[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org .

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

Most Geotechnical and Geologic Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations Are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term “Biological Pollutants” includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

Have we delivered World Class Client Service?

Please let us know by visiting **www.geoengineers.com/feedback**.

GeoEngineers

Appendix C

ENVIRONMENTAL SITE ASSESSMENTS

LEVEL I ENVIRONMENTAL ASSESSMENT

Westlake Avenue Building
534 Westlake Avenue North
Seattle, Washington

Project No. T-3939

Terra Associates, Inc.

Prepared for:

Marcus and Millichap
Bellevue, Washington

March 25, 1998

TERRA ASSOCIATES, Inc.

Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

March 25, 1998
Project No. T-3939

Mr. Brian Leibsohn
Marcus and Millichap
10900 NE 4th Street, Suite 2150
Bellevue, Washington 98004

Subject: Level I Environmental Assessment
Westlake Avenue Building
534 Westlake Avenue North
Seattle, Washington

Dear Mr. Leibsohn:

We have completed a Level I Environmental Assessment for the Westlake Avenue Building site in Seattle, Washington. The purpose of our study was to provide our opinion on the probable presence or absence of site contamination by hazardous materials.

A three-story concrete commercial building currently occupies the site.

Based on the information we have reviewed for this study, we found no past incidences or current practices which would require further investigation or soil and/or groundwater sampling at this time. It is our opinion that the potential for site contamination due to past site use, present site use, or off-site sources is low.

There are several potential off-site sources of contamination in the vicinity. However, due to distances and the local geohydrologic environment, the likelihood that sources of extensive contamination from these off-site sources is low. The most probable on-site contamination would be in the groundwater. The levels of contamination are expected to be at or a little above cleanup regulations. This contamination, if present, would not interfere with the ongoing operation of the existing building. Construction of a new building on the site could encounter the suspected contamination and could result in the need to dispose of some on-site soils during construction activities. It is not expected that any formal cleanup would be required by agencies at this time.

The attached report describes our study in greater detail. We trust the information presented is sufficient for your current needs. If you have any questions or require additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.

Anil Butail, P.E.
President

12525 Willows Road, Suite 101, Kirkland, Washington 98034 • **Phone (425) 821-7777**

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Level I Environmental Assessment
Westlake Avenue Building
534 Westlake Avenue North
Seattle, Washington

1.0 SCOPE OF WORK

Our scope of work on this project included the following tasks:

- Review of a report compiled by Environmental Data Resources, Inc. (EDR), dated February 23, 1998, which consists of the following databases:

  National Priorities List (NPL); Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS); Emergency Response Notification System (ERNS); Facility Index System (FINDS); Hazardous Materials Information Reporting System (HMIRS); Material Licensing Tracking System (MLTS); Resource Conservation Recovery Act Information System (RCRIS); RCRA Administration Action Tracking System (RAATS); PCB Activity Database System (PADS); Toxic Chemical Release Inventory System (TRIS); Federal Superfund Liens (NPL Liens); Corrective Action Report (CORRACTS); Records of Decisions Report (ROD); Superfund Consent Decrees (CONSENT); CERCLIS sites designated as No Further Remedial Action Planned (CERC-NFRAP); and Toxic Substance Control Act (TSCA) by the Environmental Protection Agency (EPA)

  Confirmed and Suspected Contaminated Sites List (CSCSL); Leaking Underground Storage Tank (LUST) list; Solid Waste Facilities Handbook (State LF); Independent cleanup Reports (ICR) and Underground Storage Tank (UST) list by the Washington State Department of Ecology (Ecology)

  Former Manufactured Gas (Coal Gas) Sites by Real Property Scan, Inc.

- Review of the *Abandoned Landfill Study in Seattle*, by the Seattle-King County Department of Public Health, dated April 30, 1985

- Review of a 50-year chain-of-title

- Site reconnaissance to visually observe existing conditions

- Review of a prior Phase One Environmental Assessment for the site prepared by Enviros, Inc., dated January 24, 1994

- Review of historic City Directories

- Review of information available at the Seattle Department of Construction and Land Use (DCLU) Archives

- Review of available Sanborn Insurance Atlases for historical information regarding the site vicinity
- A site visit with Mr. Scott Clements
- Review of historical aerial photographs of the area
- Review of published maps and geological information for the site vicinity
- Review of selected reports on file at Ecology for adjacent parcels

We performed the research for this project and report in general accordance with American Society for Testing and Materials (ASTM) Designation E-1527-97: *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. Throughout this report, we refer to the section number and the applicable ASTM standard for various aspects of the assessment being addressed.

2.0 SITE CONDITIONS

2.1 General

The site is located at 534 Westlake Avenue North in Seattle, Washington. The approximate location of the property is shown on the Vicinity Map, Figure 1. Land use in the surrounding area is characterized by commercial and retail development.

Our experience in this area is that the site is underlain at shallow depths by fill soils. For the purpose of this study, it is reasonable to assume that near-surface groundwater gradients are strongly controlled by topography and/or surface features. In general, near-surface groundwater will flow towards the north and northeast. Local variations in groundwater gradients will occur. Man made features, such as utility trenches, will create variations in near-surface groundwater movements. The topography of the area is shown on the Topographic Vicinity Map, Figure 2.

2.2 Surface

On February 20, 1998, an environmental scientist from our office visited the site to look for evidence of past or ongoing contamination from hazardous materials.

The project site is located at 534 Westlake Avenue North, in Seattle, Washington. The site is currently developed with a three-story concrete building. The basement and street levels of the building are in use as parking levels. A small vacant retail/commercial tenant space is present on the street level in the northwest corner of the building. A mezzanine level currently used for dry storage is present above this street level retail space. The upper two floors are occupied by tenants who use the space as office areas. A penthouse in the southeast corner of the building houses equipment for a freight elevator that is no longer in use. A cellular phone antenna is located on the roof of the building.

The basement level extends west beneath the eastern sidewalk of Westlake Avenue North. The boiler room is located in the basement. The boiler is fueled by natural gas.

We did not note any litter on the site or observe any unusual soil conditions, ground staining, or odors that would indicate significant contamination.

2.3 Adjacent Development

The site is located in an area of commercial and retail development. Immediately south of the site is the former Jafco/BEST retail store. Portions of the store are in use as a musical instrument retail store. The basement of the former Jafco/BEST building is in use as a florist's supply shop. East of the site is a paved parking area. North of the site, across Mercer Way, is a Denny's Restaurant and a Unocal Gas Station. Northwest of the site is an automobile dealership. West of the site, across Westlake Avenue North, is a used car lot.

The topography in the area is relatively level with the exception of the parking lot east of the site. This parking lot is at the same elevation as the basement level of the building on the subject site.

The Schematic Site Plan, Figure 3, shows the subject parcel and surrounding properties.

2.4 Geologic Conditions

Our review of boring logs for adjacent projects indicates that the site and vicinity are underlain by fill soils. Medium dense to dense sands and silts are present beneath the fill soils. These fill and native soils will have variable but generally low permeabilities.

2.5 Hydrogeologic Conditions

A near-surface perched groundwater table exists within the low permeability fills, silty sands and silts. The gradient of flow for this perched groundwater table is expected to be towards the north and northeast, corresponding with the topography. Local variations will occur where deep excavations or utility trenches have penetrated water-bearing zones. The groundwater will flow towards Lake Union.

These assumptions are verified by actual groundwater measurements at adjacent properties. We reviewed reports for adjacent properties, including the Unocal Service Station located immediately north of the site.

3.0 SITE HISTORY RESEARCH

3.1 Aerial Photography Review

At Walker and Associates in Seattle, Washington, we reviewed aerial photographs of the site and vicinity. We also reviewed aerial photographs on file in our office.

Our review of available photographs indicates the following activity on the site:

1936 The subject building is present. The lot immediately south of the Westlake Avenue Building is vacant. A structure is present that covers most of the current site of the BEST building. A small building is present immediately east of the Westlake Avenue Building; otherwise the area of the existing parking lot is used for open storage. From the photograph, it is not apparent what the stored materials are. North of the site, two commercial buildings are present at the current location of the Denny's Restaurant and the Unocal Service Station.

1946 The subject building is present. The individual lot immediately south of the Westlake Avenue Building and the current site of the BEST building is vacant. A small building is present immediately east of the Westlake Avenue Building; otherwise the area of the existing parking lot is used for open storage. From the photograph, it is not apparent what the stored materials are. North of the site, two commercial buildings are present at the current location of the Denny's Restaurant and the Unocal Service Station.

1956 The subject building is present. The lot immediately south of the Westlake Avenue Building and the site of the BEST building is vacant. A small building is present immediately east of the Westlake Avenue Building; otherwise the area of the existing parking lot is used for open storage. From the photograph, it is not apparent what the stored materials are. North of the site, two commercial buildings are present at the current location of the Denny's Restaurant and the Unocal Service Station.

1960 The subject building is present. The lot immediately south of the Westlake Avenue Building and the site of the BEST building is vacant. A small building is present immediately east of the Westlake Avenue Building; otherwise the area of the existing parking lot is used for open storage. From the photograph, it is not apparent what the stored materials are. North of the site, two commercial buildings are present at the current location of the Denny's Restaurant and the Unocal Service Station.

1969 The area resembles the current configuration. The existing BEST building is present. The small buildings east of the Westlake Avenue Building are gone.

1974 The area resembles the existing conditions.

1985 The area resembles the existing conditions.

1990 The area resembles the existing conditions.

1995 The area resembles the existing conditions.

In reviewing the aerial photographs, we observed no evidence of site usage indicative of the possible storage, use, or disposal of hazardous materials. The aerial photographs do not present any information that contradicts the other historical data we reviewed.

3.2 Map Review

We reviewed the USGS Seattle South and Seattle North, Washington, quadrangle maps, dated 1950, with color contrasting photorevisions, dated 1968 and 1973. The color contrasting photorevisions allow comparison between development in 1949 and 1973. The changes present in the photorevisions are the addition of a purple overlay tint to signify increased urbanization in areas in the immediate vicinity of the site.

3.3 City Directory Review

We reviewed Polk City Directories available at the Bellevue Regional Library of the King County Library System. The collection at the library consists of each year following 1940. Prior to 1940, the only city directory was a 1928 edition. The 1928 edition does not include a reverse directory with listings of addresses followed by business names. The directories for 1940 and each following year contain a section where the addresses are presented followed by the name of the business or individual present at the address. The results of our review are contained in Appendix A. In general, the city directory review indicates that the building was used as a confectionery up until the 1940s. From the late 1940s to the late 1950s, the building was used by Bekins Moving and Storage. A restaurant supply company used the building from the late 1950s until the mid 1960s. From 1966 through the current time, the building has been used as office space.

The city directory information also shows that a gas station was present immediately east of the site in the 1940s. The parking area east of the site was a coal and wood fuel storage/retail yard from the 1920s through the 1940s.

The buildings south of the site shown on the Sanborn maps were blacksmith shops that were converted to automobile repair or automobile wrecking yards in the 1920s and 1930s. The Jafco/BEST building first appears in the 1964 directory.

The only site use that would suggest the use of hazardous materials is a printing company noted in the 1940 city directory. Printers commonly use solvents to carry the inks and to clean off the printing equipment. Our observations in contemporary printing shops show that the inks are generally washed off using solvent soaked rags. Our experience with inappropriate disposal of printer solvents is that they are washed down the drain into the sewer.

3.4 Sanborn Map Review

Our subcontractor, EDR Sanborn, performed a city directory review for this project. Sanborn maps were created to aid in underwriting fire insurance policies. These maps were updated until the 1960s and typically show the types of buildings and the use of the buildings for the areas of coverage.

Our review of the maps presents the following summary of the site and vicinity historical conditions:

1888 The site is labled as being a marsh. A sawmill is located north of the site on the former shore of Lake Union.

1893 The site is shown as a lumber storage yard. The storage area covered the entire block. The sawmill north of the site has been expanded from the 1888 conditions. A steam laundry is located immediately west of the site across Rollin Street (Westlake Avenue). Buildings south and southwest (upgradient) of the site are predominantly residences.

1905 The site remains a lumber storage yard. The sawmill north of the site is still present. The steam laundry west of this site is still present. The buildings southwest of the site are still primarily residential.

1917 The site is shown as vacant. South of the site are three blacksmith shops. The blacksmith shops are also listed as stables and automobile repair shops. The sawmill north of the site is still present. The steam laundry is absent. A coal yard served by a belt line railroad is present one block south of the site. Residential structures remain southwest of the site.

1950 The existing building is shown as being a transfer warehouse of concrete construction. The property south of the site is shown as being vacant. A gasoline and oil service station is shown immediately east of the site. The area that is the existing parking lot east and southeast of the site is shown as a fuel yard. A used car lot is shown west of the site across Westlake Avenue North. The site of the Unocal Service Station north of the site is shown as being Horluck Creameries, Inc. The area of the Denny's Restaurant is shown as being the Century Brewing Company. The residences southwest of the site have been replaced by commercial businesses, including automobile service businesses, automobile wrecking yards, and a candy factory.

1969 The Westlake Avenue Building is shown as being offices with parking on the first level. The adjacent BEST/Jafco building is shown as being a retail and warehouse building. The Unocal site is occupied by a gas and oil service station. The Denny's Restaurant site is occupied by a one-story commercial building. The used car lot west of the site is present. The area southwest of the site is developed with commercial buildings that include automobile sales and service, warehouses, and transmission repair facilities.

Nothing in the Sanborn maps contradicted information obtained from other sources.

3.5 Historic Tax Records

We reviewed the historic tax assessors information for these parcels presented in the appendix to the prior Enviros report. In general, the assessors records show that the building was built in 1920. The site addresses include both 536 and 534 Westlake Avenue North. In 1937, the tax card shows a sign indicating the building was occupied by the Horluck Brewing Company. This 1937 card also shows that the heating was with a gas furnace and the owner was the "National Gro. Co.", with a purchase date of July 1, 1927.

Nothing in the historic tax records contradicts information obtained from other sources.

3.6 Interview

On February 17, 1998, we met on-site with Mr. Scott Clements. He provided us with a tour of the non-office spaces and vacant tenant spaces of the buildings and answered our general questions regarding use of the existing building.

Nothing in our interview contradicted information obtained from other sources.

3.7 Chain-of-Title Review

We reviewed 50-year chain-of-title documents provided to us by Chicago Title Insurance Company. We reviewed the individual documents in addition to the chain-of-title summary. We did not note any parties commonly associated with the use, storage, or disposal of hazardous wastes in these documents. This information is consistent with the other historical research we have performed. A summary of the chain-of-title documents we received is attached as Appendix B.

3.8 DCLU Archives Review

At the Seattle DCLU, we reviewed plans and the master permit card on file for the 534 Westlake Avenue North building. From this information, we have established the following chronology for the site:

1920 The building was built to be a manufacturing facility for Koenig Candy Company. The plans show that the building is pile supported. The boiler room is at the same location as the current boiler room. The room immediately west of the boiler room is a coal bunker. The plans show that a "coal hole" is present in the sidewalk of Westlake Avenue North to supply fuel to the coal bunker.

1950 Plans dated 1949 and a permit dated 1950 show the building was altered to be a furniture warehouse for Bekins Moving and Storage.

1966 Plans and permits show the building was remodeled to have offices on the second and third floors. The ground floor was remodeled to be a parking level. The offices were for American National Insurance. These plans show the furnace (boiler) to be gas fired.

1977 Remodeling plans for the offices of Lockitch, Clements, and Rice were present in the file. This is the current tenant on the third floor.

1992 Plans for signs for Vance Real Estate Institute and Techni-Cable, Data Cabling Experts, are on file.

Nothing in the Seattle DCLU review contradicted information obtained form other sources. Nothing in the Seattle DCLU archives suggested past use, storage, or disposal of hazardous materials on the site.

4.0 REGULATORY DOCUMENT REVIEW

We reviewed reports and agency documents to analyze reporting facilities situated within a selected radius of the subject site. Facilities situated within the selected radii of the site are listed in Appendix C.

4.1 EDR Search

We reviewed a report dated February 23, 1998, compiled for the subject property by our subcontractor, EDR. EDR searches EPA and Ecology databases for potential risk sites within a specified radius of a subject property. EDR conducted its search to the minimum search radius requirements given in ASTM E1527-97-7.2.1.1, *Standard Practice for Environmental Site Assessments.*

The following databases were searched by EDR in compiling their report:

Searched to One Mile:

- National Priorities List (NPL) by EPA, dated September 25, 1997
- Confirmed and Suspected Contaminated Sites List (CSCSL) by Ecology, dated June 9, 1997
- Resource Conservation Recovery Act Information System (RCRIS)-TSD facilities that treat, store, and/or dispose of hazardous waste by EPA, dated October 1, 1997

Searched to 1/2 Mile:

- Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) by EPA, dated August 1, 1997
- Leaking Underground Storage Tank (LUST) list by Ecology, dated September 24, 1997
- Municipal Solid Waste Facilities (State LF) by Ecology, dated October 1, 1996
- Independent Cleanup Reports (ICR) by Ecology, dated June 1, 1997

Searched to 1/4 Mile:

- Resource Conservation Recovery Act Information System (RCRIS)-LgGen Large Generators by EPA, dated October 1, 1997
- Resource Conservation Recovery Act Information System (RCRIS)-SmGen Small Generators by EPA, dated July 1, 1997
- Underground Storage Tank (UST) list by Ecology, dated September 24, 1997
- Emergency Response Notification System (ERNS) by EPA, dated September 30, 1997

Searched to Target Property:

- Facility Index System (FINDS) by EPA, dated April 1, 1997
- PCB Activity Database System (PADS) by EPA, dated March 27, 1997
- Hazardous Materials Information Reporting System (HMIRS) by U.S. Department of Transportation, dated December 31, 1996
- RCRA Administration Action Tracking System (RAATS) by EPA, dated April 17, 1995
- Toxic Chemical Release Inventory System (TRIS) by EPA, dated December 31, 1995
- Federal Superfund Liens (NPL Liens) by EPA, dated October 15, 1991
- Toxic Substances Control Act (TSCA) by EPA, dated January 31, 1995

We evaluate relative elevations and locations of listed sites based on our visual site reconnaissance and review of relevant topographic and geologic maps.

The subject site did not appear in any of the databases reviewed for this report.

Seventy-three sites of record were found in the EDR search. Most of these sites are on multiple databases and/or are duplicate entries for the same site. Thirty-nine orphan sites were also identified in the EDR search. Orphan sites are properties with insufficient detail to map in the EDR computer database system. We review orphan sites on a site by site basis. None of the orphan sites are within a one-mile radius of the subject site.

4.1.1 Underground Storage Tank (UST) Sites

Section 7.2.1.1 of the ASTM standards requires a review of State UST lists for underground storage tanks listed on the subject site or adjoining properties. EDR conducted a records search for listed UST sites within a one-fourth-mile radius of the Westlake Avenue Building site. This search distance exceeds ASTM recommendations.

Six UST sites appeared on the EDR search within a 1/8-mile radius of the subject site. These sites are:

- Unocal #5353 at 600 Westlake Avenue North, across the street, north and downgradient of the Westlake Avenue Building. At this site, five USTs are reported to be in use. Four are for the storage of gasoline and one is for the storage of waste oil. This site also appears on the LUST database and is discussed in the following section of this report.

- Frank Kenney Toyota Volvo at 731 Westlake Avenue North, one block north and downgradient of the Westlake Avenue Building. At this site, three USTs are reported to have been removed. Two were for the storage of gasoline and one was for the storage of used oil.

- Ivars Commissary at 500 Terry Avenue North, one block south-southeast and crossgradient of the Westlake Avenue Building. At this site, two USTs are reported to have been removed. One was for the storage of gasoline and one was for the storage of heating oil. This site also appears on the LUST database and is discussed in the following section of this report.

- Bayside Volvo at 753 – 9th Avenue North, two blocks northwest and downgradient of the Westlake Avenue Building. At this site, three USTs are reported to have been taken out of service. One was closed in place and the substance stored was not identified. A second UST was closed in place and had been used for the storage of gasoline. The third UST was also closed in place and is reported to have been used for the storage of used oil.

- Texaco #63-232-0258 at 601 Boren Avenue North, two blocks east and crossgradient of the Westlake Avenue Building. At this site, three USTs are reported to be in use for the storage of gasoline. This site is also present on the LUST list and is discussed in the following section of this report.

- Mercer Street Garage at 815 Mercer Street, two blocks west and crossgradient of the Westlake Avenue Building. At this site, two USTs are reported to be in use for the storage of gasoline. Five USTs are reported to be removed with no details on the former contents. A sixth UST is reported to have been removed that was used for the storage of waste oil. This site also appears on the LUST list and is discussed in the following section.

Based on the local geohydrologic conditions and status, it is our opinion that the current operational UST sites pose no significant threat to the Westlake Avenue Building site. However, former operation of USTs at the adjacent Unocal and Rose (discussed in the following section) property have resulted in leakage and there is a potential for some contamination beneath the Westlake Avenue Building. This is discussed in the following Section 4.1.2 of this report.

4.1.2 Leaking Underground Storage Tank (LUST) Sites

Section 7.2.1.1 of the ASTM standards requires a review of State LUST lists for possible contaminated sites within a one-half-mile radius of the subject property. EDR conducted a records search for listed LUST sites within a one-half-mile radius of the Westlake Avenue Building site.

Forty-four LUST sites were listed on the EDR search within a one-half-mile radius of the subject site. These sites are:

- Unocal #5353 at 600 Westlake Avenue North, across the street, north and downgradient of the Westlake Avenue Building. At this site, a release of 80,000 gallons of gasoline was reported in 1980. Cleanup activities have been ongoing since that time. The gradient for groundwater movement at the Unocal station is towards the northeast. However, it is likely that some gasoline or gasoline constituents may have migrated beneath the Westlake Avenue Building. No monitoring wells have been built in the sidewalk around the Westlake Avenue Building to document actual soil or groundwater quality. In addition to being on the LUST list, numerous entries for ICR status are present in the EDR report. These ICR entries are for individual reports that present the results of monitoring at this site.

- Seattle City Westlake Site at 630 Westlake Avenue North, one block north and downgradient of the subject site. At this site, a former gasoline station was taken out of service. The city commissioned UST removal, assessment, and remediation efforts. At this time, the site is in the process of being cleaned up. In the process of the site assessment, off-site water wells were sampled and measured. Widespread hydrocarbon contamination was found in the site vicinity. The groundwater gradient is towards the north. The conclusions of the reports indicate that some upgradient migration of hydrocarbons from the Unocal spill may have occurred.

- Rose Property at 960 Republican Street, one-half-block south and immediately east of the subject site. At this site, also known as the H and A Investments site, a heating oil UST was removed south of the site in 1994. Contaminated soils and groundwater were present. The remedial effort did not remove all of the affected soils due to the presence of existing buildings. In addition, in 1993, remedial measures were undertaken at a former service station that was present immediately east of the Westlake Avenue Building. This remedial measure removed 1,500 cubic yards of petroleum contaminated soils in 1993. The soils were disposed of into the municipal waste stream with the authorization of the Seattle King County Department of Health. This remedial measure was reported to have removed all of the petroleum contaminated soils above the groundwater table. A draft report prepared by SEACOR, dated April 1, 1994, was present in the Ecology files. This investigation followed the remedial excavation in the parking lot immediately east of the Westlake Avenue Building. Four monitoring wells were constructed and sampled. The results of the analysis of groundwater samples indicate that the levels of hydrocarbons in the groundwater were generally close to the current cleanup levels for gasoline, diesel, and oil range hydrocarbons. The results do not indicate a need for remedial action due to groundwater contamination. The results of limited soil analysis of samples from the borings do not indicate a need for further remedial action. The draft report in the Ecology files did not have a site plan which would delineate the locations of the individual borings and monitoring wells. The Rose property is not on the LUST list, but is on the ICR list.

- Ivars Commissary at 500 Terry Avenue North, one block south-southeast and crossgradient of the Westlake Avenue Building. At this site, a release of petroleum products was reported in 1993. The affected media is listed as soils and groundwater. The current status of this site is listed as cleanup started. At this site, free product was present on the groundwater at the time of the initial site assessment. While cleanup is reported to be underway, no status reports or interim cleanup reports are on record as having been submitted to Ecology. We were unable to independently verify the current status of this site.

- Texaco #63-232-0258 at 601 Boren Avenue North, two blocks east and crossgradient of the Westlake Avenue Building. This site is also referred to as Shell #23714. At this site, a release was reported in 1990. At this time, the cleanup reports on file at Ecology indicate that the site is clean. Texaco has asked for a determination of No Further Action for this site.

- Mercer Street Garage at 815 Mercer Street, two blocks west and crossgradient of the Westlake Avenue Building. This site is also reported as being the Washington Natural Gas Corporate Offices. At this site, a release was reported in 1992. The affected media is listed as soil. The status is reported as cleanup underway.

- Aloha/9th Avenue North sites at 753 - 9th Avenue North, two blocks north-northwest and downgradient of the subject site. At this site, a release was reported in 1992. The affected media is listed as soil. The status of the cleanup is listed as started. Interim cleanup reports have been filed with Ecology.

- Fairview Warehouse at 800 to 820 Fairview Avenue North, four blocks east-northeast and crossgradient of the Westlake Avenue Building. At this site, a release date of 1990 is listed. The affected media is listed as soil and the status is listed as cleaned up.

- Seattle School District Facilities Building at 810 Dexter Avenue North, four blocks northwest of the Westlake Avenue Building. At this site, a release was listed as being reported in 1989. The affected media is listed as soil and the status is listed as cleaned up.

- Jarvie Paint Manufacturing Company at 760 Aloha Avenue street, four blocks northwest and crossgradient of the Westlake Avenue Building. Jarvie Paint also shows up on the CSCSL list and is discussed in Section 4.1.4 of this report.

- Hughes Revocable Intervivos Trust at 1220 Republican Street, five blocks east-southeast and crossgradient of the subject site. At this site, a release of petroleum products was reported in 1993. The affected media is listed as soils. The status of the site is listed as cleaned up.

- Ratelco Headquarters at 1260 Mercer Street, six blocks east and crossgradient of the Westlake Avenue Building. At this site, two heating oil USTs were removed in 1992. The consultants report on file with Ecology indicates that the site was cleaned up and that the affected media was soil.

- Lake Union Air Service, Inc., at 1100 Westlake Avenue North five blocks north-northwest and downgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil. The status of the site is listed as cleaned up.

- 1265 Republican Street site at 1265 Republican, seven blocks east-southeast and crossgradient of the Westlake Avenue Building. The affected media is listed as soil and groundwater and the status is listed as cleanup started.

- 900 Fairview at 900 Fairview, seven blocks northeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the status is listed as cleanup started.

- Tomlinson, Inc., at 420 Pontius Avenue North, seven blocks east-southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and groundwater, and the status is listed as cleanup started.

- Stevens-Lea Building at 818 John Street, five blocks south-southwest and upgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the status is listed as cleaned up.

- Seattle Times at 1120 John Street, five blocks south-southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the current status is listed as cleaned up.

- Van De Kamp Bakery at 823 Yale Avenue North, six blocks east-northeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the status is reported as cleanup started.
- Leavitt, Shay, Dexter Property at 203 Dexter Avenue North, six blocks south-southwest and upgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the current status is listed as cleaned up.
- Yale Street Landing at 1001 Fairview Avenue North, ten blocks northeast and crossgradient of the Westlake Avenue Building. At this site, no details are listed on the EDR report.
- Unoccupied land at 707 Taylor Avenue North, ten blocks west and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the status is listed as cleanup started.
- Seattle School District at 1255 Harrison street, six blocks east-southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the current status is listed as cleaned up.
- Kiewit Construction at 1300 Aloha Street, six blocks east-northeast and crossgradient of the Westlake Avenue Building. This property is also referred to as the Fred Hutchinson Cancer Research Center. At the Kiewit Construction site, the affected media is listed as soil. A final cleanup report has been submitted for this site.
- Muzak Building at 915 Yale Avenue North six blocks east-northeast and crossgradient of the Westlake Avenue Building. The affected media is listed as soil and the current status is listed as cleaned up.
- Lo's Deli at 1108 Aurora Avenue North, six blocks northwest and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the status is listed as cleanup started.
- Ewings Investments Property at 711 West John Street, six blocks southwest and upgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil. A final cleanup report has been submitted to Ecology for this site.
- General Motors Corporation at 101 Westlake Avenue North, six blocks south and upgradient of the Westlake Avenue Building. This site is also listed as Mallory Buick. At this site, the affected media is listed as soil. The status of the site is listed as cleanup underway.
- Kenney Property at 100 Westlake Avenue North, six blocks south and upgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the status of the cleanup is listed as underway.
- Western Van Lines at 964 Denny Way, six blocks south and upgradient of the Westlake Avenue Building. This site is also listed as the BMS Investment site. At the Western Van Lines site, the affected media is listed as soil and the status is listed as cleanup started.

- City of Seattle Mercer Street site at 5th Avenue North and Mercer Street, six blocks west and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the current status is listed as cleanup in progress.

- Yale Street Parking Lot at 310 Yale Avenue North seven blocks east-southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the current status is listed as cleaned up.

- Mercer Operating Base at 520 - 5th Avenue North, seven blocks west and crossgradient of the Westlake Avenue Building. This site is also listed as Seattle City Center and as the Mercer Bus Barn Site. This site is also on the CSCSL list and is discussed in Section 4.1.4 of this report. At this site, the affected media is listed as soil and the status is listed as cleanup started.

- Chevron at 707 Taylor Way, seven blocks west and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil. An interim cleanup report has been submitted to Ecology.

- Seattle Mental Health Institute at 815 Eastlake Avenue East, seven blocks east and crossgradient of the Westlake Avenue Building. This site is also listed as the Fuzzy Wuzzy Rug Company. The affected media is listed as soil. A final cleanup report has been submitted for this site to Ecology.

- Red Carpet Car Wash at 1164 Denny Way, seven blocks south-southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and groundwater. Cleanup is reported to have started at this site.

- Foreign Auto Rebuild at 421 Eastlake Avenue East, eight blocks east-southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and cleanup is reported to have started.

- Quinton Instrument Company at 2121 Terry Ave, eight blocks south-southeast and crossgradient of the Westlake Avenue Building. The affected media is listed as soil and the status of the site is listed as unknown.

- Myles Standish at 420 Mercer Street, eight blocks west and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and groundwater. An interim cleanup report is listed as having been submitted to Ecology.

- PEMCO Property at 221 Yale, eight blocks southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil. An interim cleanup report is listed as having been submitted to Ecology.

- Chevron #9-5723 at 1225 Denny Way, eight blocks south-southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as groundwater and soils. Interim cleanup reports are listed as having been submitted to Ecology.

- PEMCO at 325 Eastlake Avenue East, eight blocks east-southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and the status of the site is listed as cleanup started.
- Greyhound Bus Terminal at 1250 Denny Way, eight blocks southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is listed as soil and groundwater. Interim cleanup reports are listed as having been submitted to Ecology.
- Overall Laundry Services at 1330 John Street, eight blocks southeast and crossgradient of the Westlake Avenue Building. At this site, the affected media is not listed. All USTs at this site are reported to have been removed. This site has been developed into the current Recreational Equipment, Inc., main retail outlet.

Based on the status of the listed LUST sites, it is our opinion that the threat to the subject site from listed LUST sites is minimal, with the exception of the LUST sites in the immediate vicinity of the site. It is likely that the Westlake Avenue Building property has been impacted by one or more of the LUST sites in the immediate vicinity. These sites include the Unocal Service Station immediately north of the site and the H and A Investment Property (Rose Property) immediately east of the site.

On-site exploration and groundwater sampling would be needed to determine the actual levels of impacts. Based on existing data from reports and monitoring wells north, east, and west of the Westlake Avenue Building, the risk of extensive soil and groundwater contamination beneath the building is low. However, some impacts to the groundwater and soils are possible from past releases of hydrocarbons at adjacent sites.

4.1.3 Facility Index System (FINDS) Sites

The FINDS list is a group of EPA databases. It includes sites reporting under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Resource Conservation Recovery Act Information System (RCRIS); and with the State of Washington (STATE). Facilities reporting under RCRIS have filed paperwork describing their waste management practices. Other data categories also exist on this list.

Section 7.2.1.1 of the ASTM standards requires a review of federal CERCLIS lists to a radius of one-half mile, federal RCRIS TSD lists to a radius of one mile, and federal RCRIS generators and ERNS listings on the property and adjoining properties. The federal FINDS list includes CERCLIS and RCRIS sites in one listing.

EDR conducted a records search for listed ERNS entries within a one-fourth-mile radius of the site address. No ERNS listings for the site or vicinity of the site were found.

EDR conducted a records search for listed RCRIS generator sites within a one-fourth-mile radius of the Westlake Avenue Building site. This exceeds the ASTM recommendation for the site and the adjoining properties.

Eight sites were listed as being within a 1/8-mile radius of the subject site. These sites are:

- Pacific Lincoln Mercury at 601 Westlake Avenue North, one block northwest and downgradient of the Westlake Avenue Building. No violations were reported at this site.
- Washington Trade Press at 1015 Republican Street, one block south and upgradient of the Westlake Avenue Building. No violations were reported at this site.
- Antique Liquidators at 503 Westlake Avenue North, one block south and upgradient of the Westlake Avenue Building. No violations were reported at this site.
- Seattle City, Mercer Corridor site at 965 Valley, one block north and downgradient of the Westlake Avenue Building. No violations were reported at this site.
- Seattle Motor Sports at 701 - 9th Avenue North, one block northwest and downgradient of the Westlake Avenue Building. No violations were reported at this site.
- WDOE NRO Terry Drum at 500 Terry Avenue North, one block south-southeast and crossgradient of the Westlake Avenue Building. This entry appears to be for a one time pick up of an orphan drum. No violations were noted for this site.
- Maaco Auto Painting at 739 - 9th Avenue North, two blocks northwest and crossgradient of the Westlake Avenue Building. No violations were reported at this site.
- Seattle City Department of Administration at 630 Boren Avenue North, two blocks east and crossgradient of the Westlake Avenue Building. This site is listed as a large quantity generator. No violations were found at this site.

Except as noted, all of these sites are small quantity generators. In general, this means they generate less than 220 pounds of hazardous waste per month and never accumulate more than 2,200 pounds of hazardous waste at any given time. Medium quantity generators generate between 220 and 2,200 pounds of hazardous waste per month. Large Quantity generators generate more than 2,200 pounds per month. Based on the status and locations of the RCRIS generators, together with the local geohydrologic conditions, it is our opinion that these facilities pose a minimal threat to the subject site.

EDR conducted a records search for listed RCRIS TSD sites within a one-half-mile radius of the Westlake Avenue Building site. These are treatment, storage, or disposal sites for hazardous wastes. No TSD sites were listed as being within a one-half-mile radius of the subject site. Based on the lack of registered TSD sites in the FINDS database, it is our opinion that registered TSD sites pose no significant threat to the subject site.

EDR conducted a records search for listed CERCLIS sites within a one-half-mile radius of the Westlake Avenue Building site. No CERCLIS sites were listed as being within a one-half-mile radius of the subject site. Based on the lack of CERCLIS sites within a one-half-mile radius of the subject site, it is our opinion that registered CERCLIS sites pose no significant threat to the subject site.

EDR conducted a records search for listed CORRACTS sites within a one-mile radius of the Westlake Avenue Building site. CORRACTS sites are TSD facilities that have a Corrective Action Report in their files. No CORRACTS sites were listed as being within a one-mile radius of the subject site. Based on the lack of CORRACTS sites within a one-half-mile radius of the subject site, it is our opinion that CORRACTS sites pose no significant threat to the subject site.

4.1.4 Confirmed and Suspected Contaminated Sites (CSCSL) Report

Section 7.2.1.1 of the ASTM standards requires a review of State lists of hazardous waste sites (state hazardous waste site-SWHS in ASTM) identified for investigation or remediation within a one-mile radius of the subject property. EDR conducted a records search for listed CSCSL sites within a one-mile radius of the subject property, in conformance with ASTM standards.

Fifteen CSCSL sites appeared on the EDR search. These sites are:

- Maryatt Industries at 771 Valley Street, three blocks northwest and crossgradient of the Westlake Avenue Building. At this site, suspected and confirmed contamination of the site soils and groundwater with solvents and petroleum products is present.

- Jarvie Paint Company at 760 Aloha Street four blocks northwest and crossgradient of the Westlake Avenue Building. At this site, suspected and confirmed contamination of the site soils and groundwater with solvents and metals is present. No site specific studies are present in the Ecology files for Jarvie Paint.

- Seattle Taxi at 912 Dexter Avenue North, four blocks northwest and crossgradient of the Westlake Avenue Building. At this site, suspected and confirmed soil contamination with metals and petroleum products is present. No site specific studies are contained in Ecology files for Seattle Taxi.

- Mastercraft Metal Finish at 1175 Harrison Street, seven blocks southeast and crossgradient of the Westlake Avenue Building. At this site, suspected contamination of surface water and site soils with metals and corrosive wastes are present. No site specific studies are contained in Ecology files for the Mastercraft Metal Finish site.

- ABC Metal Finish, Inc., at 528 Pontius, seven blocks east and crossgradient of the Westlake Avenue Building. At this site, suspected contamination of surface water and site soils with metals, solvents, and corrosive/reactive wastes is present. No site specific studies are in Ecology files for the ABC Metal Finish, Inc., site.

- Mercer Street Bus Barn at 520 - 5th Avenue North, seven blocks west and crossgradient of the Westlake Avenue Building. At this site, confirmed and suspected contamination of the site soils and groundwater with petroleum products, metals, and PCBs is present. This site has been redeveloped and has undergone some remedial measures.

- Seattle City Center Property at 601-615 Mercer Street, eight blocks west and crossgradient of the Westlake Avenue Building. At this site, suspected and confirmed contamination of the site soils and groundwater with metals, solvents, and petroleum products is present.

- Lake Union Steam Plant at 1179 Eastlake Avenue East, nine blocks northeast and crossgradient of the Westlake Avenue Building. At this site, petroleum and PCB contamination has been remediated. The site has been redeveloped. Some petroleum contaminated soils remain in place. In addition, the issue of sediments in Lake Union has not been resolved at this time. This site is ranked with a priority 5 status with 1 being high priority and 5 being low priority.

- Fred Hutchinson Center, Lake Union at Eastlake Avenue East and Fairview Avenue East, nine blocks northwest and crossgradient of the Westlake Avenue Building. At this site, confirmed and suspected soils, groundwater, surface water, air and sediment contamination with metals is present.

- Bird Johnson Company at 1608 Fairview Avenue East, ten blocks northeast and crossgradient of the Westlake Avenue Building. At this site, confirmed soil and groundwater contamination with Petroleum products, PCB's and solvents is present. This site has undergone some remedial efforts and has been redeveloped.

- Melrose Apartments, ten blocks southeast and crossgradient of the Westlake Avenue Building. At this site, confirmed and suspected contamination of the soil and groundwater with petroleum products is present.

- Haug Corporation Property at 1801 Fairview Avenue North, ten blocks northeast and crossgradient of the Westlake Avenue Building. At this site, suspected and confirmed contamination of the site groundwater and soils with metals and petroleum products is present.

- Monterey Apartments Site at 622 - 1st Avenue West, ten blocks west of the Westlake Avenue Building. This site is on the opposite side of a broad ridge-like feature and is in a different near-surface water regime than the Westlake Avenue Building. This site is ranked with a priority 3 status with 1 being high priority and 5 being low priority. At the Monterey Apartments site, contamination of the site soils with petroleum products is present.

- Unocal Seattle Marketing Terminal and Upland Site, at Broad Street and Western Avenue and on Elliot Avenue 12 blocks west of the Westlake Avenue Building. This site is ranked with a priority 4 status with 1 being high priority and 5 being low priority. At the Unocal site, extensive soil, groundwater, surface water, and sediment contamination with petroleum products has been present. Remedial measures are underway. The Unocal Seattle Marketing site is on the opposite side of a broad ridge-like feature and is in a different groundwater regime than the Westlake Avenue Building.

- Lake Union Drydock at 1515 Fairview Avenue East, 12 blocks north-northeast and on the opposite side of Lake Union than the Westlake Avenue Building. This site is ranked with a priority 2 status with 1 being high priority and 5 being low priority. The drydock site has confirmed air, soil, sediment, groundwater, and surface water contamination with solvents and metals.

Due to the distances, the geohydrologic conditions, and the crossgradient location of listed CSCSL sites, there is a minimal threat of contaminant migration from such sites to the Westlake Avenue Building site.

4.2 Superfund Sites

Section 7.2.1.1 of the ASTM standards requires a review of federal and State lists of hazardous waste sites identified as National Priority Listings (NPL or Superfund sites) within a one-mile radius of the subject property. EDR's review of the National Priority List indicates that there are no Superfund sites within a one-mile radius of the Westlake Avenue Building site.

4.3 Landfills

Section 7.2.1.1 of the ASTM standards requires a review of State lists identifying landfill and solid waste disposal facilities within a one-half-mile radius of the subject property. In Washington, landfill coordination has been delegated to the individual counties. The EDR records search for landfill sites included reviewing the *Abandoned Landfill Study in Seattle,* by the Seattle-King County Department of Public Health, dated April 30, 1985. No active or abandoned landfills are located within a one-half-mile radius of the subject site.

5.0 OTHER HAZARDS

5.1 PCBs and Transformers

PCBs are associated with electrical transformer fluids and older fluorescent light ballasts. The use of PCBs in transformer fluids was discontinued in new units manufactured after 1977. Due to the age of the building, it is likely that older fluorescent light fixtures are present. These fixtures should be removed in the course of building maintenance and be lawfully disposed of. In addition, older electrical equipment on-site, including the main transformers and elevator equipment, may contain some PCB materials. All of this equipment should be maintained and disposed of in a lawful manner.

5.2 Asbestos

Asbestos is a fibrous mineral that was incorporated into a wide variety of construction materials prior to 1979. Asbestos containing materials (ACMs) include insulating pipe wrap, floor tiles, acoustical ceiling texturing, and wallboard. Based on the age of the buildings, an ACM survey should be performed prior to demolition or remodeling of the buildings. It is likely that a variety of ACMs are present in the building. All ACMs encountered should be lawfully removed and disposed of. In the event the building is to remain in use, maintenance activities should take the potential presence of ACMs into account.

5.3 Radon

Our conversations with the regional office of the EPA indicate that radon has not been a problem in areas underlain by thick sequences of glacial drift soils. We have performed radon measurements in the Puget Sound region and have found no significant levels of radon. Therefore, radon should not be a concern on this property. The primary concern is the potential for the accumulation of radon in poorly ventilated basement areas. We do not believe that radon is a potential problem on this site. If requested, we can verify on-site radon levels by testing.

5.4 On-Site Tanks

We observed no suspected UST locations on the subject site. Based on the information we have reviewed in our study, we do not suspect that any USTs have been placed on the subject site. The original boiler fuel was coal. By the mid-1930s, the heat source was listed as gas.

5.5 Other Environmental Concerns

The subject site is not located in an area where concerns about documented effects of aerial fallout from off-site industries have occurred.

A Coal Gas facility is listed as having been present at 816-822 Republican, 501 to 521 - 9th Avenue, and 807 to 825 Mercer Street. This corresponds with the location of Washington Natural Gas Corporation offices at 815 Mercer Street. The 1936 aerial photographs show a pair of large above ground storage tanks at this location. It is likely that this location was a storage facility for gas manufactured at the Coal Gas Plant located two miles north of this location. In any event, there is no existing documentation of soil or groundwater contamination associated with the former coal gas facility at this location. Thus, the risk to the Westlake Avenue Building from the coal gas facility is low.

5.6 On-Site Wells

No existing water supply or monitoring wells have been observed or are suspected of being present on the site.

6.0 SUMMARY

Our review of municipal records, regulatory agency documents, and other information revealed no evidence that, in our opinion, would normally indicate storage, use, or disposal of hazardous materials on the property beyond typical office and light commercial materials.

6.1 Current Site Use

At the time of our study, an office building occupied the site. The potential for significant contamination from current site use is minimal.

6.2 Historical Site Use

The site was historically a lumber storage yard prior to the construction of the existing building. The existing building has not been the site of the storage, use, or disposal of hazardous materials in large quantities. No underground storage tanks have been found in any historical records of on-site reconnaissances. The only site use that indicates the possible use of hazardous materials is the presence of a commercial printer in the 1940 City Directory listing. Printers typically use solvents to clean their tools. This is commonly done with solvent soaked rags with the solvent being allowed to evaporate. Inappropriate disposal of solvents or inks would have consisted of draining the fluids into the city sewer connection. Thus, no site contamination would be expected from the short term presence of a printing operation on-site. Based on the information we reviewed for this report, it is our opinion that the potential for significant contamination from past site uses is minimal.

6.3 Potential Off-Site Sources

Our reconnaissance of the neighboring developments and site vicinity topography indicates two potential sources of soil and/or groundwater contamination within a one-mile radius of the Westlake Avenue Building project site. Based on the topography in the vicinity, the local geohydrologic environment, and the nature of the potential sources, it is our opinion that the potential for contamination at the subject site from off-site sources is low to moderate. The off-site issues are primarily the adjacent Unocal Service Station and the adjacent H and A Investments property (Rose Property). Remedial measures have been undertaken at both locations. However, there is some risk that petroleum contamination could have migrated beneath the Westlake Avenue Building site through groundwater transport.

7.0 CONCLUSIONS

We did not observe any obvious conditions indicating the potential presence of hazardous materials on the site. Based on the information and data that we reviewed and documented in this report, it is our opinion that the potential for significant hazardous contamination of the site soils and groundwater that would require site remedial actions is low. It is possible that some petroleum contaminated soils may be present along the top of the groundwater table. These soils might require special disposal arrangements if they are encountered during construction of new foundations on the site. Current disposal costs for petroleum hydrocarbon contaminated soils are on the order of $30 to $40 per ton. It is not likely that extensive excavations or remedial measures would be required by regulatory agencies based on our current understanding of the site and laws. We do not see a need to perform site specific soil or groundwater sampling at this time.

Current regulations under the Model Toxics Control Act exempt innocent neighbors from cleanups due to contamination that has clearly migrated onto the site from off-site sources. However, if hydrocarbon contamination is encountered beneath the building, it may be difficult to obtain sufficient information to clearly define the source and responsible off-site parties. The costs of the investigation to delineate off-site sources could exceed the potential costs for dealing with the issue on-site.

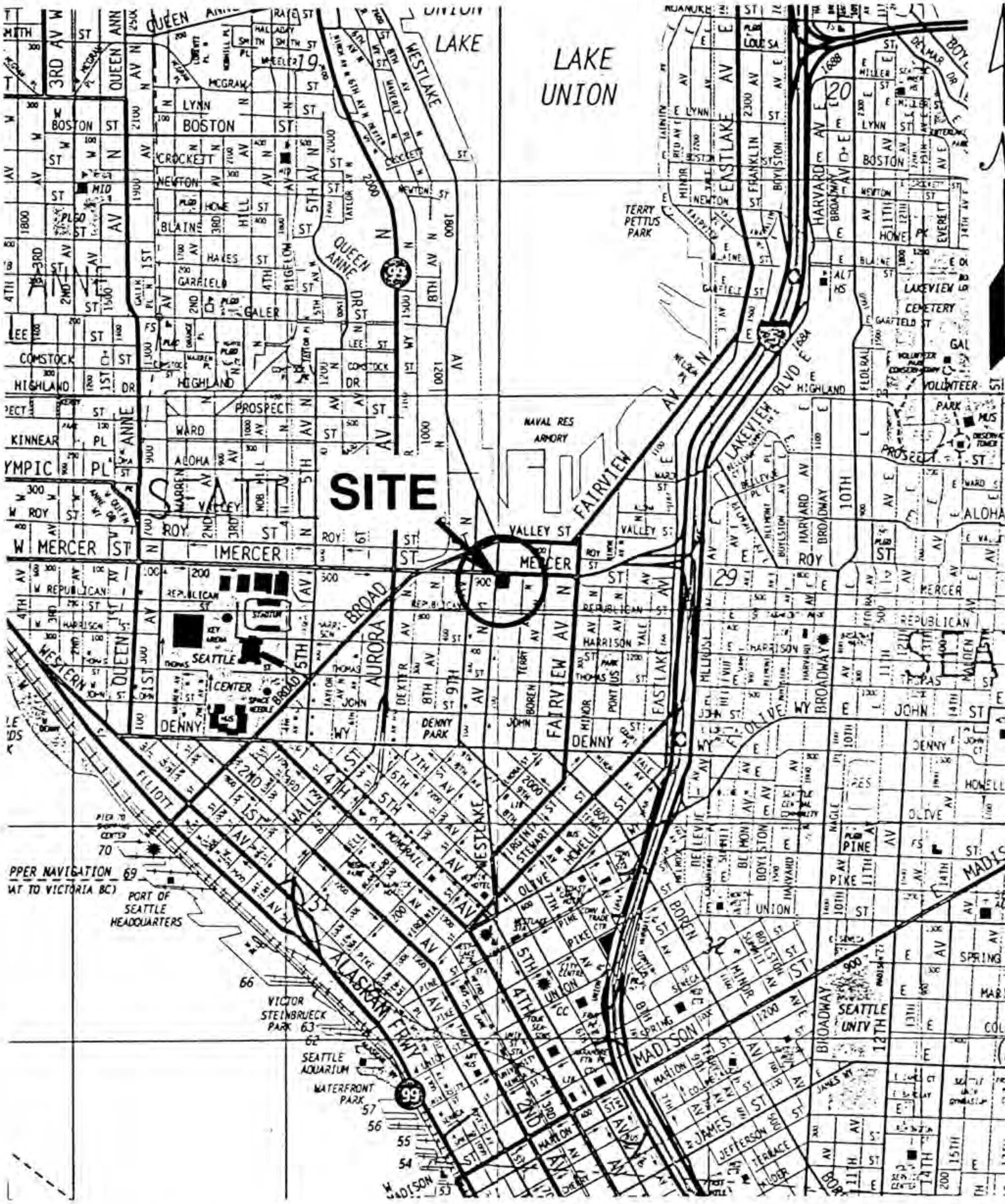
Our conclusions are generally consistent with the conclusions presented in the prior report for the site, prepared by Enviros, dated January 24, 1994.

8.0 LIMITATIONS

The findings, conclusions, and recommendations presented in this report are based on our documented site observations, our review of historic information, review of regulatory information, and the referenced aerial photographs. Other information related to past site use or current site conditions may exist.

We did not perform any testing for this study. If the existing site use changes or if further information on the site becomes available, Terra Associates, Inc., should review the changes, as they affect our conclusions.

We prepared our conclusions and recommendations in accordance with generally accepted professional engineering practices. We make no other warranty, either expressed or implied. This report is the property of Terra Associates, Inc., and is intended for specific application to Westlake Avenue Building site. This report is for the exclusive use of Marcus and Millichap and their authorized representatives.



REFERENCE: THE THOMAS GUIDE, KING COUNTY, WASHINGTON, PAGES 564 AND 565, 1998 EDITION.

TERRA ASSOCIATES Geotechnical Consultants	VICINITY MAP WESTLAKE AVENUE BUILDING SEATTLE, WASHINGTON

Proj. No. 3939	Date MAR. 1998	Figure 1

APPROXIMATE SCALE 1:24000

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 1/2 0 1 MILE

CONTOUR INTERVAL: 25 FEET

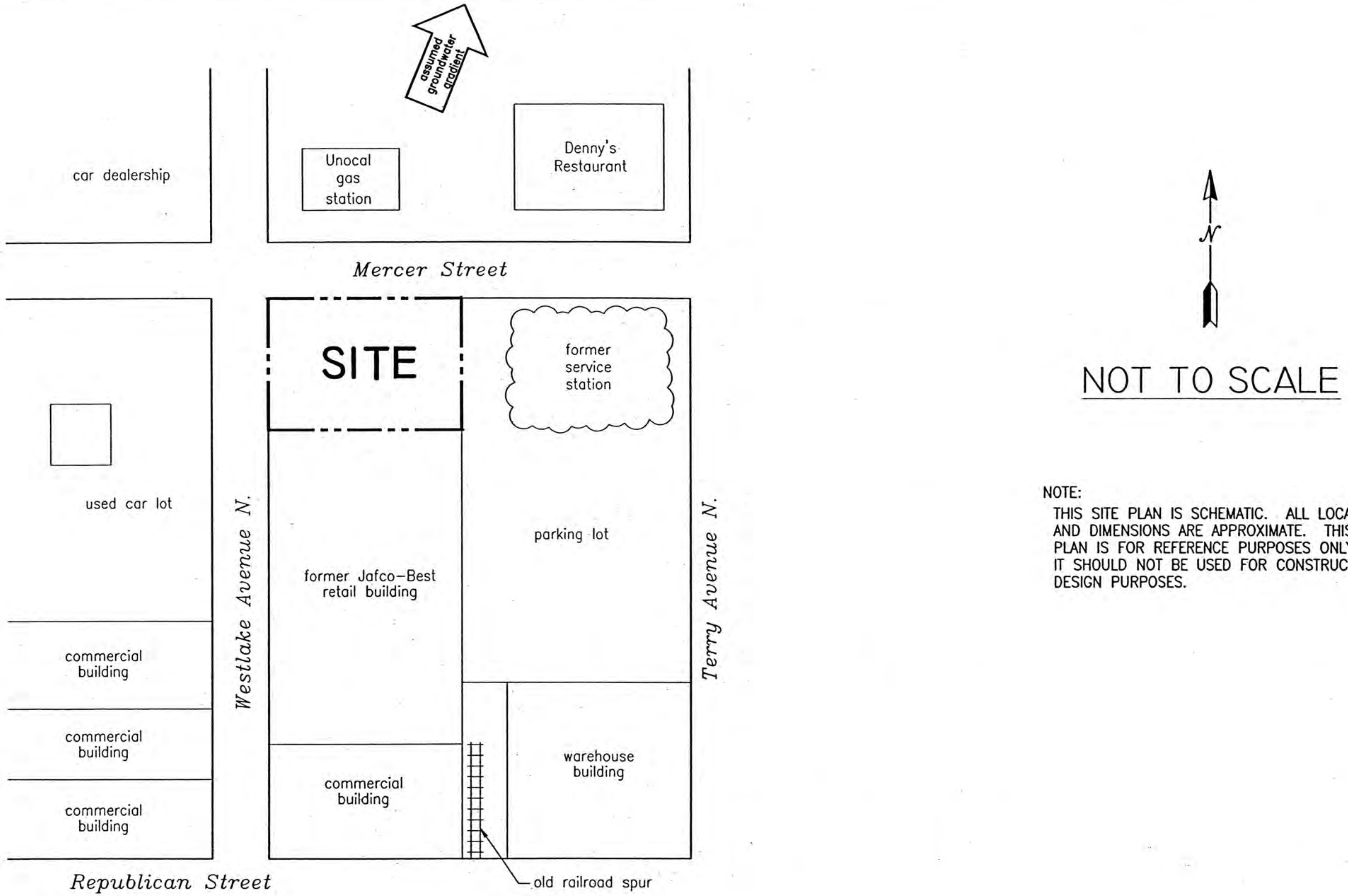
REFERENCE:

1. USGS QUADRANGLE, SEATTLE (NORTH), WASHINGTON, DATED 1949 (PHOTOREVISED 1968).
2. USGS QUADRANGLE, SEATTLE (SOUTH), WASHINGTON, DATED 1949 (PHOTOREVISED 1968 AND 1973).

TERRA ASSOCIATES
Geotechnical Consultants

TOPOGRAPHIC VICINITY MAP
WESTLAKE AVENUE BUILDING
SEATTLE, WASHINGTON

Proj. No. 3939	Date MAR. 1998	Figure 2



NOTE:
THIS SITE PLAN IS SCHEMATIC. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. THIS SITE PLAN IS FOR REFERENCE PURPOSES ONLY AND IT SHOULD NOT BE USED FOR CONSTRUCTION OR DESIGN PURPOSES.

TERRA ASSOCIATES
Geotechnical Consultants

SCHEMATIC SITE PLAN
WESTLAKE AVENUE BUILDING
SEATTLE, WASHINGTON

Proj. No. 3939	Date MAR. 1998	Figure 3

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
Fax 206.328.5581
Tel 206.324.9530
www.hartcrowser.com

J-7118

April 5, 1999

City Investors VII LLC
c/o Mr. Joe Delaney
Foster Pepper & Shefelman
1111 Third Avenue, Suite 3400
Seattle, Washington 98101

Re: Preliminary Environmental Assessment Update
Westlake Avenue Property (428, 500, 510, and 520 Westlake Avenue North)
Seattle, Washington

Dear Mr. Delaney:

This letter report presents the results of our preliminary environmental assessment update at the referenced property located in Seattle, Washington. The project work scope was completed in accordance with our proposal (99-11-1165), dated February 3, 1999.

We understand that City Investors is interested in purchasing the property from Leavitt Shay Real Estate Services, Inc. The property includes a parking lot at 428 Westlake Avenue, and three retail buildings at 500, 510, and 520 Westlake Avenue North (Photo 1 and Figure 1). Previous environmental work at the property includes Phase I Environmental Assessments by Dames & Moore in February and March 1989 and April 1994, and a Phase II soil investigation on the south side of the 500 Westlake Avenue building by Dames & Moore in September 1994.

This preliminary environmental assessment update provides information on the current conditions as well as past practices at the property to assess the potential for adverse environmental conditions.

Our report begins with a **SUMMARY OF FINDINGS** section which is followed by our:

- **SCOPE OF WORK**;
- **SUBJECT PROPERTY DESCRIPTION**;
- **SITE GEOLOGY AND HYDROGEOLOGY**;
- **HISTORICAL CHARACTERIZATION**;
- **REGULATORY AGENCY DATABASE LIST AND FILE REVIEW**;
- **SITE RECONNAISSANCE**;
- **POTENTIAL FOR CONTAMINATION**, and
- **LIMITATIONS**.

Figure 1 is a Vicinity Map showing the location of the subject property. A Site Plan showing prominent property features and photograph locations is presented on Figure 2. Appendix A contains site reconnaissance photos. A copy of the 1994 Phase II Soil Investigations (Dames & Moore) is presented in Appendix B. Appendix C presents the Environmental Data Resources, Inc. (EDR) site assessment report.

SUMMARY OF FINDINGS

Subject Property

Based on our historical review, regulatory agency list and file review, and site reconnaissance observations, a moderate potential for subsurface contamination exists at the subject property. The following summarizes our findings regarding potential environmental issues:

- **Upgradient Firestone Tire Center.** During the 1950s and 1960s, a gas station was located at the Firestone Tire Center facility immediately to the south of the U-Park parking lot. Constructed in the 1940s, the site has been primarily used for tire mounting and vehicle repair. The Firestone building contains six closed in-place gasoline underground storage tanks (USTs) and several underground vehicle hoists. This site is directly upgradient to the subject property and presents a potential for migratory petroleum hydrocarbon contamination.

- **Former Blacksmith Shops.** Two separate blacksmith shops were present on the subject property in the early 1900s. Historical records indicate the shops were located at 500 Westlake Avenue from at least 1905 until 1919, and at 524 Westlake Avenue from at least 1917 to 1936. The shops were built on pilings above a hillside that sloped downhill to the east from Westlake Avenue to the subject property alley. Some potential exists for petroleum hydrocarbon, solvent, and metals contamination resulting from the blacksmith operations. However, much of the potential contamination may have been excavated for foundations and basements.

- **Underground Storage Tanks (USTs).** A 1,500-gallon heating oil UST was removed from the sidewalk south of the 500 Westlake Avenue building in 1989 (Figure 2). The results of a Dames & Moore 1994 subsurface investigation indicated that petroleum-affected soils were not present (Appendix B). The U-Park parking lot's (428 Westlake Avenue) prior use was as a used car lot; however, no historical data concerning USTs was found, and no suspect piping was observed in this area during our site visit. The potential for contamination resulting from on-site USTs is low.

- **Asbestos.** The three buildings contained several materials that were identified as suspect asbestos-containing material (ACM). The suspect ACM include mastic residue remaining from a floor tile abatement (Photo 2), linoleum flooring in restrooms and showrooms, terrazzo flooring, ceiling tiles, fibrous carpet undercoating, roofing materials, and fire doors. All of the asbestos steam pipe wrap that was originally identified in the 500 and 510 Westlake buildings appears to have been properly abated.

- **Lead-Based Paint (LBP).** Several renovations and re-paintings have occurred throughout the buildings which might have covered up older paint which contained lead. Sampling or testing was not conducted for LBP. No paint chipping or excessive peeling was observed during our site reconnaissance.

- **Polychlorinated Biphenols (PCBs).** Older fluorescent lamps were present throughout the buildings. The ballasts may contain PCB and present a potential disposal issue. Two pole-mounted electric transformers are present to the west of the Guitar Center. The transformers were labeled as non-PCB containing.

SCOPE OF WORK

Our preliminary environmental assessment update included:

- Conducting a historical review of the subject property and surrounding area;

- Reviewing regulatory agency database lists and files for the subject property and adjacent sites;

- Reviewing previous Dames & Moore environmental reports for the property;

- Conducting a site reconnaissance to observe the subject property and a walk-by reconnaissance to observe surrounding properties; and

- Preparing this letter report presenting the findings of our work.

SUBJECT PROPERTY DESCRIPTION

The subject property is comprised of three buildings (at 500, 510, and 520 Westlake Avenue North) and a parking lot operated by U-Park Systems (at 428 Westlake Ave.). The buildings are constructed of concrete and wood, are heated by natural gas or electric fans, and are served by the municipal sewer system.

The buildings at 500 and 510 Westlake Avenue (three stories and four stories, respectively) are occupied by clothing retailers. The basements of the two buildings are connected and are currently vacant. The basement is unfinished concrete and was recently occupied by Nordstrom for antique furniture storage and repair. The 520 Westlake Avenue building is occupied by Guitar Center (top floor), a floral supply company (basement), and has a parking lot located on the roof of the building.

The subject property is bounded by Westlake Avenue to the west; Firestone Tire Center to the south, parking lots, a rail line spur and warehouse to the east; and a three-story office building to the north. Republican Street separates the parking lot parcel to the south from the three subject property buildings to the north (Figure 2).

SITE GEOLOGY AND HYDROGEOLOGY

The property is located in the south Lake Union area. The neighborhood received up to 15 feet of fill material derived from the nearby regrades in about 1911. Borings conducted by Dames & Moore near the former UST in 1994 identified a brown silty sand that graded to a gray sandy silt at a depth of approximately 13 feet below grade (the Republican Street grade). Borings conducted on the adjacent Rosen property parking lot to the east (approximately 10 feet below the Republican Street grade) in the early 1990s encountered fill material composed of sand, silt, and debris to a depth varying from 1.0 to 12 feet below grade. In some locations up to 12 feet of wood fragments and consolidated sawdust were encountered beneath the sandy fill. The sand fill was generally underlain by a layer of fine sand and silt above a gray clay.

The subject property buildings are constructed on a slope paralleling Westlake Avenue. The first floor of the buildings are level with Westlake Avenue on the west side, and the basements are level with the adjacent property parking lot on the east side. The subject property parking lot is level. The neighborhood is generally flat with a gentle slope to the north toward Lake Union. Based on surrounding topography, and Hart Crowser project experience in the area, groundwater flow is generally to the north and northeast. Depth to groundwater at the Rosen parking lot was 3 to 7 feet below grade

HISTORICAL CHARACTERIZATION UPDATE

Our review of the site history prior to 1989 is based partly on the Dames & Moore site assessments for the property. Information was collected by Dames & Moore from the following resources: Sanborn fire insurance maps, aerial photographs, real estate atlases, and business directories. The dates of the resources were not specified in the Dames & Moore reports.

Hart Crowser conducted an additional historical characterization (and update) developed from the following sources:

- Aerial photographs (Walker & Associates, 1936, 1946, and 1956; Pacific Aerial Surveys, 1953; Puget Sound Regional Transportation Study, 1965; Washington Department of Natural Resources, 1970, 1985, and 1995);
- Topographic maps (US Coast and Geodetic Survey, 1909);
- Fire Insurance Maps (Sanborn, 1893, 1905, 1917, 1950, and 1969);
- King County Tax Records (Puget Sound Regional Archives);
- Building Plans and Permits (City of Seattle DCLU); and
- City of Seattle Street Directories (Polk, 1994 and 1996).

A Chain of Title was not available for review. County tax records for the subject property block were not on file at the Puget Sound Regional Archives. Dates in the text refer to historical records and provide an approximate indication of the period of operation for each business or activity identified, except where explicitly stated.

Subject Property

428 Westlake Avenue North. Sanborn maps, aerial photographs, and street directories indicate the property remained vacant (or absent of buildings) from at least 1893 until the early 1960s. The property appears as a grassy lot containing a billboard in the 1946 aerial photograph, and as a paved parking lot in the 1956 aerial. A small used car dealership office was constructed on the property in 1962. There were no plans available for the building at the Seattle DCLU. The property was first identified in the 1965 Polk directory as the Studebaker Center (a car sales lot). Aerial photographs indicate the car dealership continued to operate until the 1970s. By 1981, the office building was removed. The lot has operated as a commercial parking lot since the 1980s.

500 and 510 Westlake Avenue North. The property was undeveloped in 1893, and was part of lumber storage lot for a large sawmill located on the north side of Mercer Street. The 1905 Sanborn map indicates that a small building at the corner of Westlake Avenue and Republican Street contained a blacksmith shop. By 1917, the blacksmith shop had expanded into two larger buildings fronting Republican Street. The existing building at 510 Westlake (also known as 512 Westlake) was constructed in 1919. Tax records indicate that a Newton (auto parts) occupied the building in the 1930s. The lot to the south remained vacant until the existing building (at 500 Westlake) was constructed as an addition in 1947. The buildings were originally heated by an oil-fired boiler and were occupied by Radio Television & Appliance during the 1950s. Occupants in the 1960s include a school/office supply store and an appliance store. Learning World (educational supplies) and Nordstrom's (antique furniture storage) occupied the buildings in the 1980s and 1990s.

Recent tenants include retail clothing stores. Faction, the current retailing tenant at 500 Westlake, recently remodeled the interior of the building. Outdoor & More, is an outdoor equipment retailer located in the 510 Westlake Avenue building.

A 1,500-gallon heating oil UST was removed in November 1989. The tank was located under the sidewalk along Republican Street, and there was no evidence of leakage observed during the removal process. Dames & Moore conducted a Phase II soils investigation in the vicinity of the UST removal in 1994, and no petroleum hydrocarbons were detected (Appendix B).

520 Westlake Avenue North. During the 1890s, the property was part of a lumber storage yard. Three buildings were constructed on the site between 1905 and 1917. A stable and wagon house occupied the buildings at 516 and 518 Westlake. The northernmost building (524 Westlake) contained a "blacksmith wagon shop and auto repair" on the first floor and a veterinary hospital on the second. These three buildings were constructed on pilings above the east side of the property. Three buildings also appear on the property in the 1936 aerial photograph. By 1946, the buildings were gone and the property remained vacant until the early 1960s. The 1956 aerial photograph indicates the property was below the Westlake Avenue grade and was used as a parking lot for the 510 Westlake building. The property at that time was accessed from the alley and also contained a billboard and shrub growth on the north end. The existing building was constructed in 1964 and was occupied by Jafco (a discount retailer) until the mid-1980s. The Best Company operated a similar retail store until about 1994. The building later contained Boat US (boat supplies and sales) in 1994, and has been occupied by Guitar Center since 1996.

Surrounding Property

In the 1890s and early 1900s, the neighborhood was a generally characterized by residential development, though the Western Saw Mill (also known as the Brace and Hergert Mill Company) located across Mercer Street to the north was a dominant feature. The original Lake Union shoreline was located approximately on the current Mercer Street right of way. After filling occurred throughout the South Lake Union neighborhood in 1911, commercial development of the surrounding properties advanced as residential use slowly declined.

Area developments by the 1940s included many manufacturing businesses as well as several gasoline stations located on Mercer Street and Westlake Avenue. Surrounding properties included the Firestone Tire building (which originally included a gasoline station) adjacent to the south of the subject property parking lot, rail yards to the east paralleling Terry Avenue, a department store warehouse adjacent to the east of the 500 Westlake building, a gasoline station at 965 Mercer Street (adjacent to the northeast of the 520 Westlake building), an office building adjacent to the north, and a car lot and transmission shop across Westlake Avenue to the west. Since the 1940s, the neighborhood has contained a variety of car dealers, service stations, print shops, freight companies, manufacturing businesses, and warehouses. The Firestone continues to operate in the building south of the subject property parking lot.

Jenks gasoline station at 965 Mercer Street (Figure 2) operated from 1935 until about 1962. The 1946 aerial photograph indicates the property immediately south of gasoline station (the current parking lot adjacent to the 520 Westlake building) was occupied by uncovered storage bins. Continental fuel was listed as the tenant at 961 Mercer Street in 1949. Approximately 1,600 cubic yards of petroleum-contaminated soil were excavated from the former gasoline station site in 1993. Further discussion of this site (also known as the Rosen Site) is presented in the following section.

REGULATORY AGENCY DATABASE LIST AND FILE REVIEW

This section describes the regulatory agency database lists reviewed for sites of concern by Environmental Data Resources, Inc. (EDR) and the results of our regulatory agency file review. EDR is a firm that acquires data from government agencies on various media such as magnetic tape, disk, and hard copy. The purpose of the regulatory agency database list review was to screen for potential sources of contamination or activities of environmental concern for the subject property and adjacent properties. The agency-published databases were screened for sites of potential concern in general accordance with current American Society for Testing and Materials (ASTM) standards. Because our regulatory agency database search was based on current agency records, our results are only as accurate as the records provided.

Regulatory agency database lists reviewed and approximate search distances from the subject property are detailed below:

- Environmental Protection Agency (EPA) National Priorities List (NPL) (October 1998) - List of "Superfund" sites; search radius of 1 mile;

- EPA Region 10 Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) List (November 1998) - List of sites which are either proposed to or are on the NPL and sites currently being reviewed for possible inclusion on the NPL; search radius of 1/2 mile;

- EPA Emergency Response Notification System (ERNS) List (December 1998) - List of reported CERCLA oil or hazardous substance releases or spills; search for subject property;

- EPA Region 10 Resource Conservation and Recovery Information System (RCRIS) List (October 1998)
  - Treatment/Storage/Disposal (TSD) - List of generators and transporters of hazardous waste, and TSD facilities; search radius of 1 mile;

  - Large Quantity Generator (LQG), Small Quantity Generator (SQG) - List of facilities that qualify as large or small quantity generators of hazardous wastes under RCRA; search radius of 1/4 mile;

- EPA Region 10 RCRA Corrective Action Sites (CORRACTS) List (December 1998) - List of RCRA facilities which are undergoing corrective action; search radius of 1 mile;

- EPA Region 10 Superfund (CERCLA) Consent Decrees (CONSENT) List (Variable) - List of major legal settlements establishing responsibility and standards for cleanup at NPL sites; search radius of 1 mile;

- EPA Region 10 Facility Index System (FINDS) List (September 1997) - Lists both facility information and "pointers" to other sources that contain more detail; search for subject property;

- EPA Federal Superfund Liens (NPL Liens) List (October 1991) - List of filed Superfund liens; search for subject property;

- EPA PCB Activity Database System (PADS) List (September 1997) - Lists generators, transporters, commercial storers, and/or brokers and disposers of PCBs who are required to notify the EPA of such activities; search for subject property;

- EPA Region 10 RCRA Administrative Action Tracking System (RAATS) List (April 1995) - List of sites under RCRA pertaining to major violators undergoing enforcement actions, search for subject property;

- EPA Region 10 Toxic Release Inventory System (TRIS) List (December 1995) - Inventory of toxic chemicals emissions from certain facilities; search for subject property;

- EPA Toxic Substances Control Act (TSCA) List December 1994) - Identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list; search for subject property;

- EPA Delisted NPL Sites (Delisted NPL) (Variable) - Sites identified for deletion from the NPL where no further response is appropriate; search for subject property;

- EPA No Further Remedial Action Planned (NFRAP) List (Variable) - Identifies sites that have been removed from CERCLIS; search for subject property;

- Federal Records of Decision (ROD) List (March 1995) - List of Superfund Sites where ROD property has been developed; search radius of 1 mile;

- US Department of Transportation (HMIRS) List (December 1997) - List of hazardous material spill incidents reported to DOT; search for subject property;

- Nuclear Regulatory Commission (MLTS) List (December 1998) - List of sites which possess or use radioactive materials and are subject to NRC licensing requirements; search for subject property;

- Washington Confirmed and Suspected Contaminated Sites List (CSCSL) (November 1998) - List of sites currently being investigated by the Washington State Department of Ecology (Ecology) under the Model Toxic Control Act (MTCA); search radius of 1 mile;

- Ecology Hazardous Sites List (HSL) (August 1998) - List of sites assessed and ranked using the Washington Ranking Method (WARM); search radius of 1 mile;

- Ecology Leaking Underground Storage Tank (LUST) Site List (September 1998) - List of registered leaking USTs in Washington; search radius of 1/2 mile;

- Ecology Underground Storage Tank (UST) Registration List (September 1998) - List of registered USTs in Washington; search radius of 1/4 mile;

- Ecology Solid Waste Facilities/Landfill Sites (SWF/LF) (July 1998) - List of permitted solid waste landfills operating in Washington; search radius of 1/2 mile; and

- Ecology Independent Remedial Action Cleanup Reports (IRAP/ICR) (November 1998) - List of sites undergoing cleanup for which reports have been received by Ecology from either the owner or operator; search radius of 1/2 mile.

EDR conducted a review of the regulatory agency database lists indicated above. The report of the database search provided by EDR includes a list of databases searched, a statistical profile indicating the number of properties within 1 mile of the subject property, selected detailed information from federal and state lists, and an overview map illustrating the identifiable and mappable sites within 1 mile of the subject property. The EDR report is presented in Appendix C of this report. Refer to the EDR report for more detailed information and additional local database lists reviewed.

The purpose of the file review is to acquire regulatory agency file information for the subject property and adjacent sites of potential concern based on their database-type listing and to identify potential sources of contamination or activities of environmental concern. The review is limited to current files and does not include a review of archived information.

On February 16, 1999, we made Freedom of Information Act (FOIA) requests to Ecology and EPA Region 10 to inquire about the availability of regulatory file information for the subject property and nearby properties identified from the EDR database search regarding potential sources of contamination or activities of environmental concern to the subject property. Our request to EPA is pending, and any pertinent information received will be presented as an addendum to this report.

The following summarizes the results of the database search and our file review at Ecology's Northwest Regional Office in Bellevue on February 22, 1999.

Subject Property

The subject property was not identified on the agency lists reviewed. Ecology and EPA had no available files for the subject property.

Nearby Site Information

Several nearby properties were identified on the agency lists. Three LUST or ICR sites were identified within one block of the property. One adjacent topographically upgradient site was also identified. The following summarizes our review of files for those properties.

Rosen Property at 960 Republican Street (ICR List). This site is adjacent to the subject property between Republican and Mercer Street. It is currently a parking lot and a warehouse. A gasoline station was located at the north end of the Rosen property. In October 1993, approximately 1,600 cubic yards of petroleum contaminated soil were removed from the site. Samples from the base of the excavation contained up to 5,400 mg/kg gasoline-range hydrocarbons and 3,700 mg/kg diesel-range hydrocarbons. A subsurface investigation including four groundwater monitoring wells was conducted by Science & Engineering Analysis Corporation (SEACOR) in 1994. Soil samples collected at 5.0 feet below ground surface were submitted from two of the borings, and contained diesel- and oil-range hydrocarbons below Method A cleanup levels.

Groundwater was measured by SEACOR to be at depths of between 3 to 7 feet below ground surface. The results of bi-monthly groundwater monitoring between July 1994 and December 1995 indicated a consistent presence of elevated diesel- and oil-range hydrocarbons from groundwater sampled at the north end of the site (adjacent to Mercer Street). Groundwater concentrations of up to 4,580 ug/L diesel-range and 14,800 ug/L oil-range hydrocarbons were identified. Groundwater sampled to the south of the former service station building generally contained low (or non detectable) concentrations of diesel- and oil-range hydrocarbons, though the oil-range hydrocarbons were detected at 1,000 ug/L and 3,010 ug/L on two occasions. This was reportedly the former site of a heating oil UST. Groundwater flow was determined by SEACOR to be to the northeast, away from the subject property.

Ivars Commissary at 500 Terry Avenue North (LUST and ICR Lists). This site is located ½ block to the east of the subject property. Following removal of several gasoline and diesel oil USTs in 1993, diesel-affected soil was identified in the excavations. Groundwater monitoring wells identified the presence of free phase gasoline and diesel in wells located in or near the parking lot near Terry Avenue, approximately 100 feet north of Republican Street. One of the wells containing free phase product was located on Terry Avenue. Passive product skimmer were installed in two of the wells. This site is located cross-gradient to the subject property.

Unocal at 600 Westlake Avenue North (ICR List). This site is located ½ block to the north of the subject property. Unocal employees detected a gasoline leak in a product line in May 1980. Unocal estimated that as much as 80,000 gallons of leaded gasoline had been released during a four-month period prior to discovery. Approximately 41,900 gallons were recovered by 1982. Several dozen monitoring wells were installed in the surrounding neighborhood. Two wells were located near the subject property: MW-41 located on Westlake Avenue near the 510 Westlake building, and MW-40, located on Mercer Street at the north end of the Rosen site. The most recent sampling of the two wells (in 1996) indicated that no detectable gasoline constituents were identified in MW-41, and 9,860 ug/L oil-range hydrocarbons were detected in MW-40. The groundwater flow direction surrounding the Unocal site was determined by GeoEngineers Inc. to be to the northeast, away from the subject property.

Firestone at 400 Westlake Avenue (UST List). The Firestone site is located adjacent to the subject property parking lot at 428 Westlake Avenue. The site contains six gasoline USTs that were closed in-place in the early 1990s.

Based on distance or cross-gradient position, other area properties identified on the database lists do not appear to present a likely potential for contamination to the subject property. Several neighboring businesses to south were identified as RCRA small quantity generators and UST sites. RCRA and UST site indicate use of petroleum/chemicals, and do not imply environmental releases.

SITE RECONNAISSANCE

On February 26, 1999, D. Joseph Grojean and Rob Roberts of Hart Crowser conducted a site reconnaissance with Jim Edris (the property manager for Leavitt Shay Real Estate) to observe the subject property and current business/land use. Photographs taken of the property during the site visit are presented in Appendix A. The following observations were recorded.

Subject Property (428, 500-520 Westlake Avenue North)

Asbestos-Containing Materials (ACM). ACM located in the basement boiler insulation, pipe insulation, linoleum, and floor tiles identified in earlier reports (Dames & Moore, 1989 and 1994) were observed, however, suspect ACMs are potentially still present in some of these areas. Boiler and pipe insulation were abated from the basement area per Dames & Moore; however, pipes with insulation could still be present behind walls and under flooring. Mastic residues remain after the nine-by nine-inch floor tile abatement from the Guitar Center's stock room floor (Photograph 2). The small room joining the stock room contains linoleum. These two suspect materials have not been sampled or analyzed for asbestos.

Other materials not tested and suspected to contain asbestos include: Guitar Center's "Terrazzo" poured floor (Photograph 3) in the storage room and under carpet in main show room; second floor bathroom ceiling tile to Faction retail store; floor tile located under carpeting in Outdoor & More on the first floor, fiber backing under the carpet flooring in Outdoor & More on second floor; roofing material, and fire doors throughout the building (22 identified).

Lead-Based Paint. Mr. Edris stated several of the stores and common areas had been renovated, and he was uncertain if LBP had been used. If LBP was used, most likely it was painted over. No paint chipping and peeling were noticed, and no samples were collected for analysis.

Polychlorinated Biphenol-Containing Ballasts. Inaccessible, fluorescent lamps were present on the property which appeared to be older. Older lamp fixtures may contain PCB ballasts and it is uncertain if the ballasts or fixtures were changed out during renovations. Two pole-mounted transformers are located west of the Guitar Center and contents are unknown. No staining was observed around the pole or transformers.

Underground Storage Tanks. We did not observe any indications (vent pipes or fill ports) of USTs at the subject property.

Additional observations were noted around the property:

- A small amount of mineral staining was present around the floor drain located next to the boiler in the basement. No staining was noticed in or around the floor drains or catch basin located in the loading dock area.

- Hazardous materials (varnishes and paint thinner) were located on a table with no containment in the basement. No spills or leaks were identified (Photograph 4).

- A small stain on the floor in the vicinity of the prior hazardous material storage shelves was present, however, no floor drains are in this area.

- The sewage tank with pump was installed in the basement about six years ago, according to Mr. Edris. The main sewer line is located beneath Westlake Avenue.

- Two cable and motor-operated elevators were present on the property. No hydraulics were present and the elevators were still operable.

- Several asphalt patches of various sizes were noticed throughout the U-Park System parking lot. The patches appeared to be related to surface repairs.

Site Vicinity

Hart Crowser conducted a one- to two-block survey of the area surrounding the subject property. Commercial, retail businesses comprise most of the surrounding properties. Firestone is located on the same block as the U-Park System (subject property) to the south. Retail stores are located south of Firestone, across Harrison Street, and along the west side of Westlake Avenue.

Retail stores and businesses located to the west of the subject property include (listed from south to north): Napa Auto Parts, Mini-Tankers, Westlake Electronics, Boise Office Furniture, Antique Liquidators, another antique furniture store, Hugh Loewy Company, Inc., and the used car lot belonging to Pacific Lincoln Mercury Nissan. American Mortgage Center is located north of the subject property on the same block. Along the west side of Terry Avenue, east of the subject property (listed from south to north) lies: a fenced parking lot to the east of Firestone, a building under construction, another parking lot, and Denny's Restaurant located north of Mercer Avenue.

Piping associated with a UST was present at the property to the east which was being reconstructed. However, the UST was removed prior to reconstruction, as reported by Mr. Edris. No further information concerning the UST was available. No USTs or piping were readily identified at other surrounding properties.

POTENTIAL FOR CONTAMINATION

Subject Property

The subject property contains a moderate potential for contamination based on the data reviewed and the site reconnaissance. Several areas contain suspect asbestos and suspect LBP (identified above). The materials appear to be in good condition, and should pose little to no risk to personnel at the work site as long as the materials are properly maintained. Facilities built in the 1970s and prior have the potential to contain ACM and LBP. If ACM or LBP is allowed to become degraded, damaged by water, pulverized, and allowed to become airborne, the risk of asbestos or lead contamination to personnel increases.

PCB-containing material are not a concern if they are in good condition. Replacement of PCB-containing light ballasts should continue with appropriate disposal of the removed ballasts.

One UST was removed from the subject property prior to 1994 (Dames & Moore) and no other USTs were identified however, USTs could be present at the U-Park parking lot considering the prior history of the property as a car dealership.

Presence of blacksmith shops on the property in the early 1900s presents some potential for contamination.

Surrounding Properties

Surrounding properties pose a moderate risk for contamination to the subject property. The Firestone property to the south of the U-Park (upgradient) contains at least six closed gasoline USTs. The Firestone has also been used for vehicle repair and includes underground hydraulic vehicle hoists. This presents a potential for migratory contamination at the U-Park parcel. The former UST located at the warehouse neighboring the 500 Westlake Avenue building presents limited potential for contamination. No other USTs were identified during the site reconnaissance of the surrounding area.

Area sites listed on the agency database lists (such as LUSTs and ICR sites) present a low potential for contamination based on presumed groundwater flow direction.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of City Investors, and their client(s), for specific application to the subject property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

It should be noted that Hart Crowser relied on information provided by the individuals representing the property owner as indicated in the report. Hart Crowser can only relay this information as it has been presented and cannot be responsible for its accuracy nor completeness.

Our work did not include sampling or testing of drinking water for lead content, sampling for indoor air quality, assessment of sewer systems, sampling for radon vapor, a good faith survey for lead, and asbestos, and other items which are not the present standard of practice, unless otherwise noted herein.

Any questions regarding our work and this letter report, the presentation of the information and the interpretation of the data are welcome and should be referred the undersigned.

We trust that this report meets your needs.

Sincerely,

HART CROWSER, INC.

ROB ROBERTS
Senior Staff Chemist
cer@hartcrowser.com

for **JULIE K.W. WUKELIC**
Principal
jkw@hartcrowser.com

7118/Westlake.doc

Attachments:
Figure 1 - Vicinity Map
Figure 2 - Site Plan
Appendix A - Site Reconnaissance Photographs
Appendix B - Phase II Soil Investigation
Dames & Moore, September 28, 1994
Appendix C - Site Assessment Report
EDR, Inc.

Vicinity Map

COREL\JOBS\7118\VICINITY7118

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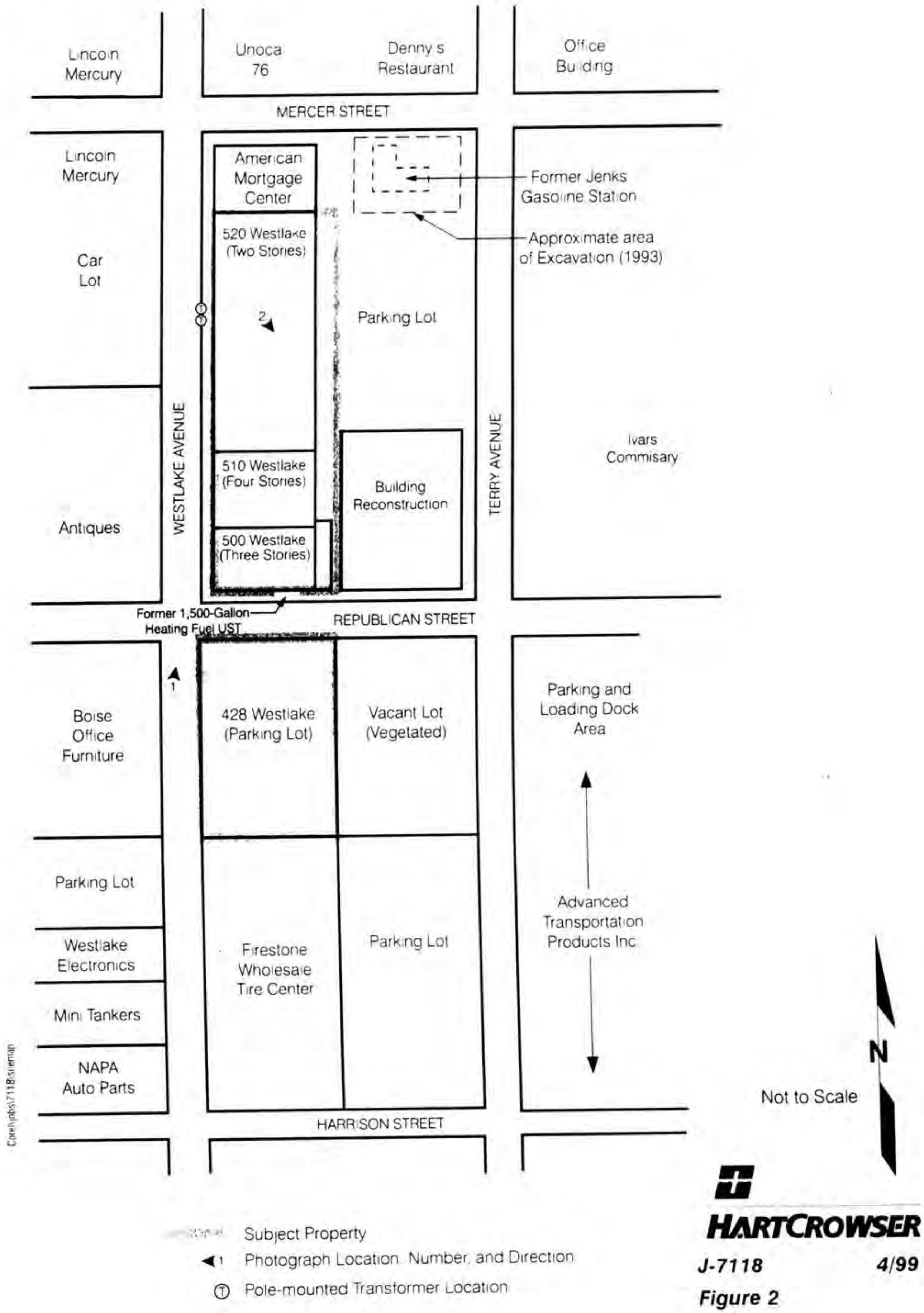
J-7118 4/99

Figure 1

Site Map



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J-7118 4/99

Figure 2

ASBESTOS SURVEY REPORT

530 Westlake Avenue North
Seattle, Washington

PREPARED FOR

Silver Run, LLC

Issaquah, Washington

PROJECT # WEB 8-301

April 6, 1998

George Webster

George Webster, P.E.
(AHERA Building Inspector)
President
WEBSTERS' Inc.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

WEBSTERS' Inc. was retained by Silver Run, LLC to conduct an asbestos survey for suspect asbestos containing building materials (ACBM) within the three story building located at 530 Westlake Avenue North in Seattle, Washington.

Authorization to perform this survey was received by WEBSTERS' from Mr. Scott Clements on March 29, 1998 as referenced by WEBSTERS' proposal #8-301.

The purpose of this asbestos survey was to identify all those building materials that contain asbestos and to develop a budgetary estimate for removal of all asbestos containing building materials.

This survey, conducted during late March and early April, encompassed the basement level parking area, together with both the basement boiler and mechanical rooms; the ground level entrance lobby, the commercial space defined as 536 Westlake Avenue, and the large high ceiling enclosed parking area; the Mezzanine storage area above the lobby and 536 office area; the second floor office areas; the third floor office areas; and the roof. Suspect materials were sampled and analyzed by NVL Laboratories.

Asbestos was identified in the following materials:

- **Nine inch square Vinyl Floor Tiles and black Mastic on the Second and Third Floors;**
- **White small pinhole type Acoustical Ceiling Tiles on the Second and Third Floors;**
- **Gypsum Wallboard "Mud" on the North side of the Basement Elevator walls, and**
- **"Mudded Fittings" piping insulation on the water heating and cooling distribution systems; in the Basement, Ground Floor, and Second Floor levels, and within walls, plus the one large roof drainpipe.**

The budget estimate for the removal of these asbestos containing materials is $60,000.

This is an estimate only and the figures are for the date of the report. Not included in this estimate are items such as professional fees for project design, management, air monitoring, replacement with non asbestos materials, or indirect or hidden costs such as office relocation during the project, lost revenues, etc.

SCOPE OF SERVICES

A visual inspection and sampling survey of the facility was conducted in accordance with general Environmental Protection Agency/Asbestos Hazard Emergency Response Act (EPA/AHERA) sampling guidelines to determine the presence of exposed or accessible suspect asbestos-containing building materials (ACBM). A physical hand pressure test was used to determine the friability of selected suspect materials.

Samples were obtained only from suspect materials that were readily exposed or accessible during the inspection.

Bulk samples obtained from the facility were analyzed by NVL Laboratories, Inc. of Seattle, using Polarized Light Microscopy with dispersion staining (PLM). The results of these analyses are presented in the appendices under Laboratory Results.

A removal cost estimate for budgetary purposes was prepared on the basis of the results of this survey. This estimate is as of the date of this report. It is recognized, however, that neither WEBSTERS' nor the owner has control over the cost of labor, materials or equipment, the contractor's methods of determining bid prices, or competitive bidding, market or negotiating conditions. However, WEBSTERS' does warrant that bids or negotiated prices will not vary more than fifteen percent from the cost estimate or evaluation prepared by WEBSTERS'.

WARRANTY

WEBSTERS' Inc. warrants that the findings contained herein have been prepared in general accordance with accepted professional practices as applied by similar professionals in the community at the time of this report's preparation. Changes in the state of the art or in applicable regulations cannot be anticipated and have not been addressed in this report.

The field and laboratory results reported herein are considered sufficient in detail and scope to determine the presence, condition, and hazard potential of accessible or exposed suspect asbestos containing building materials in the facility at the time of inspection. Test results are valid only for the material tested.

There is a distinct possibility that conditions may exist that could not be identified within the scope of survey or that were not apparent during the site visit. This inspection covered only those areas that were exposed or physically accessible to the inspector. The survey is limited to the information available from the client at the time it was conducted.

No other warranties are implied or expressed.

METHODOLOGY

GENERAL REFERENCES

Inspection, sampling, and assessment procedures were performed in general accordance with the guidelines published by the EPA in 40 CFR Part 763 Subpart E, October 30, 1987.

The survey consisted of three major activities: visual inspection, sampling, and quantification. Although these activities are listed separately, they are integrated tasks.

VISUAL INSPECTION

The visual inspection was performed by George Webster, P.E., an EPA Certified Building Inspector and Asbestos Abatement Designer. An initial building walkthrough was conducted to determine the presence of suspect materials that were accessible or exposed. Materials that were similar in general appearance were grouped into homogeneous sampling areas.

Homogeneous Material Classifications

A preliminary walkthrough of the building was conducted to determine areas of materials that were visually similar in color, texture, and general appearance and that appeared to have been installed at the same time. Such materials are termed "homogeneous materials" by the EPA. During this walkthrough, the approximate locations of these homogeneous materials were noted. Only materials that were accessible or exposed and suspected to contain asbestos were identified.

SAMPLING PROCEDURES

Following the walkthrough, the inspector collected selected samples of exposed or accessible materials identified as suspect ACBM. Sampling was limited to those accessible materials not involving destruction of walls, other building elements, physical barriers, or the structural integrity of the item being tested.

EPA guidelines were used to determine the sampling protocol. Sampling locations were chosen to be representative of the homogeneous material.

Samples of surfacing material were collected in general accordance with the EPA random sampling protocol outlined in the EPA publication, "Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials" (EPA 560/5-85-030a, October, 1985).

Samples of miscellaneous materials were taken as randomly as possible, while attempting to sample already damaged areas so as to minimize disturbance of the material.

Samples of wallboard are separated into two homogeneous sampling groups. The perimeter walls are sampled separately from the interior walls, which may have been built at a later time by the current tenant.

QUANTIFICATION

Quantities of accessible or exposed building materials that were suspected of containing asbestos were estimated. This estimate was performed by taking approximate measurements in the field.

LABORATORY PROCEDURES

Method of Analysis

Analysis was performed by visually observing the bulk sample and preparing slides for microscopic examination and identification. The samples were mounted on slides and then analyzed for asbestos (chrysotile, amosite, crocidolite, anthophyllite, and actinolite/tremolite), fibrous non-asbestos constituents (mineral wool, paper, etc.) and nonfibrous constituents. Asbestos was identified by refractive indices, morphology, color, pleochroism, birefringence, extinction characteristics, and signs of elongation. The same characteristics were used to identify the non-asbestos constituents.

The microscopist used a stereoscope to visually estimate relative amounts of each constituent using a stereoscope to determine the volume of each constituent in proportion to the total volume of the sample.

All bulk samples were analyzed by Polarized Light Microscopy (PLM) with dispersion staining as described by the interim method of the determination of asbestos in bulk insulation, Federal Register, Volume 47, No. 103, May 27, 1982. This is a standard method of analysis in optical mineralogy and the currently accepted method for the determination of asbestos in bulk samples. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The characteristic color displays that result enable mineral identification. It should be noted that some ACBM may not be accurately identified or quantified by PLM if the building material involved milling of asbestos fibers to extremely small fibers. As a result, these fibers may go undetected under the standard polarized light microscopy method. Transmission Electron Microscopy (TEM) analysis is recommended for a more definitive analysis of these very small sized asbestos fibers in those type building materials.

Laboratory Quality Control Program

NVL Laboratories, Inc. is certified by NVLAP as PLM Lab #102063, and maintains an in-house quality control program. This program involves blind reanalysis of ten percent of all samples, precision and accuracy controls, and use of standard bulk reference materials.

FINDINGS AND OBSERVATIONS

GENERAL SUMMARY

Asbestos containing building materials were found at the subject site. A material is considered by the EPA and the State of Washington to be asbestos containing if at least one sample collected from the area shows asbestos present in an amount greater than one percent (> 1%) asbestos.

Please refer to the sample analysis sheets for a more detailed description of the microscopic analysis of these samples.

Asbestos containing materials (ACM) are regulated by Federal, state, and local agencies, which include but may not be limited to the following.

The EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) requires an inspection for asbestos be done on facilities that are to undergo demolition or renovation work. Materials found to contain asbestos may need to be removed prior to the start of such demolition/renovation work.

NESHAP defines Category I nonfriable asbestos-containing materials as gaskets, resilient floor covering, and asphalt roofing products that contain more than one percent asbestos, and Category II nonfriable as any materials, except for Category I nonfriable, that contain more than one percent asbestos and can not be reduced to a powder by hand pressure when dry. NESHAP defines a Regulated Asbestos Containing Material (RACM) as: (a) friable ACM, (b) Category I nonfriable that has become friable, (c) Category I nonfriable that has or may be subject to sanding, grinding, cutting, or abrading, and (d) Category II nonfriable that may or has become friable during demolition or renovation.

BUILDING-SPECIFIC FINDINGS AND OBSERVATIONS

The building located at 530 Westlake Avenue North is a three story concrete structure, with textured rock facia which has an off-alley entrance basement parking garage. The ground level, or First Floor is approximately twenty feet in height, and contains a large parking area, entered from Mercer, and large office area, (536 Westlake), fronting Westlake and Mercer streets, adjacent to the building entrance lobby. Inside the entrance lobby is an elevator to the upper levels, and stairs, up to the Mezzanine and upper levels, and down to the Basement level. Heating is from circulated hot water radiation wall heaters supplied by a Basement natural gas fired low pressure boiler. Cooling and AC systems are located in the Basement and on the rooftop.

SAMPLE LOCATION AND ANALYTICAL RESULT TABLE

The following table summarizes the location and number of each sample taken, the suspect material sampled, and the analytical result in percent of asbestos present.

LOCATION	SAMPLE NUMBE R	SUSPECT MATERIAL	PERCENT ASBESTOS
Elevator Wall Basement Level	#7	"Mud" on GypBoardWall at Stairs Entrance	2% Chrysotile
Piping Basement Level	#8	"Mudded Fittings" on Piping Small Dia. near Nat. Gas Meter	2% Chrysotile 3% Amosite
Piping Basement Level	#9	"Mudded Fittings" on Piping Small Dia. near Nat. Gas Meter	2% Chrysotile 3% Amosite
Piping Basement Level	#10	"Mudded Fittings" on Piping Large Dia. Riser in Closet	2% Chrysotile 3% Amosite
Stairwell Basement Level	#13	Decorative Wall Siding (Pea Gravel) Foot of Stairwell	0%
Auto Entrance Door Basement Level	#14	Stucco Material around Door	0%
Basement Piping Boiler-Chiller Room	#11	"Mudded Fittings" on Piping Large Dia. near Chiller	2% Chrysotile 3% Amosite
Basement Wall Boiler-Chiller Room	#12	GypBoard near Entrance Doorway	0%
536 Office Area First Floor	#1	Acoustical Ceiling Tile 2'x4' Wormhole Pattern	0%
536 Office Area First Floor	#2	Floor -- Rear Room near Fridge Fibrous Material and Mastics	0%
536 Office Area First Floor	#3	Floor -- Rear Room near Fridge Fibrous Material and Mastics	0%
536 Office Area First Floor	#5	"Mudded Fittings" on Piping at Heater in Closet near Door	2% Chrysotile 3% Amosite
Entrance Lobby First Floor	#4	Decorative Wall Siding (Pea Gravel) Inside Entrance Lobby	0%
Exit to Parking First Floor Lobby	"O"	Decorative Wall Siding (Pea Gravel) Exit from Lobby	0%
Entrance Lobby First Floor	#6	12 inch Acoustical Ceiling Tile (Block) Inside Entrance Lobby	0%

LOCATION	SAMPLE NUMBE R	SUSPECT MATERIAL	PERCENT ASBESTOS
Near Elevator Second Floor	"A"	9 inch Grayish Vinyl Floor Tile and Black Mastic under Carpet	2% Chrysotile 15% Chrysotile
Near Elevator Second Floor	"B"	9 inch Grayish Vinyl Floor Tile and Black Mastic under Carpet	2% Chrysotile 15% Chrysotile
West Office Closet Second Floor	"C"	Thin Gray Acoustical Ceiling Tile with Pinholes	2% Chrysotile
NW Office Lobby Second Floor	"D"	Thin Gray Acoustical Ceiling Tile with Pinholes	2% Chrysotile
Mechanical Room Second Floor	"E"	Hand-Trowled Plaster on South Wall	0%
Mechanical Room Second Floor	"F"	Small Dia."Mudded Fittings" on Piping at HVAC Unit	7% Chrysotile
Kitchen Area Second Floor	"G"	9 inch Grayish Vinyl Floor Tile and Black Mastic under Carpet	2% Chrysotile 15% Chrysotile
East Storage Rm Second Floor	"H"	9 inch Grayish Vinyl Floor Tile and Black Mastic	2% Chrysotile 15% Chrysotile
Finance Co. Office Second Floor	"I"	9 inch Grayish Vinyl Floor Tile and Black Mastic under Carpet	2% Chrysotile 15% Chrysotile
West Stairs Floor Third Floor	"J"	9 inch Grayish Vinyl Floor Tile	2% Chrysotile
East Storage Rm Third Floor	"K"	9 inch Grayish Vinyl Floor Tile and Black Mastic	2% Chrysotile 10% Chrysotile
Kitchen Area Third Floor	"L"	9 inch Grayish Vinyl Floor Tile	2% Chrysotile
"Old Elevator Penthouse on Roof	"M"	Sidewall Brick Construction Unit	0%
Roof	"N"	Triple Layer of built-up Roofing	0%

ESTIMATE of COST FOR REMOVAL

MATERIAL	LOCATION	QUANTITY	UNIT COST	REMOVAL COST
"Mudded Fittings" on the Piping Systems	Basement Ceiling + Boiler Room; and Ground & Mezzanine Levels, (High); plus 2nd Level above Drop Acoustical Ceiling; and in Walls	320 Small and 140 Large Diameter	$40.	$19,000
Acoustical Ceiling Tiles	Most all Ceiling area of the 2nd & 3rd Levels of Building	12,000 ft^2	$1.00	$12,000.
Vinyl Asbestos Tile (VAT) and Black Mastic on Concrete Floors	Most all Floors of the 2nd & 3rd Levels of the Building	12,000 ft^2	$2.50	$28,000.
"Mud" on GypBoard Wall	North Elevator Wall in Basement	100 ft^2	$10.	$1,000.
			Total	$60,000.

This is a budgetary cost estimate only, and the figures are as of the date of the report. Not included in this estimate are items such as professional fees for project design, management, air monitoring; costs of replacement with non-asbestos materials; or indirect or hidden costs, such as employee relocation during the project, lost revenues, etc.

APPENDICES

LABORATORY RESULTS

Asbestos Survey Summary

Project Number: WEB 8-301 Surveyor: George Webster Survey Date: March, 1998

Project Name: The "530 Westlake Avenue North" building, Seattle, Washington

Asbestos Present: Y[X] N[ ] Removal Required: Y[X] N[ ] Estimated Cost: $60,000.

Type of Material Present

[X] Surfacing Material

[X]Friable
[ ]Structural Fireproofing
[X]Wallboard Joint Compound

[ ] Nonfriable
[ ] Other
[ ]
[ ]

[X] Thermal Insulation

[X]Friable
[ ]Insulation on Straight Piping
[X]Insulation on Pipe Fittings
[ ]Boiler Insulation
[ ]Tank Insulation
[ ]Exhaust Flue Insulation

[ ]Nonfriable
[ ]Insulation on Straight Piping
[ ]Insulation on Pipe Fittings Other
[ ]Boiler Insulation
[ ]Tank Insulation
[ ]Exhaust Flue Insulation

[X] Miscellaneous Material

[X]Friable
[X]Acoustical Ceiling Tile

[X]Nonfriable
[X]Floor Tile
[X]Floor Tile Mastic

Removal Requirements

[X]Regulated Abatement
[X]Full Containment
[X]Glovebag Operation
[ ]Gross Removal Other
Apparatus
[ ]Ceiling/Deck Scrape
[X]General Demolition
[X]Cleaning/Wet Wiping/Vacuuming
[ ]Dirt Floor Removal
[ ]Other

[ ]Nonregulated Abatement
[X]Wet Removal
[ ]Solvent Removal
[X]Other -Supplied Air Breathing

[X]Negative Pressure HEPA
[X]Three Stage Decon System
[ ]
[ ]
[ ]

Project Manager Requirements

[X]Scope of Work and Specifications Required
[ ]Limited Oversight
[X]Full Project Oversight

[ ] None

NVLAP

NL LABORATORIES INC

April 2, 1998

George Webster
Webster's Inc.
16355 Densmore N.
Shoreline, WA 98133

RE: *Bulk Asbestos Fiber Analysis; NVL Batch # 98- 5437*

Dear Mr. Webster,

Enclosed please find test results for the bulk samples submitted to our laboratory for analysis. Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance to U.S. EPA 600/R-93/116 Test Method.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer: 1 and Layer: 2, etc. for each individual layer). The asbestos concentration in the sample is determined by visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos. If you would like us to further refine the concentration estimates of asbestos in these samples using point counting, please let me know.

This report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. If you need further assistance please feel free to call me at 361-1858. Our Laboratory Director, Munaf Khan, is also available to take your call at 634-1879.

Sincerely,

Nick Ly
Technical Director

enc.: Sample Results

HAZARDOUS MATERIALS
MANAGEMENT
TRAINING
LABORATORY SERVICES

NVL LABORATORIES INC
4708 AURORA AVE. N.
SEATTLE, WA 98103
TOLL FREE 1.888.NVL.LABS (685.5227)
206. 547.0100
FAX 206. 634.1936
E-MAIL info@nvllabs.com
www.nvllabs.com

NVL Laboratories, Inc.
4708 Aurora Ave. N., Seattle, WA 98103

Tel: 206.634.1879
Fax: 206.634.1936

NVLAP
#102063

Bulk Asbestos Fiber Analysis

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

Lab ID #: 98037731 **Client Sample #: 1**

Sample Location: 1st floor ACT
Description: Gold compressed fibrous material with white paint

OTHER FIBROUS MATERIALS:
Cellulose 95%

NON-FIBROUS MATERIALS:
Binder/filler, Paint

ASBESTOS TYPE:	*PERCENT*
***None Detected**	**ND**

Lab ID #: 98037732 **Client Sample #: 2**

Sample Location: Flooring, 1st floor
Description: LAYER 1: Multi-colored fibers, LAYER 2: Gold mastic with fibers, LAYER 3: Brown brittle mastic, LAYER 4: Black asphaltic mastic

HER FIBROUS MATERIALS:
.YER 1: Cellulose 60%, Synthetic fibers 38%
LAYER 2: Cellulose 50%
LAYER 3: Cellulose 5%
LAYER 4: Cellulose 2%

NON-FIBROUS MATERIALS:
LAYER 1: Binder/filler
LAYER 2: Mastic/binder
LAYER 3: Mastic/binder
LAYER 4: Asphalt/binder

ASBESTOS TYPE:	*PERCENT*
LAYER 1: *None Detected	**ND**
LAYER 2: *None Detected	**ND**
LAYER 3: *None Detected	**ND**
LAYER 4: *None Detected	**ND**

Sampled by: Client
Analyzed by: Barbara Gloyd Date: 04/01/1998
Reviewed by: Nick Ly Date: 04/01/1998

Nick Ly, Technical Director

NVL Laboratories, Inc.

4708 Aurora Ave. N., Seattle, WA 98103

Tel: 206.634.1879
Fax: 206.634.1936

NVLAP
#102063

Bulk Asbestos Fiber Analysis

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

Lab ID #: 98037733 **Client Sample #: 3**

Sample Location: Flooring, 1st floor
Description: LAYER 1: Brown fibrous material with gold soft mastic, LAYER 2: Yellow soft spongy material with tan mastic, LAYER 3: Black asphaltic mastic

OTHER FIBROUS MATERIALS:
LAYER 1: Cellulose 95%
LAYER 2: Cellulose 5%
LAYER 3: Cellulose 2%

NON-FIBROUS MATERIALS:
LAYER 1: Mastic/binder
LAYER 2: Mastic/binder, Synthetic foam
LAYER 3: Asphalt/binder

ASBESTOS TYPE:	*PERCENT*
LAYER 1: *None Detected	**ND**
LAYER 2: *None Detected	**ND**
LAYER 3: *None Detected	**ND**

¯ ›b ID #: 98037734 **Client Sample #: 4**

.nple Location: Wall siding, entrance
Description: Tan sandy hard material with gravel

OTHER FIBROUS MATERIALS:
*None Detected

NON-FIBROUS MATERIALS:
Fine particles/binder, Sand, Gravel

ASBESTOS TYPE:	*PERCENT*
***None Detected**	**ND**

Lab ID #: 98037735 **Client Sample #: 5**

Sample Location: MF, closet heater
Description: Off-white fibrous powdery material

OTHER FIBROUS MATERIALS:
Mineral wool 30%

NON-FIBROUS MATERIALS:
Fine particles/binder

ASBESTOS TYPE:	*PERCENT*
Chrysotile	**2%**

(Sample results are continued on the next page.)

Sampled by: Client
Analyzed by: Barbara Gloyd Date: 04/01/1998
Reviewed by: Nick Ly Date: 04/01/1998

Nick Ly, Technical Director

:e: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using EPA ..0/R/116 Method with the following measurement uncertainties for reported % Asbestos: 1%=>0-3%, 5%=>1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%. This report relates only to the items tested. If samples were not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

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Fax: 206.634.1936

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Bulk Asbestos Fiber Analysis

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

(Lab ID#: 98037735 Client Sample #: 5 results continued from previous page)

Amosite	**3%**

Lab ID #: 98037736 **Client Sample #: 6**

Sample Location: ACT, 1st floor lobby
Description: Cream-colored compressed fibrous material with off-white paint

OTHER FIBROUS MATERIALS:
Cellulose 45%, Mineral wool 50%

NON-FIBROUS MATERIALS:
Binder/filler, Glass beads, Paint

ASBESTOS TYPE:	*PERCENT*
***None Detected**	**ND**

Lab ID #: 98037737 **Client Sample #: 7**

~mple Location: Gypboard mud, garage entrance to stairs on elevator pit
scription: Off-white hard brittle compacted powdery material

OTHER FIBROUS MATERIALS:
Cellulose 1%

NON-FIBROUS MATERIALS:
Calcareous binder, Mineral grains, Mica

ASBESTOS TYPE:	*PERCENT*
Chrysotile	**2%**

Lab ID #: 98037738 **Client Sample #: 8**

Sample Location: MF
Description: Cream-colored soft fibrous powdery material

OTHER FIBROUS MATERIALS:
Mineral wool 30%

NON-FIBROUS MATERIALS:
Fine particles/binder, Diatoms

ASBESTOS TYPE:	*PERCENT*
Chrysotile	**5%**
Amosite	**2%**

(Sample results are continued on the next page.)

Sampled by: Client
Analyzed by: Barbara Gloyd — Date: 04/01/1998
Reviewed by: Nick Ly — Date: 04/01/1998

Nick Ly, Technical Director

:e: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using EPA ..J/R/116 Method with the following measurement uncertainties for reported % Asbestos: 1%=>0-3%, 5%=>1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%. This report relates only to the items tested. If samples were not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

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4708 Aurora Ave. N., Seattle, WA 98103

Tel: 206.634.1879
Fax: 206.634.1936

Bulk Asbestos Fiber Analysis

NVLAP #102063

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

Lab ID #: 98037739 **Client Sample #: 9**

Sample Location: MF
Description: Cream-colored soft fibrous powdery material

OTHER FIBROUS MATERIALS:
Mineral wool 30%, Synthetic fibers 1%

NON-FIBROUS MATERIALS:
Fine particles/binder, Diatoms

ASBESTOS TYPE:	*PERCENT*
Chrysotile	**5%**
Amosite	**2%**

Lab ID #: 98037740 **Client Sample #: 10**

Sample Location: MF
Description: Cream-colored soft fibrous powdery material

OTHER FIBROUS MATERIALS:
Mineral wool 30%, Cellulose 1%

NON-FIBROUS MATERIALS:
Fine particles/binder, Diatoms

ASBESTOS TYPE:	*PERCENT*
Chrysotile	**5%**
Amosite	**2%**

Lab ID #: 98037741 **Client Sample #: 11**

Sample Location: MF, near large chiller
Description: Cream-colored soft fibrous powdery material

OTHER FIBROUS MATERIALS:
Mineral wool 30%, Cellulose 1%

NON-FIBROUS MATERIALS:
Fine particles/binder, Diatoms

ASBESTOS TYPE:	*PERCENT*
Chrysotile	**5%**
Amosite	**2%**

(Sample results are continued on the next page.)

Sampled by: Client
Analyzed by: Barbara Gloyd Date: 04/01/1998
Reviewed by: Nick Ly Date: 04/01/1998

Nick Ly, Technical Director

Tel: 206.634.1879
Fax: 206.634.1936

NVL Laboratories, Inc.

4708 Aurora Ave. N., Seattle, WA 98103

NVLAP
#102063

Bulk Asbestos Fiber Analysis

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

Lab ID #: 98037742 **Client Sample #: 12**

Sample Location: GYP, Boiler room
Description: White chalky material with tan fibrous paper

OTHER FIBROUS MATERIALS:
Cellulose 10%, Glass fibers 2%

NON-FIBROUS MATERIALS:
Gypsum/binder

ASBESTOS TYPE:	*PERCENT*
***None Detected**	**ND**

Lab ID #: 98037743 **Client Sample #: 13**

Sample Location: Siding, pea gravel, basement wall, stairwell
Description: Tan hard sandy material with gravel & gray paint

HER FIBROUS MATERIALS:
ↄne Detected

NON-FIBROUS MATERIALS:
Cement/binder, Sand, Gravel, Paint

ASBESTOS TYPE:	*PERCENT*
***None Detected**	**ND**

Lab ID #: 98037744 **Client Sample #: 14**

Sample Location: Stucco, basement
Description: Off-white hard sandy material

OTHER FIBROUS MATERIALS:
*None Detected

NON-FIBROUS MATERIALS:
Fine particles/binder, Sand

ASBESTOS TYPE:	*PERCENT*
***None Detected**	**ND**

(Sample results are continued on the next page.)

Sampled by:	Client	
Analyzed by:	Barbara Gloyd	Date: 04/01/1998
Reviewed by:	Nick Ly	Date: 04/01/1998

Nick Ly, Technical Director

*: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using EPA /R/116 Method with the following measurement uncertainties for reported % Asbestos: 1%=>0-3%, 5%=>1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%. This report relates only to the items tested. If samples were not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

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4708 Aurora Ave. N., Seattle, WA 98103

Tel: 206.634.1879
Fax: 206.634.1936

Bulk Asbestos Fiber Analysis

NVLAP #102063

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

Lab ID #: 98037745 **Client Sample #: A**

Sample Location: VFT, 2nd floor
Description: LAYER 1: Gold soft & brittle mastic on surface, LAYER 2: Grayish tan tile with white streaks, LAYER 3: Black asphaltic mastic

OTHER FIBROUS MATERIALS:
LAYER 1: Cellulose 1%
LAYER 2: *None Detected
LAYER 3: Cellulose 2%

NON-FIBROUS MATERIALS:
LAYER 1: Mastic/binder
LAYER 2: Vinyl/binder, Mineral grains
LAYER 3: Asphalt/binder

ASBESTOS TYPE:	PERCENT
LAYER 1: *None Detected	**ND**
LAYER 2: Chrysotile	**2%**
LAYER 3: Chrysotile	**15%**

Lab ID #: 98037746 **Client Sample #: B**

Sample Location: VFT
Description: LAYER 1: Grayish tan tile with gray & white streaks, LAYER 2: Black asphaltic mastic

OTHER FIBROUS MATERIALS:
LAYER 1: *None Detected
LAYER 2: Cellulose 1%

NON-FIBROUS MATERIALS:
LAYER 1: Vinyl/binder, Mineral grains
LAYER 2: Asphalt/binder, Sand, Binder/filler

ASBESTOS TYPE:	PERCENT
LAYER 1: Chrysotile	**2%**
LAYER 2: Chrysotile	**15%**

Lab ID #: 98037747 **Client Sample #: C**

Sample Location: ACT
Description: Light brown compressed fibrous material with off-white paint

OTHER FIBROUS MATERIALS:
Cellulose 40%, Mineral wool 50%

NON-FIBROUS MATERIALS:
Binder/filler, Paint, Glass beads

(Sample results are continued on the next page.)

Sampled by: Client
Analyzed by: Barbara Gloyd Date: 04/01/1998
Reviewed by: Nick Ly Date: 04/01/1998

Nick Ly, Technical Director

te: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using EPA ᵤ00/R/116 Method with the following measurement uncertainties for reported % Asbestos: 1%=>0-3%, 5%=>1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%. This report relates only to the items tested. If samples were not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

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Fax: 206.634.1936

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Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

ASBESTOS TYPE:	*PERCENT*
Chrysotile	**2%**

Lab ID #: 98037748 **Client Sample #: D**

Sample Location: ACT
Description: Light brown compressed fibrous material with off-white paint

OTHER FIBROUS MATERIALS:
Cellulose 40%, Mineral wool 50%

NON-FIBROUS MATERIALS:
Binder/filler, Paint, Glass beads

ASBESTOS TYPE:	*PERCENT*
Chrysotile	**2%**

Lab ID #: 98037749 **Client Sample #: E**

⁻mple Location: Plaster
scription: Gray-white hard coarse sandy material with cream-colored paint

OTHER FIBROUS MATERIALS:
Talc fibers <1%

NON-FIBROUS MATERIALS:
Fine particles/binder, Sand, Paint

ASBESTOS TYPE:	*PERCENT*
***None Detected**	**ND**

Lab ID #: 98037750 **Client Sample #: F**

Sample Location: MF
Description: Cream-colored soft powdery fibrous material with woven fibers

OTHER FIBROUS MATERIALS:
Cellulose 5%, Mineral wool 30%, Synthetic fibers 1%

NON-FIBROUS MATERIALS:
Fine particles/binder

ASBESTOS TYPE:	*PERCENT*
Chrysotile	**7%**

(Sample results are continued on the next page.)

Sampled by: Client
Analyzed by: Barbara Gloyd Date: 04/01/1998
Reviewed by: Nick Ly Date: 04/01/1998

Nick Ly, Technical Director

Tel: 206.634.1879
Fax: 206.634.1936

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NVLAP
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Bulk Asbestos Fiber Analysis

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

Lab ID #: 98037751 **Client Sample #: G**

Sample Location: VFT, 9"
Description: LAYER 1: Grayish tan tile with dark tan & off-white streaks, LAYER 2: Black asphaltic mastic

OTHER FIBROUS MATERIALS:
LAYER 1: *None Detected
LAYER 2: Cellulose 1%

NON-FIBROUS MATERIALS:
LAYER 1: Vinyl/binder, Mineral grains
LAYER 2: Asphalt/binder, Resin/binder

ASBESTOS TYPE:	*PERCENT*
LAYER 1: Chrysotile	**2%**
LAYER 2: Chrysotile	**15%**

Lab ID #: 98037752 **Client Sample #: H**

Sample Location: VFT, 9"
scription: LAYER 1: Grayish tan tile with dark tan & off-white streaks, LAYER 2: Trace black asphaltic mastic

OTHER FIBROUS MATERIALS:
LAYER 1: *None Detected
LAYER 2: Cellulose 5%

NON-FIBROUS MATERIALS:
LAYER 1: Vinyl/binder, Mineral grains
LAYER 2: Asphalt/binder

ASBESTOS TYPE:	*PERCENT*
LAYER 1: Chrysotile	**2%**
LAYER 2: Chrysotile	**15%**

Lab ID #: 98037753 **Client Sample #: I**

Sample Location: VFT
Description: LAYER 1: Gold soft mastic on surface, LAYER 2: Grayish tan tile with dark tan & off-white streaks, LAYER 3: Trace black asphaltic mastic

OTHER FIBROUS MATERIALS:
LAYER 1: Cellulose 3%
LAYER 2: *None Detected
LAYER 3: Cellulose 3%

NON-FIBROUS MATERIALS:
LAYER 1: Mastic/binder
LAYER 2: Vinyl/binder, Mineral grains
LAYER 3: Asphalt/binder

ASBESTOS TYPE: *PERCENT*

(Sample results are continued on the next page.)

Sampled by: Client
Analyzed by: Barbara Gloyd Date: 04/01/1998
Reviewed by: Nick Ly Date: 04/01/1998

Nick Ly, Technical Director

NVL Laboratories, Inc.
4708 Aurora Ave. N., Seattle, WA 98103
Tel: 206.634.1879
Fax: 206.634.1936

NVLAP
#102063

Bulk Asbestos Fiber Analysis

Client: **Webster's Inc.**
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Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

LAYER 1: *None Detected	**ND**
LAYER 2: Chrysotile	**2%**
LAYER 3: Chrysotile	**10%**

Lab ID #: 98037754 **Client Sample #: J**

Sample Location: VFT, gray
Description: LAYER 1: Grayish tan tile with gray & off-white streaks, LAYER 2: Trace gold mastic

OTHER FIBROUS MATERIALS:
LAYER 1: *None Detected
LAYER 2: *None Detected

NON-FIBROUS MATERIALS:
LAYER 1: Vinyl/binder, Mineral grains
LAYER 2: Mastic/binder

ASBESTOS TYPE:	*PERCENT*
LAYER 1: Chrysotile	**2%**
LAYER 2: *None Detected	**ND**

Lab ID #: 98037755 **Client Sample #: K**

Sample Location: VFT, gray
Description: LAYER 1: Grayish tan tile with gray & off-white streaks, LAYER 2: Gold brittle mastic, LAYER 3: Black asphaltic mastic

OTHER FIBROUS MATERIALS:
LAYER 1: *None Detected
LAYER 2: *None Detected
LAYER 3: Cellulose 5%

NON-FIBROUS MATERIALS:
LAYER 1: Vinyl/binder, Mineral grains
LAYER 2: Mastic/binder
LAYER 3: Asphalt/binder

ASBESTOS TYPE:	*PERCENT*
LAYER 1: Chrysotile	**2%**
LAYER 2: *None Detected	**ND**
LAYER 3: Chrysotile	**10%**

(Sample results are continued on the next page.)

Sampled by: Client
Analyzed by: Barbara Gloyd   Date: 04/01/1998
Reviewed by: Nick Ly   Date: 04/01/1998
Nick Ly, Technical Director

e: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using EPA ..0/R/116 Method with the following measurement uncertainties for reported % Asbestos: 1%=>0-3%, 5%=>1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%. This report relates only to the items tested. If samples were not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

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NVLAP #102063

Bulk Asbestos Fiber Analysis

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

Lab ID #: 98037756 **Client Sample #: L**

Sample Location: VFT, gray
Description: LAYER 1: Grayish tan tile with gray & off-white streaks, LAYER 2: Black asphaltic mastic

OTHER FIBROUS MATERIALS:
LAYER 1: *None Detected
LAYER 2: Cellulose 1%

NON-FIBROUS MATERIALS:
LAYER 1: Vinyl/binder, Mineral grains
LAYER 2: Asphalt/binder

ASBESTOS TYPE:	*PERCENT*
LAYER 1: Chrysotile	**2%**
LAYER 2: *None Detected	**ND**

Lab ID #: 98037757 **Client Sample #: M**

Sample Location: Brick, roof
scription: Orange-red brick material

OTHER FIBROUS MATERIALS:
*None Detected

NON-FIBROUS MATERIALS:
Binder/filler, Mineral grains

ASBESTOS TYPE:	*PERCENT*
***None Detected**	**ND**

Lab ID #: 98037758 **Client Sample #: N**

Sample Location: Roof (3 layer)
Description: LAYER 1: Black fibrous asphaltic built-up material with green surface, LAYER 2: Light brown compressed fibrous material, LAYER 3: Black fibrous asphaltic built-up material

OTHER FIBROUS MATERIALS:
LAYER 1: Cellulose 5%, Glass fibers 15%
LAYER 2: Cellulose 98%
LAYER 3: Cellulose 30%, Glass fibers 10%

NON-FIBROUS MATERIALS:
LAYER 1: Asphalt/binder, Calcite
LAYER 2: Binder/filler
LAYER 3: Asphalt/binder

ASBESTOS TYPE:	*PERCENT*
LAYER 1: *None Detected	**ND**

(Sample results are continued on the next page.)

Sampled by: Client
Analyzed by: Barbara Gloyd Date: 04/01/1998
Reviewed by: Nick Ly Date: 04/01/1998

Nick Ly, Technical Director

:e: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using EPA 600/R/116 Method with the following measurement uncertainties for reported % Asbestos: 1%=>0-3%, 5%=>1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%. This report relates only to the items tested. If samples were not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

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Fax: 206.634.1936

Bulk Asbestos Fiber Analysis

NVLAP
#102063

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

(Lab ID#: 98037758 Client Sample #: N results continued from previous page)

LAYER 2:	*None Detected	ND
LAYER 3:	*None Detected	ND

Lab ID #: 98037759 **Client Sample #: O**

Sample Location: Siding (pea gravel)
Description: Tan hard sandy material with gravel

OTHER FIBROUS MATERIALS:
*None Detected

NON-FIBROUS MATERIALS:
Fine particles/binder, Sand, Gravel

ASBESTOS TYPE:	*PERCENT*
*None Detected	ND

Sampled by: Client
Analyzed by: Barbara Gloyd Date: 04/01/1998
Reviewed by: Nick Ly Date: 04/01/1998

Nick Ly, Technical Director

:e: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using EPA -,0/R/116 Method with the following measurement uncertainties for reported % Asbestos: 1%=>0-3%, 5%=>1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%. This report relates only to the items tested. If samples were not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

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4708 Aurora Ave. N., Seattle, WA 98103
Tel: 206.634.1879
Fax: 206.634.1936

Summary Report
Bulk Asbestos Fiber Analysis

NVLAP
#102063

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

Lab #:98037731 **Client's #: 1**

Sample description:
Gold compressed fibrous material with white paint

ASBESTOS TYPE	PERCENT
*None Detected	ND

Lab #:98037732 **Client's #: 2**

Sample description:
LAYER 1: Multi-colored fibers, LAYER 2: Gold mastic with fibers, LAYER 3: Brown brittle mastic, LAYER 4: Black asphaltic mastic

ASBESTOS TYPE	PERCENT
LAYER 1: *None Detected	ND
LAYER 2: *None Detected	ND
LAYER 3: *None Detected	ND
LAYER 4: *None Detected	ND

Lab #:98037733 **Client's #: 3**

Sample description:
LAYER 1: Brown fibrous material with gold soft mastic, LAYER 2: Yellow soft spongy material with tan mastic, LAYER 3: Black asphaltic mastic

ASBESTOS TYPE	PERCENT
LAYER 1: *None Detected	ND
LAYER 2: *None Detected	ND
LAYER 3: *None Detected	ND

Lab #:98037734 **Client's #: 4**

Sample description:
Tan sandy hard material with gravel

ASBESTOS TYPE	PERCENT
*None Detected	ND

Lab #:98037735 **Client's #: 5**

Sample description:
Off-white fibrous powdery material

ASBESTOS TYPE	PERCENT
Chrysotile	2%
Amosite	3%

Lab #:98037736 **Client's #: 6**

Sample description:
Cream-colored compressed fibrous material with off-white paint

ASBESTOS TYPE	PERCENT
*None Detected	ND

Lab #:98037737 **Client's #: 7**

Sample description:
Off-white hard brittle compacted powdery material

ASBESTOS TYPE	PERCENT
Chrysotile	2%

Lab #:98037738 **Client's #: 8**

Sample description:
Cream-colored soft fibrous powdery material

ASBESTOS TYPE	PERCENT
Chrysotile	5%
Amosite	2%

Tel: 206.634.1879
Fax: 206.634.1936

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Summary Report
Bulk Asbestos Fiber Analysis

NVLAP
#102063

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

*None Detected	ND

Lab #:98037739 **Client's #: 9**

Sample description:
Cream-colored soft fibrous powdery material

ASBESTOS TYPE	PERCENT
Chrysotile	5%
Amosite	2%

#:98037740 **Client's #: 10**

Sample description:
Cream-colored soft fibrous powdery material

ASBESTOS TYPE	PERCENT
Chrysotile	5%
Amosite	2%

Lab #:98037741 **Client's #: 11**

Sample description:
Cream-colored soft fibrous powdery material

ASBESTOS TYPE	PERCENT
Chrysotile	5%
Amosite	2%

Lab #:98037742 **Client's #: 12**

Sample description:
White chalky material with tan fibrous paper

ASBESTOS TYPE	PERCENT

Lab #:98037743 **Client's #: 13**

Sample description:
Tan hard sandy material with gravel & gray paint

ASBESTOS TYPE	PERCENT
*None Detected	ND

Lab #:98037744 **Client's #: 14**

Sample description:
Off-white hard sandy material

ASBESTOS TYPE	PERCENT
*None Detected	ND

Lab #:98037745 **Client's #: A**

Sample description:
LAYER 1: Gold soft & brittle mastic on surface, LAYER 2: Grayish tan tile with white streaks, LAYER 3: Black asphaltic mastic

ASBESTOS TYPE	PERCENT
LAYER 1: *None Detected	ND
LAYER 2: Chrysotile	2%
LAYER 3: Chrysotile	15%

Lab #:98037746 **Client's #: B**

Sample description:
LAYER 1: Grayish tan tile with gray & white streaks, LAYER 2: Black asphaltic mastic

ASBESTOS TYPE	PERCENT

NVL Laboratories, Inc.
4708 Aurora Ave. N., Seattle, WA 98103
Tel: 206.634.1879
Fax: 206.634.1936

Summary Report
Bulk Asbestos Fiber Analysis

NVLAP
#102063

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

LAYER 1:	Chrysotile	2%
LAYER 2:	Chrysotile	15%

Lab #:98037747 **Client's #: C**

Sample description:
Light brown compressed fibrous material with off-white paint

ASBESTOS TYPE	PERCENT
Chrysotile	2%

Lab #:98037748 **Client's #: D**

Sample description:
Light brown compressed fibrous material with off-white paint

ASBESTOS TYPE	PERCENT
Chrysotile	2%

Lab #:98037749 **Client's #: E**

Sample description:
Gray-white hard coarse sandy material with cream-colored paint

ASBESTOS TYPE	PERCENT
*None Detected	ND

Lab #:98037750 **Client's #: F**

Sample description:
Cream-colored soft powdery fibrous material with woven fibers

ASBESTOS TYPE	PERCENT
Chrysotile	7%

Lab #:98037751 **Client's #: G**

Sample description:
LAYER 1: Grayish tan tile with dark tan & off-white streaks, LAYER 2: Black asphaltic mastic

ASBESTOS TYPE	PERCENT
LAYER 1: Chrysotile	2%
LAYER 2: Chrysotile	15%

Lab #:98037752 **Client's #: H**

Sample description:
LAYER 1: Grayish tan tile with dark tan & off-white streaks, LAYER 2: Trace black asphaltic mastic

ASBESTOS TYPE	PERCENT
LAYER 1: Chrysotile	2%
LAYER 2: Chrysotile	15%

Lab #:98037753 **Client's #: I**

Sample description:
LAYER 1: Gold soft mastic on surface, LAYER 2: Grayish tan tile with dark tan & off-white streaks, LAYER 3: Trace black asphaltic mastic

ASBESTOS TYPE	PERCENT
LAYER 1: *None Detected	ND
LAYER 2: Chrysotile	2%
LAYER 3: Chrysotile	10%

NVL Laboratories, Inc.
4708 Aurora Ave. N., Seattle, WA 98103
Tel: 206.634.1879
Fax: 206.634.1936

Summary Report
Bulk Asbestos Fiber Analysis

NVLAP
#102063

Client: **Webster's Inc.**
Address: **16355 Densmore N**
Seattle, WA 98133
Attn.: **George Webster**
Project: **530 Westlake, Seattle, WA 98101**

NVL Batch Number: 98-5437
Client Project #: 98-301
Number of samples: 29

Lab #:98037754 **Client's #: J**

Sample description:
LAYER 1: Grayish tan tile with gray & off-white streaks, LAYER 2: Trace gold mastic

ASBESTOS TYPE	PERCENT
LAYER 1: Chrysotile	2%
LAYER 2: *None Detected	ND

Lab #:98037755 **Client's #: K**

mple description:
.YER 1: Grayish tan tile with gray & off-white streaks, LAYER 2: old brittle mastic, LAYER 3: Black asphaltic mastic

ASBESTOS TYPE	PERCENT
LAYER 1: Chrysotile	2%
LAYER 2: *None Detected	ND
LAYER 3: Chrysotile	10%

Lab #:98037756 **Client's #: L**

Sample description:
LAYER 1: Grayish tan tile with gray & off-white streaks, LAYER 2: Black asphaltic mastic

ASBESTOS TYPE	PERCENT
LAYER 1: Chrysotile	2%
LAYER 2: *None Detected	ND

Lab #:98037757 **Client's #: M**

Sample description:
Orange-red brick material

ASBESTOS TYPE	PERCENT
*None Detected	ND

Lab #:98037758 **Client's #: N**

Sample description:
LAYER 1: Black fibrous asphaltic built-up material with green surface, LAYER 2: Light brown compressed fibrous material, LAYER 3: Black fibrous asphaltic built-up material

ASBESTOS TYPE	PERCENT
LAYER 1: *None Detected	ND
LAYER 2: *None Detected	ND
LAYER 3: *None Detected	ND

Lab #:98037759 **Client's #: O**

Sample description:
Tan hard sandy material with gravel

ASBESTOS TYPE	PERCENT
*None Detected	ND

CERTIFICATION

Certificate of Training

EHS - International, Inc.
certifies that

George Webster

has successfully completed the

AHERA Building Inspector Refresher Training Course

in accordance with
40 CFR 763, Subpart E, Appendix C,
held on this 24th day of November, 1997,
in Bellevue, Washington.

PRINCIPAL INSTRUCTOR

TRAINING DIRECTOR

November 24, 1998
EXPIRATION DATE

7101-01-12-07
CERTIFICATION NUMBER

Nine Lake Bellevue Building • Suite 203• Bellevue, Washington 98005
(425) 455-2959 Phone • (800) 666-2959 • (425) 646-7247 Fax

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Portland | Bend | Baker City
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TECHNICAL MEMORANDUM

TO: Raymond Burdick – Vulcan Inc. (by email)

FROM: Thaddeus Cline, P.E., L.G., L.H.G., Principal Civil Engineer/Hydrogeologist

Clifford T. Schmitt, L.G., L.H.G., Principal Hydrogeologist

DATE: October 16, 2018

RE: **SUMMARY OF RESULTS FROM SUBSURFACE INVESTIGATIONS
BLOCK 38 WEST
500 THROUGH 536 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
FARALLON PN: 397-019**

Farallon Consulting, L.L.C. (Farallon) has prepared this Technical Memorandum on behalf of Lakefront Investors IX LLC (Lakefront Investors) to summarize the results of subsurface investigations completed to date at the property at 500 through 536 Westlake Avenue North in Seattle, Washington (herein referred to as Block 38 West). Block 38 West comprises the western half of the block between Mercer Street to the north, Westlake Avenue North to the west, Republican Street to the South, and a north-south trending block-bisecting alley to the east (Figures 1 and 2).

Farallon conducted two phases of environmental subsurface investigation work at Block 38 West. The first subsurface investigation commenced on July 21, 2014 and entailed installing a 55-foot deep monitoring well, monitoring well FMW-130, outside the existing building in the loading dock area and collecting reconnaissance groundwater and groundwater samples. The second subsurface investigation commenced on August 20, 2018 and entailed drilling at 11 locations in Block 38 West to depths of up to 50 feet below ground surface (bgs) (i.e., below the floor elevation of the lowest level of the existing building or below the pavement outside the lowest level, approximately 10 feet below street level), collecting soil and reconnaissance groundwater samples, installing and sampling five new monitoring wells (monitoring wells FMW-132 through FMW-136), and collecting groundwater samples at existing monitoring well FMW-130. The objective of the subsurface investigations conducted in 2014 and 2018 was to obtain lithologic, hydrologic, and analytical data to support planning for the redevelopment of Block 38 West.

Soil at Block 38 West was observed during the 2014 and 2018 subsurface investigations to consist of a sequence of silt, silty sand, and sandy silt with variable gravel and organic material content in fill and recent natural deposits to depths of up to about 15 feet bgs. Underlying these shallow deposits are dense glacially consolidated outwash deposits of silt, sand, and sandy silt with variable gravel content. At a depth of approximately 30 feet bgs, a dense sand with minor silt was encountered to the maximum depth explored of approximately 60 feet bgs. Shallowest groundwater was encountered between 5 and 9 feet bgs. Groundwater elevations measured in wells screened in the shallowest water-bearing unit during the 2018 subsurface investigation indicate a southerly groundwater flow direction.

No specific uses or features of Block 38 West have been confirmed as potential sources of hazardous substances released to soil or groundwater. However, constituents of potential concern (COPCs) at Block 38 West were identified based on known historical uses of Block 38 West and vicinity. Soil and groundwater samples collected during the Subsurface Investigations were analyzed for the following COPCs:

- Total petroleum hydrocarbons as gasoline-range organics;
- Total petroleum hydrocarbons as diesel-range organics (DRO) and oil-range organics;
- Benzene, toluene, ethylbenzene, and xylenes;
- Volatile organic compounds, including chlorinated volatile organic compounds;
- Polycyclic aromatic hydrocarbons and other semi-volatile organic constituents, including carcinogenic polycyclic aromatic hydrocarbons (cPAHs);
- Napthalenes; and
- Metals (i.e., arsenic, cadmium, chromium, mercury, and lead).

Results of laboratory analysis of soil and groundwater samples collected during the 2014 and 2018 subsurface investigations for COPCs are presented in Tables 1 through 4. A total of 27 soil samples and 11 groundwater samples were analyzed for petroleum constituents. A total of 7 soil samples and 11 groundwater samples were analyzed for volatile organic compounds. A total of 19 soil samples and 7 groundwater samples were analyzed for cPAHs and/or napthalenes. A total of 15 soil samples were analyzed for metals.

At some locations sampled during the 2014 and 2018 subsurface investigations, COPCs were detected in soil or groundwater samples at concentrations exceeding Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A cleanup levels specified in Chapter 173-340 of the Washington Administrative Code and were identified for purposes of the 2014 and 2018 subsurface investigations as constituents of concern (COCs). The COCs identified for soil at Block 38 West are:

- Total petroleum hydrocarbons as oil-range organics;
- Total napthalenes; and

- Total cPAHs.

The COCs identified for groundwater at Block 38 West are:

- Total petroleum hydrocarbons as gasoline-range organics;
- Benzene;
- DRO; and
- Total naphthalenes.

Based on the results of the 2014 and 2018 subsurface investigations, the nature and extent of contamination at Block 38 West is shown on Figure 3 for soil and Figure 4 for groundwater. Soil and groundwater impacted with COCs at concentrations exceeding MTCA cleanup levels occur within the top approximately 10 to 20 feet bgs. Approximately 75,600 tons of soil is estimated to be impacted by COPCs, less than about 10 percent of which is estimated to contain COCs at concentrations exceeding MTCA cleanup levels. Redevelopment construction will entail excavation to approximately 35 feet bgs to the property boundaries. The cleanup action to be conducted concurrently with redevelopment construction excavation will result in the removal of all soil containing COCs at concentrations exceeding MTCA cleanup levels and the removal of the shallow water-bearing zone from Block 38 West. Impacted soil will necessitate management during redevelopment construction and disposal at facilities permitted to receive these types of impacted soil.

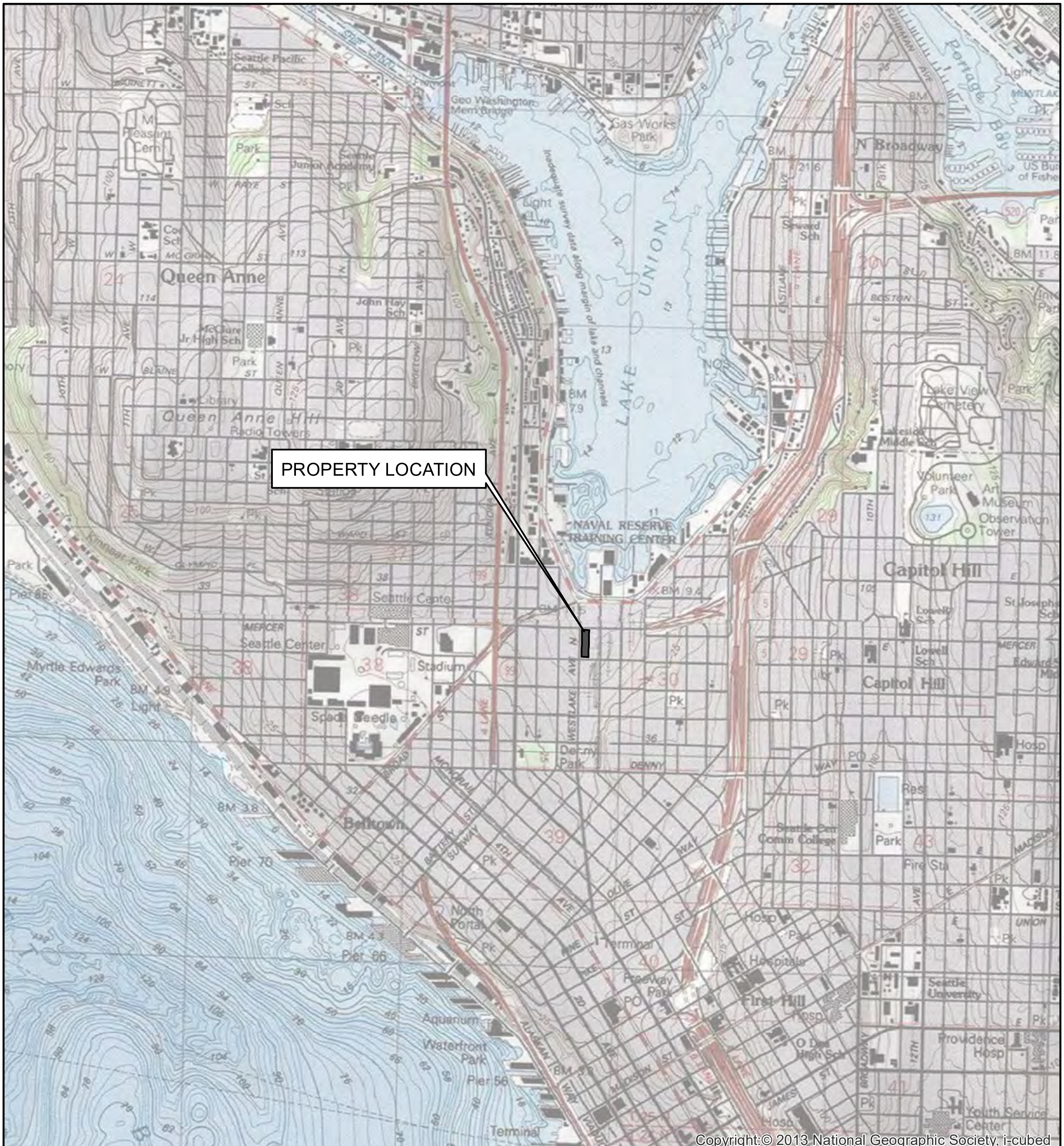
Attachments: Figure 1, *Vicinity Map*
Figure 2, *Property Map*
Figure 3, *Soil Sample Analytical Results*
Figure 4, *Groundwater Analytical Results*
Table 1, *Soil Analytical Results for TPH and BTEX*
Table 2, *Soil Analytical Results for PAHs*
Table 3, *Groundwater Analytical Results for TPH and BTEX*
Table 4, *Groundwater Analytical Results for PAHs*

TC/CTS:tlc

FIGURES

SUMMARY OF RESULTS FROM SUBSURFACE INVESTIGATIONS
Block 38 West
500 Through 536 Westlake Avenue North
Seattle, Washington

Farallon PN: 397-019



REFERENCE: 7.5 MINUTE USGS QUADRANGLE SEATTLE NORTH, WASHINGTON, DATED 1983

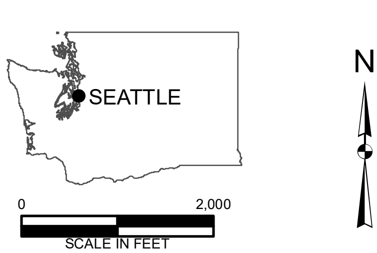


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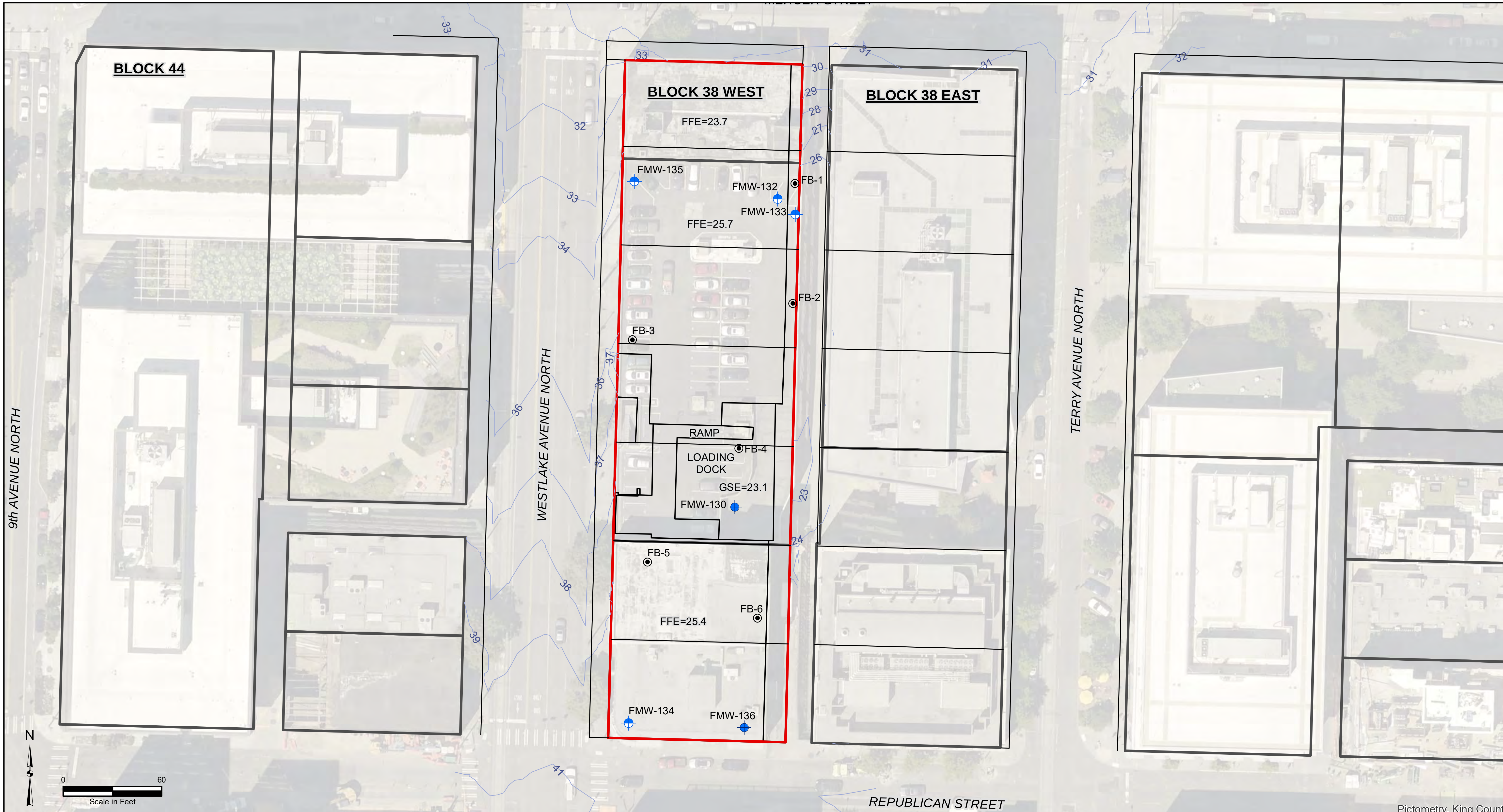
FIGURE 1

VICINITY MAP
BLOCK 38 WEST
SOUTH LAKE UNION AREA
SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: jjones | Checked By: BJ | Date: 9/28/2018 | Disc Reference:

Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\004_Reporting\Figure-01_SiteVicinity.mxd



LEGEND

- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- SOIL BORING
- PROPERTY BOUNDARY
- KING COUNTY PARCELS

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE.
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING

GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. - 2014

ELEVATION DATA PRESENTED IN FEET ABOVE MEAN SEA LEVEL IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

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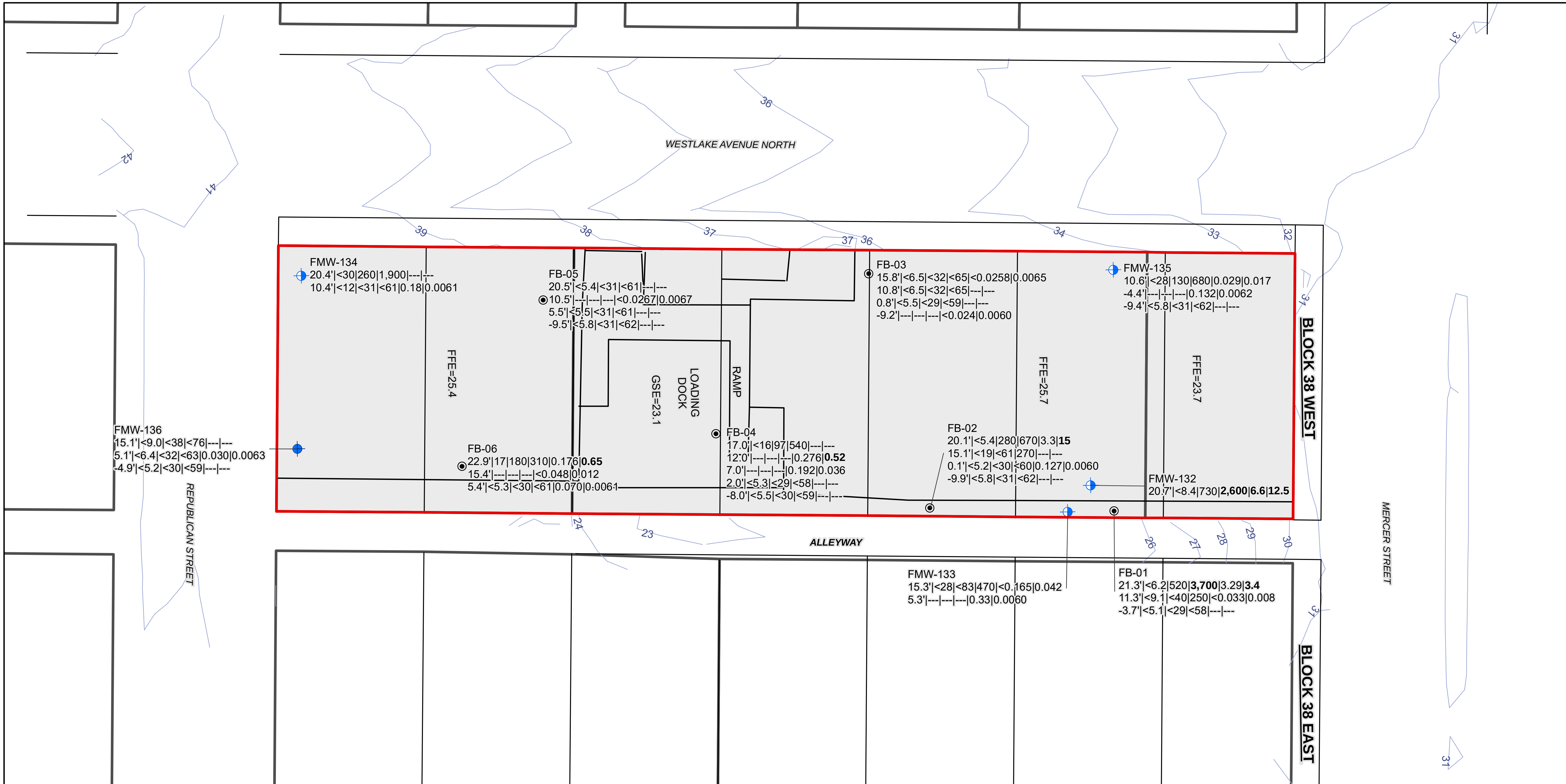
FIGURE 2

PROPERTY MAP
BLOCK 38 WEST
SOUTH LAKE UNION AREA
SEATTLE, WASHINGTON
FARALLON PN: 397-019

Drawn By: sgaynier | Checked By: TC | Date: 10/15/2018 | Disc Reference:

Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\004_Reporting\Figure-02_Propertymap.mxd



LEGEND

- BORING
- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- PROPERTY BOUNDARY
- KING COUNTY PARCEL

NOTES:
SOIL DEPTH AND CONCENTRATIONS REPORTED AS:
ELEVATION IN FEET ACCORDING TO MSL |
GRO | DRO | ORO | TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

cPAH TEC = CARCINAGENIC POLYCYCLIC AROMATIC HYDROCARBON TOXIC EQUIVALENT CONCENTRATION
DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO = TPH AS GASOLINE-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS
FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD = CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
< = ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL = MEAN SEA LEVEL

N

0 40
SCALE IN FEET

ALL LOCATIONS ARE APPROXIMATE.
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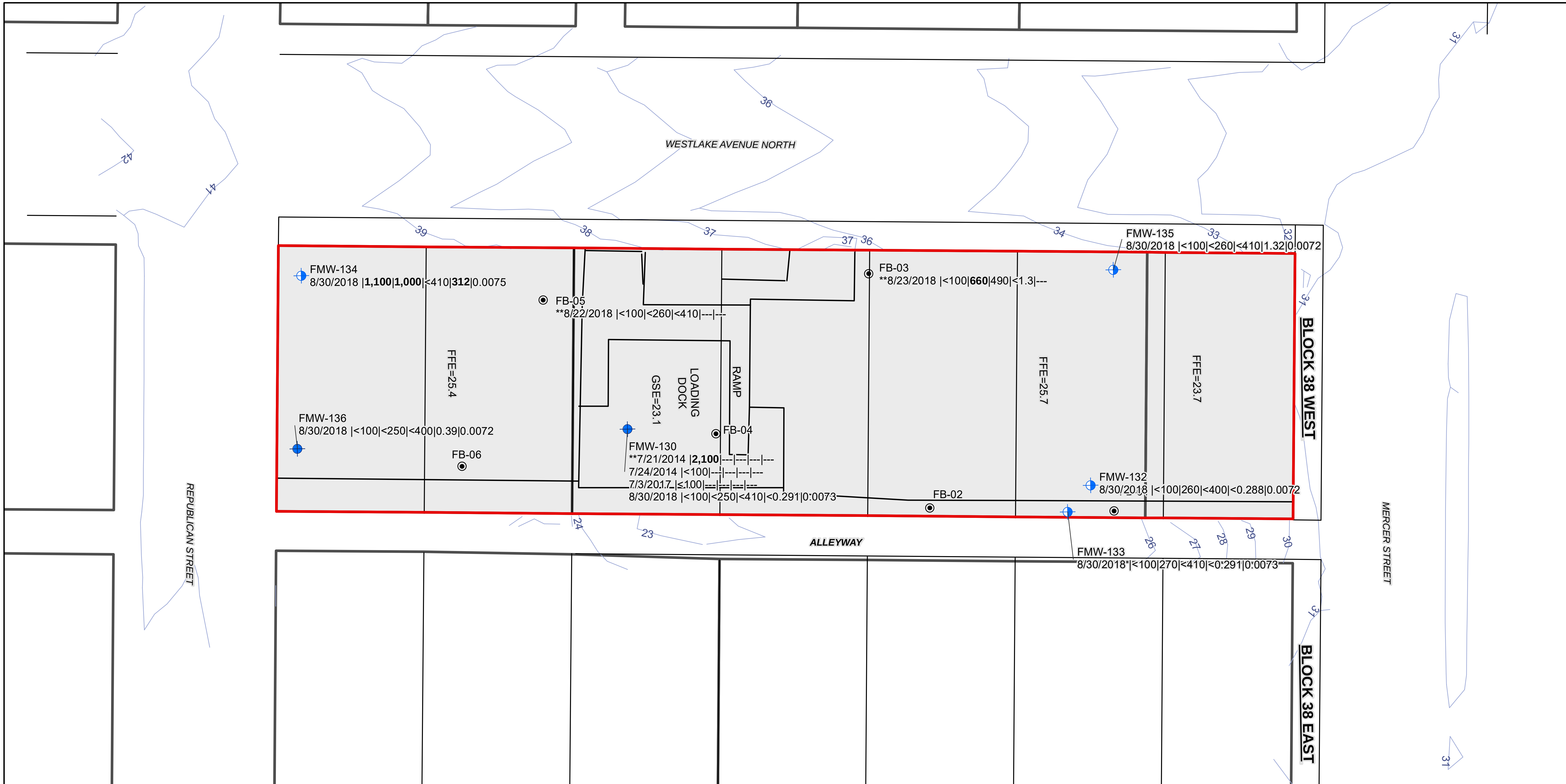
FIGURE 3

SOIL SAMPLE ANALYTICAL RESULTS
BLOCK 38 WEST
SOUTH LAKE UNION AREA
SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: sgaynier | Checked By: TC | Date: 10/15/2018 | Disc Reference:

Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\004_Reporting\Figure-03_SoilAnalytical.mxd



LEGEND

- BORING
- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- PROPERTY BOUNDARY
- KING COUNTY PARCEL

NOTES:
DATE SAMPLED AND CONCENTRATIONS REPORTED AS:
SAMPLE DATE | GRO | DRO | ORO | TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MICROGRAMS PER LITER.
**INDICATES RESULTS ARE FROM RECONNAISSANCE GROUNDWATER SAMPLE

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

cPAH TEC = CARCINAGENIC POLYCYCLIC AROMATIC HYDROCARBON TOXIC EQUIVALENT CONCENTRATION
DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO = TPH AS GASOLINE-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS
FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING

GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD = CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
< = ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL = MEAN SEA LEVEL
** = INDICATES RESULTS ARE FROM A RECONNAISSANCE GROUNDWATER SAMPLE

N

0 40
SCALE IN FEET

ALL LOCATIONS ARE APPROXIMATE.
FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

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FIGURE 4
GROUNDWATER ANALYTICAL RESULTS BLOCK 38 WEST SOUTH LAKE UNION AREA SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: sgaynier | Checked By: TC | Date: 10/15/2018 | Disc Reference:

Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\004_Reporting\Figure-04_GW-Analytical.mxd

TABLES

SUMMARY OF RESULTS FROM SUBSURFACE INVESTIGATIONS
Block 38 West
500 Through 536 Westlake Avenue North
Seattle, Washington

Farallon PN: 397-019

Table 1
Soil Analytical Results for TPH and BTEX
Block 38 West
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Elevation (feet MSL)[1]	Sample Date	Analytical Results (milligrams per kilogram)								
					NWTPH-Dx[2]		NWTPH-Dx with Silica Gel[2]		NWTPH-Gx[3]	EPA Method 8021B[4]			
					DRO	ORO	DRO	ORO	GRO	Benzene	Toluene	Ethylbenzene	Xylenes
FB-01	FB-01-5.0-082118	5.0	21.3	8/21/2018	520	**3,700**	510 N	1,100	< 6.2	< 0.020	< 0.062	< 0.062	< 0.124
	FB-01-15.0-082118	15.0	11.3	8/21/2018	< 40	250	< 40	< 81	< 9.1	< 0.020	< 0.091	< 0.091	< 0.182
	FB-01-30.0-082118	30.0	-3.7	8/21/2018	< 29	< 58	---	---	< 5.1	< 0.020	< 0.051	< 0.051	< 0.102
FB-02	FB-02-5.0-082018	5.0	20.1	8/20/2018	280 N	670	---	---	< 5.4	< 0.020	< 0.054	< 0.054	< 0.108
	FB-02-10.0-082018	10.0	15.1	8/20/2018	< 61	270	---	---	< 19	< 0.037	< 0.19	< 0.19	< 0.38
	FB-02-25.0-082018	25.0	0.1	8/20/2018	< 30	< 60	---	---	< 5.2	< 0.020	< 0.052	< 0.052	< 0.104
	FB-02-35.0-082018	35.0	-9.9	8/20/2018	< 31	< 62	---	---	< 5.8	< 0.020	< 0.058	< 0.058	< 0.116
FB-03	FB-03-10.0-082318	10.0	15.8	8/23/2018	< 32	< 65	---	---	< 6.5	< 0.020	< 0.065	< 0.065	< 0.130
	FB-03-15.0-082318	15.0	10.8	8/23/2018	< 32	< 65	---	---	< 6.5	< 0.020	< 0.065	< 0.065	< 0.130
	FB-03-25.0-082318	25.0	0.8	8/23/2018	< 29	< 59	---	---	< 5.5	< 0.020	< 0.055	< 0.055	< 0.110
FB-04	FB-04-5.0-082118	5.0	17.0	8/21/2018	97 N	540	---	---	< 16	< 0.033	< 0.16	< 0.16	< 0.32
	FB-04-20.0-082118	20.0	2.0	8/21/2018	< 29	< 58	---	---	< 5.3	< 0.020	< 0.053	< 0.053	< 0.106
	FB-04-30.0-082118	30.0	-8.0	8/21/2018	< 30	< 59	---	---	< 5.5	< 0.020	< 0.055	< 0.055	< 0.110
FB-05	FB-05-5.0-082218	5.0	20.5	8/22/2018	< 31	< 61	---	---	< 5.4	< 0.020	< 0.054	< 0.054	< 0.108
	FB-05-20.0-082218	20.0	5.5	8/22/2018	< 31	< 61	---	---	< 5.5	< 0.020	< 0.055	< 0.055	< 0.110
	FB-05-35.0-082218	35.0	-9.5	8/22/2018	< 31	< 62	---	---	< 5.8	< 0.020	< 0.058	< 0.058	< 0.116
FB-06	FB-06-2.5-082218	2.5	22.9	8/22/2018	180	310	---	---	17 T	< 0.024	< 0.12	< 0.12	< 0.24
	FB-06-20.0-082218	20.0	5.4	8/22/2018	< 30	< 61	---	---	< 5.3	< 0.020	< 0.053	< 0.053	< 0.106
FMW-132	FMW-132-5.0-082418	5.0	20.7	8/24/2018	730	**2,600**	---	---	< 8.4	< 0.020	< 0.084	< 0.084	< 0.168
FMW-133	FMW-133-10.0-082418	10.0	15.3	8/24/2018	< 83	470	---	---	< 28	< 0.057	< 0.28	< 0.28	< 0.56
FMW-134	FMW-134-5.0-082318	5.0	20.4	8/23/2018	260	1,900	---	---	< 30	< 0.059	< 0.30	< 0.30	< 0.60
	FMW-134-15.0-082318	15.0	10.4	8/23/2018	< 31	< 61	---	---	< 12	< 0.023	< 0.12	< 0.12	< 0.24
FMW-135	FMW-135-15.0-082418	15.0	10.6	8/24/2018	130	680	---	---	< 28	< 0.055	< 0.28	< 0.28	< 0.56
	FMW-135-35.0-082418	35.0	-9.4	8/24/2018	< 31	< 62	---	---	< 5.8	< 0.020	< 0.058	< 0.058	< 0.116
FMW-136	FMW-136-10.0-082218	10.0	15.1	8/22/2018	< 38	< 76	---	---	< 9.0	< 0.020	< 0.090	< 0.090	< 0.18
	FMW-136-20.0-082218	20.0	5.1	8/22/2018	< 32	< 63	---	---	< 6.4	< 0.020	< 0.064	< 0.064	< 0.128
	FMW-136-30.0-082218	30.0	-4.9	8/22/2018	< 30	< 59	---	---	< 5.2	< 0.020	< 0.052	< 0.052	< 0.104
MTCA Method A Cleanup Levels for Soil[5]					**2,000**	**2,000**	**2,000**	**2,000**	**30/100[6]**	**0.03**	**7**	**6**	**9**

NOTES:

Results in **bold** denote concentrations exceeding applicable cleanup levels.

< denotes analyte not detected at or exceeding the laboratory reporting limit listed.

— denotes sample not analyzed.

[1]Depth in feet below ground surface. Elevation in feet mean sea level using North American Vertical Datum of 1988.

[2]Analyzed by Northwest Method NWTPH-Dx. Results denoted as analyzed by NWTPH-Dx with silica gel were analyzed using a sample extract treated with sulfuric acid/silica gel cleanup procedure.

[3]Analyzed by Northwest Method NWTPH-Gx.

[4]Analyzed by U.S. Environmental Protection Agency Method 8021B.

[5]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013.

[6]Cleanup level is 30 milligrams per kilogram if benzene is detected and 100 milligrams per kilogram if benzene is not detected.

BTEX = benzene, toluene, ethylbenzene and xylenes
DRO = total petroleum hydrocarbons (TPH) as diesel-range organics
GRO = TPH as gasoline-range organics
MSL = mean sea level
N = hydrocarbons in the oil-range are impacting the diesel result
ORO = TPH as oil-range organics
T = the sample chromatogram is not similar to a typical gas

Table 2
Soil Analytical Results for PAHs
Block 38 West
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Elevation (feet MSL)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]																		
					Non-Carcinogenic PAHs												Carcinogenic PAHs						
					Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Total Naphthalenes[3]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)Perylene	Fluoranthene	Fluorene	Phenanthrene	Pyrene	Benzo(a)Pyrene	Benzo(a)Anthracene	Benzo(b)Fluoranthene	Benzo(j,k)Fluoranthene	Chrysene	Dibenzo(a,h)Anthracene	Indeno(1,2,3-cd)Pyrene	Total cPAHs TEC[4,5]
FB-01	FB-01-5.0-082118	5.0	21.3	8/21/2018	0.99	1.1	1.2	3.29	0.46	0.32	1.0	1.9	4.8	0.46	5.4	6.8	2.5	2.6	2.9	0.76	3.1	0.45	1.6	**3.4**
	FB-01-15.0-082118	15.0	11.3	8/21/2018	< 0.011	< 0.011	< 0.011	< 0.033	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	0.008
FB-02	FB-02-5.0-082018	5.0	20.1	8/20/2018	1.1	0.86	1.3	3.3	1.4	0.45	3.3	8.5	18	1.3	12	25	11	9.8	12	3.5	9.7	1.6	8.0	**15**
	FB-02-25.0-082018	25.0	0.1	8/20/2018	0.083	0.020	0.024	0.127	0.027	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	0.0060
FB-03	FB-03-10.0-082318	10.0	15.8	8/23/2018	< 0.0086	< 0.0086	< 0.0086	< 0.0258	< 0.0086	< 0.0086	< 0.0086	< 0.0086	0.011	< 0.0086	0.015	0.012	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	0.0065
	FB-03-35.0-082318	35.0	-9.2	8/23/2018	< 0.0080	< 0.0080	< 0.0080	< 0.024	< 0.0080	< 0.0080	< 0.0080	< 0.0080	0.015	< 0.0080	0.017	0.017	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	0.0060
FB-04	FB-04-10.0-082118	10.0	12.0	8/21/2018	0.12	0.057	0.099	0.276	0.21	0.045	0.29	0.21	0.97	0.22	1.0	1.1	0.36	0.67	0.47	0.18	0.95	0.041	0.19	**0.52**
	FB-04-15.0-082118	15.0	7.0	8/21/2018	0.052	0.048	0.092	0.192	0.049	< 0.0082	0.029	0.018	0.078	0.043	0.16	0.1	0.027	0.027	0.025	0.0099	0.028	< 0.0082	0.017	0.036
FB-05	FB-05-15.0-082218	15.0	10.5	8/22/2018	< 0.0089	< 0.0089	< 0.0089	< 0.0267	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	0.0067
FB-06	FB-06-2.5-082218	2.5	22.9	8/22/2018	0.087	0.044	0.045	0.176	0.13	0.042	0.20	0.35	0.81	0.094	0.89	1.1	0.49	0.47	0.52	0.17	0.50	0.054	0.34	**0.65**
	FB-06-10.0-082218	10.0	15.4	8/22/2018	< 0.016 H	< 0.016 H	< 0.016 H	< 0.048	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	0.020 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	0.012
	FB-06-20.0-082218	20.0	5.4	8/22/2018	0.070	< 0.0081	< 0.0081	0.070	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	0.0061
FMW-132	FMW-132-5.0-082418	5.0	20.7	8/24/2018	2.0	2.0	2.6	**6.6**	1.5	0.10	3.3	4.4	15	0.84	18	27	9.4	11	10	2.9	13	1.4	4.1	**12.5**
FMW-133	FMW-133-10.0-082418	10.0	15.3	8/24/2018	< 0.055	< 0.055	< 0.055	< 0.165	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	0.042
	FMW-133-20.0-082418	20.0	5.3	8/24/2018	0.25	0.035	0.042	0.33	0.021	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	0.0060
FMW-134	FMW-134-15.0-082318	15.0	10.4	8/23/2018	0.14	0.012	0.028	0.18	0.014	< 0.0081	< 0.0081	< 0.0081	< 0.0081	0.016	0.021	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	0.0061
FMW-135	FMW-135-15.0-082418	15.0	10.6	8/24/2018	0.029	< 0.022	< 0.022	0.029	0.039	< 0.022	< 0.022	< 0.022	0.042	< 0.022	0.068	0.073	< 0.022	< 0.022	< 0.022	< 0.022	< 0.022	< 0.022	< 0.022	0.017
	FMW-135-30.0-082418	30.0	-4.4	8/24/2018	0.12	0.012	< 0.0082	0.132	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	0.0062
FMW-136	FMW-136-20.0-082218	20.0	5.1	8/22/2018	0.030	< 0.0084	< 0.0084	0.030	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	0.0063
MTCA Method A Cleanup Level for Soil [6]								**5**	**4,800[7]**	**NE**	**24,000[7]**	**NE**	**3,200[7]**	**3,200[7]**	**NE**	**2,400[7]**								**0.1**
MTCA Method B Levels for Soil Protective of Groundwater Vadose @ 25 Degrees Celsius[8]					**4.46**	**NE**	**NE**	**NE**	**97.9**	**NE**	**2,270**	**NE**	**631**	**101**	**NE**	**655**								
MTCA Method B Levels for Soil Protective of Groundwater Vadose @ 13 Degrees Celsius[8]					**4.45**	**NE**	**NE**	**NE**	**97.9**	**NE**	**NE**	**NE**	**NE**	**101**	**NE**	**655**								
MTCA Method B Levels for Soil Protective of Groundwater Saturated[8]					**0.236**	**NE**	**NE**	**NE**	**4.98**	**NE**	**114**	**NE**	**31.6**	**5.12**	**NE**	**32.8**								

NOTES:

Results in **bold** denote concentrations exceeding applicable cleanup levels.
< denotes analyte not detected at or exceeding the reporting limit listed.
[1]Depth in feet below ground surface. Elevation in feet mean sea level using North American Vertical Datum of 1988.
[2]Analyzed by U.S. Environmental Protection Agency Method 8270D/SIM.
[3]Sum of naphthalene, 1-methylnaphthalene and 2-methylnaphthalene.
[4]Total carcinogenic polycyclic aromatic hydrocarbons derived using the total toxicity equivalency method in Section 708(8) of Chapter 173-340 of the Washington Administrative Code.
[5]For concentrations reported at less than the laboratory reporting limit, half the reporting limit was used to calculate the TEC.
[6]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013, unless otherwise noted.
[7]Washington State Department of Ecology Cleanup Levels and Risk Calculations, under the Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Standard Method B Formula Values for Soil (Unrestricted Land Use) - Direct Contact (Ingestion Only) and Leaching Pathway, https://fortress.wa.gov/ecy/clarc/Reporting/ChemicalQuery.aspx
[8]Washington State Cleanup Levels and Risk Calculations under the Washington State MTCA, Standard Method B Formula Values for Soil from CLARC Master spreadsheet updated September 2015, https://fortress.wa.gov/ecy/clarc/CLARCDataTables.aspx

cPAHs = carcinogenic polycyclic aromatic hydrocarbons
H = sample analyzed outside of holding time
MSL = mean sea level
NE = not established
PAHs = polycyclic aromatic hydrocarbons
TEC = toxic equivalent concentration

Table 3
Groundwater Analytical Results for TPH and BTEX
Block 38 West
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Date	Sample Identification	Screened Interval (feet MSL)[1]	Analytical Results (micrograms per liter)						
				DRO[2]	ORO[2]	GRO[3]	Benzene[4]	Toluene[4]	Ethylbenzene[4]	Xylenes[4]
Reconnaissance Boring Groundwater Samples										
FB-03	8/23/2018	FB-03-082318	8.8 to 3.8	**660**	490	< 100	< 1.0	< 1.0	< 1.0	< 2.0
FB-05	8/22/2018	FB-05-082218	8.5 to 3.5	< 260	< 410	< 100	< 1.0	< 1.0	< 1.0	< 2.0
FMW-130	7/21/2014	F-MW-130-GW1-072114	7.2 to 2.2	---	---	**2,100**	**5.1**	7.5	2.2	6.7
Monitoring Well Groundwater Samples										
FMW-130	7/24/2014	F-MW-130-072414	-22.8 to -32.8	---	---	< 100	< 1.0	< 1.0	< 1.0	< 2.0
	7/3/2017	FMW-130-070317		---	---	< 100	< 0.20	< 1.0	< 0.20	< 0.60
	8/30/2018	FMW-130-083018		< 250	< 410	< 100	< 0.20	< 1.0	< 0.20	< 0.60
FMW-132	8/30/2018	FMW-132-083018	20.7 to 15.7	260	< 400	< 100	< 0.20	< 1.0	< 0.20	< 0.60
FMW-133	8/30/2018	FMW-133-083018	18.8 to 13.8	270	< 410	< 100	< 0.20	< 1.0	< 0.20	< 0.60
FMW-134	8/30/2018	FMW-134-083018	13.4 to 8.4	**1,000** M	< 410	**1,100** Z	< 1.0	< 5.0	< 1.0	< 3.0
FMW-135	8/30/2018	FMW-135-083018	18.6 to 13.6	< 260	< 410	< 100	< 0.20	< 1.0	< 0.20	< 0.60
FMW-136	8/30/2018	FMW-136-083018	-4.9 to -14.9	< 250	< 400	< 100	< 0.20	< 1.0	< 0.20	< 0.60
Potable Water Sample										
Potable Well	8/21/2018	POTABLE-082118	Unknown	---	---	---	< 0.20	< 1.0	< 0.20	< 0.60
MTCA Method A Cleanup Level for Groundwater[5]				**500**	**500**	**800/1,000[6]**	**5**	**1,000**	**700**	**1,000**

NOTES:
Results in **bold** denote concentrations above applicable cleanup levels.
< denotes analyte not detected at or above the reporting limit listed.
— denotes sample not analyzed.
[1]In feet above mean sea level using North American Vertical Datum of 1988.
[2]Analyzed by Northwest Method NWTPH-Dx.
[3]Analyzed by Northwest Method NWTPH-Gx.
[4]Analyzed by U.S. Environmental Protection Agency Method 8021B.
[5]Washington State Model Toxics Control Act Cleanup Regulation Method A Cleanup Levels for Groundwater, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as amended 2013.
[6]Cleanup level is 800 micrograms per liter if benzene is detected and 1,000 micrograms per liter if benzene is not detected.

BTEX = benzene, toluene, ethylbenzene, and xylenes
DRO = total petroleum hydrocarbons (TPH) as diesel-range organics
GRO = TPH as gasoline-range organics
M = hydrocarbons in the gasoline-range are impacting the diesel result
ORO = TPH as oil-range organics
Z = the gasoline result is mainly attributed to a single peak (naphthalene)

Table 4
Groundwater Analytical Results for PAHs
Block 38 West
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Date	Sample Identification	Screened Interval (feet MSL)[1]	Analytical Results (micrograms per liter)[2]																			
				Non-Carcinogenic PAHs												Carcinogenic PAHs							
				Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Total Naphthalenes[3]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)Perylene	Fluoranthene	Fluorene	Phenanthrene	Pyrene	Benzo(a)pyrene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(j,k)Fluoranthene	Chrysene	Dibenzo(a,h)Anthracene	Indeno(1,2,3-cd)Pyrene	Total cPAHs TEC[4,5]
Reconnaissance Boring Groundwater Samples																							
FB-03	8/23/2018	FB-03-082318	8.8 to 3.8	< 1.3	---	---	< 1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Monitoring Well Groundwater Samples																							
FMW-130	8/30/2018	FMW-130-083018	-22.8 to -32.8	< 0.097	< 0.097	< 0.097	< 0.291	< 0.097	< 0.097	< 0.097	< 0.0097	< 0.097	< 0.097	< 0.097	< 0.097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	0.0073
FMW-132	8/30/2018	FMW-132-083018	20.7 to 15.7	< 0.096	< 0.096	< 0.096	< 0.288	0.40	< 0.096	< 0.096	< 0.0096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	0.0072
FMW-133	8/30/2018	FMW-133-083018	18.8 to 13.8	< 0.097	< 0.097	< 0.097	< 0.291	0.38	< 0.097	< 0.097	< 0.0097	< 0.097	0.098	< 0.097	< 0.097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	0.0073
FMW-134	8/30/2018	FMW-134-083018	13.4 to 8.4	290	10	12	**312**	8.3	0.12	< 0.099	< 0.0099	< 0.099	1.6	0.48	< 0.099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	0.0075
FMW-135	8/30/2018	FMW-135-083018	18.6 to 13.6	0.35	0.68	0.29	1.32	0.39	< 0.096	< 0.096	< 0.0096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	0.0072
FMW-136	8/30/2018	FMW-136-083018	-4.9 to -14.9	0.39	< 0.096	< 0.096	0.39	< 0.096	< 0.096	< 0.096	< 0.0096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	0.0072
Potable Water Sample																							
Potable Well	8/21/2018	POTABLE-082118	Unknown	< 1.0	---	---	< 1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MTCA Method A Cleanup Level for Groundwater [6]							**160**	**960[7]**	**NE**	**4,800[7]**	**NE**	**640[7]**	**640[7]**	**NE**	**480[7]**								**0.1**

NOTES:
Results in **bold** denote concentrations exceeding applicable cleanup levels.
< denotes analyte not detected at or exceeding the reporting limit listed.
— denotes sample not analyzed.
[1]In feet above mean sea level using North American Vertical Datum of 1988.
[2]Analyzed by U.S. Environmental Protection Agency (EPA) Method 8270D/SIM. FB-03 and Potable Well samples analyzed by EPA Method 8260C.
[3]Sum of naphthalene, 1-methylnaphthalene and 2-methylnaphthalene.
[4]Total carcinogenic polycyclic aromatic hydrocarbons derived using the total toxicity equivalency method in Section 708(8) of Chapter 173-340 of the Washington Administrative Code.
[5]For concentrations reported at less than the laboratory reporting limit, half the reporting limit was used to calculate the TEC.
[6]Washington State Model Toxics Control Act Cleanup Regulation Method A Cleanup Levels for Groundwater, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013, unless otherwise noted.
[7]Washington State Model Toxics Control Act Cleanup Regulation Cleanup Levels and Risk Calculations, Standard Method B Values for Groundwater, https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx.

cPAHs = carcinogenic polycyclic aromatic hydrocarbons
NE = not established
PAHs = polycyclic aromatic hydrocarbons
TEC = toxic equivalent concentration

Washington
Issaquah | Bellingham | Seattle
Oregon
Portland | Bend | Baker City
California
Oakland | Folsom | Irvine

SUBSURFACE INVESTIGATION REPORT AND ENVIRONMENTAL MEDIA MANAGEMENT PLAN

BLOCK 38 WEST PROPERTY
500 THROUGH 536 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON

Submitted By:
Farallon Consulting, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington 98027

Farallon PN: 397-019

For:
City Investors IX LLC
505 5th Avenue South, Suite 900
Seattle, Washington 98104

December 28, 2018

Prepared by:

Thaddeus Cline, P.E., L.G., L.H.G.
Principal Civil Engineer/Hydrogeologist

Reviewed by:

Clifford T. Schmitt, L.G., L.H.G.
Principal Hydrogeologist

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ACRONYMS AND ABBREVIATIONS

1998 EA Report	*Level I Environmental Site Assessment*, *Westlake Avenue Building, 534 Westlake Avenue North, Seattle, Washington* dated March 25, 1998, prepared by Terra Associates, Inc.
1999 EA Report	letter regarding Preliminary Environmental Assessment Update, Westlake Avenue Property (428, 500, 510, and 520 Westlake Avenue North), Seattle, Washington dated April 5, 1999, from Mr. Rob Roberts and Ms. Julie K.W. Wukelic of HartCrowser, Inc. to City Investors VII LLC c/o Mr. Joe Delaney of Foster Pepper & Shefelman
2014 Subsurface Investigation	subsurface investigation conducted at Block 38 West that commenced on July 21, 2014
2018 Subsurface Investigation	subsurface investigation conducted at Block 38 West that commenced on August 20, 2018
bgs	below ground surface
Block 38 East	the eastern half of the block between Mercer Street to the north, Westlake Avenue North to the west, Republican Street to the South, and a north-south–trending alley bisecting the block to the east
Block 38 West	the western half of the block between Mercer Street to the north, Westlake Avenue North to the west, Republican Street to the South, and a north-south–trending alley bisecting the block to the east
BTEX	benzene, toluene, ethylbenzene, and xylenes
Building	the new multi-story mixed-use building to be constructed on Block 38 West
City Investors	City Investor IX LLC
Cleanup Action	construction mass excavation with construction dewatering and disposal of contaminated soil off Block 38 West
COCs	constituents of concern
COPCs	constituents of potential concern
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
CVOCs	chlorinated volatile organic compounds
DRO	total petroleum hydrocarbons as diesel-range organics

Ecology	Washington State Department of Ecology
Ecology Guidance	*Guidance for Remediation of Petroleum Contaminated Sites* dated June 2016, prepared by the Washington State Department of Ecology
EMMP	*Subsurface Investigation Report and Environmental Media Management Plan, Block 38 West Property, 500 through 536 Westlake Avenue North, Seattle, Washington* dated December 28, 2018, prepared by Farallon Consulting, L.L.C. (this document)
EPA	U.S. Environmental Protection Agency
Farallon	Farallon Consulting, L.L.C.
GRO	total petroleum hydrocarbons as gasoline-range organics
Lift Maps	Environmental Media Management Plan Figures 7 through 13
mg/kg	milligrams per kilogram
µg/l	micrograms per liter
msl	mean sea level
MTCA	Washington State Model Toxics Control Act Cleanup Regulation
ORO	total petroleum hydrocarbons as oil-range organics
PAHs	polycyclic aromatic hydrocarbons
Republican Street Drain	the 72-inch-diameter King County sewer main line in the Republican Street right-of-way and its backfill
Subsurface Investigations	the 2014 and 2018 Subsurface Investigations conducted at Block 38 West
SVOCs	semivolatile organic compounds
total cPAHs TEC	a toxic equivalent concentration using a method prescribed by MTCA (WAC 173-340-708[e])
VOCs	volatile organic compounds
WAC	Washington Administrative Code

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Subsurface Investigation Report and Environmental Media Management Plan (EMMP) on behalf of City Investors IX LLC (City Investors) to support planning for redevelopment of the property at 500 through 536 Westlake Avenue North in the South Lake Union area of Seattle, Washington comprising the western half of the block between Mercer Street to the north, Westlake Avenue North to the west, Republican Street to the South, and a north-south–trending alley bisecting the block to the east, which is herein referred to as Block 38 West (Figures 1 and 2). The eastern half of the same block is referred to as Block 38 East; the whole block, including Blocks 38 West and 38 East, is referred to as Block 38. This EMMP summarizes results of subsurface investigations conducted to date at Block 38 West and presents a general plan for remediation of soil and groundwater impacted by prior releases of hazardous substances during planned redevelopment mass excavation at Block 38 West.

Redevelopment of Block 38 West is scheduled to begin in mid- to late 2019 and will entail construction of a multi-story mixed-use building (the Building) with a preliminary design for five stories above street level and four levels of parking below street level. The planned finish floor elevation of the lowest level of parking is 3.25 feet below mean sea level (North American Vertical Datum of 1988) (msl). Construction of the Building will require mass excavation across the entirety of Block 38 West. The excavation sidewalls will be retained using soldier pile and lagging shoring methods in conjunction with four rows of tiebacks. The bottom of footing elevation for the majority of the foundation will be about 8 feet below msl, or approximately 39 to 49 feet below existing grade throughout Block 38 West. Excavation for elevator cores likely will extend below the mass excavation subgrade (GeoEngineers, Inc. 2018; Middour Consulting LLC 2018).

Hazardous substances were detected in soil and groundwater samples collected from some locations at Block 38 West during subsurface investigations. Construction of the Building will require managing soil and groundwater impacted with hazardous substances. At some locations sampled during subsurface investigations at Block 38 West, hazardous substances were detected in soil or groundwater samples at concentrations exceeding Method A cleanup levels specified in the Washington State Model Toxics Control Act Cleanup Regulation (MTCA), as established in Chapter 173-340 of the Washington Administrative Code (WAC 173-340). Cleanup of contaminated soil and groundwater will be conducted in conjunction with construction of the Building as an independent action in accordance with MTCA without direct oversight or approval by the Washington State Department of Ecology (Ecology).

1.1 PURPOSE AND OBJECTIVES

The purpose of this EMMP is to document results of subsurface investigations conducted to date at Block 38 West, and to provide general methodologies for testing, excavation, handling, and disposal of impacted soil (including soil exceeding applicable cleanup levels) as required by MTCA during redevelopment construction excavation.

1.2 REPORT ORGANIZATION

This EMMP has been organized into the following sections:

- **Section 2, Background,** provides a description of the property comprising Block 38 West, a summary of land uses and prior environmental assessments of Block 38 West and vicinity, and a description of constituents and media of potential concern at Block 38 West.
- **Section 3, Subsurface Investigations,** presents a summary of the methods and results of two subsurface investigations conducted by Farallon at Block 38 West.
- **Section 4, Construction Excavation,** provides a summary of the selected cleanup action, including remedial action objectives, schedule, and restoration time frame; describes how the cleanup action will be managed; and describes how the cleanup action will be documented.
- **Section 5**, **References,** provides a list of the source materials used in preparing this EMMP.
- **Section 6**, **Limitations,** provides Farallon's limitations associated with this EMMP.

2.0 BACKGROUND

This section provides a description of Block 38 West and a summary of current and historical uses of Block 38 West and near vicinity.

2.1 BLOCK 38 WEST DESCRIPTION

Block 38 West is in a commercial and light industrial area zoned as mixed residential/commercial in the South Lake Union Area (SM-SLU 175/85-280) approximately 1 mile north of downtown Seattle. According to King County (2013), Block 38 West comprises King County Parcel Nos. 1983200196 on the northern portion of Block 38 West (534 and 536 Westlake Avenue North), 1983200180 in the central portion of Block 38 West (520 Westlake Avenue North), and 1983200170 on the southern portion of Block 38 West (500 and 510 Westlake Avenue North).

Block 38 West totals approximately 0.34 acre of land developed with structures currently used for retail, temporary offices, storage, and automobile parking. Adjacent street elevations vary from about 41 feet above msl on Republican Street adjoining the southern portion of Block 38 West to about 31 feet above msl on Mercer Street adjoining the northern portion of Block 38 West. The alley bisecting Block 38 and along the eastern boundary of Block 38 West is accessed from Mercer Street and descends from street level to an elevation of about 23 feet above msl, and is used for vehicle access to a parking garage on Block 38 East and access to garage parking and a loading dock on Block 38 West. A historical timber framed trestle extends north from Republican Street into the Block 38 alley approximately 120 feet, to a point approximately 18 feet above the fenced-off southern portion of the alley.

A 72-inch-diameter King County sewer main line is present in the Republican Street right-of-way approximately 20 feet south of the southern boundary of Block 38 West. This sewer line and its backfill (Republican Street Drain) receive inflows from Seattle Public Utilities combined mains and flows westward toward Elliott Bay. The Republican Street Drain is known to draw shallow groundwater flow in the South Lake Union area, which then drains through the backfill material toward the west. The invert elevation of the reinforced concrete pipe of the Republican Street Drain at a manhole immediately southwest of Block 38 West is approximately 14.2 feet above msl and approximately 27 feet below ground surface (bgs).

2.2 BLOCK 38 WEST AND VICINITY LAND USES AND PRIOR ENVIRONMENTAL ASSESSMENTS

According to the *Level I Environmental Site Assessment, Westlake Avenue Building, 534 Westlake Avenue North, Seattle, Washington* dated March 25, 1998, prepared by Terra Associates, Inc. (1998) (1998 EA Report), a Level I Environmental Site Assessment was conducted in 1998 for the Westlake Avenue Building on the northernmost parcel of Block 38 West at 534 Westlake Avenue North. The 1998 EA Report concluded that the potential for contamination due to past or current practices at 534 Westlake Avenue North is low. The 1998 EA Report provided the following information regarding the potential for past or current practices at other properties to affect conditions at 534 Westlake Avenue North:

- Six sites with active petroleum underground storage tanks were identified within a 1/8-mile radius of 534 Westlake Avenue North.
- Forty-four sites with leaking underground storage tanks were identified within a 0.5-mile radius of 534 Westlake Avenue North. Former operation of underground storage tanks at the north-adjacent Unocal property (Unocal station #5353 at 600 Westlake Avenue North, north of Block 38 West across Mercer Street; now also known as Block 37), at the Rosen property on Block 38 East (960 Republican Street), and at 500 Terry Avenue North (also referred to in prior documents as the Ivars Commissary) resulted in confirmed petroleum releases. The 1998 EA Report indicated cleanup actions had occurred at these properties, and acknowledged the potential for properties with leaking underground storage tanks to affect subsurface media at 534 Westlake Avenue North.
- Fifteen confirmed and suspected contaminated sites were identified within a 1-mile radius of 534 Westlake Avenue North. The 1998 EA Report concluded these properties posed minimal threat to 534 Westlake Avenue North.
- A coal gas facility (likely used for storage of gas manufactured at the coal gas plant 2 miles north, according to the 1998 EA Report) formerly was located at 815 Mercer Street, two blocks west of Block 38 West (the property known as Block 50). No documentation was available to the authors of the 1998 EA Report indicating that soil or groundwater contamination associated with the coal gas facility was present, and the 1998 EA Report considered the risk to 534 Westlake Avenue North from releases or operations at the former coal gas facility on Block 50 to be low.

HartCrowser, Inc. (1999) issued a letter regarding Preliminary Environmental Assessment Update, Westlake Avenue Property (428, 500, 510, and 520 Westlake Avenue North), Seattle, Washington dated April 5, 1999, from Mr. Rob Roberts and Ms. Julie K.W. Wukelic to City Investors VII LLC c/o Mr. Joe Delaney of Foster Pepper & Shefelman (1999 EA Report) pertaining to the two southern parcels of Block 38 West at 500, 510, and 520 Westlake Avenue North and a parcel at 428 Westlake Avenue North on the south-adjacent block (the property known as Block 39). The 1999 EA Report indicated a moderate potential for subsurface contamination at these properties based on field reconnaissance and environmental records review. The properties were not identified on agency environmental lists reviewed. Information presented in the 1999 EA Report pertaining to the two southern parcels of Block 38 West, in addition to information provided in the 1998 EA Report, is summarized below.

- Two blacksmith shops formerly present on the two southern parcels of Block 38 West, at 500 Westlake Avenue North from at least 1905 until 1919 and at 524 Westlake Avenue North, represented some potential for petroleum, solvent, or metals contamination to Block 38 West.
- A heating oil underground storage tank formerly present beneath the Republican Street sidewalk south of 500 Westlake Avenue North represented a low potential for petroleum

contamination. The underground storage tank was decommissioned in 1989 with documentation indicating that no petroleum-affected soil was observed.

- Hazardous building materials, including asbestos, lead-based paint, and polychlorinated biphenyls, potentially are present in the structures on the two southern parcels of Block 38 West.
- Former uses of the southern parcel of Block 38 West at 500 and 510 Westlake Avenue North since the 1890s include lumber storage, the blacksmith shop at 500 Westlake Avenue North, and retail/commercial (i.e., auto parts, appliances, school/office supply, furniture storage, clothing, outdoor equipment).
- Former uses of the middle parcel of Block 38 West at 520 Westlake Avenue North since the 1890s include lumber storage, a horse stable and wagon house, a blacksmith wagon shop at 524 Westlake Avenue North, auto repair, a veterinary hospital, parking, and retail operations.

2.3 GEOLOGY AND HYDROGEOLOGY

The Puget Sound region is underlain by Quaternary sediments deposited by a number of glacial episodes. Deposition occurred prior to, during, and following glacial advances and retreats, creating the existing subsurface conditions. The naturally occurring sediments in the South Lake Union area consist primarily of interlayered and/or sequential deposits of alluvial clays, silts, and sands that typically are situated over deposits of glacial till that consist of silty sand to sandy silt with gravel. Outwash sediments consisting of sands, silts, clays, and gravels were deposited by rivers, streams, and post-glacial lakes during glacial advances and recessions. Advance outwash sediments have been largely over-consolidated by the overriding ice sheets. These advance outwash sediments are overlain by a till-like layer and/or recessional outwash sediments that are less consolidated (Galster and Laprade 1991).

Block 38 West is approximately 600 feet south of Lake Union. According to a U.S. Geological Survey (1909) Seattle Special quadrangle map, the original shoreline of Lake Union extended farther south from its current location, to as far as the current location of Mercer Street. In the late 1800s and the early 1900s, the southern end of Lake Union was filled with sawdust and wood waste generated by lumber mill operations and with other fill materials.

A cross-section depicting the general lithology and hydrogeology of Block 38 West is presented on Figure 3, which is based on field observations made during the Subsurface Investigations as documented in boring logs (Appendix A). The location of the cross-section is shown on Figure 2. According to Farallon observations made during subsurface investigations conducted on adjacent properties and at Block 38 West and a review of boring logs from geotechnical drilling (GeoEngineers, Inc. 2018), three general stratigraphic units are present at Block 38 West:

- The shallowest unit consists of fill material with recent deposits, including lacustrine sediments, and comprises silt, sandy silt, and sand with variable gravel content. In some areas, this shallowest unit includes wood waste, peat, and organic silt. The shallowest unit is present across Block 38 West.

- The shallowest unit is underlain by a dense stratum of heterogeneous and anisotropic native glacially consolidated deposits comprising dense sand and variable silt and gravel content and very stiff to hard silt with variable sand and gravel content. According to GeoEngineers, Inc. (2018), the contact elevation to glacially consolidated soils typically slopes down to the north toward Lake Union, and at Block 38 West occurs between approximately 11 feet above msl and 6 feet below msl and represents competent bearing soils.
- Although not encountered to the maximum depth explored during the Subsurface Investigations (about 34 feet below msl at monitoring well FMW-130), glacially consolidated advance outwash deposits underlie the intermediate unit and comprise very dense sand with minor silt. This unit was encountered between about 20 and 30 feet below msl on the north-adjacent properties (Block 31 and Block 37).

Three general water-bearing zones are present at Block 38 West:

- The uppermost water-bearing zone encountered in the fill and underlying recent deposits is referred to in documents for other properties in the South Lake Union area as the Shallow Water-Bearing Zone. The Shallow Water-Bearing Zone at Block 38 West varies in thickness from approximately 5 to 15 feet and was encountered at depths ranging from approximately 5 to 8 feet bgs. Monitoring wells at Block 38 West are screened within the Shallow Water-Bearing Zone, with the exception of monitoring wells FMW-130 and FMW-136, which are screened in glacially consolidated deposits comprising the Intermediate Water-Bearing Zone described below.
- A deeper water-bearing zone below the Shallow Water-Bearing Zone, referred to as the Intermediate Water-Bearing Zone, is present in the glacially consolidated soil at Block 38 West encountered at approximate elevations between 5 and 10 feet above msl (approximately 15 to 20 feet bgs). The Intermediate Water-Bearing Zone is continuous across Block 38 West. Farallon has concluded based on the Subsurface Investigations that the Shallow Water-Bearing Zone at Block 38 West is in direct communication with the Intermediate Water-Bearing Zone (i.e., there is no aquitard separating these groundwater-bearing zones).
- Although not encountered to the maximum depth explored the during the Subsurface Investigations (about 34 feet below msl at monitoring well FMW-130), based on other subsurface investigations conducted in the vicinity, a third water-bearing zone, referred to as the Deep Outwash Aquifer, is presumed to be present at an approximate elevation of 35 feet below msl (approximately 60 feet bgs) in dense advance outwash sand deposits consisting of sand with minor silt. The Deep Outwash Aquifer was encountered at elevations between about 20 to 30 feet below msl at properties north of Mercer Street (Block 31 and Block 37). The thickness of the Deep Outwash Aquifer is not known. The occurrence of the Deep Outwash Aquifer and groundwater quality will be assessed during an upcoming investigation that will be reported separate from the EMMP.

2.4 CONSTITUENTS AND MEDIA OF POTENTIAL CONCERN

Constituents of potential concern (COPCs) at Block 38 West were selected based on the known historical uses of Block 38 West and vicinity summarized above, historical land fill known to have been placed in this area, and the potential for releases of contaminants at concentrations exceeding MTCA cleanup levels. The COPCs for soil and groundwater at Block 38 West are:

- Total petroleum hydrocarbons as gasoline-range organics (GRO);
- Total petroleum hydrocarbons as diesel-range organics and oil-range organics (DRO and ORO, respectively);
- Benzene, toluene, ethylbenzene, and xylenes (BTEX);
- Volatile organic compounds (VOCs), including chlorinated volatile organic compounds (CVOCs);
- Polycyclic aromatic hydrocarbons (PAHs) and other semivolatile organic compounds (SVOCs), including carcinogenic polycyclic aromatic hydrocarbons (cPAHs);
- Naphthalenes; and
- Metals (i.e., arsenic, cadmium, chromium, mercury, and lead).

3.0 SUBSURFACE INVESTIGATIONS

Results of the subsurface investigations conducted by Farallon at Block 38 West are summarized below. GeoEngineers, Inc. (2018) has separately presented results from its geotechnical engineering evaluation conducted in support of Block 38 West redevelopment.

Farallon conducted two subsurface investigations at Block 38 West. The first subsurface investigation commenced on July 21, 2014 and entailed installing and collecting samples from a 55-foot-deep monitoring well outside the existing building in the loading dock area, and collecting soil, reconnaissance groundwater, and groundwater samples (2014 Subsurface Investigation). The second subsurface investigation commenced on August 20, 2018 and entailed drilling at 11 locations within Block 38 West to depths of up to 50 feet bgs, collecting soil and reconnaissance groundwater samples, installing and collecting samples from five new monitoring wells, and collecting samples from the monitoring well installed during the 2014 Subsurface Investigation (2018 Subsurface Investigation). The objective of the 2014 Subsurface Investigation and the 2018 Subsurface Investigation (collectively, the Subsurface Investigations) was to obtain lithologic, hydrologic, and analytical data to characterize environmental conditions at Block 38 and inform the selection of remedial actions as set forth in this EMMP. Additionally, some of the data are to be used for geotechnical engineering design by others.

3.1 2014 SUBSURFACE INVESTIGATION

The 2014 Subsurface Investigation entailed the installation of monitoring well FMW-130 in the loading dock area outside the existing building (Figure 2). Methodology employed and results of the 2014 Subsurface Investigation are summarized below.

Soil samples were collected continuously during drilling of the boring for monitoring well FMW-130 to a depth of 60 feet bgs using sonic drilling methods on July 21 and 22, 2014 for lithologic logging. Soil samples also were obtained at 5-foot sampling intervals from a split-spoon sampler driven by a 140-pound hammer 18 inches into the soil formation for collection of blow counts (a metric for evaluating soil density required for geotechnical engineering analysis).

A Farallon Geologist observed subsurface conditions and prepared a boring log and well completion diagram for monitoring well FMW-130 (Appendix A). The information recorded on the boring log included soil types encountered, visual and olfactory evidence of contamination, and volatile organic vapor concentrations as measured using a photoionization detector. Soil samples were collected and transferred directly into laboratory-prepared glass sample containers fitted with Teflon-lined lids in accordance with Farallon's standard sampling procedures.

One reconnaissance groundwater sample was collected during drilling for a temporary monitoring well screened from 15 to 20 feet bgs on July 21, 2014. The reconnaissance groundwater sample was collected in general accordance with standard U.S. Environmental Protection Agency (EPA) (1996) low-flow groundwater sampling procedures. A 0.25-inch-diameter tube was inserted to near the center of the screened interval of the temporary monitoring well. Groundwater was extracted using a peristaltic pump with a flow rate of less than 300 milliliters per minute until a steady flow was established and extracted groundwater cleared, after which the reconnaissance groundwater sample was collected in a laboratory supplied sample container.

Monitoring well FMW-130 was constructed on July 22, 2014 in accordance with the Minimum Standards for Construction and Maintenance of Wells, as established in WAC 173-160. The monitoring well was constructed using 2 inch-diameter Schedule 40 polyvinyl chloride casing and 0.010-inch slotted screen set from 45 to 55 feet bgs (22.8 to 32.8 feet below msl). This interval was selected for placement of the well screen due to the presence of permeable silty sand and well-graded gravel with silt and sand, and elevated photoionization detector readings that suggested the potential presence of VOCs. The monitoring well was completed at grade in a flush-mounted steel monument. The filter pack surrounding the well screen consisted of 10/20 Monterey filter sand from the bottom of the well screen to approximately 2 feet above the well screen. A 2-foot-thick hydrated bentonite pellet seal was emplaced on the top of the filter pack and a grout consisting of a cement and bentonite mix extended from a depth of about 40 feet bgs to about 1.5 feet bgs, where a flush mounted monument was installed at the ground surface. Monitoring well construction details are provided in Appendix A.

The monitoring well was developed by surging and purging with a submersible pump shortly after well construction was completed. Monitoring well FMW-130 was developed until the majority of fine-grained sediment was removed from the well screen and adjacent sand pack. Monitoring well FMW-130 was sampled during three groundwater monitoring events: July 24, 2014; July 3, 2017; and August 30, 2018. Prior to collecting groundwater samples, groundwater was purged with a submersible pump and routed through a flow-through water quality parameter meter. Water quality parameters, including temperature, pH, specific conductance, turbidity, oxidation-reduction potential, and dissolved oxygen, were monitored and recorded. Monitoring well FMW-130 was purged until parameters stabilized prior to collection of a groundwater sample.

Soil, reconnaissance groundwater, and groundwater samples were placed on ice in a cooler under standard chain-of-custody procedures, and delivered to OnSite Environmental Inc. of Redmond, Washington for laboratory analysis. One soil sample collected from the boring advanced for construction of monitoring well FMW-130 at a depth of 20 feet bgs was submitted for laboratory analysis. The soil sample was analyzed for the following constituents:

- GRO by Northwest Method NWTPH-Gx;
- DRO and ORO by Northwest Method NWTPH-Dx;
- BTEX by EPA Method 8021; and
- PAHs and other SVOCs by EPA Method 8270D.

The reconnaissance groundwater sample (collected in July 2014) and two groundwater samples (one sample collected in July 2014 and one collected in July 2017) were analyzed for the following constituents:

- GRO by Northwest Method NWTPH-Gx;

- BTEX by EPA Method 8021 (July 2014 reconnaissance groundwater sample only);
- VOCs, including BTEX and CVOCs, by EPA Method 8260C (July 2014 reconnaissance groundwater sample and groundwater sample collected during the July 2017 groundwater monitoring event); and
- CVOCs only by EPA Method 8260C (reconnaissance groundwater sample and groundwater samples collected during the July 2014 and July 2017 groundwater monitoring events).

3.2 2018 SUBSURFACE INVESTIGATION

The 2018 Subsurface Investigation entailed drilling on Block 38 West at eight locations within the existing building and three locations adjacent to the existing building (Figure 2). Five of the borings were completed as monitoring wells. Methodology and results of the 2018 Subsurface Investigation are summarized below.

Drilling was conducted using a limited access hollow-stem auger drilling rig between August 20 and 24, 2018 to advance 11 soil borings. Four of the borings within the existing building were completed as monitoring wells FMW-132 and FMW-134 through FMW-136, and one boring adjacent to the existing building was completed as monitoring well FMW-133 (Figure 4). Monitoring well screened intervals varied and were generally shallow, between 20.7 feet above msl and 14.9 feet below msl. Soil samples were collected from each boring generally at 5-foot sampling intervals from an 18-inch-long split-spoon sampler driven by a 140-pound hammer in advance of the lead auger into the soil formation for collection of blow counts. A Farallon Geologist observed subsurface conditions and prepared boring logs and well completion diagrams (Appendix A). The information recorded on the boring logs included soil types encountered, visual and olfactory evidence of contamination, and volatile organic vapor concentrations as measured using a photoionization detector. Soil samples were collected and transferred directly into laboratory-prepared glass sample containers fitted with Teflon-lined lids in accordance with Farallon's standard sampling procedures.

One reconnaissance groundwater sample was collected from each of borings FB-1, FB-3, and FB-5 during drilling for temporary monitoring wells. The reconnaissance groundwater samples were collected in general accordance with standard EPA (1996) low-flow groundwater sampling procedures. A 0.25-inch-diameter tube was inserted to near the center of the screened interval of each temporary monitoring well. Groundwater was extracted using a peristaltic pump with a flow rate of less than 300 milliliters per minute until a steady flow was established and extracted groundwater cleared, after which the reconnaissance groundwater sample was collected.

Monitoring wells FMW-132 through FMW-136 were constructed in accordance with the Minimum Standards for Construction and Maintenance of Wells, as established in WAC 173-160. The monitoring well was constructed using 1-inch-diameter Schedule 40 polyvinyl chloride casing and 0.010-inch slotted screen prepacks with Monterey filter sand. The monitoring wells were completed at grade in flush-mounted steel monument. A hydrated bentonite pellet seal was emplaced from the top of the filter pack to a depth of approximately 1 foot bgs. A 0.5-foot-thick concrete surface seal was placed around the wells from the top of the bentonite to approximately 1 foot bgs and surrounding the flush-mounted monument up to the ground surface. Monitoring well construction details are provided in Appendix A.

The monitoring wells were developed using surging and purging with a peristaltic pump shortly after well construction was completed. Monitoring wells were developed until the majority of fine-grained sediment was removed from the well screen prepack assemblies. Monitoring wells FMW-132 through FMW-136, and monitoring well FMW-130 installed during the 2014 Subsurface Investigation, were sampled on August 30, 2018. Prior to collecting groundwater samples, groundwater was purged with a peristaltic pump and routed through a flow-through water quality parameter meter. Water quality parameters, including temperature, pH, specific conductance, turbidity, oxidation-reduction potential, and dissolved oxygen, were monitored and recorded. Monitoring wells were purged until parameters stabilized prior to collection of groundwater samples.

Soil, reconnaissance groundwater, and groundwater samples were placed on ice in a cooler under standard chain-of-custody procedures, and delivered to OnSite Environmental Inc. of Redmond, Washington for laboratory analysis. Select soil samples were analyzed for the following constituents:

- GRO by Northwest Method NWTPH-Gx;
- DRO and ORO by Northwest Method NWTPH-Dx;
- BTEX by EPA Method 8021;
- CVOCs by EPA Method 8260C;
- PAHs and other SVOCs by EPA Method 8270D; and
- Arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver by EPA Series Methods 200/6000/7000.

Reconnaissance groundwater samples were analyzed for the following constituents:

- GRO by Northwest Method NWTPH-Gx;
- DRO and ORO by Northwest Method NWTPH-Dx;
- BTEX by EPA Method 8021; and
- VOCs, including CVOCs and BTEX, by EPA Method 8260C.

Groundwater samples were analyzed for the following constituents:

- GRO by Northwest Method NWTPH-Gx;
- DRO and ORO by Northwest Method NWTPH-Dx;
- CVOCs and BTEX by EPA Method 8260C; and
- PAHs by EPA Method 8270D.

3.3 ANALYTICAL RESULTS

A summary of the analytical results for soil and groundwater samples collected by Farallon during Subsurface Investigations is presented below.

3.3.1 Soil

COPCs detected in soil samples are summarized in Figure 2. Analytical results for soil samples are presented in Tables 1 through 4 and described below. Laboratory analytical reports are provided in Appendix B.

3.3.1.1 Petroleum Hydrocarbons

A total of 28 soil samples, collected at depths up to 35 feet bgs, were analyzed for petroleum hydrocarbons.

DRO was detected in 7 of the 28 soil samples at concentrations ranging from 97 to 730 milligrams per kilogram (mg/kg), less than the MTCA Method A cleanup level of 2,000 mg/kg. These samples were collected from 7 of the 11 borings at depths ranging from 2.5 to 15 feet bgs. The laboratory report indicated that the DRO results may be impacted by hydrocarbons detected in the oil range (i.e., ORO) in two of the soil samples analyzed.

ORO was detected in 10 of the 28 soil samples at concentrations ranging from 250 to 3,700 mg/kg. These samples were collected from 8 of the 11 borings at depths ranging from 2.5 to 15 feet bgs. ORO was detected at concentrations exceeding the MTCA Method A cleanup level of 2,000 mg/kg at two locations: in a sample collected from boring FB-1 at a depth of 5 feet bgs, and in the boring for monitoring well FMW-132 in the existing building and within about 20 feet west of boring FB-1 at a depth of 5 feet bgs.

Two soil samples collected from boring FB-1, including the soil sample collected at a depth of 5 feet bgs, were re-analyzed for DRO and ORO after using the silica gel cleanup process intended to remove interference in analytical results presented by natural organic material in the sample aliquot, which could contribute to reported petroleum hydrocarbon concentrations using the standard analytical method without cleanup. DRO and ORO analyzed using silica gel cleanup were detected at lower concentrations than detected in the two soil samples analyzed without cleanup, suggesting some interference from natural organic material in these soil samples.

GRO was detected in one soil sample collected from boring FB-6 at a depth of 2.5 feet bgs at a concentration less than the MTCA Method A cleanup level of 100 mg/kg. The laboratory report indicated that the chromatogram for the GRO detected in the soil sample from boring FB-6 was not a typical gasoline.

3.3.1.2 Polycyclic Aromatic Hydrocarbons, Other Semivolatile Organic Compounds and Chlorinated Volatile Organic Compounds

Total cPAHs were calculated as a toxic equivalent concentration using a method prescribed by MTCA (WAC 173-340-708[e]): total cPAHs TEC. The calculation is based on a toxicity equivalency factor-weighted sum of concentrations of individual cPAHs.[1]

A total of 20 soil samples, collected at depths up to 35 feet bgs, were analyzed for cPAHs, naphthalenes, other SVOCs, and 10 soil samples for CVOCs.

Total cPAHs TEC was detected in 6 of the 20 soil samples submitted for laboratory analysis at concentrations ranging from 0.036 to 12.5 mg/kg. These samples were collected from 5 of the 11 borings at depths ranging from 2.5 to 15 feet bgs. Total cPAHs TEC was detected at concentrations exceeding the MTCA Method A cleanup level of 0.1 mg/kg in 5 of the 6 soil samples where total cPAHs TEC was detected. The following five locations where total cPAHs TEC exceeded the MTCA Method A cleanup level are described below:

- A concentration of 3.4 mg/kg in the soil sample collected from boring FB-1 at 5 feet bgs;
- A concentration of 15 mg/kg in the soil sample collected from boring FB-2 at 5 feet bgs;
- A concentration of 0.52 mg/kg in the soil sample collected from boring FB-4 at 10 feet bgs;
- A concentration of 0.65 mg/kg in the soil sample collected from boring FB-6 at 2.5 feet bgs; and
- A concentration of 12.5 mg/kg in the soil sample collected from the boring for monitoring well FMW-132 at 5 feet bgs.

A total naphthalene concentration was calculated using the method prescribed by MTCA. The calculation is a sum of concentrations of three individual naphthalenes.[2] Total naphthalenes were detected in 13 of the 20 soil samples submitted for laboratory analysis at concentrations ranging from 0.029 to 6.6 mg/kg. The samples were collected from 9 of the 11 borings at depths ranging from 2.5 to 30 feet bgs. Total naphthalenes were detected at concentrations exceeding the MTCA Method A cleanup level of 5 mg/kg at one location, the boring for monitoring well FMW-132 at a depth of 5 feet bgs.

Some non-carcinogenic PAHs and other SVOCs[3] were detected at concentrations exceeding laboratory reporting limits in 13 of the 20 soil samples submitted for laboratory

[1] Benzo(a)Pyrene, benzo(a)Anthracene, benzo(b)Fluoranthene, benzo(j,k)Fluoranthene, chrysene, dibenzo(a,h)Anthracene, and indeno(1,2,3-cd)Pyrene.
[2] Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
[3] Acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)Perylene, fluoranthene, fluorene, phenanthrene, pyrene, 2,4-dimethylphenol, carbazole, and dibenzofuran.

analysis, collected from 9 of the 11 borings at depths ranging from 2.5 to 35 feet bgs. Non-carcinogenic PAHs and other SVOCs were not detected at concentrations exceeding MTCA Method A cleanup levels or other MTCA cleanup criteria. Non-carcinogenic PAHs and other SVOCs were not detected at concentrations exceeding laboratory reporting limits in 7 of the 20 soil samples submitted for laboratory analysis, collected at depths of up to 30 feet bgs.

A total of seven soil samples, collected at depths up to 50 feet bgs, were analyzed for CVOCs. CVOCs were not detected at concentrations exceeding laboratory reporting limits in the soil samples collected from borings FB-02, FB-04, and FB-05 and monitoring wells FMW-135 and FMW-136 (Table 4).

3.3.1.3 Metals

Barium, chromium, lead, and/or mercury were detected at concentrations exceeding laboratory reporting limits, but less than MTCA Method A cleanup levels, in all 15 soil samples submitted for laboratory analysis, collected from 9 of the 11 borings at depths ranging from 5 to 35 feet bgs. The other metals tested were not detected at concentrations exceeding MTCA Method A cleanup levels or other MTCA criteria. No Toxicity Characteristic Leaching Procedure laboratory analysis was conducted for disposal characterization, as total metals concentrations were considerably less than 20 times the Toxicity Characteristic Leaching Procedure criteria for metals concentrations in soil acceptable for disposal at Subtitle D permitted facilities.

3.3.2 Groundwater

COPCs detected in groundwater samples are summarized in Figure 4. Stabilized groundwater field parameters measured during groundwater sampling are presented in Table 5. Analytical results for groundwater samples are presented in Tables 6 through 8 and described below. Laboratory analytical reports are provided in Appendix B.

3.3.2.1 Petroleum Hydrocarbons

DRO and/or ORO were detected at concentrations ranging from 260 to 1,000 micrograms per liter (μg/l) in a reconnaissance groundwater sample collected in one boring, and in groundwater samples collected from three monitoring wells. DRO was detected at concentrations exceeding the MTCA Method A cleanup level of 500 μg/l in groundwater samples collected from two locations: at a concentration of 660 μg/l in the reconnaissance groundwater sample collected from borings FB-3; and at a concentration of 1,000 μg/l[4] in the groundwater sample collected from monitoring well FMW-134.

[4] The laboratory report indicated that the concentration of petroleum hydrocarbons characterized as DRO in this groundwater sample was impacted by the hydrocarbons characterized as GRO.

GRO was detected in a reconnaissance groundwater sample collected from one boring and in a groundwater sample collected from one monitoring well at concentrations exceeding the MTCA Method A cleanup level of 800 µg/l:

- GRO was detected at a concentration of 2,100 µg/l in a reconnaissance groundwater sample collected at a depth of 15 to 20 feet bgs (7.2 to 2.2 feet above msl) in the boring for monitoring well FMW-130[5] in July 2014. BTEX also was detected in this reconnaissance groundwater sample, and benzene was detected at a concentration of 5.1 µg/l, slightly exceeding the 5 µg/l MTCA Method A cleanup level. Toluene, ethylbenzene, and xylenes were not detected at concentrations exceeding MTCA Method A cleanup levels.
- GRO was detected at a concentration of 1,100 µg/l[6], exceeding the MTCA Method A cleanup level, in a groundwater sample collected from monitoring well FMW-134.

GRO and BTEX were not detected at concentrations exceeding laboratory reporting limits in the other groundwater samples collected at Block 38 West.

3.3.2.2 Polycyclic Aromatic Hydrocarbons

Total cPAHs TEC was not detected at concentrations exceeding laboratory reporting limits in the six groundwater samples submitted for laboratory analysis.

Total naphthalenes were detected at concentrations ranging from 0.39 to 312 µg/l in three of the seven groundwater samples submitted for laboratory analysis. Total naphthalenes were detected at concentrations exceeding the MTCA Method A cleanup level of 160 µg/l at one location, monitoring well FMW-134.

Some non-carcinogenic PAHs were detected at concentrations exceeding laboratory reporting limits in four of the six groundwater samples submitted for laboratory analysis. The detected concentrations of non-carcinogenic PAHs were less than the MTCA Method A cleanup levels or other applicable MTCA cleanup criteria.

3.3.2.3 Volatile Organic Compounds

BTEX VOCs were discussed above in Section 3.3.2.1, Petroleum Hydrocarbons. Remaining VOCs were not detected at concentrations exceeding their respective MTCA Method A cleanup level for the groundwater samples noted below.

- 1,1,1-Trichloroethane, cis-1,2-Dichloroethene, and chloroform were detected in a groundwater sample collected from monitoring well FMW-130 on July 24, 2014 at concentrations less than their respective MTCA cleanup criteria. These VOC

[5] The screen for monitoring well FMW-130 subsequently was set between elevations of 22.8 to 32.8 feet below msl.
[6] The laboratory report indicated that the concentration of petroleum hydrocarbons characterized as GRO in this groundwater sample was attributed to a single peak on the chromatogram, which was in the range of naphthalene. Naphthalene was quantified at a concentration of 160 µg/l in this groundwater sample.

constituents were not detected in the groundwater sample collected from monitoring well FMW-130 on July 3, 2017. Cis-1,2-Dichloroethene was detected again in a groundwater sample collected from monitoring well FMW-130 on August 30, 2018 at a concentration less than its MTCA cleanup level.

  - Acetone was detected in a reconnaissance groundwater sample collected from boring FB-3 on August 23, 2018 at a concentration less than its MTCA cleanup level.
  - Chloroform was detected in a groundwater sample collected from monitoring well FMW-135 on August 30, 2018 at a concentration less than its MTCA cleanup level.
  - Chloroform was detected in a groundwater sample collected from monitoring well FMW-136 on August 30, 2018 at a concentration exceeding the MTCA cleanup level.

VOCs otherwise were not detected at concentrations exceeding the laboratory reporting limit or their respective MTCA Method A cleanup level in the remaining groundwater samples collected from Block 38 West.

3.4 SUSPECTED SOURCES OF CONTAMINATION

No specific uses or features have been confirmed as the source of soil and groundwater contamination at Block 38 West. Suspected sources of contamination include:

- Adjacent properties with documented petroleum releases referred to in Section 2.2, Block 38 West and Vicinity Land Uses and Prior Environmental Assessments, and migration to Block 38 West via groundwater transport from properties including the following:
  - Rosen property on Block 38 East (960 Republican Street);
  - Ivars Commissary (500 Terry Avenue North); and
  - Former Unocal station (600 Westlake Avenue North, Block 37).
- Waste constituents, including naphthalenes and PAH constituents, migrating to Block 38 West via groundwater transport from the former coal gas facility (815 Mercer Street, Block 50).
- Possible spills and leaks of petroleum constituents associated with former equipment or auto parking/repair operations, blacksmith shops, and/or heating oil storage at Block 38 West.
- Possible placement of contaminated fill material at Block 38 West prior to construction of the existing building.
- Other possible unidentified sources beyond the boundaries of Block 38 West.

3.5 CONSTITUENTS AND MEDIA OF CONCERN

The results of the Subsurface Investigations indicate constituents of concern (COCs) and media of concern as summarized below.

3.5.1 Constituents of Concern

COCs identified for cleanup at Block 38 West consist of those COPCs detected in soil or groundwater samples collected from Block 38 West at concentrations exceeding MTCA Method A cleanup levels or other applicable MTCA cleanup criteria.

The COCs for soil are:

- ORO;
- Total naphthalenes; and
- Total cPAHs TEC.

The COCs for groundwater are:

- GRO;
- Benzene;
- DRO; and
- Total naphthalenes.

Chloroform was detected at a concentration exceeding the MTCA Method A cleanup level in a groundwater sample collected from monitoring well FMW-136 on August 30, 2018. Chloroform was detected in two other groundwater samples and in the water sample collected from the potable water supply, which was used during drilling. Chloroform is a byproduct of the treatment of municipal water supplies and also is a common contaminant in analytical laboratories and so was not retained as a COC for groundwater. Potable water was introduced to the subsurface during drilling to help control heaving sands and was subsequently recovered during well development. Potable water also can be introduced to the subsurface from leaking water supply and/or sewer piping in the vicinity.

3.5.2 Media of Concern

The media of concern at Block 38 West are soil and groundwater.

3.6 BLOCK 38 HYDROGEOLOGY

Groundwater levels were measured during the August 30, 2018 groundwater sampling event. Depth to water in monitoring wells FMW-130 and FMW-132 through FMW-136 ranged from 5.14 to 8.66 feet bgs (Table 9). Based on the depth-to-water measurements, groundwater elevations ranged from 16.32 to 18.15 feet msl at Block 38 West (Table 9). Based on groundwater levels measured in wells screened in the Shallow Water-Bearing Zone during the August 30, 2018 groundwater monitoring event (Table 9), the inferred groundwater flow direction for this zone is southerly, with a horizontal hydraulic gradient of approximately 0.006 feet/foot, and is inferred to steepen to the south toward the Republican Street Drain. The groundwater flow direction was not estimated for the Intermediate Water-Bearing Zone or the Deep Outwash Aquifer due to the insufficient number of wells screened in those water-bearing zones. A groundwater elevation contour map for the Shallow Water-Bearing Zone at Block 38 West is provided as Figure 5.

Groundwater flow direction in the vicinity of Block 38 West has been affected in recent years by transient conditions related to construction dewatering activities in the South Lake Union are and the presumed effects of groundwater infiltration into the Republican Street Drain structure or backfill. Other factors affecting groundwater flow direction in the Shallow Water-Bearing Zone at Block 38 West include groundwater recharge at higher elevations on Queen Anne Hill and Capitol Hill flowing eastward and westward, respectively, down toward the South Lake Union area and Lake Union itself; and variable characteristics of water-bearing fill. The groundwater flow direction at Block 38 West likely is variable over time.

3.7 NATURE AND EXTENT OF CONTAMINATION

Based on the results of the Subsurface Investigations, the nature and extent of contamination at Block 38 West is shown on Figure 6 for soil and Figure 4 for groundwater. Figure 3 shows the nature and extent of contamination at Block 38 West in vertical cross-section. Tables 1 through 8 present analytical results for COCs detected in soil and groundwater samples collected at Block 38 West. Figures 7 through 13 show the estimated lateral and vertical extents of impacted soil at Block 38 West in 5-foot-thick lifts for purposes of soil disposal planning during construction excavation.

3.7.1 Soil

COCs for soil were detected at concentrations exceeding their respective MTCA Method A cleanup levels in shallow soil samples collected from the following locations on the eastern portion of Block 38 West:

- Boring FB-1 – ORO and total cPAHs TEC in a soil sample collected from 5 feet bgs;
- Boring FB-2 – total cPAHs TEC in a soil sample collected from 5 feet bgs;
- Boring FB-4 – total cPAHs TEC in a soil sample collected from 10 feet bgs;
- Boring FB-6 – total cPAHs TEC in a soil sample collected from 2.5 feet bgs; and
- The boring for monitoring well FMW-132 – ORO, total naphthalenes, and total cPAHs TEC in a soil sample collected from 5 feet bgs.

COCs detected in soil at concentrations exceeding their respective MTCA Method A cleanup levels at Block 38 West are bounded vertically by soil samples collected from boring FB-1 at a depth of 15 feet bgs, boring FB-2 at a depth of 25 feet bgs, boring FB-4 at a depth of 15 feet bgs, boring FB-6 at a depth of 10 feet bgs, and the boring for monitoring well FMW-133 at a depth of 10 feet bgs.

COCs detected in soil at concentrations exceeding their respective MTCA Method A cleanup levels at Block 38 West are bounded laterally to the west by soil samples collected from the boring for monitoring well FMW-135 and from borings FB-3 and FB-5, and bounded laterally to the south by soil samples collected from the borings for monitoring wells FMW-134 and FMW-136. The lateral extent of COCs detected in soil at concentrations exceeding MTCA Method A cleanup levels is not bounded to the north or to the east, as soil samples could not be collected during the Subsurface Investigations because of access limitations. In advance of or during redevelopment of Block 38 West, soil samples will be collected along the northern portion of the alley to define the eastern extent of shallow soil contamination encountered at Block 38 West.

3.7.2 Groundwater

COCs for groundwater were detected at concentrations exceeding their MTCA Method A cleanup levels in reconnaissance groundwater samples collected from the following locations:

- Boring FB-3 – DRO in a reconnaissance groundwater sample collected from between 17 and 22 feet bgs; and
- The boring for monitoring well FMW-130 in July 2014 – GRO, benzene, and total naphthalenes in a reconnaissance groundwater sample collected from 15 to 20 feet bgs.

COCs for groundwater were detected at concentration exceeding their respective MTCA Method A cleanup levels in groundwater samples collected from the following locations:

- Monitoring well FMW-134 – GRO, DRO, and total naphthalenes; and
- Monitoring well FMW-136 – chloroform.

The lateral extent of COCs in the Shallow Water-Bearing Zone at concentrations exceeding their respective MTCA Method A cleanup levels is not bounded off Block 38 West to the west, south, and east. Monitoring wells were not installed outside the Block 38 West property during the Subsurface Investigations. An assessment of deeper groundwater quality will be conducted in advance of redevelopment and will be reported in a later report. There are no data generated to date that suggest soil or groundwater contamination at Block 38 West currently extends to deeper water-bearing zones.

4.0 CONSTRUCTION EXCAVATION

This section describes the cleanup action selected for Block 38 West (Cleanup Action) and a plan for managing impacted soil during construction. The Cleanup Action will not foreclose future remedial action in the rights-of-way bounding Block 38 West.

For purposes of this document, the terms Contaminated Soil and Contaminated Groundwater refer to soil or groundwater containing COCs at concentrations exceeding MTCA Method A cleanup levels. The terms Impacted Soil and Impacted Groundwater, used in the context of materials management during construction, refer to soil and groundwater containing concentrations of constituents exceeding analytical laboratory reporting limits and criteria for off-site reuse, disposal, or discharge of clean soil or groundwater. Impacted Soil and Impacted Groundwater may, or may not, be considered as Contaminated Soil and Contaminated Groundwater depending on whether COCs were detected at concentrations exceeding MTCA cleanup levels. Management of Impacted Soil necessitates special handling considerations during construction. Impacted Groundwater requires special handling, and may require treatment, to comply with discharge protocols or authorizations. Impacted Soil or Impacted Groundwater may be distinguished from clean media with sample laboratory analysis and/or visual, olfactory, or field screening indications of elevated petroleum concentrations (e.g., staining, petroleum odors, volatile vapors measured with a photoionization detector).

4.1 CLEANUP ACTION OBJECTIVES

The objective of the Cleanup Action is to protect human health and the environment by meeting the requirements of MTCA for the Block 38 West property or the "site" as defined under MTCA.[7]

4.2 SCHEDULE AND RESTORATION TIME FRAME

The Cleanup Action will meet the requirements for cleanup actions under MTCA within an approximately 10-month period of construction, scheduled to begin in mid- to late 2019. Removal and off-site disposal of Contaminated Soil will result in achievement of cleanup standards for soil at Block 38 West over the course of a 2- to 3-month excavation period. Removal and treatment of Contaminated Groundwater will result in achievement of cleanup standards for groundwater at Block 38 West over the course of an estimated 8- to 10-month groundwater withdrawal and treatment period.

4.3 CONSTRUCTION MANAGEMENT

All construction work, including implementation of the Cleanup Action, will be managed by a general contractor selected by City Investors (General Contractor). Numerous specialty subcontractors will provide a range of services during construction of the Building and implementation of the Cleanup Action. Subcontractors most involved with implementation of the

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[7] Per WAC 173-340-200, the term "site" is used for the area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise came to be located.

Cleanup Action will perform soil excavation (Excavation Subcontractor) and drilling services (Drilling Subcontractor) for installation of shoring components. Both the Excavation Subcontractor and the Drilling Subcontractor will generate Impacted Soil, which will require disposal at facilities permitted to receive the applicable type of soil. A dewatering consultant and a Contaminated Groundwater treatment consultant (collectively Wastewater Consultants) will provide City Investors with services related to operating the dewatering system and extracting and treating Impacted Groundwater (including Contaminated Groundwater) prior to discharge per a temporary discharge permit. An environmental consultant will provide City Investors with services related to implementation of the Cleanup Action (Environmental Consultant). Farallon has been selected by City Investors as the Environmental Consultant for the Cleanup Action. Implementation of the Cleanup Action will require the Environmental Consultant to consult with City Investors, the General Contractor, the Excavation Subcontractor, the Drilling Subcontractor, and the Wastewater Consultants regarding design and implementation of the Cleanup Action.

4.4 ELEMENTS OF CLEANUP ACTION

The Cleanup Action includes the following general elements that will be conducted during construction of the Building, detailed in the sections that follow. During construction, the contaminated Shallow Water-Bearing Zone and the upper portion of the Intermediate Water-Bearing Zone will be dewatered and contaminated soil removed as part of the excavation activities. After construction, these portions of the Shallow and Intermediate Water-Bearing Zones will no longer exist on the Block 38 West property. A waterproofing and vapor barrier will be installed along the exterior subsurface walls and the subsurface floor of the Building to prevent the Block 38 West property from being re-contaminated by hazardous substances that may remain in the adjoining rights-of-way. Following completion of the construction activities, compliance groundwater monitoring will not be conducted as the Shallow Water-Bearing Zone and upper portion of the Intermediate Water-Bearing Zone will no longer be present on the Block 38 West property.

- **Site preparation** includes decommissioning monitoring wells within the boundaries of Block 38 West, installing erosion-control measures prior to beginning excavation, and installing shoring piles and lagging for the excavation shoring system along the perimeter of Block 38 West.
- **Dewatering and wastewater treatment and discharge** includes installing a dewatering system to achieve sufficient groundwater drawdown to enable excavation to a desired depth, and installing a wastewater treatment system to treat COCs in groundwater extracted from the Shallow and Intermediate Water-Bearing Zones and the Deep Outwash Aquifer to achieve MTCA cleanup standards and the authorized discharge criteria. Discharged groundwater will be monitored to confirm that the authorized discharge limits are met.
- **Contaminated soil management** includes excavation, handling, transportation, and disposal of Contaminated Soil generated during mass excavation across the entirety of Block 38 West to approximately 10 feet below msl, and installation of shoring. Contaminated soil removed from Block 38 West will be managed and disposed of per

Ecology (2016) (Ecology Guidance), the disposal criteria of the disposal facilities selected by City Investors, and applicable hazardous waste regulations.

- **Compliance soil monitoring** includes performance and confirmation soil sampling and analysis to guide the excavation and handling of Contaminated Soil and to document compliance with MTCA Method A cleanup levels.
- **Waterproof concrete and vapor barrier installation** includes current construction plans that specify that the exterior walls and floor slab of the underground portion of the Building will be constructed of waterproof concrete below the water table and a vapor barrier will be installed above the water table. No provisions for drainage are planned or needed. The exterior walls and floor slab of the underground portion of the Building and the additional protective measures of the waterproof concrete and vapor barrier will prevent future migration of and potential exposure to contaminated groundwater, if present, emanating from sources at properties adjacent to or in the vicinity of Block 38 West.

4.4.1 Site Preparation

Preparation for implementation of the Cleanup Action and for construction of the Building includes installation of security and erosion controls per permitted construction plans. Work related to re-routing underground utilities out of the construction area or decommissioning them will be completed before construction excavation. Current construction plans specify that a system of soldier piles and lagging be installed around the outside perimeter of Block 38 West, which will be installed concurrently with implementation of the Cleanup Action.

Prior to construction excavation, the monitoring wells at Block 38 West will require decommissioning in accordance with the *Minimum Standards for Construction and Maintenance of Wells* (WAC 173-160). Each monitoring well will be decommissioned by backfilling the well casing with bentonite chips from the total depth of the installation to surface grade, and hydrating the bentonite with water in accordance with WAC 173-160-381. The flush-mounted well monuments will be removed.

4.4.2 Dewatering and Wastewater Treatment and Discharge

Construction excavation requires installation of a dewatering system and a wastewater treatment system per plans and specifications of the Wastewater Consultants. The dewatering system will achieve drawdown to approximately 2 feet below final subgrade to a maximum depth of approximately 10 feet below msl across Block 38 West for a period of up to approximately 10 months. The wastewater treatment system will treat groundwater extracted from the Shallow and Intermediate Water-Bearing Zones and the Deep Outwash Aquifer sufficient to achieve permit requirements prior to discharge to Lake Union or, alternatively, to meet criteria for discharge to the municipal sanitary sewer.[8]

Middour Consulting LLC (2018) prepared a groundwater control plan and specifications for a dewatering system to draw groundwater below the maximum excavation depth required for the

[8] The wastewater treatment system will be designed to capture and treat stormwater on the construction site.

redevelopment design. Middour Consulting LLC (2018) indicates that eighteen 12-inch-diameter dewatering wells installed in 30- to 36-inch-diameter boreholes drilled around the perimeter of Block 38 West and screened from 10 feet above msl to 30 feet below msl will extract groundwater at a combined rate of about 800 gallons per minute after about 1 week of pumping, tapering to about 540 gallons per minute after a period of about 1 month of operation. Each well will have a pump capable of initially discharging up to 100 gallons per minute under 70 feet of total dynamic head. The dewatering system will be operated continuously until the excavation is complete, the exterior walls and the floor slab are constructed with waterproof concrete below the water table and a vapor barrier above, and sufficient structural weight of the Building is in place to counteract buoyancy. Dewatering system observation wells currently are being planned.

4.4.3 Contaminated Soil Management

Impacted Soil, including the Contaminated Soil generated during construction of the Building, will require special handling and disposal measures beyond those needed for handling and disposing of clean soil. Contaminated Soil will be excavated, segregated, stored temporarily, and disposed of off the site in accordance with Washington State Solid Waste Management Laws and Regulations (Chapter 70.95 of the Revised Code of Washington; WAC 173-351 and 173-304) and the Ecology Guidance. Based on data collected to date, approximately 76,000 tons of Impacted Soil is estimated to be present at Block 31 West, of which less than about 10 percent is estimated to be Contaminated Soil. Management of Impacted Soil, including Contaminated Soil, will be conducted concurrently with other construction activities such as shoring, dewatering, and excavation of Category 1 soil or clean soil that meets criteria for reuse as clean fill or meets acceptance criteria for disposal at a facility or site selected by the Excavation Subcontractor (Table 10). Appendix C includes soil data representative of Category 1 Soil at Block 38 West. Construction excavation will result in elimination of the Shallow Water-Bearing Zone and the upper portion of the Intermediate Water-Bearing Zone to the depth of final subgrade at Block 38 West.

Construction workers encountering Impacted Soil will have completed 40-Hour Hazardous Waste Operations and Emergency Response training in accordance with Part 1910.120 of Title 29 of the Code of Federal Regulations and will have completed Annual 8-Hour Hazardous Waste Operations and Emergency Response refresher training, as needed.

Figures 7 through 13 show the estimated extent of Impacted Soil at Block 38 West in 30-foot-square grid cells and 5-foot-thick lifts (Lift Maps). The estimated extent of Impacted Soil shown on the Lift Maps is based on results from field observations and screening and on laboratory analytical results from the Subsurface Investigation. Lift Maps will be continually updated by the Environmental Consultant as new field-screening results and analytical data become available from performance soil samples collected during the Cleanup Action.

Supplemental characterization of soil, possibly including collection of soil samples from test pits, will be conducted during the Cleanup Action to refine estimated extents of Impacted Soil, including Contaminated Soil. Test pit soil sampling also will serve the purposes of performance and confirmation soil sampling described in more detail in Section 4.4.4, Compliance Soil

Monitoring, and Appendix D, Sampling and Analysis Plan. Test-pit soil sampling and analysis will be conducted by the Environmental Consultant using equipment and an operator provided by the Excavation Subcontractor.

Excavated soil that will be transported off Block 38 West for reuse or disposal will be segregated by category according to Ecology Guidance and/or acceptance criteria of the disposal facility. Four general categories of soil are anticipated to be managed during construction excavation and implementation of the Cleanup Action:

- **Category 1 Soil** has no olfactory, visual, or other evidence of contamination (e.g., odor, staining, sheen, elevated photoionization detector readings) and meets criteria for reuse as clean fill or meets acceptance criteria for disposal at a facility or site selected by the Excavation Subcontractor. Category 1 Soil does not include Impacted Soil and is not a threat to human health or the environment as indicated by the Ecology Guidance and can be reused where allowed under other regulations. Category 1 Soil will be segregated from Impacted Soil to the maximum extent practicable and transported off Block 38 West to the selected destination. Category 1 Soil is indicated by blue-green hatching on the Lift Maps. Appendix C includes soil data representative of Category 1 Soil at Block 38 West.
- **Category 2 Soil** contains COCs or other constituents at concentrations meeting acceptance criteria for disposal at the Category 2 disposal facility selected by City Investors, or by the Excavation Subcontractor with approval from City Investors. Category 2 Soil includes soil that may not contain detected concentrations of petroleum hydrocarbons, but exhibits olfactory, visual, or other evidence of contamination. Category 2 Soil includes Impacted Soil (but not Contaminated Soil) containing COCs and other constituents at concentrations meeting acceptance criteria for the Category 2 Soil disposal facility, and not meeting the criteria for handling as Category 1 Soil. Category 2 Soil is indicated by yellow shading on the Lift Maps.
- **Category 3 Soil** is excavated Impacted Soil containing COCs or other constituents at concentrations not meeting acceptance criteria for disposal at the Category 2 Soil disposal facility, but meeting acceptance criteria for disposal at the Category 3 disposal facility selected by City Investors, or by the Excavation Subcontractor with approval from City Investors. Category 3 Soil may require pre-treatment by the selected disposal facility prior to disposal. Category 3 Soil includes Contaminated Soil and Impacted Soil from Block 38 West containing constituent concentrations not meeting the criteria for disposal as Category 2 Soil. Category 3 Soil is indicated by orange shading on the Lift Maps.
- **Category 3+ Soil** is excavated Impacted Soil containing COCs or other constituents (e.g., wood material) not meeting acceptance criteria for disposal at the Category 3 Soil disposal facility, but meeting acceptance criteria for disposal at the Category 3+ disposal facility selected by City Investors, or by the Excavation Subcontractor with approval from City Investors. Category 3+ Soil may require pre-treatment by the selected disposal facility prior to disposal. Category 3+ Soil includes Contaminated Soil and Impacted Soil from Block 38 West containing constituent concentrations not meeting the criteria for disposal as Category 3 Soil. Category 3+ Soil is indicated by red shading on the Lift Maps.

The Environmental Consultant will observe the construction excavation and drilling during installation of select shoring piles to depths where Impacted Soil or Contaminated Soil is no longer anticipated, as reflected on the Lift Maps. The Environmental Consultant will conduct field screening, following the procedures described in the Sampling and Analysis Plan (provided as Appendix D), in areas of confirmed or suspected Impacted Soil to classify the soil as Category 2 or Category 3 Soil. Field screening may consist of visual observation for evidence of soil staining or discoloration, and/or notation of noticeable odors, and may include use of field instrumentation such as a photoionization detector for detection of volatile vapors. The Environmental Consultant will perform performance and confirmation soil sampling per Section 4.4.4, Compliance Soil Monitoring, and the Sampling and Analysis Plan (Appendix D). The Environmental Consultant will consult with the Excavation Subcontractor and the Drilling Subcontractor as needed regarding management of Impacted Soil based on soil categorization.

If direct loading of excavated soil into trucks is not feasible, temporary stockpiles will be maintained by the Excavation Subcontractor as needed to segregate soil by disposal category until it can be loaded into trucks. The Excavation Subcontractor will use discretion on best means and methods to construct and maintain stockpiles and to prevent intermixing of soil segregated by disposal category to the maximum extent practicable given the constraints of the construction project. The Excavation Subcontractor may consider use of physical barriers such as traffic plates beneath stockpiles to protect clean underlying soil, and/or concrete blocks between stockpiles to prevent commingling of segregated soil. Plastic sheeting should be placed on top of inactive stockpiles to prevent wind or runoff transport of Impacted Soil, and to prevent stockpile cross-contamination pending load-out. Plastic sheeting is not suitable for use beneath stockpiles of Impacted Soil placed on clean soil.

The Environmental Consultant will assist City Investors with manifesting trucks loaded with Impacted Soil, and tracking quantities of soil delivered to disposal facilities. Documentation of soil disposal will be maintained in the project file and used for purposes of regulatory closure under MTCA.

4.4.4 Compliance Soil Monitoring

Requirements for compliance monitoring during implementation of a cleanup action are specified in WAC 173-340-410. Three types of compliance monitoring are identified in MTCA: protection, performance, and confirmation monitoring. This section documents the compliance soil monitoring to be conducted by the Environmental Consultant as part of Cleanup Action.

Health and Safety Plans, including plans for protection monitoring, will be prepared for use by personnel working in the construction excavation. A site-specific Health and Safety Plan will be prepared for use by Farallon as the Environmental Consultant prior to construction excavation. The General Contractor and subcontractors are responsible for their own health and safety, and will follow their own Health and Safety Plans.

Performance and confirmation sampling to be implemented during the Cleanup Action is described in the following sections. Performance sampling includes collection of discrete soil samples to identify Contaminated Soil for Cleanup Action excavation planning and regulatory purposes and to categorize Impacted Soil for disposal. Confirmation sampling includes collection of discrete soil samples to confirm the removal of Contaminated Soil from Block 38 West and to confirm achievement of soil cleanup standards. Compliance monitoring documentation requirements and the methodology for soil sampling by the Environmental Consultant are provided in the Sampling and Analysis Plan (Appendix D).

4.4.4.1 Performance Soil Sampling

Performance soil sampling includes collection of discrete in-situ soil samples for laboratory analysis to quantify the concentration of COCs (and other constituents required by the disposal facilities) in soil removed from an excavation area with known or suspected Impacted Soil. Results from performance soil sampling conducted to date are indicated on the Lift Maps (Figures 7 through 13) and were used to estimate the limits of Contaminated Soil. Results from future performance soil sampling will be used to refine the estimated lateral and vertical extent of Contaminated Soil and to categorize Impacted Soil for disposal. Key objectives of the performance soil sampling are to minimize the quantity of Impacted Soil requiring disposal as Category 2 or Category 3 Soil and to identify the limits of Contaminated Soil. Results from the performance soil sampling will be used to continually update the Lift Maps, and to track the progress of the Cleanup Action.

The locations and frequency of collection of performance soil samples will be at the discretion of the Environmental Consultant based on professional judgment, requirements for regulatory closure under MTCA, and requirements of the disposal facilities. The frequency of performance soil sampling will be dependent on existing soil analytical data and the results from field screening conducted by the Environmental Consultant, as described in Section 4.4.3, Contaminated Soil Management. If COCs or other constituents required for testing by the disposal facilities are detected in soil samples collected in a particular area, the area may be further divided by the Environmental Consultant into subareas, and additional performance samples may be collected to assess lateral extents. The frequency of performance soil sampling will be higher near the lateral and vertical limits of Contaminated Soil to provide sufficient samples for confirmation sampling. Confirmation soil sampling will be performed as described in Section 4.4.4.2, Confirmation Soil Sampling, to ensure that cleanup standards are met.

4.4.4.2 Confirmation Soil Sampling

Confirmation soil sampling will be conducted once performance soil sampling results indicate the excavation is approaching the lateral and vertical limits of Contaminated Soil. Confirmation soil sampling will consist of collecting and analyzing in-situ soil samples from the base and sidewalls of the excavation to confirm that no COCs are present at concentrations exceeding their respective MTCA cleanup levels. Performance soil sampling locations will be used as confirmation soil sampling points in cases where analytical results for the performance soil samples confirm that cleanup levels have been attained.

4.4.5 Waterproof Concrete and Vapor Barrier Installation

Current construction plans specify that the exterior walls and floor slab of the underground portion of the Building will be constructed along the boundaries of Block 38 West, and the floor will be constructed at approximately 8 feet below msl. The exterior walls and floor slab of the underground portion of the Building will be constructed of waterproof concrete below the water table and a vapor barrier will be installed above the water table. No provisions for drainage are planned or needed. The exterior walls and floor slab of the underground portion of the Building and the additional protective measures of the waterproof concrete and vapor barrier will prevent future migration of and potential exposure to contaminated groundwater, if present, emanating from sources at properties adjacent to or in the vicinity of Block 38 West.

4.5 CLEANUP ACTION COMPLETION REPORT

Following construction completion, the Environmental Consultant will prepare a Cleanup Action Completion Report documenting the Cleanup Action, per WAC 173-340-400(6)(b). The Cleanup Action Completion Report, in addition to reporting documenting the remedial investigation, feasibility study, and Cleanup Action Plan, will provide the technical basis to support a request for a No Further Action determination from Ecology, and a summary of the Cleanup Action, including the limits of the contaminated soil excavation, quantities of contaminated soil disposed of off the site, treatment of groundwater, and results from compliance monitoring.

5.0 REFERENCES

Galster, Richard W., and William T. Laprade. 1991. "Geology of Seattle, Washington, United States of America." *Bulletin of the Association of Engineering Geologists* 28 (No. 3): 235-302.

GeoEngineers, Inc. 2018. *Geotechnical Engineering Services, Block 38, Seattle, Washington*. Prepared for City Investors IX, LLC. October 17.

HartCrowser, Inc. 1999. Letter Regarding Preliminary Environmental Assessment Update, Westlake Avenue Property (428, 500, 510, and 520 Westlake Avenue North), Seattle, Washington. From Rob Roberts and Julie K.W. Wukelic. To City Investors VI LLC, c/o Joe Delaney, Foster Pepper & Shefelman. April 5.

King County. 2013. Parcel Viewer KCGIS Center, <https://gismaps.kingcounty.gov/parcelviewer2/>. (September 17, 2018.)

Middour Consulting LLC. 2018. *Groundwater Control Plan, Block 38, Seattle, Washington*. Prepared for GLY Construction. October 17.

Terra Associates, Inc. 1998. *Level I Environmental Site Assessment, Westlake Avenue Building, 534 Westlake Avenue North, Seattle, Washington*. Prepared for Marcus and Millichap. March 25.

U.S. Geological Survey. 1909. *Seattle Special* Quadrangle Map. May.

U.S. Environmental Protection Agency (EPA). 1996. *Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells*. Publication No. EQASOP-GW-001. July. Updated January 19, 2010.

Washington State Department of Ecology (Ecology). 2016. *Guidance for Remediation of Petroleum Contaminated Sites*. (Revised.) Publication No. 10-09-057. June.

6.0 LIMITATIONS

6.1 GENERAL LIMITATIONS

The conclusions contained in this report/assessment are based on professional opinions with regard to the subject matter. These opinions have been arrived at in accordance with currently accepted hydrogeologic and engineering standards and practices applicable to this location. The conclusions contained herein are subject to the following inherent limitations:

- **Accuracy of Information.** Farallon obtained, reviewed, and evaluated certain information used in this report/assessment from sources that were believed to be reliable. Farallon's conclusions, opinions, and recommendations are based in part on such information. Farallon's services did not include verification of its accuracy or authenticity. Should the information upon which Farallon relied prove to be inaccurate or unreliable, Farallon reserves the right to amend or revise its conclusions, opinions, and/or recommendations.
- **Reconnaissance and/or Characterization.** Farallon performed a reconnaissance and/or characterization of the Site that is the subject of this report/assessment to document current conditions. Farallon focused on areas deemed more likely to exhibit hazardous materials conditions. Contamination may exist in other areas of the Site that were not investigated or were inaccessible. Site activities beyond Farallon's control could change at any time after the completion of this report/assessment.

For the foregoing reasons, Farallon cannot and does not warrant or guarantee that the Site is free of hazardous or potentially hazardous substances or conditions, or that latent or undiscovered conditions will not become evident in the future. Farallon's observations, findings, and opinions can be considered valid only as of the date of the report.

This report/assessment has been prepared in accordance with the contract for services between Farallon and City Investors IX LLC, and currently accepted industry standards. No other warranties, representations, or certifications are made.

6.2 LIMITATION ON RELIANCE BY THIRD PARTIES

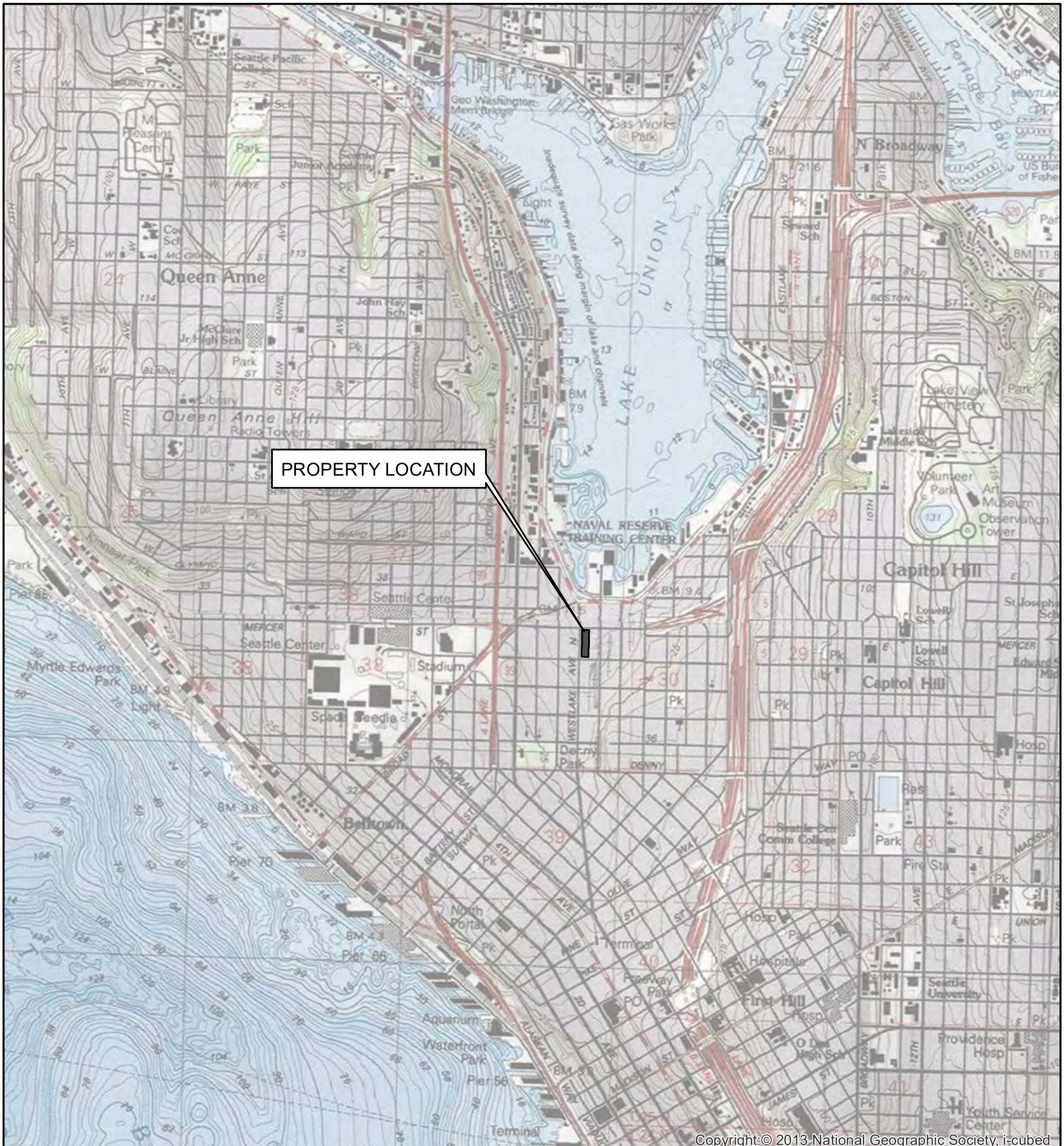
Reliance by third parties is prohibited. This report/assessment has been prepared for the exclusive use of City Investors IX LLC to address the unique needs of City Investors IX LLC at Block 38 West at a specific point in time.

This is not a general grant of reliance. No one other than City Investors IX LLC may rely on this report unless Farallon agrees in advance to such reliance in writing. Any unauthorized use, interpretation, or reliance on this report/assessment is at the sole risk of that party and Farallon will have no liability for such unauthorized use, interpretation, or reliance.

FIGURES

SUBSURFACE INVESTIGATION REPORT AND ENVIRONMENTAL MEDIA MANAGEMENT PLAN
Block 38 West Property
500 through 536 Westlake Avenue North
Seattle, Washington

Farallon PN: 397-019



REFERENCE: 7.5 MINUTE USGS QUADRANGLE SEATTLE NORTH, WASHINGTON, DATED 1983

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Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Bend | Baker City

California
Oakland | Folsom | Irvine

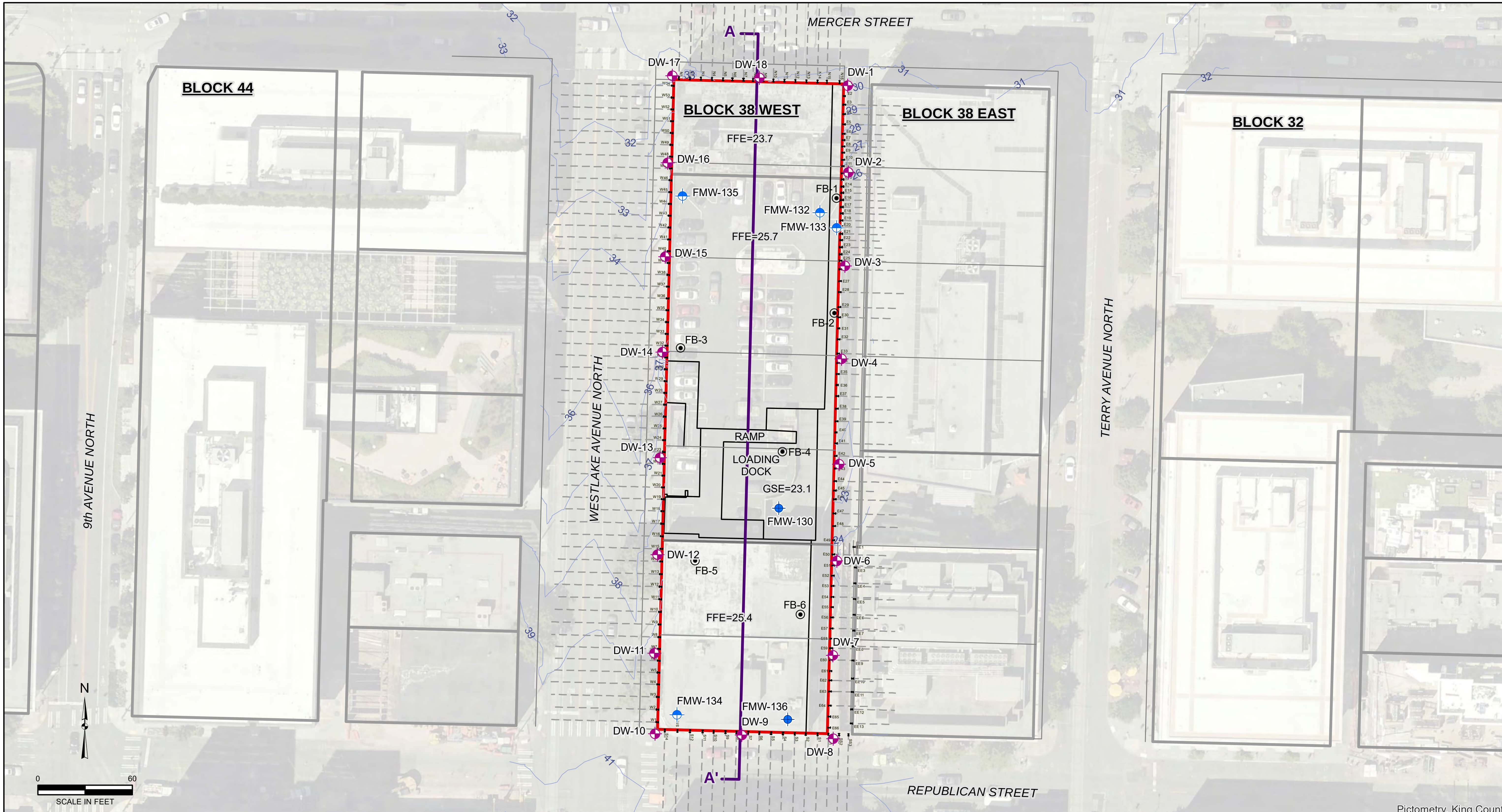
FIGURE 1

VICINITY MAP
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: jjones | Checked By: BJ | Date: 10/29/2018 | Disc Reference:

Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\004_Reporting\Figure-01_SiteVicinity.mxd



LEGEND

- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- SOIL BORING
- DEWATERING WELL
- 38 ELEVATION CONTOUR
- PROPERTY BOUNDARY
- KING COUNTY PARCEL BOUNDARY
- A A' LINE OF CROSS SECTION
- PILE
- TIEBACK
- FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
- GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK AREA

NOTES:
LOADING DOCK HIGHER THAN GSE
ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MEAN SEA LEVEL IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

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FIGURE 2

PROPERTY MAP
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

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LEGEND

FMW-134 (TP 41'E)	BORING OR MONITORING WELL LOCATION TRANSPOSED (TP) IN FEET, EAST (E) OR WEST (W), TO CROSS-SECTION LINE.
	STRATIGRAPHIC CONTACT
	BLANK CASING OR BORING
5	BLOW COUNT (SUM OF SECOND AND THIRD 6" PENETRATION BLOW COUNTS)
	STATIC GROUNDWATER LEVEL (8/30/2018)
	INITIAL GROUNDWATER LEVEL
	PRESENCE OF ORGANIC LAYER / WOOD
	TEMPORARY WELL SCREEN INTERVAL
	WELL SCREEN INTERVAL

FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING

GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCKS

ALL GROUNDWATER ANALYTICAL RESULTS IN MICROGRAMS PER LITER (µg/l)

<100|<250|<0.20|<0.291 GROUNDWATER ANALYTICAL RESULT GRO | DRO | BENZENE | TOTAL NAPHTHALENES (8/30/2018)

(<100|<250|<0.20|<0.291) GROUNDWATER ANALYTICAL RESULT GRO | DRO | BENZENE | TOTAL NAPHTHALENES (8/23/2018)

{2,100|---|5.1|---} GROUNDWATER ANALYTICAL RESULT GRO | DRO | BENZENE | TOTAL NAPHTHALENES (7/21/2014)

[5.0'|1,900|---|---] ALL SOIL ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)
SOIL ANALYTICAL RESULT [DEPTH IN FEET BELOW GROUND SURFACE | ORO | TOTAL NAPHTHALENES | TOTAL cPAHs TEC]

DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS

GRO = TPH AS GASOLINE-RANGE ORGANICS

ORO = TPH AS OIL-RANGE ORGANICS

BOLD = INDICATES CONCENTRATIONS EXCEED THE WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION METHOD A CLEANUP LEVELS

--- = SAMPLE NOT ANALYZED FOR CONSTITUENT

< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED

ESTIMATED SOIL EXCEEDING MTCA CLEANUP LEVELS

ESTIMATED GROUNDWATER EXCEEDING MTCA CLEANUP LEVELS

5' 0' 0' 20'

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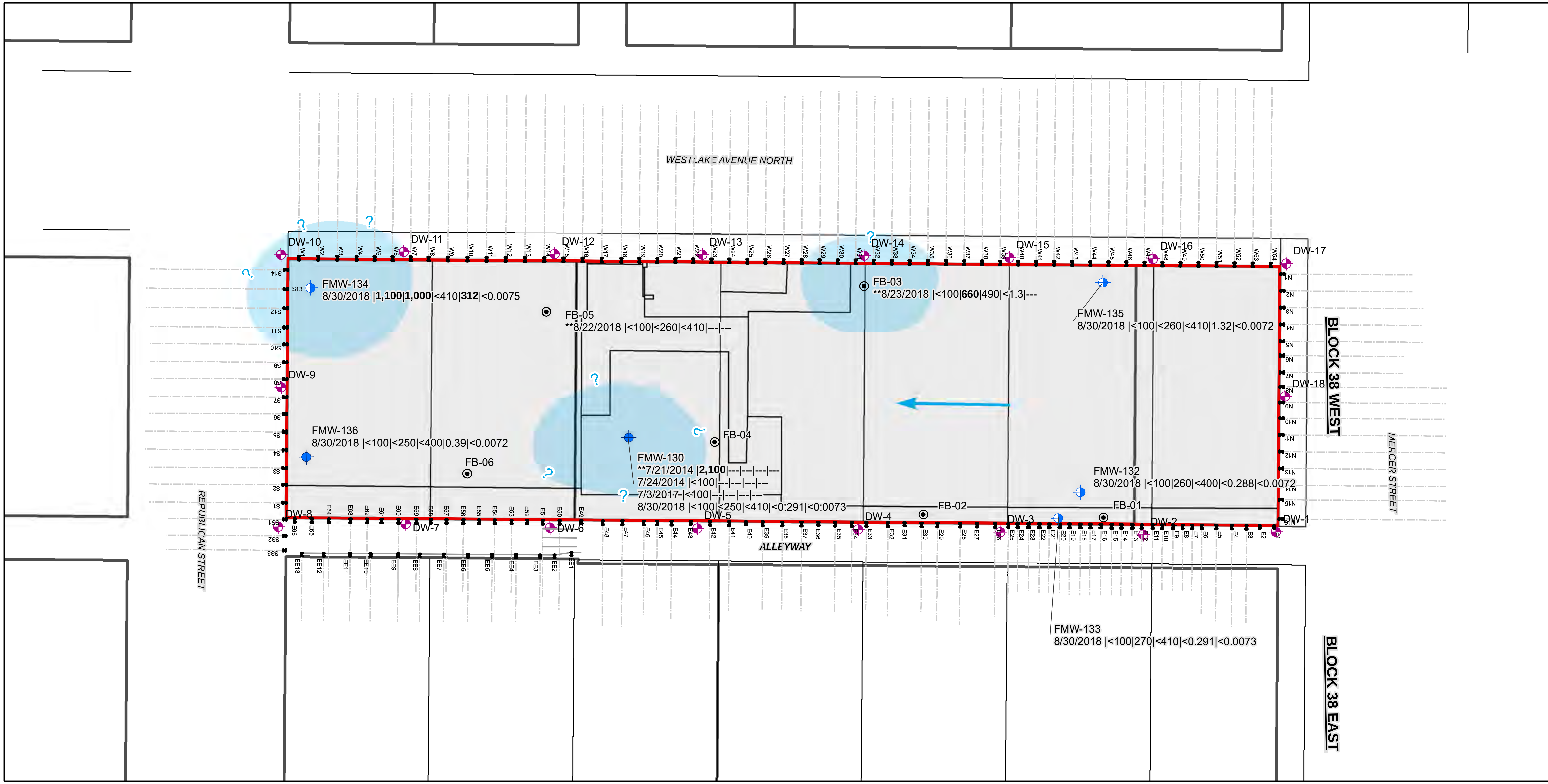
FIGURE 3

CROSS-SECTION A-A'
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: DEW | Checked By: JR | Date: 12/26/2018 | Disk Reference: X-SEC-A-A



LEGEND

- BORING
- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- DEWATERING WELL
- INFERRED GROUNDWATER FLOW DIRECTION
- PROPERTY BOUNDARY
- KING COUNTY PARCEL BOUNDARY
- PILE
- TIEBACK
- GROUNDWATER EXCEEDING MTCA CLEANUP LEVEL (? ESTIMATED EXTENT INFERRED)

NOTES:
DATE SAMPLED AND CONCENTRATIONS REPORTED AS:
BLACK = TPH SAMPLE DATE | GRO | DRO | ORO | TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MICROGRAMS PER LITER (µg/l)

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL IN THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

cPAH TEC = CARCINAGENIC POLYCYCLIC AROMATIC HYDROCARBON TOXIC EQUIVALENT CONCENTRATION
DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO = TPH AS GASOLINE-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS
FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD = CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
< = ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL = MEAN SEA LEVEL
** = INDICATES RESULTS ARE FROM A RECONNAISSANCE GROUNDWATER SAMPLE

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FIGURE 4
GROUNDWATER ANALYTICAL RESULTS
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

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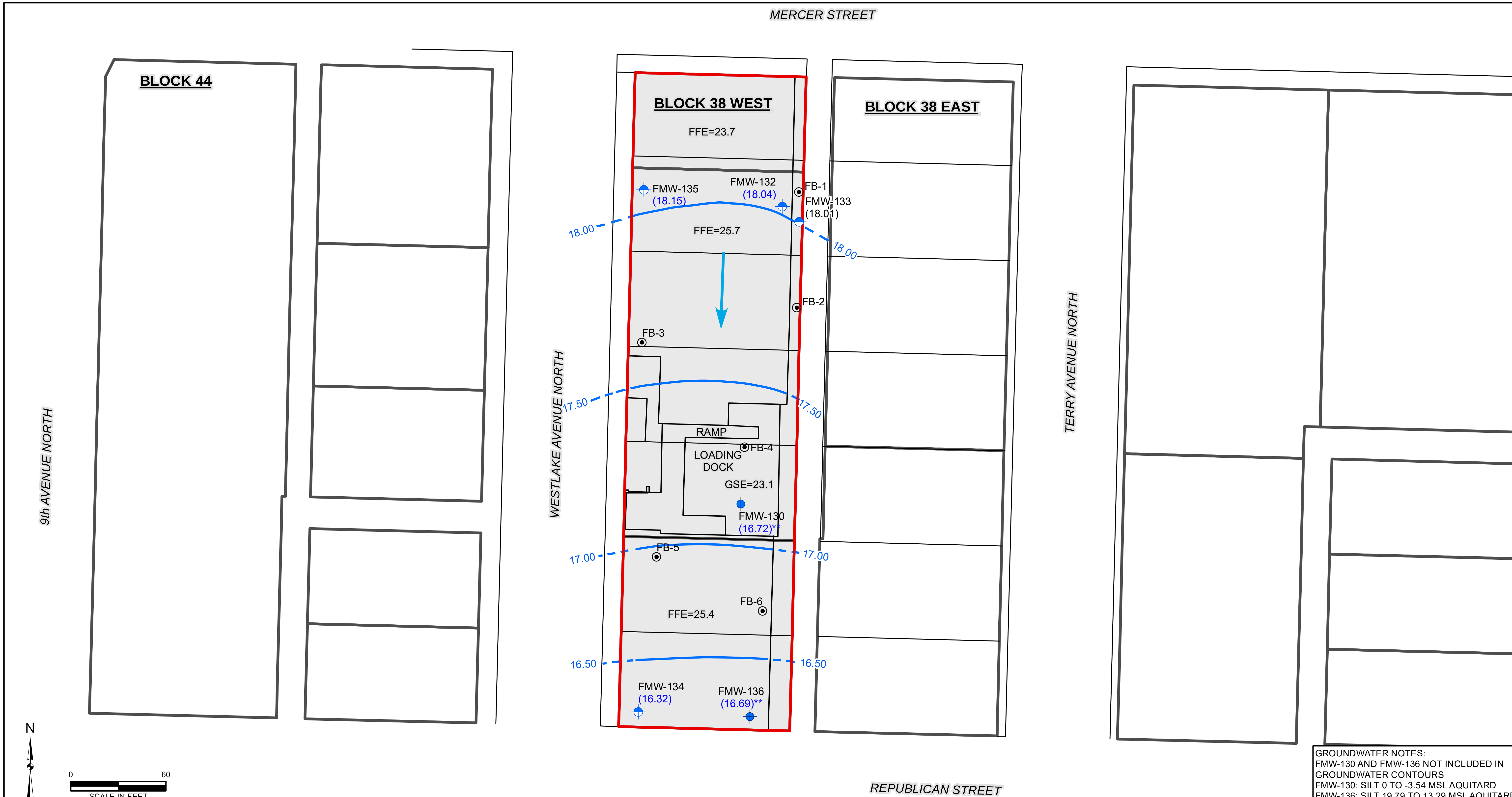

GROUNDWATER NOTES:
FMW-130 AND FMW-136 NOT INCLUDED IN GROUNDWATER CONTOURS
FMW-130: SILT 0 TO -3.54 MSL AQUITARD
FMW-136: SILT 19.79 TO 13.29 MSL AQUITARD

LEGEND

- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- BORING
- PROPERTY BOUNDARY
- KING COUNTY PARCEL BOUNDARY

(16.32) GROUNDWATER ELEVATION (8/30/18) MEASURED IN FEET RELATIVE TO NAVD 88

(16.69)** ELEVATION NOT USED IN CONTOURING

16.50 APPROXIMATE GROUNDWATER ELEVATION CONTOUR IN FEET NAVD88 (INFERRED WHERE DASHED)

INFERRED GROUNDWATER FLOW DIRECTION

FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK AREA
MSL = MEAN SEA LEVEL
NS = NOT SURVEYED
ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MEAN SEA LEVEL IN THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

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FIGURE 5
GROUNDWATER ELEVATION CONTOURS
FOR AUGUST 30, 2018
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

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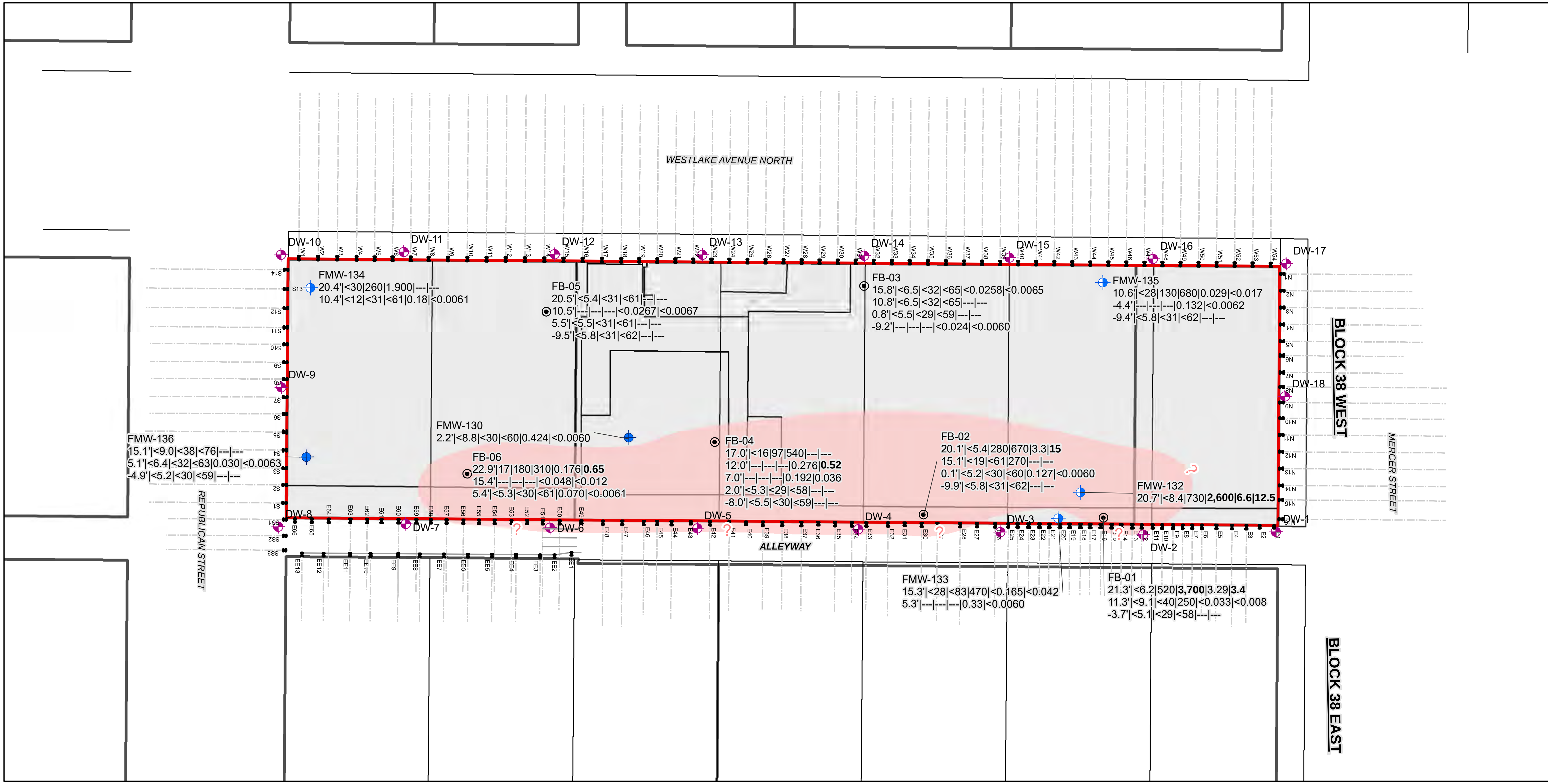

LEGEND

- BORING
- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- DEWATERING WELL
- SOIL EXCEEDING MTCA CLEANUP LEVEL
- PROPERTY BOUNDARY
- KING COUNTY PARCEL BOUNDARY
- PILE
- TIEBACK

NOTES:
SOIL DEPTH AND CONCENTRATIONS REPORTED AS:
ELEVATION IN FEET ACCORDING TO MSL |
GRO | DRO | ORO | TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

cPAH TEC	=	CARCINAGENIC POLYCYCLIC AROMATIC HYDROCARBON TOXIC EQUIVALENT CONCENTRATION
DRO	=	TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO	=	TPH AS GASOLINE-RANGE ORGANICS
ORO	=	TPH AS OIL-RANGE ORGANICS
FFE	=	APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE	=	APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD	=	CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
<	=	ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
---	=	SAMPLE NOT ANALYZED
MTCA	=	WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL	=	MEAN SEA LEVEL

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FIGURE 6
SOIL SAMPLE ANALYTICAL RESULTS
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

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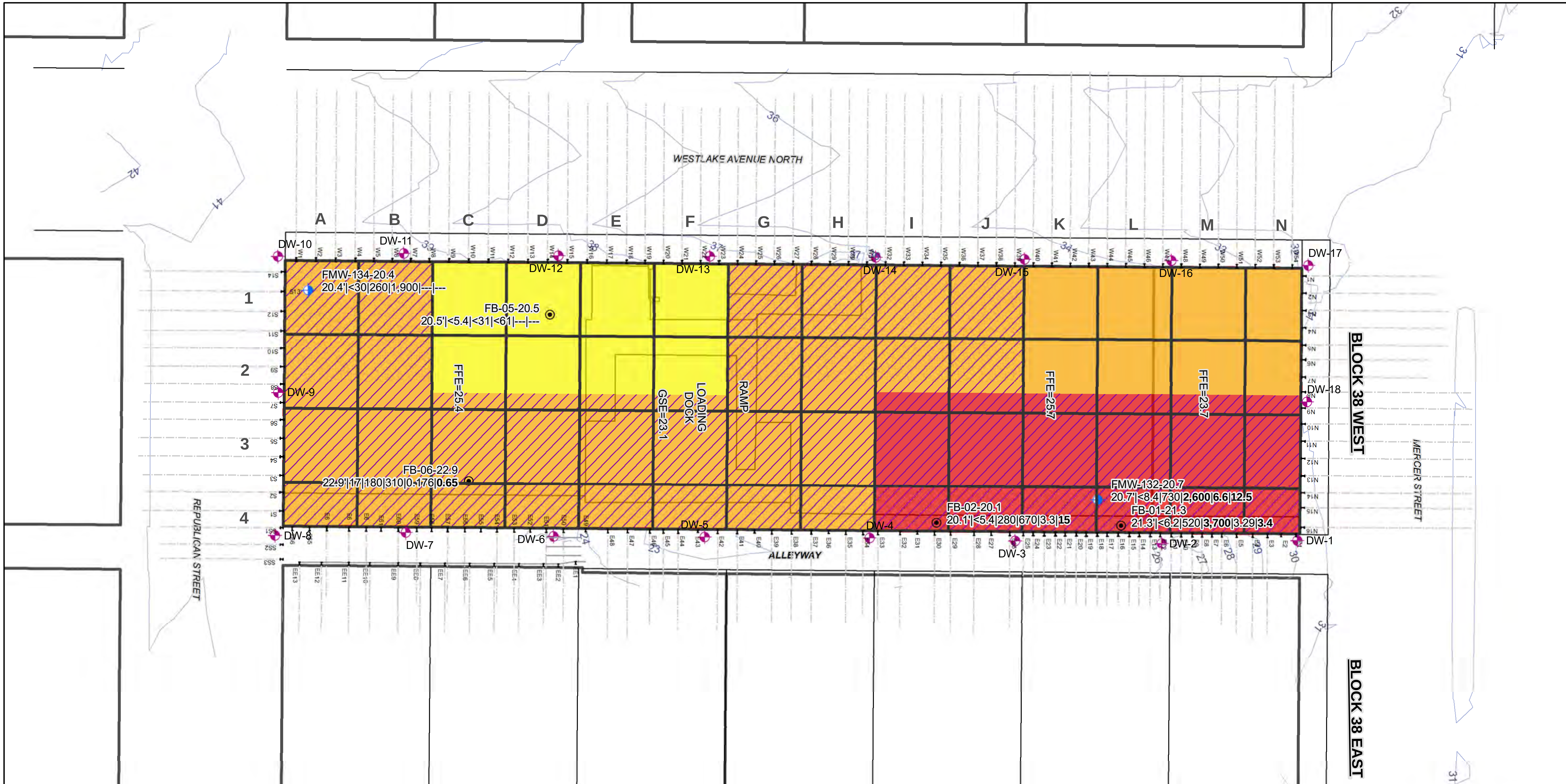

LEGEND

- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- MONITORING WELL
- DECOMISSIONED MONITORING WELL (UNKNOWN ZONE)
- DEWATERING WELL
- SOIL BORING
- PROPERTY BOUNDARY
- CATEGORY 1 CLEAN SOIL
- CATEGORY 2 IMPACTED SOIL
- CATEGORY 3 IMPACTED SOIL
- CATEGORY 3+ IMPACTED SOIL
- SOIL CONTAINS ORGANIC/PEAT/WOOD
- 30' X 30' GRID
- PILE
- TIEBACK

NOTES:
SOIL DEPTH AND CONCENTRATIONS REPORTED AS:
ELEVATION IN FEET MSL | GRO | DRO | ORO |
TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

cPAH TEC = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXIC EQUIVALENT CONCENTRATION
DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO = TPH AS GASOLINE-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS
FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD = CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
< = ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL = MEAN SEA LEVEL

N

0 40
SCALE IN FEET

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FIGURE 7

ESTIMATED EXCAVATION AREAS, ELEVATIONS 26 TO 20 FEET MSL
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

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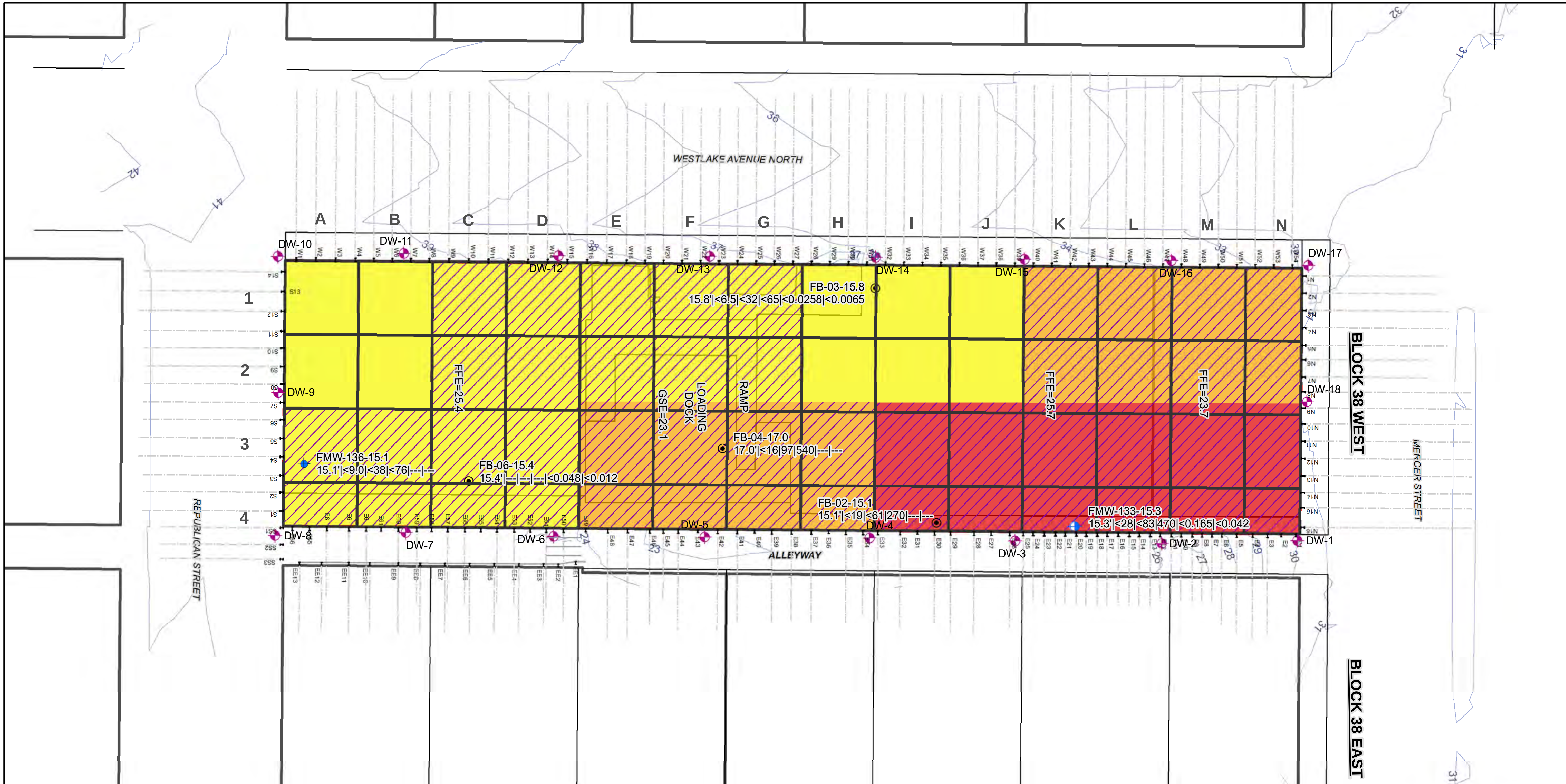

LEGEND

- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- MONITORING WELL
- DECOMISSIONED MONITORING WELL (UNKNOWN ZONE)
- DEWATERING WELL
- SOIL BORING
- PROPERTY BOUNDARY
- CATEGORY 1 CLEAN SOIL
- CATEGORY 2 IMPACTED SOIL
- CATEGORY 3 IMPACTED SOIL
- CATEGORY 3+ IMPACTED SOIL
- SOIL CONTAINS ORGANIC/PEAT/WOOD
- 30' X 30' GRID
- PILE
- TIEBACK

NOTES:
SOIL DEPTH AND CONCENTRATIONS REPORTED AS:
ELEVATION IN FEET MSL | GRO | DRO | ORO |
TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

cPAH TEC = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXIC EQUIVALENT CONCENTRATION
DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO = TPH AS GASOLINE-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS
FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD = CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
< = ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL = MEAN SEA LEVEL

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FIGURE 8

ESTIMATED EXCAVATION AREAS, ELEVATIONS 20 TO 15 FEET MSL
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

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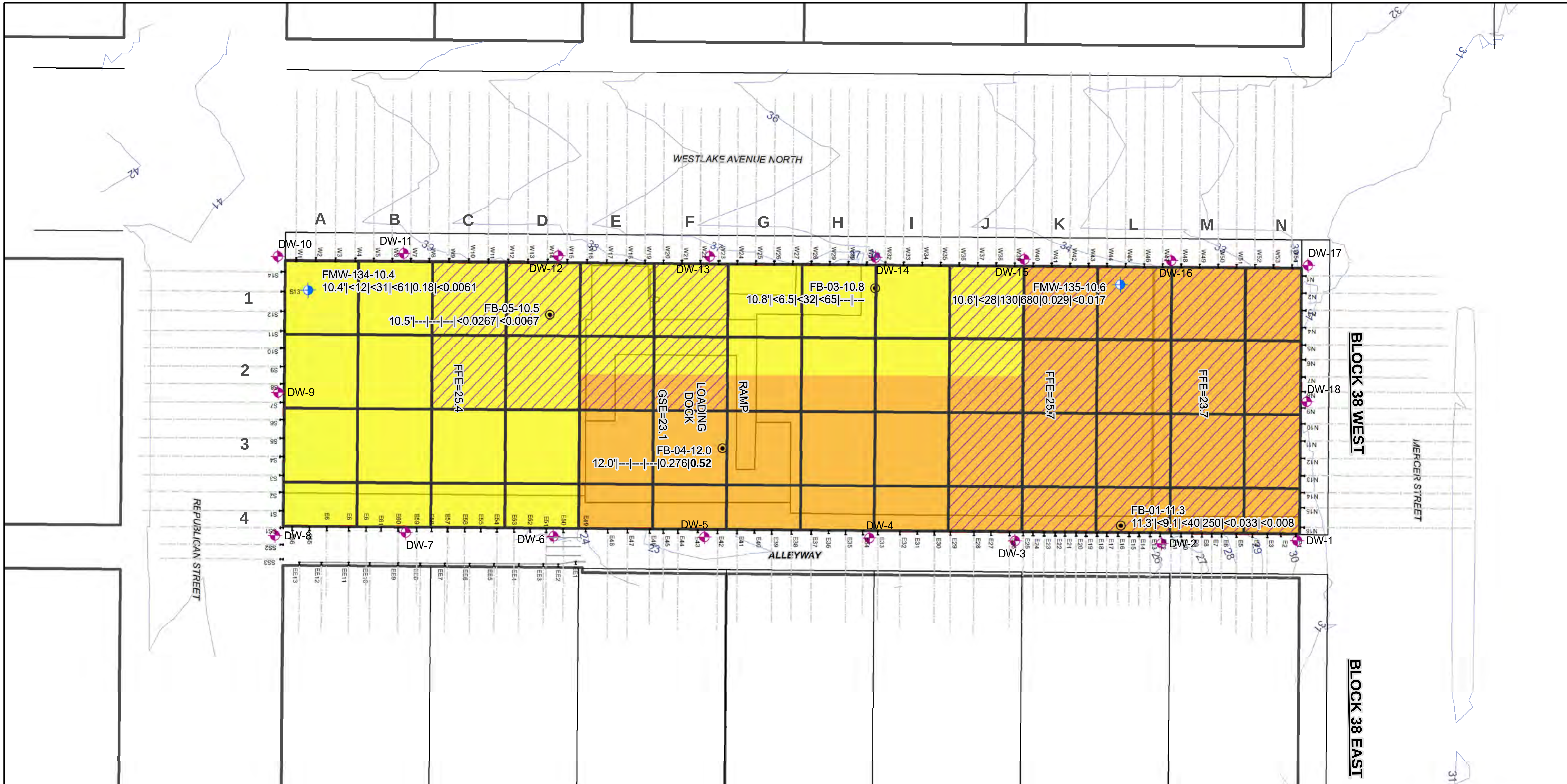

LEGEND

- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- MONITORING WELL
- DECOMISSIONED MONITORING WELL (UNKNOWN ZONE)
- DEWATERING WELL
- SOIL BORING
- PROPERTY BOUNDARY
- CATEGORY 1 CLEAN SOIL
- CATEGORY 2 IMPACTED SOIL
- CATEGORY 3 IMPACTED SOIL
- CATEGORY 3+ IMPACTED SOIL
- SOIL CONTAINS ORGANIC/PEAT/WOOD
- 30' X 30' GRID
- PILE
- TIEBACK

NOTES:
SOIL DEPTH AND CONCENTRATIONS REPORTED AS:
ELEVATION IN FEET MSL | GRO | DRO | ORO |
TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

cPAH TEC = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXIC EQUIVALENT CONCENTRATION
DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO = TPH AS GASOLINE-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS
FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD = CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
< = ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL = MEAN SEA LEVEL

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FIGURE 9

ESTIMATED EXCAVATION AREAS,
ELEVATIONS 15 TO 10 FEET MSL
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

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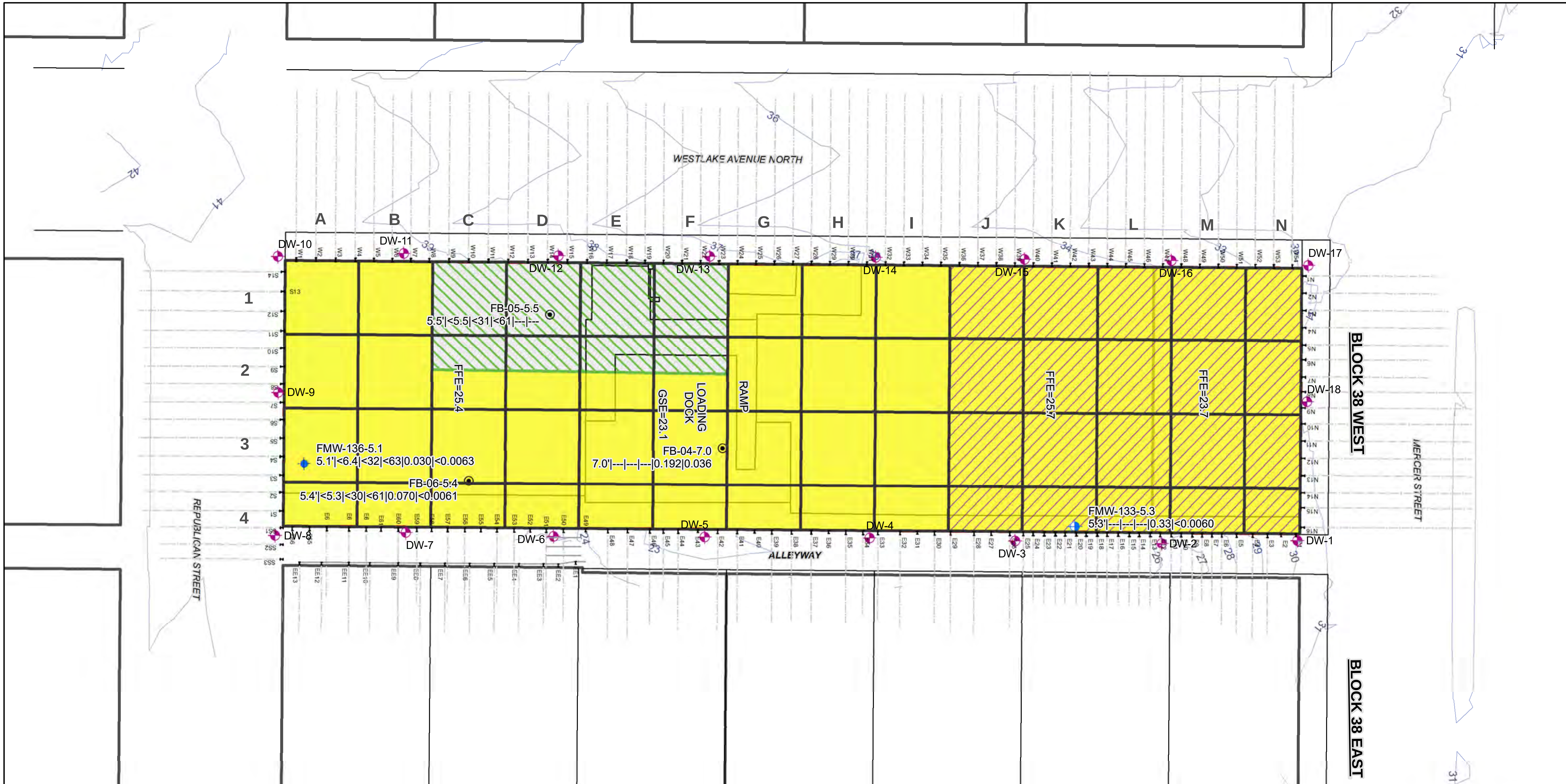

LEGEND

- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- MONITORING WELL
- DECOMISSIONED MONITORING WELL (UNKNOWN ZONE)
- DEWATERING WELL
- SOIL BORING
- PROPERTY BOUNDARY
- CATEGORY 1 CLEAN SOIL
- CATEGORY 2 IMPACTED SOIL
- CATEGORY 3 IMPACTED SOIL
- CATEGORY 3+ IMPACTED SOIL
- SOIL CONTAINS ORGANIC/PEAT/WOOD
- 30' X 30' GRID
- PILE
- TIEBACK

NOTES:
SOIL DEPTH AND CONCENTRATIONS REPORTED AS:
ELEVATION IN FEET MSL | GRO | DRO | ORO |
TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

cPAH TEC = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXIC EQUIVALENT CONCENTRATION
DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO = TPH AS GASOLINE-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS
FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD = CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
< = ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL = MEAN SEA LEVEL

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0 40

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FIGURE 10

ESTIMATED EXCAVATION AREAS,
ELEVATIONS 10 TO 5 FEET MSL
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

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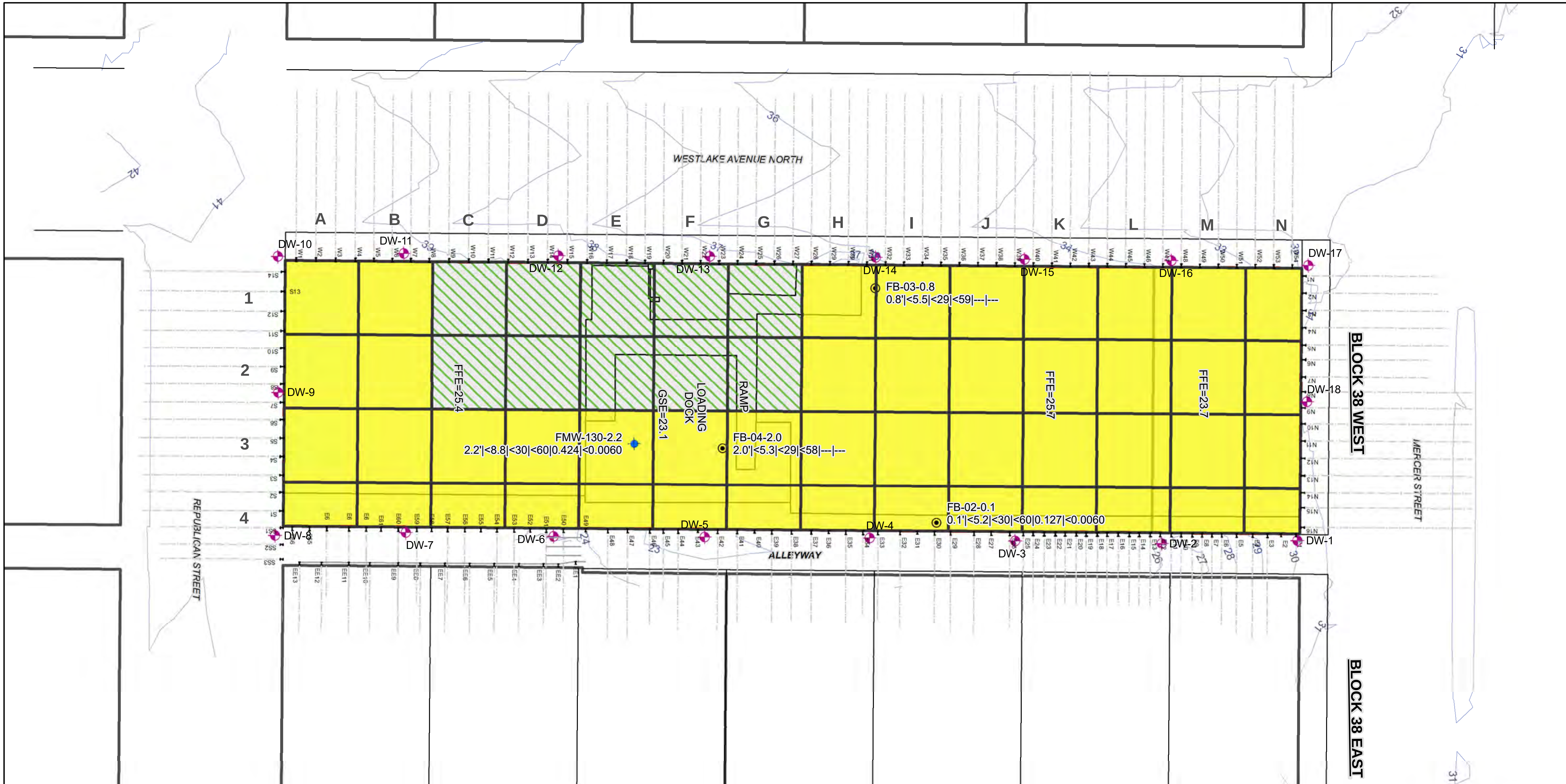

LEGEND

- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- MONITORING WELL
- DECOMISSIONED MONITORING WELL (UNKNOWN ZONE)
- DEWATERING WELL
- SOIL BORING
- PROPERTY BOUNDARY
- CATEGORY 1 CLEAN SOIL
- CATEGORY 2 IMPACTED SOIL
- CATEGORY 3 IMPACTED SOIL
- CATEGORY 3+ IMPACTED SOIL
- SOIL CONTAINS ORGANIC/PEAT/WOOD
- 30' X 30' GRID
- PILE
- TIEBACK

NOTES:
SOIL DEPTH AND CONCENTRATIONS REPORTED AS:
ELEVATION IN FEET MSL | GRO | DRO | ORO | TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

cPAH TEC = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXIC EQUIVALENT CONCENTRATION
DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO = TPH AS GASOLINE-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS
FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE = APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD = CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
< = ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL = MEAN SEA LEVEL

N

0 40
SCALE IN FEET

ALL LOCATIONS ARE APPROXIMATE.
FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

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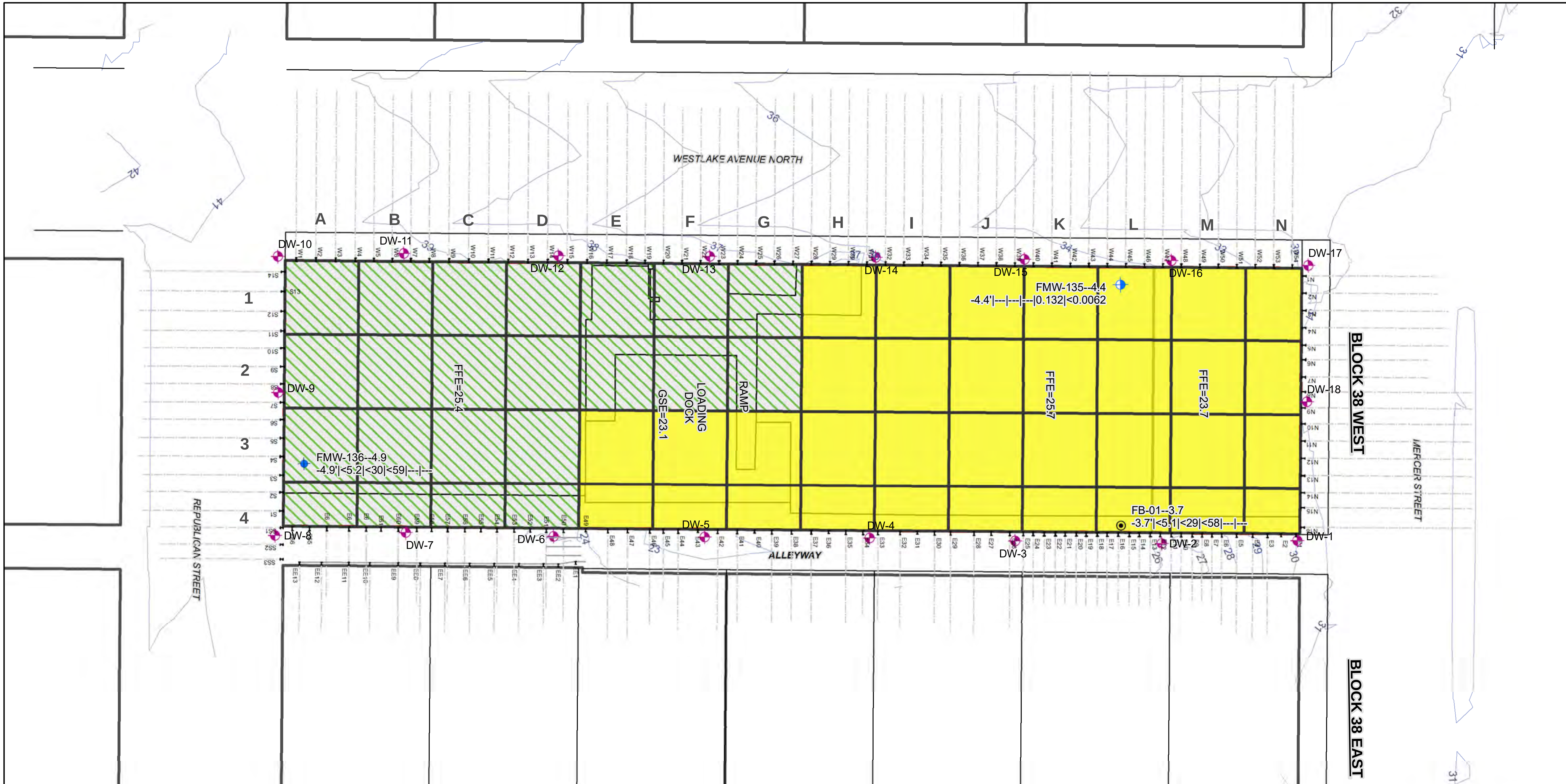
FIGURE 11
ESTIMATED EXCAVATION AREAS, ELEVATIONS 5 TO 0 FEET MSL
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON
FARALLON PN: 397-019

Drawn By: pemahiser | Checked By: TC | Date: 12/28/2018 | Disc Reference:
Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\LiftMaps\BL38_Lift_15_-10.mxd



LEGEND

- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- MONITORING WELL
- DECOMISSIONED MONITORING WELL (UNKNOWN ZONE)
- DEWATERING WELL
- SOIL BORING
- PROPERTY BOUNDARY
- CATEGORY 1 CLEAN SOIL
- CATEGORY 2 IMPACTED SOIL
- CATEGORY 3 IMPACTED SOIL
- CATEGORY 3+ IMPACTED SOIL
- SOIL CONTAINS ORGANIC/PEAT/WOOD
- 30' X 30' GRID
- PILE
- TIEBACK

NOTES:
SOIL DEPTH AND CONCENTRATIONS REPORTED AS:
ELEVATION IN FEET MSL | GRO | DRO | ORO |
TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

cPAH TEC	=	CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXIC EQUIVALENT CONCENTRATION
DRO	=	TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO	=	TPH AS GASOLINE-RANGE ORGANICS
ORO	=	TPH AS OIL-RANGE ORGANICS
FFE	=	APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE	=	APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD	=	CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
<	=	ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
---	=	SAMPLE NOT ANALYZED
MTCA	=	WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL	=	MEAN SEA LEVEL

N

0 40
SCALE IN FEET

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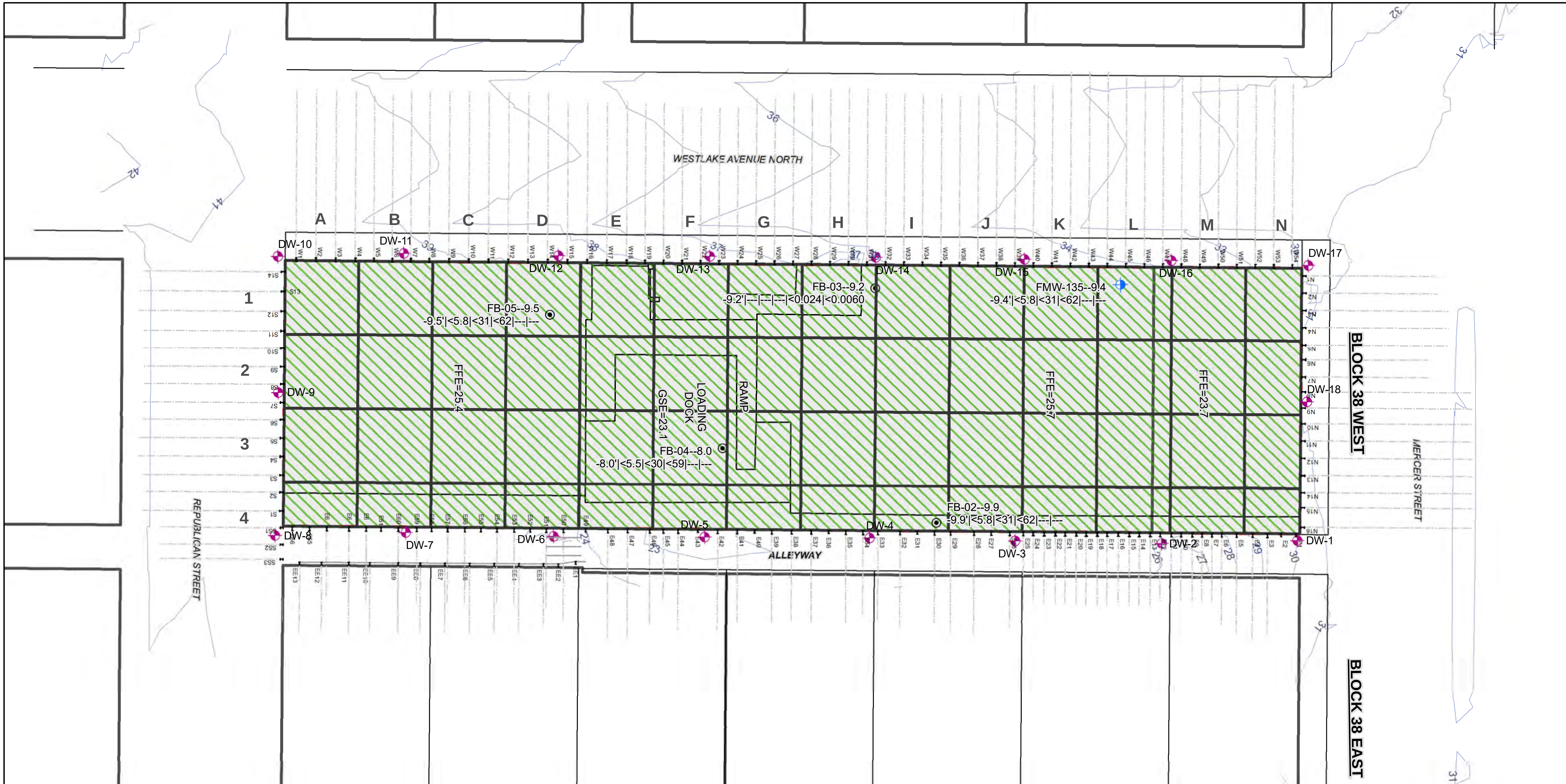
FIGURE 12
ESTIMATED EXCAVATION AREAS, ELEVATIONS 0 TO -5 FEET MSL
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON
FARALLON PN: 397-019

Drawn By: pemahiser Checked By: TC Date: 12/28/2018 Disc Reference:
Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\LiftMaps\BL38_Lift_15_-10.mxd



LEGEND

- SHALLOW WATER-BEARING ZONE WELL
- INTERMEDIATE WATER-BEARING ZONE WELL
- MONITORING WELL
- DECOMISSIONED MONITORING WELL (UNKNOWN ZONE)
- DEWATERING WELL
- SOIL BORING
- PROPERTY BOUNDARY
- CATEGORY 1 CLEAN SOIL
- CATEGORY 2 IMPACTED SOIL
- CATEGORY 3 IMPACTED SOIL
- CATEGORY 3+ IMPACTED SOIL
- SOIL CONTAINS ORGANIC/PEAT/WOOD
- 30' X 30' GRID
- PILE
- TIEBACK

NOTES:
SOIL DEPTH AND CONCENTRATIONS REPORTED AS:
ELEVATION IN FEET MSL | GRO | DRO | ORO |
TOTAL Napthalenes | cPAH TEC
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM

ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988

cPAH TEC	=	CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXIC EQUIVALENT CONCENTRATION
DRO	=	TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
GRO	=	TPH AS GASOLINE-RANGE ORGANICS
ORO	=	TPH AS OIL-RANGE ORGANICS
FFE	=	APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF EXISTING BUILDING
GSE	=	APPROXIMATE GROUND SURFACE ELEVATION OF EXISTING LOADING DOCK
BOLD	=	CONCENTRATIONS THAT EXCEED MTCA CLEANUP LEVELS
<	=	ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
---	=	SAMPLE NOT ANALYZED
MTCA	=	WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
MSL	=	MEAN SEA LEVEL

N

0 40
SCALE IN FEET

ALL LOCATIONS ARE APPROXIMATE.
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FIGURE 13
ESTIMATED EXCAVATION AREAS, ELEVATIONS -5 TO -10 FEET MSL
BLOCK 38 WEST PROPERTY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: pemahiser | Checked By: TC | Date: 12/28/2018 | Disc Reference:
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TABLES

SUBSURFACE INVESTIGATION REPORT AND ENVIRONMENTAL MEDIA
MANAGEMENT PLAN
Block 38 West Property
500 through 536 Westlake Avenue North
Seattle, Washington

Farallon PN: 397-019

Table 1
Soil Analytical Results for TPH and BTEX
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Elevation (feet msl)[1]	Sample Date	Analytical Results (milligrams per kilogram)								
					NWTPH-Dx[2]		NWTPH-Dx with Silica Gel[2]		NWTPH-Gx[3]	EPA Method 8021B[4]			
					DRO	ORO	DRO	ORO	GRO	Benzene	Toluene	Ethylbenzene	Xylenes
FB-01	FB-01-5.0-082118	5.0	21.3	8/21/2018	520	**3,700**	510 N	1,100	< 6.2	< 0.020	< 0.062	< 0.062	< 0.124
	FB-01-15.0-082118	15.0	11.3	8/21/2018	< 40	250	< 40	< 81	< 9.1	< 0.020	< 0.091	< 0.091	< 0.182
	FB-01-30.0-082118	30.0	-3.7	8/21/2018	< 29	< 58	---	---	< 5.1	< 0.020	< 0.051	< 0.051	< 0.102
FB-02	FB-02-5.0-082018	5.0	20.1	8/20/2018	280 N	670	---	---	< 5.4	< 0.020	< 0.054	< 0.054	< 0.108
	FB-02-10.0-082018	10.0	15.1	8/20/2018	< 61	270	---	---	< 19	< 0.037	< 0.19	< 0.19	< 0.38
	FB-02-25.0-082018	25.0	0.1	8/20/2018	< 30	< 60	---	---	< 5.2	< 0.020	< 0.052	< 0.052	< 0.104
	FB-02-35.0-082018	35.0	-9.9	8/20/2018	< 31	< 62	---	---	< 5.8	< 0.020	< 0.058	< 0.058	< 0.116
FB-03	FB-03-10.0-082318	10.0	15.8	8/23/2018	< 32	< 65	---	---	< 6.5	< 0.020	< 0.065	< 0.065	< 0.130
	FB-03-15.0-082318	15.0	10.8	8/23/2018	< 32	< 65	---	---	< 6.5	< 0.020	< 0.065	< 0.065	< 0.130
	FB-03-25.0-082318	25.0	0.8	8/23/2018	< 29	< 59	---	---	< 5.5	< 0.020	< 0.055	< 0.055	< 0.110
FB-04	FB-04-5.0-082118	5.0	17.0	8/21/2018	97 N	540	---	---	< 16	< 0.033	< 0.16	< 0.16	< 0.32
	FB-04-20.0-082118	20.0	2.0	8/21/2018	< 29	< 58	---	---	< 5.3	< 0.020	< 0.053	< 0.053	< 0.106
	FB-04-30.0-082118	30.0	-8.0	8/21/2018	< 30	< 59	---	---	< 5.5	< 0.020	< 0.055	< 0.055	< 0.110
FB-05	FB-05-5.0-082218	5.0	20.5	8/22/2018	< 31	< 61	---	---	< 5.4	< 0.020	< 0.054	< 0.054	< 0.108
	FB-05-20.0-082218	20.0	5.5	8/22/2018	< 31	< 61	---	---	< 5.5	< 0.020	< 0.055	< 0.055	< 0.110
	FB-05-35.0-082218	35.0	-9.5	8/22/2018	< 31	< 62	---	---	< 5.8	< 0.020	< 0.058	< 0.058	< 0.116
FB-06	FB-06-2.5-082218	2.5	22.9	8/22/2018	180	310	---	---	17 T	< 0.024	< 0.12	< 0.12	< 0.24
	FB-06-20.0-082218	20.0	5.4	8/22/2018	< 30	< 61	---	---	< 5.3	< 0.020	< 0.053	< 0.053	< 0.106
FMW-130	F-MW-130-20.0-072114	20.0	2.2	7/21/2014	< 30	< 60	---	---	< 8.8	< 0.020	< 0.088	< 0.088	< 0.176
FMW-132	FMW-132-5.0-082418	5.0	20.7	8/24/2018	730	**2,600**	---	---	< 8.4	< 0.020	< 0.084	< 0.084	< 0.168
FMW-133	FMW-133-10.0-082418	10.0	15.3	8/24/2018	< 83	470	---	---	< 28	< 0.057	< 0.28	< 0.28	< 0.56
FMW-134	FMW-134-5.0-082318	5.0	20.4	8/23/2018	260	1,900	---	---	< 30	< 0.059	< 0.30	< 0.30	< 0.60
	FMW-134-15.0-082318	15.0	10.4	8/23/2018	< 31	< 61	---	---	< 12	< 0.023	< 0.12	< 0.12	< 0.24
FMW-135	FMW-135-15.0-082418	15.0	10.6	8/24/2018	130	680	---	---	< 28	< 0.055	< 0.28	< 0.28	< 0.56
	FMW-135-35.0-082418	35.0	-9.4	8/24/2018	< 31	< 62	---	---	< 5.8	< 0.020	< 0.058	< 0.058	< 0.116
FMW-136	FMW-136-10.0-082218	10.0	15.1	8/22/2018	< 38	< 76	---	---	< 9.0	< 0.020	< 0.090	< 0.090	< 0.18
	FMW-136-20.0-082218	20.0	5.1	8/22/2018	< 32	< 63	---	---	< 6.4	< 0.020	< 0.064	< 0.064	< 0.128
	FMW-136-30.0-082218	30.0	-4.9	8/22/2018	< 30	< 59	---	---	< 5.2	< 0.020	< 0.052	< 0.052	< 0.104
MTCA Method A Cleanup Levels for Soil[5]					**2,000**	**2,000**	**2,000**	**2,000**	**30/100[6]**	**0.03**	**7**	**6**	**9**

NOTES:

Results in **bold** denote concentrations exceeding applicable cleanup levels.

< denotes analyte not detected at or exceeding the laboratory reporting limit listed.

— denotes sample not analyzed.

[1]Depth in feet below ground surface. Elevation in feet mean sea level using North American Vertical Datum of 1988.

[2]Analyzed by Northwest Method NWTPH-Dx. Results denoted as analyzed by NWTPH-Dx with silica gel were analyzed using a sample extract treated with sulfuric acid/silica gel cleanup procedure.

[3]Analyzed by Northwest Method NWTPH-Gx.

[4]Analyzed by U.S. Environmental Protection Agency Method 8021B.

[5]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013.

[6]Cleanup level is 30 milligrams per kilogram if benzene is detected and 100 milligrams per kilogram if benzene is not detected.

BTEX = benzene, toluene, ethylbenzene and xylenes

DRO = total petroleum hydrocarbons (TPH) as diesel-range organics

GRO = TPH as gasoline-range organics

msl = mean sea level

N = hydrocarbons in the oil-range are impacting the diesel-range result

ORO = TPH as oil-range organics

T = the sample chromatogram is not similar to a typical gasoline standard.

Table 2
Soil Analytical Results for PAHs
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Elevation (feet msl)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]																			
					Non-Carcinogenic PAHs												Carcinogenic PAHs							
					Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Total Naphthalenes[3,5]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)Perylene	Fluoranthene	Fluorene	Phenanthrene	Pyrene	Benzo(a)Pyrene	Benzo(a)Anthracene	Benzo(b)Fluoranthene	Benzo(j,k)Fluoranthene	Chrysene	Dibenzo(a,h)Anthracene	Indeno(1,2,3-cd)Pyrene	Total cPAHs TEC[4,5]
FB-01	FB-01-5.0-082118	5.0	21.3	8/21/2018	0.99	1.1	1.2	3.29	0.46	0.32	1.0	1.9	4.8	0.46	5.4	6.8	2.5	2.6	2.9	0.76	3.1	0.45	1.6	**3.4**
	FB-01-15.0-082118	15.0	11.3	8/21/2018	< 0.011	< 0.011	< 0.011	< 0.033	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.008
FB-02	FB-02-5.0-082018	5.0	20.1	8/20/2018	1.1	0.86	1.3	3.3	1.4	0.45	3.3	8.5	18	1.3	12	25	11	9.8	12	3.5	9.7	1.6	8.0	**15**
	FB-02-25.0-082018	25.0	0.1	8/20/2018	0.083	0.020	0.024	0.127	0.027	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0060
FB-03	FB-03-10.0-082318	10.0	15.8	8/23/2018	< 0.0086	< 0.0086	< 0.0086	< 0.0258	< 0.0086	< 0.0086	< 0.0086	< 0.0086	0.011	< 0.0086	0.015	0.012	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0065
	FB-03-35.0-082318	35.0	-9.2	8/23/2018	< 0.0080	< 0.0080	< 0.0080	< 0.024	< 0.0080	< 0.0080	< 0.0080	< 0.0080	0.015	< 0.0080	0.017	0.017	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0060
FB-04	FB-04-10.0-082118	10.0	12.0	8/21/2018	0.12	0.057	0.099	0.276	0.21	0.045	0.29	0.21	0.97	0.22	1.0	1.1	0.36	0.67	0.47	0.18	0.95	0.041	0.19	**0.52**
	FB-04-15.0-082118	15.0	7.0	8/21/2018	0.052	0.048	0.092	0.192	0.049	< 0.0082	0.029	0.018	0.078	0.043	0.16	0.1	0.027	0.027	0.025	0.0099	0.028	< 0.0082	0.017	0.036
FB-05	FB-05-15.0-082218	15.0	10.5	8/22/2018	< 0.0089	< 0.0089	< 0.0089	< 0.0267	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0067
FB-06	FB-06-2.5-082218	2.5	22.9	8/22/2018	0.087	0.044	0.045	0.176	0.13	0.042	0.20	0.35	0.81	0.094	0.89	1.1	0.49	0.47	0.52	0.17	0.50	0.054	0.34	**0.65**
	FB-06-10.0-082218	10.0	15.4	8/22/2018	< 0.016 H	< 0.016 H	< 0.016 H	< 0.048	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	0.020 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.012
	FB-06-20.0-082218	20.0	5.4	8/22/2018	0.070	< 0.0081	< 0.0081	0.070	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0061
FMW-130	F-MW-130-20.0-072114	20.0	2.2	7/21/2014	0.38	0.016	0.028	0.424	0.014	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0060
FMW-132	FMW-132-5.0-082418	5.0	20.7	8/24/2018	2.0	2.0	2.6	**6.6**	1.5	0.10	3.3	4.4	15	0.84	18	27	9.4	11	10	2.9	13	1.4	4.1	**12.5**
FMW-133	FMW-133-10.0-082418	10.0	15.3	8/24/2018	< 0.055	< 0.055	< 0.055	< 0.165	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.042
	FMW-133-20.0-082418	20.0	5.3	8/24/2018	0.25	0.035	0.042	0.33	0.021	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0060
FMW-134	FMW-134-15.0-082318	15.0	10.4	8/23/2018	0.14	0.012	0.028	0.18	0.014	< 0.0081	< 0.0081	< 0.0081	< 0.0081	0.016	0.021	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0061
FMW-135	FMW-135-15.0-082418	15.0	10.6	8/24/2018	0.029	< 0.022	< 0.022	0.029	0.039	< 0.022	< 0.022	< 0.022	0.042	< 0.022	0.068	0.073	< 0.022	< 0.022	< 0.022	< 0.022	< 0.022	< 0.022	< 0.022	< 0.017
	FMW-135-30.0-082418	30.0	-4.4	8/24/2018	0.12	0.012	< 0.0082	0.132	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0062
FMW-136	FMW-136-20.0-082218	20.0	5.1	8/22/2018	0.030	< 0.0084	< 0.0084	0.030	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0063
MTCA Method A Cleanup Level for Soil [6]								**5**	**4,800[7]**	**NE**	**24,000[7]**	**NE**	**3,200[7]**	**3,200[7]**	**NE**	**2,400[7]**								**0.1**

NOTES:

Results in **bold** denote concentrations exceeding applicable cleanup levels.
< denotes analyte not detected at or exceeding the reporting limit listed.
[1]Depth in feet below ground surface. Elevation in feet mean sea level using North American Vertical Datum of 1988.
[2]Analyzed by U.S. Environmental Protection Agency Method 8270D/SIM.
[3]Sum of naphthalene, 1-methylnaphthalene and 2-methylnaphthalene.
[4]Total carcinogenic polycyclic aromatic hydrocarbons derived using the total toxicity equivalency method in Section 708(8) of Chapter 173-340 of the Washington Administrative Code.
[5]For concentrations reported at less than the laboratory reporting limit, half the reporting limit was used to calculate total. If all constituent concentrations are non-detect, calculated total is indicated non-detect.
[6]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses,
Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013, unless otherwise noted.
[7]Washington State Department of Ecology Cleanup Levels and Risk Calculations, under MTCA Standard Method B Formula Values for Soil (Unrestricted Land Use) - Direct Contact (Ingestion Only) and Leaching Pathway,
https://fortress.wa.gov/ecy/clarc/Reporting/ChemicalQuery.aspx

cPAHs = carcinogenic polycyclic aromatic hydrocarbons
H = sample analyzed outside of holding time
msl = mean sea level
NE = not established
PAHs = polycyclic aromatic hydrocarbons
TEC = toxic equivalent concentration

Table 3
Soil Analytical Results for Metals
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Identification	Sample Depth (feet) [1]	Sample Elevation (feet msl) [1]	Sample Date	Analytical Results (milligrams per kilogram) [2]					
					Cadmium	Chromium	Lead	Mercury	Selenium	Silver
FB-01	FB-01-15.0-082118	15.0	11.3	8/21/2018	< 0.81	60	< 8.1	< 0.40	< 16	< 1.6
FB-02	FB-02-10.0-082018	10.0	15.1	8/20/2018	< 1.2	36	24	1.2	< 12	< 2.5
FB-03	FB-03-10.0-082318	10.0	15.8	8/23/2018	< 0.65	100	8.9	< 0.32	< 13	< 1.3
	FB-03-35.0-082318	35.0	-9.2	8/23/2018	< 0.60	42	< 6.0	< 0.30	< 12	< 1.2
FB-04	FB-04-5.0-082118	5.0	17.0	8/21/2018	< 1.1	53	56	< 0.55	< 11	< 2.2
FB-05	FB-05-35.0-082218	35.0	-9.5	8/22/2018	< 0.62	38	< 6.2	< 0.31	< 12	< 1.2
FMW-133	FMW-133-10.0-082418	10.0	15.3	8/24/2018	< 1.7	29	18	< 0.83	< 17	< 3.3
	FMW-133-20.0-082418	20.0	5.3	8/24/2018	< 0.60	27	< 6.0	< 0.30	< 12	< 1.2
FMW-134	FMW-134-5.0-082318	5.0	20.4	8/23/2018	< 1.7	19	< 17	< 0.83	< 17	< 3.3
	FMW-134-15.0-082318	15.0	10.4	8/23/2018	< 0.61	42	< 6.1	< 0.30	< 12	< 1.2
FMW-135	FMW-135-5.0-082418	5.0	20.6	8/24/2018	< 0.61	48	16	< 0.31	< 12	< 1.2
	FMW-135-25.0-082418	25.0	0.6	8/24/2018	< 0.69	60	< 6.9	< 0.35	< 14	< 1.4
	FMW-135-30.0-082418	30.0	-4.4	8/24/2018	< 0.62	44	< 6.2	< 0.31	< 12	< 1.2
FMW-136	FMW-136-20.0-082218	20.0	5.1	8/22/2018	< 0.63	42	< 6.3	< 0.32	< 13	< 1.3
	FMW-136-30.0-082218	30.0	-4.9	8/22/2018	< 0.59	41	< 5.9	< 0.30	< 12	< 1.2
MTCA Cleanup Levels for Soil [3]					**2**	**2,000**	**250**	**2**	**400[4]**	**400[4]**

NOTES:

< denotes analyte not detected at or exceeding the laboratory reporting limit listed.

msl = mean sea level

[1]Depth in feet below ground surface. Elevation in feet mean sea level using North American Vertical Datum of 1988.

[2]Analyzed by U.S. Environmental Protection Agency Methods 6010D/7471B.

[3]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as amended 2013, unless otherwise noted.

[4]Washington State Department of Ecology Cleanup Levels and Risk Calculations, under MTCA Standard Method B Formula Values for Soil (Unrestricted Land Use) - Direct Contact (Ingestion Only) and Leaching Pathway,

Table 4
Soil Analytical Results for Halogenated VOCs
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Elevation (feet MSL)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]				
					PCE	TCE	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
FB-02	FB-02-10.0-082018	10.0	15.1	8/20/2018	< 0.0028	< 0.0028	< 0.0028	< 0.0028	< 0.0028
	FB-02-25.0-082018	25.0	0.1	8/20/2018	< 0.00085	< 0.00085	< 0.00085	< 0.00085	< 0.00085
FB-04	FB-04-20.0-082118	20.0	2.0	8/21/2018	< 0.00093	< 0.00093	< 0.00093	< 0.00093	< 0.00093
FB-05	FB-05-20.0-082218	20.0	5.5	8/22/2018	< 0.00090	< 0.00090	< 0.00090	< 0.00090	< 0.00090
FMW-135	FMW-135-50.0-082418	50.0	-24.4	8/24/2018	< 0.00074	< 0.00074	< 0.00074	< 0.00074	< 0.00074
FMW-136	FMW-136-10.0-082218	10.0	15.1	8/22/2018	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015
	FMW-136-20.0-082218	20.0	5.1	8/22/2018	< 0.00094	< 0.00094	< 0.00094	< 0.00094	< 0.00094
MTCA Cleanup Levels for Soil[3]					**0.05**	**0.03**	**160[4]**	**1,600[4]**	**0.67[4]**

NOTES:

Results in **bold** denote concentrations exceeding applicable cleanup levels.

< denotes analyte not detected at or exceeding the reporting limit listed.

[1]Depth in feet below ground surface. Elevation in feet mean sea level using North American Vertical Datum of 1988.

[2]Analyzed by U.S. Environmental Protection Agency Method 8260C.

[3]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013, unless otherwise noted.

MSL = mean sea level
PCE = tetrachloroethene
TCE = trichloroethene
VOC = volatile organic compound

Table 5
Stabilized Groundwater Field Parameters
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Monitoring Well	Screened Interval (feet msl)[1]	Date	Temperature (degrees Celsius)	pH (Standard Units)	Specific Conductivity (mS/cm)	Turbidity (NTU)
FMW-130	-22.8 to -32.8	7/24/2014	17.09	6.63	0.680	3.2
		7/3/2017	15.1	6.41	0.636	--
		8/30/2018	15.3	6.60	0.665	9.2
FMW-132	20.7 to 15.7	8/30/2018	19.5	6.39	1.073	7.9
FMW-133	18.8 to 13.8	8/30/2018	18.4	6.28	1.188	5.1
FMW-134	13.4 to 8.4	8/30/2018	16.6	6.31	0.780	20.9
FMW-135	18.6 to 13.6	8/30/2018	18.5	6.47	0.897	55.2
FMW-136	-4.9 to -14.9	8/30/2018	16.3	6.59	0.483	11.2

NOTE:

— denotes parameter not measured

[1]In feet above mean sea level using North American Vertical Datum of 1988.

mS/cm = milliSiemens per centimeter

msl = mean sea level

NTU = Nephelometric Turbidity Unit

Table 6
Groundwater Analytical Results for TPH and BTEX
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Date	Sample Identification	Screened Interval (feet msl)[1]	Analytical Results (micrograms per liter) DRO[2]	ORO[2]	GRO[3]	Benzene[4]	Toluene[4]	Ethylbenzene[4]	Xylenes[4]
Reconnaissance Groundwater Samples from Borings										
FB-03	8/23/2018	FB-03-082318	8.8 to 3.8	**660**	490	< 100	< 1.0	< 1.0	< 1.0	< 2.0
FB-05	8/22/2018	FB-05-082218	8.5 to 3.5	< 260	< 410	< 100	< 1.0	< 1.0	< 1.0	< 2.0
FMW-130	7/21/2014	F-MW-130-GW1-072114	7.2 to 2.2	---	---	**2,100**	**5.1**	7.5	2.2	6.7
Groundwater Samples from Monitoring Wells										
FMW-130	7/24/2014	F-MW-130-072414	-22.8 to -32.8	---	---	< 100	< 1.0	< 1.0	< 1.0	< 2.0
	7/3/2017	FMW-130-070317		---	---	< 100	< 0.20	< 1.0	< 0.20	< 0.60
	8/30/2018	FMW-130-083018		< 250	< 410	< 100	< 0.20	< 1.0	< 0.20	< 0.60
FMW-132	8/30/2018	FMW-132-083018	20.7 to 15.7	260	< 400	< 100	< 0.20	< 1.0	< 0.20	< 0.60
FMW-133	8/30/2018	FMW-133-083018	18.8 to 13.8	270	< 410	< 100	< 0.20	< 1.0	< 0.20	< 0.60
FMW-134	8/30/2018	FMW-134-083018	13.4 to 8.4	**1,000** M	< 410	**1,100** Z	< 1.0	< 5.0	< 1.0	< 3.0
FMW-135	8/30/2018	FMW-135-083018	18.6 to 13.6	< 260	< 410	< 100	< 0.20	< 1.0	< 0.20	< 0.60
FMW-136	8/30/2018	FMW-136-083018	-4.9 to -14.9	< 250	< 400	< 100	< 0.20	< 1.0	< 0.20	< 0.60
Potable Water Sample										
Potable Well	8/21/2018	POTABLE-082118	Unknown	---	---	---	< 0.20	< 1.0	< 0.20	< 0.60
MTCA Method A Cleanup Level for Groundwater[5]				**500**	**500**	**800/1,000[6]**	**5**	**1,000**	**700**	**1,000**

NOTES:
Results in **bold** denote concentrations above applicable cleanup levels.
< denotes analyte not detected at or above the reporting limit listed.
— denotes sample not analyzed.
[1]In feet above mean sea level using North American Vertical Datum of 1988.
[2]Analyzed by Northwest Method NWTPH-Dx.
[3]Analyzed by Northwest Method NWTPH-Gx.
[4]Analyzed by U.S. Environmental Protection Agency Method 8021B and/or 8260C.
[5]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as amended 2013.
[6]Cleanup level is 800 micrograms per liter if benzene is detected and 1,000 micrograms per liter if benzene is not detected.

BTEX = benzene, toluene, ethylbenzene, and xylenes
DRO = total petroleum hydrocarbons (TPH) as diesel-range organics
GRO = TPH as gasoline-range organics
M = hydrocarbons in the gasoline-range are impacting the diesel-range result
msl = mean sea level
ORO = TPH as oil-range organics
Z = the gasoline result is mainly attributed to a single peak (naphthalene)

Table 7
Groundwater Analytical Results for PAHs
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Date	Sample Identification	Screened Interval (feet msl)[1]	Analytical Results (micrograms per liter)[2]																			
				Non-Carcinogenic PAHs												Carcinogenic PAHs							
				Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Total Naphthalenes[3]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)Perylene	Fluoranthene	Fluorene	Phenanthrene	Pyrene	Benzo(a)pyrene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(j,k)Fluoranthene	Chrysene	Dibenzo(a,h)Anthracene	Indeno(1,2,3-cd)Pyrene	Total cPAHs TEC[4,5]
Reconnaissance Groundwater Samples from Borings																							
FB-03	8/23/2018	FB-03-082318	8.8 to 3.8	< 1.3	---	---	< 1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Groundwater Samples from Monitoring Wells																							
FMW-130	8/30/2018	FMW-130-083018	-22.8 to -32.8	< 0.097	< 0.097	< 0.097	< 0.291	< 0.097	< 0.097	< 0.097	< 0.0097	< 0.097	< 0.097	< 0.097	< 0.097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0073
FMW-132	8/30/2018	FMW-132-083018	20.7 to 15.7	< 0.096	< 0.096	< 0.096	< 0.288	0.40	< 0.096	< 0.096	< 0.0096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0072
FMW-133	8/30/2018	FMW-133-083018	18.8 to 13.8	< 0.097	< 0.097	< 0.097	< 0.291	0.38	< 0.097	< 0.097	< 0.0097	< 0.097	0.098	< 0.097	< 0.097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.0073
FMW-134	8/30/2018	FMW-134-083018	13.4 to 8.4	290	10	12	**312**	8.3	0.12	< 0.099	< 0.0099	< 0.099	1.6	0.48	< 0.099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0075
FMW-135	8/30/2018	FMW-135-083018	18.6 to 13.6	0.35	0.68	0.29	1.32	0.39	< 0.096	< 0.096	< 0.0096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0072
FMW-136	8/30/2018	FMW-136-083018	-4.9 to -14.9	0.39	< 0.096	< 0.096	0.39	< 0.096	< 0.096	< 0.096	< 0.0096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0072
Potable Water Sample																							
Potable Well	8/21/2018	POTABLE-082118	Unknown	< 1.0	---	---	< 1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MTCA Method A Cleanup Level for Groundwater[6]							**160**	**960[7]**	**NE**	**4,800[7]**	**NE**	**640[7]**	**640[7]**	**NE**	**480[7]**								**0.1**

NOTES:

Results in **bold** denote concentrations exceeding applicable cleanup levels.
< denotes analyte not detected at or exceeding the reporting limit listed.
— denotes sample not analyzed.
[1]In feet above mean sea level using North American Vertical Datum of 1988.
[2]Analyzed by U.S. Environmental Protection Agency (EPA) Method 8270D/SIM. FB-03 and Potable Well samples analyzed by EPA Method 8260C.
[3]Sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
[4]Total carcinogenic polycyclic aromatic hydrocarbons derived using the total toxicity equivalency method in Section 708(8) of Chapter 173-340 of the Washington Administrative Code.
[5]For concentrations reported at less than the laboratory reporting limit, half the reporting limit was used to calculate total. If all constituent concentrations are non-detect, calculated total is indicated non-detect.
[6]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013, unless otherwise noted.
[7]MTCA Cleanup Levels and Risk Calculations, Standard Method B Values for Groundwater, https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx.

cPAHs = carcinogenic polycyclic aromatic hydrocarbons
msl = mean sea level
NE = not established
PAHs = polycyclic aromatic hydrocarbons
TEC = toxic equivalent concentration

Table 8
Groundwater Analytical Results for Detected VOCs
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Date	Sample Identification	Screened Interval (feet msl)[1]	Analytical Results (micrograms per liter)[2] 1,1,1-Trichloroethane	Chloroform	cis-1,2-Dichloroethene
Reconnaissance Groundwater Samples from Borings						
FB-03	8/23/2018	FB-03-082318	8.8 to 3.8	< 0.20	< 0.20	< 0.20
FB-05	8/22/2018	FB-05-082218	8.5 to 3.5	< 0.20	< 0.20	< 0.20
FMW-130	7/21/2014	F-MW-130-GW1-072114	7.2 to 2.2	< 0.20	< 0.20	< 0.20
Groundwater Samples from Monitoring Wells						
FMW-130	7/24/2014	F-MW-130-072414	-22.8 to -32.8	0.26	0.91	0.51
	7/3/2017	FMW-130-070317		< 0.20	< 0.20	< 0.20
	8/30/2018	FMW-130-083018		< 0.20	< 0.20	0.27
FMW-132	8/30/2018	FMW-132-083018	20.7 to 15.7	< 0.20	< 0.20	< 0.20
FMW-133	8/30/2018	FMW-133-083018	18.8 to 13.8	< 0.20	< 0.20	< 0.20
FMW-134	8/30/2018	FMW-134-083018	13.4 to 8.4	< 1.0	< 1.0	< 1.0
FMW-135	8/30/2018	FMW-135-083018	18.6 to 13.6	< 0.20	0.41	< 0.20
FMW-136	8/30/2018	FMW-136-083018	-4.9 to -14.9	< 0.20	**2.7**	0.36
Potable Water Sample						
Potable Well	8/21/2018	POTABLE-082118	Unknown	< 0.20	**16**	< 0.20
MTCA Cleanup Levels for Groundwater[3]				**200[4]**	**1.41**	**16**

NOTES:

Results in **bold** denote concentrations exceeding applicable cleanup levels.
< denotes analyte not detected at or exceeding the reporting limit listed.

[1]In feet above mean sea level using North American Vertical Datum of 1988.

[2]Analyzed by U.S. Environmental Protection Agency Method 8260C. Only detected VOCs shown; see lab report for full list of analytes.

[3]Washington State Model Toxics Control Act (MTCA) Cleanup Regulation Cleanup Levels and Risk Calculations, Standard Method B Values for Groundwater, https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx, unless otherwise noted.

[4]MTCA Method A Cleanup Levels for Groundwater, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as amended 2013.

msl = mean sea level
VOCs = volatile organic compounds

Table 9
Groundwater Elevations
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Location	Screened Interval (feet bgs)[1]	Screened Interval (feet msl)[2]	Top of Casing Elevation (feet msl)[2]	Monitoring Date	Depth to Water (feet)[3]	Water Level Elevation (feet msl)[2]
FMW-130	45.0 to 55.0	-22.8 to -32.8	21.86	8/30/2018	5.14	16.72
FMW-132	5.0 to 10.0	20.7 to 15.7	25.48	8/30/2018	7.44	18.04
FMW-133	6.5 to 11.5	18.8 to 13.8	24.87	8/30/2018	6.86	18.01
FMW-134	12.0 to 17.0	13.4 to 8.4	24.98	8/30/2018	8.66	16.32
FMW-135	7.0 to 12.0	18.6 to 13.6	25.29	8/30/2018	7.14	18.15
FMW-136	30.0 to 40.0	-4.9 to -14.9	24.79	8/30/2018	8.10	16.69

Notes:

[1]Depth in feet below ground surface.

[2]In feet above mean sea level using North American Vertical Datum of 1988.

[3]In feet below top of well casing.

bgs = below ground surface

msl = mean sea level

Table 10
Estimated Quantity of Impacted Soil
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Lift (feet msl)[1]	Impacted Grid Cell Identification	Impacted Area (square feet)	Impacted Elevation Range (feet msl)[1]	Impacted Thickness (feet)	Volume (cubic feet)	Volume (cubic yards)	Conversion Factor (tons per cubic yard)	Weight of Impacted Soil (tons)	Category 2 [2]		Category 3 [2]		Category 3+[2]	
									Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics
26 to 20	A 1	900	26 to 20	6	5,400	200	1.7	340				X		
	A 2	900	26 to 20	6	5,400	200	1.7	340				X		
	A 3	900	26 to 20	6	5,400	200	1.7	340				X		
	A 4	540	26 to 20	6	3,240	120	1.7	204				X		
	B 1	900	26 to 20	6	5,400	200	1.7	340				X		
	B 2	900	26 to 20	6	5,400	200	1.7	340				X		
	B 3	900	26 to 20	6	5,400	200	1.7	340				X		
	B 4	540	26 to 20	6	3,240	120	1.7	204				X		
	C 1	900	26 to 20	6	5,400	200	1.7	340	X					
	C 2	600	26 to 20	6	3,600	133	1.7	227	X					
	C 2	300	26 to 20	6	1,800	67	1.7	113			X			
	C 3	900	26 to 20	6	5,400	200	1.7	340			X			
	C 4	540	26 to 20	6	3,240	120	1.7	204			X			
	D 1	900	26 to 20	6	5,400	200	1.7	340	X					
	D 2	600	26 to 20	6	3,600	133	1.7	227	X					
	D 2	300	26 to 20	6	1,800	67	1.7	113				X		
	D 3	900	26 to 20	6	5,400	200	1.7	340				X		
	D 4	540	26 to 20	6	3,240	120	1.7	204				X		
	E 1	900	26 to 20	6	5,400	200	1.7	340	X					
	E 2	600	26 to 20	6	3,600	133	1.7	227	X					
	E 2	300	26 to 20	6	1,800	67	1.7	113				X		
	E 3	900	26 to 20	6	5,400	200	1.7	340				X		
	E 4	540	26 to 20	6	3,240	120	1.7	204				X		
	F 1	900	26 to 20	6	5,400	200	1.7	340	X					
	F 2	600	26 to 20	6	3,600	133	1.7	227	X					
	F 2	300	26 to 20	6	1,800	67	1.7	113				X		
	F 3	900	26 to 20	6	5,400	200	1.7	340				X		
	F 4	540	26 to 20	6	3,240	120	1.7	204				X		
	G 1	900	26 to 20	6	5,400	200	1.7	340				X		
	G 2	900	26 to 20	6	5,400	200	1.7	340				X		
	G 3	900	26 to 20	6	5,400	200	1.7	340				X		
	G 4	540	26 to 20	6	3,240	120	1.7	204				X		
	H 1	900	26 to 20	6	5,400	200	1.7	340				X		
	H 2	900	26 to 20	6	5,400	200	1.7	340				X		
	H 3	900	26 to 20	6	5,400	200	1.7	340				X		
	H 4	540	26 to 20	6	3,240	120	1.7	204				X		
	I 1	900	26 to 20	6	5,400	200	1.7	340				X		
	I 2	600	26 to 20	6	3,600	133	1.7	227				X		
	I 2	300	26 to 20	6	1,800	67	1.7	113						X
	I 3	900	26 to 20	6	5,400	200	1.7	340						X
	I 4	540	26 to 20	6	3,240	120	1.7	204						X
	J 1	900	26 to 20	6	5,400	200	1.7	340				X		
	J 2	600	26 to 20	6	3,600	133	1.7	227				X		
	J 2	300	26 to 20	6	1,800	67	1.7	113						X
	J 3	900	26 to 20	6	5,400	200	1.7	340						X
	J 4	540	26 to 20	6	3,240	120	1.7	204						X
	K 1	900	26 to 20	6	5,400	200	1.7	340			X			
	K 2	600	26 to 20	6	3,600	133	1.7	227			X			
	K 2	300	26 to 20	6	1,800	67	1.7	113						X
	K 3	900	26 to 20	6	5,400	200	1.7	340						X
	K 4	540	26 to 20	6	3,240	120	1.7	204						X

Table 10
Estimated Quantity of Impacted Soil
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Lift (feet msl)[1]	Impacted Grid Cell Identification	Impacted Area (square feet)	Impacted Elevation Range (feet msl)[1]			Impacted Thickness (feet)	Volume (cubic feet)	Volume (cubic yards)	Conversion Factor (tons per cubic yard)	Weight of Impacted Soil (tons)	Category 2[2]		Category 3[2]		Category 3+[2]	
											Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics
26 to 20 (cont.)	L 1	900	26	to	20	6	5,400	200	1.7	340			X			
	L 2	600	26	to	20	6	3,600	133	1.7	227			X			
	L 2	300	26	to	20	6	1,800	67	1.7	113						X
	L 3	900	26	to	20	6	5,400	200	1.7	340						X
	L 4	540	26	to	20	6	3,240	120	1.7	204						X
	M 1	900	26	to	20	6	5,400	200	1.7	340			X			
	M 2	600	26	to	20	6	3,600	133	1.7	227			X			
	M 2	300	26	to	20	6	1,800	67	1.7	113						X
	M 3	900	26	to	20	6	5,400	200	1.7	340						X
	M 4	540	26	to	20	6	3,240	120	1.7	204						X
	N 1	690	26	to	20	6	4,140	153	1.7	261			X			
	N 2	460	26	to	20	6	2,760	102	1.7	174			X			
	N 2	230	26	to	20	6	1,380	51	1.7	87						X
	N 3	690	26	to	20	6	4,140	153	1.7	261						X
	N 4	324	26	to	20	6	1,944	72	1.7	122						X
20 to 15	A 1	900	20	to	15	5	4,500	167	1.7	283	X					
	A 2	900	20	to	15	5	4,500	167	1.7	283	X					
	A 3	900	20	to	15	5	4,500	167	1.7	283		X				
	A 4	540	20	to	15	5	2,700	100	1.7	170		X				
	B 1	900	20	to	15	5	4,500	167	1.7	283	X					
	B 2	900	20	to	15	5	4,500	167	1.7	283	X					
	B 3	900	20	to	15	5	4,500	167	1.7	283		X				
	B 4	540	20	to	15	5	2,700	100	1.7	170		X				
	C 1	900	20	to	15	5	4,500	167	1.7	283		X				
	C 2	900	20	to	15	5	4,500	167	1.7	283		X				
	C 3	900	20	to	15	5	4,500	167	1.7	283		X				
	C 4	540	20	to	15	5	2,700	100	1.7	170		X				
	D 1	900	20	to	15	5	4,500	167	1.7	283		X				
	D 2	900	20	to	15	5	4,500	167	1.7	283		X				
	D 3	900	20	to	15	5	4,500	167	1.7	283		X				
	D 4	540	20	to	15	5	2,700	100	1.7	170		X				
	E 1	900	20	to	15	5	4,500	167	1.7	283		X				
	E 2	780	20	to	15	5	3,900	144	1.7	246		X				
	E 2	120	20	to	15	5	600	22	1.7	38				X		
	E 3	900	20	to	15	5	4,500	167	1.7	283				X		
	E 4	540	20	to	15	5	2,700	100	1.7	170				X		
	F 1	900	20	to	15	5	4,500	167	1.7	283		X				
	F 2	780	20	to	15	5	3,900	144	1.7	246		X				
	F 2	120	20	to	15	5	600	22	1.7	38				X		
	F 3	900	20	to	15	5	4,500	167	1.7	283				X		
	F 4	540	20	to	15	5	2,700	100	1.7	170				X		
	G 1	900	20	to	15	5	4,500	167	1.7	283		X				
	G 2	780	20	to	15	5	3,900	144	1.7	246		X				
	G 2	120	20	to	15	5	600	22	1.7	38				X		
	G 3	900	20	to	15	5	4,500	167	1.7	283				X		
	G 4	540	20	to	15	5	2,700	100	1.7	170				X		
	H 1	900	20	to	15	5	4,500	167	1.7	283	X					
	H 2	780	20	to	15	5	3,900	144	1.7	246	X					
	H 2	120	20	to	15	5	600	22	1.7	38				X		
	H 3	900	20	to	15	5	4,500	167	1.7	283				X		
	H 4	540	20	to	15	5	2,700	100	1.7	170				X		

Table 10
Estimated Quantity of Impacted Soil
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Lift (feet msl)[1]	Impacted Grid Cell Identification	Impacted Area (square feet)	Impacted Elevation Range (feet msl)[1]	Impacted Thickness (feet)	Volume (cubic feet)	Volume (cubic yards)	Conversion Factor (tons per cubic yard)	Weight of Impacted Soil (tons)	Category 2 [2]		Category 3 [2]		Category 3+[2]	
									Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics
20 to 15 (cont.)	I 1	900	20 to 15	5	4,500	167	1.7	283	X					
	I 2	780	20 to 15	5	3,900	144	1.7	246	X					
	I 2	120	20 to 15	5	600	22	1.7	38						X
	I 3	900	20 to 15	5	4,500	167	1.7	283						X
	I 4	540	20 to 15	5	2,700	100	1.7	170						X
	J 1	900	20 to 15	5	4,500	167	1.7	283	X					
	J 2	780	20 to 15	5	3,900	144	1.7	246	X					
	J 2	120	20 to 15	5	600	22	1.7	38						X
	J 3	900	20 to 15	5	4,500	167	1.7	283						X
	J 4	540	20 to 15	5	2,700	100	1.7	170						X
	K 1	900	20 to 15	5	4,500	167	1.7	283				X		
	K 2	780	20 to 15	5	3,900	144	1.7	246				X		
	K 2	120	20 to 15	5	600	22	1.7	38						X
	K 3	900	20 to 15	5	4,500	167	1.7	283						X
	K 4	540	20 to 15	5	2,700	100	1.7	170						X
	L 1	900	20 to 15	5	4,500	167	1.7	283				X		
	L 2	780	20 to 15	5	3,900	144	1.7	246				X		
	L 2	120	20 to 15	5	600	22	1.7	38						X
	L 3	900	20 to 15	5	4,500	167	1.7	283						X
	L 4	540	20 to 15	5	2,700	100	1.7	170						X
	M 1	900	20 to 15	5	4,500	167	1.7	283				X		
	M 2	780	20 to 15	5	3,900	144	1.7	246				X		
	M 2	120	20 to 15	5	600	22	1.7	38						X
	M 3	900	20 to 15	5	4,500	167	1.7	283						X
	M 4	540	20 to 15	5	2,700	100	1.7	170						X
	N 1	690	20 to 15	5	3,450	128	1.7	217				X		
	N 2	530	20 to 15	5	2,650	98	1.7	167				X		
	N 2	160	20 to 15	5	800	30	1.7	50						X
	N 3	690	20 to 15	5	3,450	128	1.7	217						X
	N 4	324	20 to 15	5	1,620	60	1.7	102						X
15 to 10	A 1	900	15 to 10	5	4,500	167	1.7	283	X					
	A 2	900	15 to 10	5	4,500	167	1.7	283	X					
	A 3	900	15 to 10	5	4,500	167	1.7	283	X					
	A 4	540	15 to 10	5	2,700	100	1.7	170	X					
	B 1	900	15 to 10	5	4,500	167	1.7	283	X					
	B 2	900	15 to 10	5	4,500	167	1.7	283	X					
	B 3	900	15 to 10	5	4,500	167	1.7	283	X					
	B 4	540	15 to 10	5	2,700	100	1.7	170	X					
	C 1	900	15 to 10	5	4,500	167	1.7	283		X				
	C 2	900	15 to 10	5	4,500	167	1.7	283		X				
	C 3	900	15 to 10	5	4,500	167	1.7	283	X					
	C 4	540	15 to 10	5	2,700	100	1.7	170	X					
	D 1	900	15 to 10	5	4,500	167	1.7	283		X				
	D 2	900	15 to 10	5	4,500	167	1.7	283		X				
	D 3	900	15 to 10	5	4,500	167	1.7	283	X					
	D 4	540	15 to 10	5	2,700	100	1.7	170	X					
	E 1	900	15 to 10	5	4,500	167	1.7	283		X				
	E 2	750	15 to 10	5	3,750	139	1.7	236		X				
	E 2	150	15 to 10	5	750	28	1.7	47				X		
	E 3	900	15 to 10	5	4,500	167	1.7	283			X			
	E 4	540	15 to 10	5	2,700	100	1.7	170			X			

Table 10
Estimated Quantity of Impacted Soil
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Lift (feet msl)[1]	Impacted Grid Cell Identification	Impacted Area (square feet)	Impacted Elevation Range (feet msl)[1]	Impacted Thickness (feet)	Volume (cubic feet)	Volume (cubic yards)	Conversion Factor (tons per cubic yard)	Weight of Impacted Soil (tons)	Category 2 [2]		Category 3 [2]		Category 3+[2]	
									Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics
	F 1	900	15 to 10	5	4,500	167	1.7	283		X				
	F 2	750	15 to 10	5	3,750	139	1.7	236		X				
	F 2	150	15 to 10	5	750	28	1.7	47				X		
	F 3	900	15 to 10	5	4,500	167	1.7	283			X			
	F 4	540	15 to 10	5	2,700	100	1.7	170			X			
	G 1	900	15 to 10	5	4,500	167	1.7	283	X					
	G 2	750	15 to 10	5	3,750	139	1.7	236	X					
	G 2	150	15 to 10	5	750	28	1.7	47			X			
	G 3	900	15 to 10	5	4,500	167	1.7	283			X			
	G 4	540	15 to 10	5	2,700	100	1.7	170			X			
	H 1	900	15 to 10	5	4,500	167	1.7	283	X					
	H 2	750	15 to 10	5	3,750	139	1.7	236	X					
	H 2	150	15 to 10	5	750	28	1.7	47			X			
	H 3	900	15 to 10	5	4,500	167	1.7	283			X			
	H 4	540	15 to 10	5	2,700	100	1.7	170			X			
	I 1	900	15 to 10	5	4,500	167	1.7	283	X					
	I 2	750	15 to 10	5	3,750	139	1.7	236	X					
	I 2	150	15 to 10	5	750	28	1.7	47			X			
	I 3	900	15 to 10	5	4,500	167	1.7	283			X			
	I 4	540	15 to 10	5	2,700	100	1.7	170			X			
15 to 10 (cont.)	J 1	900	15 to 10	5	4,500	167	1.7	283		X				
	J 2	750	15 to 10	5	3,750	139	1.7	236		X				
	J 2	150	15 to 10	5	750	28	1.7	47				X		
	J 3	900	15 to 10	5	4,500	167	1.7	283				X		
	J 4	540	15 to 10	5	2,700	100	1.7	170				X		
	K 1	900	15 to 10	5	4,500	167	1.7	283				X		
	K 2	900	15 to 10	5	4,500	167	1.7	283				X		
	K 3	900	15 to 10	5	4,500	167	1.7	283				X		
	K 4	540	15 to 10	5	2,700	100	1.7	170				X		
	L 1	900	15 to 10	5	4,500	167	1.7	283				X		
	L 2	900	15 to 10	5	4,500	167	1.7	283				X		
	L 3	900	15 to 10	5	4,500	167	1.7	283				X		
	L 4	540	15 to 10	5	2,700	100	1.7	170				X		
	M 1	900	15 to 10	5	4,500	167	1.7	283				X		
	M 2	900	15 to 10	5	4,500	167	1.7	283				X		
	M 3	900	15 to 10	5	4,500	167	1.7	283				X		
	M 4	540	15 to 10	5	2,700	100	1.7	170				X		
	N 1	690	15 to 10	5	3,450	128	1.7	217				X		
	N 2	530	15 to 10	5	2,650	98	1.7	167				X		
	N 2	160	15 to 10	5	800	30	1.7	50				X		
	N 3	690	15 to 10	5	3,450	128	1.7	217				X		
	N 4	324	15 to 10	5	1,620	60	1.7	102				X		
	A 1	900	10 to 5	5	4,500	167	1.7	283	X					
	A 2	900	10 to 5	5	4,500	167	1.7	283	X					
	A 3	900	10 to 5	5	4,500	167	1.7	283	X					
	A 4	540	10 to 5	5	2,700	100	1.7	170	X					
	B 1	900	10 to 5	5	4,500	167	1.7	283	X					
10 to 5	B 2	900	10 to 5	5	4,500	167	1.7	283	X					
	B 3	900	10 to 5	5	4,500	167	1.7	283	X					
	B 4	540	10 to 5	5	2,700	100	1.7	170	X					
	C 2	150	10 to 5	5	750	28	1.7	47	X					
	C 3	900	10 to 5	5	4,500	167	1.7	283	X					
	C 4	540	10 to 5	5	2,700	100	1.7	170	X					

Table 10
Estimated Quantity of Impacted Soil
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Lift (feet msl)[1]	Impacted Grid Cell Identification	Impacted Area (square feet)	Impacted Elevation Range (feet msl)[1]	Impacted Thickness (feet)	Volume (cubic feet)	Volume (cubic yards)	Conversion Factor (tons per cubic yard)	Weight of Impacted Soil (tons)	Category 2 [2]		Category 3 [2]		Category 3+[2]	
									Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics
10 to 5 (cont.)	D 2	150	10 to 5	5	750	28	1.7	47	X					
	D 3	900	10 to 5	5	4,500	167	1.7	283	X					
	D 4	540	10 to 5	5	2,700	100	1.7	170	X					
	E 2	150	10 to 5	5	750	28	1.7	47	X					
	E 3	900	10 to 5	5	4,500	167	1.7	283	X					
	E 4	540	10 to 5	5	2,700	100	1.7	170	X					
	F 2	150	10 to 5	5	750	28	1.7	47	X					
	F 3	900	10 to 5	5	4,500	167	1.7	283	X					
	F 4	540	10 to 5	5	2,700	100	1.7	170	X					
	G 1	900	10 to 5	5	4,500	167	1.7	283	X					
	G 2	900	10 to 5	5	4,500	167	1.7	283	X					
	G 3	900	10 to 5	5	4,500	167	1.7	283	X					
	G 4	540	10 to 5	5	2,700	100	1.7	170	X					
	H 1	900	10 to 5	5	4,500	167	1.7	283	X					
	H 2	900	10 to 5	5	4,500	167	1.7	283	X					
	H 3	900	10 to 5	5	4,500	167	1.7	283	X					
	H 4	540	10 to 5	5	2,700	100	1.7	170	X					
	I 1	900	10 to 5	5	4,500	167	1.7	283	X					
	I 2	900	10 to 5	5	4,500	167	1.7	283	X					
	I 3	900	10 to 5	5	4,500	167	1.7	283	X					
	I 4	540	10 to 5	5	2,700	100	1.7	170	X					
	J 1	900	10 to 5	5	4,500	167	1.7	283		X				
	J 2	900	10 to 5	5	4,500	167	1.7	283		X				
	J 3	900	10 to 5	5	4,500	167	1.7	283		X				
	J 4	540	10 to 5	5	2,700	100	1.7	170		X				
	K 1	900	10 to 5	5	4,500	167	1.7	283		X				
	K 2	900	10 to 5	5	4,500	167	1.7	283		X				
	K 3	900	10 to 5	5	4,500	167	1.7	283		X				
	K 4	540	10 to 5	5	2,700	100	1.7	170		X				
	L 1	900	10 to 5	5	4,500	167	1.7	283		X				
	L 2	900	10 to 5	5	4,500	167	1.7	283		X				
	L 3	900	10 to 5	5	4,500	167	1.7	283		X				
	L 4	540	10 to 5	5	2,700	100	1.7	170		X				
	M 1	900	10 to 5	5	4,500	167	1.7	283		X				
	M 2	900	10 to 5	5	4,500	167	1.7	283		X				
	M 3	900	10 to 5	5	4,500	167	1.7	283		X				
	M 4	540	10 to 5	5	2,700	100	1.7	170		X				
	N 1	690	10 to 5	5	3,450	128	1.7	217		X				
	N 2	690	10 to 5	5	3,450	128	1.7	217		X				
	N 3	690	10 to 5	5	3,450	128	1.7	217		X				
	N 4	324	10 to 5	5	1,620	60	1.7	102		X				

Table 10
Estimated Quantity of Impacted Soil
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Lift (feet msl)[1]	Impacted Grid Cell Identification	Impacted Area (square feet)	Impacted Elevation Range (feet msl)[1]	Impacted Thickness (feet)	Volume (cubic feet)	Volume (cubic yards)	Conversion Factor (tons per cubic yard)	Weight of Impacted Soil (tons)	Category 2 [2]		Category 3 [2]		Category 3+[2]	
									Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics
5 to 0	A 1	900	5 to 0	5	4,500	167	1.7	283	X					
	A 2	900	5 to 0	5	4,500	167	1.7	283	X					
	A 3	900	5 to 0	5	4,500	167	1.7	283	X					
	A 4	540	5 to 0	5	2,700	100	1.7	170	X					
	B 1	900	5 to 0	5	4,500	167	1.7	283	X					
	B 2	900	5 to 0	5	4,500	167	1.7	283	X					
	B 3	900	5 to 0	5	4,500	167	1.7	283	X					
	B 4	540	5 to 0	5	2,700	100	1.7	170	X					
	C 3	900	5 to 0	5	4,500	167	1.7	283	X					
	C 4	540	5 to 0	5	2,700	100	1.7	170	X					
	D 3	900	5 to 0	5	4,500	167	1.7	283	X					
	D 4	540	5 to 0	5	2,700	100	1.7	170	X					
	E 3	900	5 to 0	5	4,500	167	1.7	283	X					
	E 4	540	5 to 0	5	2,700	100	1.7	170	X					
	F 3	900	5 to 0	5	4,500	167	1.7	283	X					
	F 4	540	5 to 0	5	2,700	100	1.7	170	X					
	G 3	900	5 to 0	5	4,500	167	1.7	283	X					
	G 4	540	5 to 0	5	2,700	100	1.7	170	X					
	H 1	900	5 to 0	5	4,500	167	1.7	283	X					
	H 2	900	5 to 0	5	4,500	167	1.7	283	X					
	H 3	900	5 to 0	5	4,500	167	1.7	283	X					
	H 4	540	5 to 0	5	2,700	100	1.7	170	X					
	I 1	900	5 to 0	5	4,500	167	1.7	283	X					
	I 2	900	5 to 0	5	4,500	167	1.7	283	X					
	I 3	900	5 to 0	5	4,500	167	1.7	283	X					
	I 4	540	5 to 0	5	2,700	100	1.7	170	X					
	J 1	900	5 to 0	5	4,500	167	1.7	283	X					
	J 2	900	5 to 0	5	4,500	167	1.7	283	X					
	J 3	900	5 to 0	5	4,500	167	1.7	283	X					
	J 4	540	5 to 0	5	2,700	100	1.7	170	X					
	K 1	540	5 to 0	5	2,700	100	1.7	170	X					
	K 2	900	5 to 0	5	4,500	167	1.7	283	X					
	K 3	900	5 to 0	5	4,500	167	1.7	283	X					
	K 4	540	5 to 0	5	2,700	100	1.7	170	X					
	L 1	900	5 to 0	5	4,500	167	1.7	283	X					
	L 2	900	5 to 0	5	4,500	167	1.7	283	X					
	L 3	900	5 to 0	5	4,500	167	1.7	283	X					
	L 4	540	5 to 0	5	2,700	100	1.7	170	X					
	M 1	900	5 to 0	5	4,500	167	1.7	283	X					
	M 2	900	5 to 0	5	4,500	167	1.7	283	X					
	M 3	900	5 to 0	5	4,500	167	1.7	283	X					
	M 4	540	5 to 0	5	2,700	100	1.7	170	X					
	N 1	690	5 to 0	5	3,450	128	1.7	217	X					
	N 2	690	5 to 0	5	3,450	128	1.7	217	X					
	N 3	690	5 to 0	5	3,450	128	1.7	217	X					
	N 4	324	5 to 0	5	1,620	60	1.7	102	X					

Table 10
Estimated Quantity of Impacted Soil
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

Lift (feet msl)[1]	Impacted Grid Cell Identification	Impacted Area (square feet)	Impacted Elevation Range (feet msl)[1]	Impacted Thickness (feet)	Volume (cubic feet)	Volume (cubic yards)	Conversion Factor (tons per cubic yard)	Weight of Impacted Soil (tons)	Category 2 [2]		Category 3 [2]		Category 3+[2]	
									Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics	Without Wood Debris/Organics	With Wood Debris/Organics
0 to -5	E 3	900	0 to -5	5	4,500	167	1.7	283	X					
	E 4	540	0 to -5	5	2,700	100	1.7	170	X					
	F 3	900	0 to -5	5	4,500	167	1.7	283	X					
	F 4	540	0 to -5	5	2,700	100	1.7	170	X					
	G 3	900	0 to -5	5	4,500	167	1.7	283	X					
	G 4	540	0 to -5	5	2,700	100	1.7	170	X					
	H 1	900	0 to -5	5	4,500	167	1.7	283	X					
	H 2	900	0 to -5	5	4,500	167	1.7	283	X					
	H 3	900	0 to -5	5	4,500	167	1.7	283	X					
	H 4	540	0 to -5	5	2,700	100	1.7	170	X					
	I 1	900	0 to -5	5	4,500	167	1.7	283	X					
	I 2	900	0 to -5	5	4,500	167	1.7	283	X					
	I 3	900	0 to -5	5	4,500	167	1.7	283	X					
	I 4	540	0 to -5	5	2,700	100	1.7	170	X					
	J 1	900	0 to -5	5	4,500	167	1.7	283	X					
	J 2	900	0 to -5	5	4,500	167	1.7	283	X					
	J 3	900	0 to -5	5	4,500	167	1.7	283	X					
	J 4	540	0 to -5	5	2,700	100	1.7	170	X					
	K 1	900	0 to -5	5	4,500	167	1.7	283	X					
	K 2	900	0 to -5	5	4,500	167	1.7	283	X					
	K 3	900	0 to -5	5	4,500	167	1.7	283	X					
	K 4	540	0 to -5	5	2,700	100	1.7	170	X					
	L 1	900	0 to -5	5	4,500	167	1.7	283	X					
	L 2	900	0 to -5	5	4,500	167	1.7	283	X					
	L 3	900	0 to -5	5	4,500	167	1.7	283	X					
	L 4	540	0 to -5	5	2,700	100	1.7	170	X					
	M 1	900	0 to -5	5	4,500	167	1.7	283	X					
	M 2	900	0 to -5	5	4,500	167	1.7	283	X					
	M 3	900	0 to -5	5	4,500	167	1.7	283	X					
	M 4	540	0 to -5	5	2,700	100	1.7	170	X					
	N 1	690	0 to -5	5	3,450	128	1.7	217	X					
	N 2	690	0 to -5	5	3,450	128	1.7	217	X					
	N 3	690	0 to -5	5	3,450	128	1.7	217	X					
	N 4	324	0 to -5	5	1,620	60	1.7	102	X					
						Total Estimated Tonnages of Impacted Soil		**76,080**	**35,895**	**12,059**	**5,200**	**16,345**	**0**	**6,582**

NOTES:

[1]Elevation in feet above mean sea level (msl) (NAVD 88).

[2]Petroleum-contaminated soil disposal classification according to CEMEX disposal criteria.

msl = mean sea level

APPENDIX A
BORING LOGS AND WELL COMPLETION DIAGRAMS

SUBSURFACE INVESTIGATION REPORT AND ENVIRONMENTAL MEDIA MANAGEMENT PLAN
Block 38 West Property
500 through 536 Westlake Avenue North
Seattle, Washington

Farallon PN: 397-019

USCS Classification and Graphic Legend

Major Divisions			USCS Letter Symbol	Lithologic Description
Coarse-Grained Soil (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)	GW	Well graded GRAVEL, well graded GRAVEL with sand
			GP	Poorly graded GRAVEL, GRAVEL with sand
		GRAVEL WITH FINES (Appreciable amount of fines)	GP-GM	Poorly graded GRAVEL - GRAVEL with sand and silt
			GM	Silty GRAVEL
			GC	Clayey GRAVEL
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)	SW	Well graded SAND
			SP	Poorly graded SAND
		SAND WITH FINES (Appreciable amount of fines)	SP-SM	Poorly graded SAND - silty SAND
			SM	Silty SAND
			SC	Clayey SAND
			SM-ML	SILT - Silty SAND
Fine-Grained Soil (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)		ML	SILT
			CL	CLAY
			OL	Organic SILT
	SILT AND CLAY (Liquid limit greater than 50)		MH	Inorganic SILT
			CH	Inorganic CLAY
			OH	Organic CLAY
		Highly Organic Soil	PT	Peat
OTHER MATERIALS	PAVEMENT		AC	Asphalt concrete
			CO	Concrete
	OTHER		RK	Bedrock
			WD	Wood Debris
			DB	Debris (Miscellaneous)
			PC	Portland cement

Legend

Sample Interval

Grab Sample Interval

Water level at time of drilling

Water level at time of sampling

Blank Casing

Screened Casing

Cement Grout

Bentonite

Sand Pack

Well Cap

Solid line indicates sharp contact between units well defined.

Dashed line indicates gradational contact between units.

feet bgs = feet below ground surface
NE = Not Encountered
NA = Not Applicable
PID = Photoionization Detector
PN = Project Number
*ppm = parts per million total organic vapors in isobutylene equivalents using a 10.6 electron volt lamp
USCS = Unified Soil Classification System

FARALLON CONSULTING

Log of Boring: FB-01

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started:	08/21/2018 @ 1126	**Sampler Type:**	1.5 Split Spoon
Date/Time Completed:	08/21/2018 @ 1540	**Drive Hammer (lbs.):**	140
Equipment:	MiniTrack	**Depth of Water ATD (ft bgs):**	8.0
Drilling Company:	Geologic Drilling	**Total Boring Depth (ft bgs):**	41.5
Drilling Foreman:	Blaine Gibson	**Total Well Depth (ft bgs):**	NA
Drilling Method:	Hollow Stem Auger		

Depth (feet bgs.)	Lithologic Description	USCS	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0	0.0-1.0': Concrete. Hand auger to clear for utilities.	CO						Concrete
	1.0'-5.0': Well graded SAND with silt and gravel (60% sand, 30% gravel, 10% silt), fine to coarse sand, fine gravel, brown, moist, no odor.	SW-SM			1.0			
5	5.0-6.5': Silty SAND (50% sand, 40% silt, 10% gravel), fine to coarse sand, fine gravel, dark brown, very loose, moist, no odor.	SM	80	3 2 1	0.5	FB-01-5.0-082118 @ 1140	X	
								Water Level
10	10.0-11.5': No soil samples collected. Temporary well installed at approximately 12.5 ft bgs.		NA	NA	NA	FB-01-082118 @1245	X	
15	15.0-15.8': SILT (90% silt, 10% sand), fine sand, brown, wet, stiff, no odor.	ML	100	2 4 8	0.0	FB-01-15.0-082118 @1420	X	Bentonite
	15.8-16.5': Silty SAND (70% sand, 30% silt), fine sand, gray, wet, medium dense, no odor.	SM						
20	20.0-21.5': Poorly-graded SAND (95% sand, 5% silt), fine sand, grayish brown, wet, dense, no odor.	SP	100	12 19 21	0.0	FB-01-20.0-082118 @ 1446		

Well Construction Information

Monument Type:	NA	**Filter Pack:**	NA	**Ground Surface Elevation (ft):**	NA
Casing Diameter (inches):	NA	**Surface Seal:**	Concrete	**Top of Casing Elevation (ft):**	NA
Screen Slot Size (inches):	NA	**Annular Seal:**	NA	**Surveyed Location:**	**X:** NA
Screened Interval (ft bgs):	NA	**Boring Abandonment:**	Bentonite		**Y:** NA

FARALLON CONSULTING

Log of Boring: FB-01

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started: 08/21/2018 @ 1126
Date/Time Completed: 08/21/2018 @ 1540
Equipment: MiniTrack
Drilling Company: Geologic Drilling
Drilling Foreman: Blaine Gibson
Drilling Method: Hollow Stem Auger

Sampler Type: 1.5 Split Spoon
Drive Hammer (lbs.): 140
Depth of Water ATD (ft bgs): 8.0
Total Boring Depth (ft bgs): 41.5
Total Well Depth (ft bgs): NA

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
25		25.0-26.5': SILT (90% silt, 10% sand), fine sand, gray, wet,stiff, no odor.	ML		100	3 4 5	0.0	FB-01-25.0-082118 @ 1500		
30		30.0-31.5': Poorly graded SAND (95% sand, 5% silt), medium sand, gray, wet, dense, no odor.	SP		100	14 20 25	0.0	FB-01-30.0-082118 @ 1515	X	
35		35.0-36.5': Silty SAND (60% sand, 40% silt), fine sand, gray, moist, very dense no odor.	SM		100	17 35 26	0.0	FB-01-35.0-082118 @ 1530		Bentonite
40		40.0-41.5': Poorly graded SAND (95% sand, 5% silt), fine sand, dark gray, very dense, moist, no odor.	SP		100	12 15 50 5	0.0	FB-01-40.0-082118 @ 1540		

Well Construction Information

Monument Type: NA
Casing Diameter (inches): NA
Screen Slot Size (inches): NA
Screened Interval (ft bgs): NA

Filter Pack: NA
Surface Seal: Concrete
Annular Seal: NA
Boring Abandonment: Bentonite

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: X: NA Y: NA

Log of Boring: FB-02

FARALLON CONSULTING

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started:	08/20/2018 @ 1045	**Sampler Type:**	1.5 Split Spoon
Date/Time Completed:	08/20/2018 @ 1545	**Drive Hammer (lbs.):**	140
Equipment:	Mini-track	**Depth of Water ATD (ft bgs):**	10.0
Drilling Company:	Geologic Drilling	**Total Boring Depth (ft bgs):**	41.5
Drilling Foreman:	Blaine Gibson	**Total Well Depth (ft bgs):**	NA
Drilling Method:	Hollow Stem Auger		

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-0.7': Concrete, hand auger to clear for utilities.	CO							Concrete
		2.5-3.5': Well graded GRAVEL with silt and sand (50% gravel, 40% sand,10% silt), fine to coarse sand, fine gravel, dark brown, moist, no odor. (Fill).	FILL				0.5	FB-02-3.0-082018 @1155		
5		5.0-6.5': Well graded GRAVEL with silt and sand (50% gravel, 40% sand, 10% silt), fine to coarse sand, fine gravel, dark brown, moist, loose, no odor. Wood debris present. (Fill).	FILL		100	11 5 3	0.9	FB-02-5.0-082018 @1220	X	
10		10.0-11.5': Sandy SILT (70% silt, 30% sand), fine to medium sand, dark brown, wet, very soft, no odor. Mottling present.	ML		100	1 1 1	0.2	FB-02-10.0-082018 @1255	X	Water Level
15		15.0-16.5': SILT with sand (75% silt, 25% sand), fine to medium sand, grayish brown, moist, stiff, no odor.	ML		100	4 4 6	0.5	FB-02-15.0-082018 @1245		Bentonite
20		20.0-21.5': Poorly graded SAND with silt (90% sand, 10% silt), fine sand, gray, wet, medium dense, no odor.	SP-SM		100	14 11 5	0.2	FB-02-20.0-082018 @1310		

Well Construction Information

Monument Type:	NA	**Filter Pack:**	NA
Casing Diameter (inches):	NA	**Surface Seal:**	Concrete
Screen Slot Size (inches):	NA	**Annular Seal:**	NA
Screened Interval (ft bgs):	NA	**Boring Abandonment:**	Bentonite

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

Log of Boring: FB-02

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started:	08/20/2018 @ 1045	**Sampler Type:**	1.5 Split Spoon
Date/Time Completed:	08/20/2018 @ 1545	**Drive Hammer (lbs.):**	140
Equipment:	Mini-track	**Depth of Water ATD (ft bgs):**	10.0
Drilling Company:	Geologic Drilling	**Total Boring Depth (ft bgs):**	41.5
Drilling Foreman:	Blaine Gibson	**Total Well Depth (ft bgs):**	NA
Drilling Method:	Hollow Stem Auger		

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
25	X	25.0-26.5': Silty SAND (80% sand, 20% silt), fine to medium sand, gray, wet, dense, slight petroleum-like odor.	SM		100	16 20 20	0.4	FB-02-25.0-082018 @1430	X	
30	X	30.0-31.5': Sandy SILT (60% silt, 40% sand), fine sand, gray, moist to wet, very stiff, slight petroleum-like odor.	ML		100	12 16 16	0.7	FB-02-30.0-082018 @1454		
35	X	35.0-36.5': Poorly graded SAND with silt (90% sand, 10% silt), fine to medium sand, gray, moist to wet, medium dense, no odor.	SP-SM		100	5 8 12	0.6	FB-02-35.0-082018 @1520	X	Bentonite
40		40.0-41.5': No Recovery. Heaving sands prevented drilling beyond 40.0 ft bgs.			0			No Sample		

Well Construction Information

Monument Type:	NA	**Filter Pack:**	NA	**Ground Surface Elevation (ft):**	NA
Casing Diameter (inches):	NA	**Surface Seal:**	Concrete	**Top of Casing Elevation (ft):**	NA
Screen Slot Size (inches):	NA	**Annular Seal:**	NA	**Surveyed Location:**	**X:** NA
Screened Interval (ft bgs):	NA	**Boring Abandonment:**	Bentonite		**Y:** NA

Log of Boring: FB-03

FARALLON CONSULTING

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started:	08/23/2018 @ 1200	**Sampler Type:**	1.5 Split Spoon
Date/Time Completed:	08/23/2018 @ 1540	**Drive Hammer (lbs.):**	140
Equipment:	Mini-track	**Depth of Water ATD (ft bgs):**	17.0
Drilling Company:	Geologic Drilling	**Total Boring Depth (ft bgs):**	41.5
Drilling Foreman:	Blaine Gibson	**Total Well Depth (ft bgs):**	NA
Drilling Method:	Hollow Stem Auger		

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-0.6': Concrete, asphalt fill material. Hand auger to clear for utilities.	CO							Concrete
5	X	5.0-6.5': SILT with sand (80% silt, 10% sand, 10% gravel), fine sand, fine gravel, gray, moist, medium stiff, organic odor. Some charcoal and wood debris. (Fill).	FILL		100	3 3 3	0.1	FB-03-5.0-082318 @1250		
10	X	10.0-11.5': SILT (100% silt), gray, moist, medium stiff, no odor.	ML		100	3 3 3	0.2	FB-03-10.0-082318 @1310	X	Bentonite
15	X	15.0-16.5': Sandy SILT (60% silt, 40% sand), fine sand, gray, wet, medium stiff, no odor.	ML		100	2 3 5	0.2	FB-03-15.0-082318 @1325	X	Water Level
20	X	20.5-21.5': No soil sample. Temporary well installed for reconnaissance groundwater sampling.			NA	NA	NA	FB-03-082318 @ 14:00	X	

Well Construction Information

Monument Type:	NA	**Filter Pack:**	NA
Casing Diameter (inches):	NA	**Surface Seal:**	Concrete
Screen Slot Size (inches):	NA	**Annular Seal:**	NA
Screened Interval (ft bgs):	NA	**Boring Abandonment:**	Bentonite

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

FARALLON CONSULTING

Log of Boring: FB-03

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started: 08/23/2018 @ 1200
Date/Time Completed: 08/23/2018 @ 1540
Equipment: Mini-track
Drilling Company: Geologic Drilling
Drilling Foreman: Blaine Gibson
Drilling Method: Hollow Stem Auger

Sampler Type: 1.5 Split Spoon
Drive Hammer (lbs.): 140
Depth of Water ATD (ft bgs): 17.0
Total Boring Depth (ft bgs): 41.5
Total Well Depth (ft bgs): NA

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
25	X	25.0-26.5': Poorly graded SAND with silt (90% sand, 10% silt), medium sand, gray, wet, very dense, no odor.	SP-SM		100	19 22 33	0.2	FB-03-25.0-082318 @1500	X	
30	X	30.0-31.5': Poorly graded SAND (100% sand), fine to medium sand, grayish brown, wet, dense, no odor.	SP		100	10 21 27	0.3	FB-03-30.0-082318 @1520		Bentonite
35	X	35.0-36.5': Poorly graded SAND with silt (90% sand, 10% silt), fine sand, gray, wet, medium dense, no odor.	SP-SM		100	14 21 13	0.3	FB-03-35.0-082318 @1530	X	
40	X	40.0-41.5': Silty SAND (70% sand, 30% silt), fine sand, grayish brown, wet, medium dense, no odor.	SM		100	11 16 20	0.1	FB-03-40.0-082318 @1540		

Well Construction Information

Monument Type: NA
Casing Diameter (inches): NA
Screen Slot Size (inches): NA
Screened Interval (ft bgs): NA

Filter Pack: NA
Surface Seal: Concrete
Annular Seal: NA
Boring Abandonment: Bentonite

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

FARALLON CONSULTING

Log of Boring: FB-04

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started: 08/21/2018 @ 0645
Date/Time Completed: 08/21/2018 @ 0900
Equipment: Mini-track
Drilling Company: Geologic Drilling
Drilling Foreman: Blaine Gibson
Drilling Method: Hollow Stem Auger

Sampler Type: 1.5 Split Spoon
Drive Hammer (lbs.): 140
Depth of Water ATD (ft bgs): 17.0
Total Boring Depth (ft bgs): 33.0
Total Well Depth (ft bgs): NA

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-2.0': Asphalt. Hand auger to clear for utilities.	AC							Concrete
		2.0-3.0': SILT with sand (80% silt, 20% sand), fine sand, dark brown, moist, petroleum-like odor. Peat and orgranic material present. (Fill).	FILL				0.5	FB-04-3.0-082118 @0645		
5		5.0-6.5': SILT with sand (80% silt, 20% sand), fine sand, dark brown, moist, very soft, no odor. Debris and organic material present. (Fill).	FILL		100	1 1 1	0.9	FB-04-5.0-082118 @0650	X	
10		10.0-11.5': SILT with sand (80% silt, 20% silt), fine to medium sand, dark brown, moist to wet, stiff, no odor. Debris present. (Fill).	FILL		100	1 5 10	0.2	FB-04-10.0-082118 @0710	X	Bentonite
15		15.0-16.5': Silty SAND (80% sand, 20% silt), fine to medium sand, gray, wet, loose, no odor.	SM		100	3 2 4	0.5	FB-04-15.0-082118 @0735	X	Water Level
20		20.0-21.5': Poorly graded sand (100% sand), fine to medium sand, gray, wet, dense, no odor.	SP		100	7 15 28	0.2	FB-04-20.0-082118 @0745	X	
25		25.0-26.5': SILT with sand (60% silt, 40% sand), fine sand, gray, wet, very stiff, no odor.	ML		100	10 11 17	0.4	FB-04-25.0-082118 @0815		Bentonite
30		30-31.5': Poorly graded SAND (100% sand), fine to medium sand, gray, wet, dense, no odor.	SP		100	9 14 30	0.7	FB-04-30.0-082118 @0850	X	
35		Refusal at 33.0' bgs due to heaving sands.								

Well Construction Information

Monument Type: NA
Casing Diameter (inches): NA
Screen Slot Size (inches): NA
Screened Interval (ft bgs): NA

Filter Pack: NA
Surface Seal: Concrete
Annular Seal: NA
Boring Abandonment: Bentonite

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

Log of Boring: FB-05

FARALLON CONSULTING

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started:	08/22/2018 @ 0815	**Sampler Type:**	1.5 Split Spoon
Date/Time Completed:	08/22/2018 @ 1140	**Drive Hammer (lbs.):**	140
Equipment:	Mini-track	**Depth of Water ATD (ft bgs):**	17.0
Drilling Company:	Geologic Drilling	**Total Boring Depth (ft bgs):**	41.5
Drilling Foreman:	Blaine Gibson	**Total Well Depth (ft bgs):**	NA
Drilling Method:	Hollow Stem Auger		

Depth (feet bgs.)	Lithologic Description	USCS	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0	0.0-0.5': Concrete. Hand auger to clear for utilities.	CO						Concrete
	0.5-5.0': Silty SAND (80% sand, 20% silt), fine to medium sand, dark brown, moist, no odor. (Fill).	FILL						
5	5.0-6.5': Silty SAND (50% sand, 45% silt, 5% gravel), fine to medium sand, fine gravel, dark brown, moist, loose, no odor. (Fill).	FILL	100	1 2 3	0.5	FB-05-5.0-082218 @0840	X	
10	10.0-11.5': SILT (90% silt, 10% sand), fine sand, gray, moist, medium stiff, no odor. Wood chips and organic matter present. (Fill).	FILL	100	2 2 3	0.6	FB-05-10.0-082218 @0855		Bentonite
15	15.0-16.5': SILT (95% silt, 5% sand), fine sand, gray, moist, very stiff, no odor.	ML	100	7 10 13	1.0	FB-05-15.0-082218 @0910	X	
						FB-04-082218 @0950	X	Water Level
20	20.0-20.6': SILT (100% silt), gray, wet, hard, no odor.	ML	100	14 21 24	0.6	FB-05-20.0-082218 @0930	X	
	20.6-21.5': Silty SAND (80% sand, 20% silt), medium sand, gray, wet, dense, no odor.	SM						

Well Construction Information

Monument Type:	NA	**Filter Pack:**	NA	**Ground Surface Elevation (ft):**	NA
Casing Diameter (inches):	NA	**Surface Seal:**	Concrete	**Top of Casing Elevation (ft):**	NA
Screen Slot Size (inches):	NA	**Annular Seal:**	NA	**Surveyed Location:**	**X:** NA
Screened Interval (ft bgs):	NA	**Boring Abandonment:**	Bentonite		**Y:** NA

FARALLON CONSULTING

Log of Boring: FB-05

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started: 08/22/2018 @ 0815
Date/Time Completed: 08/22/2018 @ 1140
Equipment: Mini-track
Drilling Company: Geologic Drilling
Drilling Foreman: Blaine Gibson
Drilling Method: Hollow Stem Auger

Sampler Type: 1.5 Split Spoon
Drive Hammer (lbs.): 140
Depth of Water ATD (ft bgs): 17.0
Total Boring Depth (ft bgs): 41.5
Total Well Depth (ft bgs): NA

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
25		25.0-26.5': Poorly-graded SAND with silt (90% sand, 10% silt), fine to medium sand, gray, moist, very dense, no odor.	SP-SM		100	17 13 50-6"	0.7	FB-04-25.0-082218 @1110		
30		30-31.5': Poorly-graded SAND (100% sand), fine to medium sand, grayish brown, wet, very dense, no odor.	SP		100	16 25 35	0.4	FB-04-30.0-082218 @1120		Bentonite
35		35-36.5': Poorly-graded SAND with silt (90% sand, 10% silt), fine to medium sand, grayish brown, wet, very dense, no odor.	SP-SM		100	24 28 32	0.7	FB-04-35.0-082218 @1130	X	
40		40.0-41.5': Poorly-graded SAND with silt (90% sand, 10% silt), fine to medium sand, grayish brown, wet, dense, no odor.	SP-SM		100	11 18 30	0.6	FB-04-40.0-082218 @1140		
45										

Well Construction Information

Monument Type: NA
Casing Diameter (inches): NA
Screen Slot Size (inches): NA
Screened Interval (ft bgs): NA

Filter Pack: NA
Surface Seal: Concrete
Annular Seal: NA
Boring Abandonment: Bentonite

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: X: NA Y: NA

Log of Boring: FB-06

FARALLON CONSULTING

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started: 08/22/2018 @ 0610
Date/Time Completed: 08/22/2018 @ 0730
Equipment: Mini-track
Drilling Company: Geologic Drilling
Drilling Foreman: Blaine Gibson
Drilling Method: Hollow Stem Auger

Sampler Type: 1.5 Split Spoon
Drive Hammer (lbs.): 140
Depth of Water ATD (ft bgs): 16.0
Total Boring Depth (ft bgs): 26.5
Total Well Depth (ft bgs): NA

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-0.5': Concrete. Hand auger to clear for utilities.	CO							Concrete
		0.5-2.5': SILT with sand (80% silt, 15% sand, 5% gravel), fine sand, fine gravel, dark brown, moist, petroleum-like odor. (Fill).	FILL				6.9	FB-05-2.5-082218 @0610	X	
5		5.0-6.5': Sandy SILT (60% silt, 40% sand), fine sand, dark brown, moist, very soft, petroleum-like odor. Wood debris. (Fill).	FILL		100	1 1 1	2.4	No Sample		
10		10.0-11.5': SILT (90% silt, 10% sand), fine sand, dark brown, moist, medium stiff, no odor.	ML		100	1 2 3	0.4	FB-05-10.0-082218 @0640	X	Bentonite
15		15.0-16.5': SILT (95% silt, 5% sand), fine sand, brown, moist, medium stiff, no odor.	ML		100	3 3 3	0.4	FB-05-15.0-082218 @0655		Water Level
20		20.0-21.5': Sandy SILT (60 silt, 40% sand), fine sand, gray, moist to wet, hard, no odor.	ML		100	13 20 23	0.4	FB-05-20.0-082218 @0715	X	
25		25.0-26.5': Silty SAND (80% sand, 20% silt), fine sand, gray, moist, very dense, no odor.	SM		100	14 22 30	0.6	FB-05-25.0-082218 @0730	X	

Well Construction Information

Monument Type: NA
Casing Diameter (inches): NA
Screen Slot Size (inches): NA
Screened Interval (ft bgs): NA

Filter Pack: NA
Surface Seal: Concrete
Annular Seal: NA
Boring Abandonment: Bentonite

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

Log of Boring: F-MW-130

FARALLON CONSULTING

Client: Washington Builders LLC
Project: Block 43
Location: Block 38, Seattle, WA
Farallon PN: 397-010
Logged By: Dincer Kayhan

Date/Time Started:	7/21/14 @ 0945	**Sampler Type:**	PE Bags
Date/Time Completed:	7/22/14 @	**Drive Hammer (lbs.):**	Auto
Equipment:	Spider 1576	**Depth of Water ATD (ft bgs):**	5.7
Drilling Company:	Cascade Drilling	**Total Boring Depth (ft bgs):**	60.0
Drilling Foreman:	Zane Huckins	**Total Well Depth (ft bgs):**	55
Drilling Method:	Sonic		

Depth (feet bgs.)	Lithologic Description	USCS	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Boring/Well Construction Details
0	0.0-0.8': Asphalt (Cored).	AC					Concrete
	1.1-5.7': Wood debris mixed with black silty sand/sandy silt.	FILL				Air knife from 0.0-5.7' bgs.	
5	5.7-6.7': SILT (100% Silt), brown with alternating zones of black, wet, no odor.	FILL		1/1/1	0.6	SS-6.0 SPT	Water Level
	6.7-8.0': SILT (100% silt), alternating colors between brown, gray, and light gray, wet, organic odor, debris includes glass shards.	FILL	100		2.1	SS-5.0-7.5	
	8.0-8.9': Sandy SILT with gravel (70% silt, 15% sand, 15% gravel), fine to medium sand, coarse gravel, gray, no odor.	ML					
10	8.9-10.8': SILT (95% silt, 5% sand), fine sand, gray, wet, no odor.	ML			2.6	SS-7.5-10.0	Grout with Bentonite
	10.8-12.7': Sandy SILT (60% silt, 40% sand), fine sand, gray, wet, no odor.	ML		7/14/12	3.1	SS-11.0 SPT	
					5.2	SS-10.0-12.5	
	12.7-14.3': Silty SAND (70% sand, 30% silt), fine sand, coarse gravel <5%, gray, no odor, loose, moist.	SM	96		4.0	SS-12.5-14.8	
	14.3-14.8': SILT (95% silt, 5% sand), fine sand, gray, wet, no odor.	ML					
15	14.8-15.0': No recovery.						
	15.0-16.0': SILT (95% silt, 5% sand), fine sand, gray, wet, no odor.	ML		3/6/20	NM	SS-15.0-SPT	
	16.0-20.0': Silty SAND (70% sand, 30% silt), fine sand, loose, wet, strong moth ball-like odor.	SM	100		2.2	SS-15.0-17.5	
20						F-MW-130-GW1-072114 @ 1420	

Well Construction Information

Monument Type:	Flush Mount	**Filter Pack:**	10/20 Sand
Casing Diameter (inches):	2	**Surface Seal:**	Concrete
Screen Slot Size (inches):	0.010	**Annular Seal:**	Bentonite
Screened Interval (ft bgs):	45.0-55.0	**Boring Abandonment:**	NA

Ground Surface Elevation (ft): 23
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

FARALLON CONSULTING

Log of Boring: F-MW-130

Client: Washington Builders LLC
Project: Block 43
Location: Block 38, Seattle, WA
Farallon PN: 397-010
Logged By: Dincer Kayhan

Date/Time Started:	7/21/14 @ 0945	**Sampler Type:**	PE Bags
Date/Time Completed:	7/22/14 @	**Drive Hammer (lbs.):**	Auto
Equipment:	Spider 1576	**Depth of Water ATD (ft bgs):**	5.7
Drilling Company:	Cascade Drilling	**Total Boring Depth (ft bgs):**	60.0
Drilling Foreman:	Zane Huckins	**Total Well Depth (ft bgs):**	55
Drilling Method:	Sonic		

Depth (feet bgs.)	Lithologic Description	USCS	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Boring/Well Construction Details
20	20.0-21.2': Silty SAND (70% sand, 30% silt), fine sand, loose, wet, strong moth ball-like odor.	SM			27.7	F-MW-130-20.0-072114 @ 1300	
	21.2-23.5': SILT (90% silt, 5% sand, 5% gravel), fine sand, coarse gravel, gray, moist, no odor.	ML	70	4/6/5	NM	SS-21.0-SPT	
					4.6	SS-20.0-22.5	
					2.7	SS-22.5-23.5	
	23.5-25.0': No recovery.						
25	25.0-25.4': SILT (90% silt, 5% sand, 5% gravel), fine sand, coarse gravel, gray, moist, no odor.	ML					
	25.4-30.0': Silty SAND (60% sand, 40% silt), fine to medium sand, gray, moist, no odor, unit is more dense than previous silty sands.	SM	100	14/21 /47	NM	SS-26.0-SPT	
					2.2	SS-25.0-27.5	
	sand increased to 80% sand and 20% silt from 28.0-30.0' bgs, (zones of light brown toward 30.0' bgs).				2.3	SS-27.5-30.0	
30	30.0-40.0': Well graded SAND with silt (90% sand, 10% silt), fine to medium sand, gray, moist, no odor.	SW-SM	100	5/4/1	NM	SS-31.0-SPT	Grout with Bentonite
					2.9	SS-30.0-32.5	
					3.2	SS-32.5-35.0	
35			100		3.8	SS-35.0-37.5	
					2.9	SS-37.5-40.0	
40							

Well Construction Information

Monument Type:	Flush Mount	**Filter Pack:**	10/20 Sand
Casing Diameter (inches):	2	**Surface Seal:**	Concrete
Screen Slot Size (inches):	0.010	**Annular Seal:**	Bentonite
Screened Interval (ft bgs):	45.0-55.0	**Boring Abandonment:**	NA

Ground Surface Elevation (ft): 23
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

Log of Boring: F-MW-130

FARALLON CONSULTING

Client: Washington Builders LLC
Project: Block 43
Location: Block 38, Seattle, WA
Farallon PN: 397-010
Logged By: Dincer Kayhan

Date/Time Started:	7/21/14 @ 0945	**Sampler Type:**	PE Bags
Date/Time Completed:	7/22/14 @	**Drive Hammer (lbs.):**	Auto
Equipment:	Spider 1576	**Depth of Water ATD (ft bgs):**	5.7
Drilling Company:	Cascade Drilling	**Total Boring Depth (ft bgs):**	60.0
Drilling Foreman:	Zane Huckins	**Total Well Depth (ft bgs):**	55
Drilling Method:	Sonic		

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
40		Moisture content increased from previous 30.0-35.0' interval but still classified as moist.	SM				26.7	F-MW-130-40.0-072114 @ 1655 SS-40.7		Bentonite Seal
		40.0-40.7': Silty SAND (80% sand, 20% silt), fine to medium sand, gray, moist, no odor.			14					
		40.7-45.0': No recovery. Soil was not solid enough to collect due to water injection to combat heaving sands.								Sand Pack
45		45.0-49.5': Silty SAND (80% sand, 20% silt), fine to medium sand, gray, moist, no odor.	SM		90		173	F-MW-130-47.5-072214 @ 1000		
		49.5-50.0': No recovery.								
50		50.0-55.0': Well graded GRAVEL with silt and sand (60% gravel, 30% sand, 10% silt), fine to coarse sand and gravel, gray, wet, no odor, large cobbles present, natural wood debris present (bark and tree branch).	GW-GM		100		88.4	F-MW-130-50.0-072214 @ 1005		Screen
							8.5	SS-50.0-52.5		
							8.3	SS-52.5-55.0		
55		55.0-56.7: Well graded GRAVEL with silt and sand (60% gravel, 30% sand, 10% silt), fine to coarse sand and gravel, gray, wet, no odor.	GW-GM					F-MW-130-55.0-072214 @ 1325		Sand Pack
		56.7-60.0': Gravelly SILT (50% silt, 40% gravel, 10% sand), fine to coarse gravel and sand, gray, wet, no odor, cobbles present, gradational contact with unit above.	ML		100		12.8	SS-55.0-57.5		
						10/18/20	6.7	SS-57.5-60.0		Bentonite Seal
60							NM	SS-60.0-SPT		

Well Construction Information

Monument Type:	Flush Mount	**Filter Pack:**	10/20 Sand
Casing Diameter (inches):	2	**Surface Seal:**	Concrete
Screen Slot Size (inches):	0.010	**Annular Seal:**	Bentonite
Screened Interval (ft bgs):	45.0-55.0	**Boring Abandonment:**	NA

Ground Surface Elevation (ft): 23
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

Log of Boring: FMW-132

FARALLON CONSULTING

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started:	08/24/2018 @ 1330	**Sampler Type:**	1.5 Split spoon
Date/Time Completed:	08/24/2018 @ 1530	**Drive Hammer (lbs.):**	140
Equipment:	Mini-track	**Depth of Water ATD (ft bgs):**	7.5
Drilling Company:	Geologic Drilling	**Total Boring Depth (ft bgs):**	10.0
Drilling Foreman:	Blaine Gibson	**Total Well Depth (ft bgs):**	10.0
Drilling Method:	Hollow Stem Auger		

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-1.0': Concrete, tile and asphalt material.	CO							Monument
		1.0-2.5': Poorly graded SAND with gravel (80% sand,15% gravel, 5% silt), medium to coarse sand, fine gravel, brown, dry, no odor. (Fill).	FILL				0.3	FMW-132-2.5-082418@1320		Bentonite
5		5.0-6.5': Sandy SILT (60% sand, 30% silt, 10% gravel), fine sand, fine gravel, brown, dry, very loose, no odor. Fill material consisting of wood & glass debris. Some organic matter present. (Fill).	FILL		100	3 2 1	0.5	FMW-132-5.0-082418@1320	X	Sand Pack Pre-packed Screen Water Level
10		Drilling crew encountered unidentified hard object while attempting to sample at 10.0 ft bgs. Farallon decided to stop drilling operations and install monitoring well at 10.0 ft bgs.			NA	NA	NA	FMW-132-10.0-082418@1835	X	

Well Construction Information

Monument Type:	Flush Mount	**Filter Pack:**	Silica/Sand	**Ground Surface Elevation (ft):**	NA
Casing Diameter (inches):	1.0	**Surface Seal:**	Grout/Concrete	**Top of Casing Elevation (ft):**	NA
Screen Slot Size (inches):	0.010	**Annular Seal:**	Bentonite/Grout	**Surveyed Location:**	**X:** NA
Screened Interval (ft bgs):	5.0-10.0	**Boring Abandonment:**	NA		**Y:** NA

FARALLON CONSULTING

Log of Boring: FMW-133

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started:	08/24/2018 @ 1745	**Sampler Type:**	1.5 Split Spoon
Date/Time Completed:	08/24/2018 @ 1902	**Drive Hammer (lbs.):**	140
Equipment:	Mini-track	**Depth of Water ATD (ft bgs):**	9.0
Drilling Company:	Geologic Drilling	**Total Boring Depth (ft bgs):**	26.5
Drilling Foreman:	Blaine Gibson	**Total Well Depth (ft bgs):**	11.5
Drilling Method:	Hollow Stem Auger		

Depth (feet bgs.)	Lithologic Description	USCS	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed
0	0.0-1.5': Concrete. Hand auger to clear for utilities.	CO					
2.5	2.5-5.0': Poorly graded SAND with gravel (70% sand, 25% gravel, 5% silt), medium sand, fine gravel, dark brown, dry to moist, no odor. (Fill).	FILL					
5	5.0-6.5': No Recovery.		0	1 2 1	NA	No Sample	
10	10.0-11.5': SILT (90% silt, 10% sand), fine sand, brown, moist to wet, very soft, no odor. Wood debris present. (Fill).	FILL	100	1 1 1	0.5	FMW-133-10.0-082418@1835	X
15	15.0-16.5': Silty SAND (85% sand, 15% silt), fine sand, gray, moist, stiff, no odor.	SM	100	4 5 6	0.3	FMW-133-15.0-082418@1849	
20	20.0-21.5': Poorly graded SAND (95% sand, 5% silt), medium to coarse sand, gray, wet, medium dense, wet, no odor.	SP	100	6 8 11	0.4	FMW-133-20.0-082418@1852	X
25	25.0-26.5': Poorly graded SAND (95% sand, 5% silt), fine to medium sand, gray, wet, very dense, no odor.	SP	100	18 21 30	0.4	FMW-133-25.0-082418@1902	

Boring/Well Construction Details: Monument; Bentonite; Sand Pack; Pre-Packed Screen; Water Level; Sand Pack

Well Construction Information

Monument Type:	Flush Mount	**Filter Pack:**	Silica/Sand
Casing Diameter (inches):	1.0	**Surface Seal:**	Grout/Concrete
Screen Slot Size (inches):	0.01	**Annular Seal:**	NA
Screened Interval (ft bgs):	6.5 - 11.5	**Boring Abandonment:**	NA

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

Log of Boring: FMW-134

FARALLON CONSULTING

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA

Farallon PN: 397-019

Logged By: Greg Peters

Date/Time Started:	08/24/2018 @ 0700	**Sampler Type:**	1.5 Split Spoon
Date/Time Completed:	08/24/2018 @ 1030	**Drive Hammer (lbs.):**	140
Equipment:	Mini-track	**Depth of Water ATD (ft bgs):**	13.0
Drilling Company:	Geologic Drilling	**Total Boring Depth (ft bgs):**	20.0
Drilling Foreman:	Blaine Gibson	**Total Well Depth (ft bgs):**	17.0
Drilling Method:	Hollow Stem Auger		

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-0.5': Concrete. Hand auger to clear for utilities.	CO							Monument
		0.5-2.5': Sandy SILT (50% silt, 40% sand, 10% gravel), fine to coarse sand, fine gravel, dark brown, moist, organic odor.	ML							
5		5.0-6.5': SILT (90% silt, 10% sand), fine sand, brown, moist to wet, medium stiff, organic odor. Organic matter present.	ML		100	2 1 4	0.1	FMW-134-5.0-082318@0710	X	Bentonite
10		10.0-11.0': SILT (90% silt, 10% sand), fine sand, gray, medium stiff, moist, no odor.	ML		100	2 3 5	0.0	FMW-134-10.0-082318@0720		
		11.0-11.5': Poorly-graded SAND (100% sand), fine to medium sand, gray, loose, moist, no odor.	SP							Sand Pack
										Water Level
15		15.0-16.5': Silty SAND (85% sand, 15% silt), fine to medium sand, grey, wet, medium dense, no odor.	SM		100	8 11 11	0.3	FMW-134-15.0-082318@0730	X	Pre-Packed Screen
										Sand Pack
20		20.0-21.5': Poorly graded SAND (100% sand), medium sand, grey, wet, medium dense, wet, no odor.	SP-SM		100	10 13 17	0.1	FMW-134-20.0-082318@0750		
25		Refusal at 25.0' bgs due to heaving sands.								

Well Construction Information

Monument Type:	Flush Mount	**Filter Pack:**	Silica/Sand	**Ground Surface Elevation (ft):**	NA
Casing Diameter (inches):	1.0	**Surface Seal:**	Grout/Concrete	**Top of Casing Elevation (ft):**	NA
Screen Slot Size (inches):	0.010	**Annular Seal:**	Bentonite/Grout	**Surveyed Location:**	**X:** NA
Screened Interval (ft bgs):	12.0-17.0	**Boring Abandonment:**	NA		**Y:** NA

Log of Boring: FMW-135

FARALLON CONSULTING

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started: 08/24/2018 @ 0700
Date/Time Completed: 08/24/2018 @ 0950
Equipment: Mini-track
Drilling Company: Geologic Drilling
Drilling Foreman: Blaine Gibson
Drilling Method: Hollow Stem Auger

Sampler Type: 1.5 Split Spoon
Drive Hammer (lbs.): 140
Depth of Water ATD (ft bgs): 8.0
Total Boring Depth (ft bgs): 51.5
Total Well Depth (ft bgs): 12.0

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-0.6': Concrete. Hand auger to clear for utilities.	CO							Monument
										Bentonite
5	X	5.0-6.0': Silty SAND (60% sand, 30% silt,10% gravel), fine to coarse sand, fine gravel, brown, moist to wet, very loose, no odor. (Fill).	FILL		100	1 1 2	0.1	FMW-135-5.0-082418@0735	X	
		6.0-6.5': SILT (90% silt, 10% sand), fine sand, grayish brown, moist to wet, soft, no odor. (Fill).	FILL							Sand Pack
										Water Level
10	X	10.0-11.5': Poor recovery. Wood debris throughout entire core sample. (Fill).	FILL		NA	9 6 5	0.5	No Sample		Pre-Packed Screen
15	X	15.0-15.9': SILT (100% silt), dark brown, moist, medium stiff, no odor.	ML		100	2 3 4	3.5	FMW-135-15.0-082418@0750	X	
		15.9-16.5': Silty SAND (70% sand, 30% silt), fine sand, gray, moist, loose, no odor.	SM							
20	X	20.0-20.8': Poorly-graded SAND (100% sand), medium to coarse sand, gray, wet, loose, organic odor.	SP		100	1 4 3	1.2	FMW-135-20.0-082418@0810		
		20.8-21.5': SILT (90% silt, 10% sand), medium sand, gray, moist to wet, medium stiff, organic odor.	ML							
25	X	25.0-26.5': Silty SAND (55% sand, 40% silt, 5% gravel), fine sand, fine gravel, gray, wet, loose, organic odor.	SM		100	2 4 6	1.0	FMW-135-25.0-082418@0823	X	

Well Construction Information

Monument Type: Flush Mount
Casing Diameter (inches): 1.0
Screen Slot Size (inches): 0.010
Screened Interval (ft bgs): 7.0-12.0

Filter Pack: Silica/Sand
Surface Seal: Grout/Concrete
Annular Seal: Bentonite/Grout
Boring Abandonment: NA

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

FARALLON CONSULTING

Log of Boring: FMW-135

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started: 08/24/2018 @ 0700
Date/Time Completed: 08/24/2018 @ 0950
Equipment: Mini-track
Drilling Company: Geologic Drilling
Drilling Foreman: Blaine Gibson
Drilling Method: Hollow Stem Auger

Sampler Type: 1.5 Split Spoon
Drive Hammer (lbs.): 140
Depth of Water ATD (ft bgs): 8.0
Total Boring Depth (ft bgs): 51.5
Total Well Depth (ft bgs): 12.0

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
30	X	30.0-31.5': Silty SAND (70% sand, 30% silt), fine sand, gray, moist, medium dense, no odor.	SM		100	9 13 15	1.1	FMW-135-30.0-082418@0835	X	
35	X	35.0-36.5': Silty SAND (60% sand, 40% silt), fine sand, gray, moist, dense, no odor.	SM		100	15 21 24	0.9	FMW-135-35.0-082418@0850	X	
40	X	40.0-41.5': Poorly-graded SAND with silt (90% sand, 10% silt), fine sand, grayish brown, moist, very dense, no odor.	SP-SM		100	22 32 38	1.0	FMW-135-40.0-082418@0915		
45	X	45.0-46.5': Poorly-graded SAND with silt (90% sand, 10% silt), fine sand, grayish brown, moist, very dense, no odor.	SP-SM		100	19 26 32	0.9	FMW-135-45.0-082418@0930		
50	X	50.0-51.5': Well-graded SAND with gravel (70% sand, 25% gravel, 5% silt), fine to coarse sand, fine gravel, moist to wet, dense, no odor.	SW		100	15 21 18	1.0	FMW-135-50.0-082418@0950	X	

Well Construction Information

Monument Type: Flush Mount
Casing Diameter (inches): 1.0
Screen Slot Size (inches): 0.010
Screened Interval (ft bgs): 7.0-12.0

Filter Pack: Silica/Sand
Surface Seal: Grout/Concrete
Annular Seal: Bentonite/Grout
Boring Abandonment: NA

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

FARALLON CONSULTING

Log of Boring: FMW-136

Client: City Investors IX LLC
Project: Block 38 West Property
Location: Seattle, WA
Farallon PN: 397-019
Logged By: Greg Peters

Date/Time Started: 08/22/2018 @ 1310
Date/Time Completed: 08/22/2018 @ 1400
Equipment: Mini-track
Drilling Company: Geologic Drilling
Drilling Foreman: Blaine Gibson
Drilling Method: Hollow Stem Auger

Sampler Type: 1.5 Split Spoon
Drive Hammer (lbs.): 140
Depth of Water ATD (ft bgs): 18.0
Total Boring Depth (ft bgs): 40.0
Total Well Depth (ft bgs): NA

Depth (feet bgs.)	Lithologic Description	USCS	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0	0.0-0.5': Concrete. Hand auger to clear for utilities.	CO						Monument
5	5.0-6.5': Sandy SILT (70% silt, 30% sand), fine to medium sand, dark brown, moist, soft, no odor. Wood debris and organic matter present. (Fill).	FILL	100	1 2 2	0.7	FMW-136-5.0-082218@1315		
10	10.0-11.5': Sandy SILT (60% silt, 40% sand), fine sand, gray, moist, stiff, no odor.	ML	100	3 6 5	0.8	FMW-136-10.0-082218@1320	X	Bentonite
15	15.0-16.5': Silty SAND (60% sand, 40% silt), fine sand, gray, moist, medium dense, no odor.	SM	100	8 10 14	0.6	FMW-136-15.0-082218@1330		Water Level
20	20.0-21.5': Silty SAND (80% sand, 20% silt), fine to medium sand, grayish brown, moist to wet, medium dense, no odor.	SM	100	18 13 12	0.8	FMW-136-20.0-082218@1345	X	
25	25.0-26.5': Poorly-graded SAND with silt (90% sand, 10% silt), fine sand, grayish brown, wet, medium dense, no odor.	SP-SM	100	4 10 16	1.3	FMW-136-25.0-082218@1355		Sand Pack
30	30.0-31.5': Poorly-graded SAND (100% sand), fine sand, grayish brown, wet, dense, no odor.	SP	100	6 12 19	1.0	FMW-136-30.0-082218@1400	X	
35	No sample recovery beyond 30.0' bgs due to heaving sands.							Pre-Packed Screen
40								

Well Construction Information

Monument Type: Flush Mount
Casing Diameter (inches): 1.0
Screen Slot Size (inches): 0.010
Screened Interval (ft bgs): 30.0- 40.0

Filter Pack: Silica/Sand
Surface Seal: Grout/Concrete
Annular Seal: Bentonite/Grout
Boring Abandonment: NA

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: **X:** NA **Y:** NA

APPENDIX B
LABORATORY ANALYTICAL REPORTS

SUBSURFACE INVESTIGATION REPORT AND ENVIRONMENTAL MEDIA MANAGEMENT PLAN
Block 38 West Property
500 through 536 Westlake Avenue North
Seattle, Washington

Farallon PN: 397-019

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 30, 2014

Cliff Schmitt
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-010
Laboratory Reference No. 1407-172

Dear Cliff:

Enclosed are the analytical results and associated quality control data for samples submitted on July 22, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

Case Narrative

Samples were collected on July 21 and 22, 2014 and received by the laboratory on July 22, 2014. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

The chromatogram for sample F-MW-130-GW1-072114 is not similar to a typical gas.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-GW1-072114**					
Laboratory ID:	07-172-02					
Benzene	**5.1**	1.0	EPA 8021B	7-24-14	7-24-14	
Toluene	**7.5**	1.0	EPA 8021B	7-24-14	7-24-14	
Ethyl Benzene	**2.2**	1.0	EPA 8021B	7-24-14	7-24-14	
m,p-Xylene	**3.4**	1.0	EPA 8021B	7-24-14	7-24-14	
o-Xylene	**3.3**	1.0	EPA 8021B	7-24-14	7-24-14	
Gasoline	**2100**	100	NWTPH-Gx	7-24-14	7-24-14	T
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***71-112***				

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0724W1					
Benzene	**ND**	1.0	EPA 8021B	7-24-14	7-24-14	
Toluene	**ND**	1.0	EPA 8021B	7-24-14	7-24-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-24-14	7-24-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-24-14	7-24-14	
o-Xylene	**ND**	1.0	EPA 8021B	7-24-14	7-24-14	
Gasoline	**ND**	100	NWTPH-Gx	7-24-14	7-24-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***99***	***71-112***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-209-02										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						***97***	***96***	***71-112***			
MATRIX SPIKES											
Laboratory ID:	07-209-02										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**52.9**	**54.0**	50.0	50.0	ND	**106**	**108**	78-120	2	12	
Toluene	**54.7**	**55.9**	50.0	50.0	ND	**109**	**112**	80-121	2	12	
Ethyl Benzene	**55.1**	**55.9**	50.0	50.0	ND	**110**	**112**	81-120	1	13	
m,p-Xylene	**55.8**	**56.7**	50.0	50.0	ND	**112**	**113**	81-119	2	13	
o-Xylene	**55.4**	**56.0**	50.0	50.0	ND	**111**	**112**	79-117	1	13	
Surrogate:											
Fluorobenzene						***102***	***102***	***71-112***			

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-GW1-072114**					
Laboratory ID:	07-172-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloromethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Vinyl Chloride	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromomethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloroethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Iodomethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Methylene Chloride	ND	1.0	EPA 8260C	7-23-14	7-23-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromochloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloroform	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Trichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Dibromomethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromodichloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	7-23-14	7-23-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-GW1-072114**					
Laboratory ID:	07-172-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Tetrachloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Dibromochloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromoform	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Bromobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***99***	***62-122***				
Toluene-d8	***101***	***70-120***				
4-Bromofluorobenzene	***99***	***71-120***				

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0723W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloromethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Vinyl Chloride	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromomethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloroethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Iodomethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Methylene Chloride	ND	1.0	EPA 8260C	7-23-14	7-23-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromochloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloroform	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Trichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Dibromomethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromodichloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	7-23-14	7-23-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0723W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Tetrachloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Dibromochloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromoform	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Bromobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***100***	***62-122***				
Toluene-d8	***100***	***70-120***				
4-Bromofluorobenzene	***97***	***71-120***				

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

HALOGENATED VOLATILES EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0723W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**9.90**	**10.1**	10.0	10.0	99	101	63-142	2	17	
Benzene	**10.1**	**10.0**	10.0	10.0	101	100	78-125	1	15	
Trichloroethene	**10.4**	**10.0**	10.0	10.0	104	100	75-125	4	15	
Toluene	**10.1**	**9.91**	10.0	10.0	101	99	80-125	2	15	
Chlorobenzene	**9.83**	**9.74**	10.0	10.0	98	97	80-140	1	15	
Surrogate:										
Dibromofluoromethane					***95***	***98***	***62-122***			
Toluene-d8					***101***	***101***	***70-120***			
4-Bromofluorobenzene					***95***	***97***	***71-120***			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical gas.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 07-172

Company: FARALLON
Project Number: 397-010
Project Name: BLOCK 43
Project Manager: CLIFF SCHMITT
Sampled by: DINCER KAYHAN

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	F-MW-130-20.0-072114	7/21/14	1300	S	5		X				X			~~STANDARD TAT~~								DK HOLD				
2	F-MW-130-GW1-072114	7/21/14	1420	W	5		X				X			STANDARD TAT												
3	F-MW-130-40.0-072114	7/21/14	1655	S	4																					
4	DRILLING WATER	7/22/14	0815	W	3													HOLD								

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		FARALLON	7/22/14	0950	
Received		SPEEDY	7/22/14	1000	
Relinquished		SPEEDY	7/22/14	1115	
Received		OSE	7/22/14	1115	
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

August 5, 2014

Cliff Schmitt
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-010
Laboratory Reference No. 1407-172B

Dear Cliff:

Enclosed are the analytical results and associated quality control data for samples submitted on July 22, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

Case Narrative

Samples were collected on July 21 and 22, 2014 and received by the laboratory on July 22, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-20.0-072114**					
Laboratory ID:	07-172-01					
Benzene	**ND**	0.020	EPA 8021B	7-31-14	8-1-14	
Toluene	**ND**	0.088	EPA 8021B	7-31-14	8-1-14	
Ethyl Benzene	**ND**	0.088	EPA 8021B	7-31-14	8-1-14	
m,p-Xylene	**ND**	0.088	EPA 8021B	7-31-14	8-1-14	
o-Xylene	**ND**	0.088	EPA 8021B	7-31-14	8-1-14	
Gasoline	**ND**	8.8	NWTPH-Gx	7-31-14	8-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-121*				

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0731S1					
Benzene	**ND**	0.020	EPA 8021B	7-31-14	7-31-14	
Toluene	**ND**	0.050	EPA 8021B	7-31-14	7-31-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	7-31-14	7-31-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	7-31-14	7-31-14	
o-Xylene	**ND**	0.050	EPA 8021B	7-31-14	7-31-14	
Gasoline	**ND**	5.0	NWTPH-Gx	7-31-14	7-31-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*107*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-275-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*109*	*109*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0731S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.998**	**1.04**	1.00	1.00		**100**	**104**	73-121	4	10	
Toluene	**1.07**	**1.13**	1.00	1.00		**107**	**113**	75-124	5	10	
Ethyl Benzene	**1.07**	**1.12**	1.00	1.00		**107**	**112**	75-125	5	9	
m,p-Xylene	**1.08**	**1.13**	1.00	1.00		**108**	**113**	75-126	5	9	
o-Xylene	**1.07**	**1.11**	1.00	1.00		**107**	**111**	74-123	4	8	
Surrogate:											
Fluorobenzene						*104*	*107*	*71-121*			

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-20.0-072114**					
Laboratory ID:	07-172-01					
Diesel Range Organics	**ND**	30	NWTPH-Dx	8-1-14	8-1-14	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	8-1-14	8-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0801S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-1-14	8-1-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-1-14	8-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-297-03										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*95*	*105*	*50-150*			

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

SEMIVOLATILES EPA 8270D/SIM
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-20.0-072114**					
Laboratory ID:	07-172-01					
n-Nitrosodimethylamine	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Pyridine	**ND**	0.40	EPA 8270D	8-1-14	8-2-14	
Phenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Aniline	**ND**	0.20	EPA 8270D	8-1-14	8-2-14	
bis(2-Chloroethyl)ether	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2-Chlorophenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
1,3-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
1,4-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Benzyl alcohol	**ND**	0.20	EPA 8270D	8-1-14	8-2-14	
1,2-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2-Methylphenol (o-Cresol)	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
bis(2-Chloroisopropyl)ether	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
n-Nitroso-di-n-propylamine	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Hexachloroethane	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Nitrobenzene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Isophorone	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2-Nitrophenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2,4-Dimethylphenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
bis(2-Chloroethoxy)methane	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2,4-Dichlorophenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
1,2,4-Trichlorobenzene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Naphthalene	**0.38**	0.040	EPA 8270D	8-1-14	8-2-14	
4-Chloroaniline	**ND**	0.20	EPA 8270D	8-1-14	8-2-14	
Hexachlorobutadiene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
4-Chloro-3-methylphenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2-Methylnaphthalene	**0.028**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
1-Methylnaphthalene	**0.016**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Hexachlorocyclopentadiene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2,4,6-Trichlorophenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2,3-Dichloroaniline	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2,4,5-Trichlorophenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2-Chloronaphthalene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2-Nitroaniline	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
1,4-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Dimethylphthalate	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
1,3-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2,6-Dinitrotoluene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
1,2-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Acenaphthylene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
3-Nitroaniline	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

SEMIVOLATILES EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-20.0-072114**					
Laboratory ID:	07-172-01					
2,4-Dinitrophenol	**ND**	0.20	EPA 8270D	8-1-14	8-2-14	
Acenaphthene	**0.014**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
4-Nitrophenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2,4-Dinitrotoluene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Dibenzofuran	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2,3,5,6-Tetrachlorophenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
2,3,4,6-Tetrachlorophenol	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Diethylphthalate	**ND**	0.20	EPA 8270D	8-1-14	8-2-14	
4-Chlorophenyl-phenylether	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
4-Nitroaniline	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Fluorene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
4,6-Dinitro-2-methylphenol	**ND**	0.20	EPA 8270D	8-1-14	8-2-14	
n-Nitrosodiphenylamine	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
1,2-Diphenylhydrazine	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
4-Bromophenyl-phenylether	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Hexachlorobenzene	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Pentachlorophenol	**ND**	0.20	EPA 8270D	8-1-14	8-2-14	
Phenanthrene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Anthracene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Carbazole	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Di-n-butylphthalate	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Fluoranthene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Benzidine	**ND**	0.40	EPA 8270D	8-1-14	8-2-14	
Pyrene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Butylbenzylphthalate	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
bis-2-Ethylhexyladipate	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
3,3'-Dichlorobenzidine	**ND**	0.20	EPA 8270D	8-1-14	8-2-14	
Benzo[a]anthracene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Chrysene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
bis(2-Ethylhexyl)phthalate	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Di-n-octylphthalate	**ND**	0.040	EPA 8270D	8-1-14	8-2-14	
Benzo[b]fluoranthene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Benzo(j,k)fluoranthene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Benzo[a]pyrene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Indeno[1,2,3-cd]pyrene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Benzo[g,h,i]perylene	**ND**	0.0079	EPA 8270D/SIM	8-1-14	8-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*78*	*24 - 105*				
Phenol-d6	*85*	*34 - 101*				
Nitrobenzene-d5	*72*	*32 - 102*				
2-Fluorobiphenyl	*75*	*44 -100*				
2,4,6-Tribromophenol	*67*	*34 - 124*				
Terphenyl-d14	*74*	*47 - 114*				

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

SEMIVOLATILES EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0801S1					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Pyridine	**ND**	0.33	EPA 8270D	8-1-14	8-1-14	
Phenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Aniline	**ND**	0.17	EPA 8270D	8-1-14	8-1-14	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2-Chlorophenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Benzyl alcohol	**ND**	0.17	EPA 8270D	8-1-14	8-1-14	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Hexachloroethane	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Nitrobenzene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Isophorone	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2-Nitrophenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
4-Chloroaniline	**ND**	0.17	EPA 8270D	8-1-14	8-1-14	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2-Nitroaniline	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Dimethylphthalate	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
3-Nitroaniline	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

SEMIVOLATILES EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0801S1					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	8-1-14	8-1-14	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
4-Nitrophenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Dibenzofuran	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Diethylphthalate	**ND**	0.17	EPA 8270D	8-1-14	8-1-14	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
4-Nitroaniline	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	8-1-14	8-1-14	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Pentachlorophenol	**ND**	0.17	EPA 8270D	8-1-14	8-1-14	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Carbazole	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Di-n-butylphthalate	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Benzidine	**ND**	0.33	EPA 8270D	8-1-14	8-1-14	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Butylbenzylphthalate	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
bis-2-Ethylhexyladipate	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	8-1-14	8-1-14	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
bis(2-Ethylhexyl)phthalate	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Di-n-octylphthalate	**ND**	0.033	EPA 8270D	8-1-14	8-1-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	8-1-14	8-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*85*	*24 - 105*				
Phenol-d6	*90*	*34 - 101*				
Nitrobenzene-d5	*79*	*32 - 102*				
2-Fluorobiphenyl	*77*	*44 -100*				
2,4,6-Tribromophenol	*76*	*34 - 124*				
Terphenyl-d14	*77*	*47 - 114*				

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

SEMIVOLATILES EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0801S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.798**	**1.02**	1.33	1.33	60	77	41 - 104	24	36	
2-Chlorophenol	**0.799**	**1.03**	1.33	1.33	60	77	41 - 100	25	42	
1,4-Dichlorobenzene	**0.373**	**0.507**	0.667	0.667	56	76	34 - 100	30	48	
n-Nitroso-di-n-propylamine	**0.401**	**0.495**	0.667	0.667	60	74	41 - 98	21	30	
1,2,4-Trichlorobenzene	**0.395**	**0.502**	0.667	0.667	59	75	30 - 105	24	46	
4-Chloro-3-methylphenol	**0.877**	**1.02**	1.33	1.33	66	77	57 - 101	15	27	
Acenaphthene	**0.388**	**0.455**	0.667	0.667	58	68	56 - 95	16	22	
2,4-Dinitrotoluene	**0.422**	**0.485**	0.667	0.667	63	73	63 - 110	14	23	
Pentachlorophenol	**0.972**	**1.14**	1.33	1.33	73	86	35 - 120	16	29	
Pyrene	**0.454**	**0.502**	0.667	0.667	68	75	56 - 114	10	25	
Surrogate:										
2-Fluorophenol					*59*	*80*	*24 - 105*			
Phenol-d6					*67*	*84*	*34 - 101*			
Nitrobenzene-d5					*58*	*74*	*32 - 102*			
2-Fluorobiphenyl					*63*	*74*	*44 -100*			
2,4,6-Tribromophenol					*60*	*72*	*34 - 124*			
Terphenyl-d14					*66*	*74*	*47 - 114*			

Date of Report: August 5, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172B
Project: 397-010

% MOISTURE

Date Analyzed: 8-1-14

Client ID	Lab ID	% Moisture
F-MW-130-20.0-072114	07-172-01	16

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 07-172

Company: FARALLON
Project Number: 397-010
Project Name: BLOCK 43
Project Manager: CLIFF SCHMITT
Sampled by: DINCER KAYHAN

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A						% Moisture
1	F-MW-130-20.0-072114	7/21/14	1300	S	5		X		X		NO	X	~~STANDARD TAT~~									DK ~~HOLD~~ D3					X
2	F-MW-130-GW1-072114	7/21/14	1420	W	5		X				X			STANDARD TAT													
3	F-MW-130-40.0-072114	7/21/14	1655	S	4																						
4	DRILLING WATER	7/22/14	0815	W	3													HOLD									

	Signature	Company	Date	Time
Relinquished	[signature]	FARALLON	7/22/14	0950
Received	[signature]	SPEEDY	7/22/14	1000
Relinquished	[signature]	SPEEDY	7/22/14	1115
Received	[signature]	OSE	7/22/14	1115
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
X Added 7/31/14. DB (3 day TAT)

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 30, 2014

Cliff Schmitt
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-010
Laboratory Reference No. 1407-172

Dear Cliff:

Enclosed are the analytical results and associated quality control data for samples submitted on July 22, 2014.

Please note that this is a *revised* report, and replaces the original dated July 30, 2014, due to a requested change of the Halogenated Volatiles to full list Volatiles.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

Case Narrative

Samples were collected on July 21 and 22, 2014 and received by the laboratory on July 22, 2014. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

The chromatogram for sample F-MW-130-GW1-072114 is not similar to a typical gas.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-GW1-072114**					
Laboratory ID:	07-172-02					
Benzene	**5.1**	1.0	EPA 8021B	7-24-14	7-24-14	
Toluene	**7.5**	1.0	EPA 8021B	7-24-14	7-24-14	
Ethyl Benzene	**2.2**	1.0	EPA 8021B	7-24-14	7-24-14	
m,p-Xylene	**3.4**	1.0	EPA 8021B	7-24-14	7-24-14	
o-Xylene	**3.3**	1.0	EPA 8021B	7-24-14	7-24-14	
Gasoline	**2100**	100	NWTPH-Gx	7-24-14	7-24-14	T
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-112*				

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0724W1					
Benzene	**ND**	1.0	EPA 8021B	7-24-14	7-24-14	
Toluene	**ND**	1.0	EPA 8021B	7-24-14	7-24-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-24-14	7-24-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-24-14	7-24-14	
o-Xylene	**ND**	1.0	EPA 8021B	7-24-14	7-24-14	
Gasoline	**ND**	100	NWTPH-Gx	7-24-14	7-24-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-209-02										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*97*	*96*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	07-209-02										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**52.9**	**54.0**	50.0	50.0	ND	**106**	**108**	78-120	2	12	
Toluene	**54.7**	**55.9**	50.0	50.0	ND	**109**	**112**	80-121	2	12	
Ethyl Benzene	**55.1**	**55.9**	50.0	50.0	ND	**110**	**112**	81-120	1	13	
m,p-Xylene	**55.8**	**56.7**	50.0	50.0	ND	**112**	**113**	81-119	2	13	
o-Xylene	**55.4**	**56.0**	50.0	50.0	ND	**111**	**112**	79-117	1	13	
Surrogate:											
Fluorobenzene						*102*	*102*	*71-112*			

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-GW1-072114**					
Laboratory ID:	07-172-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloromethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Vinyl Chloride	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromomethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloroethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Acetone	ND	6.4	EPA 8260C	7-23-14	7-23-14	
Iodomethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Carbon Disulfide	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Methylene Chloride	ND	1.0	EPA 8260C	7-23-14	7-23-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Methyl t-Butyl Ether	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Vinyl Acetate	ND	1.0	EPA 8260C	7-23-14	7-23-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Butanone	ND	5.0	EPA 8260C	7-23-14	7-23-14	
Bromochloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloroform	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Benzene	6.1	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Trichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Dibromomethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromodichloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Chloroethyl Vinyl Ether	ND	1.9	EPA 8260C	7-23-14	7-23-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260C	7-23-14	7-23-14	
Toluene	4.3	1.0	EPA 8260C	7-23-14	7-23-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-GW1-072114**					
Laboratory ID:	07-172-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Tetrachloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Hexanone	ND	2.9	EPA 8260C	7-23-14	7-23-14	
Dibromochloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Ethylbenzene	1.6	0.20	EPA 8260C	7-23-14	7-23-14	
m,p-Xylene	2.2	0.40	EPA 8260C	7-23-14	7-23-14	
o-Xylene	2.3	0.20	EPA 8260C	7-23-14	7-23-14	
Styrene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromoform	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Isopropylbenzene	0.23	0.20	EPA 8260C	7-23-14	7-23-14	
Bromobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
n-Propylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,3,5-Trimethylbenzene	1.2	0.20	EPA 8260C	7-23-14	7-23-14	
tert-Butylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2,4-Trimethylbenzene	2.6	0.20	EPA 8260C	7-23-14	7-23-14	
sec-Butylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
p-Isopropyltoluene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
n-Butylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Naphthalene	650	1.0	EPA 8260C	7-23-14	7-23-14	E
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*99*	*71-120*				

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0723W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloromethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Vinyl Chloride	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromomethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloroethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Acetone	ND	6.4	EPA 8260C	7-23-14	7-23-14	
Iodomethane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Carbon Disulfide	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Methylene Chloride	ND	1.0	EPA 8260C	7-23-14	7-23-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Methyl t-Butyl Ether	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Vinyl Acetate	ND	1.0	EPA 8260C	7-23-14	7-23-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Butanone	ND	5.0	EPA 8260C	7-23-14	7-23-14	
Bromochloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chloroform	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Benzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Trichloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Dibromomethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromodichloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Chloroethyl Vinyl Ether	ND	1.9	EPA 8260C	7-23-14	7-23-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260C	7-23-14	7-23-14	
Toluene	ND	1.0	EPA 8260C	7-23-14	7-23-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-23-14	7-23-14	

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0723W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Tetrachloroethene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Hexanone	ND	2.9	EPA 8260C	7-23-14	7-23-14	
Dibromochloromethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Chlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Ethylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
m,p-Xylene	ND	0.40	EPA 8260C	7-23-14	7-23-14	
o-Xylene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Styrene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromoform	ND	1.0	EPA 8260C	7-23-14	7-23-14	
Isopropylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Bromobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	7-23-14	7-23-14	
n-Propylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
tert-Butylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
sec-Butylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
p-Isopropyltoluene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
n-Butylbenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	7-23-14	7-23-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Naphthalene	ND	1.0	EPA 8260C	7-23-14	7-23-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	7-23-14	7-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*100*	*62-122*				
Toluene-d8	*100*	*70-120*				
4-Bromofluorobenzene	*97*	*71-120*				

Date of Report: July 30, 2014
Samples Submitted: July 22, 2014
Laboratory Reference: 1407-172
Project: 397-010

VOLATILES EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0723W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**9.90**	**10.1**	10.0	10.0	99	101	63-142	2	17	
Benzene	**10.1**	**10.0**	10.0	10.0	101	100	78-125	1	15	
Trichloroethene	**10.4**	**10.0**	10.0	10.0	104	100	75-125	4	15	
Toluene	**10.1**	**9.91**	10.0	10.0	101	99	80-125	2	15	
Chlorobenzene	**9.83**	**9.74**	10.0	10.0	98	97	80-140	1	15	
Surrogate:										
Dibromofluoromethane					*95*	*98*	*62-122*			
Toluene-d8					*101*	*101*	*70-120*			
4-Bromofluorobenzene					*95*	*97*	*71-120*			

OnSite
Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical gas.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.

Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 07-172

Company: FARALLON
Project Number: 397-010
Project Name: BLOCK 43
Project Manager: CLIFF SCHMITT
Sampled by: DINCER KAYHAN

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A						% Moisture
1	F-MW-130-20.0-072114	7/21/14	1300	S	5		X				X		~~STANDARD TAT~~									DK	HOLD				
2	F-MW-130-GW1-072114	7/21/14	1420	W	5		X				X			STANDARD TAT													
3	F-MW-130-40.0-072114	7/21/14	1655	S	4																						
4	DRILLING WATER	7/22/14	0815	W	3													HOLD									

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		FARALLON	7/22/14	0950	
Received		SPEEDY	7/22/14	1000	
Relinquished		SPEEDY	7/22/14	1115	
Received		OSE	7/22/14	1115	
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 28, 2014

Jennifer Moore
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-010
Laboratory Reference No. 1407-225

Dear Jennifer:

Enclosed are the analytical results and associated quality control data for samples submitted on July 24, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 28, 2014
Samples Submitted: July 24, 2014
Laboratory Reference: 1407-225
Project: 397-010

Case Narrative

Samples were collected on July 24, 2014 and received by the laboratory on July 24, 2014. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: July 28, 2014
Samples Submitted: July 24, 2014
Laboratory Reference: 1407-225
Project: 397-010

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-072414**					
Laboratory ID:	07-225-01					
Benzene	**ND**	1.0	EPA 8021B	7-25-14	7-25-14	
Toluene	**ND**	1.0	EPA 8021B	7-25-14	7-25-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-25-14	7-25-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-25-14	7-25-14	
o-Xylene	**ND**	1.0	EPA 8021B	7-25-14	7-25-14	
Gasoline	**ND**	100	NWTPH-Gx	7-25-14	7-25-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Date of Report: July 28, 2014
Samples Submitted: July 24, 2014
Laboratory Reference: 1407-225
Project: 397-010

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0725W1					
Benzene	**ND**	1.0	EPA 8021B	7-25-14	7-25-14	
Toluene	**ND**	1.0	EPA 8021B	7-25-14	7-25-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-25-14	7-25-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-25-14	7-25-14	
o-Xylene	**ND**	1.0	EPA 8021B	7-25-14	7-25-14	
Gasoline	**ND**	100	NWTPH-Gx	7-25-14	7-25-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-225-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*93*	*93*	*71-112*			
SPIKE BLANKS											
Laboratory ID:	SB0725W1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**51.0**	**49.9**	50.0	50.0		**102**	**100**	86-116	2	11	
Toluene	**51.5**	**50.6**	50.0	50.0		**103**	**101**	86-117	2	12	
Ethyl Benzene	**50.9**	**49.7**	50.0	50.0		**102**	**99**	86-118	2	13	
m,p-Xylene	**51.0**	**49.9**	50.0	50.0		**102**	**100**	86-118	2	14	
o-Xylene	**50.9**	**49.9**	50.0	50.0		**102**	**100**	85-117	2	14	
Surrogate:											
Fluorobenzene						*94*	*95*	*71-112*			

Date of Report: July 28, 2014
Samples Submitted: July 24, 2014
Laboratory Reference: 1407-225
Project: 397-010

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-072414**					
Laboratory ID:	07-225-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Chloromethane	ND	1.0	EPA 8260C	7-25-14	7-25-14	
Vinyl Chloride	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Bromomethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Chloroethane	ND	1.0	EPA 8260C	7-25-14	7-25-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Iodomethane	ND	1.0	EPA 8260C	7-25-14	7-25-14	
Methylene Chloride	ND	1.0	EPA 8260C	7-25-14	7-25-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
(cis) 1,2-Dichloroethene	0.51	0.20	EPA 8260C	7-25-14	7-25-14	
Bromochloromethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Chloroform	0.91	0.20	EPA 8260C	7-25-14	7-25-14	
1,1,1-Trichloroethane	0.26	0.20	EPA 8260C	7-25-14	7-25-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Trichloroethene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Dibromomethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Bromodichloromethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	7-25-14	7-25-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-25-14	7-25-14	

Date of Report: July 28, 2014
Samples Submitted: July 24, 2014
Laboratory Reference: 1407-225
Project: 397-010

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**F-MW-130-072414**					
Laboratory ID:	07-225-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Tetrachloroethene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Dibromochloromethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Chlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Bromoform	ND	1.0	EPA 8260C	7-25-14	7-25-14	
Bromobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2-Dibromo-3-chloropropane	ND	1.3	EPA 8260C	7-25-14	7-25-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*103*	*62-122*				
Toluene-d8	*102*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

Date of Report: July 28, 2014
Samples Submitted: July 24, 2014
Laboratory Reference: 1407-225
Project: 397-010

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0725W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Chloromethane	ND	1.0	EPA 8260C	7-25-14	7-25-14	
Vinyl Chloride	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Bromomethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Chloroethane	ND	1.0	EPA 8260C	7-25-14	7-25-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Iodomethane	ND	1.0	EPA 8260C	7-25-14	7-25-14	
Methylene Chloride	ND	1.0	EPA 8260C	7-25-14	7-25-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Bromochloromethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Chloroform	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Trichloroethene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Dibromomethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Bromodichloromethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	7-25-14	7-25-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-25-14	7-25-14	

Date of Report: July 28, 2014
Samples Submitted: July 24, 2014
Laboratory Reference: 1407-225
Project: 397-010

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0725W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Tetrachloroethene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Dibromochloromethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Chlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Bromoform	ND	1.0	EPA 8260C	7-25-14	7-25-14	
Bromobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	7-25-14	7-25-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2-Dibromo-3-chloropropane	ND	1.3	EPA 8260C	7-25-14	7-25-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	7-25-14	7-25-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*93*	*62-122*				
Toluene-d8	*99*	*70-120*				
4-Bromofluorobenzene	*95*	*71-120*				

Date of Report: July 28, 2014
Samples Submitted: July 24, 2014
Laboratory Reference: 1407-225
Project: 397-010

HALOGENATED VOLATILES EPA 8260C
MS/MSD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	07-225-01										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**9.22**	**9.29**	10.0	10.0	ND	92	93	57-133	1	15	
Benzene	**9.68**	**9.81**	10.0	10.0	ND	97	98	78-117	1	15	
Trichloroethene	**9.61**	**9.56**	10.0	10.0	ND	96	96	77-120	1	15	
Toluene	**9.48**	**9.60**	10.0	10.0	ND	95	96	80-115	1	15	
Chlorobenzene	**9.26**	**9.32**	10.0	10.0	ND	93	93	80-122	1	15	
Surrogate:											
Dibromofluoromethane						*99*	*102*	*62-122*			
Toluene-d8						*99*	*101*	*70-120*			
4-Bromofluorobenzene						*95*	*97*	*71-120*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.

Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 07-225

Company: Farallon

Project Number: 397-010

Project Name: Block 43

Project Manager: Jen Moore

Sampled by: Ryan Ostrom

Turnaround Request (in working days)

(Check One)

- [x] Same Day
- [ ] 1 Day
- [ ] 2 Days
- [ ] 3 Days
- [ ] Standard (7 Days) (TPH analysis 5 Days)
- [ ] ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	F-MW-130-072417	7/24/14	1053	W	6		X				X											

RO

	Signature	Company	Date	Time
Relinquished	Ryan Ostrom	Farallon	7/24/14	1352
Received	[illegible]	OSE	7/24/14	1352
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 11, 2017

Rob Leet
Farallon Consulting
1809 7th Ave., Suite 1111
Seattle, WA 98101

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1707-004

Dear Rob:

Enclosed are the analytical results and associated quality control data for samples submitted on July 3, 2017.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 11, 2017
Samples Submitted: July 3, 2017
Laboratory Reference: 1707-004
Project: 397-019

Case Narrative

Samples were collected on July 3, 2017 and received by the laboratory on July 3, 2017. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: July 11, 2017
Samples Submitted: July 3, 2017
Laboratory Reference: 1707-004
Project: 397-019

NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-130-070317**					
Laboratory ID:	07-004-01					
Gasoline	**ND**	100	NWTPH-Gx	7-6-17	7-6-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*61-118*				

Date of Report: July 11, 2017
Samples Submitted: July 3, 2017
Laboratory Reference: 1707-004
Project: 397-019

NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0706W1					
Gasoline	**ND**	100	NWTPH-Gx	7-6-17	7-6-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*61-118*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	06-353-32										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*86*	*85*	*61-118*			

Date of Report: July 11, 2017
Samples Submitted: July 3, 2017
Laboratory Reference: 1707-004
Project: 397-019

VOLATILES EPA 8260C
Page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-130-070317**					
Laboratory ID:	07-004-01					
Dichlorodifluoromethane	ND	0.35	EPA 8260C	7-5-17	7-5-17	
Chloromethane	ND	1.3	EPA 8260C	7-5-17	7-5-17	
Vinyl Chloride	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Bromomethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Chloroethane	ND	1.0	EPA 8260C	7-5-17	7-5-17	
Trichlorofluoromethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1-Dichloroethene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Acetone	ND	5.0	EPA 8260C	7-5-17	7-5-17	
Iodomethane	ND	1.7	EPA 8260C	7-5-17	7-5-17	
Carbon Disulfide	ND	0.43	EPA 8260C	7-5-17	7-5-17	
Methylene Chloride	ND	1.0	EPA 8260C	7-5-17	7-5-17	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Methyl t-Butyl Ether	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1-Dichloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Vinyl Acetate	ND	1.0	EPA 8260C	7-5-17	7-5-17	
2,2-Dichloropropane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
2-Butanone	ND	5.0	EPA 8260C	7-5-17	7-5-17	
Bromochloromethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Chloroform	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Carbon Tetrachloride	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1-Dichloropropene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Benzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2-Dichloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Trichloroethene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2-Dichloropropane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Dibromomethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Bromodichloromethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	7-5-17	7-5-17	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260C	7-5-17	7-5-17	
Toluene	ND	1.0	EPA 8260C	7-5-17	7-5-17	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-5-17	7-5-17	

Date of Report: July 11, 2017
Samples Submitted: July 3, 2017
Laboratory Reference: 1707-004
Project: 397-019

VOLATILES EPA 8260C
Page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-130-070317**					
Laboratory ID:	07-004-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Tetrachloroethene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,3-Dichloropropane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
2-Hexanone	ND	2.0	EPA 8260C	7-5-17	7-5-17	
Dibromochloromethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2-Dibromoethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Chlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Ethylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
m,p-Xylene	ND	0.40	EPA 8260C	7-5-17	7-5-17	
o-Xylene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Styrene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Bromoform	ND	1.0	EPA 8260C	7-5-17	7-5-17	
Isopropylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Bromobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
n-Propylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
2-Chlorotoluene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
4-Chlorotoluene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
tert-Butylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
sec-Butylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
p-Isopropyltoluene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
n-Butylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	7-5-17	7-5-17	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Hexachlorobutadiene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Naphthalene	ND	1.0	EPA 8260C	7-5-17	7-5-17	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*103*	*77-129*				
Toluene-d8	*99*	*80-127*				
4-Bromofluorobenzene	*105*	*80-125*				

Date of Report: July 11, 2017
Samples Submitted: July 3, 2017
Laboratory Reference: 1707-004
Project: 397-019

VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0705W2					
Dichlorodifluoromethane	ND	0.35	EPA 8260C	7-5-17	7-5-17	
Chloromethane	ND	1.3	EPA 8260C	7-5-17	7-5-17	
Vinyl Chloride	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Bromomethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Chloroethane	ND	1.0	EPA 8260C	7-5-17	7-5-17	
Trichlorofluoromethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1-Dichloroethene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Acetone	ND	5.0	EPA 8260C	7-5-17	7-5-17	
Iodomethane	ND	1.7	EPA 8260C	7-5-17	7-5-17	
Carbon Disulfide	ND	0.43	EPA 8260C	7-5-17	7-5-17	
Methylene Chloride	ND	1.0	EPA 8260C	7-5-17	7-5-17	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Methyl t-Butyl Ether	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1-Dichloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Vinyl Acetate	ND	1.0	EPA 8260C	7-5-17	7-5-17	
2,2-Dichloropropane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
2-Butanone	ND	5.0	EPA 8260C	7-5-17	7-5-17	
Bromochloromethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Chloroform	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Carbon Tetrachloride	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1-Dichloropropene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Benzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2-Dichloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Trichloroethene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2-Dichloropropane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Dibromomethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Bromodichloromethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	7-5-17	7-5-17	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260C	7-5-17	7-5-17	
Toluene	ND	1.0	EPA 8260C	7-5-17	7-5-17	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	7-5-17	7-5-17	

Date of Report: July 11, 2017
Samples Submitted: July 3, 2017
Laboratory Reference: 1707-004
Project: 397-019

VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0705W2					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Tetrachloroethene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,3-Dichloropropane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
2-Hexanone	ND	2.0	EPA 8260C	7-5-17	7-5-17	
Dibromochloromethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2-Dibromoethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Chlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Ethylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
m,p-Xylene	ND	0.40	EPA 8260C	7-5-17	7-5-17	
o-Xylene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Styrene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Bromoform	ND	1.0	EPA 8260C	7-5-17	7-5-17	
Isopropylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Bromobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	7-5-17	7-5-17	
n-Propylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
2-Chlorotoluene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
4-Chlorotoluene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
tert-Butylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
sec-Butylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
p-Isopropyltoluene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
n-Butylbenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	7-5-17	7-5-17	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Hexachlorobutadiene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Naphthalene	ND	1.0	EPA 8260C	7-5-17	7-5-17	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	7-5-17	7-5-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*94*	*77-129*				
Toluene-d8	*97*	*80-127*				
4-Bromofluorobenzene	*102*	*80-125*				

Date of Report: July 11, 2017
Samples Submitted: July 3, 2017
Laboratory Reference: 1707-004
Project: 397-019

VOLATILES EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0705W2									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**7.70**	**7.67**	10.0	10.0	77	77	63-127	0	17	
Benzene	**10.0**	**10.2**	10.0	10.0	100	102	76-121	2	12	
Trichloroethene	**8.43**	**8.41**	10.0	10.0	84	84	64-120	0	15	
Toluene	**10.3**	**10.6**	10.0	10.0	103	106	82-120	3	13	
Chlorobenzene	**8.96**	**9.40**	10.0	10.0	90	94	80-120	5	14	
Surrogate:										
Dibromofluoromethane					*100*	*100*	*77-129*			
Toluene-d8					*95*	*95*	*80-127*			
4-Bromofluorobenzene					*103*	*103*	*80-125*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 07-004

Company: Farallon
Project Number: 397-019
Project Name: Block 38
Project Manager: Rob Leet
Sampled by: A. Burns

Turnaround Request (in working days)
(Check One)

- ☐ Same Day ☐ 1 Day
- ☐ 2 Days ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Volatiles by 8260C				% Moisture
1	FMW-130-070317	7-3-17	9:40	Water	6			X															X				

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	Signature	Company	Date	Time
Relinquished	A Burns	Farallon	7-3-17	10:32
Received	[signature]	OSE	7/3/17	1032
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

August 24, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1808-217

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on August 21, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

Case Narrative

Samples were collected on August 20, 2018 and received by the laboratory on August 21, 2018. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

The MTCA Method A cleanup level of 0.030 ppm for Benzene is not achievable for sample FB-02-10.0-082018 due to the low dry weight of the sample.

Total Metals EPA 6010D/7471B Analysis

The duplicate RPD for Chromium is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-5.0-082018**					
Laboratory ID:	08-217-02					
Benzene	**ND**	0.020	EPA 8021B	8-21-18	8-21-18	
Toluene	**ND**	0.054	EPA 8021B	8-21-18	8-21-18	
Ethyl Benzene	**ND**	0.054	EPA 8021B	8-21-18	8-21-18	
m,p-Xylene	**ND**	0.054	EPA 8021B	8-21-18	8-21-18	
o-Xylene	**ND**	0.054	EPA 8021B	8-21-18	8-21-18	
Gasoline	**ND**	5.4	NWTPH-Gx	8-21-18	8-21-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*57-129*				
Client ID:	**FB-02-10.0-082018**					
Laboratory ID:	08-217-03					
Benzene	**ND**	0.037	EPA 8021B	8-21-18	8-21-18	
Toluene	**ND**	0.19	EPA 8021B	8-21-18	8-21-18	
Ethyl Benzene	**ND**	0.19	EPA 8021B	8-21-18	8-21-18	
m,p-Xylene	**ND**	0.19	EPA 8021B	8-21-18	8-21-18	
o-Xylene	**ND**	0.19	EPA 8021B	8-21-18	8-21-18	
Gasoline	**ND**	19	NWTPH-Gx	8-21-18	8-21-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*57-129*				
Client ID:	**FB-02-25.0-082018**					
Laboratory ID:	08-217-06					
Benzene	**ND**	0.020	EPA 8021B	8-21-18	8-21-18	
Toluene	**ND**	0.052	EPA 8021B	8-21-18	8-21-18	
Ethyl Benzene	**ND**	0.052	EPA 8021B	8-21-18	8-21-18	
m,p-Xylene	**ND**	0.052	EPA 8021B	8-21-18	8-21-18	
o-Xylene	**ND**	0.052	EPA 8021B	8-21-18	8-21-18	
Gasoline	**ND**	5.2	NWTPH-Gx	8-21-18	8-21-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*57-129*				

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-35.0-082018**					
Laboratory ID:	08-217-08					
Benzene	**ND**	0.020	EPA 8021B	8-21-18	8-21-18	
Toluene	**ND**	0.058	EPA 8021B	8-21-18	8-21-18	
Ethyl Benzene	**ND**	0.058	EPA 8021B	8-21-18	8-21-18	
m,p-Xylene	**ND**	0.058	EPA 8021B	8-21-18	8-21-18	
o-Xylene	**ND**	0.058	EPA 8021B	8-21-18	8-21-18	
Gasoline	**ND**	5.8	NWTPH-Gx	8-21-18	8-21-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*57-129*				

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0821S1					
Benzene	**ND**	0.020	EPA 8021B	8-21-18	8-21-18	
Toluene	**ND**	0.050	EPA 8021B	8-21-18	8-21-18	
Ethyl Benzene	**ND**	0.050	EPA 8021B	8-21-18	8-21-18	
m,p-Xylene	**ND**	0.050	EPA 8021B	8-21-18	8-21-18	
o-Xylene	**ND**	0.050	EPA 8021B	8-21-18	8-21-18	
Gasoline	**ND**	5.0	NWTPH-Gx	8-21-18	8-21-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*57-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-170-14										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*89*	*91*	*57-129*			
SPIKE BLANKS											
Laboratory ID:	SB0821S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.875**	**0.882**	1.00	1.00		**88**	**88**	69-111	1	10	
Toluene	**0.868**	**0.873**	1.00	1.00		**87**	**87**	70-114	1	11	
Ethyl Benzene	**0.868**	**0.876**	1.00	1.00		**87**	**88**	70-115	1	10	
m,p-Xylene	**0.860**	**0.863**	1.00	1.00		**86**	**86**	72-115	0	10	
o-Xylene	**0.890**	**0.884**	1.00	1.00		**89**	**88**	71-115	1	11	
Surrogate:											
Fluorobenzene						*86*	*86*	*57-129*			

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-5.0-082018**					
Laboratory ID:	08-217-02					
Diesel Range Organics	**280**	150	NWTPH-Dx	8-22-18	8-22-18	N
Lube Oil Range Organics	**670**	310	NWTPH-Dx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**FB-02-10.0-082018**					
Laboratory ID:	08-217-03					
Diesel Range Organics	**ND**	61	NWTPH-Dx	8-22-18	8-22-18	
Lube Oil Range Organics	**270**	120	NWTPH-Dx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				
Client ID:	**FB-02-25.0-082018**					
Laboratory ID:	08-217-06					
Diesel Range Organics	**ND**	30	NWTPH-Dx	8-22-18	8-22-18	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				
Client ID:	**FB-02-35.0-082018**					
Laboratory ID:	08-217-08					
Diesel Range Organics	**ND**	31	NWTPH-Dx	8-22-18	8-22-18	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0822S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-22-18	8-22-18	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*121*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-170-16										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range Organics	**149**	**126**	NA	NA		NA		NA	17	NA	
Surrogate:											
o-Terphenyl						*115*	*103*	*50-150*			

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

VOLATILE ORGANICS EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-10.0-082018**					
Laboratory ID:	08-217-03					
Dichlorodifluoromethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Chloromethane	ND	0.014	EPA 8260C	8-21-18	8-21-18	
Vinyl Chloride	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Bromomethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Chloroethane	ND	0.014	EPA 8260C	8-21-18	8-21-18	
Trichlorofluoromethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,1-Dichloroethene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Iodomethane	ND	0.028	EPA 8260C	8-21-18	8-21-18	
Methylene Chloride	ND	0.014	EPA 8260C	8-21-18	8-21-18	
(trans) 1,2-Dichloroethene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,1-Dichloroethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
2,2-Dichloropropane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
(cis) 1,2-Dichloroethene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Bromochloromethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Chloroform	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,1,1-Trichloroethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Carbon Tetrachloride	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,1-Dichloropropene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,2-Dichloroethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Trichloroethene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,2-Dichloropropane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Dibromomethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Bromodichloromethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
2-Chloroethyl Vinyl Ether	ND	0.014	EPA 8260C	8-21-18	8-21-18	
(cis) 1,3-Dichloropropene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
(trans) 1,3-Dichloropropene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

VOLATILE ORGANICS EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-10.0-082018**					
Laboratory ID:	08-217-03					
1,1,2-Trichloroethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Tetrachloroethene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,3-Dichloropropane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Dibromochloromethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,2-Dibromoethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Chlorobenzene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,1,1,2-Tetrachloroethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Bromoform	ND	0.014	EPA 8260C	8-21-18	8-21-18	
Bromobenzene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,1,2,2-Tetrachloroethane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,2,3-Trichloropropane	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
2-Chlorotoluene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
4-Chlorotoluene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,3-Dichlorobenzene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,4-Dichlorobenzene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,2-Dichlorobenzene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
1,2-Dibromo-3-chloropropane	ND	0.014	EPA 8260C	8-21-18	8-21-18	
1,2,4-Trichlorobenzene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Hexachlorobutadiene	ND	0.014	EPA 8260C	8-21-18	8-21-18	
1,2,3-Trichlorobenzene	ND	0.0028	EPA 8260C	8-21-18	8-21-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*94*	*68-139*				
Toluene-d8	*104*	*79-128*				
4-Bromofluorobenzene	*87*	*71-132*				

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

VOLATILE ORGANICS EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-25.0-082018**					
Laboratory ID:	08-217-06					
Dichlorodifluoromethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Chloromethane	ND	0.0043	EPA 8260C	8-21-18	8-21-18	
Vinyl Chloride	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Bromomethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Chloroethane	ND	0.0043	EPA 8260C	8-21-18	8-21-18	
Trichlorofluoromethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,1-Dichloroethene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Iodomethane	ND	0.0085	EPA 8260C	8-21-18	8-21-18	
Methylene Chloride	ND	0.0043	EPA 8260C	8-21-18	8-21-18	
(trans) 1,2-Dichloroethene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,1-Dichloroethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
2,2-Dichloropropane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
(cis) 1,2-Dichloroethene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Bromochloromethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Chloroform	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,1,1-Trichloroethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Carbon Tetrachloride	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,1-Dichloropropene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,2-Dichloroethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Trichloroethene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,2-Dichloropropane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Dibromomethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Bromodichloromethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
2-Chloroethyl Vinyl Ether	ND	0.0043	EPA 8260C	8-21-18	8-21-18	
(cis) 1,3-Dichloropropene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
(trans) 1,3-Dichloropropene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	

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Project: 397-019

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-25.0-082018**					
Laboratory ID:	08-217-06					
1,1,2-Trichloroethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Tetrachloroethene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,3-Dichloropropane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Dibromochloromethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,2-Dibromoethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Chlorobenzene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,1,1,2-Tetrachloroethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Bromoform	ND	0.0043	EPA 8260C	8-21-18	8-21-18	
Bromobenzene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,1,2,2-Tetrachloroethane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,2,3-Trichloropropane	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
2-Chlorotoluene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
4-Chlorotoluene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,3-Dichlorobenzene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,4-Dichlorobenzene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,2-Dichlorobenzene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
1,2-Dibromo-3-chloropropane	ND	0.0043	EPA 8260C	8-21-18	8-21-18	
1,2,4-Trichlorobenzene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Hexachlorobutadiene	ND	0.0043	EPA 8260C	8-21-18	8-21-18	
1,2,3-Trichlorobenzene	ND	0.00085	EPA 8260C	8-21-18	8-21-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*94*	*68-139*				
Toluene-d8	*108*	*79-128*				
4-Bromofluorobenzene	*105*	*71-132*				

Date of Report: August 24, 2018
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VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0821S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Chloromethane	ND	0.0050	EPA 8260C	8-21-18	8-21-18	
Vinyl Chloride	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Bromomethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Chloroethane	ND	0.0050	EPA 8260C	8-21-18	8-21-18	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Iodomethane	ND	0.0050	EPA 8260C	8-21-18	8-21-18	
Methylene Chloride	ND	0.0065	EPA 8260C	8-21-18	8-21-18	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Bromochloromethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Chloroform	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Trichloroethene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Dibromomethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Bromodichloromethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	8-21-18	8-21-18	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	

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METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0821S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Tetrachloroethene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Dibromochloromethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Chlorobenzene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Bromoform	ND	0.0050	EPA 8260C	8-21-18	8-21-18	
Bromobenzene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
2-Chlorotoluene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
4-Chlorotoluene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	8-21-18	8-21-18	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	8-21-18	8-21-18	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	8-21-18	8-21-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*89*	*68-139*				
Toluene-d8	*99*	*79-128*				
4-Bromofluorobenzene	*89*	*71-132*				

Date of Report: August 24, 2018
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Project: 397-019

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0821S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0511**	**0.0534**	0.0500	0.0500	102	107	53-141	4	17	
Benzene	**0.0432**	**0.0439**	0.0500	0.0500	86	88	70-130	2	15	
Trichloroethene	**0.0520**	**0.0545**	0.0500	0.0500	104	109	74-122	5	16	
Toluene	**0.0493**	**0.0505**	0.0500	0.0500	99	101	76-130	2	15	
Chlorobenzene	**0.0477**	**0.0479**	0.0500	0.0500	95	96	75-120	0	14	
Surrogate:										
Dibromofluoromethane					*95*	*92*	*68-139*			
Toluene-d8					*97*	*98*	*79-128*			
4-Bromofluorobenzene					*94*	*92*	*71-132*			

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-25.0-082018**					
Laboratory ID:	08-217-06					
n-Nitrosodimethylamine	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Pyridine	**ND**	0.40	EPA 8270D	8-22-18	8-22-18	
Phenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Aniline	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroethyl)ether	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2-Chlorophenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
1,3-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
1,4-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Benzyl alcohol	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
1,2-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2-Methylphenol (o-Cresol)	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroisopropyl)ether	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
n-Nitroso-di-n-propylamine	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Hexachloroethane	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Nitrobenzene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Isophorone	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2-Nitrophenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2,4-Dimethylphenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroethoxy)methane	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2,4-Dichlorophenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
1,2,4-Trichlorobenzene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Naphthalene	**0.083**	0.040	EPA 8270D	8-22-18	8-22-18	
4-Chloroaniline	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
Hexachlorobutadiene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
4-Chloro-3-methylphenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2-Methylnaphthalene	**0.024**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
1-Methylnaphthalene	**0.020**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Hexachlorocyclopentadiene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2,4,6-Trichlorophenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2,3-Dichloroaniline	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2,4,5-Trichlorophenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2-Chloronaphthalene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2-Nitroaniline	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
1,4-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Dimethylphthalate	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
1,3-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2,6-Dinitrotoluene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
1,2-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Acenaphthylene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
3-Nitroaniline	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-25.0-082018**					
Laboratory ID:	08-217-06					
2,4-Dinitrophenol	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
Acenaphthene	**0.027**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
4-Nitrophenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2,4-Dinitrotoluene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Dibenzofuran	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Diethylphthalate	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
4-Chlorophenyl-phenylether	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
4-Nitroaniline	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Fluorene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
4,6-Dinitro-2-methylphenol	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
n-Nitrosodiphenylamine	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
1,2-Diphenylhydrazine	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
4-Bromophenyl-phenylether	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Hexachlorobenzene	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Pentachlorophenol	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
Phenanthrene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Anthracene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Carbazole	**ND**	0.040	EPA 8270D	8-22-18	8-22-18	
Di-n-butylphthalate	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
Fluoranthene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Benzidine	**ND**	0.40	EPA 8270D	8-22-18	8-22-18	
Pyrene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Butylbenzylphthalate	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
bis-2-Ethylhexyladipate	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
3,3'-Dichlorobenzidine	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Chrysene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
Di-n-octylphthalate	**ND**	0.20	EPA 8270D	8-22-18	8-22-18	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo(j,k)fluoranthene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270D/SIM	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*74*	*19 - 103*				
Phenol-d6	*72*	*30 - 103*				
Nitrobenzene-d5	*69*	*27 - 105*				
2-Fluorobiphenyl	*77*	*36 - 102*				
2,4,6-Tribromophenol	*82*	*33 - 110*				
Terphenyl-d14	*74*	*38 - 108*				

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METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0822S1					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Pyridine	**ND**	0.33	EPA 8270D	8-22-18	8-22-18	
Phenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Aniline	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Chlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Benzyl alcohol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Hexachloroethane	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Nitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Isophorone	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Nitrophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
4-Chloroaniline	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Nitroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Dimethylphthalate	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
3-Nitroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0822S1					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
4-Nitrophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Dibenzofuran	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Diethylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
4-Nitroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Pentachlorophenol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Carbazole	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Di-n-butylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzidine	**ND**	0.33	EPA 8270D	8-22-18	8-22-18	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Butylbenzylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
bis-2-Ethylhexyladipate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Di-n-octylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*86*	*19 - 103*				
Phenol-d6	*87*	*30 - 103*				
Nitrobenzene-d5	*84*	*27 - 105*				
2-Fluorobiphenyl	*92*	*36 - 102*				
2,4,6-Tribromophenol	*99*	*33 - 110*				
Terphenyl-d14	*92*	*38 - 108*				

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0822S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.988**	**1.12**	1.33	1.33	74	84	45 - 94	13	29	
2-Chlorophenol	**1.05**	**1.21**	1.33	1.33	79	91	46 - 94	14	33	
1,4-Dichlorobenzene	**0.511**	**0.581**	0.667	0.667	77	87	42 - 91	13	37	
n-Nitroso-di-n-propylamine	**0.506**	**0.568**	0.667	0.667	76	85	45 - 100	12	26	
1,2,4-Trichlorobenzene	**0.559**	**0.579**	0.667	0.667	84	87	45 - 100	4	32	
4-Chloro-3-methylphenol	**1.09**	**1.13**	1.33	1.33	82	85	55 - 97	4	21	
Acenaphthene	**0.539**	**0.564**	0.667	0.667	81	85	48 - 91	5	21	
4-Nitrophenol	**1.06**	**1.17**	1.33	1.33	80	88	53 - 102	10	20	
2,4-Dinitrotoluene	**0.527**	**0.583**	0.667	0.667	79	87	47 - 96	10	19	
Pentachlorophenol	**1.34**	**1.40**	1.33	1.33	101	105	35 - 125	4	26	
Pyrene	**0.534**	**0.561**	0.667	0.667	80	84	55 - 110	5	17	
Surrogate:										
2-Fluorophenol					*72*	*81*	*19 - 103*			
Phenol-d6					*73*	*80*	*30 - 103*			
Nitrobenzene-d5					*72*	*73*	*27 - 105*			
2-Fluorobiphenyl					*79*	*80*	*36 - 102*			
2,4,6-Tribromophenol					*86*	*85*	*33 - 110*			
Terphenyl-d14					*76*	*78*	*38 - 108*			

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

TOTAL METALS
EPA 6010D/7471B

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-10.0-082018**					
Laboratory ID:	08-217-03					
Arsenic	**ND**	12	EPA 6010D	8-23-18	8-23-18	
Barium	**190**	6.1	EPA 6010D	8-23-18	8-23-18	
Cadmium	**ND**	1.2	EPA 6010D	8-23-18	8-23-18	
Chromium	**36**	1.2	EPA 6010D	8-23-18	8-23-18	
Lead	**24**	12	EPA 6010D	8-23-18	8-23-18	
Mercury	**1.2**	0.61	EPA 7471B	8-22-18	8-22-18	
Selenium	**ND**	12	EPA 6010D	8-23-18	8-23-18	
Silver	**ND**	2.5	EPA 6010D	8-23-18	8-23-18	

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

TOTAL METALS
EPA 6010D/7471B
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0823SM1					
Arsenic	**ND**	5.0	EPA 6010D	8-23-18	8-23-18	
Barium	**ND**	2.5	EPA 6010D	8-23-18	8-23-18	
Cadmium	**ND**	0.50	EPA 6010D	8-23-18	8-23-18	
Chromium	**ND**	0.50	EPA 6010D	8-23-18	8-23-18	
Lead	**ND**	5.0	EPA 6010D	8-23-18	8-23-18	
Selenium	**ND**	5.0	EPA 6010D	8-23-18	8-23-18	
Silver	**ND**	1.0	EPA 6010D	8-23-18	8-23-18	
Laboratory ID:	MB0822S1					
Mercury	**ND**	0.25	EPA 7471B	8-22-18	8-22-18	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-239-08										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Barium	**92.2**	**83.3**	NA	NA		NA		NA	10	20	
Cadmium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Chromium	**8.30**	**5.65**	NA	NA		NA		NA	38	20	K
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Selenium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Silver	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	08-218-01										
Mercury	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	08-239-08										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**93.1**	**95.5**	100	100	ND	**93**	**96**	75-125	3	20	
Barium	**188**	**184**	100	100	92.2	**96**	**92**	75-125	2	20	
Cadmium	**46.3**	**45.8**	50.0	50.0	ND	**93**	**92**	75-125	1	20	
Chromium	**102**	**102**	100	100	8.30	**94**	**94**	75-125	0	20	
Lead	**232**	**233**	250	250	ND	**93**	**93**	75-125	1	20	
Selenium	**91.2**	**92.2**	100	100	ND	**91**	**92**	75-125	1	20	
Silver	**21.8**	**21.9**	25.0	25.0	ND	**87**	**88**	75-125	1	20	
Laboratory ID:	08-218-01										
Mercury	**0.562**	**0.540**	0.500	0.500	0.0190	**109**	**104**	80-120	4	20	

Date of Report: August 24, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217
Project: 397-019

% MOISTURE

Date Analyzed: 8-22-18

Client ID	Lab ID	% Moisture
FB-02-5.0-082018	08-217-02	18
FB-02-10.0-082018	08-217-03	59
FB-02-25.0-082018	08-217-06	17
FB-02-35.0-082018	08-217-08	19

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.

Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-217

Company: FARALLON
Project Number: 397-019
Project Name: Block 38 West Property
Project Manager: Javan Ruark
Sampled by: Greg Peters

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☒ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

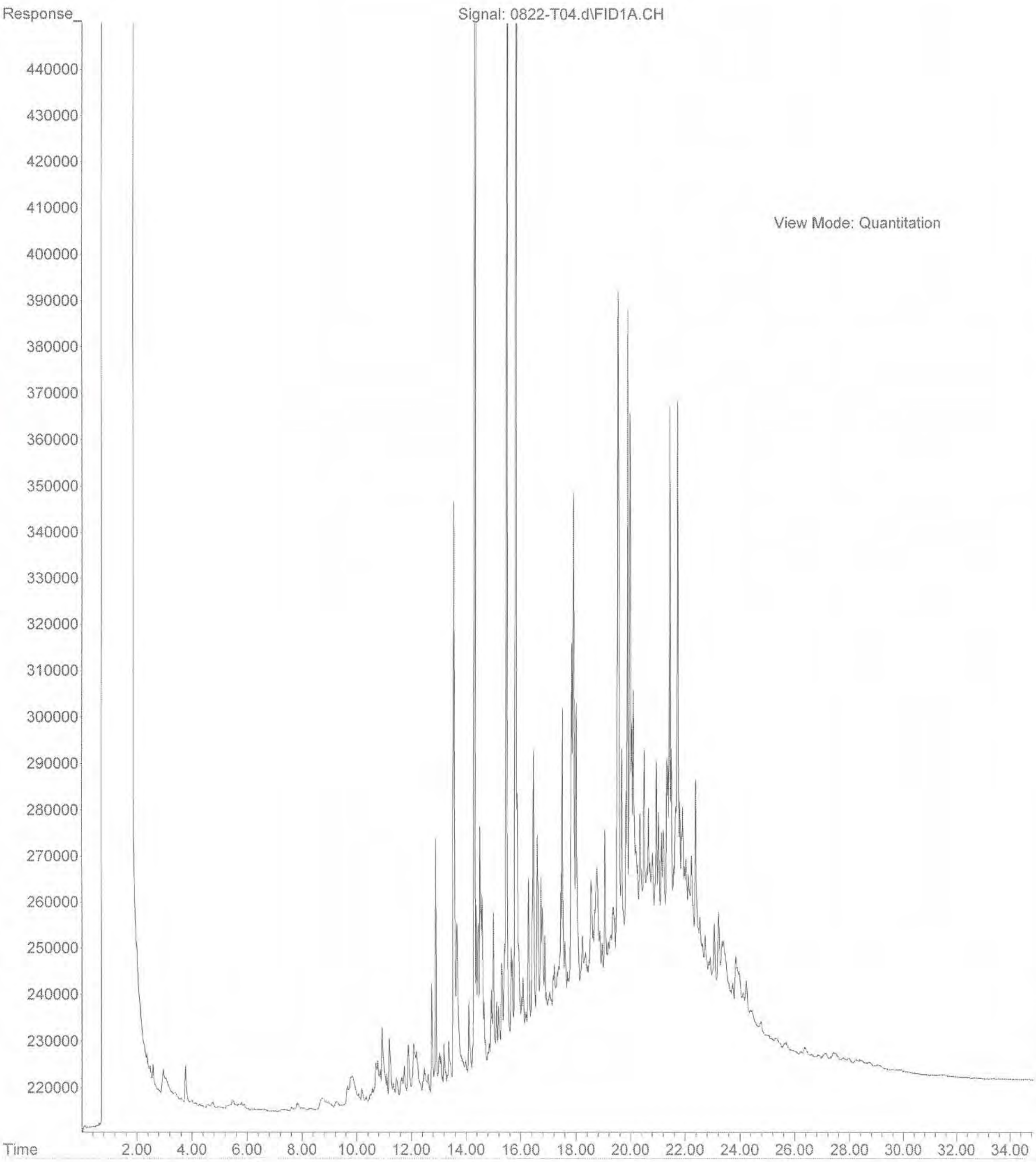
Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	FB-02-3.0-082018	8/20/18	1155	Soil	5																						
2	FB-02-5.0-082018		1220				X		X																		X
3	FB-02-10.0-082018		1235				X		X		X								X								X
4	FB-02-15.0-082018		1245																								
5	FB-02-20.0-082018		1310																								
6	FB-02-25.0-082018		1430				X		X		X		X														X
7	FB-02-30.0-082018		1454																								
8	FB-02-35.0-082018		1520				X		X																		X

	Signature	Company	Date	Time
Relinquished	[signature]	Farallon	8/20/18	1845
Received	[signature]	OSE	8/21/18	1000
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
~~Please Contact Project Manager for Analyses and turn around time requests //~~ 60 DB 8/21/18

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

```
File        :C:\msdchem\1\data\T180822\0822-T04.d
Operator    : JT
Acquired    : 22 Aug 2018  11:01     using AcqMethod T180110F.M
Instrument :   Teri
Sample Name: 08-217-02 5X
Misc Info   :
Vial Number: 4
```



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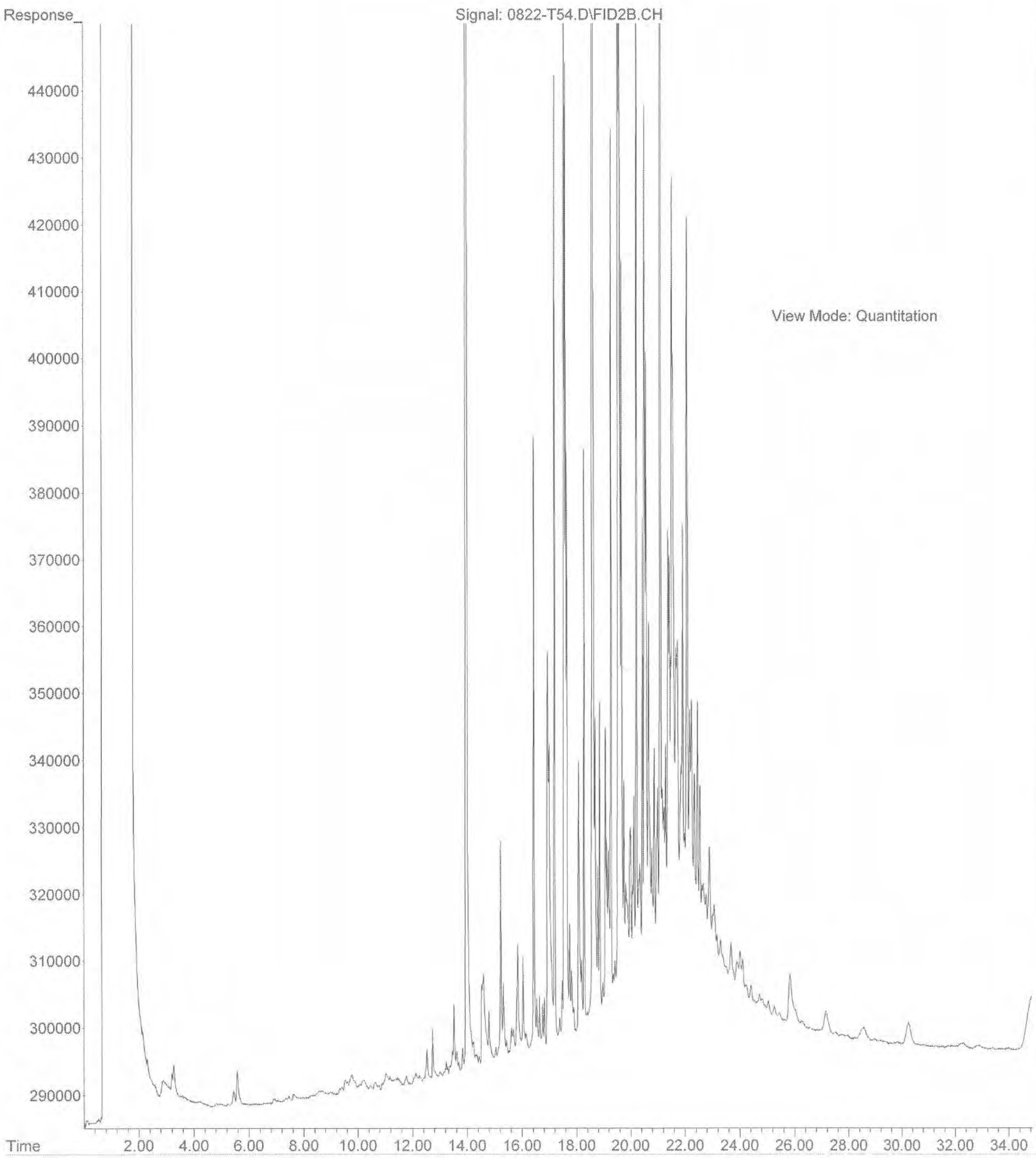
File        :C:\msdchem\1\data\T180822.SEC\0822-T54.D
Operator    : JT
Acquired    : 22 Aug 2018  11:01     using AcqMethod T180110F.M
Instrument :   Teri
Sample Name: 08-217-03
Misc Info  :
Vial Number: 54
```



OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 26, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1808-217B

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on August 21, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 26, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217B
Project: 397-019

Case Narrative

Samples were collected on August 20, 2018 and received by the laboratory on August 21, 2018. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 26, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217B
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-5.0-082018**					
Laboratory ID:	08-217-02					
n-Nitrosodimethylamine	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Pyridine	**ND**	3.0	EPA 8270D	9-1-18	9-24-18	
Phenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Aniline	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
bis(2-Chloroethyl)ether	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2-Chlorophenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
1,3-Dichlorobenzene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
1,4-Dichlorobenzene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Benzyl alcohol	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
1,2-Dichlorobenzene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2-Methylphenol (o-Cresol)	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
bis(2-Chloroisopropyl)ether	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
n-Nitroso-di-n-propylamine	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Hexachloroethane	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Nitrobenzene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Isophorone	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2-Nitrophenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2,4-Dimethylphenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
bis(2-Chloroethoxy)methane	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2,4-Dichlorophenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
1,2,4-Trichlorobenzene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Naphthalene	**1.1**	0.30	EPA 8270D	9-1-18	9-24-18	
4-Chloroaniline	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
Hexachlorobutadiene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
4-Chloro-3-methylphenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2-Methylnaphthalene	**1.3**	0.30	EPA 8270D	9-1-18	9-24-18	
1-Methylnaphthalene	**0.86**	0.30	EPA 8270D	9-1-18	9-24-18	
Hexachlorocyclopentadiene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2,4,6-Trichlorophenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2,3-Dichloroaniline	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2,4,5-Trichlorophenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2-Chloronaphthalene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2-Nitroaniline	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
1,4-Dinitrobenzene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Dimethylphthalate	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
1,3-Dinitrobenzene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2,6-Dinitrotoluene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
1,2-Dinitrobenzene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Acenaphthylene	**0.45**	0.30	EPA 8270D	9-1-18	9-24-18	
3-Nitroaniline	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	

Date of Report: September 26, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217B
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-02-5.0-082018**					
Laboratory ID:	08-217-02					
2,4-Dinitrophenol	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
Acenaphthene	**1.4**	0.30	EPA 8270D	9-1-18	9-24-18	
4-Nitrophenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2,4-Dinitrotoluene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Dibenzofuran	**0.71**	0.30	EPA 8270D	9-1-18	9-24-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Diethylphthalate	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
4-Chlorophenyl-phenylether	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
4-Nitroaniline	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Fluorene	**1.3**	0.30	EPA 8270D	9-1-18	9-24-18	
4,6-Dinitro-2-methylphenol	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
n-Nitrosodiphenylamine	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
1,2-Diphenylhydrazine	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
4-Bromophenyl-phenylether	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Hexachlorobenzene	**ND**	0.30	EPA 8270D	9-1-18	9-24-18	
Pentachlorophenol	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
Phenanthrene	**12**	0.30	EPA 8270D	9-1-18	9-24-18	
Anthracene	**3.3**	0.30	EPA 8270D	9-1-18	9-24-18	
Carbazole	**0.55**	0.30	EPA 8270D	9-1-18	9-24-18	
Di-n-butylphthalate	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
Fluoranthene	**18**	0.30	EPA 8270D	9-1-18	9-24-18	
Benzidine	**ND**	3.0	EPA 8270D	9-1-18	9-24-18	
Pyrene	**25**	1.2	EPA 8270D	9-1-18	9-25-18	
Butylbenzylphthalate	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
bis-2-Ethylhexyladipate	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
3,3'-Dichlorobenzidine	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
Benzo[a]anthracene	**9.8**	0.30	EPA 8270D	9-1-18	9-24-18	
Chrysene	**9.7**	0.30	EPA 8270D	9-1-18	9-24-18	
bis(2-Ethylhexyl)phthalate	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
Di-n-octylphthalate	**ND**	1.5	EPA 8270D	9-1-18	9-24-18	
Benzo[b]fluoranthene	**12**	0.30	EPA 8270D	9-1-18	9-24-18	
Benzo(j,k)fluoranthene	**3.5**	0.30	EPA 8270D	9-1-18	9-24-18	
Benzo[a]pyrene	**11**	0.30	EPA 8270D	9-1-18	9-24-18	
Indeno[1,2,3-cd]pyrene	**8.0**	0.30	EPA 8270D	9-1-18	9-24-18	
Dibenz[a,h]anthracene	**1.6**	0.30	EPA 8270D	9-1-18	9-24-18	
Benzo[g,h,i]perylene	**8.5**	0.30	EPA 8270D	9-1-18	9-24-18	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorophenol	***63***	***19 - 103***				
Phenol-d6	***73***	***30 - 103***				
Nitrobenzene-d5	***73***	***27 - 105***				
2-Fluorobiphenyl	***91***	***36 - 102***				
2,4,6-Tribromophenol	***79***	***33 - 110***				
Terphenyl-d14	***97***	***38 - 108***				

Date of Report: September 26, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217B
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0901S1					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Pyridine	**ND**	0.33	EPA 8270D	9-1-18	9-4-18	
Phenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Aniline	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2-Chlorophenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Benzyl alcohol	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Hexachloroethane	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Nitrobenzene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Isophorone	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2-Nitrophenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
4-Chloroaniline	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2-Nitroaniline	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Dimethylphthalate	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
3-Nitroaniline	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	

Date of Report: September 26, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217B
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0901S1					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
4-Nitrophenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Dibenzofuran	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Diethylphthalate	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
4-Nitroaniline	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Pentachlorophenol	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Carbazole	**ND**	0.033	EPA 8270D	9-1-18	9-4-18	
Di-n-butylphthalate	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Benzidine	**ND**	0.33	EPA 8270D	9-1-18	9-4-18	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Butylbenzylphthalate	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
bis-2-Ethylhexyladipate	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
Di-n-octylphthalate	**ND**	0.17	EPA 8270D	9-1-18	9-4-18	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	9-1-18	9-4-18	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorophenol	***89***	***19 - 103***				
Phenol-d6	***91***	***30 - 103***				
Nitrobenzene-d5	***75***	***27 - 105***				
2-Fluorobiphenyl	***83***	***36 - 102***				
2,4,6-Tribromophenol	***99***	***33 - 110***				
Terphenyl-d14	***101***	***38 - 108***				

Date of Report: September 26, 2018
Samples Submitted: August 21, 2018
Laboratory Reference: 1808-217B
Project: 397-019

PAHs EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0901S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**1.09**	**1.18**	1.33	1.33	82	89	45 - 94	8	29	
2-Chlorophenol	**1.03**	**1.10**	1.33	1.33	77	83	46 - 94	7	33	
1,4-Dichlorobenzene	**0.521**	**0.524**	0.667	0.667	78	79	42 - 91	1	37	
n-Nitroso-di-n-propylamine	**0.526**	**0.582**	0.667	0.667	79	87	45 - 100	10	26	
1,2,4-Trichlorobenzene	**0.519**	**0.555**	0.667	0.667	78	83	45 - 100	7	32	
4-Chloro-3-methylphenol	**1.04**	**1.19**	1.33	1.33	78	89	55 - 97	13	21	
Acenaphthene	**0.533**	**0.577**	0.667	0.667	80	87	48 - 91	8	21	
4-Nitrophenol	**0.917**	**1.03**	1.33	1.33	69	77	53 - 102	12	20	
2,4-Dinitrotoluene	**0.407**	**0.460**	0.667	0.667	61	69	47 - 96	12	19	
Pentachlorophenol	**1.08**	**1.26**	1.33	1.33	81	95	35 - 125	15	26	
Pyrene	**0.581**	**0.627**	0.667	0.667	87	94	55 - 110	8	17	
Surrogate:										
2-Fluorophenol					***81***	***82***	***19 - 103***			
Phenol-d6					***79***	***84***	***30 - 103***			
Nitrobenzene-d5					***69***	***74***	***27 - 105***			
2-Fluorobiphenyl					***76***	***78***	***36 - 102***			
2,4,6-Tribromophenol					***84***	***91***	***33 - 110***			
Terphenyl-d14					***85***	***87***	***38 - 108***			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Laboratory Number: 08-217

Company: FARALLON
Project Number: 397-019
Project Name: Block 38 West Property
Project Manager: Javan Ruark
Sampled by: Greg Peters

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☒ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	FB-02-3.0-082018	8/20/18	1155	Soil	5																						
2	FB-02-5.0-082018		1220				X		X				●	~~Extract and hold~~													X
3	FB-02-10.0-082018		1235				X		X		X								X								X
4	FB-02-15.0-082018		1245																								
5	FB-02-20.0-082018		1310																								
6	FB-02-25.0-082018		1430				X		X		X		X														X
7	FB-02-30.0-082018		1454																								
8	FB-02-35.0-082018		1520				X		X																		X

	Signature	Company	Date	Time
Relinquished	[signature]	Farallon	8/20/18	1845
Received	[signature]	OSE	8/21/18	1000
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
~~Please Contact Project Manager for Analyses and turn around time requests//~~ DB 8/21/18
(X) Added 8/30/18 DB
Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐
● Analysis requested 9/24/18. DB (STD)

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

August 27, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1808-229

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on August 22, 2018.

Please note that the data for the additionally requested analyses will follow in the final report.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

Case Narrative

Samples were collected on August 21, 2018 and received by the laboratory on August 22, 2018. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

The MTCA Method A cleanup level of 0.030 ppm for Benzene is not achievable for sample FB-04-5.0-082118 due to the low dry weight of the sample.

Total Metals EPA 6010D/7471B Analysis

The duplicate RPD for Chromium is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-04-5.0-082118**					
Laboratory ID:	08-229-02					
Benzene	**ND**	0.033	EPA 8021B	8-22-18	8-22-18	
Toluene	**ND**	0.16	EPA 8021B	8-22-18	8-22-18	
Ethyl Benzene	**ND**	0.16	EPA 8021B	8-22-18	8-22-18	
m,p-Xylene	**ND**	0.16	EPA 8021B	8-22-18	8-22-18	
o-Xylene	**ND**	0.16	EPA 8021B	8-22-18	8-22-18	
Gasoline	**ND**	16	NWTPH-Gx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*57-129*				
Client ID:	**FB-04-20.0-082118**					
Laboratory ID:	08-229-05					
Benzene	**ND**	0.020	EPA 8021B	8-22-18	8-22-18	
Toluene	**ND**	0.053	EPA 8021B	8-22-18	8-22-18	
Ethyl Benzene	**ND**	0.053	EPA 8021B	8-22-18	8-22-18	
m,p-Xylene	**ND**	0.053	EPA 8021B	8-22-18	8-22-18	
o-Xylene	**ND**	0.053	EPA 8021B	8-22-18	8-22-18	
Gasoline	**ND**	5.3	NWTPH-Gx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*57-129*				
Client ID:	**FB-04-30.0-082118**					
Laboratory ID:	08-229-07					
Benzene	**ND**	0.020	EPA 8021B	8-22-18	8-22-18	
Toluene	**ND**	0.055	EPA 8021B	8-22-18	8-22-18	
Ethyl Benzene	**ND**	0.055	EPA 8021B	8-22-18	8-22-18	
m,p-Xylene	**ND**	0.055	EPA 8021B	8-22-18	8-22-18	
o-Xylene	**ND**	0.055	EPA 8021B	8-22-18	8-22-18	
Gasoline	**ND**	5.5	NWTPH-Gx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*57-129*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-01-5.0-082118**					
Laboratory ID:	08-229-08					
Benzene	**ND**	0.020	EPA 8021B	8-22-18	8-22-18	
Toluene	**ND**	0.062	EPA 8021B	8-22-18	8-22-18	
Ethyl Benzene	**ND**	0.062	EPA 8021B	8-22-18	8-22-18	
m,p-Xylene	**ND**	0.062	EPA 8021B	8-22-18	8-22-18	
o-Xylene	**ND**	0.062	EPA 8021B	8-22-18	8-22-18	
Gasoline	**ND**	6.2	NWTPH-Gx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*57-129*				
Client ID:	**FB-01-15.0-082118**					
Laboratory ID:	08-229-09					
Benzene	**ND**	0.020	EPA 8021B	8-22-18	8-22-18	
Toluene	**ND**	0.091	EPA 8021B	8-22-18	8-22-18	
Ethyl Benzene	**ND**	0.091	EPA 8021B	8-22-18	8-22-18	
m,p-Xylene	**ND**	0.091	EPA 8021B	8-22-18	8-22-18	
o-Xylene	**ND**	0.091	EPA 8021B	8-22-18	8-22-18	
Gasoline	**ND**	9.1	NWTPH-Gx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*57-129*				
Client ID:	**FB-01-30.0-082118**					
Laboratory ID:	08-229-12					
Benzene	**ND**	0.020	EPA 8021B	8-22-18	8-22-18	
Toluene	**ND**	0.051	EPA 8021B	8-22-18	8-22-18	
Ethyl Benzene	**ND**	0.051	EPA 8021B	8-22-18	8-22-18	
m,p-Xylene	**ND**	0.051	EPA 8021B	8-22-18	8-22-18	
o-Xylene	**ND**	0.051	EPA 8021B	8-22-18	8-22-18	
Gasoline	**ND**	5.1	NWTPH-Gx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*57-129*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0822S1					
Benzene	**ND**	0.020	EPA 8021B	8-22-18	8-22-18	
Toluene	**ND**	0.050	EPA 8021B	8-22-18	8-22-18	
Ethyl Benzene	**ND**	0.050	EPA 8021B	8-22-18	8-22-18	
m,p-Xylene	**ND**	0.050	EPA 8021B	8-22-18	8-22-18	
o-Xylene	**ND**	0.050	EPA 8021B	8-22-18	8-22-18	
Gasoline	**ND**	5.0	NWTPH-Gx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*57-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-229-02										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*104*	*102*	*57-129*			
SPIKE BLANKS											
Laboratory ID:	SB0822S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.855**	**0.924**	1.00	1.00		**86**	**92**	69-111	8	10	
Toluene	**0.842**	**0.912**	1.00	1.00		**84**	**91**	70-114	8	11	
Ethyl Benzene	**0.843**	**0.915**	1.00	1.00		**84**	**92**	70-115	8	10	
m,p-Xylene	**0.826**	**0.900**	1.00	1.00		**83**	**90**	72-115	9	10	
o-Xylene	**0.853**	**0.919**	1.00	1.00		**85**	**92**	71-115	7	11	
Surrogate:											
Fluorobenzene						*83*	*89*	*57-129*			

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-01-5.0-082118**					
Laboratory ID:	08-229-08					
Diesel Range Organics	**520**	320	NWTPH-Dx	8-22-18	8-24-18	
Lube Oil Range Organics	**3700**	640	NWTPH-Dx	8-22-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	---	*50-150*				S
Client ID:	**FB-01-15.0-082118**					
Laboratory ID:	08-229-09					
Diesel Range Organics	**ND**	40	NWTPH-Dx	8-22-18	8-23-18	
Lube Oil Range Organics	**250**	81	NWTPH-Dx	8-22-18	8-23-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*116*	*50-150*				
Client ID:	**FB-01-30.0-082118**					
Laboratory ID:	08-229-12					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-22-18	8-23-18	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	8-22-18	8-23-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0822S4					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-22-18	8-22-18	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*131*	*50-150*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	08-231-10										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*55*	*64*	*50-150*			

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-01-5.0-082118**					
Laboratory ID:	08-229-08					
Diesel Range Organics	**510**	160	NWTPH-Dx	8-22-18	8-25-18	X1,N
Lube Oil Range Organics	**1100**	320	NWTPH-Dx	8-22-18	8-25-18	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**FB-01-15.0-082118**					
Laboratory ID:	08-229-09					
Diesel Range Organics	**ND**	40	NWTPH-Dx	8-22-18	8-25-18	X1
Lube Oil Range Organics	**ND**	81	NWTPH-Dx	8-22-18	8-25-18	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*97*	*50-150*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0822S4					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-22-18	8-25-18	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-22-18	8-25-18	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	08-231-10									
	ORIG	DUP								
Diesel Range	**ND**	**ND**	NA	NA		NA	NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA	NA	NA	NA	
Surrogate:										
o-Terphenyl						*55 64*	*50-150*			

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
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Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-04-5.0-082118**					
Laboratory ID:	08-229-02					
Diesel Range Organics	**97**	55	NWTPH-Dx	8-23-18	8-23-18	N
Lube Oil Range Organics	**540**	110	NWTPH-Dx	8-23-18	8-23-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**FB-04-20.0-082118**					
Laboratory ID:	08-229-05					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-23-18	8-23-18	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	8-23-18	8-23-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				
Client ID:	**FB-04-30.0-082118**					
Laboratory ID:	08-229-07					
Diesel Range Organics	**ND**	30	NWTPH-Dx	8-23-18	8-23-18	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	8-23-18	8-23-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0823S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-23-18	8-23-18	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-23-18	8-23-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-229-05										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*96*	*63*	*50-150*			

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
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VOLATILE ORGANICS EPA 8260C
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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-04-20.0-082118**					
Laboratory ID:	08-229-05					
Dichlorodifluoromethane	ND	0.0013	EPA 8260C	8-22-18	8-22-18	
Chloromethane	ND	0.0046	EPA 8260C	8-22-18	8-22-18	
Vinyl Chloride	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Bromomethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Chloroethane	ND	0.0046	EPA 8260C	8-22-18	8-22-18	
Trichlorofluoromethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,1-Dichloroethene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Iodomethane	ND	0.0046	EPA 8260C	8-22-18	8-22-18	
Methylene Chloride	ND	0.0046	EPA 8260C	8-22-18	8-22-18	
(trans) 1,2-Dichloroethene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,1-Dichloroethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
2,2-Dichloropropane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
(cis) 1,2-Dichloroethene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Bromochloromethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Chloroform	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,1,1-Trichloroethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Carbon Tetrachloride	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,1-Dichloropropene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,2-Dichloroethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Trichloroethene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,2-Dichloropropane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Dibromomethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Bromodichloromethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
2-Chloroethyl Vinyl Ether	ND	0.0046	EPA 8260C	8-22-18	8-22-18	
(cis) 1,3-Dichloropropene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
(trans) 1,3-Dichloropropene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	

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Samples Submitted: August 22, 2018
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VOLATILE ORGANICS EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-04-20.0-082118**					
Laboratory ID:	08-229-05					
1,1,2-Trichloroethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Tetrachloroethene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,3-Dichloropropane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Dibromochloromethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,2-Dibromoethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Chlorobenzene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,1,1,2-Tetrachloroethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Bromoform	ND	0.0046	EPA 8260C	8-22-18	8-22-18	
Bromobenzene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,1,2,2-Tetrachloroethane	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,2,3-Trichloropropane	ND	0.0012	EPA 8260C	8-22-18	8-22-18	
2-Chlorotoluene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
4-Chlorotoluene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,3-Dichlorobenzene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,4-Dichlorobenzene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,2-Dichlorobenzene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
1,2-Dibromo-3-chloropropane	ND	0.0060	EPA 8260C	8-22-18	8-22-18	
1,2,4-Trichlorobenzene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Hexachlorobutadiene	ND	0.0046	EPA 8260C	8-22-18	8-22-18	
1,2,3-Trichlorobenzene	ND	0.00093	EPA 8260C	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*95*	*68-139*				
Toluene-d8	*100*	*79-128*				
4-Bromofluorobenzene	*103*	*71-132*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
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Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0822S1					
Dichlorodifluoromethane	ND	0.0014	EPA 8260C	8-22-18	8-22-18	
Chloromethane	ND	0.0050	EPA 8260C	8-22-18	8-22-18	
Vinyl Chloride	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Bromomethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Chloroethane	ND	0.0050	EPA 8260C	8-22-18	8-22-18	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Iodomethane	ND	0.0050	EPA 8260C	8-22-18	8-22-18	
Methylene Chloride	ND	0.0050	EPA 8260C	8-22-18	8-22-18	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Bromochloromethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Chloroform	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Trichloroethene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Dibromomethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Bromodichloromethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	8-22-18	8-22-18	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0822S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Tetrachloroethene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Dibromochloromethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Chlorobenzene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Bromoform	ND	0.0050	EPA 8260C	8-22-18	8-22-18	
Bromobenzene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,2,3-Trichloropropane	ND	0.0013	EPA 8260C	8-22-18	8-22-18	
2-Chlorotoluene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
4-Chlorotoluene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
1,2-Dibromo-3-chloropropane	ND	0.0065	EPA 8260C	8-22-18	8-22-18	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	8-22-18	8-22-18	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*97*	*68-139*				
Toluene-d8	*100*	*79-128*				
4-Bromofluorobenzene	*104*	*71-132*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0822S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0491**	**0.0531**	0.0500	0.0500	98	106	53-141	8	17	
Benzene	**0.0466**	**0.0535**	0.0500	0.0500	93	107	70-130	14	15	
Trichloroethene	**0.0469**	**0.0529**	0.0500	0.0500	94	106	74-122	12	16	
Toluene	**0.0490**	**0.0543**	0.0500	0.0500	98	109	76-130	10	15	
Chlorobenzene	**0.0444**	**0.0496**	0.0500	0.0500	89	99	75-120	11	14	
Surrogate:										
Dibromofluoromethane					*96*	*91*	*68-139*			
Toluene-d8					*103*	*100*	*79-128*			
4-Bromofluorobenzene					*103*	*104*	*71-132*			

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Potable-082118**					
Laboratory ID:	08-229-16					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Chloromethane	ND	1.0	EPA 8260C	8-23-18	8-23-18	
Vinyl Chloride	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Bromomethane	ND	2.0	EPA 8260C	8-23-18	8-23-18	
Chloroethane	ND	1.0	EPA 8260C	8-23-18	8-23-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Acetone	10	5.0	EPA 8260C	8-23-18	8-23-18	
Iodomethane	ND	5.0	EPA 8260C	8-23-18	8-23-18	
Carbon Disulfide	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Methylene Chloride	ND	1.0	EPA 8260C	8-23-18	8-23-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Methyl t-Butyl Ether	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Vinyl Acetate	ND	1.0	EPA 8260C	8-23-18	8-23-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
2-Butanone	ND	5.0	EPA 8260C	8-23-18	8-23-18	
Bromochloromethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Chloroform	16	0.20	EPA 8260C	8-23-18	8-23-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Benzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Trichloroethene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Dibromomethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Bromodichloromethane	1.6	0.20	EPA 8260C	8-23-18	8-23-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	8-23-18	8-23-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260C	8-23-18	8-23-18	
Toluene	ND	1.0	EPA 8260C	8-23-18	8-23-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-23-18	8-23-18	

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Potable-082118**					
Laboratory ID:	08-229-16					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Tetrachloroethene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
2-Hexanone	ND	2.0	EPA 8260C	8-23-18	8-23-18	
Dibromochloromethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Chlorobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Ethylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
m,p-Xylene	ND	0.40	EPA 8260C	8-23-18	8-23-18	
o-Xylene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Styrene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Bromoform	ND	1.0	EPA 8260C	8-23-18	8-23-18	
Isopropylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Bromobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
n-Propylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
tert-Butylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
sec-Butylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
p-Isopropyltoluene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
n-Butylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	8-23-18	8-23-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	8-23-18	8-23-18	
Naphthalene	ND	1.0	EPA 8260C	8-23-18	8-23-18	
1,2,3-Trichlorobenzene	ND	0.26	EPA 8260C	8-23-18	8-23-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*90*	*75-127*				
Toluene-d8	*85*	*80-127*				
4-Bromofluorobenzene	*96*	*78-125*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0823W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Chloromethane	ND	1.0	EPA 8260C	8-23-18	8-23-18	
Vinyl Chloride	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Bromomethane	ND	2.0	EPA 8260C	8-23-18	8-23-18	
Chloroethane	ND	1.0	EPA 8260C	8-23-18	8-23-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Acetone	ND	5.0	EPA 8260C	8-23-18	8-23-18	
Iodomethane	ND	5.0	EPA 8260C	8-23-18	8-23-18	
Carbon Disulfide	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Methylene Chloride	ND	1.0	EPA 8260C	8-23-18	8-23-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Methyl t-Butyl Ether	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Vinyl Acetate	ND	1.0	EPA 8260C	8-23-18	8-23-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
2-Butanone	ND	5.0	EPA 8260C	8-23-18	8-23-18	
Bromochloromethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Chloroform	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Benzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Trichloroethene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Dibromomethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Bromodichloromethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	8-23-18	8-23-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260C	8-23-18	8-23-18	
Toluene	ND	1.0	EPA 8260C	8-23-18	8-23-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-23-18	8-23-18	

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0823W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Tetrachloroethene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
2-Hexanone	ND	2.0	EPA 8260C	8-23-18	8-23-18	
Dibromochloromethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Chlorobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Ethylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
m,p-Xylene	ND	0.40	EPA 8260C	8-23-18	8-23-18	
o-Xylene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Styrene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Bromoform	ND	1.0	EPA 8260C	8-23-18	8-23-18	
Isopropylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Bromobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	8-23-18	8-23-18	
n-Propylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
tert-Butylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
sec-Butylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
p-Isopropyltoluene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
n-Butylbenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	8-23-18	8-23-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	8-23-18	8-23-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	8-23-18	8-23-18	
Naphthalene	ND	1.0	EPA 8260C	8-23-18	8-23-18	
1,2,3-Trichlorobenzene	ND	0.26	EPA 8260C	8-23-18	8-23-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*89*	*75-127*				
Toluene-d8	*89*	*80-127*				
4-Bromofluorobenzene	*97*	*78-125*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0823W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**10.8**	**10.2**	10.0	10.0	108	102	62-129	6	15	
Benzene	**10.6**	**9.90**	10.0	10.0	106	99	77-127	7	15	
Trichloroethene	**10.1**	**9.52**	10.0	10.0	101	95	70-120	6	15	
Toluene	**10.4**	**9.86**	10.0	10.0	104	99	82-123	5	15	
Chlorobenzene	**10.0**	**9.49**	10.0	10.0	100	95	79-120	5	15	
Surrogate:										
Dibromofluoromethane					*89*	*90*	*75-127*			
Toluene-d8					*89*	*90*	*80-127*			
4-Bromofluorobenzene					*96*	*97*	*78-125*			

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-01-5.0-082118**					
Laboratory ID:	08-229-08					
n-Nitrosodimethylamine	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Pyridine	**ND**	8.6	EPA 8270D	8-22-18	8-24-18	
Phenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Aniline	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
bis(2-Chloroethyl)ether	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2-Chlorophenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
1,3-Dichlorobenzene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
1,4-Dichlorobenzene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Benzyl alcohol	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
1,2-Dichlorobenzene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2-Methylphenol (o-Cresol)	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
bis(2-Chloroisopropyl)ether	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
n-Nitroso-di-n-propylamine	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Hexachloroethane	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Nitrobenzene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Isophorone	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2-Nitrophenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2,4-Dimethylphenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
bis(2-Chloroethoxy)methane	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2,4-Dichlorophenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
1,2,4-Trichlorobenzene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Naphthalene	**0.99**	0.86	EPA 8270D	8-22-18	8-24-18	
4-Chloroaniline	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
Hexachlorobutadiene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
4-Chloro-3-methylphenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2-Methylnaphthalene	**1.2**	0.86	EPA 8270D	8-22-18	8-24-18	
1-Methylnaphthalene	**1.1**	0.86	EPA 8270D	8-22-18	8-24-18	
Hexachlorocyclopentadiene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2,4,6-Trichlorophenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2,3-Dichloroaniline	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2,4,5-Trichlorophenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2-Chloronaphthalene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2-Nitroaniline	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
1,4-Dinitrobenzene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Dimethylphthalate	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
1,3-Dinitrobenzene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2,6-Dinitrotoluene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
1,2-Dinitrobenzene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Acenaphthylene	**0.32**	0.034	EPA 8270D/SIM	8-22-18	8-24-18	
3-Nitroaniline	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-01-5.0-082118**					
Laboratory ID:	08-229-08					
2,4-Dinitrophenol	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
Acenaphthene	**0.46**	0.034	EPA 8270D/SIM	8-22-18	8-24-18	
4-Nitrophenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2,4-Dinitrotoluene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Dibenzofuran	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Diethylphthalate	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
4-Chlorophenyl-phenylether	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
4-Nitroaniline	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Fluorene	**0.46**	0.034	EPA 8270D/SIM	8-22-18	8-24-18	
4,6-Dinitro-2-methylphenol	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
n-Nitrosodiphenylamine	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
1,2-Diphenylhydrazine	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
4-Bromophenyl-phenylether	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Hexachlorobenzene	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Pentachlorophenol	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
Phenanthrene	**5.4**	0.86	EPA 8270D	8-22-18	8-24-18	
Anthracene	**1.0**	0.86	EPA 8270D	8-22-18	8-24-18	
Carbazole	**ND**	0.86	EPA 8270D	8-22-18	8-24-18	
Di-n-butylphthalate	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
Fluoranthene	**4.8**	0.86	EPA 8270D	8-22-18	8-24-18	
Benzidine	**ND**	8.6	EPA 8270D	8-22-18	8-24-18	
Pyrene	**6.8**	0.86	EPA 8270D	8-22-18	8-24-18	
Butylbenzylphthalate	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
bis-2-Ethylhexyladipate	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
3,3'-Dichlorobenzidine	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
Benzo[a]anthracene	**2.6**	0.86	EPA 8270D	8-22-18	8-24-18	
Chrysene	**3.1**	0.86	EPA 8270D	8-22-18	8-24-18	
bis(2-Ethylhexyl)phthalate	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
Di-n-octylphthalate	**ND**	4.3	EPA 8270D	8-22-18	8-24-18	
Benzo[b]fluoranthene	**2.9**	0.86	EPA 8270D	8-22-18	8-24-18	
Benzo(j,k)fluoranthene	**0.76**	0.034	EPA 8270D/SIM	8-22-18	8-24-18	
Benzo[a]pyrene	**2.5**	0.86	EPA 8270D	8-22-18	8-24-18	
Indeno[1,2,3-cd]pyrene	**1.6**	0.86	EPA 8270D	8-22-18	8-24-18	
Dibenz[a,h]anthracene	**0.45**	0.034	EPA 8270D/SIM	8-22-18	8-24-18	
Benzo[g,h,i]perylene	**1.9**	0.86	EPA 8270D	8-22-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*52*	*19 - 103*				
Phenol-d6	*61*	*30 - 103*				
Nitrobenzene-d5	*68*	*27 - 105*				
2-Fluorobiphenyl	*88*	*36 - 102*				
2,4,6-Tribromophenol	*66*	*33 - 110*				
Terphenyl-d14	*94*	*38 - 108*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0822S1					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Pyridine	**ND**	0.33	EPA 8270D	8-22-18	8-22-18	
Phenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Aniline	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Chlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Benzyl alcohol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Hexachloroethane	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Nitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Isophorone	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Nitrophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
4-Chloroaniline	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Nitroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Dimethylphthalate	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
3-Nitroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0822S1					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
4-Nitrophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Dibenzofuran	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Diethylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
4-Nitroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Pentachlorophenol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Carbazole	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Di-n-butylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzidine	**ND**	0.33	EPA 8270D	8-22-18	8-22-18	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Butylbenzylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
bis-2-Ethylhexyladipate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Di-n-octylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*86*	*19 - 103*				
Phenol-d6	*87*	*30 - 103*				
Nitrobenzene-d5	*84*	*27 - 105*				
2-Fluorobiphenyl	*92*	*36 - 102*				
2,4,6-Tribromophenol	*99*	*33 - 110*				
Terphenyl-d14	*92*	*38 - 108*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0822S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.988**	**1.12**	1.33	1.33	74	84	45 - 94	13	29	
2-Chlorophenol	**1.05**	**1.21**	1.33	1.33	79	91	46 - 94	14	33	
1,4-Dichlorobenzene	**0.511**	**0.581**	0.667	0.667	77	87	42 - 91	13	37	
n-Nitroso-di-n-propylamine	**0.506**	**0.568**	0.667	0.667	76	85	45 - 100	12	26	
1,2,4-Trichlorobenzene	**0.559**	**0.579**	0.667	0.667	84	87	45 - 100	4	32	
4-Chloro-3-methylphenol	**1.09**	**1.13**	1.33	1.33	82	85	55 - 97	4	21	
Acenaphthene	**0.539**	**0.564**	0.667	0.667	81	85	48 - 91	5	21	
4-Nitrophenol	**1.06**	**1.17**	1.33	1.33	80	88	53 - 102	10	20	
2,4-Dinitrotoluene	**0.527**	**0.583**	0.667	0.667	79	87	47 - 96	10	19	
Pentachlorophenol	**1.34**	**1.40**	1.33	1.33	101	105	35 - 125	4	26	
Pyrene	**0.534**	**0.561**	0.667	0.667	80	84	55 - 110	5	17	
Surrogate:										
2-Fluorophenol					*72*	*81*	*19 - 103*			
Phenol-d6					*73*	*80*	*30 - 103*			
Nitrobenzene-d5					*72*	*73*	*27 - 105*			
2-Fluorobiphenyl					*79*	*80*	*36 - 102*			
2,4,6-Tribromophenol					*86*	*85*	*33 - 110*			
Terphenyl-d14					*76*	*78*	*38 - 108*			

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-04-10.0-082118**					
Laboratory ID:	08-229-03					
n-Nitrosodimethylamine	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Pyridine	**ND**	0.83	EPA 8270D	8-22-18	8-24-18	
Phenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Aniline	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
bis(2-Chloroethyl)ether	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2-Chlorophenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
1,3-Dichlorobenzene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
1,4-Dichlorobenzene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Benzyl alcohol	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
1,2-Dichlorobenzene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2-Methylphenol (o-Cresol)	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
bis(2-Chloroisopropyl)ether	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
n-Nitroso-di-n-propylamine	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Hexachloroethane	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Nitrobenzene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Isophorone	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2-Nitrophenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2,4-Dimethylphenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
bis(2-Chloroethoxy)methane	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2,4-Dichlorophenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
1,2,4-Trichlorobenzene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Naphthalene	**0.12**	0.083	EPA 8270D	8-22-18	8-24-18	
4-Chloroaniline	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
Hexachlorobutadiene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
4-Chloro-3-methylphenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2-Methylnaphthalene	**0.099**	0.083	EPA 8270D	8-22-18	8-24-18	
1-Methylnaphthalene	**0.057**	0.017	EPA 8270D/SIM	8-22-18	8-24-18	
Hexachlorocyclopentadiene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2,4,6-Trichlorophenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2,3-Dichloroaniline	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2,4,5-Trichlorophenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2-Chloronaphthalene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2-Nitroaniline	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
1,4-Dinitrobenzene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Dimethylphthalate	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
1,3-Dinitrobenzene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2,6-Dinitrotoluene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
1,2-Dinitrobenzene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Acenaphthylene	**0.045**	0.017	EPA 8270D/SIM	8-22-18	8-24-18	
3-Nitroaniline	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-04-10.0-082118**					
Laboratory ID:	08-229-03					
2,4-Dinitrophenol	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
Acenaphthene	**0.21**	0.083	EPA 8270D	8-22-18	8-24-18	
4-Nitrophenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2,4-Dinitrotoluene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Dibenzofuran	**0.12**	0.083	EPA 8270D	8-22-18	8-24-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Diethylphthalate	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
4-Chlorophenyl-phenylether	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
4-Nitroaniline	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Fluorene	**0.22**	0.083	EPA 8270D	8-22-18	8-24-18	
4,6-Dinitro-2-methylphenol	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
n-Nitrosodiphenylamine	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
1,2-Diphenylhydrazine	**ND**	0.18	EPA 8270D	8-22-18	8-24-18	U1
4-Bromophenyl-phenylether	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Hexachlorobenzene	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Pentachlorophenol	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
Phenanthrene	**1.0**	0.083	EPA 8270D	8-22-18	8-24-18	
Anthracene	**0.29**	0.083	EPA 8270D	8-22-18	8-24-18	
Carbazole	**ND**	0.083	EPA 8270D	8-22-18	8-24-18	
Di-n-butylphthalate	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
Fluoranthene	**0.97**	0.083	EPA 8270D	8-22-18	8-24-18	
Benzidine	**ND**	0.83	EPA 8270D	8-22-18	8-24-18	
Pyrene	**1.1**	0.083	EPA 8270D	8-22-18	8-24-18	
Butylbenzylphthalate	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
bis-2-Ethylhexyladipate	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
3,3'-Dichlorobenzidine	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
Benzo[a]anthracene	**0.67**	0.083	EPA 8270D	8-22-18	8-24-18	
Chrysene	**0.95**	0.083	EPA 8270D	8-22-18	8-24-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
Di-n-octylphthalate	**ND**	0.42	EPA 8270D	8-22-18	8-24-18	
Benzo[b]fluoranthene	**0.47**	0.083	EPA 8270D	8-22-18	8-24-18	
Benzo(j,k)fluoranthene	**0.18**	0.083	EPA 8270D	8-22-18	8-24-18	
Benzo[a]pyrene	**0.36**	0.083	EPA 8270D	8-22-18	8-24-18	
Indeno[1,2,3-cd]pyrene	**0.19**	0.083	EPA 8270D	8-22-18	8-24-18	
Dibenz[a,h]anthracene	**0.041**	0.017	EPA 8270D/SIM	8-22-18	8-24-18	
Benzo[g,h,i]perylene	**0.21**	0.083	EPA 8270D	8-22-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*41*	*19 - 103*				
Phenol-d6	*48*	*30 - 103*				
Nitrobenzene-d5	*45*	*27 - 105*				
2-Fluorobiphenyl	*55*	*36 - 102*				
2,4,6-Tribromophenol	*64*	*33 - 110*				
Terphenyl-d14	*60*	*38 - 108*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0822S1					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Pyridine	**ND**	0.33	EPA 8270D	8-22-18	8-22-18	
Phenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Aniline	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Chlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Benzyl alcohol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Hexachloroethane	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Nitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Isophorone	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Nitrophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
4-Chloroaniline	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2-Nitroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Dimethylphthalate	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
3-Nitroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	

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METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0822S1					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
4-Nitrophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Dibenzofuran	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Diethylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
4-Nitroaniline	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Pentachlorophenol	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Carbazole	**ND**	0.033	EPA 8270D	8-22-18	8-22-18	
Di-n-butylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzidine	**ND**	0.33	EPA 8270D	8-22-18	8-22-18	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Butylbenzylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
bis-2-Ethylhexyladipate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Di-n-octylphthalate	**ND**	0.17	EPA 8270D	8-22-18	8-22-18	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	8-22-18	8-22-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*86*	*19 - 103*				
Phenol-d6	*87*	*30 - 103*				
Nitrobenzene-d5	*84*	*27 - 105*				
2-Fluorobiphenyl	*92*	*36 - 102*				
2,4,6-Tribromophenol	*99*	*33 - 110*				
Terphenyl-d14	*92*	*38 - 108*				

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0822S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.988**	**1.12**	1.33	1.33	74	84	45 - 94	13	29	
2-Chlorophenol	**1.05**	**1.21**	1.33	1.33	79	91	46 - 94	14	33	
1,4-Dichlorobenzene	**0.511**	**0.581**	0.667	0.667	77	87	42 - 91	13	37	
n-Nitroso-di-n-propylamine	**0.506**	**0.568**	0.667	0.667	76	85	45 - 100	12	26	
1,2,4-Trichlorobenzene	**0.559**	**0.579**	0.667	0.667	84	87	45 - 100	4	32	
4-Chloro-3-methylphenol	**1.09**	**1.13**	1.33	1.33	82	85	55 - 97	4	21	
Acenaphthene	**0.539**	**0.564**	0.667	0.667	81	85	48 - 91	5	21	
4-Nitrophenol	**1.06**	**1.17**	1.33	1.33	80	88	53 - 102	10	20	
2,4-Dinitrotoluene	**0.527**	**0.583**	0.667	0.667	79	87	47 - 96	10	19	
Pentachlorophenol	**1.34**	**1.40**	1.33	1.33	101	105	35 - 125	4	26	
Pyrene	**0.534**	**0.561**	0.667	0.667	80	84	55 - 110	5	17	
Surrogate:										
2-Fluorophenol					*72*	*81*	*19 - 103*			
Phenol-d6					*73*	*80*	*30 - 103*			
Nitrobenzene-d5					*72*	*73*	*27 - 105*			
2-Fluorobiphenyl					*79*	*80*	*36 - 102*			
2,4,6-Tribromophenol					*86*	*85*	*33 - 110*			
Terphenyl-d14					*76*	*78*	*38 - 108*			

Date of Report: August 27, 2018
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Date of Report: August 27, 2018
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Date of Report: August 27, 2018
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METHOD BLANK QUALITY CONTROL
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Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

TOTAL METALS
EPA 6010D/7471B

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-04-5.0-082118**					
Laboratory ID:	08-229-02					
Arsenic	**ND**	11	EPA 6010D	8-23-18	8-23-18	
Barium	**290**	5.5	EPA 6010D	8-23-18	8-23-18	
Cadmium	**ND**	1.1	EPA 6010D	8-23-18	8-23-18	
Chromium	**53**	1.1	EPA 6010D	8-23-18	8-23-18	
Lead	**56**	11	EPA 6010D	8-23-18	8-23-18	
Mercury	**ND**	0.55	EPA 7471B	8-23-18	8-23-18	
Selenium	**ND**	11	EPA 6010D	8-23-18	8-23-18	
Silver	**ND**	2.2	EPA 6010D	8-23-18	8-23-18	
Client ID:	**FB-01-15.0-082118**					
Laboratory ID:	08-229-09					
Arsenic	**ND**	16	EPA 6010D	8-23-18	8-23-18	
Barium	**110**	4.0	EPA 6010D	8-23-18	8-23-18	
Cadmium	**ND**	0.81	EPA 6010D	8-23-18	8-23-18	
Chromium	**60**	0.81	EPA 6010D	8-23-18	8-23-18	
Lead	**ND**	8.1	EPA 6010D	8-23-18	8-23-18	
Mercury	**ND**	0.40	EPA 7471B	8-23-18	8-23-18	
Selenium	**ND**	16	EPA 6010D	8-23-18	8-23-18	
Silver	**ND**	1.6	EPA 6010D	8-23-18	8-23-18	

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

TOTAL METALS
EPA 6010D/7471B
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0823SM1					
Arsenic	**ND**	5.0	EPA 6010D	8-23-18	8-23-18	
Barium	**ND**	2.5	EPA 6010D	8-23-18	8-23-18	
Cadmium	**ND**	0.50	EPA 6010D	8-23-18	8-23-18	
Chromium	**ND**	0.50	EPA 6010D	8-23-18	8-23-18	
Lead	**ND**	5.0	EPA 6010D	8-23-18	8-23-18	
Selenium	**ND**	5.0	EPA 6010D	8-23-18	8-23-18	
Silver	**ND**	1.0	EPA 6010D	8-23-18	8-23-18	
Laboratory ID:	MB0823S1					
Mercury	**ND**	0.25	EPA 7471B	8-23-18	8-23-18	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-239-08										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Barium	**92.2**	**83.3**	NA	NA		NA		NA	10	20	
Cadmium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Chromium	**8.30**	**5.65**	NA	NA		NA		NA	38	20	K
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Selenium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Silver	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	08-239-08										
Mercury	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	08-239-08										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**93.1**	**95.5**	100	100	ND	**93**	**96**	75-125	3	20	
Barium	**188**	**184**	100	100	92.2	**96**	**92**	75-125	2	20	
Cadmium	**46.3**	**45.8**	50.0	50.0	ND	**93**	**92**	75-125	1	20	
Chromium	**102**	**102**	100	100	8.30	**94**	**94**	75-125	0	20	
Lead	**232**	**233**	250	250	ND	**93**	**93**	75-125	1	20	
Selenium	**91.2**	**92.2**	100	100	ND	**91**	**92**	75-125	1	20	
Silver	**21.8**	**21.9**	25.0	25.0	ND	**87**	**88**	75-125	1	20	
Laboratory ID:	08-239-08										
Mercury	**0.555**	**0.554**	0.500	0.500	0.00530	**110**	**110**	80-120	0	20	

Date of Report: August 27, 2018
Samples Submitted: August 22, 2018
Laboratory Reference: 1808-229
Project: 397-019

% MOISTURE

Date Analyzed: 8-22-18

Client ID	Lab ID	% Moisture
FB-04-3.0-082118	08-229-02	54
FB-04-10.0-082118	08-229-03	60
FB-04-20.0-082118	08-229-05	14
FB-04-30.0-082118	08-229-07	15
FB-01-5.0-082118	08-229-08	22
FB-01-15.0-082118	08-229-09	38
FB-01-30.0-082118	08-229-12	13

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-229

Company: FARALLON
Project Number: 397-019
Project Name: Block 38 West Property
Project Manager: Javan Ruark
Sampled by: Greg Peters

Turnaround Request (in working days)
(Check One)
- ☐ Same Day
- ☐ 1 Day
- ☒ 2 Days
- ☒ 3 Days
- ☐ Standard (7 Days) (TPH analysis 5 Days)
- ☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	ACU/SG	2 DAY TAT	3 DAY TAT		% Moisture
1	FB-04-3.0-082118	8/21/18	0645	Soil	5																						
2	FB-04-5.0-082118		0650				X		X										X						X		X
3	FB-04-10.0-082118		0710										X												X		X
4	FB-04-15.0-082118		0735				[illegible]																				
5	FB-04-20.0-082118		0745				X		X		X														X		X
6	FB-04-25.0-082118		0815				[illegible]																				
7	FB-04-30.0-082118		0850				X		X																X		X
8	FB-01-5.0-082118		1140				X		X				X										X	X			X
9	FB-01-15.0-082118		1420				X		X				O						X - 3 day TAT				X	X			X
10	FB-01-20.0-082118		1446																								

	Signature	Company	Date	Time
Relinquished				
Received	[signature]	OSE	8/22/18	0930
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
X - Added 8/22/18. DB (2-3 day TAT)
X Added 8/24/18. DB (1 day TAT)
O Added 8/27/18. DB (STA)

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.

Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-229

Company:
Project Number:
Project Name:
Project Manager:
Sampled by:

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A		2 DAY TAT	3 DAY TAT		% Moisture
11	FB-01-25.0-082118	8/21/18	1500	Soil	5																						
12	FB-01-30.0-082118		1515	Soil	5		X		X															X			X
13	FB-01-35.0-082118		1530	Soil	5																						
14	FB-01-40.0-082118		1540	Soil	5																						
15	FB01-082118		1245	Water	8		X		X		X		HOLD														
16	Potable-082118		1655	Water	12					X															X		

	Signature	Company	Date	Time
Relinquished	[signature]	Farallon	8/21/18	1915
Received	[signature]	OSE	8/22/18	0930
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Please Contact Project Manager for Analyses and Sample turn around time Confirmations.

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 4, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1808-271

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on August 23, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

Case Narrative

Samples were collected on August 22, 2018 and received by the laboratory on August 23, 2018. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-10.0-082218**					
Laboratory ID:	08-271-02					
Benzene	**ND**	0.020	EPA 8021B	8-24-18	8-24-18	
Toluene	**ND**	0.090	EPA 8021B	8-24-18	8-24-18	
Ethyl Benzene	**ND**	0.090	EPA 8021B	8-24-18	8-24-18	
m,p-Xylene	**ND**	0.090	EPA 8021B	8-24-18	8-24-18	
o-Xylene	**ND**	0.090	EPA 8021B	8-24-18	8-24-18	
Gasoline	**ND**	9.0	NWTPH-Gx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*57-129*				
Client ID:	**FMW-136-20.0-082218**					
Laboratory ID:	08-271-04					
Benzene	**ND**	0.020	EPA 8021B	8-24-18	8-24-18	
Toluene	**ND**	0.064	EPA 8021B	8-24-18	8-24-18	
Ethyl Benzene	**ND**	0.064	EPA 8021B	8-24-18	8-24-18	
m,p-Xylene	**ND**	0.064	EPA 8021B	8-24-18	8-24-18	
o-Xylene	**ND**	0.064	EPA 8021B	8-24-18	8-24-18	
Gasoline	**ND**	6.4	NWTPH-Gx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*57-129*				
Client ID:	**FMW-136-30.0-082218**					
Laboratory ID:	08-271-06					
Benzene	**ND**	0.020	EPA 8021B	8-24-18	8-24-18	
Toluene	**ND**	0.052	EPA 8021B	8-24-18	8-24-18	
Ethyl Benzene	**ND**	0.052	EPA 8021B	8-24-18	8-24-18	
m,p-Xylene	**ND**	0.052	EPA 8021B	8-24-18	8-24-18	
o-Xylene	**ND**	0.052	EPA 8021B	8-24-18	8-24-18	
Gasoline	**ND**	5.2	NWTPH-Gx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*57-129*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0824S1					
Benzene	**ND**	0.020	EPA 8021B	8-24-18	8-24-18	
Toluene	**ND**	0.050	EPA 8021B	8-24-18	8-24-18	
Ethyl Benzene	**ND**	0.050	EPA 8021B	8-24-18	8-24-18	
m,p-Xylene	**ND**	0.050	EPA 8021B	8-24-18	8-24-18	
o-Xylene	**ND**	0.050	EPA 8021B	8-24-18	8-24-18	
Gasoline	**ND**	5.0	NWTPH-Gx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*57-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-271-02										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*94*	*95*	*57-129*			
SPIKE BLANKS											
Laboratory ID:	SB0824S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.873**	**0.924**	1.00	1.00		**87**	**92**	69-111	6	10	
Toluene	**0.863**	**0.912**	1.00	1.00		**86**	**91**	70-114	6	11	
Ethyl Benzene	**0.860**	**0.915**	1.00	1.00		**86**	**92**	70-115	6	10	
m,p-Xylene	**0.841**	**0.897**	1.00	1.00		**84**	**90**	72-115	6	10	
o-Xylene	**0.872**	**0.916**	1.00	1.00		**87**	**92**	71-115	5	11	
Surrogate:											
Fluorobenzene						*85*	*91*	*57-129*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-10.0-082218**					
Laboratory ID:	08-271-02					
Diesel Range Organics	**ND**	38	NWTPH-Dx	8-24-18	8-24-18	
Lube Oil Range Organics	**ND**	76	NWTPH-Dx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				
Client ID:	**FMW-136-20.0-082218**					
Laboratory ID:	08-271-04					
Diesel Range Organics	**ND**	32	NWTPH-Dx	8-24-18	8-27-18	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	8-24-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*66*	*50-150*				
Client ID:	**FMW-136-30.0-082218**					
Laboratory ID:	08-271-06					
Diesel Range Organics	**ND**	30	NWTPH-Dx	8-24-18	8-24-18	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0824S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-24-18	8-24-18	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-245-02										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*56*	*90*	*50-150*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

VOLATILE ORGANICS EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-10.0-082218**					
Laboratory ID:	08-271-02					
Dichlorodifluoromethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Chloromethane	ND	0.0077	EPA 8260C	8-24-18	8-24-18	
Vinyl Chloride	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Bromomethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Chloroethane	ND	0.0077	EPA 8260C	8-24-18	8-24-18	
Trichlorofluoromethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloroethene	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Iodomethane	ND	0.0077	EPA 8260C	8-24-18	8-24-18	
Methylene Chloride	ND	0.0077	EPA 8260C	8-24-18	8-24-18	
(trans) 1,2-Dichloroethene	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloroethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
2,2-Dichloropropane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
(cis) 1,2-Dichloroethene	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Bromochloromethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Chloroform	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
1,1,1-Trichloroethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Carbon Tetrachloride	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloropropene	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
1,2-Dichloroethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Trichloroethene	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
1,2-Dichloropropane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Dibromomethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Bromodichloromethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
2-Chloroethyl Vinyl Ether	ND	0.0077	EPA 8260C	8-24-18	8-24-18	
(cis) 1,3-Dichloropropene	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
(trans) 1,3-Dichloropropene	ND	0.0015	EPA 8260C	8-24-18	8-24-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

VOLATILE ORGANICS EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-10.0-082218**					
Laboratory ID:	08-271-02					
1,1,2-Trichloroethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Tetrachloroethene	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
1,3-Dichloropropane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Dibromochloromethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
1,2-Dibromoethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Chlorobenzene	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
1,1,1,2-Tetrachloroethane	ND	0.0015	EPA 8260C	8-24-18	8-24-18	
Bromoform	ND	0.0077	EPA 8260C	8-24-18	8-24-18	
Bromobenzene	ND	0.093	EPA 8260C	8-24-18	8-24-18	
1,1,2,2-Tetrachloroethane	ND	0.093	EPA 8260C	8-24-18	8-24-18	
1,2,3-Trichloropropane	ND	0.093	EPA 8260C	8-24-18	8-24-18	
2-Chlorotoluene	ND	0.093	EPA 8260C	8-24-18	8-24-18	
4-Chlorotoluene	ND	0.093	EPA 8260C	8-24-18	8-24-18	
1,3-Dichlorobenzene	ND	0.093	EPA 8260C	8-24-18	8-24-18	
1,4-Dichlorobenzene	ND	0.093	EPA 8260C	8-24-18	8-24-18	
1,2-Dichlorobenzene	ND	0.093	EPA 8260C	8-24-18	8-24-18	
1,2-Dibromo-3-chloropropane	ND	0.46	EPA 8260C	8-24-18	8-24-18	
1,2,4-Trichlorobenzene	ND	0.093	EPA 8260C	8-24-18	8-24-18	
Hexachlorobutadiene	ND	0.46	EPA 8260C	8-24-18	8-24-18	
1,2,3-Trichlorobenzene	ND	0.093	EPA 8260C	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*68-139*				
Toluene-d8	*98*	*79-128*				
4-Bromofluorobenzene	*83*	*71-132*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

VOLATILE ORGANICS EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-20.0-082218**					
Laboratory ID:	08-271-04					
Dichlorodifluoromethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Chloromethane	ND	0.0047	EPA 8260C	8-24-18	8-24-18	
Vinyl Chloride	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Bromomethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Chloroethane	ND	0.0047	EPA 8260C	8-24-18	8-24-18	
Trichlorofluoromethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloroethene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Iodomethane	ND	0.0047	EPA 8260C	8-24-18	8-24-18	
Methylene Chloride	ND	0.0047	EPA 8260C	8-24-18	8-24-18	
(trans) 1,2-Dichloroethene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloroethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
2,2-Dichloropropane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
(cis) 1,2-Dichloroethene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Bromochloromethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Chloroform	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,1,1-Trichloroethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Carbon Tetrachloride	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloropropene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,2-Dichloroethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Trichloroethene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,2-Dichloropropane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Dibromomethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Bromodichloromethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
2-Chloroethyl Vinyl Ether	ND	0.0047	EPA 8260C	8-24-18	8-24-18	
(cis) 1,3-Dichloropropene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
(trans) 1,3-Dichloropropene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-20.0-082218**					
Laboratory ID:	08-271-04					
1,1,2-Trichloroethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Tetrachloroethene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,3-Dichloropropane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Dibromochloromethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,2-Dibromoethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Chlorobenzene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,1,1,2-Tetrachloroethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Bromoform	ND	0.0047	EPA 8260C	8-24-18	8-24-18	
Bromobenzene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,1,2,2-Tetrachloroethane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,2,3-Trichloropropane	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
2-Chlorotoluene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
4-Chlorotoluene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,3-Dichlorobenzene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,4-Dichlorobenzene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,2-Dichlorobenzene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
1,2-Dibromo-3-chloropropane	ND	0.0047	EPA 8260C	8-24-18	8-24-18	
1,2,4-Trichlorobenzene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Hexachlorobutadiene	ND	0.0047	EPA 8260C	8-24-18	8-24-18	
1,2,3-Trichlorobenzene	ND	0.00094	EPA 8260C	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*97*	*68-139*				
Toluene-d8	*104*	*79-128*				
4-Bromofluorobenzene	*98*	*71-132*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0824S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Chloromethane	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
Vinyl Chloride	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Bromomethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Chloroethane	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Iodomethane	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
Methylene Chloride	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Bromochloromethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Chloroform	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Trichloroethene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Dibromomethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Bromodichloromethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	

Date of Report: September 4, 2018
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Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0824S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Tetrachloroethene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Dibromochloromethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Chlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Bromoform	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
Bromobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
2-Chlorotoluene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
4-Chlorotoluene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*68-139*				
Toluene-d8	*101*	*79-128*				
4-Bromofluorobenzene	*97*	*71-132*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0824S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0480**	**0.0510**	0.0500	0.0500	96	102	53-141	6	17	
Benzene	**0.0481**	**0.0509**	0.0500	0.0500	96	102	70-130	6	15	
Trichloroethene	**0.0506**	**0.0520**	0.0500	0.0500	101	104	74-122	3	16	
Toluene	**0.0513**	**0.0551**	0.0500	0.0500	103	110	76-130	7	15	
Chlorobenzene	**0.0488**	**0.0506**	0.0500	0.0500	98	101	75-120	4	14	
Surrogate:										
Dibromofluoromethane					*98*	*94*	*68-139*			
Toluene-d8					*101*	*103*	*79-128*			
4-Bromofluorobenzene					*98*	*98*	*71-132*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-20.0-082218**					
Laboratory ID:	08-271-04					
n-Nitrosodimethylamine	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Pyridine	**ND**	0.42	EPA 8270D	8-27-18	8-30-18	
Phenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Aniline	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroethyl)ether	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2-Chlorophenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
1,3-Dichlorobenzene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
1,4-Dichlorobenzene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Benzyl alcohol	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
1,2-Dichlorobenzene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2-Methylphenol (o-Cresol)	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroisopropyl)ether	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
n-Nitroso-di-n-propylamine	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Hexachloroethane	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Nitrobenzene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Isophorone	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2-Nitrophenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2,4-Dimethylphenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroethoxy)methane	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2,4-Dichlorophenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
1,2,4-Trichlorobenzene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Naphthalene	**0.030**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
4-Chloroaniline	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
Hexachlorobutadiene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
4-Chloro-3-methylphenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2-Methylnaphthalene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
1-Methylnaphthalene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Hexachlorocyclopentadiene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2,4,6-Trichlorophenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2,3-Dichloroaniline	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2,4,5-Trichlorophenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2-Chloronaphthalene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2-Nitroaniline	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
1,4-Dinitrobenzene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Dimethylphthalate	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
1,3-Dinitrobenzene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2,6-Dinitrotoluene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
1,2-Dinitrobenzene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Acenaphthylene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
3-Nitroaniline	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
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SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-20.0-082218**					
Laboratory ID:	08-271-04					
2,4-Dinitrophenol	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
Acenaphthene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
4-Nitrophenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2,4-Dinitrotoluene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Dibenzofuran	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Diethylphthalate	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
4-Chlorophenyl-phenylether	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
4-Nitroaniline	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Fluorene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
4,6-Dinitro-2-methylphenol	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
n-Nitrosodiphenylamine	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
1,2-Diphenylhydrazine	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
4-Bromophenyl-phenylether	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Hexachlorobenzene	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Pentachlorophenol	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
Phenanthrene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Anthracene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Carbazole	**ND**	0.042	EPA 8270D	8-27-18	8-30-18	
Di-n-butylphthalate	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
Fluoranthene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Benzidine	**ND**	0.42	EPA 8270D	8-27-18	8-30-18	
Pyrene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Butylbenzylphthalate	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
bis-2-Ethylhexyladipate	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
3,3'-Dichlorobenzidine	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
Benzo[a]anthracene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Chrysene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
Di-n-octylphthalate	**ND**	0.21	EPA 8270D	8-27-18	8-30-18	
Benzo[b]fluoranthene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo(j,k)fluoranthene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[a]pyrene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Dibenz[a,h]anthracene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[g,h,i]perylene	**ND**	0.0084	EPA 8270D/SIM	8-27-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*67*	*19 - 103*				
Phenol-d6	*68*	*30 - 103*				
Nitrobenzene-d5	*62*	*27 - 105*				
2-Fluorobiphenyl	*69*	*36 - 102*				
2,4,6-Tribromophenol	*78*	*33 - 110*				
Terphenyl-d14	*72*	*38 - 108*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
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Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0827S2					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Pyridine	**ND**	0.33	EPA 8270D	8-27-18	8-28-18	
Phenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Aniline	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Chlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Benzyl alcohol	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Hexachloroethane	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Nitrobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Isophorone	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Nitrophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
4-Chloroaniline	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Nitroaniline	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Dimethylphthalate	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
3-Nitroaniline	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0827S2					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
4-Nitrophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Dibenzofuran	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Diethylphthalate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
4-Nitroaniline	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Pentachlorophenol	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Carbazole	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Di-n-butylphthalate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Benzidine	**ND**	0.33	EPA 8270D	8-27-18	8-28-18	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Butylbenzylphthalate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
bis-2-Ethylhexyladipate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Di-n-octylphthalate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*79*	*19 - 103*				
Phenol-d6	*82*	*30 - 103*				
Nitrobenzene-d5	*78*	*27 - 105*				
2-Fluorobiphenyl	*83*	*36 - 102*				
2,4,6-Tribromophenol	*94*	*33 - 110*				
Terphenyl-d14	*84*	*38 - 108*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	08-245-02										
	MS	MSD	MS	MSD		MS	MSD				
Phenol	**1.14**	**1.11**	1.33	1.33	ND	86	83	37 - 94	3	27	
2-Chlorophenol	**1.15**	**1.12**	1.33	1.33	ND	86	84	37 - 95	3	32	
1,4-Dichlorobenzene	**0.550**	**0.554**	0.667	0.667	ND	82	83	23 - 97	1	37	
n-Nitroso-di-n-propylamine	**0.562**	**0.552**	0.667	0.667	ND	84	83	40 - 91	2	28	
1,2,4-Trichlorobenzene	**0.586**	**0.564**	0.667	0.667	ND	88	85	37 - 93	4	30	
4-Chloro-3-methylphenol	**1.15**	**1.11**	1.33	1.33	ND	86	83	46 - 96	4	25	
Acenaphthene	**0.581**	**0.573**	0.667	0.667	ND	87	86	43 - 90	1	25	
4-Nitrophenol	**1.15**	**1.18**	1.33	1.33	ND	86	89	31 - 104	3	28	
2,4-Dinitrotoluene	**0.607**	**0.576**	0.667	0.667	ND	91	86	31 - 96	5	32	
Pentachlorophenol	**1.34**	**1.36**	1.33	1.33	ND	101	102	20 - 123	1	29	
Pyrene	**0.590**	**0.590**	0.667	0.667	ND	88	88	28 - 114	0	35	
Surrogate:											
2-Fluorophenol						*80*	*81*	*19 - 103*			
Phenol-d6						*83*	*82*	*30 - 103*			
Nitrobenzene-d5						*74*	*73*	*27 - 105*			
2-Fluorobiphenyl						*78*	*79*	*36 - 102*			
2,4,6-Tribromophenol						*91*	*92*	*33 - 110*			
Terphenyl-d14						*80*	*80*	*38 - 108*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

TOTAL METALS
EPA 6010D/7471B

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-20.0-082218**					
Laboratory ID:	08-271-04					
Arsenic	**ND**	13	EPA 6010D	8-28-18	8-30-18	
Barium	**46**	3.2	EPA 6010D	8-28-18	8-30-18	
Cadmium	**ND**	0.63	EPA 6010D	8-28-18	8-30-18	
Chromium	**42**	0.63	EPA 6010D	8-28-18	8-30-18	
Lead	**ND**	6.3	EPA 6010D	8-28-18	8-30-18	
Mercury	**ND**	0.32	EPA 7471B	8-27-18	8-27-18	
Selenium	**ND**	13	EPA 6010D	8-28-18	8-30-18	
Silver	**ND**	1.3	EPA 6010D	8-28-18	8-30-18	
Client ID:	**FMW-136-30.0-082218**					
Laboratory ID:	08-271-06					
Arsenic	**ND**	12	EPA 6010D	8-28-18	8-30-18	
Barium	**45**	3.0	EPA 6010D	8-28-18	8-30-18	
Cadmium	**ND**	0.59	EPA 6010D	8-28-18	8-30-18	
Chromium	**41**	0.59	EPA 6010D	8-28-18	8-30-18	
Lead	**ND**	5.9	EPA 6010D	8-28-18	8-30-18	
Mercury	**ND**	0.30	EPA 7471B	8-27-18	8-27-18	
Selenium	**ND**	12	EPA 6010D	8-28-18	8-30-18	
Silver	**ND**	1.2	EPA 6010D	8-28-18	8-30-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

TOTAL METALS
EPA 6010D/7471B
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0828SM1					
Arsenic	**ND**	10	EPA 6010D	8-28-18	8-30-18	
Cadmium	**ND**	0.50	EPA 6010D	8-28-18	8-30-18	
Chromium	**ND**	0.50	EPA 6010D	8-28-18	8-30-18	
Lead	**ND**	5.0	EPA 6010D	8-28-18	8-30-18	
Selenium	**ND**	10	EPA 6010D	8-28-18	8-30-18	
Silver	**ND**	1.0	EPA 6010D	8-28-18	8-30-18	
Laboratory ID:	MB0827S1					
Mercury	**ND**	0.25	EPA 7471B	8-27-18	8-27-18	
Laboratory ID:	MB0828SM3					
Barium	**ND**	2.5	EPA 6010D	8-28-18	8-30-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

TOTAL METALS
EPA 6010D/7471B
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-245-01										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Cadmium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Chromium	**35.3**	**42.0**	NA	NA		NA		NA	17	20	
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Selenium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Silver	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	08-245-05										
Mercury	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	08-245-01										
	ORIG	DUP									
Barium	**69.6**	**60.3**	NA	NA		NA		NA	14	20	
MATRIX SPIKES											
Laboratory ID:	08-245-01										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**95.8**	**96.1**	100	100	ND	**96**	**96**	75-125	0	20	
Cadmium	**46.4**	**47.9**	50.0	50.0	ND	**93**	**96**	75-125	3	20	
Chromium	**133**	**141**	100	100	35.3	**98**	**106**	75-125	6	20	
Lead	**243**	**250**	250	250	ND	**97**	**100**	75-125	3	20	
Selenium	**93.1**	**96.9**	100	100	ND	**93**	**97**	75-125	4	20	
Silver	**22.4**	**22.6**	25.0	25.0	ND	**90**	**90**	75-125	1	20	
Laboratory ID:	08-245-05										
Mercury	**0.529**	**0.523**	0.500	0.500	0.0116	**103**	**102**	80-120	1	20	
Laboratory ID:	08-245-01										
	MS	MSD	MS	MSD		MS	MSD				
Barium	**186**	**183**	100	100	69.6	**116**	**113**	75-125	2	20	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-271
Project: 397-019

% MOISTURE

Date Analyzed: 8-24-18

Client ID	Lab ID	% Moisture
FMW-136-10.0-082218	08-271-02	34
FMW-136-20.0-082218	08-271-04	21
FMW-136-30.0-082218	08-271-06	15

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.

Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-271

Company: Favallon
Project Number: 397-019
Project Name: Block 38 West Property
Project Manager: Javan Ruark
Sampled by: Greg Peters

Turnaround Request (in working days) (Check One)

- ☐ Same Day ☐ 1 Day
- ☐ 2 Days ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	FMW-136-5.0-082218	8/22/18	1315	Soil	5																						
2	FMW-136-10.0-082218		1320				X		X		X																X
3	FMW-136-15.0-082218		1330																								
4	FMW-136-20.0-082218		1345				X		X		X		X						X								X
5	FMW-136-25.0-082218		1355																								
6	FMW-136-30.0-082218		1400				X		X										X								X

	Signature	Company	Date	Time
Relinquished	C Peters	Farallon	8/22/18	1915
Received	[illegible]	OSE	8/23/18	1417
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

~~Please Contact Project Manager for Sample Analyses and turn around time.~~ DJ

X - Added 8-24-18 KL (STA)

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 4, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1808-272

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on August 23, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

Case Narrative

Samples were collected on August 22, 2018 and received by the laboratory on August 23, 2018. They were maintained at the laboratory at a temperature of $2^{o}C$ to $6^{o}C$.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX (soil) Analysis

The chromatogram for sample FB-06-2.5-082218 is not similar to a typical gas.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-06-2.5-082218**					
Laboratory ID:	08-272-01					
Benzene	**ND**	0.024	EPA 8021B	8-24-18	8-24-18	
Toluene	**ND**	0.12	EPA 8021B	8-24-18	8-24-18	
Ethyl Benzene	**ND**	0.12	EPA 8021B	8-24-18	8-24-18	
m,p-Xylene	**ND**	0.12	EPA 8021B	8-24-18	8-24-18	
o-Xylene	**ND**	0.12	EPA 8021B	8-24-18	8-24-18	
Gasoline	**17**	12	NWTPH-Gx	8-24-18	8-24-18	T
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*57-129*				
Client ID:	**FB-06-20.0-082218**					
Laboratory ID:	08-272-04					
Benzene	**ND**	0.020	EPA 8021B	8-24-18	8-24-18	
Toluene	**ND**	0.053	EPA 8021B	8-24-18	8-24-18	
Ethyl Benzene	**ND**	0.053	EPA 8021B	8-24-18	8-24-18	
m,p-Xylene	**ND**	0.053	EPA 8021B	8-24-18	8-24-18	
o-Xylene	**ND**	0.053	EPA 8021B	8-24-18	8-24-18	
Gasoline	**ND**	5.3	NWTPH-Gx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*57-129*				
Client ID:	**FB-05-5.0-082218**					
Laboratory ID:	08-272-06					
Benzene	**ND**	0.020	EPA 8021B	8-24-18	8-24-18	
Toluene	**ND**	0.054	EPA 8021B	8-24-18	8-24-18	
Ethyl Benzene	**ND**	0.054	EPA 8021B	8-24-18	8-24-18	
m,p-Xylene	**ND**	0.054	EPA 8021B	8-24-18	8-24-18	
o-Xylene	**ND**	0.054	EPA 8021B	8-24-18	8-24-18	
Gasoline	**ND**	5.4	NWTPH-Gx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*57-129*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-05-20.0-082218**					
Laboratory ID:	08-272-09					
Benzene	**ND**	0.020	EPA 8021B	8-24-18	8-24-18	
Toluene	**ND**	0.055	EPA 8021B	8-24-18	8-24-18	
Ethyl Benzene	**ND**	0.055	EPA 8021B	8-24-18	8-24-18	
m,p-Xylene	**ND**	0.055	EPA 8021B	8-24-18	8-24-18	
o-Xylene	**ND**	0.055	EPA 8021B	8-24-18	8-24-18	
Gasoline	**ND**	5.5	NWTPH-Gx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*57-129*				
Client ID:	**FB-05-35.0-082218**					
Laboratory ID:	08-272-12					
Benzene	**ND**	0.020	EPA 8021B	8-24-18	8-24-18	
Toluene	**ND**	0.058	EPA 8021B	8-24-18	8-24-18	
Ethyl Benzene	**ND**	0.058	EPA 8021B	8-24-18	8-24-18	
m,p-Xylene	**ND**	0.058	EPA 8021B	8-24-18	8-24-18	
o-Xylene	**ND**	0.058	EPA 8021B	8-24-18	8-24-18	
Gasoline	**ND**	5.8	NWTPH-Gx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*57-129*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0824S1					
Benzene	**ND**	0.020	EPA 8021B	8-24-18	8-24-18	
Toluene	**ND**	0.050	EPA 8021B	8-24-18	8-24-18	
Ethyl Benzene	**ND**	0.050	EPA 8021B	8-24-18	8-24-18	
m,p-Xylene	**ND**	0.050	EPA 8021B	8-24-18	8-24-18	
o-Xylene	**ND**	0.050	EPA 8021B	8-24-18	8-24-18	
Gasoline	**ND**	5.0	NWTPH-Gx	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*57-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-271-02										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*94*	*95*	*57-129*			
SPIKE BLANKS											
Laboratory ID:	SB0824S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.873**	**0.924**	1.00	1.00		**87**	**92**	69-111	6	10	
Toluene	**0.863**	**0.912**	1.00	1.00		**86**	**91**	70-114	6	11	
Ethyl Benzene	**0.860**	**0.915**	1.00	1.00		**86**	**92**	70-115	6	10	
m,p-Xylene	**0.841**	**0.897**	1.00	1.00		**84**	**90**	72-115	6	10	
o-Xylene	**0.872**	**0.916**	1.00	1.00		**87**	**92**	71-115	5	11	
Surrogate:											
Fluorobenzene						*85*	*91*	*57-129*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-05-082218**					
Laboratory ID:	08-272-14					
Benzene	**ND**	1.0	EPA 8021B	8-27-18	8-27-18	
Toluene	**ND**	1.0	EPA 8021B	8-27-18	8-27-18	
Ethyl Benzene	**ND**	1.0	EPA 8021B	8-27-18	8-27-18	
m,p-Xylene	**ND**	1.0	EPA 8021B	8-27-18	8-27-18	
o-Xylene	**ND**	1.0	EPA 8021B	8-27-18	8-27-18	
Gasoline	**ND**	100	NWTPH-Gx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*66-117*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0827W2					
Benzene	**ND**	1.0	EPA 8021B	8-27-18	8-27-18	
Toluene	**ND**	1.0	EPA 8021B	8-27-18	8-27-18	
Ethyl Benzene	**ND**	1.0	EPA 8021B	8-27-18	8-27-18	
m,p-Xylene	**ND**	1.0	EPA 8021B	8-27-18	8-27-18	
o-Xylene	**ND**	1.0	EPA 8021B	8-27-18	8-27-18	
Gasoline	**ND**	100	NWTPH-Gx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*111*	*66-117*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-276-03										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*101*	*93*	*66-117*			
MATRIX SPIKES											
Laboratory ID:	08-276-03										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**53.6**	**51.8**	50.0	50.0	ND	**107**	**104**	82-122	3	11	
Toluene	**52.2**	**50.4**	50.0	50.0	ND	**104**	**101**	83-123	4	12	
Ethyl Benzene	**52.3**	**50.6**	50.0	50.0	ND	**105**	**101**	83-123	3	12	
m,p-Xylene	**51.7**	**50.2**	50.0	50.0	ND	**103**	**100**	83-123	3	12	
o-Xylene	**52.3**	**51.0**	50.0	50.0	ND	**105**	**102**	83-123	3	11	
Surrogate:											
Fluorobenzene						*103*	*104*	*66-117*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-06-2.5-082218**					
Laboratory ID:	08-272-01					
Diesel Range Organics	**180**	43	NWTPH-Dx	8-27-18	8-27-18	
Lube Oil Range Organics	**310**	87	NWTPH-Dx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**FB-06-20.0-082218**					
Laboratory ID:	08-272-04					
Diesel Range Organics	**ND**	30	NWTPH-Dx	8-27-18	8-27-18	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*117*	*50-150*				
Client ID:	**FB-05-5.0-082218**					
Laboratory ID:	08-272-06					
Diesel Range Organics	**ND**	31	NWTPH-Dx	8-27-18	8-27-18	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*131*	*50-150*				
Client ID:	**FB-05-20.0-082218**					
Laboratory ID:	08-272-09					
Diesel Range Organics	**ND**	31	NWTPH-Dx	8-27-18	8-27-18	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*56*	*50-150*				
Client ID:	**FB-05-35.0-082218**					
Laboratory ID:	08-272-12					
Diesel Range Organics	**ND**	31	NWTPH-Dx	8-27-18	8-27-18	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0827S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-27-18	8-27-18	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-272-01										
	ORIG	DUP									
Diesel Range Organics	**101**	**73.8**	NA	NA		NA		NA	31	NA	
Lube Oil Range Organics	**177**	**148**	NA	NA		NA		NA	18	NA	
Surrogate:											
o-Terphenyl						*88*	*102*	*50-150*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-05-082218**					
Laboratory ID:	08-272-14					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	8-27-18	8-27-18	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0827W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	8-27-18	8-27-18	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-270-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range Organics	**0.687**	**0.476**	NA	NA		NA		NA	36	NA	
Surrogate:											
o-Terphenyl						*88*	*82*	*50-150*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-05-20.0-082218**					
Laboratory ID:	08-272-09					
Dichlorodifluoromethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Chloromethane	ND	0.0045	EPA 8260C	8-24-18	8-24-18	
Vinyl Chloride	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Bromomethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Chloroethane	ND	0.0045	EPA 8260C	8-24-18	8-24-18	
Trichlorofluoromethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloroethene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Iodomethane	ND	0.0045	EPA 8260C	8-24-18	8-24-18	
Methylene Chloride	ND	0.0045	EPA 8260C	8-24-18	8-24-18	
(trans) 1,2-Dichloroethene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloroethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
2,2-Dichloropropane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
(cis) 1,2-Dichloroethene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Bromochloromethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Chloroform	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,1,1-Trichloroethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Carbon Tetrachloride	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloropropene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,2-Dichloroethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Trichloroethene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,2-Dichloropropane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Dibromomethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Bromodichloromethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
2-Chloroethyl Vinyl Ether	ND	0.0045	EPA 8260C	8-24-18	8-24-18	
(cis) 1,3-Dichloropropene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
(trans) 1,3-Dichloropropene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
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Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-05-20.0-082218**					
Laboratory ID:	08-272-09					
1,1,2-Trichloroethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Tetrachloroethene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,3-Dichloropropane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Dibromochloromethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,2-Dibromoethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Chlorobenzene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,1,1,2-Tetrachloroethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Bromoform	ND	0.0045	EPA 8260C	8-24-18	8-24-18	
Bromobenzene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,1,2,2-Tetrachloroethane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,2,3-Trichloropropane	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
2-Chlorotoluene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
4-Chlorotoluene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,3-Dichlorobenzene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,4-Dichlorobenzene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,2-Dichlorobenzene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
1,2-Dibromo-3-chloropropane	ND	0.0045	EPA 8260C	8-24-18	8-24-18	
1,2,4-Trichlorobenzene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Hexachlorobutadiene	ND	0.0045	EPA 8260C	8-24-18	8-24-18	
1,2,3-Trichlorobenzene	ND	0.00090	EPA 8260C	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*68-139*				
Toluene-d8	*100*	*79-128*				
4-Bromofluorobenzene	*94*	*71-132*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0824S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Chloromethane	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
Vinyl Chloride	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Bromomethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Chloroethane	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Iodomethane	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
Methylene Chloride	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Bromochloromethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Chloroform	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Trichloroethene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Dibromomethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Bromodichloromethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0824S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Tetrachloroethene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Dibromochloromethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Chlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Bromoform	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
Bromobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
2-Chlorotoluene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
4-Chlorotoluene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	8-24-18	8-24-18	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	8-24-18	8-24-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*68-139*				
Toluene-d8	*101*	*79-128*				
4-Bromofluorobenzene	*97*	*71-132*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0824S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0480**	**0.0510**	0.0500	0.0500	96	102	53-141	6	17	
Benzene	**0.0481**	**0.0509**	0.0500	0.0500	96	102	70-130	6	15	
Trichloroethene	**0.0506**	**0.0520**	0.0500	0.0500	101	104	74-122	3	16	
Toluene	**0.0513**	**0.0551**	0.0500	0.0500	103	110	76-130	7	15	
Chlorobenzene	**0.0488**	**0.0506**	0.0500	0.0500	98	101	75-120	4	14	
Surrogate:										
Dibromofluoromethane					*98*	*94*	*68-139*			
Toluene-d8					*101*	*103*	*79-128*			
4-Bromofluorobenzene					*98*	*98*	*71-132*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
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Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-05-082218**					
Laboratory ID:	08-272-14					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chloromethane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Vinyl Chloride	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromomethane	ND	2.0	EPA 8260C	8-29-18	8-29-18	
Chloroethane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Iodomethane	ND	5.0	EPA 8260C	8-29-18	8-29-18	
Methylene Chloride	ND	1.0	EPA 8260C	8-29-18	8-29-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromochloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chloroform	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Trichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Dibromomethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromodichloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	8-29-18	8-29-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-05-082218**					
Laboratory ID:	08-272-14					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Tetrachloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Dibromochloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromoform	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Bromobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	8-29-18	8-29-18	
1,2,3-Trichlorobenzene	ND	0.26	EPA 8260C	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*90*	*75-127*				
Toluene-d8	*90*	*80-127*				
4-Bromofluorobenzene	*99*	*78-125*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0829W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chloromethane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Vinyl Chloride	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromomethane	ND	2.0	EPA 8260C	8-29-18	8-29-18	
Chloroethane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Iodomethane	ND	5.0	EPA 8260C	8-29-18	8-29-18	
Methylene Chloride	ND	1.0	EPA 8260C	8-29-18	8-29-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromochloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chloroform	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Trichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Dibromomethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromodichloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	8-29-18	8-29-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
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METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0829W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Tetrachloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Dibromochloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromoform	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Bromobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	8-29-18	8-29-18	
1,2,3-Trichlorobenzene	ND	0.26	EPA 8260C	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*87*	*75-127*				
Toluene-d8	*88*	*80-127*				
4-Bromofluorobenzene	*95*	*78-125*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0829W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**10.6**	**10.0**	10.0	10.0	106	100	62-129	6	15	
Benzene	**11.1**	**10.5**	10.0	10.0	111	105	77-127	6	15	
Trichloroethene	**10.7**	**9.96**	10.0	10.0	107	100	70-120	7	15	
Toluene	**11.1**	**10.5**	10.0	10.0	111	105	82-123	6	15	
Chlorobenzene	**10.5**	**9.70**	10.0	10.0	105	97	79-120	8	15	
Surrogate:										
Dibromofluoromethane					*85*	*89*	*75-127*			
Toluene-d8					*88*	*89*	*80-127*			
4-Bromofluorobenzene					*93*	*94*	*78-125*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-06-2.5-082218**					
Laboratory ID:	08-272-01					
n-Nitrosodimethylamine	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Pyridine	**ND**	0.58	EPA 8270D	8-27-18	8-30-18	
Phenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Aniline	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroethyl)ether	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2-Chlorophenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
1,3-Dichlorobenzene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
1,4-Dichlorobenzene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Benzyl alcohol	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
1,2-Dichlorobenzene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2-Methylphenol (o-Cresol)	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroisopropyl)ether	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
n-Nitroso-di-n-propylamine	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Hexachloroethane	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Nitrobenzene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Isophorone	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2-Nitrophenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2,4-Dimethylphenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroethoxy)methane	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2,4-Dichlorophenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
1,2,4-Trichlorobenzene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Naphthalene	**0.087**	0.058	EPA 8270D	8-27-18	8-30-18	
4-Chloroaniline	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
Hexachlorobutadiene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
4-Chloro-3-methylphenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2-Methylnaphthalene	**0.045**	0.012	EPA 8270D/SIM	8-27-18	8-28-18	
1-Methylnaphthalene	**0.044**	0.012	EPA 8270D/SIM	8-27-18	8-28-18	
Hexachlorocyclopentadiene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2,4,6-Trichlorophenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2,3-Dichloroaniline	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2,4,5-Trichlorophenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2-Chloronaphthalene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2-Nitroaniline	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
1,4-Dinitrobenzene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Dimethylphthalate	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
1,3-Dinitrobenzene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2,6-Dinitrotoluene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
1,2-Dinitrobenzene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Acenaphthylene	**0.042**	0.012	EPA 8270D/SIM	8-27-18	8-28-18	
3-Nitroaniline	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	

Date of Report: September 4, 2018
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Laboratory Reference: 1808-272
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-06-2.5-082218**					
Laboratory ID:	08-272-01					
2,4-Dinitrophenol	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
Acenaphthene	**0.13**	0.058	EPA 8270D	8-27-18	8-30-18	
4-Nitrophenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2,4-Dinitrotoluene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Dibenzofuran	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Diethylphthalate	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
4-Chlorophenyl-phenylether	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
4-Nitroaniline	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Fluorene	**0.094**	0.058	EPA 8270D	8-27-18	8-30-18	
4,6-Dinitro-2-methylphenol	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
n-Nitrosodiphenylamine	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
1,2-Diphenylhydrazine	**ND**	0.16	EPA 8270D	8-27-18	8-30-18	U1
4-Bromophenyl-phenylether	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Hexachlorobenzene	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Pentachlorophenol	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
Phenanthrene	**0.89**	0.058	EPA 8270D	8-27-18	8-30-18	
Anthracene	**0.20**	0.058	EPA 8270D	8-27-18	8-30-18	
Carbazole	**ND**	0.058	EPA 8270D	8-27-18	8-30-18	
Di-n-butylphthalate	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
Fluoranthene	**0.81**	0.058	EPA 8270D	8-27-18	8-30-18	
Benzidine	**ND**	0.58	EPA 8270D	8-27-18	8-30-18	
Pyrene	**1.1**	0.058	EPA 8270D	8-27-18	8-30-18	
Butylbenzylphthalate	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
bis-2-Ethylhexyladipate	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
3,3'-Dichlorobenzidine	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
Benzo[a]anthracene	**0.47**	0.012	EPA 8270D/SIM	8-27-18	8-28-18	
Chrysene	**0.50**	0.058	EPA 8270D	8-27-18	8-30-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
Di-n-octylphthalate	**ND**	0.29	EPA 8270D	8-27-18	8-30-18	
Benzo[b]fluoranthene	**0.52**	0.012	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo(j,k)fluoranthene	**0.17**	0.012	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[a]pyrene	**0.49**	0.012	EPA 8270D/SIM	8-27-18	8-28-18	
Indeno[1,2,3-cd]pyrene	**0.34**	0.012	EPA 8270D/SIM	8-27-18	8-28-18	
Dibenz[a,h]anthracene	**0.054**	0.012	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[g,h,i]perylene	**0.35**	0.012	EPA 8270D/SIM	8-27-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*65*	*19 - 103*				
Phenol-d6	*65*	*30 - 103*				
Nitrobenzene-d5	*63*	*27 - 105*				
2-Fluorobiphenyl	*76*	*36 - 102*				
2,4,6-Tribromophenol	*80*	*33 - 110*				
Terphenyl-d14	*83*	*38 - 108*				

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Project: 397-019

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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-06-20.0-082218**					
Laboratory ID:	08-272-04					
n-Nitrosodimethylamine	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Pyridine	**ND**	0.40	EPA 8270D	8-27-18	8-30-18	
Phenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Aniline	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroethyl)ether	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2-Chlorophenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
1,3-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
1,4-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Benzyl alcohol	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
1,2-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2-Methylphenol (o-Cresol)	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroisopropyl)ether	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
n-Nitroso-di-n-propylamine	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Hexachloroethane	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Nitrobenzene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Isophorone	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2-Nitrophenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2,4-Dimethylphenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroethoxy)methane	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2,4-Dichlorophenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
1,2,4-Trichlorobenzene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Naphthalene	**0.070**	0.040	EPA 8270D	8-27-18	8-30-18	
4-Chloroaniline	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
Hexachlorobutadiene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
4-Chloro-3-methylphenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2-Methylnaphthalene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
1-Methylnaphthalene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Hexachlorocyclopentadiene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2,4,6-Trichlorophenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2,3-Dichloroaniline	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2,4,5-Trichlorophenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2-Chloronaphthalene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2-Nitroaniline	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
1,4-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Dimethylphthalate	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
1,3-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2,6-Dinitrotoluene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
1,2-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Acenaphthylene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
3-Nitroaniline	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-06-20.0-082218**					
Laboratory ID:	08-272-04					
2,4-Dinitrophenol	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
Acenaphthene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
4-Nitrophenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2,4-Dinitrotoluene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Dibenzofuran	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Diethylphthalate	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
4-Chlorophenyl-phenylether	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
4-Nitroaniline	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Fluorene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
4,6-Dinitro-2-methylphenol	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
n-Nitrosodiphenylamine	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
1,2-Diphenylhydrazine	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
4-Bromophenyl-phenylether	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Hexachlorobenzene	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Pentachlorophenol	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
Phenanthrene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Anthracene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Carbazole	**ND**	0.040	EPA 8270D	8-27-18	8-30-18	
Di-n-butylphthalate	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
Fluoranthene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Benzidine	**ND**	0.40	EPA 8270D	8-27-18	8-30-18	
Pyrene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Butylbenzylphthalate	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
bis-2-Ethylhexyladipate	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
3,3'-Dichlorobenzidine	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
Benzo[a]anthracene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Chrysene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
Di-n-octylphthalate	**ND**	0.20	EPA 8270D	8-27-18	8-30-18	
Benzo[b]fluoranthene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo(j,k)fluoranthene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[a]pyrene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Dibenz[a,h]anthracene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[g,h,i]perylene	**ND**	0.0081	EPA 8270D/SIM	8-27-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*70*	*19 - 103*				
Phenol-d6	*71*	*30 - 103*				
Nitrobenzene-d5	*64*	*27 - 105*				
2-Fluorobiphenyl	*71*	*36 - 102*				
2,4,6-Tribromophenol	*80*	*33 - 110*				
Terphenyl-d14	*75*	*38 - 108*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-05-15.0-082218**					
Laboratory ID:	08-272-08					
n-Nitrosodimethylamine	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Pyridine	**ND**	0.45	EPA 8270D	8-27-18	8-30-18	
Phenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Aniline	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroethyl)ether	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2-Chlorophenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
1,3-Dichlorobenzene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
1,4-Dichlorobenzene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Benzyl alcohol	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
1,2-Dichlorobenzene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2-Methylphenol (o-Cresol)	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroisopropyl)ether	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
n-Nitroso-di-n-propylamine	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Hexachloroethane	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Nitrobenzene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Isophorone	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2-Nitrophenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2,4-Dimethylphenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
bis(2-Chloroethoxy)methane	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2,4-Dichlorophenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
1,2,4-Trichlorobenzene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Naphthalene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
4-Chloroaniline	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
Hexachlorobutadiene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
4-Chloro-3-methylphenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2-Methylnaphthalene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
1-Methylnaphthalene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Hexachlorocyclopentadiene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2,4,6-Trichlorophenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2,3-Dichloroaniline	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2,4,5-Trichlorophenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2-Chloronaphthalene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2-Nitroaniline	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
1,4-Dinitrobenzene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Dimethylphthalate	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
1,3-Dinitrobenzene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2,6-Dinitrotoluene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
1,2-Dinitrobenzene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Acenaphthylene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
3-Nitroaniline	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-05-15.0-082218**					
Laboratory ID:	08-272-08					
2,4-Dinitrophenol	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
Acenaphthene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
4-Nitrophenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2,4-Dinitrotoluene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Dibenzofuran	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Diethylphthalate	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
4-Chlorophenyl-phenylether	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
4-Nitroaniline	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Fluorene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
4,6-Dinitro-2-methylphenol	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
n-Nitrosodiphenylamine	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
1,2-Diphenylhydrazine	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
4-Bromophenyl-phenylether	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Hexachlorobenzene	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Pentachlorophenol	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
Phenanthrene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Anthracene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Carbazole	**ND**	0.045	EPA 8270D	8-27-18	8-30-18	
Di-n-butylphthalate	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
Fluoranthene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Benzidine	**ND**	0.45	EPA 8270D	8-27-18	8-30-18	
Pyrene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Butylbenzylphthalate	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
bis-2-Ethylhexyladipate	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
3,3'-Dichlorobenzidine	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
Benzo[a]anthracene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Chrysene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
Di-n-octylphthalate	**ND**	0.22	EPA 8270D	8-27-18	8-30-18	
Benzo[b]fluoranthene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo(j,k)fluoranthene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[a]pyrene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Dibenz[a,h]anthracene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[g,h,i]perylene	**ND**	0.0089	EPA 8270D/SIM	8-27-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*60*	*19 - 103*				
Phenol-d6	*61*	*30 - 103*				
Nitrobenzene-d5	*57*	*27 - 105*				
2-Fluorobiphenyl	*66*	*36 - 102*				
2,4,6-Tribromophenol	*78*	*33 - 110*				
Terphenyl-d14	*76*	*38 - 108*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0827S2					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Pyridine	**ND**	0.33	EPA 8270D	8-27-18	8-28-18	
Phenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Aniline	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Chlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Benzyl alcohol	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Hexachloroethane	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Nitrobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Isophorone	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Nitrophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
4-Chloroaniline	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2-Nitroaniline	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Dimethylphthalate	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
3-Nitroaniline	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
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METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0827S2					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
4-Nitrophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Dibenzofuran	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Diethylphthalate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
4-Nitroaniline	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Pentachlorophenol	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Carbazole	**ND**	0.033	EPA 8270D	8-27-18	8-28-18	
Di-n-butylphthalate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Benzidine	**ND**	0.33	EPA 8270D	8-27-18	8-28-18	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Butylbenzylphthalate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
bis-2-Ethylhexyladipate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Di-n-octylphthalate	**ND**	0.17	EPA 8270D	8-27-18	8-28-18	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	8-27-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*79*	*19 - 103*				
Phenol-d6	*82*	*30 - 103*				
Nitrobenzene-d5	*78*	*27 - 105*				
2-Fluorobiphenyl	*83*	*36 - 102*				
2,4,6-Tribromophenol	*94*	*33 - 110*				
Terphenyl-d14	*84*	*38 - 108*				

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	08-245-02										
	MS	MSD	MS	MSD		MS	MSD				
Phenol	**1.14**	**1.11**	1.33	1.33	ND	86	83	37 - 94	3	27	
2-Chlorophenol	**1.15**	**1.12**	1.33	1.33	ND	86	84	37 - 95	3	32	
1,4-Dichlorobenzene	**0.550**	**0.554**	0.667	0.667	ND	82	83	23 - 97	1	37	
n-Nitroso-di-n-propylamine	**0.562**	**0.552**	0.667	0.667	ND	84	83	40 - 91	2	28	
1,2,4-Trichlorobenzene	**0.586**	**0.564**	0.667	0.667	ND	88	85	37 - 93	4	30	
4-Chloro-3-methylphenol	**1.15**	**1.11**	1.33	1.33	ND	86	83	46 - 96	4	25	
Acenaphthene	**0.581**	**0.573**	0.667	0.667	ND	87	86	43 - 90	1	25	
4-Nitrophenol	**1.15**	**1.18**	1.33	1.33	ND	86	89	31 - 104	3	28	
2,4-Dinitrotoluene	**0.607**	**0.576**	0.667	0.667	ND	91	86	31 - 96	5	32	
Pentachlorophenol	**1.34**	**1.36**	1.33	1.33	ND	101	102	20 - 123	1	29	
Pyrene	**0.590**	**0.590**	0.667	0.667	ND	88	88	28 - 114	0	35	
Surrogate:											
2-Fluorophenol						*80*	*81*	*19 - 103*			
Phenol-d6						*83*	*82*	*30 - 103*			
Nitrobenzene-d5						*74*	*73*	*27 - 105*			
2-Fluorobiphenyl						*78*	*79*	*36 - 102*			
2,4,6-Tribromophenol						*91*	*92*	*33 - 110*			
Terphenyl-d14						*80*	*80*	*38 - 108*			

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

TOTAL METALS
EPA 6010D/7471B

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-05-35.0-082218**					
Laboratory ID:	08-272-12					
Arsenic	**ND**	12	EPA 6010D	8-28-18	8-30-18	
Barium	**58**	3.1	EPA 6010D	8-28-18	8-30-18	
Cadmium	**ND**	0.62	EPA 6010D	8-28-18	8-30-18	
Chromium	**38**	0.62	EPA 6010D	8-28-18	8-30-18	
Lead	**ND**	6.2	EPA 6010D	8-28-18	8-30-18	
Mercury	**ND**	0.31	EPA 7471B	8-27-18	8-27-18	
Selenium	**ND**	12	EPA 6010D	8-28-18	8-30-18	
Silver	**ND**	1.2	EPA 6010D	8-28-18	8-30-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

TOTAL METALS
EPA 6010D/7471B
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0828SM1					
Arsenic	**ND**	10	EPA 6010D	8-28-18	8-30-18	
Cadmium	**ND**	0.50	EPA 6010D	8-28-18	8-30-18	
Chromium	**ND**	0.50	EPA 6010D	8-28-18	8-30-18	
Lead	**ND**	5.0	EPA 6010D	8-28-18	8-30-18	
Selenium	**ND**	10	EPA 6010D	8-28-18	8-30-18	
Silver	**ND**	1.0	EPA 6010D	8-28-18	8-30-18	
Laboratory ID:	MB0827S1					
Mercury	**ND**	0.25	EPA 7471B	8-27-18	8-27-18	
Laboratory ID:	MB0828SM3					
Barium	**ND**	2.5	EPA 6010D	8-28-18	8-30-18	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

TOTAL METALS
EPA 6010D/7471B
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-245-01										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Cadmium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Chromium	**35.3**	**42.0**	NA	NA		NA		NA	17	20	
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Selenium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Silver	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	08-245-05										
Mercury	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	08-245-01										
	ORIG	DUP									
Barium	**69.6**	**60.3**	NA	NA		NA		NA	14	20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	08-245-01										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**95.8**	**96.1**	100	100	ND	**96**	**96**	75-125	0	20	
Cadmium	**46.4**	**47.9**	50.0	50.0	ND	**93**	**96**	75-125	3	20	
Chromium	**133**	**141**	100	100	35.3	**98**	**106**	75-125	6	20	
Lead	**243**	**250**	250	250	ND	**97**	**100**	75-125	3	20	
Selenium	**93.1**	**96.9**	100	100	ND	**93**	**97**	75-125	4	20	
Silver	**22.4**	**22.6**	25.0	25.0	ND	**90**	**90**	75-125	1	20	
Laboratory ID:	08-245-05										
Mercury	**0.529**	**0.523**	0.500	0.500	0.0116	**103**	**102**	80-120	1	20	
Laboratory ID:	08-245-01										
	MS	MSD	MS	MSD		MS	MSD				
Barium	**186**	**183**	100	100	69.6	**116**	**113**	75-125	2	20	

Date of Report: September 4, 2018
Samples Submitted: August 23, 2018
Laboratory Reference: 1808-272
Project: 397-019

% MOISTURE

Date Analyzed: 8-24&27-18

Client ID	Lab ID	% Moisture
FB-06-2.5-082218	08-272-01	42
FB-06-20.0-082218	08-272-04	18
FB-05-5.0-082218	08-272-06	18
FB-05-15.0-082218	08-272-08	25
FB-05-20.0-082218	08-272-09	18
FB-05-35.0-082218	08-272-12	19

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical gas.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Company: FARALLON
Project Number: 397-019
Project Name: Block 38 West Property
Project Manager: Javan Ruark
Sampled by: Greg Peters

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Laboratory Number: 08-272

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	FB-06-2.5-082218	8/22/18	0610	Soil	5		X		X				X														X
2	FB-06-10.0-082218		0640																								
3	FB-06-15.0-082218		0655																								
4	FB-06-20.0-082218		0710				X		X				X														X
5	FB-06-25.0-082218		0730																								
6	FB-05-5.0-082218		0840				X		X																		X
7	FB-05-10.0-082218		0855																								
8	FB-05-15.0-082218		0910										X														X
9	FB-05-20.0-082218		0930				X		X		X																X
10	FB-05-25.0-082218		1110																								

	Signature	Company	Date	Time
Relinquished	[signature]	Farallon	8/22/18	1850
Received	Walter Lizzai	OSE	8/23/18	1417
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
~~Please Contact Project Manager for Analyses and turnaround time for each Sample~~ DB
X - Added 8/24/18. DB (STA)

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.

Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-272

Company:
Project Number:
Project Name:
Project Manager:
Sampled by:

Turnaround Request (in working days)
(Check One)

- ☐ Same Day ☐ 1 Day
- ☐ 2 Days ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
11	FB-05-30.0-082218	8/22/18	1120	Soil	5																						
12	FB-05-35.0-082218	|	1130	Soil	5		X		X										X								X
13	FB-05-40.0-082218	|	1140	Soil	5																						
14	FB-05-082218	|	0950	Water	12		X		X		X																

	Signature	Company	Date	Time
Relinquished	[signature]	Farallon	8/22/18	1858
Received	[signature]	OSE	8/23/18	1417
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

See Page 1.

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 7, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1808-272B

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on September 5, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 7, 2018
Samples Submitted: September 5, 2018
Laboratory Reference: 1808-272B
Project: 397-019

Case Narrative

Samples were collected on August 22, 2018 and received by the laboratory on August 23, 2018. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Semivolatiles EPA 8270D/SIM Analysis

Per client request, sample FB-06-10.0-082218 was extracted and analyzed out of hold-time.

The Spike Blank Duplicate associated with sample FB-06-10.0-082218 had one recovery slightly above control limits. The sample was non-detect for this analyte so no further action was taken.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 7, 2018
Samples Submitted: September 5, 2018
Laboratory Reference: 1808-272B
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-06-10.0-082218**					
Laboratory ID:	08-272-02					
n-Nitrosodimethylamine	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Pyridine	**ND**	0.82	EPA 8270D	9-6-18	9-6-18	
Phenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Aniline	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
bis(2-Chloroethyl)ether	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2-Chlorophenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
1,3-Dichlorobenzene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
1,4-Dichlorobenzene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Benzyl alcohol	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
1,2-Dichlorobenzene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2-Methylphenol (o-Cresol)	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
bis(2-Chloroisopropyl)ether	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
n-Nitroso-di-n-propylamine	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Hexachloroethane	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Nitrobenzene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Isophorone	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2-Nitrophenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2,4-Dimethylphenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
bis(2-Chloroethoxy)methane	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2,4-Dichlorophenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
1,2,4-Trichlorobenzene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Naphthalene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
4-Chloroaniline	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
Hexachlorobutadiene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
4-Chloro-3-methylphenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2-Methylnaphthalene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
1-Methylnaphthalene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Hexachlorocyclopentadiene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2,4,6-Trichlorophenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2,3-Dichloroaniline	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2,4,5-Trichlorophenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2-Chloronaphthalene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2-Nitroaniline	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
1,4-Dinitrobenzene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Dimethylphthalate	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
1,3-Dinitrobenzene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2,6-Dinitrotoluene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
1,2-Dinitrobenzene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Acenaphthylene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
3-Nitroaniline	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	

Date of Report: September 7, 2018
Samples Submitted: September 5, 2018
Laboratory Reference: 1808-272B
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-06-10.0-082218**					
Laboratory ID:	08-272-02					
2,4-Dinitrophenol	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
Acenaphthene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
4-Nitrophenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2,4-Dinitrotoluene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Dibenzofuran	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Diethylphthalate	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
4-Chlorophenyl-phenylether	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
4-Nitroaniline	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Fluorene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
4,6-Dinitro-2-methylphenol	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
n-Nitrosodiphenylamine	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
1,2-Diphenylhydrazine	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
4-Bromophenyl-phenylether	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Hexachlorobenzene	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Pentachlorophenol	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
Phenanthrene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Anthracene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Carbazole	**ND**	0.082	EPA 8270D	9-6-18	9-6-18	
Di-n-butylphthalate	**ND**	0.93	EPA 8270D	9-6-18	9-6-18	U1
Fluoranthene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Benzidine	**ND**	0.82	EPA 8270D	9-6-18	9-6-18	
Pyrene	**0.020**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Butylbenzylphthalate	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
bis-2-Ethylhexyladipate	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
3,3'-Dichlorobenzidine	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
Benzo[a]anthracene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Chrysene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
Di-n-octylphthalate	**ND**	0.41	EPA 8270D	9-6-18	9-6-18	
Benzo[b]fluoranthene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Benzo(j,k)fluoranthene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Benzo[a]pyrene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Dibenz[a,h]anthracene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Benzo[g,h,i]perylene	**ND**	0.016	EPA 8270D/SIM	9-6-18	9-6-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*64*	*19 - 103*				
Phenol-d6	*79*	*30 - 103*				
Nitrobenzene-d5	*76*	*27 - 105*				
2-Fluorobiphenyl	*76*	*36 - 102*				
2,4,6-Tribromophenol	*86*	*33 - 110*				
Terphenyl-d14	*82*	*38 - 108*				

Date of Report: September 7, 2018
Samples Submitted: September 5, 2018
Laboratory Reference: 1808-272B
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0906S2					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Pyridine	**ND**	0.33	EPA 8270D	9-6-18	9-6-18	
Phenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Aniline	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2-Chlorophenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Benzyl alcohol	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Hexachloroethane	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Nitrobenzene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Isophorone	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2-Nitrophenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
4-Chloroaniline	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2-Nitroaniline	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Dimethylphthalate	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
3-Nitroaniline	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	

Date of Report: September 7, 2018
Samples Submitted: September 5, 2018
Laboratory Reference: 1808-272B
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0906S2					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
4-Nitrophenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Dibenzofuran	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Diethylphthalate	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
4-Nitroaniline	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Pentachlorophenol	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Carbazole	**ND**	0.033	EPA 8270D	9-6-18	9-6-18	
Di-n-butylphthalate	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Benzidine	**ND**	0.33	EPA 8270D	9-6-18	9-6-18	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Butylbenzylphthalate	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
bis-2-Ethylhexyladipate	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
Di-n-octylphthalate	**ND**	0.17	EPA 8270D	9-6-18	9-6-18	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	9-6-18	9-6-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*73*	*19 - 103*				
Phenol-d6	*83*	*30 - 103*				
Nitrobenzene-d5	*82*	*27 - 105*				
2-Fluorobiphenyl	*82*	*36 - 102*				
2,4,6-Tribromophenol	*86*	*33 - 110*				
Terphenyl-d14	*80*	*38 - 108*				

Date of Report: September 7, 2018
Samples Submitted: September 5, 2018
Laboratory Reference: 1808-272B
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0906S2									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.940**	**0.997**	1.33	1.33	71	75	45 - 94	6	29	
2-Chlorophenol	**0.963**	**1.05**	1.33	1.33	72	79	46 - 94	9	33	
1,4-Dichlorobenzene	**0.405**	**0.493**	0.667	0.667	61	74	42 - 91	20	37	
n-Nitroso-di-n-propylamine	**0.495**	**0.576**	0.667	0.667	74	86	45 - 100	15	26	
1,2,4-Trichlorobenzene	**0.480**	**0.537**	0.667	0.667	72	81	45 - 100	11	32	
4-Chloro-3-methylphenol	**1.08**	**1.19**	1.33	1.33	81	89	55 - 97	10	21	
Acenaphthene	**0.531**	**0.589**	0.667	0.667	80	88	48 - 91	10	21	
4-Nitrophenol	**1.17**	**1.33**	1.33	1.33	88	100	53 - 102	13	20	
2,4-Dinitrotoluene	**0.534**	**0.606**	0.667	0.667	80	91	47 - 96	13	19	
Pentachlorophenol	**1.46**	**1.78**	1.33	1.33	110	134	35 - 125	20	26	I
Pyrene	**0.523**	**0.592**	0.667	0.667	78	89	55 - 110	12	17	
Surrogate:										
2-Fluorophenol					*68*	*70*	*19 - 103*			
Phenol-d6					*77*	*79*	*30 - 103*			
Nitrobenzene-d5					*80*	*76*	*27 - 105*			
2-Fluorobiphenyl					*79*	*85*	*36 - 102*			
2,4,6-Tribromophenol					*82*	*91*	*33 - 110*			
Terphenyl-d14					*76*	*85*	*38 - 108*			

Date of Report: September 7, 2018
Samples Submitted: September 5, 2018
Laboratory Reference: 1808-272B
Project: 397-019

% MOISTURE

Date Analyzed: 8-24,27&9-5-18

Client ID	Lab ID	% Moisture
FB-06-10.0-082218	08-272-02	59

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-272

Company: FARALLON
Project Number: 397-019
Project Name: Block 38 West Property
Project Manager: Javan Ruark
Sampled by: Greg Peters

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Days
- [ ] 3 Days
- [x] Standard (7 Days) (TPH analysis 5 Days)
- [ ] ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	FB-06-2.5-082218	8/22/18	0610	Soil	5		X		X				X														X
2	FB-06-10.0-082218		0640										X														X
3	FB-06-15.0-082218		0655																								
4	FB-06-20.0-082218		0710				X		X				X														X
5	FB-06-25.0-082218		0730																								
6	FB-05-5.0-082218		0840				X		X																		X
7	FB-05-10.0-082218		0855																								
8	FB-05-15.0-082218		0910										X														X
9	FB-05-20.0-082218		0930				X		X		X																X
10	FB-05-25.0-082218		1110																								

	Signature	Company	Date	Time
Relinquished	[illegible]	Farallon	8/22/18	1850
Received	[illegible]	OSE	8/23/18	1417
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
~~Please Contact Project Manager for Analyses and turnaround time for each sample~~ DB
X - Added 8/24/18. DB (STA)
⊗ Added 9/5/18. DB (STA)

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
Analytical Laboratory Testing Services
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Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-272

Company:
Project Number:
Project Name:
Project Manager:
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A						% Moisture
11	FB-05-30.0-082218	8/22/18	1120	Soil	5																							
12	FB-05-35.0-082218		1130	Soil	5		X		X										X									X
13	FB-05-40.0-082218		1140	Soil	5																							
14	FB-05-082218		0950	Water	12		X		X		X																	

	Signature	Company	Date	Time
Relinquished	[signature]	Farallon	8/22/18	1850
Received	[signature]	OSE	8/23/18	1417
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

See Page 1.

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 6, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1808-277

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on August 24, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

Case Narrative

Samples were collected on August 23, 2018 and received by the laboratory on August 24, 2018. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

<u>NWTPH Gx/BTEX Analysis</u>

The MTCA Method A cleanup level of 0.030 ppm for Benzene is not achievable for sample FMW-134-5.0-082318 due to the low dry weight of the sample.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-5.0-082318**					
Laboratory ID:	08-277-01					
Benzene	**ND**	0.059	EPA 8021B	8-27-18	8-27-18	
Toluene	**ND**	0.30	EPA 8021B	8-27-18	8-27-18	
Ethyl Benzene	**ND**	0.30	EPA 8021B	8-27-18	8-27-18	
m,p-Xylene	**ND**	0.30	EPA 8021B	8-27-18	8-27-18	
o-Xylene	**ND**	0.30	EPA 8021B	8-27-18	8-27-18	
Gasoline	**ND**	30	NWTPH-Gx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*80*	*57-129*				
Client ID:	**FMW-134-15.0-082318**					
Laboratory ID:	08-277-03					
Benzene	**ND**	0.023	EPA 8021B	8-27-18	8-27-18	
Toluene	**ND**	0.12	EPA 8021B	8-27-18	8-27-18	
Ethyl Benzene	**ND**	0.12	EPA 8021B	8-27-18	8-27-18	
m,p-Xylene	**ND**	0.12	EPA 8021B	8-27-18	8-27-18	
o-Xylene	**ND**	0.12	EPA 8021B	8-27-18	8-27-18	
Gasoline	**ND**	12	NWTPH-Gx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*57-129*				
Client ID:	**FB-03-10.0-082318**					
Laboratory ID:	08-277-06					
Benzene	**ND**	0.020	EPA 8021B	8-27-18	8-27-18	
Toluene	**ND**	0.065	EPA 8021B	8-27-18	8-27-18	
Ethyl Benzene	**ND**	0.065	EPA 8021B	8-27-18	8-27-18	
m,p-Xylene	**ND**	0.065	EPA 8021B	8-27-18	8-27-18	
o-Xylene	**ND**	0.065	EPA 8021B	8-27-18	8-27-18	
Gasoline	**ND**	6.5	NWTPH-Gx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*57-129*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-15.0-082318**					
Laboratory ID:	08-277-07					
Benzene	**ND**	0.020	EPA 8021B	8-27-18	8-27-18	
Toluene	**ND**	0.065	EPA 8021B	8-27-18	8-27-18	
Ethyl Benzene	**ND**	0.065	EPA 8021B	8-27-18	8-27-18	
m,p-Xylene	**ND**	0.065	EPA 8021B	8-27-18	8-27-18	
o-Xylene	**ND**	0.065	EPA 8021B	8-27-18	8-27-18	
Gasoline	**ND**	6.5	NWTPH-Gx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*57-129*				
Client ID:	**FB-03-25.0-082318**					
Laboratory ID:	08-277-08					
Benzene	**ND**	0.020	EPA 8021B	8-27-18	8-27-18	
Toluene	**ND**	0.055	EPA 8021B	8-27-18	8-27-18	
Ethyl Benzene	**ND**	0.055	EPA 8021B	8-27-18	8-27-18	
m,p-Xylene	**ND**	0.055	EPA 8021B	8-27-18	8-27-18	
o-Xylene	**ND**	0.055	EPA 8021B	8-27-18	8-27-18	
Gasoline	**ND**	5.5	NWTPH-Gx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*57-129*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0827S2					
Benzene	**ND**	0.020	EPA 8021B	8-27-18	8-27-18	
Toluene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
Ethyl Benzene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
m,p-Xylene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
o-Xylene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
Gasoline	**ND**	5.0	NWTPH-Gx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*57-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-276-04										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*99*	*94*	*57-129*			
SPIKE BLANKS											
Laboratory ID:	SB0827S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.923**	**0.893**	1.00	1.00		**92**	**89**	69-111	3	10	
Toluene	**0.915**	**0.880**	1.00	1.00		**92**	**88**	70-114	4	11	
Ethyl Benzene	**0.918**	**0.886**	1.00	1.00		**92**	**89**	70-115	4	10	
m,p-Xylene	**0.907**	**0.877**	1.00	1.00		**91**	**88**	72-115	3	10	
o-Xylene	**0.917**	**0.882**	1.00	1.00		**92**	**88**	71-115	4	11	
Surrogate:											
Fluorobenzene						*89*	*86*	*57-129*			

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-082318**					
Laboratory ID:	08-277-12					
Benzene	**ND**	1.0	EPA 8021B	8-28-18	8-28-18	
Toluene	**ND**	1.0	EPA 8021B	8-28-18	8-28-18	
Ethyl Benzene	**ND**	1.0	EPA 8021B	8-28-18	8-28-18	
m,p-Xylene	**ND**	1.0	EPA 8021B	8-28-18	8-28-18	
o-Xylene	**ND**	1.0	EPA 8021B	8-28-18	8-28-18	
Gasoline	**ND**	100	NWTPH-Gx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*111*	*66-117*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828W1					
Benzene	**ND**	1.0	EPA 8021B	8-28-18	8-28-18	
Toluene	**ND**	1.0	EPA 8021B	8-28-18	8-28-18	
Ethyl Benzene	**ND**	1.0	EPA 8021B	8-28-18	8-28-18	
m,p-Xylene	**ND**	1.0	EPA 8021B	8-28-18	8-28-18	
o-Xylene	**ND**	1.0	EPA 8021B	8-28-18	8-28-18	
Gasoline	**ND**	100	NWTPH-Gx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*112*	*66-117*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-277-12										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*111*	*113*	*66-117*			
MATRIX SPIKES											
Laboratory ID:	08-277-12										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**50.9**	**52.1**	50.0	50.0	ND	**102**	**104**	82-122	2	11	
Toluene	**50.2**	**51.2**	50.0	50.0	ND	**100**	**102**	83-123	2	12	
Ethyl Benzene	**50.6**	**51.9**	50.0	50.0	ND	**101**	**104**	83-123	3	12	
m,p-Xylene	**50.1**	**51.2**	50.0	50.0	ND	**100**	**102**	83-123	2	12	
o-Xylene	**50.7**	**51.8**	50.0	50.0	ND	**101**	**104**	83-123	2	11	
Surrogate:											
Fluorobenzene						*100*	*100*	*66-117*			

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-5.0-082318**					
Laboratory ID:	08-277-01					
Diesel Range Organics	**260**	83	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**1900**	170	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**FMW-134-15.0-082318**					
Laboratory ID:	08-277-03					
Diesel Range Organics	**ND**	31	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*124*	*50-150*				
Client ID:	**FB-03-10.0-082318**					
Laboratory ID:	08-277-06					
Diesel Range Organics	**ND**	32	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**ND**	65	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*75*	*50-150*				
Client ID:	**FB-03-15.0-082318**					
Laboratory ID:	08-277-07					
Diesel Range Organics	**ND**	32	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**ND**	65	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**FB-03-25.0-082318**					
Laboratory ID:	08-277-08					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-277-03										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*124*	*113*	*50-150*			

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-082318**					
Laboratory ID:	08-277-12					
Diesel Range Organics	**0.66**	0.25	NWTPH-Dx	8-28-18	8-30-18	
Lube Oil Range Organics	**0.49**	0.41	NWTPH-Dx	8-28-18	8-30-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*118*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	SB0828W1										
	ORIG	DUP									
Diesel Fuel #2	**0.920**	**0.849**	NA	NA		NA		NA	8	NA	
Lube Oil	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*103*	*106*	*50-150*			

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-082318**					
Laboratory ID:	08-277-12					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chloromethane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Vinyl Chloride	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromomethane	ND	2.0	EPA 8260C	8-29-18	8-29-18	
Chloroethane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Acetone	7.4	5.0	EPA 8260C	8-29-18	8-29-18	
Iodomethane	ND	5.0	EPA 8260C	8-29-18	8-29-18	
Carbon Disulfide	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Methylene Chloride	ND	1.0	EPA 8260C	8-29-18	8-29-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Methyl t-Butyl Ether	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Vinyl Acetate	ND	1.0	EPA 8260C	8-29-18	8-29-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Butanone	ND	5.0	EPA 8260C	8-29-18	8-29-18	
Bromochloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chloroform	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Benzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Trichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Dibromomethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromodichloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	8-29-18	8-29-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260C	8-29-18	8-29-18	
Toluene	ND	1.0	EPA 8260C	8-29-18	8-29-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-082318**					
Laboratory ID:	08-277-12					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Tetrachloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Hexanone	ND	2.0	EPA 8260C	8-29-18	8-29-18	
Dibromochloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Ethylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
m,p-Xylene	ND	0.40	EPA 8260C	8-29-18	8-29-18	
o-Xylene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Styrene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromoform	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Isopropylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
n-Propylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
tert-Butylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
sec-Butylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
p-Isopropyltoluene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
n-Butylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Naphthalene	ND	1.3	EPA 8260C	8-29-18	8-29-18	
1,2,3-Trichlorobenzene	ND	0.26	EPA 8260C	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*75-127*				
Toluene-d8	*96*	*80-127*				
4-Bromofluorobenzene	*106*	*78-125*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
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Project: 397-019

VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0829W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chloromethane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Vinyl Chloride	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromomethane	ND	2.0	EPA 8260C	8-29-18	8-29-18	
Chloroethane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Acetone	ND	5.0	EPA 8260C	8-29-18	8-29-18	
Iodomethane	ND	5.0	EPA 8260C	8-29-18	8-29-18	
Carbon Disulfide	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Methylene Chloride	ND	1.0	EPA 8260C	8-29-18	8-29-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Methyl t-Butyl Ether	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Vinyl Acetate	ND	1.0	EPA 8260C	8-29-18	8-29-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Butanone	ND	5.0	EPA 8260C	8-29-18	8-29-18	
Bromochloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chloroform	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Benzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Trichloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Dibromomethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromodichloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	8-29-18	8-29-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260C	8-29-18	8-29-18	
Toluene	ND	1.0	EPA 8260C	8-29-18	8-29-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-29-18	8-29-18	

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0829W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Tetrachloroethene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Hexanone	ND	2.0	EPA 8260C	8-29-18	8-29-18	
Dibromochloromethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Chlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Ethylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
m,p-Xylene	ND	0.40	EPA 8260C	8-29-18	8-29-18	
o-Xylene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Styrene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromoform	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Isopropylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Bromobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	8-29-18	8-29-18	
n-Propylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
tert-Butylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
sec-Butylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
p-Isopropyltoluene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
n-Butylbenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	8-29-18	8-29-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	8-29-18	8-29-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	8-29-18	8-29-18	
Naphthalene	ND	1.3	EPA 8260C	8-29-18	8-29-18	
1,2,3-Trichlorobenzene	ND	0.26	EPA 8260C	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*87*	*75-127*				
Toluene-d8	*88*	*80-127*				
4-Bromofluorobenzene	*95*	*78-125*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

VOLATILES EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0829W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**10.6**	**10.0**	10.0	10.0	106	100	62-129	6	15	
Benzene	**11.1**	**10.5**	10.0	10.0	111	105	77-127	6	15	
Trichloroethene	**10.7**	**9.96**	10.0	10.0	107	100	70-120	7	15	
Toluene	**11.1**	**10.5**	10.0	10.0	111	105	82-123	6	15	
Chlorobenzene	**10.5**	**9.70**	10.0	10.0	105	97	79-120	8	15	
Surrogate:										
Dibromofluoromethane					*85*	*89*	*75-127*			
Toluene-d8					*88*	*89*	*80-127*			
4-Bromofluorobenzene					*93*	*94*	*78-125*			

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-15.0-082318**					
Laboratory ID:	08-277-03					
n-Nitrosodimethylamine	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Pyridine	**ND**	0.41	EPA 8270D	8-29-18	8-29-18	
Phenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Aniline	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethyl)ether	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2-Chlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
1,3-Dichlorobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
1,4-Dichlorobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Benzyl alcohol	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
1,2-Dichlorobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2-Methylphenol (o-Cresol)	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroisopropyl)ether	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
n-Nitroso-di-n-propylamine	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Hexachloroethane	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Nitrobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Isophorone	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2-Nitrophenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2,4-Dimethylphenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethoxy)methane	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2,4-Dichlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
1,2,4-Trichlorobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Naphthalene	**0.14**	0.041	EPA 8270D	8-29-18	8-29-18	
4-Chloroaniline	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Hexachlorobutadiene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
4-Chloro-3-methylphenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2-Methylnaphthalene	**0.028**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
1-Methylnaphthalene	**0.012**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Hexachlorocyclopentadiene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2,4,6-Trichlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2,3-Dichloroaniline	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2,4,5-Trichlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2-Chloronaphthalene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2-Nitroaniline	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
1,4-Dinitrobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Dimethylphthalate	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
1,3-Dinitrobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2,6-Dinitrotoluene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
1,2-Dinitrobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Acenaphthylene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
3-Nitroaniline	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-15.0-082318**					
Laboratory ID:	08-277-03					
2,4-Dinitrophenol	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Acenaphthene	**0.014**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
4-Nitrophenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2,4-Dinitrotoluene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Dibenzofuran	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Diethylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
4-Chlorophenyl-phenylether	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
4-Nitroaniline	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Fluorene	**0.016**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
4,6-Dinitro-2-methylphenol	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
n-Nitrosodiphenylamine	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
1,2-Diphenylhydrazine	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
4-Bromophenyl-phenylether	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Hexachlorobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Pentachlorophenol	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Phenanthrene	**0.021**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Anthracene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Carbazole	**ND**	0.041	EPA 8270D	8-29-18	8-29-18	
Di-n-butylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Fluoranthene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Benzidine	**ND**	0.41	EPA 8270D	8-29-18	8-29-18	
Pyrene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Butylbenzylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
bis-2-Ethylhexyladipate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
3,3'-Dichlorobenzidine	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Benzo[a]anthracene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Chrysene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Di-n-octylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Benzo[b]fluoranthene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo(j,k)fluoranthene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[a]pyrene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Dibenz[a,h]anthracene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[g,h,i]perylene	**ND**	0.0081	EPA 8270D/SIM	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*71*	*19 - 103*				
Phenol-d6	*71*	*30 - 103*				
Nitrobenzene-d5	*65*	*27 - 105*				
2-Fluorobiphenyl	*70*	*36 - 102*				
2,4,6-Tribromophenol	*79*	*33 - 110*				
Terphenyl-d14	*69*	*38 - 108*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-10.0-082318**					
Laboratory ID:	08-277-06					
n-Nitrosodimethylamine	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Pyridine	**ND**	0.43	EPA 8270D	8-29-18	8-29-18	
Phenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Aniline	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethyl)ether	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2-Chlorophenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
1,3-Dichlorobenzene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
1,4-Dichlorobenzene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Benzyl alcohol	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
1,2-Dichlorobenzene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2-Methylphenol (o-Cresol)	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroisopropyl)ether	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
n-Nitroso-di-n-propylamine	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Hexachloroethane	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Nitrobenzene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Isophorone	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2-Nitrophenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2,4-Dimethylphenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethoxy)methane	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2,4-Dichlorophenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
1,2,4-Trichlorobenzene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Naphthalene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
4-Chloroaniline	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
Hexachlorobutadiene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
4-Chloro-3-methylphenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2-Methylnaphthalene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
1-Methylnaphthalene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Hexachlorocyclopentadiene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2,4,6-Trichlorophenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2,3-Dichloroaniline	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2,4,5-Trichlorophenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2-Chloronaphthalene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2-Nitroaniline	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
1,4-Dinitrobenzene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Dimethylphthalate	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
1,3-Dinitrobenzene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2,6-Dinitrotoluene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
1,2-Dinitrobenzene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Acenaphthylene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
3-Nitroaniline	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-10.0-082318**					
Laboratory ID:	08-277-06					
2,4-Dinitrophenol	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
Acenaphthene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
4-Nitrophenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2,4-Dinitrotoluene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Dibenzofuran	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Diethylphthalate	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
4-Chlorophenyl-phenylether	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
4-Nitroaniline	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Fluorene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
4,6-Dinitro-2-methylphenol	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
n-Nitrosodiphenylamine	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
1,2-Diphenylhydrazine	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
4-Bromophenyl-phenylether	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Hexachlorobenzene	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Pentachlorophenol	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
Phenanthrene	**0.015**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Anthracene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Carbazole	**ND**	0.043	EPA 8270D	8-29-18	8-29-18	
Di-n-butylphthalate	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
Fluoranthene	**0.011**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Benzidine	**ND**	0.43	EPA 8270D	8-29-18	8-29-18	
Pyrene	**0.012**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Butylbenzylphthalate	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
bis-2-Ethylhexyladipate	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
3,3'-Dichlorobenzidine	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
Benzo[a]anthracene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Chrysene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
Di-n-octylphthalate	**ND**	0.22	EPA 8270D	8-29-18	8-29-18	
Benzo[b]fluoranthene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo(j,k)fluoranthene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[a]pyrene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Dibenz[a,h]anthracene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[g,h,i]perylene	**ND**	0.0086	EPA 8270D/SIM	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*60*	*19 - 103*				
Phenol-d6	*61*	*30 - 103*				
Nitrobenzene-d5	*52*	*27 - 105*				
2-Fluorobiphenyl	*54*	*36 - 102*				
2,4,6-Tribromophenol	*56*	*33 - 110*				
Terphenyl-d14	*52*	*38 - 108*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-35.0-082318**					
Laboratory ID:	08-277-10					
n-Nitrosodimethylamine	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Pyridine	**ND**	0.40	EPA 8270D	8-29-18	8-29-18	
Phenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Aniline	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethyl)ether	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2-Chlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
1,3-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
1,4-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Benzyl alcohol	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
1,2-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2-Methylphenol (o-Cresol)	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroisopropyl)ether	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
n-Nitroso-di-n-propylamine	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Hexachloroethane	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Nitrobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Isophorone	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2-Nitrophenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2,4-Dimethylphenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethoxy)methane	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2,4-Dichlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
1,2,4-Trichlorobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Naphthalene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
4-Chloroaniline	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Hexachlorobutadiene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
4-Chloro-3-methylphenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2-Methylnaphthalene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
1-Methylnaphthalene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Hexachlorocyclopentadiene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2,4,6-Trichlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2,3-Dichloroaniline	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2,4,5-Trichlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2-Chloronaphthalene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2-Nitroaniline	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
1,4-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Dimethylphthalate	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
1,3-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2,6-Dinitrotoluene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
1,2-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Acenaphthylene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
3-Nitroaniline	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-35.0-082318**					
Laboratory ID:	08-277-10					
2,4-Dinitrophenol	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Acenaphthene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
4-Nitrophenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2,4-Dinitrotoluene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Dibenzofuran	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Diethylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
4-Chlorophenyl-phenylether	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
4-Nitroaniline	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Fluorene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
4,6-Dinitro-2-methylphenol	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
n-Nitrosodiphenylamine	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
1,2-Diphenylhydrazine	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
4-Bromophenyl-phenylether	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Hexachlorobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Pentachlorophenol	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Phenanthrene	**0.017**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Anthracene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Carbazole	**ND**	0.040	EPA 8270D	8-29-18	8-29-18	
Di-n-butylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Fluoranthene	**0.015**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Benzidine	**ND**	0.40	EPA 8270D	8-29-18	8-29-18	
Pyrene	**0.017**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Butylbenzylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
bis-2-Ethylhexyladipate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
3,3'-Dichlorobenzidine	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Chrysene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Di-n-octylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-29-18	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo(j,k)fluoranthene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*75*	*19 - 103*				
Phenol-d6	*78*	*30 - 103*				
Nitrobenzene-d5	*69*	*27 - 105*				
2-Fluorobiphenyl	*73*	*36 - 102*				
2,4,6-Tribromophenol	*84*	*33 - 110*				
Terphenyl-d14	*75*	*38 - 108*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0829S1					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Pyridine	**ND**	0.33	EPA 8270D	8-29-18	8-29-18	
Phenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Aniline	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Chlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Benzyl alcohol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Hexachloroethane	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Nitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Isophorone	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Nitrophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
4-Chloroaniline	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Nitroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Dimethylphthalate	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
3-Nitroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0829S1					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
4-Nitrophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Dibenzofuran	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Diethylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
4-Nitroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Pentachlorophenol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Carbazole	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Di-n-butylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzidine	**ND**	0.33	EPA 8270D	8-29-18	8-29-18	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Butylbenzylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
bis-2-Ethylhexyladipate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Di-n-octylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*79*	*19 - 103*				
Phenol-d6	*79*	*30 - 103*				
Nitrobenzene-d5	*73*	*27 - 105*				
2-Fluorobiphenyl	*75*	*36 - 102*				
2,4,6-Tribromophenol	*88*	*33 - 110*				
Terphenyl-d14	*81*	*38 - 108*				

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	08-229-04										
	MS	MSD	MS	MSD		MS	MSD				
Phenol	**1.15**	**0.989**	1.33	1.33	ND	86	74	37 - 94	15	27	
2-Chlorophenol	**1.21**	**1.03**	1.33	1.33	ND	91	77	37 - 95	16	32	
1,4-Dichlorobenzene	**0.568**	**0.493**	0.667	0.667	ND	85	74	23 - 97	14	37	
n-Nitroso-di-n-propylamine	**0.580**	**0.501**	0.667	0.667	ND	87	75	40 - 91	15	28	
1,2,4-Trichlorobenzene	**0.563**	**0.505**	0.667	0.667	ND	84	76	37 - 93	11	30	
4-Chloro-3-methylphenol	**1.11**	**1.03**	1.33	1.33	ND	83	77	46 - 96	7	25	
Acenaphthene	**0.585**	**0.526**	0.667	0.667	0.0395	82	73	43 - 90	11	25	
4-Nitrophenol	**1.15**	**1.03**	1.33	1.33	ND	86	77	31 - 104	11	28	
2,4-Dinitrotoluene	**0.575**	**0.516**	0.667	0.667	ND	86	77	31 - 96	11	32	
Pentachlorophenol	**1.38**	**1.22**	1.33	1.33	ND	104	92	20 - 123	12	29	
Pyrene	**0.582**	**0.518**	0.667	0.667	0.0828	75	65	28 - 114	12	35	
Surrogate:											
2-Fluorophenol						*85*	*71*	*19 - 103*			
Phenol-d6						*84*	*73*	*30 - 103*			
Nitrobenzene-d5						*72*	*65*	*27 - 105*			
2-Fluorobiphenyl						*77*	*70*	*36 - 102*			
2,4,6-Tribromophenol						*92*	*84*	*33 - 110*			
Terphenyl-d14						*78*	*71*	*38 - 108*			

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

TOTAL METALS
EPA 6010D/7471B

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-5.0-082318**					
Laboratory ID:	08-277-01					
Arsenic	**ND**	17	EPA 6010D	8-29-18	8-31-18	
Barium	**110**	8.3	EPA 6010D	8-29-18	8-31-18	
Cadmium	**ND**	1.7	EPA 6010D	8-29-18	8-31-18	
Chromium	**19**	1.7	EPA 6010D	8-29-18	8-31-18	
Lead	**ND**	17	EPA 6010D	8-29-18	8-31-18	
Mercury	**ND**	0.83	EPA 7471B	8-29-18	8-29-18	
Selenium	**ND**	17	EPA 6010D	8-29-18	8-31-18	
Silver	**ND**	3.3	EPA 6010D	8-29-18	8-31-18	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-15.0-082318**					
Laboratory ID:	08-277-03					
Arsenic	**ND**	12	EPA 6010D	8-29-18	8-31-18	
Barium	**48**	3.0	EPA 6010D	8-29-18	8-31-18	
Cadmium	**ND**	0.61	EPA 6010D	8-29-18	8-31-18	
Chromium	**42**	0.61	EPA 6010D	8-29-18	8-31-18	
Lead	**ND**	6.1	EPA 6010D	8-29-18	8-31-18	
Mercury	**ND**	0.30	EPA 7471B	8-29-18	8-29-18	
Selenium	**ND**	12	EPA 6010D	8-29-18	8-31-18	
Silver	**ND**	1.2	EPA 6010D	8-29-18	8-31-18	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-10.0-082318**					
Laboratory ID:	08-277-06					
Arsenic	**ND**	13	EPA 6010D	8-29-18	8-31-18	
Barium	**230**	3.2	EPA 6010D	8-29-18	8-31-18	
Cadmium	**ND**	0.65	EPA 6010D	8-29-18	8-31-18	
Chromium	**100**	0.65	EPA 6010D	8-29-18	8-31-18	
Lead	**8.9**	6.5	EPA 6010D	8-29-18	8-31-18	
Mercury	**ND**	0.32	EPA 7471B	8-29-18	8-29-18	
Selenium	**ND**	13	EPA 6010D	8-29-18	8-31-18	
Silver	**ND**	1.3	EPA 6010D	8-29-18	8-31-18	

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

TOTAL METALS
EPA 6010D/7471B

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FB-03-35.0-082318**					
Laboratory ID:	08-277-10					
Arsenic	**ND**	12	EPA 6010D	8-29-18	8-31-18	
Barium	**44**	3.0	EPA 6010D	8-29-18	8-31-18	
Cadmium	**ND**	0.60	EPA 6010D	8-29-18	8-31-18	
Chromium	**42**	0.60	EPA 6010D	8-29-18	8-31-18	
Lead	**ND**	6.0	EPA 6010D	8-29-18	8-31-18	
Mercury	**ND**	0.30	EPA 7471B	8-29-18	8-29-18	
Selenium	**ND**	12	EPA 6010D	8-29-18	8-31-18	
Silver	**ND**	1.2	EPA 6010D	8-29-18	8-31-18	

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

TOTAL METALS
EPA 6010D/7471B
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0829SM1					
Arsenic	**ND**	5.0	EPA 6010D	8-29-18	8-31-18	
Barium	**ND**	2.5	EPA 6010D	8-29-18	8-31-18	
Cadmium	**ND**	0.50	EPA 6010D	8-29-18	8-31-18	
Chromium	**ND**	0.50	EPA 6010D	8-29-18	8-31-18	
Lead	**ND**	5.0	EPA 6010D	8-29-18	8-31-18	
Selenium	**ND**	5.0	EPA 6010D	8-29-18	8-31-18	
Silver	**ND**	1.0	EPA 6010D	8-29-18	8-31-18	
Laboratory ID:	MB0829S1					
Mercury	**ND**	0.25	EPA 7471B	8-29-18	8-29-18	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-277-03										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Barium	**39.8**	**42.3**	NA	NA		NA		NA	6	20	
Cadmium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Chromium	**34.5**	**36.2**	NA	NA		NA		NA	5	20	
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Selenium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Silver	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	08-277-03										
Mercury	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	08-277-03										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**98.9**	**98.4**	100	100	ND	**99**	**98**	75-125	0	20	
Barium	**148**	**148**	100	100	39.8	**109**	**109**	75-125	0	20	
Cadmium	**49.4**	**48.5**	50.0	50.0	ND	**99**	**97**	75-125	2	20	
Chromium	**137**	**136**	100	100	34.5	**102**	**102**	75-125	0	20	
Lead	**242**	**239**	250	250	ND	**97**	**96**	75-125	1	20	
Selenium	**100**	**101**	100	100	ND	**100**	**101**	75-125	0	20	
Silver	**22.9**	**22.7**	25.0	25.0	ND	**92**	**91**	75-125	1	20	
Laboratory ID:	08-277-03										
Mercury	**0.534**	**0.537**	0.500	0.500	0.0115	**105**	**105**	80-120	1	20	

Date of Report: September 6, 2018
Samples Submitted: August 24, 2018
Laboratory Reference: 1808-277
Project: 397-019

% MOISTURE

Date Analyzed: 8-27&28-18

Client ID	Lab ID	% Moisture
FMW-134-5.0-082318	08-277-01	70
FMW-134-15.0-082318	08-277-03	18
FB-03-10.0-082318	08-277-06	23
FB-03-15.0-082318	08-277-07	23
FB-03-25.0-082318	08-277-08	15
FB-03-35.0-082318	08-277-10	16

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-277

Company: FARALLON
Project Number: 397-019
Project Name: Block 38 West Property
Project Manager: Javan Ruark
Sampled by:

Turnaround Request (in working days)
(Check One)
- ☐ Same Day ☐ 1 Day
- ☐ 2 Days ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	FMW-134-5.0-082318	8/23/18	0710	Soil	5		X		X										X				X
2	FMW-134-10.0-082318		0720		5																		
3	FMW-134-15.0-082318		0730				X		X				X						X				X
4	FMW-134-20.0-082318		0750																				
5	FB03-5.0-082318		1250																				
6	FB-03-10.0-082318		1310				X		X				X						X				X
7	FB-03-15.0-082318		1325				X		X														X
8	FB-03-25.0-082318		1500				X		X														X
9	FB-03-30.0-082318		1520																				
10	FB-03-35.0-082318		1530										X						X				X

	Signature	Company	Date	Time
Relinquished	[signature]	Farallon	8/23/18	1857
Received	[signature]	OSE	8/24/18	1100
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
Please Contact Project Manager for Sample analyses and turnaround time. Confirmations 66
X - Added 8/27/18. DB (STA)

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 2 of 2

Laboratory Number: 08-277

Company:
Project Number:
Project Name:
Project Manager:
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
11	FB-03-40.0-082318	8/23/18	1540	Soil	5			~~X~~ NO																			
12	FB-03-082318	8/23/18	1400	Water	8		X	~~X~~	X	X	~~X~~ NO																
13	FMW-134-2.5-082318	8/23/18	0700	SOIL	5			NO																			

	Signature	Company	Date	Time
Relinquished				
Received	[signature]	OSE	8/24/18	1100
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
See Page 1.

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 5, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1808-292

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on August 25, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

Case Narrative

Samples were collected on August 24, 2018 and received by the laboratory on August 25, 2018. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

The MTCA Method A cleanup level of 0.030 ppm for Benzene is not achievable for sample FMW-135-15.0-082418 due to the low dry weight of the sample.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-15.0-082418**					
Laboratory ID:	08-292-02					
Benzene	**ND**	0.055	EPA 8021B	8-27-18	8-28-18	
Toluene	**ND**	0.28	EPA 8021B	8-27-18	8-28-18	
Ethyl Benzene	**ND**	0.28	EPA 8021B	8-27-18	8-28-18	
m,p-Xylene	**ND**	0.28	EPA 8021B	8-27-18	8-28-18	
o-Xylene	**ND**	0.28	EPA 8021B	8-27-18	8-28-18	
Gasoline	**ND**	28	NWTPH-Gx	8-27-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*109*	*57-129*				
Client ID:	**FMW-135-35.0-082418**					
Laboratory ID:	08-292-06					
Benzene	**ND**	0.020	EPA 8021B	8-27-18	8-28-18	
Toluene	**ND**	0.058	EPA 8021B	8-27-18	8-28-18	
Ethyl Benzene	**ND**	0.058	EPA 8021B	8-27-18	8-28-18	
m,p-Xylene	**ND**	0.058	EPA 8021B	8-27-18	8-28-18	
o-Xylene	**ND**	0.058	EPA 8021B	8-27-18	8-28-18	
Gasoline	**ND**	5.8	NWTPH-Gx	8-27-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*80*	*57-129*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0827S1					
Benzene	**ND**	0.020	EPA 8021B	8-27-18	8-27-18	
Toluene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
Ethyl Benzene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
m,p-Xylene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
o-Xylene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
Gasoline	**ND**	5.0	NWTPH-Gx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*57-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-276-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*104*	*103*	*57-129*			
SPIKE BLANKS											
Laboratory ID:	SB0827S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.923**	**0.893**	1.00	1.00		**92**	**89**	69-111	3	10	
Toluene	**0.915**	**0.880**	1.00	1.00		**92**	**88**	70-114	4	11	
Ethyl Benzene	**0.918**	**0.886**	1.00	1.00		**92**	**89**	70-115	4	10	
m,p-Xylene	**0.907**	**0.877**	1.00	1.00		**91**	**88**	72-115	3	10	
o-Xylene	**0.917**	**0.882**	1.00	1.00		**92**	**88**	71-115	4	11	
Surrogate:											
Fluorobenzene						*89*	*86*	*57-129*			

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-15.0-082418**					
Laboratory ID:	08-292-02					
Diesel Range Organics	**130**	83	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**680**	170	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**FMW-135-35.0-082418**					
Laboratory ID:	08-292-06					
Diesel Range Organics	**ND**	31	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-277-03										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*124*	*113*	*50-150*			

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

VOLATILE ORGANICS EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-50.0-082418**					
Laboratory ID:	08-292-09					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	8-28-18	8-29-18	
Chloromethane	ND	0.0037	EPA 8260C	8-28-18	8-29-18	
Vinyl Chloride	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Bromomethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Chloroethane	ND	0.0037	EPA 8260C	8-28-18	8-29-18	
Trichlorofluoromethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,1-Dichloroethene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Iodomethane	ND	0.0053	EPA 8260C	8-28-18	8-29-18	
Methylene Chloride	ND	0.0037	EPA 8260C	8-28-18	8-29-18	
(trans) 1,2-Dichloroethene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,1-Dichloroethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
2,2-Dichloropropane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
(cis) 1,2-Dichloroethene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Bromochloromethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Chloroform	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,1,1-Trichloroethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Carbon Tetrachloride	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,1-Dichloropropene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,2-Dichloroethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Trichloroethene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,2-Dichloropropane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Dibromomethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Bromodichloromethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
2-Chloroethyl Vinyl Ether	ND	0.0037	EPA 8260C	8-28-18	8-29-18	
(cis) 1,3-Dichloropropene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
(trans) 1,3-Dichloropropene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-50.0-082418**					
Laboratory ID:	08-292-09					
1,1,2-Trichloroethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Tetrachloroethene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,3-Dichloropropane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Dibromochloromethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,2-Dibromoethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Chlorobenzene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,1,1,2-Tetrachloroethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Bromoform	ND	0.0037	EPA 8260C	8-28-18	8-29-18	
Bromobenzene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,1,2,2-Tetrachloroethane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,2,3-Trichloropropane	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
2-Chlorotoluene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
4-Chlorotoluene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,3-Dichlorobenzene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,4-Dichlorobenzene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,2-Dichlorobenzene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
1,2-Dibromo-3-chloropropane	ND	0.0037	EPA 8260C	8-28-18	8-29-18	
1,2,4-Trichlorobenzene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Hexachlorobutadiene	ND	0.0037	EPA 8260C	8-28-18	8-29-18	
1,2,3-Trichlorobenzene	ND	0.00074	EPA 8260C	8-28-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*95*	*68-139*				
Toluene-d8	*100*	*79-128*				
4-Bromofluorobenzene	*102*	*71-132*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0828S2					
Dichlorodifluoromethane	ND	0.0015	EPA 8260C	8-28-18	8-28-18	
Chloromethane	ND	0.0050	EPA 8260C	8-28-18	8-28-18	
Vinyl Chloride	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Bromomethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Chloroethane	ND	0.0050	EPA 8260C	8-28-18	8-28-18	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Iodomethane	ND	0.0065	EPA 8260C	8-28-18	8-28-18	
Methylene Chloride	ND	0.0050	EPA 8260C	8-28-18	8-28-18	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Bromochloromethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Chloroform	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Trichloroethene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Dibromomethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Bromodichloromethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
2-Chloroethyl Vinyl Ether	ND	0.0074	EPA 8260C	8-28-18	8-28-18	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0828S2					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Tetrachloroethene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Dibromochloromethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Chlorobenzene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Bromoform	ND	0.0050	EPA 8260C	8-28-18	8-28-18	
Bromobenzene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
2-Chlorotoluene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
4-Chlorotoluene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	8-28-18	8-28-18	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	8-28-18	8-28-18	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*68-139*				
Toluene-d8	*106*	*79-128*				
4-Bromofluorobenzene	*108*	*71-132*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0828S2									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0608**	**0.0586**	0.0500	0.0500	122	117	53-141	4	17	
Benzene	**0.0636**	**0.0600**	0.0500	0.0500	127	120	70-130	6	15	
Trichloroethene	**0.0588**	**0.0580**	0.0500	0.0500	118	116	74-122	1	16	
Toluene	**0.0628**	**0.0621**	0.0500	0.0500	126	124	76-130	1	15	
Chlorobenzene	**0.0559**	**0.0532**	0.0500	0.0500	112	106	75-120	5	14	
Surrogate:										
Dibromofluoromethane					*99*	*99*	*68-139*			
Toluene-d8					*108*	*107*	*79-128*			
4-Bromofluorobenzene					*108*	*109*	*71-132*			

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-15.0-082418**					
Laboratory ID:	08-292-02					
n-Nitrosodimethylamine	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Pyridine	**ND**	1.1	EPA 8270D	8-29-18	8-30-18	
Phenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Aniline	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroethyl)ether	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2-Chlorophenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
1,3-Dichlorobenzene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
1,4-Dichlorobenzene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Benzyl alcohol	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
1,2-Dichlorobenzene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2-Methylphenol (o-Cresol)	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroisopropyl)ether	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
n-Nitroso-di-n-propylamine	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Hexachloroethane	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Nitrobenzene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Isophorone	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2-Nitrophenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2,4-Dimethylphenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroethoxy)methane	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2,4-Dichlorophenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
1,2,4-Trichlorobenzene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Naphthalene	**0.029**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
4-Chloroaniline	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
Hexachlorobutadiene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
4-Chloro-3-methylphenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2-Methylnaphthalene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
1-Methylnaphthalene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Hexachlorocyclopentadiene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2,4,6-Trichlorophenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2,3-Dichloroaniline	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2,4,5-Trichlorophenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2-Chloronaphthalene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2-Nitroaniline	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
1,4-Dinitrobenzene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Dimethylphthalate	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
1,3-Dinitrobenzene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2,6-Dinitrotoluene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
1,2-Dinitrobenzene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Acenaphthylene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
3-Nitroaniline	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-15.0-082418**					
Laboratory ID:	08-292-02					
2,4-Dinitrophenol	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
Acenaphthene	**0.039**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
4-Nitrophenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2,4-Dinitrotoluene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Dibenzofuran	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Diethylphthalate	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
4-Chlorophenyl-phenylether	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
4-Nitroaniline	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Fluorene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
4,6-Dinitro-2-methylphenol	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
n-Nitrosodiphenylamine	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
1,2-Diphenylhydrazine	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
4-Bromophenyl-phenylether	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Hexachlorobenzene	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Pentachlorophenol	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
Phenanthrene	**0.068**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Anthracene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Carbazole	**ND**	0.11	EPA 8270D	8-29-18	8-30-18	
Di-n-butylphthalate	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
Fluoranthene	**0.042**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Benzidine	**ND**	1.1	EPA 8270D	8-29-18	8-30-18	
Pyrene	**0.073**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Butylbenzylphthalate	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
bis-2-Ethylhexyladipate	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
3,3'-Dichlorobenzidine	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
Benzo[a]anthracene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Chrysene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
Di-n-octylphthalate	**ND**	0.56	EPA 8270D	8-29-18	8-30-18	
Benzo[b]fluoranthene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Benzo(j,k)fluoranthene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Benzo[a]pyrene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Dibenz[a,h]anthracene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Benzo[g,h,i]perylene	**ND**	0.022	EPA 8270D/SIM	8-29-18	8-31-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*58*	*19 - 103*				
Phenol-d6	*60*	*30 - 103*				
Nitrobenzene-d5	*59*	*27 - 105*				
2-Fluorobiphenyl	*65*	*36 - 102*				
2,4,6-Tribromophenol	*76*	*33 - 110*				
Terphenyl-d14	*71*	*38 - 108*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-30.0-082418**					
Laboratory ID:	08-292-05					
n-Nitrosodimethylamine	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Pyridine	**ND**	0.41	EPA 8270D	8-29-18	8-30-18	
Phenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Aniline	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroethyl)ether	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2-Chlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
1,3-Dichlorobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
1,4-Dichlorobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Benzyl alcohol	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
1,2-Dichlorobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2-Methylphenol (o-Cresol)	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroisopropyl)ether	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
n-Nitroso-di-n-propylamine	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Hexachloroethane	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Nitrobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Isophorone	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2-Nitrophenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2,4-Dimethylphenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroethoxy)methane	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2,4-Dichlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
1,2,4-Trichlorobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Naphthalene	**0.12**	0.041	EPA 8270D	8-29-18	8-30-18	
4-Chloroaniline	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
Hexachlorobutadiene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
4-Chloro-3-methylphenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2-Methylnaphthalene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
1-Methylnaphthalene	**0.012**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Hexachlorocyclopentadiene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2,4,6-Trichlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2,3-Dichloroaniline	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2,4,5-Trichlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2-Chloronaphthalene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2-Nitroaniline	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
1,4-Dinitrobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Dimethylphthalate	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
1,3-Dinitrobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2,6-Dinitrotoluene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
1,2-Dinitrobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Acenaphthylene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
3-Nitroaniline	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-30.0-082418**					
Laboratory ID:	08-292-05					
2,4-Dinitrophenol	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
Acenaphthene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
4-Nitrophenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2,4-Dinitrotoluene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Dibenzofuran	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Diethylphthalate	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
4-Chlorophenyl-phenylether	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
4-Nitroaniline	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Fluorene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
4,6-Dinitro-2-methylphenol	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
n-Nitrosodiphenylamine	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
1,2-Diphenylhydrazine	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
4-Bromophenyl-phenylether	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Hexachlorobenzene	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Pentachlorophenol	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
Phenanthrene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Anthracene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Carbazole	**ND**	0.041	EPA 8270D	8-29-18	8-30-18	
Di-n-butylphthalate	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
Fluoranthene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Benzidine	**ND**	0.41	EPA 8270D	8-29-18	8-30-18	
Pyrene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Butylbenzylphthalate	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
bis-2-Ethylhexyladipate	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
3,3'-Dichlorobenzidine	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
Benzo[a]anthracene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Chrysene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
Di-n-octylphthalate	**ND**	0.21	EPA 8270D	8-29-18	8-30-18	
Benzo[b]fluoranthene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo(j,k)fluoranthene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[a]pyrene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Dibenz[a,h]anthracene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[g,h,i]perylene	**ND**	0.0082	EPA 8270D/SIM	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*73*	*19 - 103*				
Phenol-d6	*72*	*30 - 103*				
Nitrobenzene-d5	*64*	*27 - 105*				
2-Fluorobiphenyl	*71*	*36 - 102*				
2,4,6-Tribromophenol	*80*	*33 - 110*				
Terphenyl-d14	*78*	*38 - 108*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0829S1					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Pyridine	**ND**	0.33	EPA 8270D	8-29-18	8-29-18	
Phenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Aniline	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Chlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Benzyl alcohol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Hexachloroethane	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Nitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Isophorone	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Nitrophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
4-Chloroaniline	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Nitroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Dimethylphthalate	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
3-Nitroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0829S1					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
4-Nitrophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Dibenzofuran	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Diethylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
4-Nitroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Pentachlorophenol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Carbazole	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Di-n-butylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzidine	**ND**	0.33	EPA 8270D	8-29-18	8-29-18	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Butylbenzylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
bis-2-Ethylhexyladipate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Di-n-octylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*79*	*19 - 103*				
Phenol-d6	*79*	*30 - 103*				
Nitrobenzene-d5	*73*	*27 - 105*				
2-Fluorobiphenyl	*75*	*36 - 102*				
2,4,6-Tribromophenol	*88*	*33 - 110*				
Terphenyl-d14	*81*	*38 - 108*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	08-229-04										
	MS	MSD	MS	MSD		MS	MSD				
Phenol	**1.15**	**0.989**	1.33	1.33	ND	86	74	37 - 94	15	27	
2-Chlorophenol	**1.21**	**1.03**	1.33	1.33	ND	91	77	37 - 95	16	32	
1,4-Dichlorobenzene	**0.568**	**0.493**	0.667	0.667	ND	85	74	23 - 97	14	37	
n-Nitroso-di-n-propylamine	**0.580**	**0.501**	0.667	0.667	ND	87	75	40 - 91	15	28	
1,2,4-Trichlorobenzene	**0.563**	**0.505**	0.667	0.667	ND	84	76	37 - 93	11	30	
4-Chloro-3-methylphenol	**1.11**	**1.03**	1.33	1.33	ND	83	77	46 - 96	7	25	
Acenaphthene	**0.585**	**0.526**	0.667	0.667	0.0395	82	73	43 - 90	11	25	
4-Nitrophenol	**1.15**	**1.03**	1.33	1.33	ND	86	77	31 - 104	11	28	
2,4-Dinitrotoluene	**0.575**	**0.516**	0.667	0.667	ND	86	77	31 - 96	11	32	
Pentachlorophenol	**1.38**	**1.22**	1.33	1.33	ND	104	92	20 - 123	12	29	
Pyrene	**0.582**	**0.518**	0.667	0.667	0.0828	75	65	28 - 114	12	35	
Surrogate:											
2-Fluorophenol						*85*	*71*	*19 - 103*			
Phenol-d6						*84*	*73*	*30 - 103*			
Nitrobenzene-d5						*72*	*65*	*27 - 105*			
2-Fluorobiphenyl						*77*	*70*	*36 - 102*			
2,4,6-Tribromophenol						*92*	*84*	*33 - 110*			
Terphenyl-d14						*78*	*71*	*38 - 108*			

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

TOTAL METALS
EPA 6010D/7471B

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-5.0-082418**					
Laboratory ID:	08-292-01					
Arsenic	**ND**	12	EPA 6010D	8-28-18	8-31-18	
Barium	**120**	3.1	EPA 6010D	8-28-18	8-31-18	
Cadmium	**ND**	0.61	EPA 6010D	8-28-18	8-31-18	
Chromium	**48**	0.61	EPA 6010D	8-28-18	8-31-18	
Lead	**16**	6.1	EPA 6010D	8-28-18	8-31-18	
Mercury	**ND**	0.31	EPA 7471B	8-29-18	8-29-18	
Selenium	**ND**	12	EPA 6010D	8-28-18	8-31-18	
Silver	**ND**	1.2	EPA 6010D	8-28-18	8-31-18	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-25.0-082418**					
Laboratory ID:	08-292-04					
Arsenic	**ND**	14	EPA 6010D	8-28-18	8-31-18	
Barium	**120**	3.5	EPA 6010D	8-28-18	8-31-18	
Cadmium	**ND**	0.69	EPA 6010D	8-28-18	8-31-18	
Chromium	**60**	0.69	EPA 6010D	8-28-18	8-31-18	
Lead	**ND**	6.9	EPA 6010D	8-28-18	8-31-18	
Mercury	**ND**	0.35	EPA 7471B	8-29-18	8-29-18	
Selenium	**ND**	14	EPA 6010D	8-28-18	8-31-18	
Silver	**ND**	1.4	EPA 6010D	8-28-18	8-31-18	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-30.0-082418**					
Laboratory ID:	08-292-05					
Arsenic	**ND**	12	EPA 6010D	8-28-18	8-31-18	
Barium	**66**	3.1	EPA 6010D	8-28-18	8-31-18	
Cadmium	**ND**	0.62	EPA 6010D	8-28-18	8-31-18	
Chromium	**44**	0.62	EPA 6010D	8-28-18	8-31-18	
Lead	**ND**	6.2	EPA 6010D	8-28-18	8-31-18	
Mercury	**ND**	0.31	EPA 7471B	8-29-18	8-29-18	
Selenium	**ND**	12	EPA 6010D	8-28-18	8-31-18	
Silver	**ND**	1.2	EPA 6010D	8-28-18	8-31-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

TOTAL METALS
EPA 6010D/7471B
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828SM2					
Arsenic	**ND**	10	EPA 6010D	8-28-18	8-29-18	
Barium	**ND**	2.5	EPA 6010D	8-28-18	8-29-18	
Cadmium	**ND**	0.50	EPA 6010D	8-28-18	8-29-18	
Chromium	**ND**	0.50	EPA 6010D	8-28-18	8-28-18	
Lead	**ND**	5.0	EPA 6010D	8-28-18	8-29-18	
Selenium	**ND**	10	EPA 6010D	8-28-18	8-29-18	
Silver	**ND**	1.0	EPA 6010D	8-28-18	8-29-18	
Laboratory ID:	MB0829S1					
Mercury	**ND**	0.25	EPA 7471B	8-29-18	8-29-18	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-265-16										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Barium	**22.1**	**19.5**	NA	NA		NA		NA	13	20	
Cadmium	**25.2**	**23.2**	NA	NA		NA		NA	8	20	
Chromium	**8.95**	**7.40**	NA	NA		NA		NA	19	20	
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Selenium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Silver	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	08-277-03										
Mercury	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	08-265-16										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**111**	**112**	100	100	ND	**111**	**112**	75-125	1	20	
Barium	**141**	**139**	100	100	22.1	**119**	**117**	75-125	1	20	
Cadmium	**75.1**	**75.9**	50.0	50.0	25.2	**100**	**101**	75-125	1	20	
Chromium	**109**	**108**	100	100	8.95	**100**	**99**	75-125	1	20	
Lead	**237**	**239**	250	250	ND	**95**	**95**	75-125	1	20	
Selenium	**104**	**101**	100	100	ND	**104**	**101**	75-125	2	20	
Silver	**25.6**	**25.4**	25.0	25.0	ND	**102**	**102**	75-125	1	20	
Laboratory ID:	08-277-03										
Mercury	**0.534**	**0.537**	0.500	0.500	0.0115	**105**	**105**	80-120	1	20	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-292
Project: 397-019

% MOISTURE

Date Analyzed: 8-27&28-18

Client ID	Lab ID	% Moisture
FMW-135-5.0-082418	08-292-01	18
FMW-135-15.0-082418	08-292-02	70
FMW-135-25.0-082418	08-292-04	28
FMW-135-30.0-082418	08-292-05	19
FMW-135-35.0-082418	08-292-06	19
FMW-135-50.0-082418	08-292-09	16

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.

Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-292

Company: Favallon
Project Number: 397-019
Project Name: Block 38 West Property
Project Manager: Javan Ruark
Sampled by: Greg Peters

Turnaround Request (in working days)

(Check One)

- ☐ Same Day ☐ 1 Day
- ☐ 2 Days ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	FMW-135-5.0-082418	8/24/18	0735	Soil	5														X								X
2	FMW-135-15.0-082418		0750				X		X				X														X
3	FMW-135-20.0-082418		0810																								
4	FMW-135-25.0-082418		0823																X								X
5	FMW-135-30.0-082418		0835										X						X								X
6	FMW-135-35.0-082418		0850				X		X																		X
7	FMW-135-40.0-082418		0915																								
8	FMW-135-45.0-082418		0930																								
9	FMW-135-50.0-082418		0950								X																X

	Signature	Company	Date	Time
Relinquished	[signature]	Favallon	8/24/18	0840
Received	[signature]	OnSite Env	8/25/18	840
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

~~Please Contact Project manager for Analyses and turnaround time confirmation.~~
X-Added 8/27/18. DB (STA)

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 5, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1808-293

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on August 25, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

Case Narrative

Samples were collected on August 24, 2018 and received by the laboratory on August 25, 2018. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Semivolatiles EPA 8270D/SIM Analysis

Sample FMW-133-20.0-082418 had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-132-5.0-082418**					
Laboratory ID:	08-293-02					
Benzene	**ND**	0.020	EPA 8021B	8-27-18	8-28-18	
Toluene	**ND**	0.084	EPA 8021B	8-27-18	8-28-18	
Ethyl Benzene	**ND**	0.084	EPA 8021B	8-27-18	8-28-18	
m,p-Xylene	**ND**	0.084	EPA 8021B	8-27-18	8-28-18	
o-Xylene	**ND**	0.084	EPA 8021B	8-27-18	8-28-18	
Gasoline	**ND**	8.4	NWTPH-Gx	8-27-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*77*	*57-129*				
Client ID:	**FMW-133-10.0-082418**					
Laboratory ID:	08-293-03					
Benzene	**ND**	0.057	EPA 8021B	8-27-18	8-28-18	
Toluene	**ND**	0.28	EPA 8021B	8-27-18	8-28-18	
Ethyl Benzene	**ND**	0.28	EPA 8021B	8-27-18	8-28-18	
m,p-Xylene	**ND**	0.28	EPA 8021B	8-27-18	8-28-18	
o-Xylene	**ND**	0.28	EPA 8021B	8-27-18	8-28-18	
Gasoline	**ND**	28	NWTPH-Gx	8-27-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*80*	*57-129*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0827S1					
Benzene	**ND**	0.020	EPA 8021B	8-27-18	8-27-18	
Toluene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
Ethyl Benzene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
m,p-Xylene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
o-Xylene	**ND**	0.050	EPA 8021B	8-27-18	8-27-18	
Gasoline	**ND**	5.0	NWTPH-Gx	8-27-18	8-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*57-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-276-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*104*	*103*	*57-129*			
SPIKE BLANKS											
Laboratory ID:	SB0827S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.923**	**0.893**	1.00	1.00		**92**	**89**	69-111	3	10	
Toluene	**0.915**	**0.880**	1.00	1.00		**92**	**88**	70-114	4	11	
Ethyl Benzene	**0.918**	**0.886**	1.00	1.00		**92**	**89**	70-115	4	10	
m,p-Xylene	**0.907**	**0.877**	1.00	1.00		**91**	**88**	72-115	3	10	
o-Xylene	**0.917**	**0.882**	1.00	1.00		**92**	**88**	71-115	4	11	
Surrogate:											
Fluorobenzene						*89*	*86*	*57-129*			

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-132-5.0-082418**					
Laboratory ID:	08-293-02					
Diesel Range Organics	**730**	180	NWTPH-Dx	8-28-18	8-30-18	
Lube Oil Range Organics	**2600**	360	NWTPH-Dx	8-28-18	8-30-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*97*	*50-150*				
Client ID:	**FMW-133-10.0-082418**					
Laboratory ID:	08-293-03					
Diesel Range Organics	**ND**	83	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**470**	170	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-28-18	8-28-18	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-28-18	8-28-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-277-03										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*124*	*113*	*50-150*			

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-132-5.0-082418**					
Laboratory ID:	08-293-02					
n-Nitrosodimethylamine	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Pyridine	**ND**	4.8	EPA 8270D	8-29-18	8-31-18	
Phenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Aniline	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
bis(2-Chloroethyl)ether	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2-Chlorophenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
1,3-Dichlorobenzene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
1,4-Dichlorobenzene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Benzyl alcohol	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
1,2-Dichlorobenzene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2-Methylphenol (o-Cresol)	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
bis(2-Chloroisopropyl)ether	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
n-Nitroso-di-n-propylamine	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Hexachloroethane	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Nitrobenzene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Isophorone	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2-Nitrophenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2,4-Dimethylphenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
bis(2-Chloroethoxy)methane	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2,4-Dichlorophenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
1,2,4-Trichlorobenzene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Naphthalene	**2.0**	0.48	EPA 8270D	8-29-18	8-31-18	
4-Chloroaniline	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
Hexachlorobutadiene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
4-Chloro-3-methylphenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2-Methylnaphthalene	**2.6**	0.48	EPA 8270D	8-29-18	8-31-18	
1-Methylnaphthalene	**2.0**	0.48	EPA 8270D	8-29-18	8-31-18	
Hexachlorocyclopentadiene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2,4,6-Trichlorophenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2,3-Dichloroaniline	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2,4,5-Trichlorophenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2-Chloronaphthalene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2-Nitroaniline	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
1,4-Dinitrobenzene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Dimethylphthalate	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
1,3-Dinitrobenzene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2,6-Dinitrotoluene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
1,2-Dinitrobenzene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Acenaphthylene	**0.10**	0.0095	EPA 8270D/SIM	8-29-18	8-29-18	
3-Nitroaniline	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-132-5.0-082418**					
Laboratory ID:	08-293-02					
2,4-Dinitrophenol	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
Acenaphthene	**1.5**	0.48	EPA 8270D	8-29-18	8-31-18	
4-Nitrophenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2,4-Dinitrotoluene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Dibenzofuran	**0.70**	0.48	EPA 8270D	8-29-18	8-31-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Diethylphthalate	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
4-Chlorophenyl-phenylether	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
4-Nitroaniline	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Fluorene	**0.84**	0.48	EPA 8270D	8-29-18	8-31-18	
4,6-Dinitro-2-methylphenol	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
n-Nitrosodiphenylamine	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
1,2-Diphenylhydrazine	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
4-Bromophenyl-phenylether	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Hexachlorobenzene	**ND**	0.48	EPA 8270D	8-29-18	8-31-18	
Pentachlorophenol	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
Phenanthrene	**18**	0.48	EPA 8270D	8-29-18	8-31-18	
Anthracene	**3.3**	0.48	EPA 8270D	8-29-18	8-31-18	
Carbazole	**1.1**	0.48	EPA 8270D	8-29-18	8-31-18	
Di-n-butylphthalate	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
Fluoranthene	**15**	0.48	EPA 8270D	8-29-18	8-31-18	
Benzidine	**ND**	4.8	EPA 8270D	8-29-18	8-31-18	
Pyrene	**27**	0.48	EPA 8270D	8-29-18	8-31-18	
Butylbenzylphthalate	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
bis-2-Ethylhexyladipate	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
3,3'-Dichlorobenzidine	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
Benzo[a]anthracene	**11**	0.48	EPA 8270D	8-29-18	8-31-18	
Chrysene	**13**	0.48	EPA 8270D	8-29-18	8-31-18	
bis(2-Ethylhexyl)phthalate	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
Di-n-octylphthalate	**ND**	2.4	EPA 8270D	8-29-18	8-31-18	
Benzo[b]fluoranthene	**10**	0.48	EPA 8270D	8-29-18	8-31-18	
Benzo(j,k)fluoranthene	**2.9**	0.48	EPA 8270D	8-29-18	8-31-18	
Benzo[a]pyrene	**9.4**	0.48	EPA 8270D	8-29-18	8-31-18	
Indeno[1,2,3-cd]pyrene	**4.1**	0.48	EPA 8270D	8-29-18	8-31-18	
Dibenz[a,h]anthracene	**1.4**	0.48	EPA 8270D	8-29-18	8-31-18	
Benzo[g,h,i]perylene	**4.4**	0.48	EPA 8270D	8-29-18	8-31-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*54*	*19 - 103*				
Phenol-d6	*53*	*30 - 103*				
Nitrobenzene-d5	*67*	*27 - 105*				
2-Fluorobiphenyl	*77*	*36 - 102*				
2,4,6-Tribromophenol	*72*	*33 - 110*				
Terphenyl-d14	*75*	*38 - 108*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-133-10.0-082418**					
Laboratory ID:	08-293-03					
n-Nitrosodimethylamine	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Pyridine	**ND**	2.8	EPA 8270D	8-29-18	8-30-18	
Phenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Aniline	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroethyl)ether	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2-Chlorophenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
1,3-Dichlorobenzene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
1,4-Dichlorobenzene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Benzyl alcohol	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
1,2-Dichlorobenzene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2-Methylphenol (o-Cresol)	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroisopropyl)ether	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
n-Nitroso-di-n-propylamine	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Hexachloroethane	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Nitrobenzene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Isophorone	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2-Nitrophenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2,4-Dimethylphenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroethoxy)methane	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2,4-Dichlorophenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
1,2,4-Trichlorobenzene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Naphthalene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
4-Chloroaniline	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
Hexachlorobutadiene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
4-Chloro-3-methylphenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2-Methylnaphthalene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
1-Methylnaphthalene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Hexachlorocyclopentadiene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2,4,6-Trichlorophenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2,3-Dichloroaniline	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2,4,5-Trichlorophenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2-Chloronaphthalene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2-Nitroaniline	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
1,4-Dinitrobenzene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Dimethylphthalate	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
1,3-Dinitrobenzene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2,6-Dinitrotoluene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
1,2-Dinitrobenzene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Acenaphthylene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
3-Nitroaniline	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-133-10.0-082418**					
Laboratory ID:	08-293-03					
2,4-Dinitrophenol	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
Acenaphthene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
4-Nitrophenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2,4-Dinitrotoluene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Dibenzofuran	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Diethylphthalate	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
4-Chlorophenyl-phenylether	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
4-Nitroaniline	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Fluorene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
4,6-Dinitro-2-methylphenol	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
n-Nitrosodiphenylamine	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
1,2-Diphenylhydrazine	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
4-Bromophenyl-phenylether	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Hexachlorobenzene	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Pentachlorophenol	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
Phenanthrene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Anthracene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Carbazole	**ND**	0.28	EPA 8270D	8-29-18	8-30-18	
Di-n-butylphthalate	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
Fluoranthene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Benzidine	**ND**	2.8	EPA 8270D	8-29-18	8-30-18	
Pyrene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Butylbenzylphthalate	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
bis-2-Ethylhexyladipate	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
3,3'-Dichlorobenzidine	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
Benzo[a]anthracene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Chrysene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
bis(2-Ethylhexyl)phthalate	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
Di-n-octylphthalate	**ND**	1.4	EPA 8270D	8-29-18	8-30-18	
Benzo[b]fluoranthene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo(j,k)fluoranthene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[a]pyrene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Dibenz[a,h]anthracene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[g,h,i]perylene	**ND**	0.055	EPA 8270D/SIM	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*57*	*19 - 103*				
Phenol-d6	*61*	*30 - 103*				
Nitrobenzene-d5	*52*	*27 - 105*				
2-Fluorobiphenyl	*59*	*36 - 102*				
2,4,6-Tribromophenol	*73*	*33 - 110*				
Terphenyl-d14	*65*	*38 - 108*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-133-20.0-082418**					
Laboratory ID:	08-293-05					
n-Nitrosodimethylamine	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Pyridine	**ND**	0.40	EPA 8270D	8-29-18	8-30-18	
Phenol	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Aniline	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroethyl)ether	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2-Chlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
1,3-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
1,4-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Benzyl alcohol	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
1,2-Dichlorobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2-Methylphenol (o-Cresol)	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroisopropyl)ether	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
n-Nitroso-di-n-propylamine	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Hexachloroethane	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Nitrobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Isophorone	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2-Nitrophenol	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2,4-Dimethylphenol	**0.091**	0.040	EPA 8270D	8-29-18	8-30-18	
bis(2-Chloroethoxy)methane	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2,4-Dichlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
1,2,4-Trichlorobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Naphthalene	**0.25**	0.040	EPA 8270D	8-29-18	8-30-18	
4-Chloroaniline	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
Hexachlorobutadiene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
4-Chloro-3-methylphenol	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2-Methylnaphthalene	**0.042**	0.040	EPA 8270D	8-29-18	8-30-18	
1-Methylnaphthalene	**0.035**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Hexachlorocyclopentadiene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2,4,6-Trichlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2,3-Dichloroaniline	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2,4,5-Trichlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2-Chloronaphthalene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2-Nitroaniline	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
1,4-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Dimethylphthalate	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
1,3-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2,6-Dinitrotoluene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
1,2-Dinitrobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Acenaphthylene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
3-Nitroaniline	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-133-20.0-082418**					
Laboratory ID:	08-293-05					
2,4-Dinitrophenol	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
Acenaphthene	**0.021**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
4-Nitrophenol	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2,4-Dinitrotoluene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Dibenzofuran	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Diethylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
4-Chlorophenyl-phenylether	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
4-Nitroaniline	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Fluorene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
4,6-Dinitro-2-methylphenol	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
n-Nitrosodiphenylamine	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
1,2-Diphenylhydrazine	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
4-Bromophenyl-phenylether	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Hexachlorobenzene	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Pentachlorophenol	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
Phenanthrene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Anthracene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Carbazole	**ND**	0.040	EPA 8270D	8-29-18	8-30-18	
Di-n-butylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
Fluoranthene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Benzidine	**ND**	0.40	EPA 8270D	8-29-18	8-30-18	
Pyrene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Butylbenzylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
bis-2-Ethylhexyladipate	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
3,3'-Dichlorobenzidine	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Chrysene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
Di-n-octylphthalate	**ND**	0.20	EPA 8270D	8-29-18	8-30-18	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo(j,k)fluoranthene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270D/SIM	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*51*	*19 - 103*				
Phenol-d6	*70*	*30 - 103*				
Nitrobenzene-d5	*66*	*27 - 105*				
2-Fluorobiphenyl	*72*	*36 - 102*				
2,4,6-Tribromophenol	*27*	*33 - 110*				Q
Terphenyl-d14	*74*	*38 - 108*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0829S1					
n-Nitrosodimethylamine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Pyridine	**ND**	0.33	EPA 8270D	8-29-18	8-29-18	
Phenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Aniline	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethyl)ether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Chlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,3-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,4-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Benzyl alcohol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
1,2-Dichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Methylphenol (o-Cresol)	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroisopropyl)ether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
n-Nitroso-di-n-propylamine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Hexachloroethane	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Nitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Isophorone	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Nitrophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4-Dimethylphenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
bis(2-Chloroethoxy)methane	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4-Dichlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,2,4-Trichlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
4-Chloroaniline	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Hexachlorobutadiene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
4-Chloro-3-methylphenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Hexachlorocyclopentadiene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4,6-Trichlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,3-Dichloroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4,5-Trichlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Chloronaphthalene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2-Nitroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,4-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Dimethylphthalate	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,3-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,6-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,2-Dinitrobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
3-Nitroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0829S1					
2,4-Dinitrophenol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
4-Nitrophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,4-Dinitrotoluene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Dibenzofuran	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,3,5,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
2,3,4,6-Tetrachlorophenol	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Diethylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
4-Chlorophenyl-phenylether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
4-Nitroaniline	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
4,6-Dinitro-2-methylphenol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
n-Nitrosodiphenylamine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
1,2-Diphenylhydrazine	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
4-Bromophenyl-phenylether	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Hexachlorobenzene	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Pentachlorophenol	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Carbazole	**ND**	0.033	EPA 8270D	8-29-18	8-29-18	
Di-n-butylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzidine	**ND**	0.33	EPA 8270D	8-29-18	8-29-18	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Butylbenzylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
bis-2-Ethylhexyladipate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
3,3'-Dichlorobenzidine	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
bis(2-Ethylhexyl)phthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Di-n-octylphthalate	**ND**	0.17	EPA 8270D	8-29-18	8-29-18	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Indeno[1,2,3-cd]pyrene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	8-29-18	8-29-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*79*	*19 - 103*				
Phenol-d6	*79*	*30 - 103*				
Nitrobenzene-d5	*73*	*27 - 105*				
2-Fluorobiphenyl	*75*	*36 - 102*				
2,4,6-Tribromophenol	*88*	*33 - 110*				
Terphenyl-d14	*81*	*38 - 108*				

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

SEMIVOLATILE ORGANICS EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	08-229-04										
	MS	MSD	MS	MSD		MS	MSD				
Phenol	**1.15**	**0.989**	1.33	1.33	ND	86	74	37 - 94	15	27	
2-Chlorophenol	**1.21**	**1.03**	1.33	1.33	ND	91	77	37 - 95	16	32	
1,4-Dichlorobenzene	**0.568**	**0.493**	0.667	0.667	ND	85	74	23 - 97	14	37	
n-Nitroso-di-n-propylamine	**0.580**	**0.501**	0.667	0.667	ND	87	75	40 - 91	15	28	
1,2,4-Trichlorobenzene	**0.563**	**0.505**	0.667	0.667	ND	84	76	37 - 93	11	30	
4-Chloro-3-methylphenol	**1.11**	**1.03**	1.33	1.33	ND	83	77	46 - 96	7	25	
Acenaphthene	**0.585**	**0.526**	0.667	0.667	0.0395	82	73	43 - 90	11	25	
4-Nitrophenol	**1.15**	**1.03**	1.33	1.33	ND	86	77	31 - 104	11	28	
2,4-Dinitrotoluene	**0.575**	**0.516**	0.667	0.667	ND	86	77	31 - 96	11	32	
Pentachlorophenol	**1.38**	**1.22**	1.33	1.33	ND	104	92	20 - 123	12	29	
Pyrene	**0.582**	**0.518**	0.667	0.667	0.0828	75	65	28 - 114	12	35	
Surrogate:											
2-Fluorophenol						*85*	*71*	*19 - 103*			
Phenol-d6						*84*	*73*	*30 - 103*			
Nitrobenzene-d5						*72*	*65*	*27 - 105*			
2-Fluorobiphenyl						*77*	*70*	*36 - 102*			
2,4,6-Tribromophenol						*92*	*84*	*33 - 110*			
Terphenyl-d14						*78*	*71*	*38 - 108*			

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

TOTAL METALS
EPA 6010D/7471B

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-133-10.0-082418**					
Laboratory ID:	08-293-03					
Arsenic	**ND**	17	EPA 6010D	8-28-18	8-31-18	
Barium	**200**	8.3	EPA 6010D	8-28-18	8-31-18	
Cadmium	**ND**	1.7	EPA 6010D	8-28-18	8-31-18	
Chromium	**29**	1.7	EPA 6010D	8-28-18	8-31-18	
Lead	**18**	17	EPA 6010D	8-28-18	8-31-18	
Mercury	**ND**	0.83	EPA 7471B	8-29-18	8-29-18	
Selenium	**ND**	17	EPA 6010D	8-28-18	8-31-18	
Silver	**ND**	3.3	EPA 6010D	8-28-18	8-31-18	
Client ID:	**FMW-133-20.0-082418**					
Laboratory ID:	08-293-05					
Arsenic	**ND**	12	EPA 6010D	8-28-18	8-31-18	
Barium	**50**	3.0	EPA 6010D	8-28-18	8-31-18	
Cadmium	**ND**	0.60	EPA 6010D	8-28-18	8-31-18	
Chromium	**27**	0.60	EPA 6010D	8-28-18	8-31-18	
Lead	**ND**	6.0	EPA 6010D	8-28-18	8-31-18	
Mercury	**ND**	0.30	EPA 7471B	8-29-18	8-29-18	
Selenium	**ND**	12	EPA 6010D	8-28-18	8-31-18	
Silver	**ND**	1.2	EPA 6010D	8-28-18	8-31-18	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

TOTAL METALS
EPA 6010D/7471B
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828SM2					
Arsenic	**ND**	5.0	EPA 6010D	8-28-18	8-29-18	
Barium	**ND**	2.5	EPA 6010D	8-28-18	8-29-18	
Cadmium	**ND**	0.50	EPA 6010D	8-28-18	8-29-18	
Chromium	**ND**	0.50	EPA 6010D	8-28-18	8-28-18	
Lead	**ND**	5.0	EPA 6010D	8-28-18	8-29-18	
Selenium	**ND**	5.0	EPA 6010D	8-28-18	8-29-18	
Silver	**ND**	1.0	EPA 6010D	8-28-18	8-29-18	
Laboratory ID:	MB0829S1					
Mercury	**ND**	0.25	EPA 7471B	8-29-18	8-29-18	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-265-16										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Barium	**22.1**	**19.5**	NA	NA		NA		NA	13	20	
Cadmium	**25.2**	**23.2**	NA	NA		NA		NA	8	20	
Chromium	**8.95**	**7.40**	NA	NA		NA		NA	19	20	
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Selenium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Silver	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	08-277-03										
Mercury	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	08-265-16										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**111**	**112**	100	100	ND	**111**	**112**	75-125	1	20	
Barium	**141**	**139**	100	100	22.1	**119**	**117**	75-125	1	20	
Cadmium	**75.1**	**75.9**	50.0	50.0	25.2	**100**	**101**	75-125	1	20	
Chromium	**109**	**108**	100	100	8.95	**100**	**99**	75-125	1	20	
Lead	**237**	**239**	250	250	ND	**95**	**95**	75-125	1	20	
Selenium	**104**	**101**	100	100	ND	**104**	**101**	75-125	2	20	
Silver	**25.6**	**25.4**	25.0	25.0	ND	**102**	**102**	75-125	1	20	
Laboratory ID:	08-277-03										
Mercury	**0.534**	**0.537**	0.500	0.500	0.0115	**105**	**105**	80-120	1	20	

Date of Report: September 5, 2018
Samples Submitted: August 25, 2018
Laboratory Reference: 1808-293
Project: 397-019

% MOISTURE

Date Analyzed: 8-27&28-18

Client ID	Lab ID	% Moisture
FMW-132-5.0-082418	08-293-02	30
FMW-133-10.0-082418	08-293-03	70
FMW-133-20.0-082418	08-293-05	17

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Company: Faralloн
Project Number: 397-019
Project Name: Block 38 West Property
Project Manager: Javan Ruark
Sampled by: Greg Peters

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Laboratory Number: 08-293

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	FMW-132-2.5-082418	8/24/18	1320	Soil	5																						
2	FMW-132-5.0-082418		1430		5		X		X				X														X
3	FMW-133-10.0-082418		1835				X		X				X						X								X
4	FMW-133-15.0-082418		1849																								
5	FMW-133-20.0-082418		1852										X						X								X
6	FMW-133-25.0-082418		1902																								

	Signature	Company	Date	Time
Relinquished	[signature]	Farallon	8/24/18	0840
Received	[signature]	OnSite Env	8/25/18	840
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions:
~~Please contact project manager for analyses and turn around time confirmation~~
X-Added 8/27/18. DB (STA)

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 11, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 397-019
Laboratory Reference No. 1808-374

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on August 31, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

Case Narrative

Samples were collected on August 30, 2018 and received by the laboratory on August 31, 2018. They were maintained at the laboratory at a temperature of $2^{o}C$ to $6^{o}C$.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH-Gx Analysis

The gasoline result for sample FMW-134-083018 is mainly attributed to a single peak (Naphthalene).

Volatiles EPA 8260C Analysis

Some MTCA Method A cleanup levels are non-achievable for sample FMW-134-083018 due to the necessary dilution of the sample.

PAHs EPA 8270D/SIM Analysis

The associated method blank had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-083018**					
Laboratory ID:	08-374-01					
Gasoline	**1100**	100	NWTPH-Gx	9-6-18	9-6-18	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*114*	*66-117*				
Client ID:	**FMW-133-083018**					
Laboratory ID:	08-374-02					
Gasoline	**ND**	100	NWTPH-Gx	9-6-18	9-6-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*112*	*66-117*				
Client ID:	**FMW-132-083018**					
Laboratory ID:	08-374-03					
Gasoline	**ND**	100	NWTPH-Gx	9-6-18	9-6-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*112*	*66-117*				
Client ID:	**FMW-130-083018**					
Laboratory ID:	08-374-04					
Gasoline	**ND**	100	NWTPH-Gx	9-6-18	9-6-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*111*	*66-117*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

GASOLINE RANGE ORGANICS
NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0906W3					
Gasoline	**ND**	100	NWTPH-Gx	9-6-18	9-6-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*111*	*66-117*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-380-02										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*112*	*112*	*66-117*			

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-083018**					
Laboratory ID:	08-374-01					
Diesel Range Organics	**1.0**	0.26	NWTPH-Dx	9-7-18	9-8-18	M
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-7-18	9-8-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				
Client ID:	**FMW-133-083018**					
Laboratory ID:	08-374-02					
Diesel Range Organics	**0.27**	0.26	NWTPH-Dx	9-7-18	9-8-18	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-7-18	9-8-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				
Client ID:	**FMW-132-083018**					
Laboratory ID:	08-374-03					
Diesel Range Organics	**0.26**	0.25	NWTPH-Dx	9-7-18	9-8-18	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-7-18	9-8-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*98*	*50-150*				
Client ID:	**FMW-130-083018**					
Laboratory ID:	08-374-04					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-7-18	9-8-18	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-7-18	9-8-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0907W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-7-18	9-8-18	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-7-18	9-8-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	08-374-01										
	ORIG	DUP									
Diesel Range Organics	**1.03**	**1.01**	NA	NA		NA		NA	2	NA	M
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*100*	*94*	*50-150*			

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-083018**					
Laboratory ID:	08-374-01					
Dichlorodifluoromethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Chloromethane	ND	5.0	EPA 8260C	9-5-18	9-5-18	
Vinyl Chloride	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Bromomethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Chloroethane	ND	5.0	EPA 8260C	9-5-18	9-5-18	
Trichlorofluoromethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloroethene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Iodomethane	ND	5.0	EPA 8260C	9-5-18	9-5-18	
Methylene Chloride	ND	5.0	EPA 8260C	9-5-18	9-5-18	
(trans) 1,2-Dichloroethene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloroethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
2,2-Dichloropropane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
(cis) 1,2-Dichloroethene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Bromochloromethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Chloroform	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,1,1-Trichloroethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Carbon Tetrachloride	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloropropene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Benzene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2-Dichloroethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Trichloroethene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2-Dichloropropane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Dibromomethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Bromodichloromethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
2-Chloroethyl Vinyl Ether	ND	5.0	EPA 8260C	9-5-18	9-5-18	
(cis) 1,3-Dichloropropene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Toluene	ND	5.0	EPA 8260C	9-5-18	9-5-18	
(trans) 1,3-Dichloropropene	ND	1.0	EPA 8260C	9-5-18	9-5-18	

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Project: 397-019

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-083018**					
Laboratory ID:	08-374-01					
1,1,2-Trichloroethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Tetrachloroethene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,3-Dichloropropane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Dibromochloromethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2-Dibromoethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Chlorobenzene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,1,1,2-Tetrachloroethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Ethylbenzene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
m,p-Xylene	ND	2.0	EPA 8260C	9-5-18	9-5-18	
o-Xylene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Bromoform	ND	5.0	EPA 8260C	9-5-18	9-5-18	
Bromobenzene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,1,2,2-Tetrachloroethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2,3-Trichloropropane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
2-Chlorotoluene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
4-Chlorotoluene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,3-Dichlorobenzene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,4-Dichlorobenzene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2-Dichlorobenzene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2-Dibromo-3-chloropropane	ND	5.0	EPA 8260C	9-5-18	9-5-18	
1,2,4-Trichlorobenzene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Hexachlorobutadiene	ND	5.0	EPA 8260C	9-5-18	9-5-18	
1,2,3-Trichlorobenzene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*113*	*75-127*				
Toluene-d8	*107*	*80-127*				
4-Bromofluorobenzene	*87*	*78-125*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
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Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-133-083018**					
Laboratory ID:	08-374-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloromethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Vinyl Chloride	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromomethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloroethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Iodomethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Methylene Chloride	ND	2.0	EPA 8260C	9-5-18	9-5-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromochloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloroform	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Benzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Trichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Dibromomethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromodichloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-5-18	9-5-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Toluene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-133-083018**					
Laboratory ID:	08-374-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Tetrachloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Dibromochloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Ethylbenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
m,p-Xylene	ND	0.40	EPA 8260C	9-5-18	9-5-18	
o-Xylene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromoform	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Bromobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*116*	*75-127*				
Toluene-d8	*107*	*80-127*				
4-Bromofluorobenzene	*89*	*78-125*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-132-083018**					
Laboratory ID:	08-374-03					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloromethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Vinyl Chloride	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromomethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloroethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Iodomethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Methylene Chloride	ND	2.0	EPA 8260C	9-5-18	9-5-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromochloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloroform	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Benzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Trichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Dibromomethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromodichloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-5-18	9-5-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Toluene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-132-083018**					
Laboratory ID:	08-374-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Tetrachloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Dibromochloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Ethylbenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
m,p-Xylene	ND	0.40	EPA 8260C	9-5-18	9-5-18	
o-Xylene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromoform	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Bromobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*116*	*75-127*				
Toluene-d8	*105*	*80-127*				
4-Bromofluorobenzene	*87*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-130-083018**					
Laboratory ID:	08-374-04					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloromethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Vinyl Chloride	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromomethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloroethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Iodomethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Methylene Chloride	ND	1.0	EPA 8260C	9-5-18	9-5-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
(cis) 1,2-Dichloroethene	0.27	0.20	EPA 8260C	9-5-18	9-5-18	
Bromochloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloroform	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Benzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Trichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Dibromomethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromodichloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-5-18	9-5-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Toluene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-130-083018**					
Laboratory ID:	08-374-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Tetrachloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Dibromochloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Ethylbenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
m,p-Xylene	ND	0.40	EPA 8260C	9-5-18	9-5-18	
o-Xylene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromoform	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Bromobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*118*	*75-127*				
Toluene-d8	*108*	*80-127*				
4-Bromofluorobenzene	*86*	*78-125*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0905W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloromethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Vinyl Chloride	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromomethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloroethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Iodomethane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Methylene Chloride	ND	2.0	EPA 8260C	9-5-18	9-5-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromochloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chloroform	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Benzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Trichloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Dibromomethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromodichloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-5-18	9-5-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Toluene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-5-18	9-5-18	

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0905W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Tetrachloroethene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Dibromochloromethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Chlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Ethylbenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
m,p-Xylene	ND	0.40	EPA 8260C	9-5-18	9-5-18	
o-Xylene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Bromoform	ND	1.0	EPA 8260C	9-5-18	9-5-18	
Bromobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-5-18	9-5-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	9-5-18	9-5-18	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-5-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*109*	*75-127*				
Toluene-d8	*106*	*80-127*				
4-Bromofluorobenzene	*86*	*78-125*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0905W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**7.44**	**7.44**	10.0	10.0	74	74	62-129	0	15	
Benzene	**8.58**	**8.79**	10.0	10.0	86	88	77-127	2	15	
Trichloroethene	**8.79**	**8.75**	10.0	10.0	88	88	70-120	0	15	
Toluene	**9.25**	**9.39**	10.0	10.0	93	94	82-123	2	15	
Chlorobenzene	**9.02**	**9.13**	10.0	10.0	90	91	79-120	1	15	
Surrogate:										
Dibromofluoromethane					*105*	*107*	*75-127*			
Toluene-d8					*105*	*104*	*80-127*			
4-Bromofluorobenzene					*85*	*86*	*78-125*			

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

PAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-134-083018**					
Laboratory ID:	08-374-01					
Naphthalene	**290**	9.9	EPA 8270D/SIM	9-4-18	9-5-18	
2-Methylnaphthalene	**12**	2.0	EPA 8270D/SIM	9-4-18	9-5-18	
1-Methylnaphthalene	**10**	2.0	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthylene	**0.12**	0.099	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthene	**8.3**	2.0	EPA 8270D/SIM	9-4-18	9-5-18	
Fluorene	**1.6**	0.099	EPA 8270D/SIM	9-4-18	9-5-18	
Phenanthrene	**0.48**	0.099	EPA 8270D/SIM	9-4-18	9-5-18	
Anthracene	**ND**	0.099	EPA 8270D/SIM	9-4-18	9-5-18	
Fluoranthene	**ND**	0.099	EPA 8270D/SIM	9-4-18	9-5-18	
Pyrene	**ND**	0.099	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]anthracene	**ND**	0.0099	EPA 8270D/SIM	9-4-18	9-5-18	
Chrysene	**ND**	0.0099	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[b]fluoranthene	**ND**	0.0099	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo(j,k)fluoranthene	**ND**	0.0099	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]pyrene	**ND**	0.0099	EPA 8270D/SIM	9-4-18	9-5-18	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0099	EPA 8270D/SIM	9-4-18	9-5-18	
Dibenz[a,h]anthracene	**ND**	0.0099	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[g,h,i]perylene	**ND**	0.0099	EPA 8270D/SIM	9-4-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*64*	*21 - 110*				
Pyrene-d10	*73*	*19 - 111*				
Terphenyl-d14	*73*	*32 - 137*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

PAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-133-083018**					
Laboratory ID:	08-374-02					
Naphthalene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
2-Methylnaphthalene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
1-Methylnaphthalene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthylene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthene	**0.38**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Fluorene	**0.098**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Phenanthrene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Anthracene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Fluoranthene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Pyrene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]anthracene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Chrysene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[b]fluoranthene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo(j,k)fluoranthene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]pyrene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Dibenz[a,h]anthracene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[g,h,i]perylene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*78*	*21 - 110*				
Pyrene-d10	*89*	*19 - 111*				
Terphenyl-d14	*89*	*32 - 137*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

PAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-132-083018**					
Laboratory ID:	08-374-03					
Naphthalene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
2-Methylnaphthalene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
1-Methylnaphthalene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthylene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthene	**0.40**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Fluorene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Phenanthrene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Anthracene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Fluoranthene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Pyrene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]anthracene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Chrysene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[b]fluoranthene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo(j,k)fluoranthene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]pyrene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Dibenz[a,h]anthracene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[g,h,i]perylene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*71*	*21 - 110*				
Pyrene-d10	*84*	*19 - 111*				
Terphenyl-d14	*84*	*32 - 137*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

PAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-130-083018**					
Laboratory ID:	08-374-04					
Naphthalene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
2-Methylnaphthalene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
1-Methylnaphthalene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthylene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Fluorene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Phenanthrene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Anthracene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Fluoranthene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Pyrene	**ND**	0.097	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]anthracene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Chrysene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[b]fluoranthene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo(j,k)fluoranthene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]pyrene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Dibenz[a,h]anthracene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[g,h,i]perylene	**ND**	0.0097	EPA 8270D/SIM	9-4-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*69*	*21 - 110*				
Pyrene-d10	*85*	*19 - 111*				
Terphenyl-d14	*84*	*32 - 137*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0904W1					
Naphthalene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
2-Methylnaphthalene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
1-Methylnaphthalene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Acenaphthylene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Acenaphthene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Fluorene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Phenanthrene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Anthracene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Fluoranthene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Pyrene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Benzo[a]anthracene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Chrysene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Benzo(j,k)fluoranthene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Benzo[a]pyrene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*115*	*21 - 110*				Q
Pyrene-d10	*88*	*19 - 111*				
Terphenyl-d14	*117*	*32 - 137*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-374
Project: 397-019

PAHs EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0904W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.343**	**0.271**	0.500	0.500	69	54	28 - 109	23	38	
Acenaphthylene	**0.384**	**0.320**	0.500	0.500	77	64	37 - 111	18	26	
Acenaphthene	**0.375**	**0.304**	0.500	0.500	75	61	41 - 113	21	33	
Fluorene	**0.366**	**0.339**	0.500	0.500	73	68	47 - 114	8	23	
Phenanthrene	**0.363**	**0.339**	0.500	0.500	73	68	50 - 113	7	18	
Anthracene	**0.380**	**0.362**	0.500	0.500	76	72	50 - 117	5	18	
Fluoranthene	**0.396**	**0.381**	0.500	0.500	79	76	52 - 120	4	15	
Pyrene	**0.395**	**0.381**	0.500	0.500	79	76	51 - 128	4	31	
Benzo[a]anthracene	**0.428**	**0.413**	0.500	0.500	86	83	57 - 127	4	15	
Chrysene	**0.414**	**0.413**	0.500	0.500	83	83	51 - 120	0	15	
Benzo[b]fluoranthene	**0.412**	**0.402**	0.500	0.500	82	80	54 - 124	2	17	
Benzo(j,k)fluoranthene	**0.426**	**0.418**	0.500	0.500	85	84	50 - 127	2	18	
Benzo[a]pyrene	**0.414**	**0.398**	0.500	0.500	83	80	50 - 120	4	16	
Indeno(1,2,3-c,d)pyrene	**0.407**	**0.390**	0.500	0.500	81	78	46 - 132	4	20	
Dibenz[a,h]anthracene	**0.416**	**0.403**	0.500	0.500	83	81	49 - 129	3	18	
Benzo[g,h,i]perylene	**0.412**	**0.402**	0.500	0.500	82	80	45 - 130	2	19	
Surrogate:										
2-Fluorobiphenyl					*69*	*56*	*21 - 110*			
Pyrene-d10					*79*	*78*	*19 - 111*			
Terphenyl-d14					*79*	*77*	*32 - 137*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z - The gasoline result is mainly attributed to a single peak (Naphthalene).

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Laboratory Number: 08-374

Company: Farallon
Project Number: 397-019
Project Name: Block 38 West
Project Manager: Javan Ruark
Sampled by: Greg Peters

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/~~BTEX~~	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C + BTEX	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	FMW-134-083018	8/30/18	1034	Water	11		X		X		X			X									
2	FMW-133-083018		1819		11		X		X		X			X									
3	FMW-132-083018		1707		11		X		X		X			X									
4	FMW-130-083018		1347		11		X		X		X			X									

	Signature	Company	Date	Time
Relinquished	[signature]	Farallon	8/30/18	1834
Received	[signature]	OSE	8/31/18	1015
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
~~Please Contact Project Manager for Sample analyses and turnaround time!!~~ X-Added 9/4/18. DB (STA)

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 11, 2018

Javan Ruark
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re:	Analytical Data for Project 397-019
	Laboratory Reference No. 1808-375

Dear Javan:

Enclosed are the analytical results and associated quality control data for samples submitted on August 31, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

Case Narrative

Samples were collected on August 30, 2018 and received by the laboratory on August 31, 2018. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

The associated method blank had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-083018**					
Laboratory ID:	08-375-01					
Gasoline	**ND**	100	NWTPH-Gx	9-6-18	9-6-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*110*	*66-117*				
Client ID:	**FMW-136-083018**					
Laboratory ID:	08-375-02					
Gasoline	**ND**	100	NWTPH-Gx	9-6-18	9-6-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*110*	*66-117*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

GASOLINE RANGE ORGANICS
NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0906W3					
Gasoline	**ND**	100	NWTPH-Gx	9-6-18	9-6-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*111*	*66-117*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-380-02										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*112*	*112*	*66-117*			

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-083018**					
Laboratory ID:	08-375-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-7-18	9-8-18	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-7-18	9-8-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**FMW-136-083018**					
Laboratory ID:	08-375-02					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-7-18	9-8-18	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-7-18	9-8-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0907W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-7-18	9-8-18	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-7-18	9-8-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-374-01										
	ORIG	DUP									
Diesel Range Organics	**1.03**	**1.01**	NA	NA		NA		NA	2	NA	M
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*100*	*94*	*50-150*			

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

VOLATILE ORGANICS EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-083018**					
Laboratory ID:	08-375-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chloromethane	ND	1.0	EPA 8260C	9-10-18	9-10-18	
Vinyl Chloride	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromomethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chloroethane	ND	1.0	EPA 8260C	9-10-18	9-10-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Iodomethane	ND	1.5	EPA 8260C	9-10-18	9-10-18	
Methylene Chloride	ND	1.0	EPA 8260C	9-10-18	9-10-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromochloromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chloroform	0.41	0.20	EPA 8260C	9-10-18	9-10-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Benzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Trichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Dibromomethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromodichloromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-10-18	9-10-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Toluene	ND	1.0	EPA 8260C	9-10-18	9-10-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-10-18	9-10-18	

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-083018**					
Laboratory ID:	08-375-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Tetrachloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Dibromochloromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Ethylbenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
m,p-Xylene	ND	0.40	EPA 8260C	9-10-18	9-10-18	
o-Xylene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromoform	ND	1.0	EPA 8260C	9-10-18	9-10-18	
Bromobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-10-18	9-10-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	9-10-18	9-10-18	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*111*	*75-127*				
Toluene-d8	*108*	*80-127*				
4-Bromofluorobenzene	*84*	*78-125*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

VOLATILE ORGANICS EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-083018**					
Laboratory ID:	08-375-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chloromethane	ND	1.0	EPA 8260C	9-10-18	9-10-18	
Vinyl Chloride	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromomethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chloroethane	ND	1.0	EPA 8260C	9-10-18	9-10-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Iodomethane	ND	1.5	EPA 8260C	9-10-18	9-10-18	
Methylene Chloride	ND	1.0	EPA 8260C	9-10-18	9-10-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
(cis) 1,2-Dichloroethene	0.36	0.20	EPA 8260C	9-10-18	9-10-18	
Bromochloromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chloroform	2.7	0.20	EPA 8260C	9-10-18	9-10-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Benzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Trichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Dibromomethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromodichloromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-10-18	9-10-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Toluene	ND	1.0	EPA 8260C	9-10-18	9-10-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-10-18	9-10-18	

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

VOLATILE ORGANICS EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-083018**					
Laboratory ID:	08-375-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Tetrachloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Dibromochloromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Ethylbenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
m,p-Xylene	ND	0.40	EPA 8260C	9-10-18	9-10-18	
o-Xylene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromoform	ND	1.0	EPA 8260C	9-10-18	9-10-18	
Bromobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-10-18	9-10-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	9-10-18	9-10-18	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*114*	*75-127*				
Toluene-d8	*107*	*80-127*				
4-Bromofluorobenzene	*84*	*78-125*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0910W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chloromethane	ND	1.0	EPA 8260C	9-10-18	9-10-18	
Vinyl Chloride	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromomethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chloroethane	ND	1.0	EPA 8260C	9-10-18	9-10-18	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Iodomethane	ND	1.5	EPA 8260C	9-10-18	9-10-18	
Methylene Chloride	ND	1.0	EPA 8260C	9-10-18	9-10-18	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromochloromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chloroform	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Benzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Trichloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Dibromomethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromodichloromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-10-18	9-10-18	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Toluene	ND	1.0	EPA 8260C	9-10-18	9-10-18	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-10-18	9-10-18	

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
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Project: 397-019

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0910W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Tetrachloroethene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Dibromochloromethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Chlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Ethylbenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
m,p-Xylene	ND	0.40	EPA 8260C	9-10-18	9-10-18	
o-Xylene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Bromoform	ND	1.0	EPA 8260C	9-10-18	9-10-18	
Bromobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-10-18	9-10-18	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-10-18	9-10-18	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Hexachlorobutadiene	ND	1.0	EPA 8260C	9-10-18	9-10-18	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-10-18	9-10-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*111*	*75-127*				
Toluene-d8	*106*	*80-127*				
4-Bromofluorobenzene	*83*	*78-125*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0910W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**10.2**	**9.81**	10.0	10.0	102	98	62-129	4	15	
Benzene	**9.94**	**9.63**	10.0	10.0	99	96	77-127	3	15	
Trichloroethene	**9.86**	**9.35**	10.0	10.0	99	94	70-120	5	15	
Toluene	**10.2**	**9.78**	10.0	10.0	102	98	82-123	4	15	
Chlorobenzene	**9.76**	**9.14**	10.0	10.0	98	91	79-120	7	15	
Surrogate:										
Dibromofluoromethane					*109*	*111*	*75-127*			
Toluene-d8					*107*	*107*	*80-127*			
4-Bromofluorobenzene					*86*	*85*	*78-125*			

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

PAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-135-083018**					
Laboratory ID:	08-375-01					
Naphthalene	**0.35**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
2-Methylnaphthalene	**0.29**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
1-Methylnaphthalene	**0.68**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthylene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthene	**0.39**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Fluorene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Phenanthrene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Anthracene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Fluoranthene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Pyrene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]anthracene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Chrysene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[b]fluoranthene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo(j,k)fluoranthene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]pyrene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Dibenz[a,h]anthracene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[g,h,i]perylene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*50*	*21 - 110*				
Pyrene-d10	*62*	*19 - 111*				
Terphenyl-d14	*62*	*32 - 137*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

PAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FMW-136-083018**					
Laboratory ID:	08-375-02					
Naphthalene	**0.39**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
2-Methylnaphthalene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
1-Methylnaphthalene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthylene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Acenaphthene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Fluorene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Phenanthrene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Anthracene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Fluoranthene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Pyrene	**ND**	0.096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]anthracene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Chrysene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[b]fluoranthene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo(j,k)fluoranthene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[a]pyrene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Dibenz[a,h]anthracene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Benzo[g,h,i]perylene	**ND**	0.0096	EPA 8270D/SIM	9-4-18	9-5-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*21 - 110*				
Pyrene-d10	*84*	*19 - 111*				
Terphenyl-d14	*83*	*32 - 137*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0904W1					
Naphthalene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
2-Methylnaphthalene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
1-Methylnaphthalene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Acenaphthylene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Acenaphthene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Fluorene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Phenanthrene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Anthracene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Fluoranthene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Pyrene	**ND**	0.10	EPA 8270D/SIM	9-4-18	9-4-18	
Benzo[a]anthracene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Chrysene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Benzo(j,k)fluoranthene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Benzo[a]pyrene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270D/SIM	9-4-18	9-4-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*115*	*21 - 110*				Q
Pyrene-d10	*88*	*19 - 111*				
Terphenyl-d14	*117*	*32 - 137*				

Date of Report: September 11, 2018
Samples Submitted: August 31, 2018
Laboratory Reference: 1808-375
Project: 397-019

PAHs EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0904W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.343**	**0.271**	0.500	0.500	69	54	28 - 109	23	38	
Acenaphthylene	**0.384**	**0.320**	0.500	0.500	77	64	37 - 111	18	26	
Acenaphthene	**0.375**	**0.304**	0.500	0.500	75	61	41 - 113	21	33	
Fluorene	**0.366**	**0.339**	0.500	0.500	73	68	47 - 114	8	23	
Phenanthrene	**0.363**	**0.339**	0.500	0.500	73	68	50 - 113	7	18	
Anthracene	**0.380**	**0.362**	0.500	0.500	76	72	50 - 117	5	18	
Fluoranthene	**0.396**	**0.381**	0.500	0.500	79	76	52 - 120	4	15	
Pyrene	**0.395**	**0.381**	0.500	0.500	79	76	51 - 128	4	31	
Benzo[a]anthracene	**0.428**	**0.413**	0.500	0.500	86	83	57 - 127	4	15	
Chrysene	**0.414**	**0.413**	0.500	0.500	83	83	51 - 120	0	15	
Benzo[b]fluoranthene	**0.412**	**0.402**	0.500	0.500	82	80	54 - 124	2	17	
Benzo(j,k)fluoranthene	**0.426**	**0.418**	0.500	0.500	85	84	50 - 127	2	18	
Benzo[a]pyrene	**0.414**	**0.398**	0.500	0.500	83	80	50 - 120	4	16	
Indeno(1,2,3-c,d)pyrene	**0.407**	**0.390**	0.500	0.500	81	78	46 - 132	4	20	
Dibenz[a,h]anthracene	**0.416**	**0.403**	0.500	0.500	83	81	49 - 129	3	18	
Benzo[g,h,i]perylene	**0.412**	**0.402**	0.500	0.500	82	80	45 - 130	2	19	
Surrogate:										
2-Fluorobiphenyl					*69*	*56*	*21 - 110*			
Pyrene-d10					*79*	*78*	*19 - 111*			
Terphenyl-d14					*79*	*77*	*32 - 137*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-375

Company: Favallon
Project Number: 397-019
Project Name: Block 38 West
Project Manager: Jovan Ruark
Sampled by: Greg Peters

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/~~BTEX~~ DB	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C + BTEX	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	FMW-135-083018	8/30/18	1545	Water	11		X		X		X			X													
2	FMW-136-083018	8/30/18	1151	Water	11		X		X		X			X													

	Signature	Company	Date	Time
Relinquished	[signature]	Farallon	8/30/18	1839
Received	[signature]	OSE	8/31/18	1015
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
~~Please Contact project Manager for sample analyses and turnaround time!!~~
X - added 9/4/18 - DB (STA)

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

APPENDIX C
CATEGORY 1 SOIL ANALYTICAL DATA TABLES

SUBSURFACE INVESTIGATION REPORT AND ENVIRONMENTAL MEDIA MANAGEMENT PLAN
Block 38 West Property
500 through 536 Westlake Avenue North
Seattle, Washington

Farallon PN: 397-019

Table 1
Soil Analytical Results for TPH and BTEX
South Lake Union Block 38
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)						
				NWTPH-Dx[2]		NWTPH-Gx[3]	EPA Method 8021B[4]			
				DRO	ORO	GRO	Benzene	Toluene	Ethylbenzene	Xylenes
FB-01	FB-01-30.0-082118	30.0	8/21/2018	< 29	< 58	< 5.1	< 0.020	< 0.051	< 0.051	< 0.102
FB-02	FB-02-35.0-082018	35.0	8/20/2018	< 31	< 62	< 5.8	< 0.020	< 0.058	< 0.058	< 0.116
FB-03	FB-03-15.0-082318	15.0	8/23/2018	< 32	< 65	< 6.5	< 0.020	< 0.065	< 0.065	< 0.130
	FB-03-25.0-082318	25.0	8/23/2018	< 29	< 59	< 5.5	< 0.020	< 0.055	< 0.055	< 0.110
FB-04	FB-04-20.0-082118	20.0	8/21/2018	< 29	< 58	< 5.3	< 0.020	< 0.053	< 0.053	< 0.106
	FB-04-30.0-082118	30.0	8/21/2018	< 30	< 59	< 5.5	< 0.020	< 0.055	< 0.055	< 0.110
FB-05	FB-05-5.0-082218	5.0	8/22/2018	< 31	< 61	< 5.4	< 0.020	< 0.054	< 0.054	< 0.108
	FB-05-20.0-082218	20.0	8/22/2018	< 31	< 61	< 5.5	< 0.020	< 0.055	< 0.055	< 0.110
	FB-05-35.0-082218	35.0	8/22/2018	< 31	< 62	< 5.8	< 0.020	< 0.058	< 0.058	< 0.116
FMW-135	FMW-135-35.0-082418	35.0	8/24/2018	< 31	< 62	< 5.8	< 0.020	< 0.058	< 0.058	< 0.116
FMW-136	FMW-136-10.0-082218	10.0	8/22/2018	< 38	< 76	< 9.0	< 0.020	< 0.090	< 0.090	< 0.18
	FMW-136-30.0-082218	30.0	8/22/2018	< 30	< 59	< 5.2	< 0.020	< 0.052	< 0.052	< 0.104
MTCA Method A Cleanup Levels for Soil[5]				**2,000**	**2,000**	**30/100[6]**	**0.03**	**7**	**6**	**9**

NOTES:

< denotes analyte not detected at or exceeding the laboratory reporting limit listed.
— denotes sample not analyzed.
[1]Depth in feet below ground surface.
[2]Analyzed by Northwest Method NWTPH-Dx.
[3]Analyzed by Northwest Method NWTPH-Gx.
[4]Analyzed by U.S. Environmental Protection Agency Method 8021B.
[5]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013.
[6]Cleanup level is 30 milligrams per kilogram if benzene is detected and 100 milligrams per kilogram if benzene is not detected.

EPA = U.S. Environmental Protection Agency
BTEX = benzene, toluene, ethylbenzene and xylenes
DRO = total petroleum hydrocarbons (TPH) as diesel-range organics
GRO = TPH as gasoline-range organics
ORO = TPH as oil-range organics

Table 2
Soil Analytical Results for Halogenated VOCs
South Lake Union Block 38
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]				
				PCE	TCE	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
FB-04	FB-04-20.0-082118	20.0	8/21/2018	< 0.00093	< 0.00093	< 0.00093	< 0.00093	< 0.00093
FB-05	FB-05-20.0-082218	20.0	8/22/2018	< 0.00090	< 0.00090	< 0.00090	< 0.00090	< 0.00090
FMW-135	FMW-135-50.0-082418	50.0	8/24/2018	< 0.00074	< 0.00074	< 0.00074	< 0.00074	< 0.00074
FMW-136	FMW-136-10.0-082218	10.0	8/22/2018	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015
MTCA Cleanup Levels for Soil[3]				**0.05**	**0.03**	**160[4]**	**1,600[4]**	**0.67[4]**

NOTES:

< denotes analyte not detected at or exceeding the reporting limit listed.

[1]Depth in feet below ground surface.

[2]Analyzed by U.S. Environmental Protection Agency Method 8260C.

[3]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013, unless otherwise noted.

[4]Washington State Cleanup Levels and Risk Calculations under MTCA Standard Method B Formula Values for Soil (Unrestricted Land Use) - Direct Contact (Ingestion Only) and Leaching Pathway, https://fortress.wa.gov/ecy/clarc/Reporting/ChemicalQuery.aspx

PCE = tetrachloroethene
TCE = trichloroethene
VOCs = volatile organic compounds

Table 3
Soil Analytical Results for PAHs
South Lake Union Block 38
Seattle, Washington
Farallon PN: 397-019

				Analytical Results (milligrams per kilogram)[2]																			
				Non-Carcinogenic PAHs												Carcinogenic PAHs							
Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Date	Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Total Naphthalenes[3]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)Perylene	Fluoranthene	Fluorene	Phenanthrene	Pyrene	Benzo(a)Pyrene	Benzo(a)Anthracene	Benzo(b)Fluoranthene	Benzo(j,k)Fluoranthene	Chrysene	Dibenzo(a,h)Anthracene	Indeno(1,2,3-cd)Pyrene	Total cPAHs TEC[4,5]
FB-05	FB-05-15.0-082218	15.0	8/22/2018	< 0.0089	< 0.0089	< 0.0089	< 0.0267	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	< 0.0089	0.0067
FB-06	FB-06-10.0-082218	10.0	8/22/2018	< 0.016 H	< 0.016 H	< 0.016 H	< 0.048	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	0.020 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	< 0.016 H	0.012
MTCA Method A Cleanup Level for Soil [6]							**5**	**4,800[7]**	**NE**	**24,000[7]**	**NE**	**3,200[7]**	**3,200[7]**	**NE**	**2,400[7]**								**0.1**

NOTES:

< denotes analyte not detected at or exceeding the reporting limit listed.

[1]Depth in feet below ground surface.

[2]Analyzed by U.S. Environmental Protection Agency Method 8270D/SIM.

[3]Sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

[4]Total carcinogenic polycyclic aromatic hydrocarbons derived using the total toxicity equivalency method in Section 708(8) of Chapter 173-340 of the Washington Administrative Code.

[5]For concentrations reported at less than the laboratory reporting limit, half the reporting limit was used to calculate the TEC.

[6]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013, unless otherwise noted.

[7]Washington State Department of Ecology Cleanup Levels and Risk Calculations, under MTCA Standard Method B Formula Values for Soil (Unrestricted Land Use) - Direct Contact (Ingestion Only) and Leaching Pathway, https://fortress.wa.gov/ecy/clarc/Reporting/ChemicalQuery.aspx

cPAHs = carcinogenic polycyclic aromatic hydrocarbons
H = sample analyzed outside of holding time
NE = not established
PAHs = polycyclic aromatic hydrocarbons
TEC = toxic equivalent concentration

Table 4
Soil Analytical Results for Detected SVOCs
South Lake Union Block 38
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]		
				2,4-Dimethylphenol	Carbazole	Dibenzofuran
FB-05	FB-05-15.0-082218	15.0	8/22/2018	< 0.045	< 0.045	< 0.045
FB-06	FB-06-10.0-082218	10.0	8/22/2018	< 0.082 H	< 0.082 H	< 0.082 H
MTCA Cleanup Levels for Soil[3]				**1,600**	**NE**	**80**

NOTES:

Results in **bold** denote concentrations exceeding applicable cleanup levels.
< denotes analyte not detected at or exceeding the reporting limit listed.
[1]Depth in feet below ground surface.
[2]Analyzed by U.S. Environmental Protection Agency Method 8270D or 8270D/SIM. Only detected SVOCs shown in table; see lab report for full list of analytes.
[3]Washington State Cleanup Levels and Risk Calculations under the Washington State Model Toxics Control Act (MTCA) Cleanup Regulation, Standard Method B Formula Values for Soil (Unrestricted Land Use) - Direct Contact (Ingestion Only) and Leaching Pathway, https://fortress.wa.gov/ecy/clarc/Reporting/ChemicalQuery.aspx

H = sample analyzed outside of holding time
NE = not established
SVOCs = semivolatile organic comounds

Table 5
Soil Analytical Results for Metals
South Lake Union Block 38
Seattle, Washington
Farallon PN: 397-019

Sample Location	Sample Identification	Sample Depth (feet) [1]	Sample Date	Analytical Results (milligrams per kilogram)[2]							
				Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
FB-05	FB-05-35.0-082218	35.0	8/22/2018	< 12	58	< 0.62	38	< 6.2	< 0.31	< 12	< 1.2
FMW-135	FMW-135-5.0-082418	5.0	8/24/2018	< 12	120	< 0.61	48	16	< 0.31	< 12	< 1.2
	FMW-135-25.0-082418	25.0	8/24/2018	< 14	120	< 0.69	60	< 6.9	< 0.35	< 14	< 1.4
FMW-136	FMW-136-30.0-082218	30.0	8/22/2018	< 12	45	< 0.59	41	< 5.9	< 0.30	< 12	< 1.2
MTCA Cleanup Levels for Soil [3]				**20**	**16,000[4]**	**2**	**2,000**	**250**	**2**	**400[4]**	**400[4]**

NOTES:
< denotes analyte not detected at or exceeding the laboratory reporting limit listed.
[1]Depth in feet below ground surface.
[2]Analyzed by U.S. Environmental Protection Agency Methods 6010D/7471B.
[3]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as amended 2013, unless otherwise noted.
[4]Washington State Department of Ecology Cleanup Levels and Risk Calculations, under MTCA Standard Method B Formula Values for Soil (Unrestricted Land Use) - Direct Contact (Ingestion Only) and Leaching Pathway, https://fortress.wa.gov/ecy/clarc/Reporting/ChemicalQuery.aspx

APPENDIX D
SAMPLING AND ANALYSIS PLAN

SUBSURFACE INVESTIGATION REPORT AND ENVIRONMENTAL MEDIA MANAGEMENT PLAN
Block 38 West Property
500 through 536 Westlake Avenue North
Seattle, Washington

Farallon PN: 397-019

Washington
Issaquah | Bellingham | Seattle
Oregon
Portland | Bend | Baker City
California
Oakland | Folsom | Irvine

SAMPLING AND ANALYSIS PLAN

APPENDIX D

ENVIRONMENTAL MEDIA MANAGEMENT PLAN
BLOCK 38 WEST PROPERTY
500 THROUGH 536 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON

Submitted by:
Farallon Consulting, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington 98027

Farallon PN: 397-019

For:
City Investors IX LLC
505 5th Avenue South, Suite 900
Seattle, Washington 98104

December 28, 2018

Prepared by:

Javan Ruark, L.G.
Associate Geologist

Reviewed by:

Thaddeus Cline, P.E., L.G., L.H.G.
Principal Civil Engineer/Hydrogeologist

Clifford T. Schmitt, L.G., L.H.G.
Principal Hydrogeologist

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ATTACHMENT

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) prepared this Sampling and Analysis Plan (SAP) on behalf of Lakefront Investors IX LLC (Lakefront Investors) to present the requirements and methodology for sample collection and laboratory analysis activities related to the planned redevelopment at the property at 500 through 536 Westlake Avenue North in Seattle, Washington (herein referred to as Block 38 West). The SAP presents project-specific protocols and information pertaining to sampling and analysis procedures to be used during the redevelopment at Block 38 West in accordance with the Environmental Media Management Plan (EMMP) to which this SAP is attached as Appendix D.

The objective of the cleanup action to be conducted during construction excavation will be to protect human health and the environment and to satisfy the requirements for regulatory closure and a No Further Action determination from the Washington State Department of Ecology (Ecology) under the Washington State Model Toxics Control Act Cleanup Regulation (MTCA), as established in Chapter 173-340 of the Washington Administrative Code (WAC 173-340). The cleanup action summarized in the EMMP describes the following general elements: site preparation, dewatering and wastewater treatment and discharge, contaminated soil management, compliance soil monitoring, and waterproof barrier installation. The cleanup action entails mass excavation of contaminated soil until cleanup objectives identified in the EMMP are achieved.

The purpose of the SAP is to specify requirements for field screening and compliance monitoring soil sample collection and laboratory analysis activities to be conducted during the excavation of impacted soil at Block 38 West, to ensure data are collected in accordance with technically acceptable protocols and that analytical results will meet the data quality objectives (DQOs) for the cleanup action.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section identifies key personnel related to the cleanup action excavation at Block 38 West and their responsibilities.

2.1 MANAGEMENT

The Farallon Principal is Mr. Thaddeus Cline, who will provide overall program guidance to support staff and will have a direct line of communication with Lakefront Investors.

The Farallon Project Manager is Mr. Javan Ruark, whose primary role is to ensure compliance with the requirements of this SAP during implementation of the cleanup action.

The Farallon Health and Safety Coordinator is Mr. Joe Rounds, who will provide support in implementing health and safety protocols for Farallon field personnel.

2.2 FIELD COORDINATOR

The Farallon Field Coordinator will be responsible for monitoring Farallon field activities and supporting the Field Scientist(s). The Field Coordinator will ensure that appropriate protocols for sample collection, preservation, and holding times are observed, and will submit or arrange for submittal of soil samples to the designated laboratory for analyses. Farallon Engineer Mr. Russell Luiten has been assigned the Field Coordinator role for the cleanup action excavation at Block 38 West.

2.3 FIELD SCIENTISTS

Farallon Field Scientists are experienced field technicians with training in field procedures related to cleanup action excavations and the methodology described in this SAP. Personnel assigned to the Field Scientist role have not yet been named for the cleanup action excavation.

2.4 QUALITY ASSURANCE/QUALITY CONTROL MANAGER

Farallon Associate Geologist Mr. Ruark will serve as the Farallon Quality Assurance and Quality Control (QA/QC) Manager, providing QA/QC oversight for field screening, soil sampling, and laboratory analytical programs; ensuring that field data are collected and documented appropriately; coordinating with the analytical laboratories; and overseeing data quality assessment and quality assurance coordination.

2.5 DATA MANAGER

Ms. Jeannette Mullin will serve as the Farallon Data Manager, and will compile field measurements and analytical data into a project database, review the data for completeness and consistency, conduct data quality assessment activities, and review assigned data qualifiers based on results of data quality assessment.

2.6 LABORATORY PROJECT MANAGER

OnSite Environmental, Inc. in Redmond, Washington (OnSite) is the analytical laboratory selected for this project. Mr. David Baumeister will serve as the Laboratory Project Manager, overseeing laboratory operations associated with the receipt of environmental samples, chemical analyses, and laboratory report preparation for this project.

OnSite will be responsible for the following tasks:

- Performing laboratory analysis of samples using the methods outlined in the SAP;
- Adhering to documentation, custody, and sample logbook procedures;
- Meeting reporting and QA/QC requirements;
- Delivering electronic data deliverables as specified in the SAP;
- Meeting turnaround times for deliverables as described in the SAP; and
- Allowing the Farallon QA/QC Manager to perform laboratory and data audits as requested.

OnSite will be certified through Ecology and the National Environmental Laboratory Accreditation Program for the analytical methods performed.

3.0 DATA QUALITY OBJECTIVES AND MEASUREMENT CRITERIA

DQOs provide a qualitative and quantitative framework pertaining to laboratory analysis of soil samples collected during the cleanup action excavation, including a series of planning steps based on the scientific method around which data collection programs are designed. The use of DQOs ensures that:

- The objectives of field screening, soil sampling, and laboratory analysis to be conducted during the cleanup action excavation are clearly defined;
- The type, quantity, and quality of environmental data used in decision making are appropriate for their intended application; and
- Acceptable levels of decision error and performance goals are specified, such that the quantity and quality of data needed to support management decisions are provided.

The objectives of field screening, soil sampling, and laboratory analysis are to obtain data documenting the effectiveness of the cleanup action so that the cleanup action objectives indicated in the EMMP and summarized in Section 1, Introduction, are met. The overall QA/QC objective for this SAP is to develop and implement procedures that will ensure the collection of representative data of known and acceptable quality.

Measurement quality indicators pertaining to field sampling and laboratory analysis are generally defined in terms of five parameters:

- Precision;
- Accuracy;
- Representativeness;
- Comparability; and
- Completeness.

Each parameter is defined below. Specific QC objectives for sample collection and laboratory analyses are set forth below.

3.1 PRECISION

Precision measures the reproducibility of measurements under a given set of conditions and pertains to laboratory analytical results. The goal is to maintain a level of analytical precision consistent with the objectives of the cleanup action. Work for this project will adhere to established protocols as presented in this SAP. Precision will be evaluated using laboratory duplicate results as applicable per the analytical methods. Analytical precision measurements may be carried out on project-specific samples at the discretion of the Field Coordinator. The equation used to evaluate precision is:

$$RPD = \frac{(A-B)}{[\frac{(A+B)}{2}]} \ x \ 100\%$$

Where:
RPD = relative percent difference
A = Analytical result from one of two duplicate measurements
B = Analytical result from the second measurement

Plus or minus 35 percent RPD is the criterion for sufficient precision for this project.

3.2 ACCURACY

Accuracy (or bias) is an expression of the degree to which a measured value conforms to the reference value and pertains to laboratory analytical results. Laboratory blanks and surrogate standards will be used to evaluate the bias of the analytical data.

Accuracy can be expressed as a percentage of the true or reference value, or as percent recovery in analyses where reference materials are not available and spiked samples are analyzed. The equation used to determine percent recovery for spiked samples is:

$$Percent\ Recovery = \frac{A-X}{B} \ x \ 100\%$$

Where:
A = Value measured in spiked sample or standard
X = Value measured in original sample
B = True value of amount added to sample or true value of standard

The equation used to determine percent recovery for reference materials is:

$$Percent\ Recovery = \frac{A}{B} \ x \ 100\%$$

Where:
A = Value measured in control or reference sample
B = Established concentration of the control or reference sample

Method blank analytical results can reflect systematic bias resulting from contamination of samples during laboratory analysis, and as such, any detected values will be evaluated.

Recovery of 60 to 140 percent is the criterion for sufficient accuracy for this project.

Trip blank analytical results may be evaluated to check for procedural contamination, cross-contamination, and contamination during shipment and storage of samples collected for volatile organic compounds (VOC) analysis, which includes benzene. Up to one trip blank, filled with analyte-free deionized water and preserved with hydrochloric acid, may be submitted to the project laboratory for each cooler containing samples for analysis for benzene. After their preparation, the trip blank sample containers are not to be opened until the containers have been returned to the laboratory.

3.3 REPRESENTATIVENESS

Representativeness is the degree to which laboratory analytical data accurately and precisely represent conditions in the project area. Representativeness is dependent on sampling and analytical variability and the variability of environmental media. The sampling plan, sample collection techniques, sample handling protocols, analytical methods, and data review procedures have been developed to ensure that the results obtained are representative of conditions at Block 38 West.

3.4 COMPARABILITY

Comparability is a qualitative parameter expressing the confidence with which a data set can be compared with another. Comparability will be maintained through consistent use of the field sampling and laboratory analytical methodologies set forth in the SAP, and through the use of established QA/QC procedures and appropriately trained personnel. In addition, the use of standard methods and procedures for both sample collection and laboratory analysis will make the data collected comparable to internal and other data generated.

3.5 COMPLETENESS

Completeness is defined as a measure of the amount of valid data obtained from an event or investigation compared to the total amount obtained. Completeness (C) will be calculated as follows:

$$C = \frac{[(\text{number of acceptable data points}) \text{ x } 100]}{(\text{total number of data points collected})}$$

The measurement quality objective for completeness for all components of this project is 95 percent. Data that have been qualified as estimated because the QC criteria were not met will be considered valid for the purpose of assessing completeness. Data that have been qualified as rejected will not be considered valid for the purpose of assessing completeness.

Completeness of 95 percent is the criterion for sufficient completeness for this project.

4.0 DOCUMENTATION AND RECORD KEEPING

Procedures, observations, and test results will be documented for sample collection, laboratory analysis and reporting, and data quality assessment activities. Procedures for documentation of these activities are described in this section.

4.1 FIELD RECORDS

Documentation of field activities will be provided on Field Report forms, Soil Sample Data Log forms, sample and waste material labels, Chain of Custody forms, Soil Disposal Tracking Sheets, and field maps. Documentation generated during the field program will be scanned for electronic archive with hard copies retained in the project file and included in the reports generated, as appropriate.

4.1.1 Field Report Form

Field personnel will be required to keep a daily record of field activities on a Field Report form. Field notes will be as descriptive and inclusive as possible, enabling independent parties to reconstruct the sampling situation from the recorded information. Language will be objective, factual, and free of inappropriate terminology. A summary of daily events will be provided on the Field Report form. At a minimum, field documentation will include the date, job number, project identification and location, weather conditions, sample collection data, personnel present and responsibilities, field equipment used, and any field activities performed during the day. In addition, if other forms or documents such as well-head surveys or maps are completed or used, these documents will be cited in and attached to the Field Report form. Field personnel will sign the completed Field Report form. A copy of the Field Report form is included in Attachment 1.

4.1.2 Soil Sample Data Log Form

A Soil Sample Data Log form will be used to record soil field measurements, observations, and samples collected for analysis. The Soil Sample Data Log form will be completed by the Field Scientist at the time of sample collection. A copy of a Soil Sample Data Log form is included in Attachment 1.

4.1.3 Sample Labels

A sample label is filled out and affixed to appropriate sample containers immediately prior to sample collection. Each sample collected will be assigned a unique sample identifier and number. The sample identifier and number will be filled out in indelible ink and affixed to sample containers immediately prior to sample collection. The sample identifier will be placed on the sample label, Field Report form, and Chain of Custody form. In addition to the sample identifier and number, the sample labels will include the client name, project name and number, date and time of sample collection, sampler's initials, analytical method, and analyte preservative(s).

4.1.4 Chain of Custody Form

The written procedures that are followed whenever samples are collected, transferred, stored, analyzed, or destroyed are designed to create an accurate written record that can be used to trace the possession and handling of the sample from the moment of its collection through analysis and reporting of analytical values. This written record, the Chain of Custody form, will be filled out by the Farallon Field Scientist at the time a sample is obtained. The Farallon Field Scientist will sign and date the Chain of Custody form to relinquish custody of the samples to another party such as the analytical laboratory.

Samples submitted to the laboratory are accompanied by a Chain of Custody form. This form is checked for accuracy and completeness, signed, and dated by the laboratory sample custodian accepting the sample. At the laboratory, each sample is assigned a unique, sequential laboratory identification number that is stamped or written on the Chain of Custody form.

Samples are held under internal chain of custody in the Sample Control room under the appropriate storage conditions (e.g., ambient, refrigeration, frozen). The laboratory Project Manager assigned to a particular client is responsible for tracking the status of the samples throughout the laboratory. Samples are signed out of the Sample Control room in a sample control logbook by the analyst who will prepare the samples for analysis.

The Chain of Custody form includes the client name, project name and number, date and time sampled, sample identifier, sampler's initials, analysis, and analyte preservative(s), if any. A copy of the Chain of Custody form is included in Attachment 1.

4.1.5 Soil Disposal Tracking Sheet

A Soil Disposal Tracking Sheet will be used to document and track the soil excavated and disposed of during the cleanup action. The form will include: the categorization of the soil (Category 2 and Category 3), the source area and depth of the soil disposed as described using the grid system shown on the series of maps with an overlay grid system (Lift Maps) provided in the EMMP, the time the truck transporting the soil departs the site, the name of the trucking company, and the identification number for the truck. A copy of the Soil Disposal Tracking Sheet is included in Attachment 1. Minor modifications may be made to the Soil Disposal Tracking Sheet to satisfy specific project requirements.

4.1.6 Field Maps (Lift Maps)

The EMMP includes Lift Maps that will be used to record the locations for soil samples collected and features related to excavation progress. The locations will be documented on the Lift Maps by the Field Scientist at the time the observation is made and/or sample collection. In addition, Farallon field personnel will track changes in topographic elevations as the excavation progresses and the approximate locations of stockpiled soil segregated by category. The Lift Maps will be updated continually during the cleanup action excavation, and final versions will be maintained in the project files.

4.2 LABORATORY DATA REPORTS

Activities and results associated with analysis of the samples submitted to the analytical laboratory will be documented at the analytical laboratory.

The analytical laboratory will provide analytical results and associated documentation for each sample in a standard data package for each sample delivery group or analytical batch. Each data package will contain the information required for a complete quality assurance review, including the following:

- **Project Narrative.** This summary, presented in a cover letter, will discuss problems (including deviations from applicable laboratory Standard Operating Procedures and this SAP), if any, encountered during analysis. This summary will discuss but not be limited to QC, sample shipment, sample storage, and analytical difficulties. Any actual or perceived problems identified and their resolution will be documented with as much detail as appropriate.
- **Chain-of-Custody Records.** Legible copies of the Chain of Custody forms will be provided as part of the data package. This documentation will include the time of receipt and the condition of each sample received by the laboratory. Additional internal tracking of sample custody by the laboratory also will be documented.
- **Sample Results.** The data package will summarize the results for each sample analyzed. The summary will include the following information, where applicable:
  - Field sample identification and the corresponding laboratory sample identification;
  - Sample matrix;
  - Date of sample extraction;
  - Date and time of analysis;
  - Weight and/or volume used for analysis;
  - Final dilution volume or concentration factor for the sample;
  - The instrument used for analysis;
  - Method detection limits;
  - Method reporting limits;
  - Analytical results with units identified; and
  - Data qualifiers and their definitions.
- **QC Summaries.** This section will contain the results of the laboratory QC procedures. Each QC sample analysis will be documented with the same information required for the sample results (see above). No recovery or blank corrections will be made by the laboratory. The required summaries are listed below; additional information may be requested.

- **Method Blank Analysis.** The method blank analyses associated with each sample and the concentrations of all compounds of interest will be reported.
- **Surrogate Spike Recovery.** Surrogate spike recovery data will be reported. The names of compounds added, percent recoveries, and range of acceptable recoveries will be listed.

5.0 FIELD SCREENING AND SOIL SAMPLING

The procedures for soil field screening and soil sampling are described in this section. Field screening techniques will be used by the Field Scientist to obtain real-time information for guiding the cleanup action excavation activities and the segregation of waste soil for disposal, and for identifying areas for soil sampling. Additional information pertaining to field screening and soil sampling is provided in the EMMP.

Soil sampling will be conducted for purposes of cleanup action excavation performance and protection monitoring. Descriptions of soil sampling procedures are provided in Section 5.2, Soil Sampling.

Field screening and soil sampling data will be documented on appropriate field records, as described in Section 4, Documentation and Record Keeping. Proper personal protective equipment will be used during field screening and soil sample collection per the Health and Safety Plan prepared for Block 38 West.

Four general categories of soil are expected to be encountered during implementation of the cleanup action excavation, as described in the EMMP and summarized below:

- **Category 1 Soil** has no olfactory, visual, or other evidence of contamination (e.g., odor, staining, sheen, elevated photoionization detector readings) and meets criteria for reuse as clean fill or meets acceptance criteria for disposal at a facility or site selected by the excavation subcontractor. Category 1 Soil is not a threat to human health or the environment and can be reused where allowed under other regulations. Areas of Category 1 Soil are indicated by blue-green hatching on the Lift Maps in the EMMP.
- **Category 2 Soil** contains constituents at concentrations not meeting acceptance criteria for the Category 1 Soil disposal facility or for reuse as clean fill off Block 38 West, but meeting acceptance criteria for disposal at the selected Category 2 Soil disposal facility. Category 2 Soil may not contain concentrations of constituents of concern detected in laboratory analyses, but instead could exhibit olfactory, visual, or other evidence of impact. Areas of Category 2 Soil are indicated by yellow shading on the Lift Maps in the EMMP.
- **Category 3 Soil** contains constituents at concentrations exceeding acceptance criteria for disposal at the selected Category 2 Soil disposal facility, but meeting acceptance criteria for disposal at the Category 3 Soil disposal facility. Areas of Category 3 Soil are indicated by orange shading on the Lift Maps in the EMMP.
- **Category 3**+ Soil contains constituents and other material (e.g., wood debris) not meeting acceptance criteria for disposal at the Category 3 Soil disposal facility, but meeting acceptance criteria for disposal at the selected Category 3+ disposal facility. Category 3+ Soil may require pre-treatment by the selected disposal facility prior to disposal. Areas of Category 3+ Soil are indicated by red shading on the Lift Maps in the EMMP.

Lift Maps will be updated continually during the cleanup action excavation to document the extent of the soil categories encountered.

5.1 FIELD SCREENING

Field screening will be performed by the Field Scientist to guide the cleanup action excavation work and to supplement soil sample analytical data, as needed, in identifying extents of the general categories of soil for purposes of soil handling and disposal and regulatory closure under MTCA.

Field screening will consist of any or all of the following:

- Visual and olfactory observations;
- Organic vapor screening; and
- Soil sheen testing.

Results of field screening will be recorded by the Field Scientist on a Field Report form and/or Lift Maps.

Soil sampling procedures for cleanup action excavation performance and confirmation monitoring are discussed in Section 5.2, Soil Sampling.

5.1.1 Visual and Olfactory Observations

Field Scientist visual and olfactory observations will include at a minimum: elevation and soil lift identification, Unified Soil Classification System soil description, estimated soil moisture, physical indications of contamination (e.g., odor, staining), and estimate of percentage of wood debris by volume.

5.1.2 Organic Vapor Screening

Organic vapor screening may be performed by the Field Scientist using a calibrated photoionization detector (PID) for purposes of identifying soil containing VOCs or for health and safety monitoring. A PID reading exceeding ambient or background concentrations indicates potential confirmation of VOC concentrations in a soil sample. Organic vapor screening will be conducted as follows:

- Approximately 100 grams of the soil sample will be sealed in a heavy resealable plastic bag, and care will be taken to leave air (headspace) in the bag for the volatile organic vapors to collect;
- The sealed bag will be shaken to volatilize the contaminants in the soil;
- After waiting approximately 5 minutes, the Field Scientist will insert the PID probe tip into a small opening in the seal at the top of the bag, and the highest PID reading will be recorded on the Soil Sample Data Log form; and

- The bag will be resealed after taking the headspace reading in case further assessment of the sample is needed.

5.1.3 Soil Sheen Test

Soil sheen testing will be performed for purposes of identifying soil containing petroleum hydrocarbons. The Field Scientist will place a soil sample into a clean sample jar and add fresh water. The surface of the water will then be observed for the presence or absence of a sheen in accordance with *Guidance for Remediation of Petroleum Contaminated Sites* dated 2016, prepared by Ecology (2016) (Ecology Guidance), with the following sheen descriptors noted:

- NS – No visible sheen on the water surface.
- SS – Slight (i.e., light, colorless, dull) sheen on the water surface, with irregular non-rapid spread. Natural organic oils or iron bacteria in the soil may produce a slight sheen.
- MS – Moderate (i.e., pronounced over limited area) sheen. Sheen may have some color/iridescence, with irregular and possibly rapid spread, but does not spread over entire water surface.
- HS – Heavy sheen with pronounced color/iridescence and rapid spread, with the sheen covering the entire water surface.

Decaying organic matter and/or iron bacteria can produce a rainbow-like sheen similar to an oil sheen. However, these sheens typically can be broken up when agitated or disturbed, unlike oil sheens, which can be iridescent.

5.2 SOIL SAMPLING

The cleanup action excavation provides for compliance monitoring soil sampling in accordance with WAC 173-340-410 to document the effectiveness of the cleanup action excavation. The following sections summarize the methodology for compliance monitoring to be conducted as performance soil sampling and confirmation soil sampling, as described in the EMMP. Performance soil sample results will be used to identify the limits of the cleanup action excavation and may also be used, as needed, to document compliance of soil with waste profiles approved by selected disposal facilities. Confirmation soil sampling results will confirm compliance with cleanup objectives identified in the EMMP, to the extent practicable, at the limits of the cleanup action excavation. Data pertaining to soil sampling will be recorded by the Field Scientist on a Field Report form, a Soil Sample Data Log form, and/or Lift Maps. Soil sampling methodology is discussed in Section 6, Sample Handling and Chain-of-Custody Procedures.

5.2.1 Performance Soil Sampling

Performance soil sampling will involve collecting discrete in-situ soil samples for laboratory analysis. Performance soil samples generally will be collected from test pits excavated by a track-hoe in advance of mass excavation and at the direction of the Field Scientist. Performance soil samples may in some cases be used for confirmation soil samples when data indicate that cleanup objectives identified in the EMMP have been attained.

The frequency and location of performance soil sampling will be dependent on the sampling data available at that time and results of field screening described in Section 5.1, Field Screening, and at the discretion of the Field Scientist. Performance soil sample locations and elevations will be measured using a geographic positioning system or by a construction land surveyor, and will be clearly indicated on the Lift Maps.

Lift Maps will be updated continually with results of field screening and performance soil sampling, and will be used for planning of additional performance soil sampling, to minimize the amount of contaminated soil requiring off-site disposal, and to minimize the amount of soil requiring off-site disposal at a higher cost. If soil contamination is confirmed in a Lift Map grid area, the grid area may be divided further into subareas and additional performance samples collected to assess the lateral extent of contamination, as needed. The frequency of performance soil sampling may be higher near the lateral and vertical limits of the cleanup action excavation to confirm that cleanup objectives are attained.

5.2.2 Confirmation Soil Sampling

Confirmation soil sampling will be conducted once performance soil sampling results indicate the excavation is approaching the lateral and vertical limits of Contaminated Soil. Confirmation soil sampling will consist of collecting and analyzing in-situ soil samples from the base and sidewalls of the excavation to confirm that no constituents of concern are present at concentrations exceeding their respective cleanup levels. Performance soil sampling locations will be used as confirmation soil sampling points in cases where analytical results for the performance soil samples confirm that cleanup levels have been attained.

5.2.3 General Field Procedures

Soil samples will be collected and handled in accordance with the general procedures listed below:

- Don a new pair of powder-free nitrile gloves prior to collecting each individual soil sample to avoid potential cross-contamination.
- Collect soil samples directly from the top 6 inches of exposed surface of the sidewalls and/or bottom of the cleanup action excavation, unless otherwise directed by the Farallon Project Manager or Field Coordinator, using decontaminated stainless steel sampling tools or sampling kits specific to the U.S. Environmental Protection Agency (EPA) Method 5035A sampling protocol to analyze for VOCs (as applicable). If sampling personnel are not allowed into the excavation area due to health and safety concerns, samples can be collected directly from the excavator bucket, taking care to collect soil from the center of the bucket and not to collect soil samples that have come in contact with the excavator bucket. Samples collected for laboratory analyses should only come into contact with decontaminated stainless steel equipment or laboratory certified-clean sample containers.

- If VOC analyses are to be conducted, fill VOC-specific sampling vials as soon as possible from the excavator bucket or exposed soil to minimize volatilization of VOCs. VOC samples will be prepared in accordance with the EPA Method 5035A sampling protocol for VOCs in soil. This method entails collection of approximately 5 grams of a representative soil sample using a dedicated sampling tool from target locations into a standard 40-milliliter, septum-sealed, threaded screw-capped glass vial containing a laboratory-provided preservative.
- For all other analyses, transfer the soil immediately to an 8-ounce, laboratory-supplied and certified-clean sampling container using a decontaminated stainless steel spoon. Care will be taken not to handle the seal or the inside cap of the container when placing the sample into the container. The container will be filled to eliminate headspace and the seal/cap will be secured. Non-dedicated sampling equipment will be decontaminated between uses, as appropriate.
- Place soil sample containers into a cooler chilled to approximately 4 degrees Celsius immediately upon collection.
- Record the following information, at a minimum, on the Soil Sample Data Log form during sampling: sample identification, sample depth, Unified Soil Classification System soil description, soil moisture, and physical indications of contamination (e.g., visual observations, PID readings).
- Label the sample container with the client name, project name and number, date and time sampled, sample identification, sampler’s initials, analysis, and analyte preservative(s), if any.
- Log the sample on a Chain of Custody form and place into a cooler on ice for transport to the laboratory under standard chain-of-custody protocols. The Chain of Custody form will clearly indicate that each sample is to be thoroughly homogenized by the laboratory.
- Discard of all disposable sampling and health and safety supplies and equipment in an appropriate waste dumpster on Block 38 West.
- Deliver soil samples to the analytical laboratory as soon as possible after sampling in order for the laboratory to analyze the samples within regulatory holding times as described in Section 7, Sample Analysis.

5.2.4 Sample Designation

Each soil sample collected during the cleanup action will be assigned a unique sample identifier. The soil sample identifier will be filled out in indelible ink on sample labels affixed to appropriate containers immediately prior to sample collection.

Soil samples collected from interior portions of the excavation will be assigned a unique sample identifier that will include the components listed below:

- Lift Map grid designation (e.g., A2);

- Grid quarter designation, as appropriate:
    - Northwest (NW)
    - Northeast (NE)
    - Southeast (SE)
    - Southwest (SW)
    - Center (C);
- Elevation of the surface soil sample in feet above mean sea level (msl); and
- Sampling date (e.g., MMDDYY).

For example, the soil sample collected from the northwestern portion of grid square G2 at 15 feet above msl on October 30, 2019 would be assigned the sample identifier G2-NW-15-103019.

Soil samples collected from the sidewalls of the excavation will include a designation of WL before the grid number. For example, the soil sample collected from the southwestern sidewall of grid G2 at 15 feet above msl on October 30, 2019 would be assigned the sample identifier WLG2-SW-15-103019.

5.3 QA/QC SAMPLES

QA/QC samples will be used to evaluate sample heterogeneity, laboratory homogenization procedures, and the potential for cross-contamination for volatile constituents, as appropriate and directed by the Farallon Project Manager. Field QA/QC samples will be documented on the Field Report forms and may include the collection of temperature blanks and trip blanks (for VOC samples). A description of the QA/QC samples that may be used for Block 38 West is provided in the following sections.

5.3.1 Trip Blanks

Analyses of trip blanks are performed to evaluate outside contributions of VOCs during transport of the sample containers to and/or from the laboratory. A trip blank is prepared by the laboratory and included in each sample cooler containing samples for analysis for VOCs.

5.3.2 Temperature Blanks

One temperature blank will be included in each cooler in which samples are stored and/or shipped. A temperature blank is prepared by the analytical laboratory and is prepared by pouring distilled/deionized water into a vial and tightly closing the lid.

5.3.3 Laboratory Duplicate Samples

OnSite will provide one laboratory duplicate result for each analysis within each analytical laboratory report. The laboratory duplicate samples used will either be taken from the laboratory-homogenized samples collected from Block 38 West or from other samples analyzed within that sample batch at the laboratory.

6.0 SAMPLE HANDLING AND CHAIN-OF-CUSTODY PROCEDURES

This section discusses the sample handling and chain-of-custody procedures to be used during the cleanup action excavation. Analytical method-specific containers, preservation, and holding times are summarized in Section 7.1, Analytical Methodology.

6.1 SAMPLE PACKAGING AND SHIPMENT

Samples shipped for laboratory analysis will be packaged according to applicable regulations and the recommendations of the laboratory performing the analysis. Performance and confirmation soil samples will be transported by courier or by Farallon staff to the analytical laboratory within 1 working day of sample collection.

The following procedures (representing the minimum shipping and handling requirements) will be used for sample packaging:

- Bubble-wrap bags or an equivalent will be used to protect glass sample containers.
- Sample containers will be placed upright into a cooler and checked against the Chain of Custody form to ensure that all samples are listed and placed into the correct cooler.
- One copy of the Chain of Custody form will be detached and retained by the Farallon Field Scientist for submittal to the Farallon Project Manager with the daily field notes.
- Remaining paperwork will be sealed in a resealable plastic bag and taped to the inside of the cooler lid.
- One to three resealable bags will be filled with ice and included in the cooler. All ice will be double-bagged in heavy-duty bags.
- The cooler will be sealed with a chain-of-custody seal.
- The cooler will be taped shut using shipping tape.
- Extraneous stickers will be removed from the cooler.

6.2 CHAIN-OF-CUSTODY PROCEDURES

An important component of data collection is the ability to demonstrate that samples were obtained from the stated locations and that samples reached the laboratory or archive location without alteration. Evidence of collection, shipment, laboratory receipt, and laboratory custody until disposal or archive must be properly documented. Documentation will be accomplished through a Chain of Custody form that documents each sample and identifies the individuals responsible for sample collection, shipment, and receipt. A sample is considered in one’s custody if at least one of the following criteria is met:

- The sample is in a person’s actual possession or view;

- The sample is placed in a container and secured with an official seal (signed and dated by the custodian) such that the sample cannot be reached without the seal being broken;
- The sample is locked and only accessible by the custodian after having been in the person's actual possession; or
- The sample is in a secured area, restricted to authorized personnel (e.g., laboratory).

A laboratory typically will not accept samples for analysis without a correctly prepared Chain of Custody form. The Chain of Custody form must be signed by each individual who has the sample in his/her custody. A Chain of Custody form is to be prepared for each sample shipped to a laboratory for analysis. Information on this form correlates with other supporting documentation, including sample labels and sample collection logs.

The Chain of Custody form accounts for the elapsed time and custodians of the sample from the time of its collection. The individuals who have physically handled the sample or witnessed initial sample collection and packaging (e.g., a sample team member) must be identified on the form. A sample team member relinquishes the sample by signing the Chain of Custody form. Individuals who either relinquish or receive samples must include their complete names, company affiliation, and the date and time the samples were relinquished and received. The times the samples are relinquished and received by the next custodian should coincide, with the exception of transfer by commercial carriers. Commercial carriers will not be required to sign the Chain of Custody form; however, their waybill or shipment tracking number must be included on the Chain of Custody form as described below.

If a sample is to be stored for a period of time (e.g., overnight), measures are to be taken to secure the sample container in a manner that provides only the custodian of record with access. If samples are relinquished to a commercial carrier (e.g., UPS, Federal Express), the carrier waybill or shipment tracking number will be recorded and a copy of the waybill will be attached to the Chain of Custody form. These documents are maintained with other field documentation. The original Chain of Custody form will be sealed inside the shipping container with the samples.

If a correction is made to the Chain of Custody form, the correction should be made by the originator of the change, who will draw a single line through the error; initial and date the correction; and, if necessary, provide an explanation of the change. The documentation should have sufficient detail to clearly document the change to a third-party reviewer.

7.0 SAMPLE ANALYSIS

This section summarizes analytical laboratory methodology. OnSite has been selected as the analytical laboratory for this project. OnSite is Ecology-certified and meets Ecology and EPA QA/QC requirements.

7.1 ANALYTICAL METHODOLOGY

Analytical methods for performance and/or confirmation soil samples for constituents of concern for the cleanup action identified in the Cleanup Action Plan include:

- Total petroleum hydrocarbons as diesel-range organics and as oil-range organics by Northwest Method NWTPH-Dx;
- Total petroleum hydrocarbons as gasoline-range organics by Northwest Method NWTPH-Gx;
- Benzene by EPA Method 8021B;
- Total carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by EPA Method 8270D/SIM; and
- Total naphthalenes (a sum of naphthalene, 2-methylnaphthalene, and 1 methylnaphthalene) and cPAHs by EPA Method 8270D/SIM.

Farallon may perform additional laboratory analyses if unforeseen conditions are encountered (e.g., a previously unknown area of soil contamination is discovered) during the cleanup action excavation in order to adequately assess the soil for disposal. Any additional analysis of soil samples will be conducted in accordance with the sampling requirements described in MTCA (Table 830-1 of WAC 173-340-900).

Although the soil sample analytical turnaround times will vary depending on the cleanup action excavation schedule, most performance and confirmation soil samples will require expedited turnaround times to prevent potential construction delays.

Analytical method containers, preservation, and holding times for the planned analytical methods include the following:

- Total petroleum hydrocarbons as diesel-range organics and as oil-range organics by Northwest Method NWTPH-Dx:
    - Sample container: one 4-ounce, laboratory-supplied, clear wide-mouth jar;
    - Preservation: chilled to less than 6 degrees Celsius;
    - Holding time: 14 days to extraction and 40 days to analyze after extraction; and
    - Standard turnaround time: 5 working days.

- Total petroleum hydrocarbons as gasoline-range organics by Northwest Method NWTPH-Gx:
  - Sample container: one 4-ounce, laboratory-supplied, clear wide-mouth jar;
  - Preservation: chilled to less than 6 degrees Celsius;
  - Holding time: 14 days to analyze; and
  - Standard turnaround time: 5 working days.
- Benzene by EPA Method 8021B:
  - Sample containers: one 40-milliliter laboratory-supplied volatile organic analysis container without a stir bar; one 4-ounce, clear wide-mouth jar;
  - Preservation: chilled to less than 6 degrees Celsius;
  - Holding time: 14 days to analyze; and
  - Standard turnaround time: 5 working days.
- Total naphthalenes and cPAHs by EPA Method 8270D/SIM:
  - Sample container: one 4-ounce, laboratory-supplied, clear wide-mouth jar;
  - Preservation: chilled to less than 6 degrees Celsius;
  - Holding time: 14 days to extraction and 40 days to analyze after extraction; and
  - Standard turnaround time: 7 working days.

With laboratory pre-approval, it may be possible to collect one sample container for more than one analysis. If additional analyses are to be conducted for unforeseen conditions, contact the laboratory for specifics of the methods regarding containers, preservation, holding times, and standard turnaround times.

Reporting limits will be the analytical laboratory's practical quantitation limits, which are the lowest concentrations that can be reliable measured during routine laboratory operation conditions using approved methods.

Farallon will obtain analytical results from the laboratory in electronic format and the data will undergo a QA/QC review at the time of receipt by the Farallon QA/QC Manager. The analytical results will be compiled into the Farallon project database by the Farallon Data Manager, and plotted on draft Lift Maps as needed. Updated Lift Maps will be used to evaluate whether sufficient performance and/or confirmation soil samples have been collected to meet the requirements of MTCA and the Ecology Guidance.

7.2 ANALYTICAL LABORATORY QUALITY CONTROL CHECKS

Internal analytical laboratory QC checks will be used to monitor data integrity. These checks will include method blanks, internal standards, surrogate standards, and calibration standards.

Surrogate recoveries will be evaluated using laboratory control limits. Laboratory control charts will be used to determine long-term instrument trends.

Results of QC samples from each sample group will be reviewed by the laboratory immediately following sample group analysis. The QC sample results will then be evaluated to determine whether control limits have been exceeded. If control limits are grossly exceeded in the sample group, the Farallon QA/QC Manager will be contacted immediately and a corrective action (e.g., method modifications followed by reprocessing of the affected samples) will be initiated prior to processing a subsequent group of samples.

The primary chemical standards and standard solutions used in this project will be traceable to the National Institute of Standards and Technology, the Environmental Resource Associates, the National Research Council of Canada, or other documented and reliable commercial sources. Standards will be validated to determine their accuracy by comparison with an independent standard. Any impurities identified in a standard will be documented.

7.2.1 Method Blanks

Method blanks are analyzed to assess possible laboratory contamination at all stages of sample preparation and analysis. The method blank for analyses must be less than the method reporting limit of any single target analyte or compound. If a method blank exceeds this criterion for any analyte or compound and the concentration of the analyte or compound in the samples is less than 5 times the concentration found in the method blank (10 times for common contaminants), analysis must stop, and the source of contamination must be eliminated or reduced.

7.2.2 Surrogate Spikes

Surrogates are compounds that are unlikely to occur under natural conditions and have properties similar to the analytes of interest. Surrogates are added to the samples prior to purging or extraction and are used primarily for organic samples analyzed by gas chromatography and/or mass spectrometry methods. The surrogate spike provides broader insight into the proficiency and efficiency of an analytical method on a sample-specific basis. This control reflects analytical conditions that may not be attributable to the sample matrix. The project samples and associated sample QC to be analyzed by organic methods will be spiked with appropriate surrogate compounds as defined in the analytical methods.

7.2.3 Calibration Check Standards

Calibration check standards analyzed within a particular analytical series provide information regarding instrument stability and validate instrument calibration. The analytical frequency of calibration check standards is specified by the analytical method.

7.3 LABORATORY DELIVERABLES

The analytical laboratory will provide analytical results and associated documentation for each sample in a data package for each sample delivery group or analytical batch as specified in Section

4.2, Laboratory Data Reports. Laboratory data requested on expedited turnaround times may be submitted as draft results, with the final analytical data package and electronic deliverables to follow within a turnaround time of 1 business day from the time of sample receipt at the laboratory for performance and confirmation soil samples.

8.0 REFERENCE

Washington State Department of Ecology (Ecology). 2016. *Guidance for Remediation of Petroleum Contaminated Sites.* (Revised.) Publication No. 10-09-057. Washington State Department of Ecology Toxics Cleanup Program. June.

ATTACHMENT 1
FIELD FORMS

SAMPLING AND ANALYSIS PLAN
Block 38 West Property
500 through 536 Westlake Avenue North
Seattle, Washington

Farallon PN: 397-019

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle
Oregon
Portland | Bend | Baker City
California
Oakland | Sacramento | Irvine

FIELD REPORT

Page ___ of ___

Date: ____________ **Project #:** ________________________________ **Task #:**______________

Project: ___________________________________ **Site Address:** ___________________________________

Client: ____________________________________ **Contractor:** _____________________________________

Weather: ___________________________________ **Temp:** ___________

Equipment Used: ____

Hours: ________ _________ **Mileage:** _________ **Project Manager:** _____________________________

Contractor *Staff*

Prepared By: ______________________________ **Reviewed By:** ___________________________________

Comments:

G:\Forms and Templates\Field Forms\Field Rpt Form.docx

FIELD REPORT (continued)

Page ___ of ___

Project: ______________________________ Date: ____________ Project #: _____________ Task #:_______

FARALLON CONSULTING

Sheet_____ of _____

Soil Sample Data Log

Date: ________________ **Project Name:** ________________________________ **Farallon P/N:** ________________________

PID Model & Serial No: ________________________________ **Calibration Date/Standard:** ________________________

Headspace Container: ☐ 16 oz glass ☐ 8 oz glass ☐ Zip-loc ☐ Other

Sample Method: ☐ Hand auger ☐ Direct push ☐ Split spoon ☐ Corer ☐ Other

Equip Decon: ☐ Tap water wash ☐ DIST/DEION 1 Rinse ☐ Isopropanol ☐ Analyte-free final rinse ☐ Tap water final rinse

☐ Alconox wash ☐ Liquinox Wash ☐ DIST/DEION 2 rinse ☐ Other solvent ☐ DIST/DEION final rinse ☐Air Dry

Test Pit/Boring Location	Sample ID	Time	Depth	PID	Odor	Sheen Tare Weight	Staining Field Weight	Containers	Lithological Description Remarks

2 oz = two-ounce jars

4 oz = four-ounce jars

14648 NE 95th Street
Redmond, WA 98052
(425) 883-3881

OnSite Environmental Inc.

Client ______________________________

Project ______________________________

Sample ID ______________________________

Date ______________ Time ______________

Analysis ______________ Preservative ______________

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Company:	
Project Number:	
Project Name:	
Project Manager:	
Sampled by:	

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Day ☐ 3 Day

☐ Standard (7 working days)

☐ ______________ (other)

Laboratory Number:

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH					% Moisture

	Signature	Company	Date	Time	Comments/Special Instructions:
Relinquished by					
Received by					
Relinquished by					
Received by					
Relinquished by					
Received by					
Reviewed by/Date		Reviewed by/Date			Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

Soil Disposal Tracking Sheet
Block 38 West Property
Seattle, Washington
Farallon PN: 397-019

											Farallon Field or Office
Date Transported	Time Leave Site	Transporter	Truck Identification	Container Identification (as applicable)	Bill of Lading	Destination Landfill	Field Classification (1, 2, 3, 3+)	Grid Location	Depth (feet below ground surface)	Elevation (feet relative to mean sea level)	Comments

Appendix D

SHADOWS ANALYSIS

APPENDIX D
AESTHETICS - SHADOWS

South Lake Union EIS

Comparison of the alternatives in the *South Lake Union* EIS reveals slight differences in the shadow impacts to Denny Park, Cascade Park, and Lake Union Park, as well as other SEPA-protected places. The location and extent of shadows vary, with the impacts associated with *Alternative 1* representing greater impacts than the other alternatives. The *South Lake Union* EIS notes that shadows would generally be longest during winter afternoons when the sun is lower on the horizon. At noon on winter solstice, when the sun angle is low on the horizon, shadow impacts could extend great distances and result from each alternative. Conversely, in the noon timeframe on summer solstice, when the sun is at its greatest height above the horizon, shadow impacts would be shorter and would be less likely to cause impacts. However, overall, the shadow impacts are not expected to result in significant adverse environmental impacts. The impacts are typical of an urbanizing area that is transitioning from lower intensity development to that of more intensive development.

EIS Addendum – Project Specific Impacts

Seattle's SEPA policies aim to "minimize or prevent light blockage and the creation of shadows on open spaces most used by the public."[1] Since the project site is north of Denny Way, areas outside of Downtown that are to be protected[2] include:

- publicly-owned parks;
- public schoolyards;
- private schools which allow public use of schoolyards during non-school hours; and
- publicly owned street ends in shoreline areas.

The nearest such area that is proximate to the project site is Lake Union Park (2 blocks north). This park is well-used by the public during daytime hours.

Factors that influence the extent of shading include: weather (e.g., cloud cover); building height, width and facade orientation; and the proximity of other intervening structures, topographic variations and significant landscaping. The extent of possible shading from the proposed development must also be considered within the context of climatic data for the month (e.g., on average the number of clear, partly cloudy and cloudy days).

The project site is part of the South Lake Union Urban Center; surrounding development includes office buildings, residential complexes, retail facilities and parking structures. The height of existing buildings within a couple blocks of the project site ranges from one to approximately 12 stories. There are several large buildings within several blocks in all directions of the project site that are either under construction or have received the required land use approvals to begin construction. These together with existing highrise buildings

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1 Seattle Municipal Code Chapter 25.05.675 Q2.
2 25.05.675.Q.2

southeast, south and southwest of the project site will influence the amount of localized, area-wide shading that occurs at and proximate to the project site.

This section of the EIS Addendum contains shadow diagrams that depict shading from the *Proposed Action* for vernal and autumnal equinox (approx. March 21st and September 21st), summer solstice (approx. June 21st), and winter solstice (approx. December 21st). Potential impacts depicting shadows from the proposed project, together with shadows from other nearby existing buildings, were evaluated at 8 AM, 12 PM, and 5 PM. The figures and the accompanying text below describe probable shadow impacts to Lake Union Park as a result of the *Proposed Action,* within the context of shading that presently occurs from existing buildings proximate to the site. The City's SEPA policies address shadow impacts with consideration given to the effect "at times when the public most frequently uses that space."[3]

The following analysis summarizes shadow impacts for various times of the day on each of the key days of the solar year. These key days of the solar year and times of the day depict worst-case impacts. Shadow-related impacts, however, can also occur at other times of the day throughout the year. Because of the earth's rotation, the duration of shadow-related impacts varies for a stationary observer[4] based on season, depending upon the width of the shadow. The shadow graphics have been adjusted to compensate for topography and, in the case of vernal equinox, summer solstice, and autumnal equinox, daylight savings time.[5]

Vernal (Spring) and Autumnal Equinox (refer to **Figure 1**)

Sunrise on vernal equinox (approx. March 21st) occurs at about 6:11 AM and sunset at 6:21 PM. Data[6] indicate that on average March has 4 clear days, 8 partly cloudy days and 19 cloudy days.[7] Pacific Daylight Savings Time is in-effect on this day.

- **At 8 AM**, shadows from the *Proposed Action* would extend in a westerly direction and would not affect Lake Union Park. Shadows from other buildings in the vicinity would contribute to shading Lark Union Park at this time of day.

- **At 12 PM**, shadows from the *Proposed Action* would extend in a northerly direction and would not affect Lake Union Park.

- **At 5 PM**, shadows from the *Proposed Action* would extend in a northeasterly direction and would not affect Lake Union Park.

Summer Solstice (refer to **Figure 2**)

Sunrise on summer solstice (approx. June 21st) occurs at about 5:11 AM and sunset at 9:10 PM. Data[8] indicate that on average June has 7 clear days, 8 partly cloudy days and 15 cloudy days. Pacific Daylight Savings Time remains in-effect on this day.

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3 Ibid.

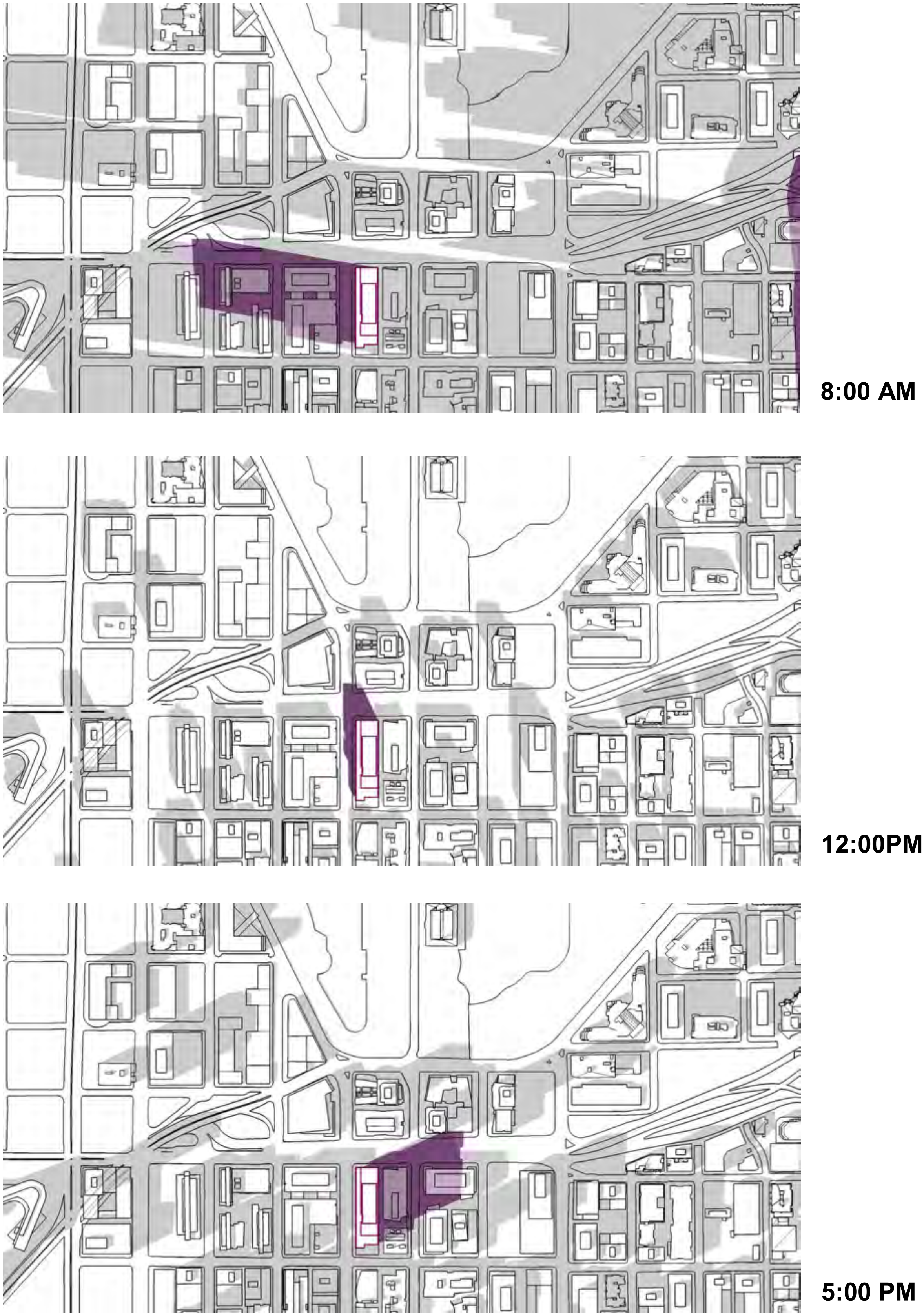
4 The rate of change of the sun's angle relative to the earth varies widely by season – from about 5 degrees horizontally and 2 degrees vertically every 15 minutes in June to 3 degrees horizontally and 1 degree vertically every 15 minutes in December.

5 Pacific Daylight Savings Time (PDST) applies to shadow impacts associated with spring equinox, summer solstice and autumnal equinox.

6 NOAA, 2005.

7 NOAA defines a clear day as one with zero to 3/10 average sky cover, a partly cloudy is one with 4/10 to 7/10 tenths average sky cover and a cloudy day is one with 8/10 to 10/10 tenths average sky cover.

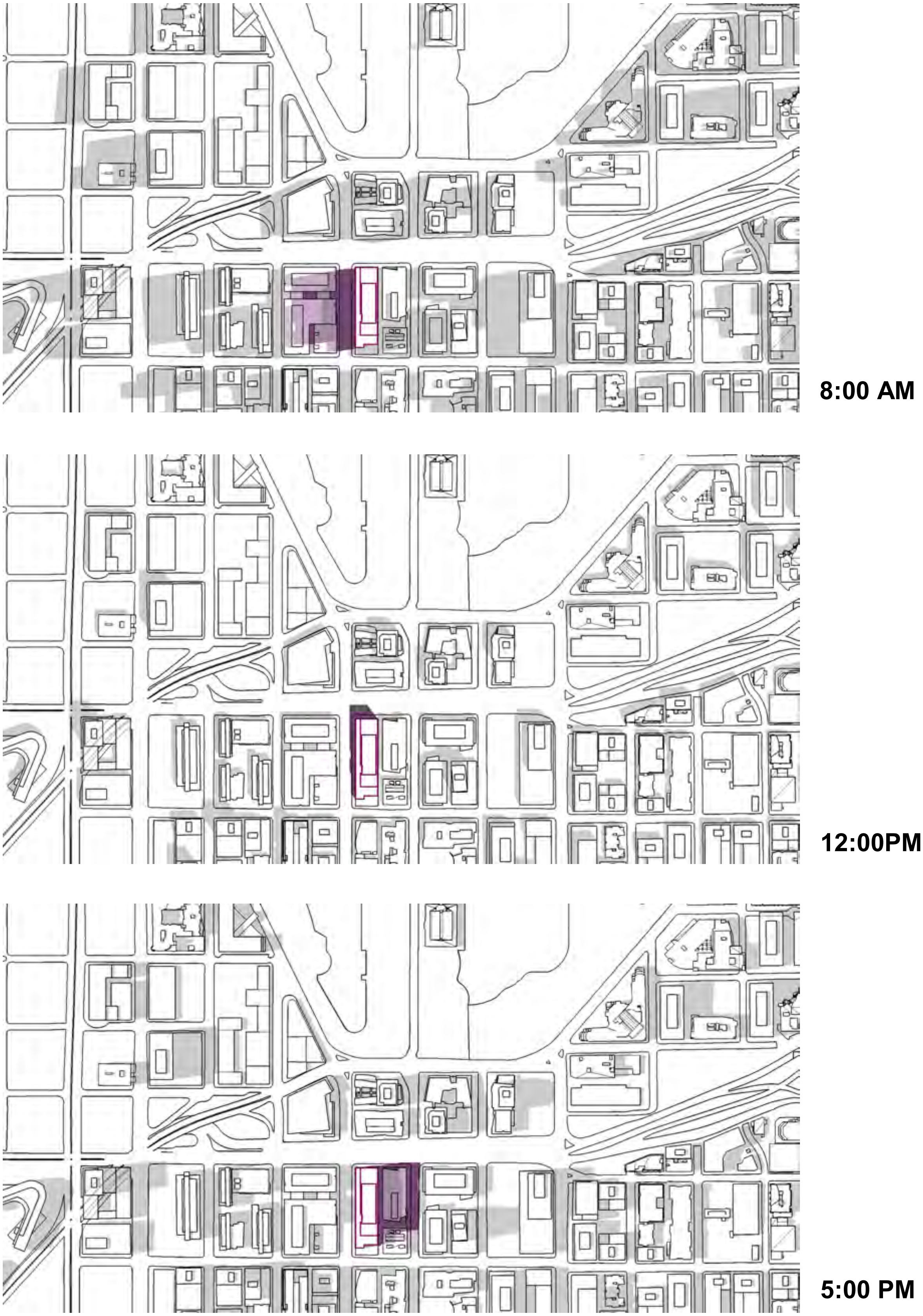
520 Westlake Ave. N. Development
EIS Addendum



Source: NBBJ, 2014

EA Engineering, Science, and Technology, Inc.

Figure 1
Shadows—Vernal & Autumnal Equinox



Source: NBBJ, 2014

EA Engineering, Science, and Technology, Inc.

Figure 2
Shadows—Summer Solstice

- **At 8 AM**, shadows from the *Proposed Action* would extend in a westerly direction and would not affect Lake Union Park.

- **At 12 PM**, shadows from the *Proposed Action* would extend in a northerly direction and would not affect Lake Union Park.

- **At 5 PM**, shadows from the *Proposed Action* would extend in an easterly direction and would not affect Lake Union Park.

Winter Solstice (refer to **Figure 3**)

Sunrise on winter solstice (approx. December 21st) occurs at about 7:54 AM and sunset at 5:19 PM. Data[9] indicate that on average December has 3 clear days, 4 partly cloudy days and 23 cloudy days.[10] Pacific Standard Time remains in-effect on this day.

- **At 9 AM**, shadows from the *Proposed Action* would extend in a northwesterly direction and would not affect Lake Union Park. Shadows from other buildings in the vicinity would contribute to shading Lark Union Park at this time of day.

- **At 12 PM**, shadows from the *Proposed Action* would extend in a northerly direction and would not affect Lake Union Park. Shadows from other buildings in the vicinity would contribute to shading Lark Union Park at this time of day.

- **At 4 PM**, shadows from the *Proposed Action* would extend in a northeasterly direction and would not affect Lake Union Park. Shadows from other buildings in the vicinity would contribute to shading Lark Union Park at this time of day.

As described above, the proposed development would not contribute to shading of Lake Union Park during the Vernal and Autumnal Equinox, Summer Solstice or Winter Solstice. Other existing buildings in the neighborhood could contribute to shading of these areas at other various times and days of the year. As a result, no shadow impacts associated with the *Proposed Action* would occur relative to Lake Union Park.

Potential Mitigation Measures

No mitigation is proposed.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated.

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9 op cit.

10 NOAA defines a clear day as one with zero to 3/10 average sky cover, a partly cloudy is one with 4/10 to 7/10 tenths average sky cover and a cloudy day is one with 8/10 to 10/10 tenths average sky cover.

Source: NBBJ, 2014

EA Engineering, Science, and Technology, Inc.

Figure 3

Shadows—Winter Solstice

Appendix E

VIEWSHED ANALYSIS

APPENDIX E
AESTHETICS - VIEWSHED

South Lake Union EIS

The *South Lake Union* EIS notes that all of the alternatives assume that every vacant or underdeveloped site is built out to its maximum potential. Therefore, all alternatives – even No Action – envision a significantly denser urban environment. A number of views inside and outside the South Lake Union neighborhood will be potentially impacted by all alternatives at full build-out, although none of the protected views are significantly impacted. It was noted that the most significant changes would involve views from Lake Union Park and the I-5/Mercer Off-ramp; less significant changes would occur to views from Volunteer Park.

EIS Addendum – Project Impacts

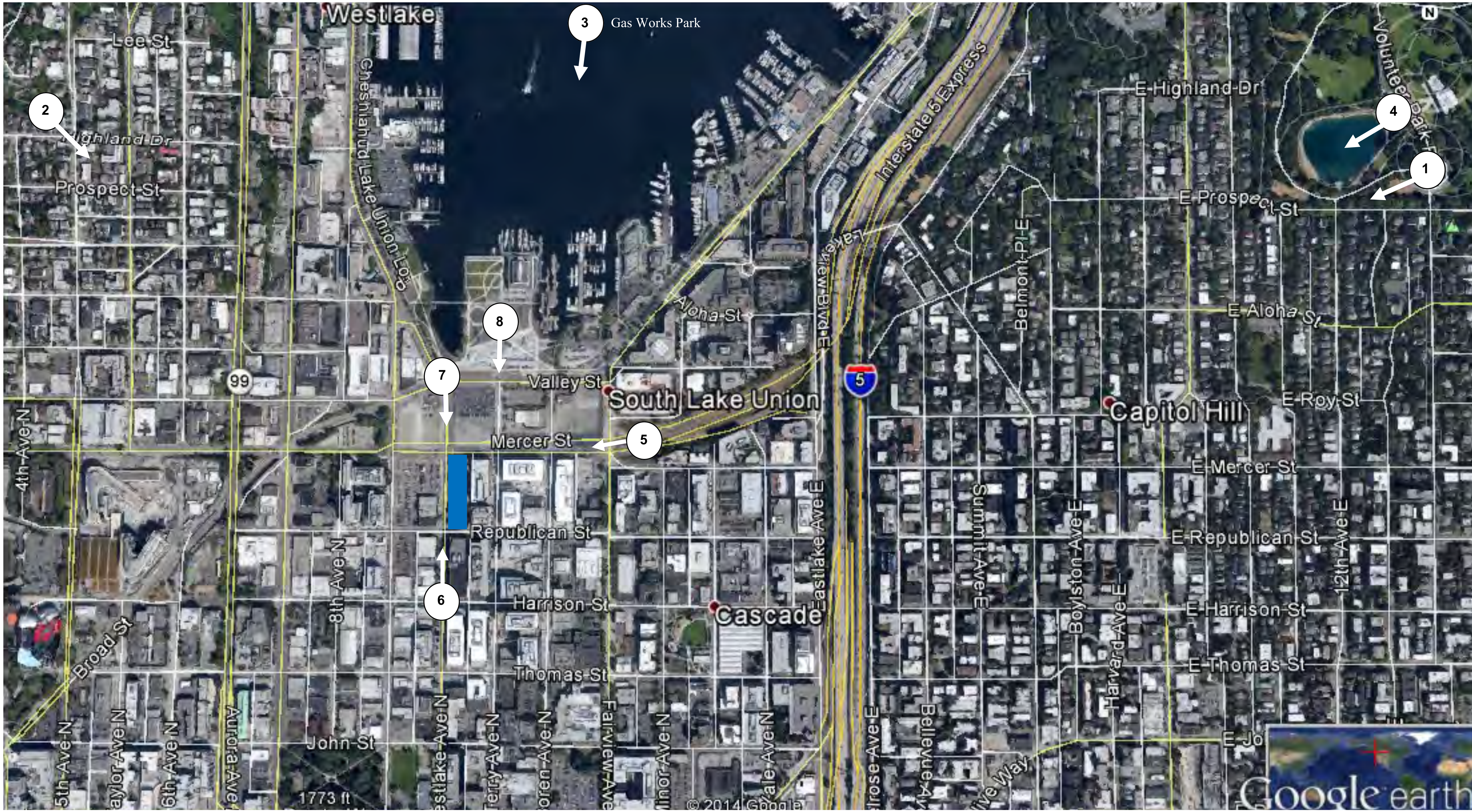
The proposed ***520 Westlake Ave. N. Development*** would result in impacts similar to those described in the *South Lake Union* EIS. The proposed project has been designed to be consistent with provisions of the *South Lake Union Urban Center Plan* and the City's *Land Use Code*. The project would blend into the skyline in the South Lake Union neighborhood and would be consistent with other buildings in this portion of the City and as allowed by the City's Land Use Code. See **Figure 1** for locations of viewshed images in this section.

The City's public view protection policies are intended to "*protect public views of significant natural and human-made features: Mount Rainier, the Olympic and Cascade Mountains, the downtown skyline, and major bodies of water including Puget Sound, Lake Washington, Lake Union and the Ship Canal, from public places consisting of specified viewpoints, parks, scenic routes, and view corridors identified in Attachment 1" to the SEPA code*.[1] Of the City's 87 officially-designated public viewpoints, only three could be affected by the project – Volunteer Park, Bhy Kracke Park and Gas Works Park. Both viewpoints are described below:

- **Volunteer Park** - The park is located in the Capitol Hill neighborhood approximately three-quarters of a mile northeast of the South Lake Union neighborhood. The designated viewpoint is atop the cylindrical water tower near the reservoir in the southern portion of the park. A 365 degree view of the City is possible from the deck at 75 ft. above street level (520 ft. elevation). The Volunteer Park Water Tower is located roughly 1.5 miles northeast of the site, in the Capitol Hill Neighborhood. This designated viewpoint provides southwesterly views toward the study area from the tower including views of the Space Needle, the Downtown Seattle skyline, the Olympic Mountains and Puget Sound. During part of the year, views of portions of the South Lake Union neighborhood from this location are obscured by mature deciduous trees.

[1] Seattle Municipal Code Chap. 25.05.675 P.2.a.i.

520 Westlake Avenue N. Development
EIS Addendum



Project Site
Viewpoint Location

Figure 1
Viewpoint Location Map

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- **Bhy Kracke Park** - This park is located on the southeast side of Queen Anne Hill, west of Lake Union (1215 - 5th Avenue N) and approximately one-half mile northwest of the South Lake Union neighborhood. This designated viewpoint provides southeasterly views toward the study area. The park is situated on a hillside and features a narrow pedestrian path that winds from the bottom to the top of the hill. From the outlook at its highest point, Bhy Kracke Park offers views of the Downtown Seattle skyline, Mount Rainier, the Space Needle and Lake Union. Only portions of the South Lake Union neighborhood are visible from the higher elevations in the park and even then, part of the view of the study area is obscured during portions of the year by mature deciduous trees.

- **Gas Works Park** – This park is located on 19 acres at the north end of Lake Union. The designated viewpoint is from the hilltop. Gas Works Park is located roughly 0.7 miles northeast of the project site, in the South Lake Union Neighborhood. This designated viewpoint provides southwesterly views toward the study area from the lake frontage and hilltop, including views of the Space Needle and the Downtown Seattle skyline.

The viewshed from each of these viewpoints was analyzed with a photosimulation showing the outer massing of the new building[2] as it would appear from each viewpoint, in the context with existing development, under the *Proposed Action*.

- **Viewpoint 1 – Figure 2** shows the existing and potential views from Volunteer Park atop the water tower in the southern portion of the park. As illustrated, the existing view from Volunteer Park includes views of the Space Needle, portions of the Downtown Seattle skyline, and portions of Elliott Bay. In the photo, the ***520 Westlake Ave. N. Development*** site would blend in with existing views of downtown and South Lake Union development; views of the Space Needle, Downtown Seattle, and Elliott Bay would not be affected by the proposed project.

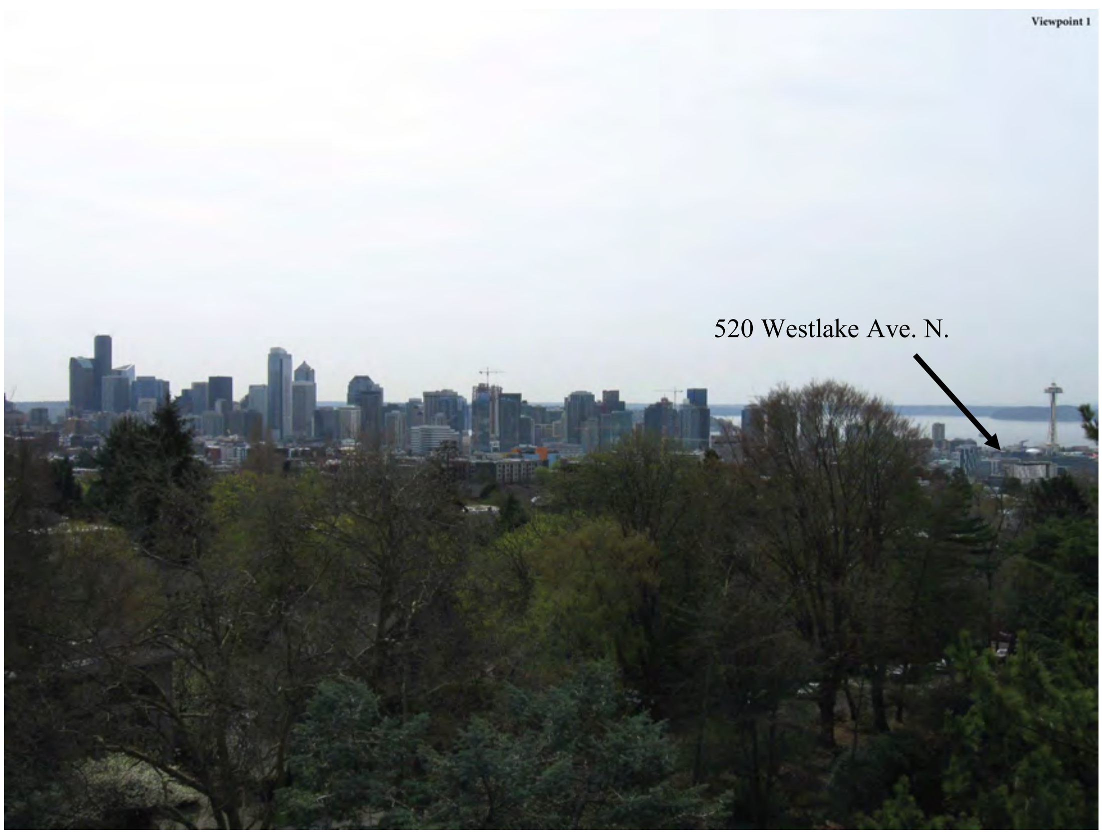
- **Viewpoint 2 – Figure 3** depicts the existing view from Bhy Kracke Park and includes a view of the South Lake Union Neighborhood and the Downtown Seattle skyline beyond. As illustrated in **Figure 3**, the proposed ***520 Westlake Ave. N. Development*** would generally blend in with existing surrounding development in the South Lake Union Neighborhood. Views of the Downtown skyline, the Space Needle, and adjacent water areas would still be possible from Bhy Kracke Park, and no significant view impacts are anticipated from this viewpoint.

- **Viewpoint 3** – **Figure 4** depicts the existing view from Gas Works Park and includes views of Lake Union, the South Lake Union Neighborhood, the Space Needle and Downtown Seattle to the south. The project site is framed in the background by existing, multi-story development in the area. As illustrated in **Figure 4**, the proposed ***520 Westlake Ave. N. Development*** would appear as a continuation of existing development in the South Lake Union area and would blend in with existing views of the Downtown skyline. The overall visual effect would be a continuation of the existing urban

2 What is shown is the outer massing of the building form, as opposed to a detailed architectural rendering depicting modulation and fenestration.

Existing View

Proposed View



Source: NBBJ, 2018

EA Engineering, Science, and Technology, Inc.

Figure 2

Viewpoint 1—Volunteer Park Viewpoint

Existing View

Proposed View

Source: NBBJ, 2018

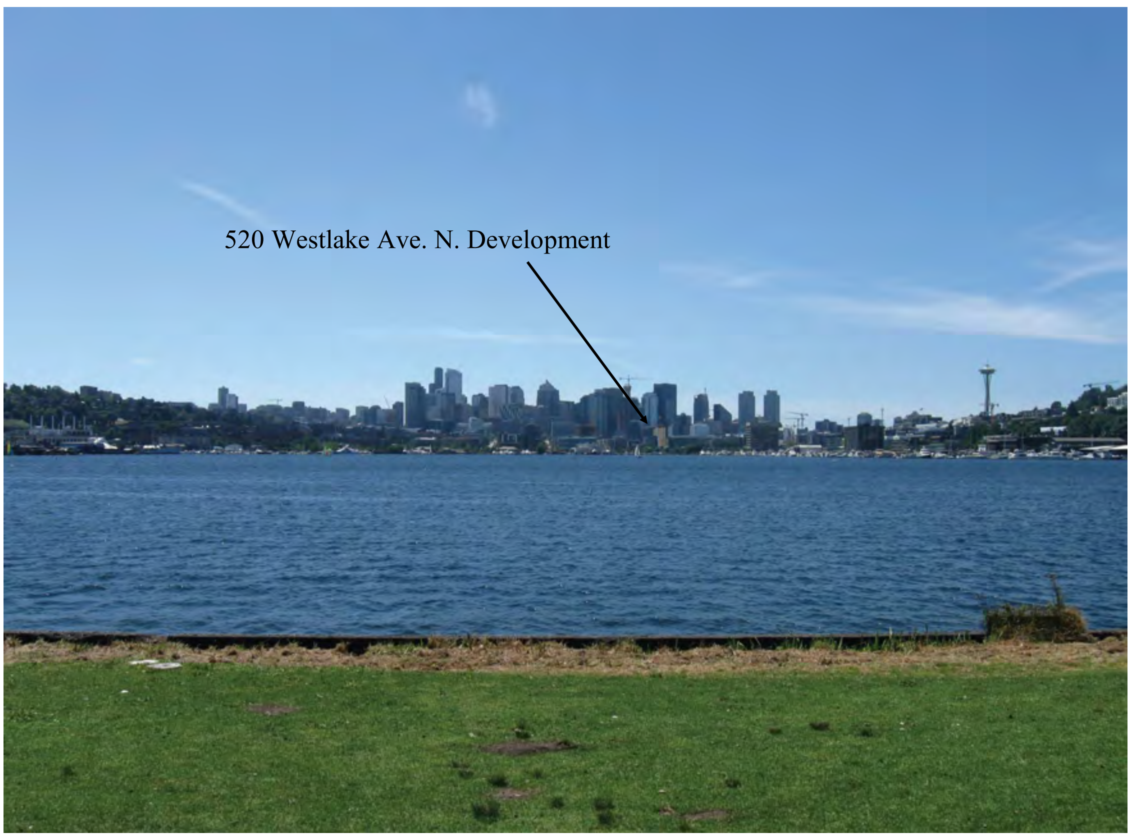
EA Engineering, Science, and Technology, Inc.

Figure 3

Viewpoint 2—Bhy Kracke Park Viewpoint

Existing View

Proposed View



Source: NBBJ, 2018

EA Engineering, Science, and Technology, Inc.

Figure 4

Viewpoint 3—Gas Works Park Viewpoint

density in the vicinity to the south and further vertical definition of the South Lake Union Neighborhood. No significant visual impacts would be anticipated and the proposed project would not result in any significant impacts to this designated scenic view. Views of the Downtown skyline, the Space Needle, and adjacent water areas would still be possible from Gas Works Park.

In addition to view protection policies associated with officially-designated viewpoints, it is also City policy to "*protect public views of historic landmarks designated by the City's Landmarks Preservation Board which, because of their prominence of location or contrasts of siting, age, or scale are easily identifiable visual features of their neighborhood or the City and contribute to the distinctive quality or identity of their neighborhood or the City*."[3] In the South Lake Union neighborhood, the City has designated 13 structures or objects as official City Landmarks. Each of these structures is at least 25 years old and each meets one or more of the City's designation criteria.[4] Designated City landmarks proximate to the site include the Pacific and Ford McKay buildings, which are located directly to the northwest of the project site. These two-story terra-cotta clad buildings were constructed in 1922 and 1925 as part of the neighborhoods 'auto row'. The buildings were disassembled in 2011 as part of the Allen Institute for Brain Science project, which is integrating the historic landmarks into a new six-story development, and are currently in the process of being reassembled. The existing and proposed view from Westlake Avenue N. in relation to these Landmark buildings is illustrated and described below under **Viewpoint 7**.

The most visible Landmark from many parts of the City is the Space Needle, which is located approximately seven blocks west of the project site. The City has identified ten viewpoints from which views of the Space Needle are to be protected.[5.] The designated Space Needle view corridors that are closest to the project site are Volunteer Park on Capitol Hill[6], and Gasworks Park at the north end of Lake Union. The Volunteer Park viewpoint, which is approximately one and one-quarter miles northeast of the project site, is from the water feature/reservoir in front of the Seattle Asian Art Museum. The Gasworks Park viewpoint, which is approximately one and three-quarter miles north of the project site, is from the lake-frontage. The existing and proposed view from Volunteer Park is described below; the existing and proposed view from Gasworks Park is similar to that described above under **Viewpoint 3**.

- **Viewpoint 4 - Figure 5** depicts both the existing view and the proposed view of the Space Needle from Volunteer Park near the reservoir. The reservoir is visible in the foreground, and the Space Needle can be seen in the distance, partially obscured by existing vegetation. As demonstrated, the proposed ***520 Westlake Ave. N. Development*** site would not be visible from this location and views of the Space Needle would not be affected by the proposed project.

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3 Seattle Municipal Code Chap. 25.05.675 P.2.b.i.
4 Refer to Seattle Municipal Code Chap. 25.12.350 for the specific standards associated with designation.
5 Seattle Municipal Code Chap. 25.05.675 P. and Seattle DCLU, 2001,
6 14th Ave. E. and E. Prospect

Existing View

Proposed View

Source: NBBJ, 2018

EA Engineering, Science, and Technology, Inc.

Figure 5

Viewpoint 4—Space Needle Viewpoint-Volunteer Park

City ordinances[7] also identify specific scenic routes throughout the City in which view protection is to be encouraged of the significant natural and human-made features listed in the City's public view protection policies. In the vicinity of the project site, there are two designated Scenic Routes; the I-5/Mercer Street off-ramp and Westlake Avenue N.

- **I-5/Mercer Street Off-Ramp** – Scenic views from this location include views of the Space Needle and the Downtown skyline.

- **Westlake Avenue N.** – Scenic views from this route includes views of Lake Union to the north, and views of the Downtown skyline to the south.

The existing and proposed views from these two scenic routes are described below.

- **Viewpoint 5** – **Mercer Street Off-Ramp Scenic Route** – **Figure 6** depicts the view from the Mercer Street off-ramp looking west toward the project site. **Viewpoint 5** shows the existing and potential view, with the proposed project site to the west. Existing mid-rise development along the south side of Mercer Street (left) is visible in the foreground view, and a glimpse of the top of the Space Needle is visible in the background. As indicated by **Figure 6**, the proposed 12-story office building would be visible from this viewpoint under the proposed view. The new building would be similar to nearby, existing buildings. The existing view of the Space Needle would not be obstructed from this location of the Mercer Street off-ramp.

  Obstruction of the Space Needle (partial or full) from certain locations on the Mercer Street off-ramp was a potential impact identified in the South Lake Union EIS, and could occur with the proposed new ***520 Westlake Ave. N. Development***. However, because this viewpoint is not an official Space Needle protected view, the impact was not identified as significant, and no mitigation was proposed.

- **Viewpoint 6 – Westlake Avenue N. Scenic Route and Harrison St.** – **Figure 7** depicts the view from Westlake Avenue N. and Harrison Street, looking north towards the project site. **Viewpoint 6** shows the existing and potential view, with the proposed project site to the east (right). The historic Firestone building is partially visible in the foreground and a 6-story office building is visible in the mid-field view. Partial views of Lake Union are visible in the distance. As indicated by **Figure 7**, a portion of the proposed 12-story office building would be visible from this viewpoint under the proposed view. The overall visual effect would be a continuation of the existing urban density in the vicinity to the south and further vertical definition of the South Lake Union Neighborhood. No viewshed impacts are anticipated from this scenic route; views of Lake Union in the distance would remain the same as under existing conditions.

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[7] Ord. #97025 (Scenic Routes Identified by the Seattle Engineering Department's Traffic Division) and Ord. #114057 (Seattle Mayor's Recommended Open Space Policies). The SEPA Scenic Routes Map incorrectly references Ord. # 97027, whereas the reference should be to Ord. # 97025.

Existing View

Proposed View

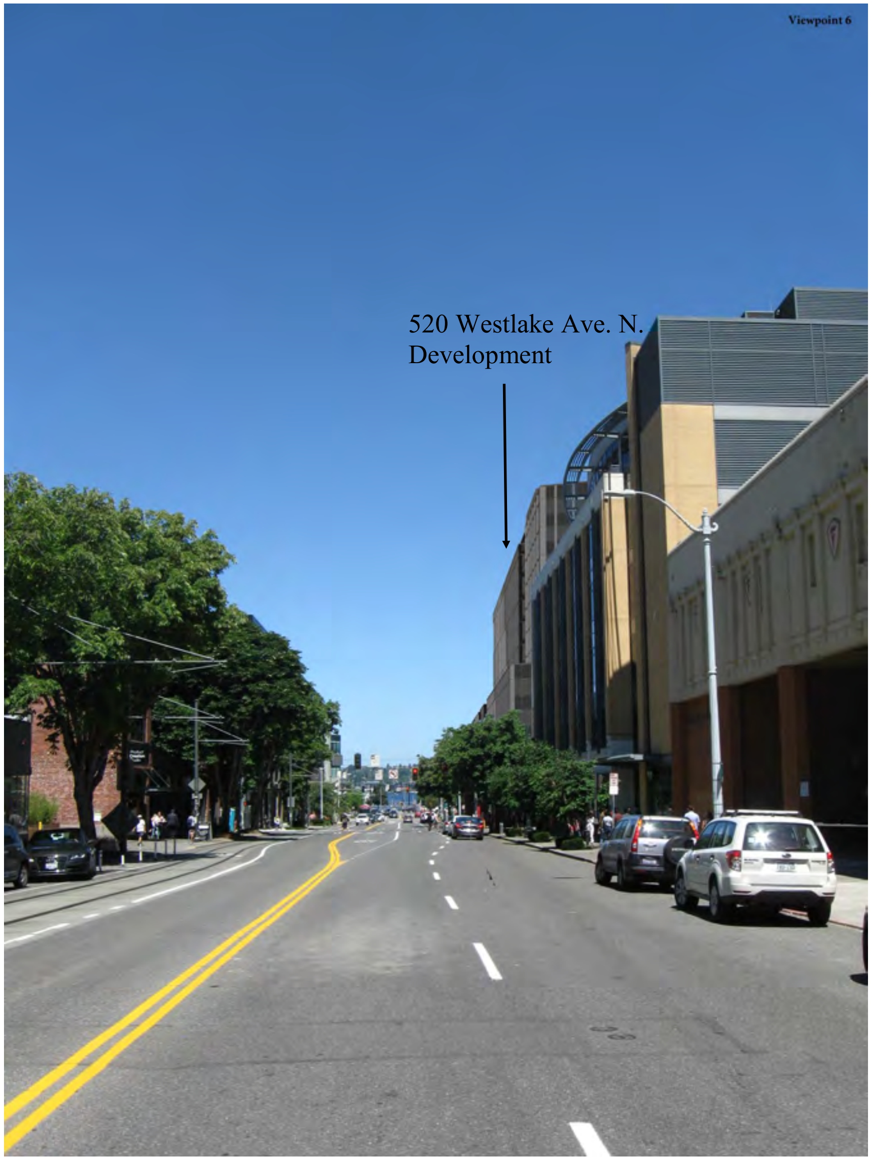
Source: NBBJ, 2014

Figure 6

Viewpoint 5—Mercer Street Off-Ramp

520 Westlake Ave. N. Development
EIS Addendum

Existing View



Proposed View

Source: NBBJ, 2018

EA Engineering, Science, and Technology, Inc.

Figure 7

Viewpoint 6—Westlake Ave. N and Harrison St. Looking North

- **Viewpoint 7 – Westlake Avenue N. Scenic Route** – **Figure 8** depicts the view from Westlake Avenue N. and Valley Street, looking south down Westlake Ave. N. towards the project site. **Viewpoint 7** shows the existing and potential view, with the proposed project site on the east (right) side of Westlake Ave. N. Portions of the historic façade of the Pacific-Ford McKay building are partially visible in the foreground to the west (left), which is integrated into the Allen Institute for Brain Science building. .Downtown highrise buildings are visible in the distance, at the terminus of and along both sides of Westlake Ave. N. As indicated by **Figure 8**, the proposed 12-story office building would be visible from this viewpoint under the proposed view. The overall visual effect would be a continuation of the existing urban density in the vicinity to the south and further vertical definition of the South Lake Union Neighborhood. No viewshed impacts are anticipated from this scenic route. As well, views of historic Pacific-Ford McKay Landmark would remain the same as under existing conditions.
  For informational purposes and to provide greater context for how the proposed building will fit into the urban fabric of the South Lake Union neighborhood, one additional photosimulation of the proposed ***520 Westlake Ave. N.*** building is provided from Lake Union Park (looking south) - **Viewpoint 8**.

- **Viewpoint 8 – Lake Union Park – Figure 9** shows the existing and potential view, with the proposed project site to the west (right) of the pedestrian pathway in the center. The 609 Fairview Ave. N. Development (part of the four-building Lakefront Blocks Development) is under construction and partially visible on the east (left) side of the pedestrian pathway. The South Lake Union neighborhood and mid-rise office buildings are visible surrounding the project site, and portions of several Downtown high-rise buildings can be seen in the background. As shown, the new ***520 Westlake Ave. N. Development*** would be partially visible, but largely obscured by trees from this location. The building would be similar in height to the Lakefront Blocks, which are closer to the park, and would obscure portions of the South Lake Union neighborhood that are visible under existing conditions. The overall visual effect would be an intensification of the urban density in the site vicinity and further vertical definition of the South Lake Union Neighborhood.

Potential Mitigation Measures

No significant impacts have been identified and no mitigation is proposed.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to views are anticipated.

Existing View

Proposed View

Source: NBBJ, 2014

Figure 8

Viewpoint 7—Westlake Ave. N. and Valley St.— Looking South

Existing View

Proposed View

Source: NBBJ, 2018

EA Engineering, Science, and Technology, Inc.

Figure 9

Viewpoint 8—Lake Union Park

Appendix F

HISTORIC RESOURCES ANALYSIS

The City of Seattle

Landmarks Preservation Board

Mailing Address: PO Box 94649 Seattle WA 98124-4649
Street Address: 700 5th Ave Suite 1700

LPB 686/14

November 17, 2014

To: Garry Papers, DPD

From: Tom Quackenbush, DON

Subject: MUP#3017466, 500 & 520 & 534 Westlake Avenue North

In accordance with SEPA Historic Preservation Policy (SMC 25.05.675-H.2.c), we have reviewed the buildings associated with the above referenced project as requested. This project involves three buildings that are more than 50 years old, and are located at 500 and 520 and 534 Westlake Avenue North.

We have reviewed the information submitted by the applicant regarding the subject buildings. Based on the review of this information and a visit to the site, we have determined that it is unlikely that any of the subject buildings would meet the standards for designation as an individual landmark, due in part to the loss of historic materials and integrity.

If you have any questions, please call me at 684-0215.

NICHOLSON KOVALCHICK ARCHITECTS

September 3, 2014

Historic Preservation and SEPA Review - Appendix A
(Seattle DPD CAM #3000)

Additional Information to determine whether a structure
appears to meet any of the criteria for landmark designation

I. Building Location:
500 Westlake Ave N. Parcel # 198320-0170

II. Physical Description: Provide a physical description of both the interior and exterior of the structure(s).

Parcel 198320-0170 is located at the northeast corner of Westlake Avenue North and Republican Street, and consists of two lots, addressed as 500-510 (even numbers) Westlake Avenue North. Although the north and south portion of the parcel appear to be separate buildings today, the south portion was constructed purposely as an addition to the north portion.

The structures fill the parcel. There is a 16 foot wide alley at the rear or east side of the parcel, and a wooden trestle reaching the first floor level of the buildings (at the rear of the site, the grade is a full story below street level). This trestle appears to have supported a railroad spur that was located in the existing alley until at least 1950 (as seen in the 1950 Sanborn map).

In 1919, a three-story concrete frame and mill construction warehouse (architect unknown) was constructed on the north or midblock lot, and the south lot was vacant. The 1919 structure was initially occupied by automobile or truck related businesses; in the 1930s and 1940s it was occupied by the Newton Auto Wrecking Company. According to tax records, the 1919 structure measures 94' x 60' in plan, and is 3 stories tall with full basement. Structure is concrete frame with infill tile walls, and mill construction interior. The 60' x 94' basement has concrete floors. Ceiling heights are 12'-13'. A freight elevator was located in the northeastern corner of the building. The 1937 tax assessor photograph shows that the original west elevation was organized into three structural bays, each filled with large industrial sash windows, with the main entrance to the building located in the center bay at street level (this elevation was later altered, as outlined below). On the alley side of this portion of the building, original wood sash windows appear to remain intact.

By the late 1940s, the 1919 building was occupied by the Radio Television & Appliance Company, which used the first floor for display, offices, and a loading dock, while the two upper floors and the basement were used for warehousing. Period news accounts indicate that the company was growing rapidly. In 1946, the street-facing elevation of the 1919 building was modernized and updated—according to the 1946 tax photo, the upper level windows were covered with fixed horizontal metal louvers, the storefront windows were updated to a contemporary storefront system, and the storefront transoms were covered or removed which allowed a large wall area above the storefront for building signage. Other alterations included removal/alteration of the street-facing shaped parapet, and removal of the exterior fire escape.

In 1947, an Art Moderne addition was constructed to the south or corner lot, and was designed by William J. Bain & Associates. This portion is currently addressed as 500 Westlake Ave N., at the corner of Westlake Ave N. and Republican Street, is currently occupied by Uptown Espresso at the corner, and Blue Moon Burgers on the Republican Street side. Upper floor interiors were not investigated for this report. Originally, the interiors of the original building and the 1947 addition were connected on all floors by doorways.

Tax records indicate that the 1947 portion was constructed of concrete block with interior pilasters, finished on the exterior with a smooth cement coat, which was then scored to appear as large tiles (approximately 36 x 36 inches). At the second story, just below the roof and following the building curve to wrap the west and south elevations, is a band of windows which appear to retain original 1947 metal sash. Interior is mill construction, which is currently visible and exposed. The basement was left unfinished and featured cement floors.

As originally designed in 1947, drawings indicate that the new main entry was relocated to the north part of the west elevation of the 1947 addition, and a new metal marquee with a wide band of signage was installed to unify the overall west elevation. A 1947 architectural drawing of the south elevation indicates that the openings at that time consisted of two bands of windows in the center of the elevation at the first floor, with two matching transom bands above them, a door with a square transom, and a loading dock/garage door entry at the far east end.

Also in 1947, minor alterations were again made to the original 1919 north portion, including alteration to storefront windows, and the installation of a small tower-like building element (of unknown purpose) located on the west elevation at the juncture of the original building and the addition.

Based on photos and drawings, at some time between 1968 and 2003, a corner entry was cut into the curved façade at the southwest corner of the building; this is now the main entry for one of the ground-floor tenants, Uptown Espresso. The corner entry appears as an existing condition in 2003 drawings. Additionally, prior to 2003, the interiors of the 1919 north portion of the building and the 1947 south addition appear to have been closed off from each other and replaced with a fire wall.

In 2003, interior and exterior alterations to the southern portion of the building (ie, the 1947 addition) by Fuller-Sears Architects were constructed to create a more "industrial" look, including the use of sheet metal to create the appearance of steel headers at windows, and the installation of galvanized metal awnings. The two street-level windows in the middle of the south elevation were enlarged at this time, and the adjacent garage/loading dock door on the south elevation was altered to become the current storefront entry for Blue Moon Burgers. The 2003 alterations to the southern portion of the building also changed flooring and interior partitions, added a ramp from the sidewalk at the alley side, removed a central stair, added restrooms, removed the (original) centrally located open shaft elevator, and installed new storefront windows on both street-facing elevations. A large "Uptown Espresso" sign was installed at the curved corner of the building at this time.

Finally, the building has had alterations which are apparent based on a visual inspection, but which for which there is no record. These include on the west elevation: Removal of some of the third floor louvers to reveal original 1919 windows; and addition of corrugated metal siding at street level windows at north portion of building (entry to The Wurst Place restaurant).

(See attached photos for identification of original and non-original features).

III. Architect or Builder: Provide information about the architect/builder; i.e., regarding education, career, other works in Seattle. If other structures were built in Seattle, indicate whether they remain and their location.

According to drawings obtained from the DPD Microfilm Library, the architects who designed the 1947 addition and concurrently renovated the original north building were William J. Bain Sr., Harrison Overturf, Edwin T. Turner (architects), and H. Hudson Benedict and Waldo E. McKinney (associates) of William J. Bain & Associates of Seattle.

Below is a biography of William Bain Sr., from HistoryLink.org (June 2014):

William Bain Sr. was a founding principal of NBBJ (named for Naramore, Bain, Brady, and Johansen), now one of the world's largest architecture firms. Born in New Westminster, British Columbia, on March 27, 1896, Bain showed an early interest in architecture. In 1915 at 19 years of age, he apprenticed with several Seattle architects including W. R. B. Willcox (1869-1947) and Arthur L. Loveless (1873-1971).

In 1921, Bain graduated with a degree in architecture from the University of Pennsylvania. This program followed Beaux-Arts principles; the Beaux-Arts tradition looked to historical precedents, structured the theoretical and practical foundations for architectural design, and required rigorous drafting in the studio.

Upon graduation, Bain returned to Seattle. He was involved in the campaign to establish architect licensure in the state of Washington and in 1923, received "Architects Certificate of Registration No. L1," Washington's first architect license, issued "this 10th Day of January 1923." In fact several architects received their licenses on this historic day, but Bain ranked first alphabetically and so received No. 1.

In 1924, after a brief period of apprenticeship, Bain established his own practice. He was immediately successful, and in the 1920s and 1930s, designed many Seattle area houses including:

- *The Clarence Shaw house (1929)*
- *The Carman house (1928)*
- *The Samuel J. Calderhead house (1936-1938)*
- *The Herbert Schoenfeld house (1938-1940)*
- *The George Vance house (1938-1939)*
- *The James G. Pursley house (1939-1940)*

These houses, and Bain's multi-unit projects, looked to historic building traditions. In his early residential work, he favored French Provincial (suggestive of French chateaus) and Georgian Revival (borrowing details from early American examples).
Examples of his larger residential projects include:

- *The Viceroy Apartments (1930-1931)*
- *The Consulate Apartments (1929-1930)*
- *The Envoy Apartments (1930)*
- *Gamma Phi Beta Sorority House (1932-1935)*
- *Pi Beta Phi Sorority House (1932-1935)*

Bain's 1930-1931 Moderne Style Bel Roy Apartments departs somewhat from his other residential work. This brick Capitol Hill apartment building incorporated the flat geometrical quality of classic moderne design. The unconventional zigzagging floor plan allows views of Seattle's downtown and Lake Union. After the building lull caused by the Great Depression, Bain's commissions evolved. Throughout the 1940s, the *demands of World War II significantly affected the course of Bain's architectural career. The scope of these demands transformed Bain from a residential designer to the principal of a highly prolific architecture firm.*

From 1941 to 1943, Bain served as president of the Seattle American Institute of Architects (AIA). In 1942, the State of Washington named Bain camouflage director, in charge of hiding critical operations from potential air attacks. Pacific Rim states along the Pacific Ocean were the primary participants in this domestic war effort.

To hide Boeing's Seattle assembly plant, Bain fabricated a fake complete rooftop town that included small versions of houses, streets, car and trees. In other parts of the country, critical buildings often received church spires or similar disguises. Sometimes a simple tarp with painted buildings and streets masked large operations. Bain's solution, however, was as extensive and detailed as a movie set.

Large-scale federal commissions necessitated partnerships. In 1943, Bain joined with Floyd Naramore (1879-1970), Clifton Brady (1894-1963) and Perry Johanson (1910-1981). They worked well together, and remained a firm after the war.

As NBBJ, they designed and supervised a number of works including:
- *Boeing Pre-Flight facilities in Renton and Moses Lake (Washington) (1956-1958)*
- *Seattle Scottish Rite Temple (1958-1962)*
- *The First Presbyterian Church (1965-1970)*

In 1947, Bain began a separate partnership with Harrison Overturf. Until 1970, the team designed residences such as the John L. Scott house (1948-1949) and Bain's own home.
Bain continued to work at NBBJ until his death in 1985. Bain's postwar partnership is now the nation's second largest architecture firm, and the fifth largest in the world.

Some of Bain's notable structures included (list also includes structures done by his firm after his death) (source Pacific Coast Architecture Database):

1st Presbyterian Church #4, Seattle, WA
225-227 Broadway House, Seattle, WA - 1900
Bain, M.C., House, Capitol Hill, Seattle, WA - 1938
Bain, William J., Sr., House, Seattle, WA
Battelle Memorial Institute, Master Plan, Richland, WA - 1967
Battelle Memorial Institute, Master Plan, Seattle, WA - 1967
Bellevue Public School District, Clyde Hill Elementary School, Clyde Hill, WA - 1952
Children's Orthopedic Hospital #2, Laurelhurst, Seattle, WA - 1951-1954
City of Seattle, Parks and Recreation Department, Loyal Heights Fieldhouse, Ballard, Seattle, WA - 1949-1951
City of Seattle, Police Department (SPD), Public Safety Building #2, Seattle, WA - 1946-1950
College Club #3, Seattle, WA - 1967
Convalescent Home for Crippled Children, Seattle, WA - 1928-1930
Federal Reserve Bank of San Francisco, Branch, Downtown, Seattle, WA - 1949-1951
Gates, Bill and Melinda, Foundation, Office Buildings, Seattle Center, Seattle, WA - 2008-2010
International Air Terminal, Agana, Guam -
International Business Machines (IBM) Corp, Office Building & Garage, Downtown, Seattle, WA - 1962-1964
King County, Central Blood Bank #1, Seattle, WA - 1945-1946
King County, Department of Stadium Administration, Domed Stadium, Pioneer Square, Seattle, WA - 1972-1976
KOMO Broadcasting Studio #1, Seattle, WA - 1948
Meany, Edmond, Hotel, University District, Seattle, WA - 1929-1931

Museum of History and Industry (MOHAI), Montlake, Seattle, WA - 1948-1950
Naramore, Bain, Brady and Johanson (NBBJ), Architects, 904 7th Avenue Office, Seattle, WA - 1950
Northern Bank and Trust Building, Downtown, Seattle, WA - 1906-1909
Olympia School District. McKinley Elementary School, Olympia, WA - 1949
Pacific Northwest Bell Telephone Company, Office Building, Downtown, Seattle, WA - 1975-1976
Port of Seattle, Seattle-Tacoma International Airport, Sea-Tac, WA - 1942-1944
Projecting Living Room House, Seattle, WA
Royal Crown Bottling Plant, Seattle, WA
Seattle 1st National Bank, Incorporated, Headquarters Building #2, Downtown, Seattle, WA - 1966-1969
Seattle Housing Authority (SHA), Yesler Terrace Public Housing Project, Seattle, WA - 1939-1941
Seattle Post-Intelligencer (P-I), Office and Press Building #4, Wall Street, Seattle, WA - 1947-1948
Seattle Public Library, Henry, Susan J., Memorial Branch, Capitol Hill, Seattle, WA - 1953-1954
Seattle World's Fair, United States Science Pavilion, Seattle, WA - 1959-1962
Seattle World's Fair, Washington State Coliseum, Seattle, WA - 1960-1962
United States Government, Federal Courts, Courthouse #2, Downtown, Seattle, WA - 2004
United States Government, Federal Office Building #4, Downtown, Seattle, WA - 2003
United States Government, Postal Service (USPS), Main Post Office #2, Seattle, WA - 1958
United States Government, Veterans Administration (VA), Hospital, Seattle, WA - 1952
University of California, San Diego (UCSD), Center Hall, Classroom Building 1, La Jolla, CA
University of Washington, Seattle, Pi Beta Phi Sorority House - 1941
University of Washington, Seattle (UW), Health Sciences Building #1, Seattle, WA - 1947-1949
University of Washington, Seattle (UW), South Campus Parking Garage, Seattle, WA
Waldo, William E., Hospital, Maple Leaf, Seattle, WA - 1924
Washington State University (WSU), Fine Arts Center, Pullman, WA - 1973
Wenatchee Public Schools, Lincoln High School, Wenatchee, WA – 1951

Below is a biography of Overturf, from the Washington State DAHP database (by Michael Houser, State Architectural Historian, May 2012):

"Born in Omaha, Nebraska on November 10, 1908, Seattle architect Harrison John Overturf was raised in Tacoma graduating from Stadium High School. He studied architecture at University of Oregon and University of Washington but never received a formal diploma. Instead, like many architects of his day, Overturf gained valuable skills by working on-the-job. He spent his early years working in Tacoma for the noted architectural firm of Heath, Gove & Bell as a junior draftsman at the age of 16 (1924-26). He then went to work for Tacoma architect Silas Nelson (2 months); and then engineer R.C. Stockton (6 months) before returning to Heath, Gove & Bell as a chief draftsman (1927-28).

With valuable experience at hand, Overturf moved to Seattle and became the chief draftsman and designer for George W. Stoddard (1929-41). His skills impressed Stoddard, and eventually Overturf rose to the level of associate. As a result, he is often noted as the co-designer on many of Stoddard's projects, particularly residential commissions. Known designs by Overturf while at Stoddard's office include several model homes for builder Albert Balch in his View Ridge subdivision (1937); the E.A. Uehling House (1938); the Dr. Bernard Jankelson House (1940); and the Dr. Kenneth Cole House (1940), which was first built as a model home demonstrating the latest design trends in the Puget Sounds area.

During the war years, Overturf served as Lieutenant Colonel, for the U.S. Army Air Corps (1942-46). Upon his return to Seattle, Overturf formed a lasting partnership with fellow Seattle architect William J. Bain. The partnership allowed Bain to focus on residential projects, while he maintained another partnership (NBBJ) for larger projects. For a short time Bain & Overturf were joined by Edwin T. Turner (1948-49); but remained as partners (1946-72) designing mainly residential projects for 30+ years until Overturf's death.

Their first project, accredited to Overturf, was the design of a model home for the American Legion at 8801 20th Ave NE in Seattle (1947). Other early projects include the T. D. Davies House (1949); Overturf's own home (1951); and the W. E. Boeing House (1953) in Fall City. The Bernard C. Sevener House (1952) brought the young firm much needed publicity. The home was featured in both House & Garden Magazine (Oct 1955) and House & Home Magazine (Sept 1955).

Overturf and Bain also designed some non-residential projects. Known work includes the John Doyle Bishop Stores (1954, 1968) in downtown Seattle and at Southgate Mall; renovations to the Washington Athletic Club (1955); an addition to the Kappa Delta Sorority House (1956); the Loomis Armored Car Service Building (1955); the L.H. Butcher Co. Building (1958); and the Bonney-Watson Mortuary Building (1961) all in Seattle. One of their bigger projects was the Wesley Gardens Methodist Retirement Home (1961) in Des Moines.

Overturf and Bain's early work tended to focus on period revival styles, later projects show their skills as delineators with a clear understanding of the modern style. Other notable projects in the modern vein include the Elizabeth Smithson House (1968); and several homes in the Canterbury neighborhood (1960-65). Overturf was a frequent guess lecturer at the University of Washington in the Interior Design program (1954) and served as the Seattle AIA President (1958-59). While there he was involved in the Century 21 State Beautification Committee (1959) and designed their award signs. Overturf died in Seattle after a long illness on January 24, 1972."

IV. Statement of Significance: Current and past uses and owners of the structure(s). The role these uses and/or owners played in the community, city, state or nation.

The buildings include 500 through 510 Westlake Avenue North (even numbers). Polk's Directories and Seattle Times newspaper advertisements were used to identify building occupants, listed below, but the list is not exhaustive. Known building occupants include:

1919-1922:	508 – Commercial Body Company, retailer of Utility brand truck trailers
1920:	510 – Miller-Acason Sales company, retailer of Acason brand trucks
1923-1926:	508 – F. T. Crowe & Co., home building materials, brick, and paint store
1933:	504 – Hemphill Diesel Engineering Schools
1935-1947:	510 – Newton Auto Wrecking Company
1947-1955:	500 – Radio Television & Appliance Company, a retailer of radios, televisions, and appliances, and local Philco representative.
1960-1975:	500 – Washington School Supply Company
1960-1965:	510 – Love Electric Equipment, a Kelvinator appliance dealer
1980-1989:	500 – Learning World Inc.

Current building occupants are Uptown Espresso, Blue Moon Burgers, and The Wurst Place, which are all restaurants/cafes.

The subject building is often associated with the Philco company, an early leader in the production and sales of radios, televisions, and other appliances. Philco originated in the first decade of the 1900s as a car battery company, called the Philadelphia Storage Battery Company (hence "Philco"). Later the company was producing automobile radios, and by the 1920s the company was producing home radios that could be plugged into an electrical socket rather than relying on power from an internal battery. Philco remained the leader in radio sales from 1930 to the mid-1950s, outselling their rivals RCA, Zenith, and others. Philco was also an early producer of televisions. Philco in the 1940s and 1950s produced a variety of home appliances, including washers, dryers, ranges, home television sets, and so forth.

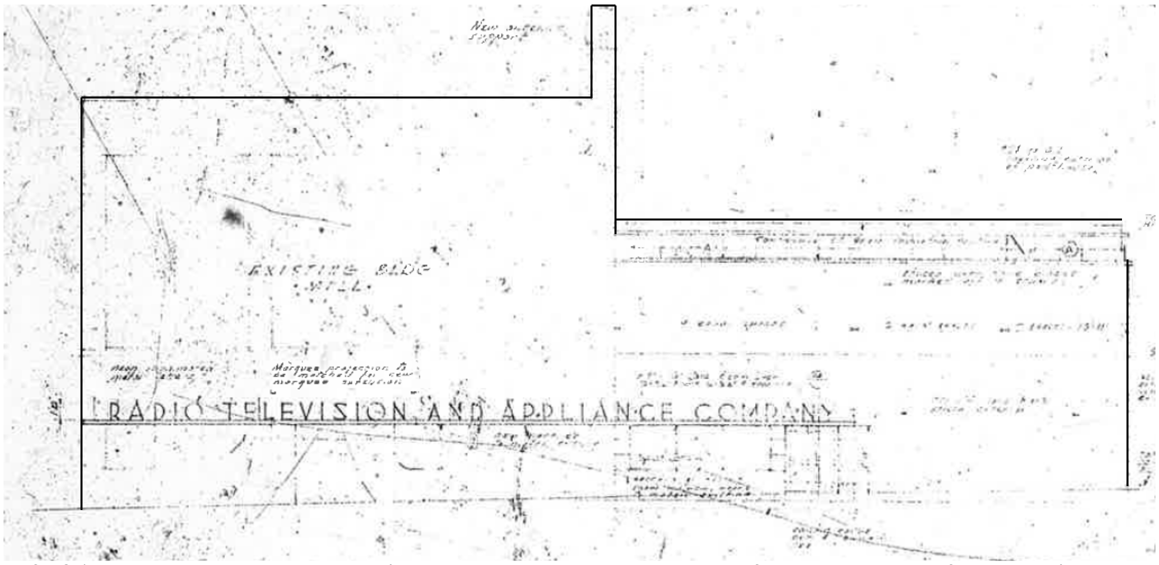
The actual occupant of the building was not Philco, but the Radio Television & Appliance Company, a retailer of radios, televisions, and appliances, and which was the local Philco representative. The Radio Television & Appliance Company appears to have been founded in the mid-1940s by S.L. Savidge, who had previously owned in the early 1940s the S.L. Savidge Company, a Dodge-Plymouth automobile dealership at 1401 Broadway. According to their 1948 Polk's directory listing, the Radio Television & Appliance Company sold "Philco television receivers, radios, radio-phonographs, refrigerators, electric stoves, and appliances." A May 18, 1948 Seattle Times news article described the company as "rapidly expanding" and that they were the Philco distributors for western Washington and the Alaska territory." By 1956, the Radio Television & Appliance Company was replaced by Love Electric Company as the Philco dealer, at the same location. Love Electric that year was described in city directories as a wholesaler of electric appliances and hot water heaters, and remained at that location until the early 1960s.

V. Photographs: Clear exterior photos of all elevations of the building; interior photos of major or significant spaces; available historic photos; neighborhood context photos.
Note: (All photos by NKA from summer 2014 unless noted otherwise)

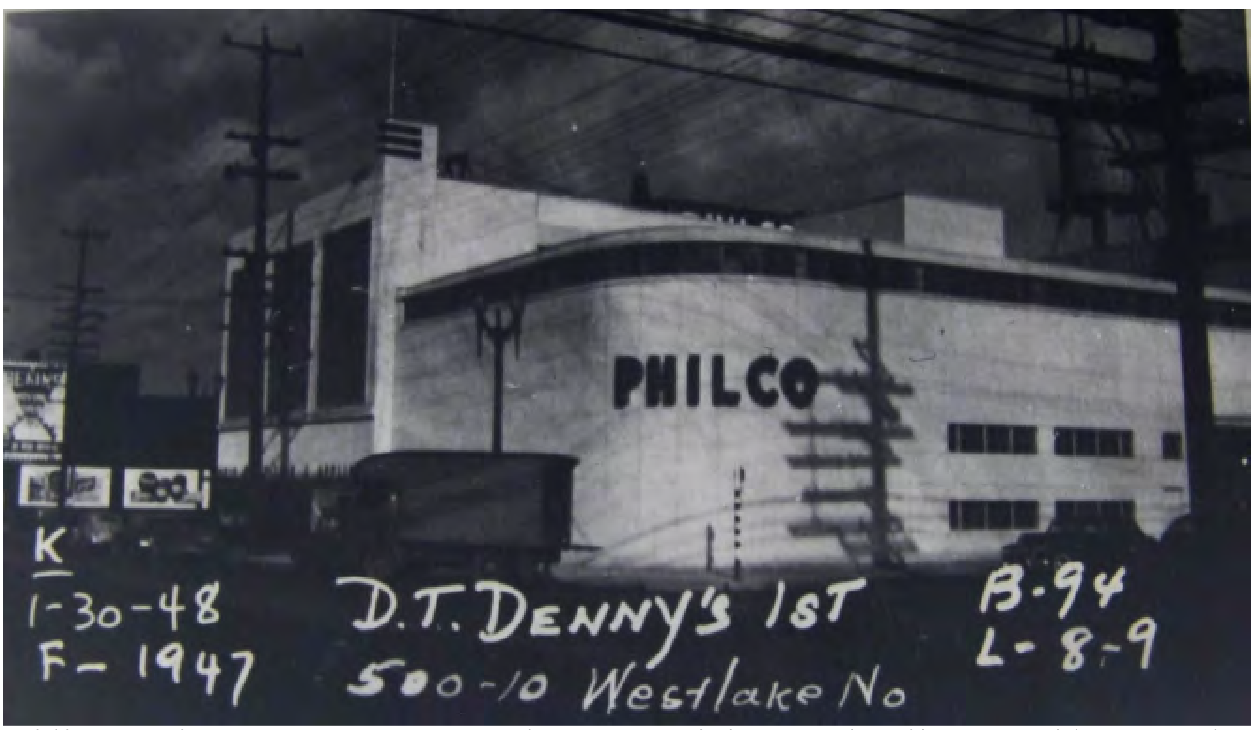
Recent neighborhood context: Subject property located by dashed box. North is up. (2014, Google Maps)

1937 view of west elevation of north portion of building originally constructed in 1919 (510 Westlake) (tax assessor photo). The empty lot to the right is lot 8, where 1947 addition would be built.

1946 view of the west elevation of building occupying lot 9, with alterations compared to the 1937 photograph. The empty lot to the right is lot 8. Note changes to shaped parapet, upper floor windows, and storefront windows.



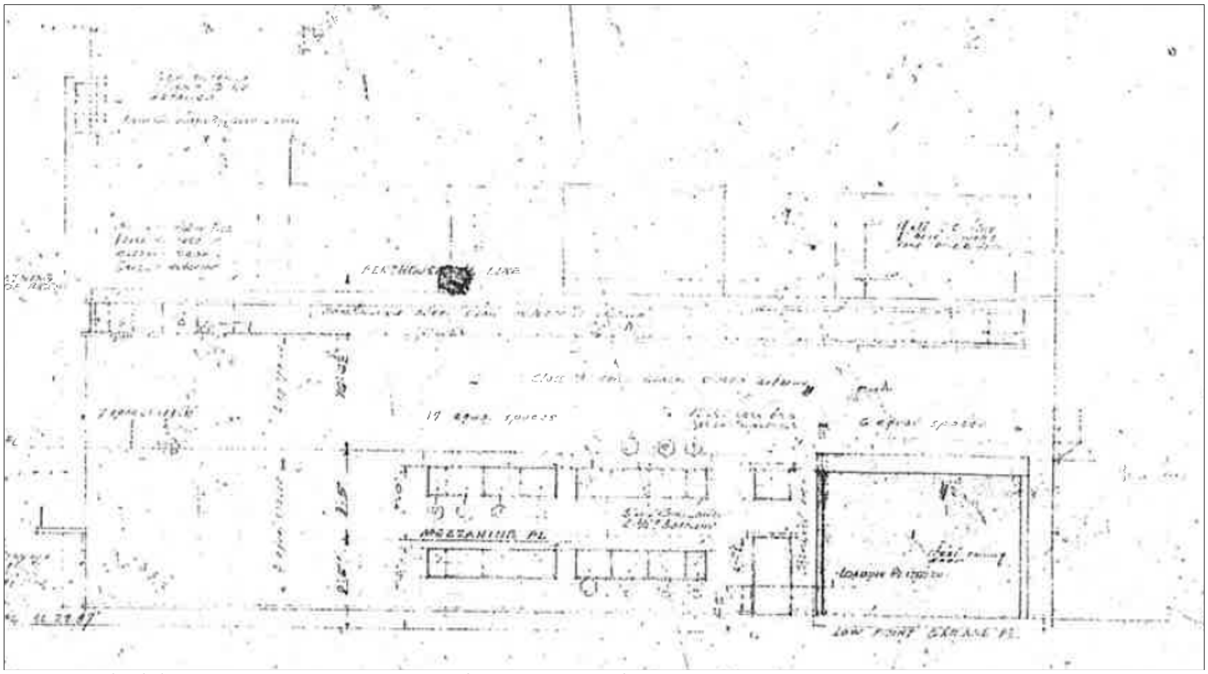
Detail of 1947 architectural drawings (original poor; drawn outline of building added for clarity) by William J. Bain & Associates, showing west elevation. Note wide band of new signage used to unify the entire west elevation of the original portion at left and the 1947 addition at right. The new main entry was located in a recessed entry just below the word "company." Drawings suggest that the storefront windows of the north portion of the building (at left in this image) were either made smaller or removed, as compared to their 1946 condition (compare to 1946 photo).



1948 image of west and south elevations of the original 1919 portion (at left) and the 1947 addition (at right). The 1919 portion was renovated and modernized on the exterior in 1946, just before the construction of the 1947 addition. A truck (just above the letters "D.T.") blocks the view of the west elevation at street level, where the new main building entry was located.

Pre-2003 tax assessor photo.

2014 view of west and south elevations. Original 1919 north portion of building at left, and 1947 south portion of building on right. At right, the continuous strip window at roof and scored cement cladding finish date to 1947. Window openings in 2003 were enlarged at the two street level windows at the center of the south elevation, at right (compare pre-2003 tax assessor photo above). All window sash at first floor, galvanized awning, signage, and sheet metal "headers" at windows are all non-original, dating to 2003. Corner entry dates to some time before 2003 but after 1968, based on photographic evidence.



Detail of 1947 architectural drawings (original poor) by William J. Bain & Associates, showing south elevation. Compare to 2014 photo below.

2014 view of south elevation (Republican Street). Canopy, signage, and window alterations from 2003 remodeling. Entrance to Uptown Espresso at left, Blue Moon Burgers at far right (Blue Moon fenestration was originally a garage entrance, see drawings above). Continuous strip window at roof and scored cement cladding finish date to 1947. Window openings in 2003 were enlarged at the two street level windows at the center of the south elevation (compare pre-2003 tax assessor photo above). All window sash at first floor, galvanized awning, signage, and sheet metal "headers" at windows are all non-original, dating to 2003. Corner entry dates to some time before 2003 but after 1968, based on photographic evidence.

2014 view of alley and east elevations of the building. Steel access ramp at alley added in 2003.

2014 view of east elevation (alley) with railroad trestle.

2014 view in alley, detail underneath trestle adjacent to subject building.

2014 view of east and north façade of 1919 (north) portion of building (510 Westlake). Alley windows appear to retain original sash.

2014 exterior view of north portion of building (510 Westlake) from roof of adjacent parking structure. View of third level on north side.

2014 view of west elevation (Westlake Avenue) of north portion of building. Louvers dating from 1946 may cover additional original 1919 windows at the second floor. Drawings suggest that the storefront windows of the north portion of the building (at left in this image) were either made smaller or removed, as compared to their 1946 condition (compare to 1946 photo; see images pp. 8-9). Corrugated metal siding at street level is not original but was installed at an unknown date, probably in recent decades.

2014 view of west elevation (Westlake Avenue) of south portion of building, originally constructed as an addition in 1947. Windows at roof line retain original 1947 sash; storefront window sash is modern and dates to 2003; corner entry at right is not original and dates to some time between 1968 and 2003.

Interior of Uptown Espresso, first floor store space. Original heavy timber framing can be seen.

Interior of Uptown Espresso, first floor space. Interiors altered in 2003 for café use.

Interior of Blue Moon Burgers, located in south portion of building (originally constructed in 1947), accessed from Harrison Street. Original heavy timber beams can be seen, painted in blue. Interior altered in 2003 for restaurant use.

2014 storefront view of north portion of building (510 Westlake) originally constructed in 1919, showing entrance to The Wurst Place, a restaurant. Non-original corrugated metal siding at first floor was installed at an unknown date. First floor windows may date from 1947 renovation to building. Entry door is recent and not original.

Interior view in north portion of building originally constructed in 1919, now occupied by The Wurst Place, a restaurant. Original 1919 heavy timber framing visible, original brick exterior wall visible.

Map showing lots within parcel; Harrison Street is along the south side. The original 1919 structure occupied Lot 9; the 1947 addition was constructed in Lot 8.

Bibliography of sources

- DPD Microfilm Library
- Puget Sound Regional Archives, tax assessor records and photos
- Polk's Seattle Directories
- The Seattle Times historical archives searchable database, available through the Seattle Public Library
- Sanborn Maps of Seattle

SEPA Appendix A summary prepared by:

David Peterson and Caitlin McCunney
Nicholson Kovalchick Architects
david@nkarch.com
ph: 206-933-1150

1 District | 2 Addition D.T.DENNY'S 1st.Add. | Name
Section | Twp. | N. Range | EWM. Block 94 | Tract or Lot No. 8 9
Description: Less por. for St.
Code No. 1
Permit No.
3 Address—Property: 510 Westlake Ave. No | Cont. Purchaser
4 Fee Owner: Chatton Security Co-Corp 12-15-31
5 Architect | Contractor

Orig. Cost $	Basement full 60 x 94 concrete 13' conc. floors	Store Fronts plate glass large sash	Extra Features 19 sprinkler heads - bsmt.
6 Building R Warehouse 3 stories		Exterior brick-solid 13" common kind concrete hollow tile gal. iron trim	Construction solid brick 13" solid-medium Miscellaneous 7 Condition: Exterior Fair Interior fair Found. good 8 Main Support Column 12 x 12 Footing conc. Span 20 Ft. 9 First Floor Joist — Inch Centers Bridged 10 Building finished 11 Gross Income $ Expense $ Net Income $ 12 Depreciation Cond. 34 % Obslse. % Econ. Suit. % Total % Year Built 1919 Remodeled Effective Age 17 Years Future Life 33 Years Dimensions 94 x 60 x Square Ft. Area Cubic Ft.
	Foundation concrete		
	Roof tar & gravel 4 truss span 60'		

Remod. Void 1-1-41 New

Interior: post & beam; conc. & tile
Floors: 3 fir 1 cement
Fire Place: none
Plumbing 4 fixtures: 2 toilets; 2 sinks
Tile Work: none
Wiring: open conduit -50 outlets
Heating: stove
Elevators: 1-freight
Ceiling—Height: bsmt. 13' 2nd.flr. 12'; 1st.flr. 18' 3rd. " 12'

Square Ft. 5640

Improvement Value

Building	$
~~Main Building~~	$
~~Less Depreciation~~	$
Other Buildings	$
Total	$ 26200
Assessed Value 50%	$ 13100
Date 7/28/37	9780

Land Information
1. Size x level-below-20'
2. Street—Road graded-paved; alley - no
3. Sidewalk conc.-sewer; water-city
4. Landscaping none; cond. fair
5. Trendstatic Value $
6. Use business-industrial
7. District medium - old

O C	Other Buildings	Construction	Floor	Roof	Sty.	Dimension	Area	Value

C	Owner or Contract Purchaser	Date	File No.	Price	Mtge.	Stamp
0	S L Savel Inc	5-5-44	3405843			$69.20

Zoned Manfrng
Floor Plan 20-1

94
60

Remarks: Also 9/94 D.T. DENNY'S 1st. Add.

FOLIO 1947

ADDITION D. T. Denny's 1st Add.

Section ___ Twp. ___ Range ___ Ewm Block 94 Tract or Lot 8-9 +9

~~Lot 9~~

LOTS 8 & 9 LESS ST.

PERMIT No. 378155

DATE 2-14-47

500-510 Westlake Ave. No

[redacted]

Fee Owner Radio Television + Appliance Co.

Condition of Exterior 9 Interior 9 Foundation 9

USE Store + Whse

2+3	No. Stories
1	No. Stores
2	No. Rooms
5	Basement
12	No. Offices
	No. Apartments
	1 rm. ☐ 2 rm. ☐ 3 rm. ☐ 4 rm. ☐ 5 rm. ☐ 6 rm. ☐

ROOF CONSTRUCTION

	Frame Lam ☐
X	Mill Construction
	Rein. Concrete
	No. Trusses
	Wood ☐ Steel

ROOFING MATERIAL

X	Tar and Gravel
Or	

FLOOR FINISHES

X	Fir ☐ Maple
	Oak ☐ 2" x 6" T&G
	Lino. ☐ 3" x 6" T&G
	Cement
	Terrazzo
	Raccolith
X	Tile Asphalt
Or	

Baths ☐ Fl. ☐ Walls

Tile Total	X	Sq. Ft. 6500 Floors
		Sq. Ft. ___ Walls
		Lin. Ft. ___ Dr. Bds.
Lino. Total		Sq. Ft. ___ Floors
		Sq. Ft. ___ Walls
		Lin. Ft. ___ Dr. Bds.

Kit's. ☐ Fl. ☐ Walls

PLUMBING

7	No. Fixtures
3	Toilets
	Tubs, Leg or Pem.
3	Basins, ~~Ped.~~
	Sinks
	Urinals
	Showers (Tub) (Stall)
	Laundry Trays
1	H.W. Tank Elec. Fl. Drains ☐
	Sprink. Sys. No. ___ Hds.

50

TYPE OF CONSTRUCTION

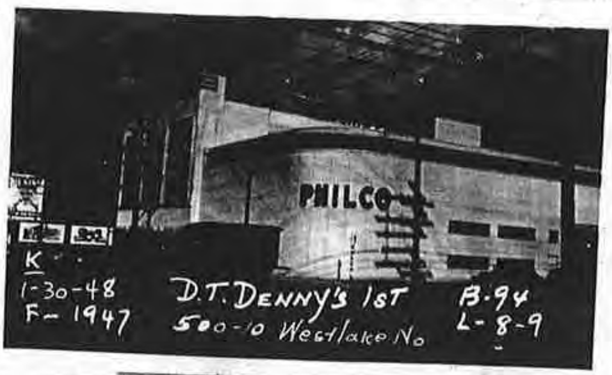
	Frame
	Single ☐ Double
	Ordinary Masonry
X	Mill Construction
	Class A Rein. Con.
	Stru. Steel and Con.
	Tile ☐ Brick
X	Con. ☐ Rein. Con.

Good X Med. ___ Cheap ___

Date Built 1919 ☒ Finished ☐ Unfinished ☒ Remodeled 1945 Add 1947

Effective Age ___ Years Future Life ___ 17 x 9 Years

Dep. for Cond. ___ Dep. for Ob. ___ Dep. for Es. ___ Total 10



Total ___ $

Assessed Value 50% ___ $

Sup. Building A. V. ___ $

Total ___ $

HEATING

	Stove
	Pipeless Furnace
	Gravity H. A.
	Air Cond., Fan
	Arcola all fans
	1-Pipe Steam
	2-Pipe St. or Vapor
X	Hot Water New
X	Oil Burner 1947
	Coal Stoker

WIRING

X	Knobs & Tube
	Flex Cable
X	Conduit
X	Power Wiring
	Range Wiring
	No. Outlets

71-60

30 200

Bc 65

ELEVATORS

	Pass. 2 Freight
2	Auto 2 Elec. 1-10 Ton, 1-2 Ton
	Man. ☐ Hyd.
	☐ Man.

~~40000~~ V8 40600

FOUNDATION

	Mud Sills
	Post and Pier
	Brick
	Concrete
	Pile

BASEMENT

X	Full ☐ %
	Sub-Basement
	Size ___ x ___
	Garage ☐ No. Cars
X	Cement Floors
	Plastered
	Living Rooms
	Service Rooms

EXTERIOR WALL CONSTR.

	Single ☐ Double
	2" x 4" Stud Walls
	2" x 6" Stud Walls
	Brick Walls
	Brick With Pilasters
X	Concrete Walls 1919 Poured
X	Con. With Pilasters 1947 Blk.
	Tile Walls
	Rein. Con. Skel.
X	Tile 1919 Filler Walls
	Laminated Walls

INTERIOR WALLS

X	Stud and Plaster
	Lam. ☐ Plastered
	Ply Wood Store +
	Ceiled Offices
	Plaster Board
X	Painted
	Stain ☐ Varnish
	Kalsomine
	Whitewashed
Bmt	Unfinished

GAS STATIONS

	Frame
	Metal
/	Masonry 2½
/	Plastered or Ceiled Bale 7
	Floors

SERVICE BUILDING

	Frame
	Metal
	Masonry
	Plastered or Ceiled
	Floors

C. H.

S. B.	13
B	13
1	15
2	12
3	12
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	

GROUND FLOOR AREA 11055

TOTAL FLOOR AREA

60 120 60 46 40

Conc walls Tile fillers

All 8" conc

4 Offices on Balc over Store

1938 N 13100

1946 N 14600

EXTERIOR FACING

	Siding ☐ Shingles
	Shakes 2 Stucco
	Brick Veneer ___ Kind
2	Conc + Cinder Blk
	Stone ☐ Cast S.
	Terra Cotta Painted
	Struct. Glass
	___ Trim

INTERIOR TRIM

X	Fir
	Mah. ☐ Oak
	Metal
X	Wood Doors
	Metal Windows
	Stained
	Varnished
	Painted
	Unfinished

TANKS, ETC., LIST

1	10x18 Roll up door

Hoists: Elect. ___ Hyd. ___

DOCKS AND PIERS

	Treated Piles and Timbers
	Untreated
	Treated Piles only
	Average Length
	Paved

FLOOR CONSTRUCTION

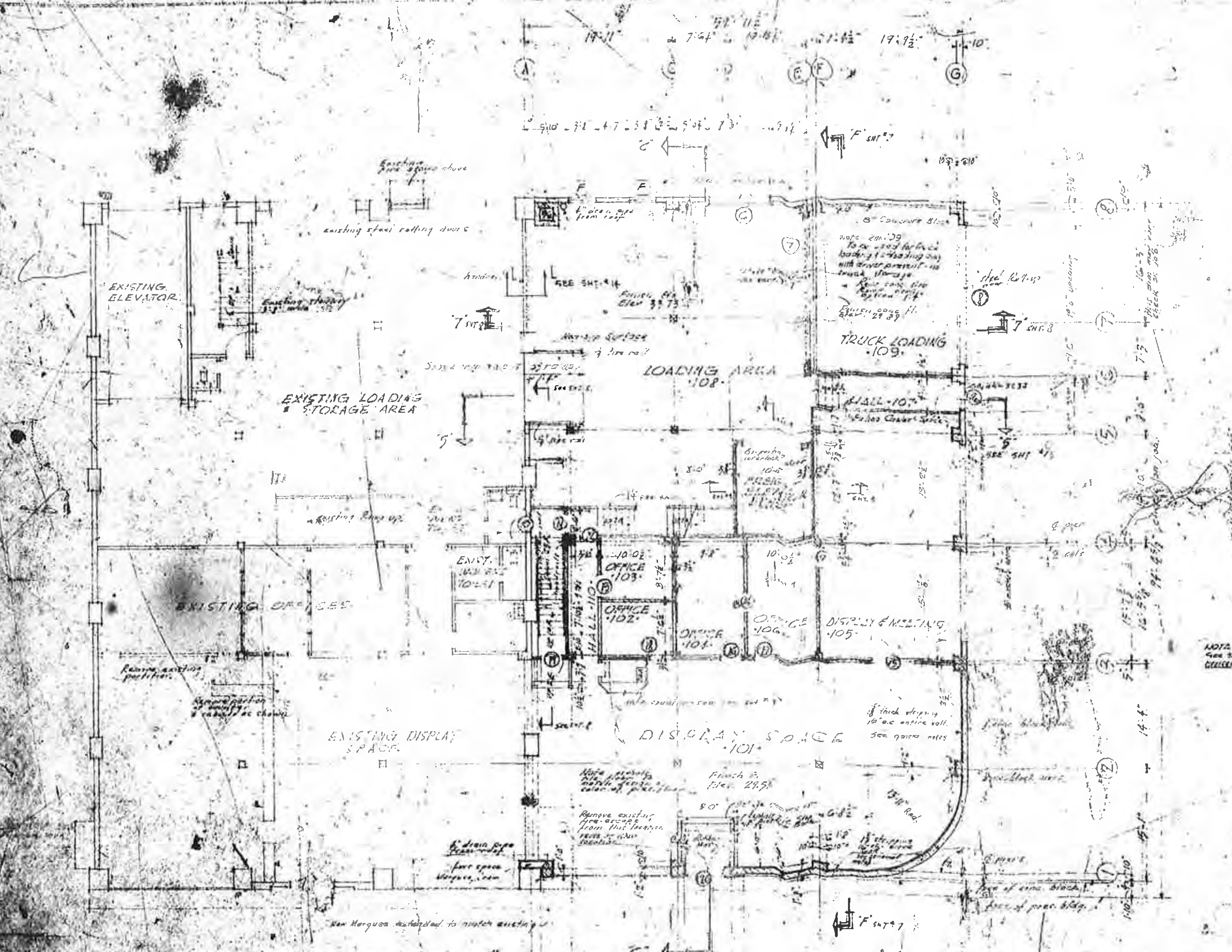
Joist Con. Size 8 x 18

O. C. 5' In Bridg. ☐

X	Mill Construction 12x12 P
	Rein. Con. 12x24 Bm

Other Buildings	Construction	Floor	Roof	Stories	Dimensions	S.F. Area	Factor	Value	% Dep.	Deprec.	Net Value
Garage					x			$		$	$
					x			$		$	$
					x			$		$	$
					x			$		$	$
					x			$		$	$

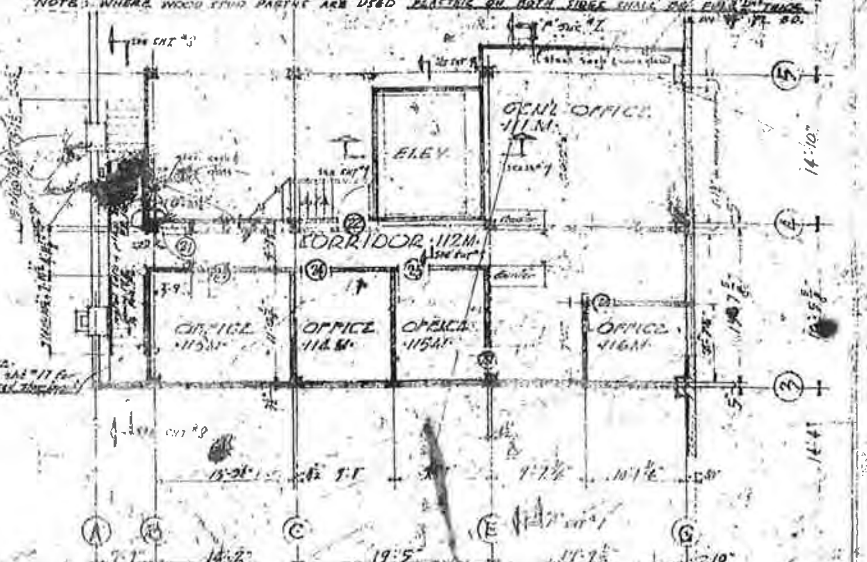
53



FINISH SCHEDULE

RM. NO.	ROOM NAME	FLOOR	BASE	WALLS	CEILING
	BASEMENT				
1	BOILER RM.	[illegible]	[illegible]	[illegible]	[illegible]
2	STORAGE AREA	[illegible]	[illegible]	[illegible]	[illegible]
	STAIRHALL TO FIRST FLOOR	[illegible]	[illegible]	[illegible]	[illegible]
	FIRST FLOOR				
101	DISPLAY SPACE	[illegible]	[illegible]	[illegible]	[illegible]
102	OFFICE	[illegible]	[illegible]	[illegible]	[illegible]
103	OFFICE	[illegible]	[illegible]	[illegible]	[illegible]
104	OFFICE	[illegible]	[illegible]	[illegible]	[illegible]
105	DISPLAY & MEETING	[illegible]	[illegible]	[illegible]	[illegible]
106	OFFICE	[illegible]	[illegible]	[illegible]	[illegible]
107	HALL	[illegible]	[illegible]	[illegible]	[illegible]
108	LOADING AREA	[illegible]	[illegible]	[illegible]	[illegible]
109	TRUCK LOADING	[illegible]	[illegible]	[illegible]	[illegible]
110	HALL	[illegible]	[illegible]	[illegible]	[illegible]
	STAIRHALL TO 2ND & 3RD FL.	[illegible]	[illegible]	[illegible]	[illegible]
	MEZZANINE				
111M	GENERAL OFFICE	[illegible]	[illegible]	[illegible]	[illegible]
112M	CORRIDOR	[illegible]	[illegible]	[illegible]	[illegible]
113M	OFFICE	[illegible]	[illegible]	[illegible]	[illegible]
114M	OFFICE	[illegible]	[illegible]	[illegible]	[illegible]
115M	OFFICE	[illegible]	[illegible]	[illegible]	[illegible]
116M	OFFICE	[illegible]	[illegible]	[illegible]	[illegible]
	SECOND FLOOR				
201	WAREHOUSE SPACE	[illegible]	none	[illegible]	[illegible]
301	PENT HOUSE	[illegible]	none	[illegible]	[illegible]

NOTE: WHERE WOOD STUD PARTNS. ARE USED PLASTER ON BOTH SIDES SHALL BE [illegible]



MEZZANINE PLAN — APPROX. 15 PEOPLE

Scale 1/8" = 1'-0" AREA 1168 #

DOOR SCHEDULE

NO.	SIZE OF OPENING			DESCRIPTION
1	3'-6" x 7'-2"	[illegible]	[illegible]	Class "B" firedoor wire glass panel
2	3'-6" x [illegible]	[illegible]	[illegible]	wood slab door
3	3'-3" x 7'-2½"	[illegible]	[illegible]	Class "B" firedoor
4	[illegible]	[illegible]	[illegible]	Class "C" firedoor 4 ply
5	3'-0" x 6'-8"	[illegible]	[illegible]	Class "B" firedoor with gl. panel
6	[illegible]	x	[illegible]	steel rolling service door
7	20'-0" x 9'-0"	x	[illegible]	steel rolling service door
8	19'-0" x 13'-0"	x	[illegible]	steel rolling service door
9	[illegible] x 6'-8"	[illegible]	[illegible]	wood slab door - glass pane
10	2'-2" x 6'-8"	[illegible]	[illegible]	Class "B" firedoor, 2 ply
11	3'-0" x 6'-8"	[illegible]	[illegible]	Class B firedoor with glass panel
12	3'-0" x 6'-8"	[illegible]	[illegible]	Class B firedoor with glass panel
13	2'-8" x 6'-8"	[illegible]	[illegible]	wood slab door - glass pane
14	2'-8" x 6'-8"	[illegible]	[illegible]	wood slab door - glass pane
15	5'-0" x 6'-8"	[illegible]	[illegible]	wood slab door
16	3'-0" x 6'-8"	[illegible]	[illegible]	wood slab door
17	3'-0" x 6'-8"	[illegible]	[illegible]	wood slab door
18	[illegible] x 6'-8"	[illegible]	[illegible]	wood slab door
19	3'-0" x 6'-8"	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]
21	3'-0" x 6'-8"	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	Class "B" firedoor with glass panel
23	[illegible]	[illegible]	[illegible]	wood slab door
24	[illegible]	[illegible]	[illegible]	wood slab door
25	[illegible]	[illegible]	[illegible]	wood slab door
26	[illegible]	[illegible]	[illegible]	wood slab door
27	2'-8" x 6'-8"	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]
29	3'-0" x 6'-8"	[illegible]	[illegible]	class "B" fire door with glass panel
30	2'-8" x 6'-8"	[illegible]	[illegible]	class "A" firedoor - 2 ply
31	3'-0" x 7'-2½"	[illegible]	[illegible]	class "B" firedoor
32	6'-8" x 8'-0"	[illegible]	[illegible]	class "C" firedoor 3 ply
33	[illegible] x 6'-8"	[illegible]	[illegible]	wood slab door w/ glass panel

GENERAL NOTES CONCERNING DOORS
Toilet door shall be self closing.
Exit doors shall have no key locks in exit line of travel.

SASH SCHEDULE

MARK	SIZE	REMARKS
[illegible]	[illegible]	[illegible]

Note: Outside Sash Mark "A" see Sht. #6
for Outside Sash Mark "B" [illegible] See Sht. #6

GENERAL NOTES

Dimensions are to: property lines, ℄ of piling & piling clusters, ℄'s of columns, o.c. face of concrete or concrete block, ℄'s of wood partitions or are as noted or shown otherwise.

FIRESTOPPING
All furring & stud partitions shall be firestopped as req'd by sec. 246 city code

FURRING & FIRESTOPPING
shall conform to sec. 248 city code

MECHANICAL VENTILATION
All interior rooms shall be mechanically ventilated

FIRST FLOOR PLAN

SCALE 1/8" = 1'-0"

WILLIAM J. BAIN & ASSOCIATES
1947
REGISTERED ARCHITECTS

PRINTED	FIRST FLOOR PLAN	Drawn by JLF
3-25-46	WAREHOUSE ADDITION TO RADIO-TELEVISION & APPLIANCE Co. • MILL BUILDING • LOCATED AT 510 WESTLAKE N. SEATTLE WASHINGTON	Traced by JLF
1-13-47		
5-[illegible]-47		
REVISIONS	WILLIAM J. BAIN, HARRISON OVERTURF & EDWIN T. TURNER Architects	
2-10-47	H. HUDSON BENEDICT, WALDO B. [illegible] Associates	Job No. 830
5-[illegible]-47	510 HOGE BLDG. SEATTLE	

NICHOLSON KOVALCHICK ARCHITECTS

August 29, 2014

Historic Preservation and SEPA Review - Appendix A
(Seattle DPD CAM #3000)

Additional Information to determine whether a structure
appears to meet any of the criteria for landmark designation

I. Building Location:

520 Westlake Ave N. Parcel # 198320-0180

II. Physical Description: Provide a physical description of both the interior and exterior of the structure(s).

Parcel 198320-0180 contains four lots, numbers 10-13. The subject building was designed in 1963 by Bittman & Sanders (of Seattle), constructed by Century Construction Company for the owner Jafco Distributors. It underwent a renovation in 1997 by Barry Gehl Design for the current occupants, the Guitar Center.

The building is about 231' x 108', with a total floor area of 45,186 square feet (not including ramp). Designed as a retail store, the subject building's structure consists of a precast concrete frame with concrete block infill walls at the alley and a storefront glazing system along the street. The west elevation is organized into eight bays, with an automobile ramp to the roof occupying the eighth or southernmost bay. Concrete columns are spaced 29'-1" and connected to precast, pre-stressed double "T" concrete joists. The reinforced concrete on the west (main) elevation of the building features broad pointed arches, and is clad with marblecrete. Non-original fabric awnings currently cover the concrete pointed arches from view, although the arches are all intact. The lower level of the building is used as basement/warehouse space, the street level is used as retail space, and roof is used as parking. A somewhat sculptured concrete stair connects the upper parking area with a raised, exterior entry courtyard, open to the street.

The interior walls are of stud, plaster, and paint. The interior ceilings are suspended with acoustic tile. There are cement floors and glass and concrete block filler walls.

Original 1963 drawings and period tax photos (image is poor) show that the original storefront windows occupied the five northernmost bays of the west elevation, with the sixth and seventh bays recessed from the street around the exterior stair. In that original configuration, the main entry to the store was at the seventh bay (adjacent to the eighth bay, which is occupied by the automobile ramp to the roof). However, today's storefront windows occupy only the first four bays, with the fifth through seventh bays recessed, forming a larger outdoor courtyard area around the stairs. When this change was made is not clear, as it is not reflected in available drawings or permits; however, it appears to have occurred prior to 1997 renovations.

Additionally, a comparison of the 1964 tax photo with current conditions show that the storefront window system in 1964 was entirely glazed in width below the horizontal muntin, while today's window features marblecrete outermost panels in the storefront system. Additionally, the current glazing features additional vertical muntins; the date of these alterations to the storefront system are unknown.

In 1993, non-structural interior alterations were made under a "subject to field inspection" permit.

Renovations in 1997 by Barry Gehl Design were interiors only, and included demolishing existing first floor interior walls (on grid), added new interior partitions in retail space, and added new CMU infill with vertical and horizontal reinforcement bars.

III. Architect or Builder: Provide information about the architect/builder; i.e., regarding education, career, other works in Seattle. If other structures were built in Seattle, indicate whether they remain and their location.

The original building was designed by Bittman & Sanders Architects of Seattle, a firm active 1953-69, comprised of Herbert Bittman and Dean Sanders. Dean Sanders stamped and signed the original drawings, and so was presumably the design lead on the project. Herbert Bittman was the nephew of the prominent Seattle architect and engineer, Henry Bittman.

The following brief entry for both Sanders and Bittman was found in the 2014 edition of *Shaping Seattle Architecture (pp. 472-473):*

> ***Sanders, Dean Harris*** *(b. November 15, 1914).*
> *Born and raised in Tacoma; B. Arch., University of Washington, 1940; employed by Bois Payette Lumber Company, 1941, by Boeing Airplane Company, 1941-45, by Henry W. Bittman, 1945-53; in partnership Bittman, Sanders & Adams, 1953-54; in partnership Bittman, Sanders & Associates with Herbert Jay Bittman (b. September 3, 1925), nephew of Henry W. Bittman, 1953-69; designed Langendorf Bakeries Building, Tacoma (1954), Richfield Building addition, Seattle (1956), 2000 Fifth Avenue Building alteration, Seattle (1956; destroyed), Sinclair & Valentine Ink Manufacturing plant, Seattle (1958), Friedman Lobe & Block Building, Seattle (1959), Prager's Men's Store alteration, Seattle (1961; altered), Harrison Dental Laboratories, Seattle (1966-67), Church of the Good Shepherd, Lynnwood (1968-69); in partnership with Bittman Sanders Hasson & Associates with David Hasson (b. November 1, 1937).*

The 1997 renovations were done by Barry Gehl Design, now named Krannitz Gehl Architects.

IV. Statement of Significance: Current and past uses and owners of the structure(s). The role these uses and/or owners played in the community, city, state or nation.

Polk's Directories and Seattle Times newspaper advertisements were used to identify building occupants. The building was constructed for Jafco, a retailer which occupied the space until 1982, when the company was purchased by Best Products Inc. of Richmond, Virginia. Best Products occupied the location as a catalog showroom and jewelry store until 1991, when the company filed for Chapter 11 bankruptcy. Since the mid-1990s, the Guitar Center (a retail music store) has been the tenant.

Information on Jafco and its founder listed below (Wikipedia):

"Jafco Company was a multi-million dollar chain of catalog showroom retail stores founded by Sidney Z. Jaffe in 1957 in Seattle, Washington. Selling various items from stereos to holiday gifts, Jafco sent catalogs to all of their clients following for pickup at their stores or by mail-order. Jafco's unique technique of processing orders started with customers ordering through mail and picking it up at the store. With notable locations in Downtown Seattle, South Center, Bellevue and North Seattle, the major retailer expanded until acquisition in the 1970s. Jafco was acquired by Modern Merchandising in 1972, then Best Products obtained all 17 stores in Washington and Oregon in 1982. By 1986 all the Jafco stores were converted to Best stores. In 1995 all of the Best stores in Washington state were closed down after financial troubles within the company.

Sidney Z. Jaffe, born March 28th, 1912, founded Jafco in 1957 with his wife and family in Seattle. After opening Jafco's first location near South Lake Union, Jaffe expanded into the catalog business with mail-ordering and processing right at their facilities. Throughout his ownership in the company, Sidney Z. Jaffe opened nearly twenty showrooms in Washington and Oregon. Jaffe's entire family helped manage the stores, with his wife Ruby and their sons Paul and Larry as well as his daughter Susan. In his spare time, he was a philanthropist, and donated generous amounts of money to many charities, synagogues and organizations around the Greater Seattle region. Sidney Jaffe passed away on May 25th, 1979 at the age of 67."

Bibliography of sources

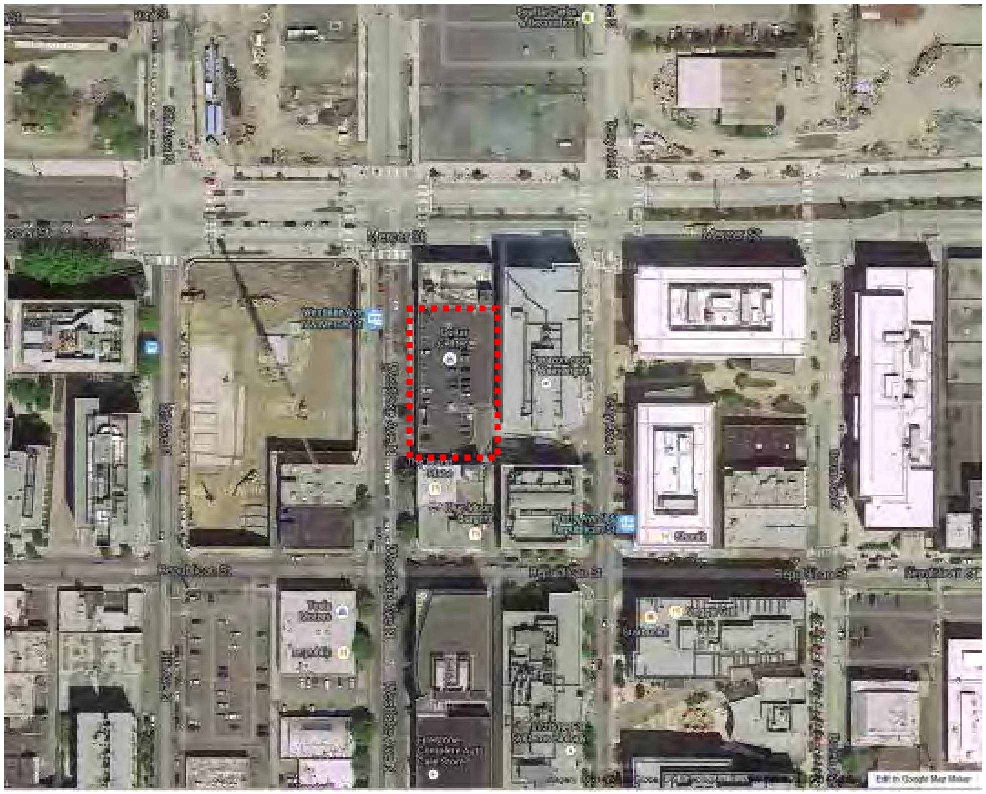
- DPD Microfilm Library
- Puget Sound Regional Archives, tax assessor records and photos
- Polk's Seattle Directories
- The Seattle Times historical archives searchable database, available through the Seattle Public Library.
    - "Westlake Best to close—bankruptcy is forcing chain to shut down outlets nationwide," The Seattle Times, April 26, 1991.
- Sanborn Maps of Seattle
- Ochsner, Jeffrey K. *Shaping Seattle Architecture: A historical guide to the architects.* Seattle: University of Washington Press, 2014.

SEPA Appendix A summary prepared by:

David Peterson, Caitlin McCunney, and Marie Caryl
Nicholson Kovalchick Architects
david@nkarch.com
ph: 206-933-1150

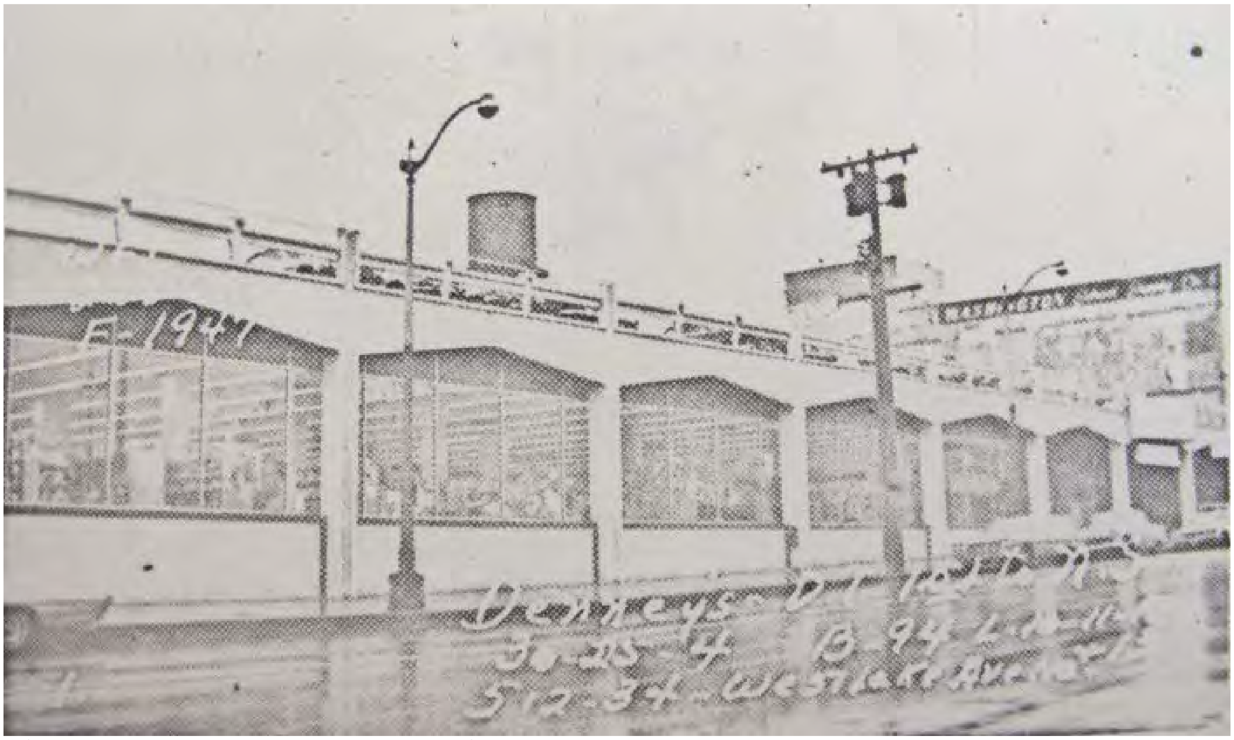
V. Photographs: Clear exterior photos of all elevations of the building; interior photos of major or significant spaces; available historic photos; neighborhood context photos.

Note: (All photos by NKA from June 2014 unless noted otherwise)

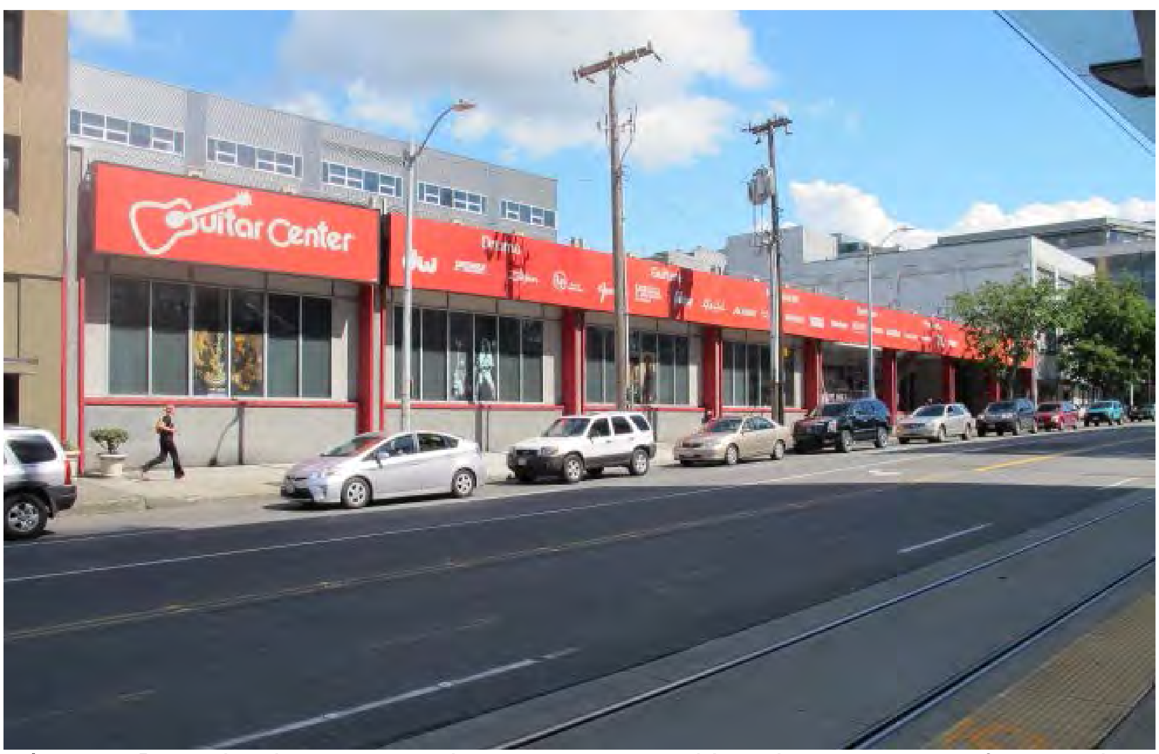


Recent neighborhood context: Subject property located by dashed box. North is up. (2014, Google Maps)

Map showing lots within parcel. The subject parcel includes Lots 10-12 and part of 13.



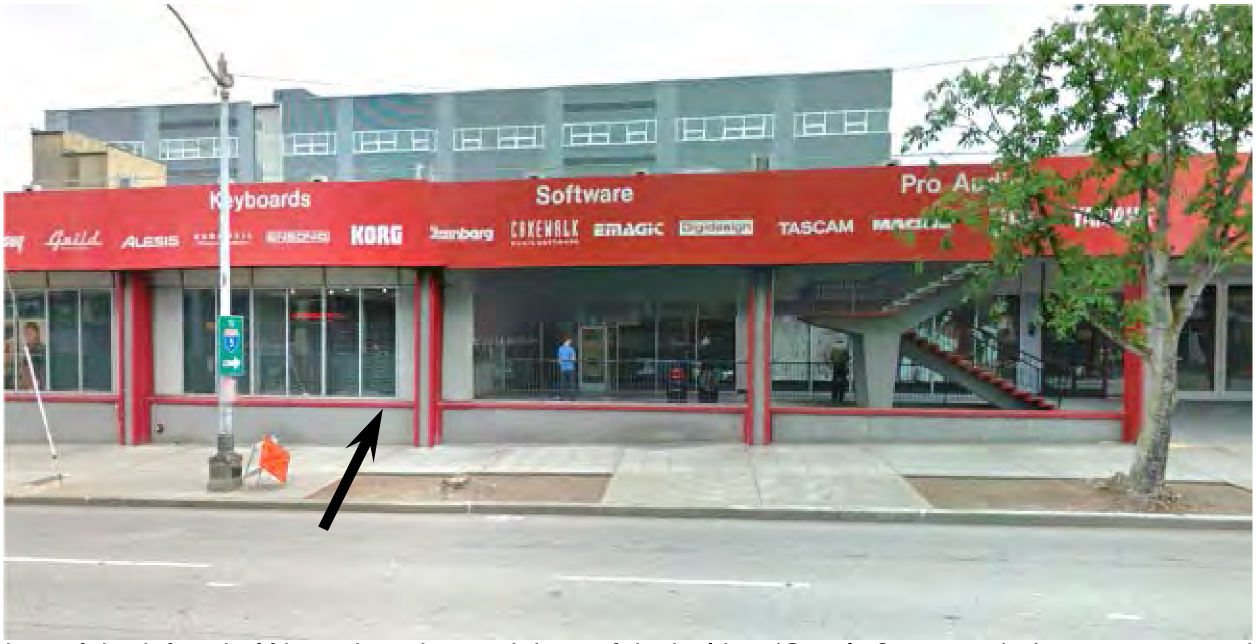
1964 tax assessor image. Note that storefront window width below the horizontal muntin is entirely glazed; compare to current windows.



West elevation. Pointed arches remain under current awnings. Note that current storefront windows have intermediary muntins at glazing (compare to 1964 tax photo), and that the outermost portion of the storefront window system consists of marblecrete panels (of indeterminate age). The date of these alterations to the windows is unknown.

West elevation


West elevation and stair



View of third, fourth, fifth, sixth, and seventh bays of the building (Google Streetview). Arrow corresponds to detail below.

Detail of storefront window system along sidewalk at fourth bay (located by arrow above); note marblecrete panel at right. Date of current window system with marblecrete panels is unknown, but after 1964 and before 1997.

Exterior entry court, open to street. Note pointed arch form visible behind awning.

Exterior entry court, showing recessed storefront window wall.

Upper level parking deck, view north

Upper level parking deck, view south

Ramp to upper level parking deck

East (alley) elevation

East (alley) elevation, and interior

Interior

FOLIO 1947

ADDITION DENNY'S DT. 1ST To NS — LOTS 10-12 & 13

SE Section 30 Twp. 25 Range 4 Ewm. Block 94 Tax Lot — Lot or Tract 10-11-12-13 All Lots 10 thru 12 & S 52.64' Lot 13 Less st.

PERMIT NO. 502772

Address 512-34 WESTLAKE AVE NO

DATE 6-10-63

Fee Owner JAFCO DISTRIBUTORS — Architect BITTMAN & SANDERS — Contractor CENTURY CONST CO

Condition of Exterior G Interior G Foundation G Floor Plan: Good X Accept. Good

USE STORE M

2	No. Stories
1	No. Stores
1	No. Rooms
1	Basement
3	No. Offices
	No. Apartments
	1 rm. 2 rm. 3 rm. 4 rm. 5 rm. 6 rm.

ROOF CONSTRUCTION

	Frame Lam.
	Mill Construction
X	Rein. Concrete
	No. Trusses
	Wood Steel

ROOFING MATERIAL

Tar and Gravel

Or And BLACK TOP

FLOOR FINISHES

	Fir	Maple
	Oak	2"x2" T&G
	Lino.	3"x2" T&G
X	Cement - 2ND - Roof	
X	Terrazzo 1ST	
	Rascolith	
	Tile	
OX	2" Black Top - Bsmt	

Tile Lino.

Baths Fl. Walls; Sq. Ft. Floors; Sq. Ft. Walls; Lin. Ft. Dr. Bds.; Sq. Ft. Floors; Sq. Ft. Walls; Lin. Ft. Dr. Bds.; Kit's Fl. Walls

PLUMBING

16	No. Fixtures
6	Toilets
	Tub, Leg or Pem.
5	Basins, Ped.
1	Sinks
2	Urinals
1	Showers (Tub) (Stall)
	Laundry Trays
1	H. W. Tank Fl. Drains
	Sprink. Sys. No. Hds.

TYPE OF CONSTRUCTION

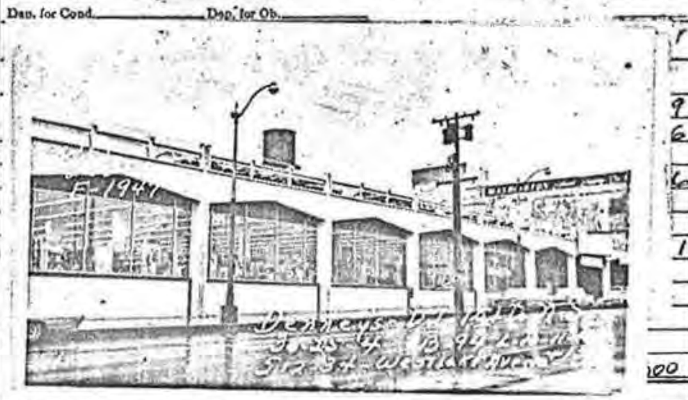
	Frame
	Single Double
	Ordinary Masonry
	Mill Construction
X	Class A Rein. Con.
	Stru. Steel and Con.
	Tile Brick
X	Con. [X] Rein. Con. + BLK

Good X Med. Cheap

Date Built 1964 [X] Finished Unfinished Remodeled

Effective Age Years

Dep. for Cond. Dep. for Ob.



HEATING

	Stove
	Pipeless Furnace
	Gravity H. A.
X	Air Cond. Elec Gas FA
3	Suspended Gas, ~~Hot Water~~ in Bsmt
	Steam Heat
	Hot Water
	Oil Burner

Year	Assessed Value
1965	102300 10F 64
1965	92500 a.JK-64
71	185000
71	204050 - RL 8/70

FOUNDATION

	Mud Sills
	Post and Pier
	Brick
X	Concrete
	Pile

BASEMENT

X	Full %
	Sub-Basement
	Size
	Garage No. Cars
X	Black Top Floors
	Plastered
	Living Rooms
	Service Rooms

24'	3 ft Conveyor Belt
4	Mezz Conc. Ind. Stairs
4	5 in Loop Pts in roof
2	Elec Doors
	Plumbing 3100

Hoists: Elec. Hyd.

Pass. Auto. Man. Freight Elec. Hyd. Man.

Treated Piles, Timb. Untreated Treated Piles only ✓ Average Length Paved

Knob & Tube, Flex. Cable, Conduit, Power Wiring, Range Wiring, No. Outlets

EXTERIOR WALL CONST.

	Single Double
	2" x 4" Stud Walls
	2" x 6" Stud Walls
	Brick Walls
	Brick with Pilasters
	Concrete Walls
	Con. with Pilasters
	Tile Walls
X	Rein. Con. Skel.
X	Glass + BLK Conc. Filler Walls
	Laminated Walls

EXTERIOR FACING

	Siding Shingles
	Shakes Stucco
	Brick Veneer
1600#	Mosaic Tile Kind
	Stone Cast S.
	Terra Cotta
	Struc. Glass
	Trim

FLOOR CONSTRUCTION

Joist Con. Size

O.C. In Bridg.

	Mill Construction
X	Rein. Con.

INTERIOR WALLS

X	Stud and Plaster 2d
	Lam. Plastered
	Plywood
	Ceiled
	Plaster Board
X	Painted
	Stain Varnish
	Kalsomine
	Whitewashed
	Unfinished

INTERIOR TRIM

X	Fir Birch
	Mah. Oak
	Metal
X	Wood Doors
X	Alum Windows
	Stained
X	Varnished
	Painted
	Unfinished

C. H.: B, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

GROUND FLOOR AREA ~~24353~~ 23401 + Ramp 1378

TOTAL FLOOR AREA 45186 + ramp area

SEE Supl SHEET

Other Buildings	Construction	Floor	Roof	Stories	Dimensions	S. F. Area	Factor	Value	% Dep.	Deprec.	Net Value
Garage											

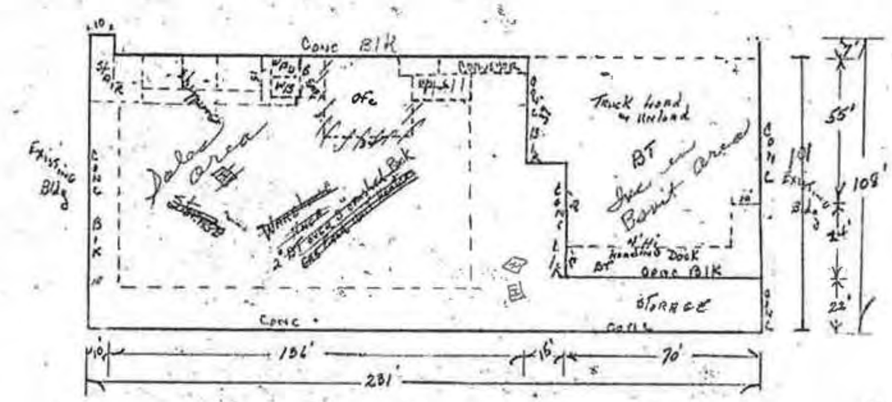
FOLIO 1947 ADDITION Denny's D.T 1st to N.S.

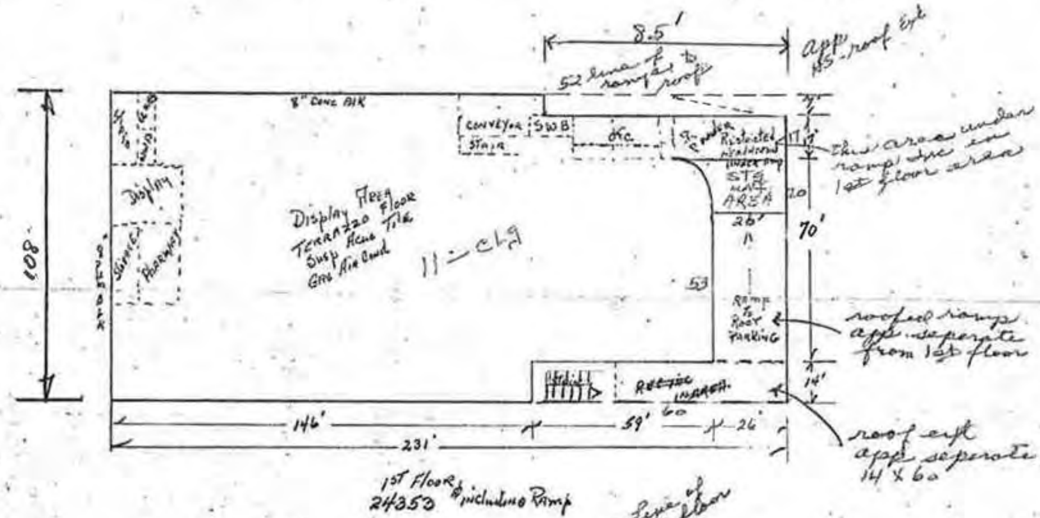
502272 SE Section 30 Twp. 25 Range 4 Ewm. Block 94 Lot or Tract 10-11-14-13

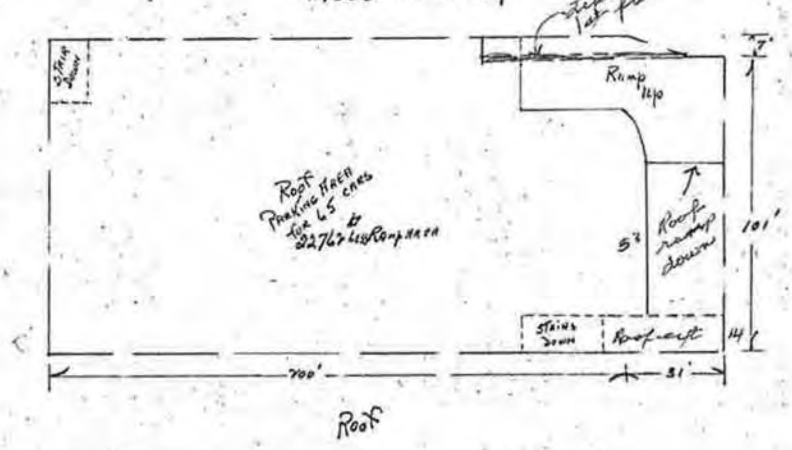
DATE 6-10-63 Tax Lot

ADDRESS 512-34 Westlake Ave No

Fee Owner Jafco Distributors







NICHOLSON KOVALCHICK ARCHITECTS

August 29, 2014

Historic Preservation and SEPA Review - Appendix A
(Seattle DPD CAM #3000)

Additional Information to determine whether a structure
appears to meet any of the criteria for landmark designation

I. Building Location:
534 Westlake Ave N. Parcel # 198320-0196

II. Physical Description: Provide a physical description of both the interior and exterior of the structure(s).

The subject building was erected in 1920, as a manufacturing building for Koenig Candy Co., four stories plus basement, by Wootten Construction Company. Tax records state that it was of masonry construction, with post and beam interior supports; however, drawings, period Seattle Times news articles, and on-site inspection indicate that it was a reinforced concrete construction. Mid-span interior supports are octagonal concrete piers with splayed caps. Store fronts originally featured plate glass, brick, and marquees on north and west sides. However, the building was completely remodeled in 1968 for the owner of American National Insurance Co., by Ridenour & Cochran Architects, at which time the fourth (partial) floor was removed, and the fenestration and siding completely altered. The stair tower at the southeast corner of the building appears to be original to the 1920 construction, and intact.

The building is located on the corner of Mercer St. and Westlake Ave N., with a footprint of 60' x 108'. It is now 3 floor levels and a basement. The building is of Class B reinforced concrete construction, with a stucco exterior facing on the street level of Westlake (1st level) and marblecrete exterior facing on second and third levels. Regularly placed windows are located on all levels. Basement level windows from 1968 remodeling have been covered (was originally a parking garage). Concrete columns are spaced about 18' apart, and connect to reinforced concrete beams. The ceilings are suspended with acoustic tile (1968 remodel). Interiors are characterized by tile flooring, and marblecrete walls in first level lobby. Office levels' interior partitions are contemporary stud partition walls. Basement has high ceilings, converted (in portions) from the 1968 garage to an office space. Some concrete beams appear to have been removed or undergone alteration. Exterior walls are either concrete block or brick.

No significant alterations appear to have been made to the building after 1968, according to the permit record.

III. Architect or Builder: Provide information about the architect/builder; i.e., regarding education, career, other works in Seattle. If other structures were built in Seattle, indicate whether they remain and their location.

The original building was constructed by Wootten Construction Co. of Seattle in 1920, headed by Eugene E. Wootten. No other information could be found regarding Wootten.

In 1968, the building was remodeled by Ridenour & Cochran Architects. Ridenour received his B.Arch. degree at the University of Washington in 1953. William Clyde Ridenour and Donald C. Cochran formed their own firm in 1960-1967 in Bellevue. Ridenour was also partners with the firm Mithun, Ridenour, and Cochran; and later the firm Ridenour, Cochran, and Lewis.

Ridenour's most notable structures are as follows (source PCAD):

- Bellevue Eye Center, Bellevue, WA - 1967
- Grace Lutheran Church, Bellevue, WA - 1963-1964
- McAdoo, Benjamin F., Jr., House, Kenmore, WA - 1961
- Progressive Care Facility, Seattle, WA - 1974
- Washington Aircraft and Transportation Corporation. Office Building and Hangar - 1958
- Washington State Bank, Bellevue, WA - 1957
- Washington State Bank, Branch, Bellevue, WA - 1955

IV. Statement of Significance: Current and past uses and owners of the structure(s). The role these uses and/or owners played in the community, city, state or nation.

Polk's Directories and Seattle Times newspaper advertisements were used to identify building occupants, listed below, but the list is not exhaustive. Addresses have changed from past years, and the building seems to include both 534 and 536 addresses. Known building occupants include:

1920	Koenig Candy Co
1930s	Horluck Brewery
1938-1939:	534- Franklin Benjamin Thrift Stores Inc
1938-1942:	536- Horluck's Westlake Center
1943-1955:	536- Bekins Moving & Storage Co (warehouse)
1960-1965:	534- Acme Restaurant Supply Co., Gas Appl Service
1970:	534- Office Building with: Quality Shippers Association, American National Insurance, Vacant, Sunpak International Transport & Moving, Sunvan & Storage Co Inc., Northwest Consolidators Inc., Karevan Inc. 536- Capital Finance Co Loans
1975:	534- Office Building (Vacant) 536- Capital Finance Co.
1980:	534- Office Building with: Greenery Inc., Lockitch Clements & Rice 536- Capital Finance Co. Loans
1985:	534- Office Building with: Greenery Inc., Lockitch Clements & Rice, Blier & Associates, Werrbach Wm Studios Inc. 536- Barclays American Financial Inc.

1989: 534- Office Building with: Lockitch Clements & Rice, Werrbach Wm Studios Inc., Washington & Northern Idaho Dist Coun of Labs
536- Vacant

The building is currently called the "Clements & Rice" building, and occupants include South Lake Therapy, Northwest Family Therapy, Lake Union Counseling, Easterday Promotions, Athena Partners, Seattle Pro Audio, W G Clark Construction Co., Walsh Construction Co., and Computer Accounting Associates.

V. Photographs: Clear exterior photos of all elevations of the building; interior photos of major or significant spaces; available historic photos; neighborhood context photos.
Note: (All photos by NKA from June 2014 unless noted otherwise)

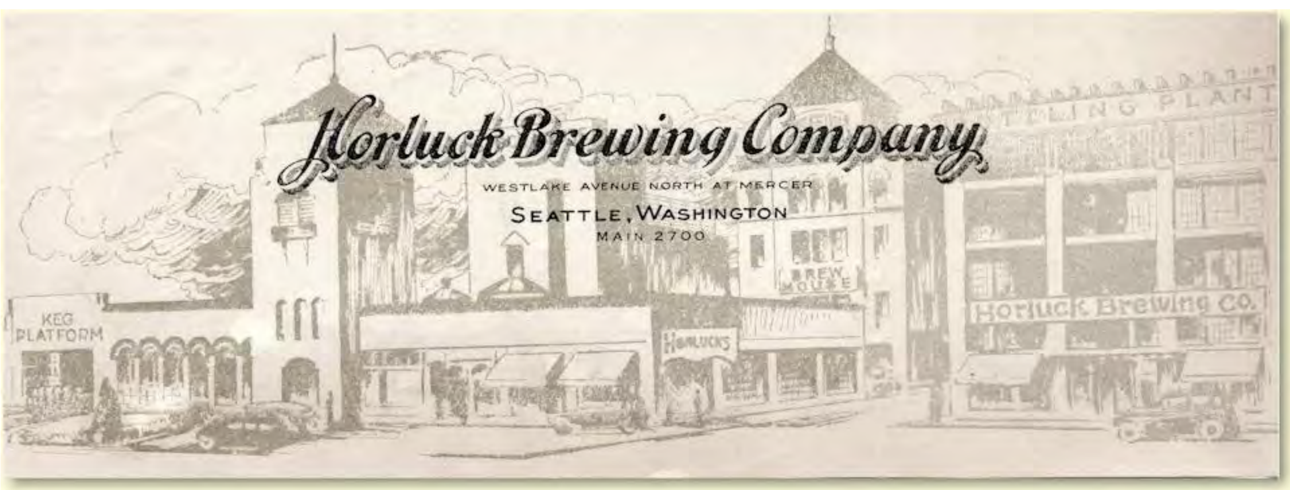
Recent neighborhood context: Subject property located by dashed box. North is up. (2014, Google Maps)

Map showing lots and parcels; subject building is all of lot 14 and part of 13.

Fine New Plant for Koenig Candy Co.

ANOTHER step in the development of an important Seattle industry will be taken about January 1, 1920, when the Koenig Candy Company will remove from its present location at 1018 Western Avenue, to a brand new, beautifully lighted, well ventilated, strictly sanitary candy factory—which is being built and especially equipped for this company on the corner of Westlake Avenue and Mercer Street.

Image from The Seattle Times, August 14, 1919, showing the building constructed in 1920 for the Koenig Candy Company.



Beer bottle label, showing subject building at right, when apparently used as bottling plant for the Horluck Brewery across Mercer Street, c.1930s. Image from http://www.brewerygems.com/horluck.htm

1937 view of west and north elevations of building (tax assessor photo).

1968 view of the west and north elevations of building.

2014 view of west elevation along Westlake Ave N. Current appearance dates to 1968 renovation. (Stucco and marblecrete façade) Original stair core can be seen in the back right above the building.

2014 view of north elevation.

2014 view of west and south facades.

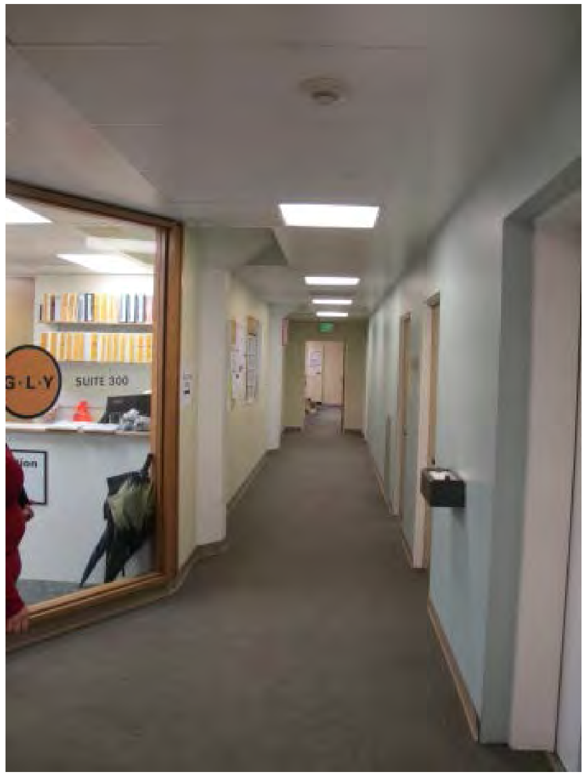
2014 view of south façade from neighboring roof parking. Original stair core can be seen to the right.

2014 view of east elevation/rear of building (alley). Original 1920 staircase can be seen on the left with steel sash windows which have been painted over.

2014 detail view of east elevation (alley) with windows from 1968 renovation boarded.

2014 view of western façade, stucco first level, marblecrete second and third levels, and storefront marquee.

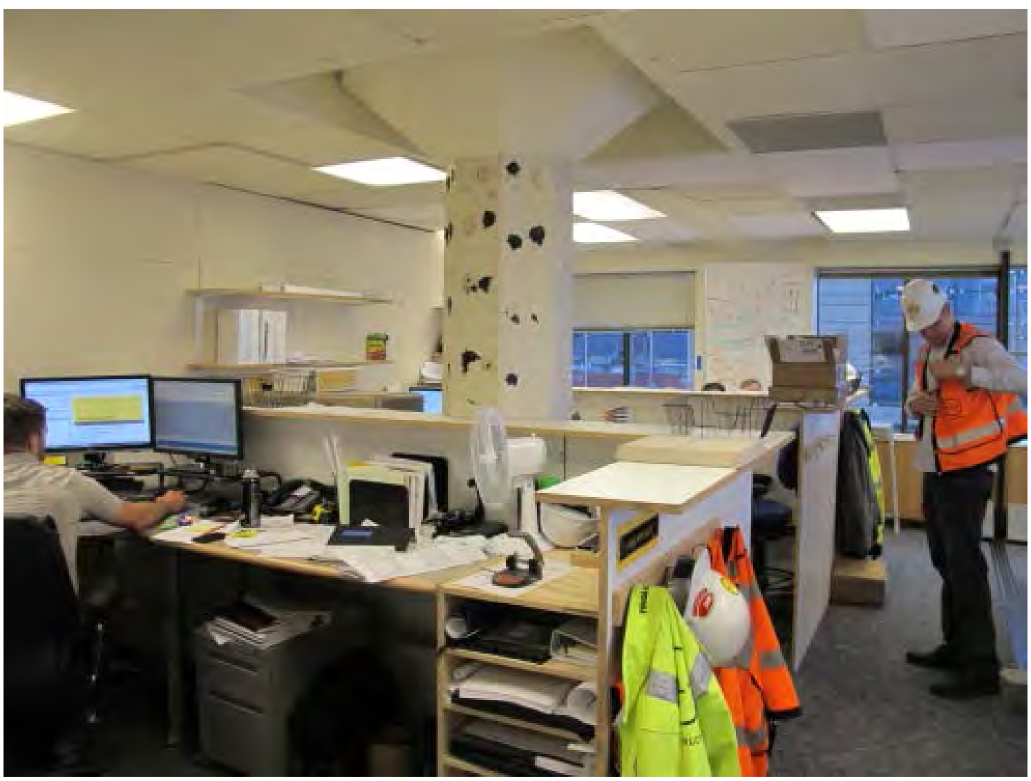
Interior-first level, lobby space, showing marblecrete walls, tile flooring, wooden railing on staircase, low suspended ceilings of acoustic tile.



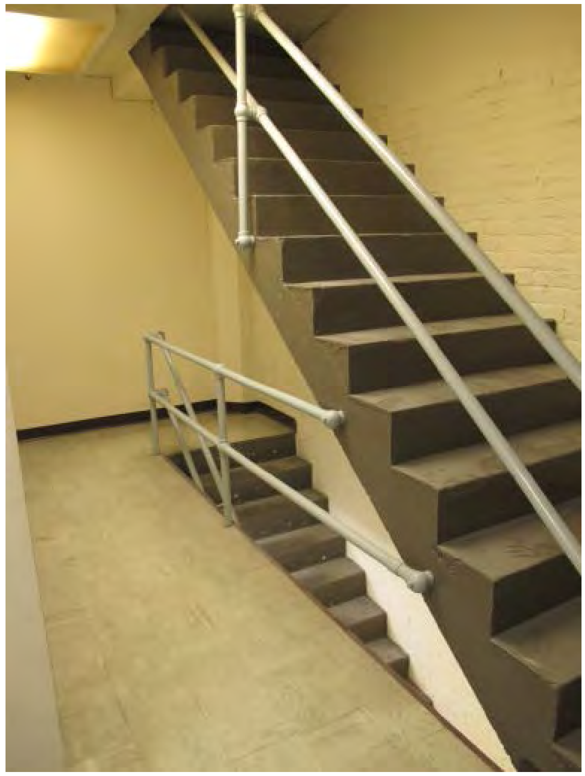
Interior- typical hallway on upper office floors.
Acoustic tile ceiling, octagon columns with splayed top, plastered interior partitions.

Interior- typical upper level office.

Interior- typical upper level office.



Interior- upper level office, column detail.

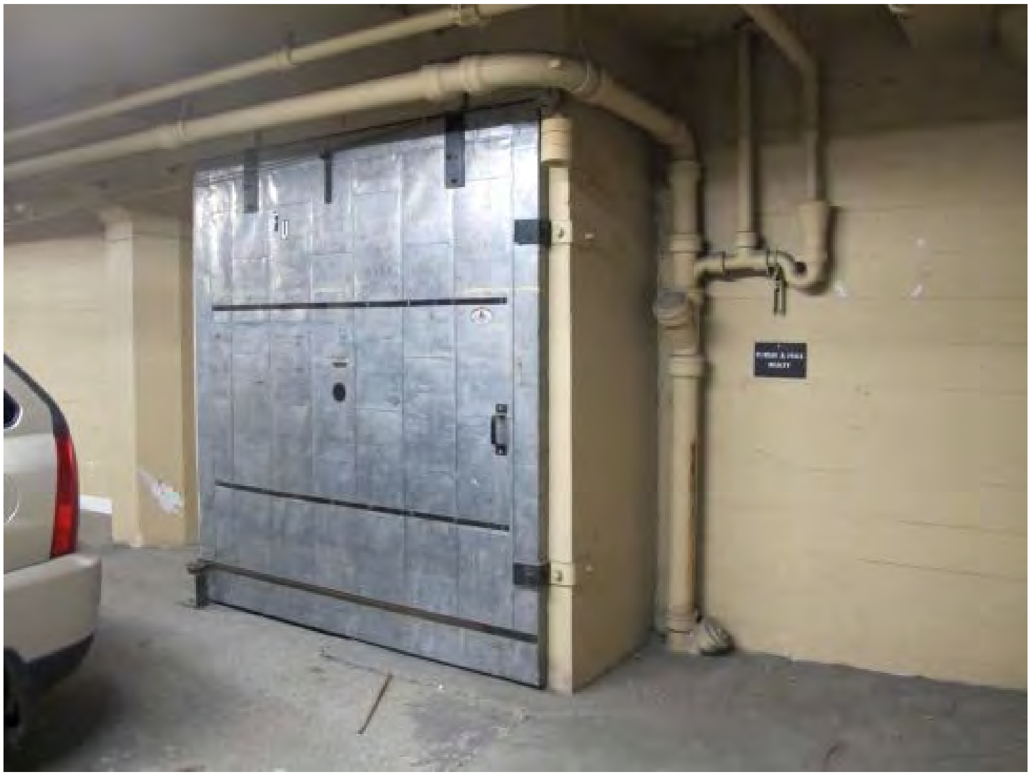


Interior- staircase with steel railing. Brick exterior wall can be seen.

Interior- original 1920 stair core, windows painted over, as well as entire space.

Interior- basement.

Interior- basement garage portion.



Interior- basement, garage portion, fire door detail.

Bibliography of sources

- DPD Microfilm Library
- Puget Sound Regional Archives, tax assessor records and photos
- Polk's Seattle Directories
- The Seattle Times historical archives searchable database, available through the Seattle Public Library
- Sanborn Maps of Seattle

SEPA Appendix A summary prepared by:
David Peterson, Caitlin McCunney, Marie Caryl
Nicholson Kovalchick Architects
david@nkarch.com
ph: 206-933-1150

DISTRICT | 2 ADDITION D.T. DENNY'S 1st. Add. | NAME
SECTION TWP. N. RANGE EWM: BLOCK 94 TRACT OR LOT NO. 14
DESCRIPTION N 7.36' Less por. for ST. Lot 13 and Less 11.36' on N.sd. for St Less por. for st.
CODE NO. 1
3 ADDRESS—PROPERTY 536 - Westlake Ave. No.
PERMIT NO. 325247 (10-15-37)
4 FEE OWNER Natl Gro. Co. | CONT. PURCHASER
5 ARCHITECT 7-1-27 | CONTRACTOR
ORIG. COST $

6 BUILDING Bekins whse. Factory 4 stories

BASEMENT Part conc. 9' concrete floor boiler room-20x24

FOUNDATION concrete

ROOF tar & gravel Cement

STORE FRONTS plate glass large sash brick bulk Hd. Marques

EXTERIOR ~~brick - solid~~

EXTRA FEATURES 97 sprinkler Hds. (Bsmt only).
CONSTRUCTION masonry solid-medium
REFRIGERATION
7 CONDITION: EXTERIOR fair INTERIOR fair FOUND. good
8 MAIN SUPPORT COLUMN x FOOTING SPAN FT.
9 FIRST FLOOR JOIST INCH CENTER BRIDGED
10 BUILDING
11 GROSS INCOME $ EXPENSE $ NET INCOME $
12 DEPRECIATION COND. 27 % OBSLSE. % ECON. SUIT. % TOTAL 75%
YEAR BUILT 1920 REMODELED
EFFECTIVE AGE 16 YEARS FUTURE LIFE 44 YEARS
DIMENSIONS x 108 x SQUARE FT. AREA CUBIC FT.
x x

VOID

INTERIOR post & beam plastered - part

FLOORS fir on conc. cement 8" rein.

PLUMBING 9 fixtures-med.

TILE WORK none

WIRING conduit wiring 50 outlets

HEATING 1 gas furnace ~~steam~~ (Bsmt heat only) '58 2 susp. Gas Heaters main flr.

ELEVATORS freight - 2 Ton.

ENTRANCE

CEILING—STORY HEIGHT bsmt. 9' 1st.flr.18' 2nd.9' 3rd-4th 9'

Void see new slip 1/68 S.J.

6480 | 14,350 | 14.67 EFP.

IMPROVEMENT VALUE
BUILDING $ 18000
OTHER BUILDINGS $ 22,400
TOTAL DEPRECIATED VALUE $
ASSESSED VALUE 50% $ 30,460 / 15230
DATE 7/30/37 22,240

LAND INFORMATION
1. SIZE x level-on grade
2. STREET—ROAD graded-paved alley-no
3. SIDEWALK conc.-sewer water-city
4. LANDSCAPING none-cond.fair
5. TREND static LAND VALUE $
6. USE business-industrial
7. DISTRICT medium - old

O C	OWNER OR CONTRACT PURCHASER	DATE	FILE NO.	PRICE	MTGE.	STAMP
	[illegible] Stg. Co.	[illegible]	3722515	35,500	[illegible]	[illegible]
D	March Inc.	3-3-58	E291675	75,000	—	750
C	Floyd Olson	1-4-66	E618466	$100,000		

Zoned Manufacturing. FLOOR PLAN 30-1
mlt.

VOID

108

60

REMARKS
1950
97 Auto Sprinkler Heads 1950 Burgess

Commercial, Factory, Loft, Garage—King County Assessor, Seattle, Washington

Pigott-Washington Printing Co.

REMOD

FOLIO 1947

PERMIT NO. 517975

DATE

ADDITION DENNY'S D.T. 1ST. TO. N.S. Legal on Back.

Section SE 30 Twp 25 Range 11 EWM. Block 94 Lot or ~~14 & 11, 7, 3 of 13~~ 13 & 14

Tax Lot ____ Tract ____

Address ~~530 WESTLAKE AVE N.~~
955 M[illegible] St

Fee Owner [illegible] INS. Co. Architect ____ Contractor ____

Zoning M. Condition of Exterior G Interior G Foundation G Floor Plan: Good ____ Accept. ✓ Poor ____

USE	[illegible]
[illegible]	No. Stories
	No. Stores
43	No. Rooms
3	Basement
37	No. Offices — Unit Sq. Ft.
	No. Apartments
	1 rm. ☐ 2 rm. ☐ 3 rm.
	4 rm. ☐ 5 rm. ☐ 6 rm.

ROOF CONSTRUCTION	
	Frame-Joist
	Mill-Deck
✓	Rein. Conc. ____ GLB
	Steel Fr. ____ Metal Deck
	Trusses ____ Span
	Wood ____ Steel

FLOOR FINISHES		☐ Tile ☐ Lino ☐ Form.	
	Fir ☐ Maple		Bath Floor
	Oak ☐ 2x6TG		Bath Walls
	Lino ☐ 3x6TG		Tub Recess
	Cement ☐ Lgtwgt. Conc.		Drain Bds.
	Terrazzo		Vanities
✓	Asphalt Tile ☐ Vinyl Tile		
or			

PLUMBING	
20	No. Fixtures
8	Toilets 2 Urinals
	Tubs Leg. or Pem.
8	Basins ____ Dr. Ftns.
2	Sinks S.S.
	Washers ____ Dryers
	Showers (tub) (stall)
	H.W. Tanks ____ Ldy. Trays
	D. Washers ____ Disposals
✓	Sprinkler Sys. BSMT Only

Date Built 1920 Date Add. Built ____ ☑ Finished ☐ Unfinished ☑ Remodeled 1968

Effective Age ____ Years Future Life ____ Years

Dep. for Cond. ____ Dep. for Ob. ____ Dep. for Ec. ____ Total 10 10

TYPE OF CONSTRUCTION	
	Frame
	Metal-Prefab
	Ordinary Masonry
	Mill Construction CLASS-B
X	Class A Rein. Conc.
	Stru. Steel and Conc.
	Struct. Steel, Frame
or	M.S.-CLASS

QUALITY-TYPE B

Good ✓ Med. Cheap

HEATING	
	Elec. ____ Oil ✓ Gas
✓	H.W. ____ St. ____ H.A.
	B.Bd. ✓ Suspended BSMT
	FHA ____ Pipeless
	A. Cond. ____ Wall Unit
	Comb. Unit ____ Custom
	Refrig. ____ Convector
	Heat Pump ____ Fireplace

YEAR	ASSESSED VALUE
1968	14350 - EFF 67
1969	71050 - S.G 68
71	142100

FOUNDATION	
	Mud Sill ☐ Post Pier
✓	Conc. ☐ Brick
	Load Hgt. ☐ Piling

BASEMENT	
X	Full ✓ % Part.
	Sub-Basement
	Size
	Garage ☐ No. Cars
	Floors
	Plastered ☐ Pl. Bd.
	No. Apartments
	Service Rooms

MISC. TANKS, Etc.

HOISTS: Elec. Hydr.

ELEVATORS	
1	Pass. 1 Frght
✓	Auto. ✓ Elec.
	Man. ____ Hydr.
	Doors-Auto ✓ Man. ✓
	Escalators
3	Stops ____ Speed
	Cap'y. 2500

DOCKS AND PIERS	
	Hvy. ____ Med. ____ Lgt.
	Untrtd. Pile Tmbr.
	Conc. Piles & Bms
	Trtd. Pile Tmbr.
	Paved
1	Dolphins
	Deck

WIRING	
	Knob & Tube
	Flex. Cable
	Conduit
	Pwr. Wiring
	Range Wiring
	Outlets
	Code

EXTERIOR WALL CONST.	
	Single ☑ Double
	Stud Walls
	Brick ____ Pil. ☐
	Conc. ✓ Pil. ☐
	Rein. Conc. Skeleton
	Str. Stl.-Frame
	Pre-Fab Metal
	Tilt-Up
	____ Filler Wall
	____ Curtain Wall

EXTERIOR FACING	
	Siding %
✓	Stucco 50% Shakes SEE
✓	Marblecrete 50% RMKS
	Brick ☐ Veneer
	Conc. ☐ Conc. Blk.

INTERIOR WALLS & CEILING
Stud Wood Metal
✓ Plaster DryWall
✓ Acc. Tile SUSP. Celotex
Ceiled Plywood
Solid Block
Sound Proofed Lamin.
✓ Finished Unfinished
✓ Painted Varnished

INSULATION	
	Exter. ____ Partitions
	Roof ____ Floor

INTERIOR TRIM	
	Fir ____ Birch
	Mah. ____ Oak
	Metal ✓ ANODIZED ALUM Metal Doors
✓	Wood ✓ Metal Doors
	Wood ✓ Metal Sash
✓	Stained ____ Varnish
	Painted ____ Unfin.

FLOOR CONSTRUCTION	
	Joist ____ x ____ x ____ O.C.
	Mill ____ Car Deck
✓	R-Conc. ____ Elev.
	Steel ____ GLB.
or	

ROOF COVERING	
✓	Blt.-Up ✓ Tar. & Gr.
	Comp. ____ Metal
or	

	C.Hgt.
SB	
B	10'
1	7'6"
2	7'6"
3	7'6"
4	
5	
6	
7	
8	
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13	
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25	
26	

GROUND FLOOR AREA 1800± OFF. & 4680 = PARK.

TOTAL FLOOR AREA 23,940

SEE SUPL. SHEET.

20M 11/63

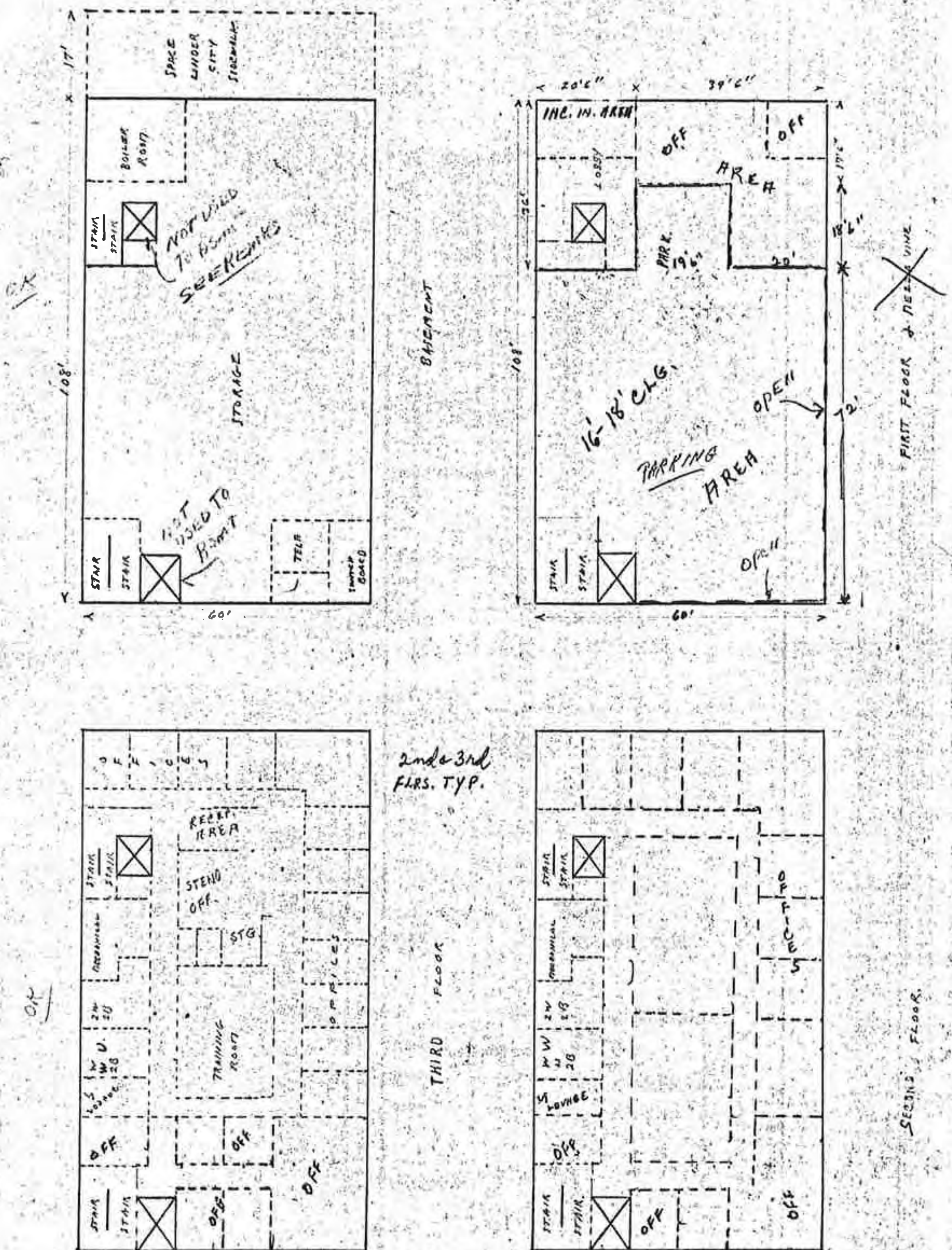
FOLIO 1747 ADDITION Dennys 1st

517 975 Section 30 Twp. 25 Range 4 Ewm. Block 94 Lot or Tract 14 Tax N 7 ft of 13

DATE 6-7-66 Tax Lot

ADDRESS 534 - Westlake Ave N

Fee Owner American National Ins Co.



Appendix G

TRANSPORTATION IMPACT ANALYSIS

heffron transportation inc

TECHNICAL MEMORANDUM

Project: Block 38W – 520 Westlake Avenue N
SDCI #3017466

Subject: Transportation Impact Analysis

Date: January 16, 2019

Author: Marni C. Heffron, P.E., P.T.O.E.
Michelle M. Brown, Senior Transportation Engineer

The Block 38W project would construct a new building on the half-block site bounded by Mercer Street on the north, Republican Street on the south, Westlake Avenue N on the west, and a north-south alley on the east. The site's location is shown on Figure 1 (attached).

This memorandum describes how the project is expected to affect various elements of the transportation system, including the roadway network, traffic operations, safety, non-motorized facilities, and transit. The study area for the analysis includes four intersections plus the alley connections in the near-site vicinity.

1. Project Description

The project proposes to construct a twelve-story building with approximately 314,300 square feet (sf) of office space plus 28,000 sf of street-level retail. A below-grade parking garage would have space for up to 342 cars. The project would rebuild the southern portion of the adjacent alley, which does not currently connect through to Republican Street due to a steep grade differential and presence of a former railroad trestle. A new ramp in the alley will be construction with about a 16% slope. With this rebuild, vehicles would be able to access and egress the alley from both Mercer and Republican Streets. The proposed site plan is shown on Figure 2 (attached).

The existing site is occupied by four buildings that have a mix of retail and commercial uses. In total, it is estimated that the existing site contains 45,271 sf of retail space (Guitar Center), 17,480-sf of restaurant space (Uptown Coffee and Blue Moon Burgers), and 30,080 sf of office space. There is also on-site parking (on top of the Guitar Center) for approximately 50 vehicles. These existing uses would be eliminated by the proposed project.

2. Roadway Network

This analysis evaluates traffic operations and the transportation system in the near-site vicinity. Analysis was performed for the following intersections:

- Mercer Street/Westlake Avenue N
- Republican Street/Westlake Avenue N
- Mercer Street/Terry Avenue N
- Mercer Street/Fairview Avenue N
- Mercer Street/Site Access Alley
- Republican Street/Site Access Alley

The study area street intersections are all signalized. Both alley intersections are unsignalized with implied stop-control for traffic exiting the alley.

Existing Roadways

The Block 38 Project site is located just north of downtown Seattle in the South Lake Union neighborhood. Mercer Street, on the north side of the site, is the primary east-west connection to Interstate 5 east of the site, and neighborhoods to the west of the site. It was completely rebuilt as part of the Mercer East project with new pavement, sidewalks, landscaping, a center median, and interconnected signals. Westlake Avenue N was reconfigured in 2016 to convert one general-purpose lane in each direction into a transit-only lane. In the northbound direction, the transit lane uses a signal priority jump to transition from the curb-side south of Harrison to the center (inside lane) when it crosses Republican Street. It stays in this lane through the Mercer Street intersection and then transitions back to the curb side. This feature provides for a north-bound right-turn-only lane from Westlake Avenue N onto Mercer Street.

In September 2016, the City Council unanimously approved reducing the speed limit on all streets in the City Center to 25 mph (arterials previously had a speed limit of 30 mph). The 25-mph speed limit now applies to all of the study area streets. Table 1 describes key roadways that serve the immediate site area.

Table 1. Study Area Roadways

Street	Classification(s) [1]	Lanes	Non-Motorized and Transit Characteristics
Mercer Street	Principal Arterial Minor Transit Street Major Truck Street	3 travel lanes in each direction with left-turn pockets at signalized intersections. On-street parking is allowed in some locations.	Sidewalks on both sides.
Westlake Avenue N	Principal Arterial Major Transit Street	1 general-purpose travel lane plus 1 transit lane each direction. Adjacent to the site, parking is prohibited on both sides of the roadway.	Sidewalks on both sides. Southbound streetcar track in the west lane from Valley Street to Olive Way; north-bound track in east lane south of Thomas Street. Bus stops every 2-3 blocks.
Republican Street	Minor Arterial	1 travel lane each direction. Adjacent to the site, parking is provided on both sides of the street.	Sidewalks on both sides.
Terry Avenue	Local Access	2 northbound travel lanes (including one for the streetcar) north of Denny Way, converging to one lane north of Republican St Parking on both sides.	Sidewalks on both sides. Northbound streetcar tracks north of Thomas Street.
Fairview Avenue N	Principal Arterial Minor Transit Street Minor Truck Street	5-6 lanes (including turn lanes) in segment between Valley Street and Republican Street. 1-2 travel lanes each direction south of Republican Street. No on-street parking between Re-publican and Valley Streets	Sidewalks on both sides. Bus stops every 2 blocks.

1. Sources: City of Seattle, Arterial Classification Map (2003), Transit Classification Map (2006), Major Truck Street Map (2003).

Future Roadway Network

Two additional projects are planned for the neighborhood that will further change traffic patterns and establish exclusive transit lanes on Fairview Avenue N. These are described below.

- **Alaskan Way Viaduct Replacement Project (SR 99 Bored Tunnel) –** The North Portal of the Bored Tunnel will be located west of Aurora Avenue N just north of Harrison Street. In addition to the new tunnel and ramps to and from South Lake Union, the project will re-establish three street crossings of Aurora Avenue N: at John Street, Thomas Street, and Harrison Street. This project is expected to substantially change existing neighborhood travel patterns by providing better access to and from SR 99, which would divert some traffic from I-5 to SR 99. It will also change where traffic enters and exits SR 99 and would provide more east-west connections across SR 99 than currently exist. The tunnel is currently scheduled to open in late Fall 2018 with the new grid of streets being completed before 2020.

- **Roosevelt RapidRide**– SDOT is planning to implement high-quality transit service through the Eastlake Avenue E/Fairview Avenue N corridor to connect the Roosevelt neighborhood to Downtown Seattle. This project was identified in the *Seattle Transit Master Plan*[1] and

[1] Amended and adopted, February 2016.

Move Seattle 10-Year Strategic Vision for Transportation[2]. In the summer of 2017, the City formally adopted the preferred alternative identified in the *Roosevelt RapidRide Project LPA Report.*[3] Many infrastructure changes, including transit-only lanes and signal enhancements were evaluated, and vary by segment of the corridor. In the segment of Fairview Avenue N north of Mercer Street, the project would widen the street into the adjacent public parking area and add transit-only lanes in both directions of travel and protected bicycle lanes.

The combination of these projects will dramatically affect how traffic arrives, departs, and circulates through the neighborhood, as well as future pedestrian, bicycle and transit routes. These routes are further described in the *Trip Distribution and Assignment* section under *Project Trips.*

As noted below, future transportation conditions were evaluated for the year 2030, which is similar to the future forecast year in the *South Lake Union Height and Density Alternatives Draft EIS*[4], as well as forecasts developed by WSDOT for the SR 99 project. All of the planned major infrastructure projects are expected to be completed prior to this year and were assumed as part of the future network for evaluating this project.

3. Project Trips

The number of trips generated by the Block 38W project was determined using the recommendations in the new *Trip Generation Handbook.*[5] ITE recognizes that development projects located in dense urban environments generate fewer trips that those in suburban settings. The new *Handbook* states:

> *Most data presented in the Trip Generation Manual data volumes are vehicle-based and have been collected at low-density, single-use, suburban developments with little or no transit service, limited bicycle access, and little or no convenient pedestrian access. These sites are called* ***baseline*** *sites because they are the starting points for vehicle trip generation estimation.*
>
> *The analysis needs to adjust baseline vehicle trip generation estimates to correctly estimate trip generation for a site*
> - *Surrounded by compact urban development;*
> - *Consisting of a mix of complementary land uses;*
> - *Served by public transit;*
> - *That attracts walking and bicycling trips;*
> - *That prices on-site parking; and*
> - *In an area with high vehicle occupancy as a result of an area-wide transportation demand management program or preferential treatment for ridesharing.*

All of the special attributes listed above apply to the Block 38W project; therefore, the following approach recommended in the *Trip Generation Handbook* was used to estimate trips for each mode of travel:

1. Estimate the baseline vehicle trips using data from the *Trip Generation Manual.*[6]

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2 Approved by voters, November 2015.
3 Seattle Department of Transportation and Nelson\Nygaard Consulting Associates, June 10, 2017.
4 City of Seattle Department of Planning and Development, February 2011.
5 Institute of Transportation Engineers, 3rd Edition, September2017.
6 Institute of Transportation Engineers [ITE], 10th Edition, 2017.

2. Convert the baseline vehicle trips to baseline person trips using baseline mode shares and vehicle occupancy for each land use (baseline vehicle occupancy rates are those inherent in the ITE rates).

3. Determine the appropriate mode of travel and vehicle occupancy for the subject site based on its characteristics and context.

4. Calculate person trips by mode of travel using the mode of travel factors for the site.

5. Convert the person trips by vehicle into adjusted vehicle trips using the vehicle occupancy for the site.

It should be noted that the 10^{th} edition of the *Trip Generation Manual*, released fall 2017, also provides rates and equations for direct calculation of person trips for some land uses. Since not all of the land uses currently provide this option, and more studies are included in the conversion process described above; the conversion process was used.

Baseline Trip Generation Factors

Table 2 summarizes the baseline trip generation rates, equations and average vehicle occupancy (AVO) factors used to estimate the proposed project's person trips.

Table 2. Basline Trip Generation Rates, Equations and AVO Assumptions

Land Use (ITE Land Use Code)	ITE Baseline Trip Generation Rates & Equations [a]	Baseline Average Vehicle Occupancy (AVO) Rates [b]		Baseline Vehicle Trip % [b]	
		Inbound	Outbound	Inbound	Outbound
General Office (710) –A location where affairs of business, commercial or industrial organizations or professional persons or firms are conducted.					
Daily	Ln(T) = 0.97Ln(X) + 2.50	1.09 [c]	1.07[c]	97% [c]	98% [c]
AM Peak Hour	T = 0.94 Ln(X) + 26.49	1.06	1.06	97%	90%
PM Peak Hour	Ln(T) = 0.95 Ln(X) + 0.36	1.11	1.07	96%	98%
Shopping Center Retail (820) – Group of commercial establishments that may include uses such as traditional retail stores, banks, post offices, recreational uses, and others. Because of the small size of the proposed retail, average rates were used.					
Daily	37.75 trips/1,000 sfgla	1.19 [c]	1.17 [c]	100% [c]	100% [c]
AM Peak Hour	0.94 trips/1,000 sfgla	1.17	1.16	100%	100%
PM Peak Hour	3.81 trips/1,000 sfgla	1.21	1.18	100%	100%
High-Turnover (Sit-Down) Restaurant (932) – This category consists of sit-down, full-service eating establishments with typical duration of stay of approximately one hour. They are usually moderately priced and belong to a chain. It would generate more trips than a quality restaurant and was selected to provide a conservatively high estimate of trips.					
Daily	112.18 trips/1,000 sfgla	1.52	1.52	100% [c]	100% [c]
AM Peak Hour	9.94 trips/1,000 sfgla	1.52[c]	1.52[c]	100%[c]	100%[c]
PM Peak Hour	9.77 trips/1,000 sfgla	1.33	1.34	100%	97%

a. *Source: Institute of Transportation Engineers (ITE) Trip Generation, 10^{th} Edition, 2017. T = number of trips, X = size of use in 1,000 square feet of gross floor area for office uses, and square feet of gross leasable area (sfgla) for commercial uses.*

b. *Based on data in ITE Trip Generation Handbook, 3^{rd} Edition; Tables B.1.and B.2, unless noted otherwise. Baseline vehicle trip % inherent less than 100% reflect trips made by walk and transit modes.*

c. *AVO rate and/or vehicle trip % not provided by ITE. Estimated by Heffron Transportation, Inc. based upon related rates.*

Internal Trips

In addition to trips to and from a site, the total number of trips generated by a mixed-use development includes "internal trips," or trips made between one use on the site and another use on the site. For example, a trip that an office worker makes at lunchtime to a local retail shop is calculated in the trip generation estimates for both the office and the retail uses. Chapter 6 of the *Trip Generation Handbook*[7] is devoted to estimating trip generation for multi-use developments and provides a methodology to estimate the number of internal trips that can be expected at specific types of sites. This method is based on the type and size of various land uses. The more balanced the mix of uses, the higher the percentage of internal trips. Developments with a predominance of one type of use (e.g., mostly office, or mostly residential) typically have lower percentages of internal trips.

ITE's methodology to determine internal trips has four steps:

1. Determine the number of person trips expected to be generated by each land use as if each was on a separate site.
2. Determine the number of internal trips based on internal capture rates presented in the *Trip Generation Handbook*.
3. Balance the number of internal trips to and from all land uses at the site.
4. Total the resulting number of internal trips and calculate the percentage of internal trips.

Person Trips

The estimated person trips generated by the Block 38W project are summarized in Table 3. This analysis assumed that about 50% of all of the commercial space could be occupied by high-turnover sit-down restaurants and that the restaurants would be open for both breakfast and dinner. This presents a conservatively high estimate of trips since this type of restaurant generates more trips than general retail or than a quality restaurant, and many restaurants in the South Lake Union neighborhood are only open for lunch.

Internal trips among the project is estimated to account for about 16% of the daily trips, 22% of the AM peak hour trips and 10.6% of the PM peak hour trips. The total number of person trips that would be external to this site is estimated at 5,490 per day, with 455 in the AM peak hour and 555in the PM peak hour.

Table 3. Total Person Trips Generated by Block 38W

Person Trip Summary	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Retail (LU 820)	14,000 sf	620	9	6	15	31	33	64
General Office (LU 710)	314,300 sf	3,550	306	50	356	60	312	372
High Turn Restaurant (LU 932)	14,000 sf	2,390	117	95	212	115	70	185
Total All Person Trips		6,560	432	151	583	206	415	621
Internal Trips		1,070	64	64	128	33	33	66
% Internal Trips		16.3%	22.0%			10.6%		
Total External Person Trips		5,490	368	87	455	173	382	555

Source: Heffron Transportation, Inc. July 2018. Trips estimated using procedures in the ITE Trip Generation Handbook, September 2017.

7 Institute of Transportation Engineers, 3rd Edition, September 2017.

Mode of Travel and Local Vehicle Occupancy

After the number of person trips was estimated, the person trips were separated by mode of travel based on the mode-split percentages appropriate for each type of use in the area. The resulting person trips made by vehicle were converted to vehicle trips using the locally-derived vehicle occupancy rate. These assumptions are described below for each land use type.

Office

Detailed travel demand modeling performed for the *South Lake Union EIS*[8] determined that automobile trips would represent about 51% of all trips. However, the new zoning requirements limit the parking ratio for commercial uses to one space per 1,000 sf, which would further reduce the percentage of office employees who can commute by personal vehicle to this site to 33%. As described later in the *Parking Impacts* section of this report, because of the limited commercial parking, the project would establish a Transportation Management Plan (TMP) with a goal that only 30% of the employees would commute by single-occupant vehicles (the other 3% of those who drive would be in carpools). This vehicle mode share (33%) was assumed for off-site traffic analyses. Pedestrian and bicycle trips were assumed to represent 27% of all office trips and transit trips were assumed to represent 40% of all office trips.

The average vehicle occupancy for local vehicle trips was derived from 'Journey-to-Work' survey results from the year *2010 Census* compiled by the PSRC. Data about number of vehicle occupants for employees in Transportation Analysis Zones (TAZs) 103, 106, 107, 108, and 109 (the zones including and surrounding the project site) were used. Currently the AVO for the South Lake Union neighborhood is 1.10 persons per vehicle.

Retail and Restaurants

Retail and restaurant uses that would occupy the commercial space are expected to attract the majority of customers from the neighborhood residents and employers. Some internal trips were assumed to come from the building's office employees. Of the external trips, it was assumed that 20% of the retail trips, including those by customers or employees, would be by private vehicle. A slightly higher vehicle share was assumed for the restaurant (30%) to account for customers who may drive to the neighborhood for the purpose of dining. Since no local AVO data are available for the retail and restaurant trips, they were assumed to be the same as the baseline AVOs.

8 *South Lake Union Height and Density Alternatives Draft EIS,* City of Seattle Department of Planning and Development, February 2011.

Table 4. **Person Trips** by Mode of Travel

Project Component and Type of Trip by Mode	% of Trips	Daily Trips	AM Peak Hour Trips In	AM Peak Hour Trips Out	AM Peak Hour Trips Total	PM Peak Hour Trips In	PM Peak Hour Trips Out	PM Peak Hour Trips Total
Retail								
Walk or Bicycle Trips	75%	330	4	2	6	10	16	26
Transit Trips	5%	20	0	0	0	1	1	2
Person Trips by Vehicle	20%	90	1	1	2	2	5	7
Total	100%	440	5	3	8	13	22	35
General Office								
Walk or Bicycle Trips	27%	860	74	5	79	15	84	99
Transit Trips	40%	1,270	110	8	118	23	123	146
Person Trips by Vehicle	33%	1,040	90	7	97	19	101	120
Total	100%	3,170	274	20	294	57	308	365
High Turnover Restaurant								
Walk or Bicycle Trips	65%	1,220	58	41	99	67	34	101
Transit Trips	5%	90	4	4	8	5	3	8
Person Trips by Vehicle	30%	570	27	19	46	31	15	46
Total	100%	1,880	89	64	153	103	52	155
Total Person Trips								
Walk or Bicycle Trips		2,410	136	48	184	92	134	226
Transit Trips		1,380	114	12	126	29	127	156
Person Trips by Vehicle		1,700	118	27	145	52	121	173
Total Person Trips		5,490	368	87	455	173	382	555

Source: Heffron Transportation, Inc., July 2018.

Vehicle Trips for Proposed Project

Vehicle trips were determined by applying the local AVO rates to the person trips generated by each land use. The total vehicle trips for the Block 38W project is summarized in Table 5. The cumulative trips generated by all the land uses is estimated at about 1,410 vehicle trips per day, with 121 during the AM peak hour and 149 during the PM peak hour.

Table 5. Vehicle Trips Generated by the Proposed Block 38W Project

Land Use	Assumed Size	Daily Vehicle Trips	AM Peak Hour Vehicle Trips			PM Peak Hour Vehicle Trips		
			In	Out	Total	In	Out	Total
Retail	14,000 sf	80	1	1	2	2	4	6
General Office	314,300 sf	950	82	6	88	17	92	109
High Turn Restaurant	14,000 sf	380	18	13	31	23	11	34
Total	342.300 sf	1,410	101	20	121	42	109	149

Source: Heffron Transportation, Inc. July 2018. Estimated using procedures in the ITE Trip Generation Handbook, 2017.

Existing Site Trips

The existing site is occupied by four buildings that have a mix of retail and commercial uses. In total, it is estimated that the existing site contains 45,271 sf of retail space (Guitar Center), 17,480-sf of restaurant space (Uptown Coffee and Blue Moon Burgers), and 30,080 sf of office space. Although the Guitar Center likely attracts a higher share of its customers from beyond the neighborhood and has ample on-site parking to accommodate them, the same local mode share (20% drive in trips) applied for the proposed project was assumed for this use. The two existing restaurants primarily cater to local neighborhood customers, so it was assumed that only 10% of the trips would be by vehicle (compared to 30% for the proposed project). For the existing office uses, the existing mode of travel for neighborhood employees derived from the *2010 Census* was used. Table 6 summarizes the vehicle trips generated by the existing buildings on the site.

Table 6. Vehicle Trips Generated by Existing Site Uses

Land Use	Assumed Size	Daily Vehicle Trips	AM Peak Hour Vehicle Trips			PM Peak Hour Vehicle Trips		
			In	Out	Total	In	Out	Total
Retail	45,271 sf	340	5	3	8	17	18	35
General Office	30,080 sf	210	30	5	35	4	20	24
High Turn Restaurant	17,480 sf	200	10	8	18	11	6	17
Total	92,831	750	45	16	61	32	44	76

Source: Heffron Transportation, Inc. July 2018. Estimated using procedures in the ITE Trip Generation Handbook, 2017.

Net Change in Site Vehicle Trips

The net change in vehicle trips is summarized in Table 7. As shown, the proposed project is anticipated to generate 660 net new vehicle trips per day, with 60 net new vehicle trips during the AM peak hour, and 73 net new vehicle trips during the PM peak hour.

Table 7. Net Change in **Vehicle Trips** Generated by the Proposed Project

Land Use	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Proposed Project	1,410	101	20	121	42	107	149
Existing Uses	-750	-45	-16	-61	-32	-44	-76
Net Change	660	56	4	60	10	63	73

Source: Heffron Transportation, Inc., July 2018.

Trip Distribution and Assignment

The vehicle trip distribution pattern for this project is from the *South Lake Union EIS.*[9] The pattern for external vehicle trips is summarized in Table 8.

Table 8. Trip Distribution Pattern – PM Peak Hour

Travel Route	% Trips
North via SR 99	13%
North via I-5 (including SR 520)	18%
South via I-5	7%
South via SR 99	4%
Downtown	16%
Belltown/Waterfront	7%
Neighborhoods west of site (Queen Anne, Magnolia, Ballard, etc.)	13%
Neighborhoods east of site (Capitol Hill, Madison Park, First Hill, etc.)	22%
Total Trips	100%

Source: South Lake Union Height and Density Alternatives Draft EIS; *City of Seattle Department of Planning and Development, February 2011; Page 3.13-55.*

9 *South Lake Union Height and Density Alternatives Draft EIS,* City of Seattle Department of Planning and Development, February 2011. Page 3.13-55.

Travel patterns in the site vicinity will be affected by future improvements that are now under construction in the neighborhood. This includes the Mercer Corridor and Alaska Way Viaduct Replacement projects described previously. Access to and across SR 99 will be changed. Three new crossings of SR 99 (Aurora Avenue N) will be provided in the future—at John Street, Thomas Street, and Harrison Street. Traffic exiting SR 99 northbound would use the new ramp at Republican Street. Traffic exiting SR 99 southbound or entering northbound SR 99 would use the new ramps at Harrison Street, and traffic destined to the south on SR 99 would likely cross Aurora Avenue on Harrison Street and use the new ramp at Republican Street.

The net change in project trips was assigned to the roadway system based on the future roadway configuration. Figure 3 (attached) shows the project trip assignment for both the AM and PM peak hours.

4. Future Traffic Volumes

Traffic operations analysis for the Block 38W project was performed for year 2030 conditions. As previously described, substantial roadway network changes are being made in the South Lake Union neighborhood that will affect traffic patterns throughout the neighborhood. This includes the new ramp connections to and from SR 99 as well as by new street grid across Aurora Avenue N.

The 2030 traffic volume forecasts were developed for the nearby *Lakefront Blocks Transportation Impact Analysis,*[10] which encompassed four sites on the north side of Mercer Street between Westlake Avenue N and Fairview Avenue N. The forecasts were developed by comparing extensive pipeline project growth with forecasts from several WSDOT's *Dynamic Traffic Assignment modeling tool (DTA Model)*, which was developed to assess traffic diversions associated with alternative tolling scenarios. The future without-project volumes for the Block 38 project includes all of the trips generated by the Lakefront project. The future (2030) traffic volumes without the proposed project are shown on Figure 4 for the AM peak hour and Figure 5 for the PM peak hour (attached).

5. Traffic Operational Impacts

Level of service (LOS) analysis was performed for the study area intersections for both the AM and PM peak hours. Level of service is a qualitative measure used to characterize traffic operating conditions. Six letter designations, "A" through "F," are used to define level of service. LOS A is the best and represents good traffic operations with little or no delay to motorists. LOS F is the worst and indicates poor traffic operations with long delays.

Levels of service for the study area intersections were analyzed using a Synchro 10.1 traffic operations model and methodologies presented in the *Highway Capacity Manual*[11] Traffic models originally developed by Seattle Department of Transportation (SDOT) for the Mercer Corridor project were extended west to account for the Mercer West project and SR 99 North Surface Project improvements and were then amended to account for the Westlake Avenue Transit Lanes and future Roosevelt RapidRide project along Fairview Avenue N. Signal timings at all intersections were optimized to account for the Mercer Corridor Adaptive Signal Control system and the likely extension of this system to other intersections along Denny Way and between Mercer Street and Denny Way.

Levels of service are reported using the *Synchro* module for signalized intersections and the *HCM Sixth Edition* module for unsignalized alley intersections. Table 9 shows the results of the analysis for the AM and PM peak hour conditions without and with the proposed project.

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10 Heffron Transportation, Inc., *Transportation Impact Analysis for the Lakefront Blocks (Block 37 – 971 Valley Street; Block 31 – 625 Boren Avenue N; Block 25W - 630 Boren Avenue N; and Block 25E – 609 Fairview Avenue N), December 5, 2016.*

11 Transportation Research Board, 6th Edition, 2016.

Table 9. Level of Service Summary – 2030 Without- and With-Project Conditions

	AM Peak Hour Conditions				PM Peak Hour Conditions			
	w/o Project		w/ Project		w/o Project		w/ Project	
Intersection	LOS [1]	Delay [2]	LOS	Delay	LOS	Delay	LOS	Delay
Signalized								
Mercer Street/Westlake Avenue N	F	80.6	F	82.1	F	94.7	F	92.4
Mercer Street/Terry Avenue N	C	26.1	C	29.5	B	15.9	B	15.9
Mercer Street/Fairview Avenue N	F	123.2	F	125.0	F	150.6	F	151.5
Republican Street/Westlake Avenue N	C	24.4	C	28.8	F	80.3	F	81.7
Two-Way Stop Controlled	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Site Access Alley / Mercer Street								
Turns from northbound alley	E	39.1	F	40.9	D	25.8	D	30.0
Site Access Alley / Republican Street								
Turns from southbound alley	NA [3]		B	10.1	NA		B	11.5
Turns from northbound alley	B	11.1	B	12.7	B	11.9	B	14.0

Source: Heffron Transportation, Inc., July 2018.
1. *Level of service.*
2. *Average seconds of delay per vehicle.*
3. *Not applicable – alley not used by vehicles.*

As shown above the intersections along Mercer Street at Westlake Avenue and Fairview Avenue are shown to operate at LOS F during both the AM and PM peak hours without or with the proposed project in 2030. The project-generated traffic would add less than five seconds of delay to each of these locations during peak hours and no mitigation is recommended.

6. Site Access and Truck Loading

The existing alley on the east side of the site currently connects only to Mercer Street. The project proposes to construct a structural ramp that will connect the existing alley to Republican Street. This connection would allow vehicles to enter or exit on-site parking from either Mercer Street or Republican Street.

The project would be required to provide five truck loading berths for a "low demand" office use. The project will request a code exception to reduce the length of four of the five four berths from 35-feet to 25-feet in length.

Research performed in partnership between SDOT and the University of Washington identified three key features of delivery infrastructure which contribute to operational effectiveness, which can help predict efficient use of loading dock space. These features are location, design, and capacity. The resulting report, *The Final 50 Feet,*[12] focused on building-specific processes contributing to dwell time and failed deliveries at each of the study environments, but it did not provide useful data to describe current utilization of existing infrastructure. The potential demand and dwell times for the project were estimating using information in the *Block 18 Transportation Impact Analysis,*[13] , which was based on full week counts at seven loading docks in the South Lake Union and Denny Triangle neighborhoods. Based on those findings:

- The proposed Block 38 building would generate about 26 visits to the loading dock on an average day and 31 visits on a peak day.
- The maximum occupancy was determined to be 8% of the peak day's trips, or three vehicles.
- Ninety-six percent (96%) of all vehicles in the loading dock are by medium size trucks or smaller. These would fit into the 25-foot loading bay.
- Larger trucks are often related to equipment deliveries that can be scheduled.
- Most vehicles (nearly 70%) occupied the loading docks for less than 30 minutes. The median length of stay was 17 minutes. This is within the range of the findings for a prototype office tower in *The Final 50 Feet*, where vehicles dwelled for an average for 24 minutes.

Given that, five loading berths would be sufficient to accommodate the estimated demand. Trucks longer than 25 feet should be scheduled to occur during off peak times. Efficient interior building operations facilitating goods delivery can further support maximum utilization of the four berths.

7. Parking

The project proposes to provide up to approximately 340 parking spaces. Parking demand for the office space was derived using national parking demand data for office buildings and the expected mode of travel for South Lake Union. The parking demand data are from *Parking Generation.*[14] For the purpose of this analysis, average parking demand rates for a "Suburban Office" were used since no data are provided to determine the mode of travel associated with the "Urban Office" land use. The suburban

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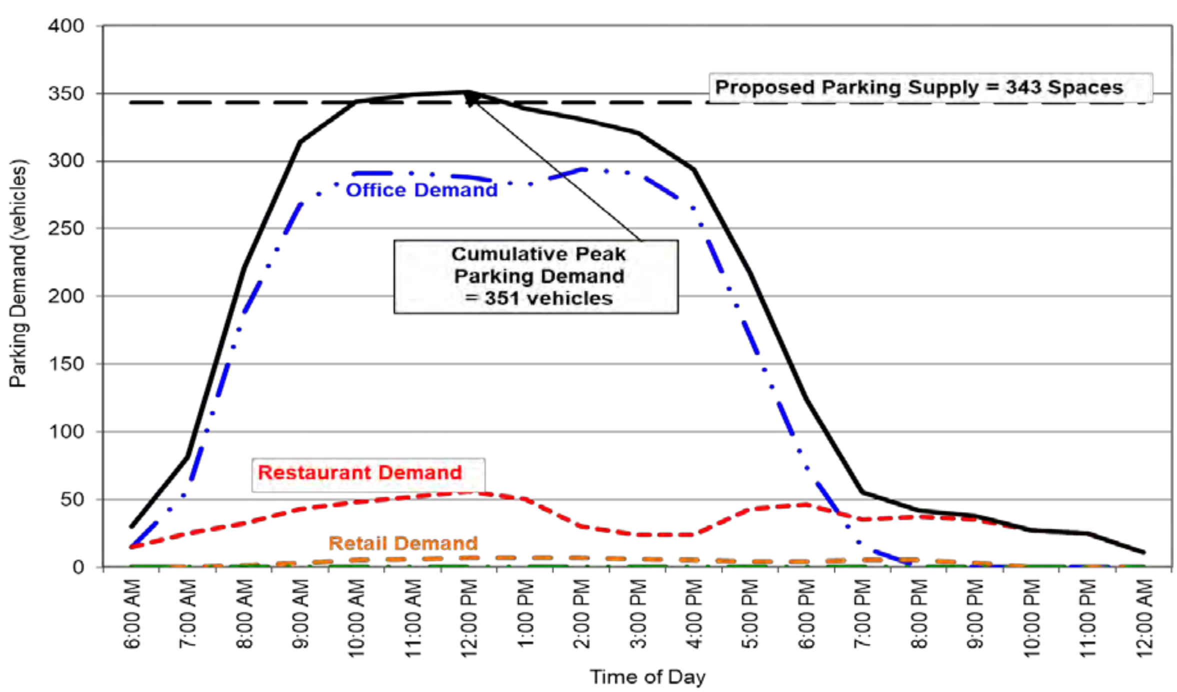
12 University of Washington, Supply Chain Transportation & Logistics Center, 2018.
13 Heffron Transportation, Inc. *Block 18 at 2205 7th Avenue (SDCI Project # 3026858) Transportation Technical Report,* February 2018.
14 Institute of Transportation Engineer, 4th Edition, 2010.

parking demand rate is 2.84 vehicles per 1,000 sf and is likely to be associated with limited transit and walk/bike modes of travel. The *South Lake Union EIS* predicted that 51% of the employee trips would be made by vehicle (including single-occupant vehicles and carpools). At this mode of travel rate, the peak weekday parking demand for the office portion would be over 500 vehicles at about noon. To mitigate traffic impacts of the rezone, the *South Lake Union EIS* recommended and the City adopted a parking supply limit of 1 space per 1,000 sf, which is intended to force more commuters to use alternative modes of travel. In order to fit into the proposed supply for office, the project would need to reduce the percentage of commuters who drive and park to 33% (assuming 30% single-occupant vehicles and 3% carpool).

Parking demand rates for the retail and restaurant uses were estimated using ITE rates for general retail and a high-turnover-sit-down restaurant, and adjusting them to the assumed vehicle-use rate for customers and employees, consistent with the trip generation estimates. The adjusted peak demand rates are about 4.0 spaces per 1,000 sf for the restaurant and about 0.8 spaces per 1,000 sf for the retail. The peak demand for the restaurant use is expected to occur at lunch and dinner periods, while the peak for retail would occur midday.

Figure 8 shows the parking demand for each use by time of day. This shows that the cumulative peak demand would be approximately 351 vehicles, which would nearly be accommodated by the on-site supply. The potential overspill of 8 vehicles is expected during the midday peak due to restaurant demand, and could be accommodated by on-street parking. Even if space is available in the garage, many customers and office visitors may choose to park on street.

Figure 8. Cumulative Parking Demand with Office TMP



Source: Heffron Transportation, Inc., July 2018.

As previously discussed, in order to achieve this condition, the project would need to adopt a Transportation Management Plan with a goal of reducing single-occupant-vehicle use for office employees to 30% of all commute trips. With that mitigation measure, no adverse impacts to parking are expected.

The parking analysis is consistent with the findings in the *South Lake Union EIS*, which was the basis for the new maximum parking supply rates in the Land Use Code. The EIS predicted that a limited parking supply would cause some travelers to change modes.

Displaced Parking

The project would eliminate parking for approximately 50 vehicles from the roof of the Guitar Center building. This lot is currently available for public parking at a fee. However, the project would also eliminate existing uses on the block that generate existing parking demand. Therefore, removal of this parking is not expected to adversely affect other parking in the neighborhood.

On-Street Parking

On-street parking along the north curb of Republican Street would be eliminated to accommodate the future Center City Connector Streetcar turnaround facility. There is no on-street parking adjacent to the site on Westlake Avenue N. There are approximately four on-street parking spaces along Mercer Street that have a 10-hour parking limit. These spaces would not be affected, although it is recommended that the 10-hour limit be changed to a 2-hour limit to better accommodate short-term parking associated with neighborhood commercial uses that have increased since the parking on Mercer Street was originally created as part of the Mercer East project.

8. Traffic Safety

Collision data obtained from SDOT for the study intersections were assessed to determine if there are any traffic safety conditions that could impact or be impacted by the proposed project. Historically, unsignalized intersections with five or more collisions per year and signalized intersections with 10 or more collisions per year have been considered high collision locations by the City. The City data reflecting the period between January 1, 2015 and July 4, 2018 are summarized in Table 10.

None of the intersections averaged more than ten collisions per year. Overall, sideswipe and right-angle collisions at the three Mercer Street intersections closest to Interstate 5 were the most prevalent types of collisions, which are related to the merging and weaving movements that occur in this segment. There were also seven collisions related to pedestrians or bicyclists; three of these were at the Mercer Street/Terry Avenue N intersection. It is noted that no fatalities were reported at any of the study area intersections during the study period.

Table 10. Historical Collision Summary - Study Area Intersections

	Collision Type								
	Rear -End	Side-Swipe	Right Turn	Left Turn	Right Angle	Ped/ Cycle	Other [a]	Total for 3.5 Years	Average/ Year
Mercer St / Fairview Ave N	3	4	0	1	4	2	5	19	5.4
Mercer St South Roadway / Fair-view Ave N [b]	0	3	0	3	2	1	0	9	2.6
Mercer St / Westlake Ave N	1	2	0			0	1	13	3.7
Mercer St / Terry Ave N	1	1	1	0	1	3	1	7	2.0
Republican St/Westlake Ave N	0	3	0	0	1	0	0	4	1.1
Republican St/Terry Ave N	0	0	0	0	0	1	0	1	0.3

Source: City of Seattle Department of Transportation. Data reflecting the period between January 1, 2015 and July 4, 2018. Sorted by number of collisions.

a. *Other collision types include no diagram available, vehicle hit an object, and vehicle hit streetcar.*

b. *Unsignalized intersection located just south of the off-ramp. Mercer Street is one-way eastbound at this location.*

The proposed project would add traffic to the surrounding street network which could increase the potential for conflicts. Collision occurrences adjacent to the site do not indicate a safety condition exists. The *South Lake Union EIS* stated, "…while it is likely that the total number of vehicle collisions will increase proportionally with the increase in traffic in the South Lake Union area, there is nothing to suggest that the volume-based rate of vehicle-to-vehicle collisions will increase with the implementation of the height and density alternatives. Therefore, no significant traffic safety impacts are anticipated." The area-wide safety impacts of the proposed project would be similar to this finding.

9. Non-Motorized Transportation Facilities

All roadways in the immediate site vicinity have sidewalks on both sides of the street. The project will rebuild the sidewalk and add landscaping along its Westlake Avenue N and Republican Street frontages; the completed pedestrian facilities along Mercer Street will remain.

The proposed project is expected to generate approximately 3,790 pedestrian, bicycle and transit trips per day, the latter of which would also be walking trips to nearby bus or streetcar stops. Of these, about 310 would occur in the AM peak hour and 380 would occur in the PM peak hour. This reflects a net increase of about 75 non-motorized trips during the PM peak hour compared to those generated by the site's existing uses. This volume of pedestrian trips would be accommodated by the proposed sidewalk widths adjacent to the site and in the broader neighborhood. Therefore, no adverse impacts to non-motorized facilities are expected to result from the project.

The project would provide at least 108 bicycle parking stalls. The project would also provide on-site showers and lockers for employees who commute to the site by bicycle.

10. Transit

The site vicinity is primarily served by King County Metro (Metro) public bus transportation. Westlake Avenue N adjacent to the site is used by the South Lake Union Streetcar, Routes 40 (Fremont, Ballard and Crown Hill) and 62 (Wallingford, Ravenna and Sand Point), and the RapidRide C Line (West Seattle). Major bus stops are provided in the northbound direction at Harrison Street and Valley Street and in the southbound direction just south of Mercer Street (across from the site). These routes provide frequent all-day service.

Routes that have stops walking distance to the site include #8 (Lower Queen Anne, Capitol Hill, Madison Valley, Rainier Valley), #26 (Green Lake, Downtown), #28 (Whittier Heights, Downtown), and #70 (University District, Downtown). Additional routes can be accessed within about one-half mile of the site, including Community Transit and Sound transit routes, providing service to and from regional destinations in all directions.

The South Lake Union Streetcar provides service between South Lake Union and Downtown. The streetcar operates northbound on Terry Avenue N and southbound on Westlake Avenue N. There are stops located within one block of the site in both directions. The streetcar operates seven days a week (Monday-Thursday 6:00 A.M. to 9:00 P.M., Friday-Saturday 6:00 A.M. to 11:00 P.M., and Sunday 10:00 A.M. to 7:00 P.M.) at 15-minute headways (time between consecutive arrivals) during all hours of operation.

The proposed project is expected to generate an estimated 1,380 transit trips per day, of which between 125 and 155 are expected to occur during each of the peak hours. The existing uses on the site are estimated to generate about 340 transit trips per day and 30 transit trips during the peak hours. Analysis performed for the *Transportation Technical Report for the Lakefront Blocks (971 Valley Street, 625 Boren Avenue N, 630 Boren Avenue N, and 609 Fairview Avenue N)*[15] determined that recent transit improvements made in the neighborhood have increased available transit capacity. During the four-hour peak periods, it is estimated that the transit routes serving the South Lake Union neighborhood have a passenger capacity of more than 24,000 people in the morning (5:00 A.M. to 9:00 P.M.) and more than 31,000 people in the afternoon (3:00 P.M. to 7:00 P.M.). King County Metro continues to evaluate service needs in the neighborhood. Overall, the proposed Block 38 project is not expected to adversely affect transit operations.

The project would create a new alley connection to Republican Street, which is where the northern turnaround for the Center City Streetcar is proposed. Streetcar tracks would be added to westbound Republican Street. The Streetcar project is currently on hold; if it is restarted, the project would coordinate its frontage design with the streetcar needs through the City's Street Improvement Permit process.

11. Transportation Concurrency

The City of Seattle developed a Transportation Concurrency policy as part of its *Comprehensive Plan*,[16] which was updated with the more recent *Director's Rule 5-2009*. Within the transportation concurrency policy, the City has defined 30 screenlines, each of which encompasses one or more arterials in the city. Screenline analysis is a transportation-planning tool that groups key arterials of a transportation network together to measure the operating conditions of a corridor. For example, the Ship Canal functions as a screenline to measure north-south travel north of downtown Seattle. The City has established a level of service standard for each screenline, which is measured by the volume-to-capacity ratio (v/c). The pro-

15 Heffron Transportation, Inc., December 5, 2016.
16 City of Seattle, 1994.

ject passes concurrency if the v/c ratio with the addition of a proposed project's traffic is lower than or equal to the level of service standard for the screenline.

Three screenlines were evaluated for the project, the Ship Canal/Aurora Ave N (Screenline 5.13), the Ship Canal/University/Montlake Bridges (Screenline 5.16), and South of Lake Union (Screenline 8.00). The most recent official measurements of the screenline capacities were performed in 2008. The level of service standards and the v/c ratios are presented in Table 11.

The net change in the project trips was added to the 2008 City traffic counts. With the project, the v/c ratios for the screenlines evaluated would remain below the established level of service standards. Therefore, transportation concurrency would be met for this project.

Table 11. Level of Service Screenlines – With Proposed Project

Screenline Number	Location	Direction	2008 Capacity	2008 Traffic Count [a]	Project Trips [b]	Total Volume across screenline	With Project v/c ratio [c]	Level of Service Standard [d]
5.13	Ship Canal/ Aurora Avenue N	NB	5,100	4,472	8	4,480	0.88	1.20
5.13	Ship Canal/ Aurora Avenue N	SB	5,100	3,756	2	3,758	0.74	1.20
5.16	Ship Canal/University/ Montlake Bridges	NB	4,030	3,833	11	3,844	0.95	1.20
5.16	Ship Canal/University/ Montlake Bridges	SB	4,070	3,571	2	3,573	0.88	1.20
8.00	South of Lake Union	EB	6,000	4,509	26	4,535	0.76	1.20
8.00	South of Lake Union	WB	3,600	3,020	4	3,024	0.84	1.20

Source: City of Seattle DPD Director's Rule 5-2009, Approved 4/10/09 (Attachment C).

a. Data reflect most recent official measurement of screenline volumes and capacities from 2008.

b. Derived using the trip origin and destination matrices provided by the City.

c. v/c = volume-to-capacity ratio. It equals the 2008 traffic count+ project trips, divided by the 2008 capacity.

d. Level of service standard, reported as a v/c ratio, which was established by the City of Seattle Ordinance #117383.

12. Construction Traffic Impacts

For most urban projects, the most noticeable construction-related traffic impacts are likely to occur during demolition of existing uses and major earthwork stages. The amount of material to be excavated from the site is estimated to be about 46,000 cubic yards. This material is assumed to expand to about 60,000 cubic yards when it is excavated and loaded into a truck ("fluff" factor of 1.3). The excavation and shoring elements are expected to take approximately 75 working days. Assuming that each dump truck with trailer can carry about 20 cubic yards of material, the excavation would generate an average of 40 truckloads per day, and an average of 5 truckloads per hour. Peak days could generate up to 15 truckloads per hour, which would relate to 30 truck trips per hour (15 empty trucks to the site, and 15 full trucks leaving the site). The contractor would not likely generate truck traffic during the PM peak period from 4:00 to 6:00 P.M., and may consider exporting some materials during overnight hours.

Other materials, such as steel, lumber, and other building supplies, are expected to be trucked to the site as needed, but deliveries would not typically be grouped in time as they would during the excavation phase of a project. Construction employees would also generate traffic and parking demand, but this volume would be much less than the site would generate when occupied.

Staging areas for loading/unloading materials are likely to be created along the site's frontages on Westlake Avenue N and Republican Street. Full-time closure of the sidewalks and temporary closure of travel lanes along each frontage would likely occur during construction. Use of this lane and sidewalk would require approval by SDOT and payment of necessary fees.

The project site is subject to the City's *Construction Hub Coordination Program*.[17] This program was developed to provide additional pre-construction planning, and then to respond to and resolve construction-related impacts that may be created by multiple public and private projects in the same vicinity. Program requirements that will need to be met by the contractor are described later in the Mitigation section of this report.

13. Summary and Mitigation

The project proposes would construct a twelve-story building with approximately 314,200 sf of office space plus about 28,000 sf of street-level retail. A below-grade parking garage would have space for up to approximately 340 cars. The project would rebuild the southern portion of the adjacent alley, which does not currently connect through to Republican Street due to a steep grade differential and presence of a former railroad trestle. The new ramp in the alley would allow vehicles to access and egress the alley from both Mercer and Republican Streets. The proposed project is anticipated to generate 660 net daily vehicle trips with a net 60 AM peak hour and 73 net PM peak hour trips. This additional traffic would not adversely affect traffic operations or other elements of the transportation system in the site vicinity.

The proposed project would construct frontage improvements along Westlake Avenue N and Republican Street. Based on the results of this analysis, the project would not have any significant adverse impacts to transportation.

Construction Mitigation

SDOT has designated the South Lake Union Neighborhood as a Construction Hub within the City's Construction Hub Coordination Program. This program was developed to provide additional pre-construction planning, and then to respond to and resolve construction-related impacts that may be created by multiple public and private projects in the same vicinity.

Prior to beginning work in the SDOT right-of-way, the contractor will be required to submit the following information to SDOT for review and approval of necessary permits:

- Haul Route Plan
- Project schedule by phase and by frontage (in SDOT's template spreadsheet)
- Traffic control plan for work on an arterial street or within high impact area.

[17] Seattle Department of Transportation, *Construction Hub Coordination Program Brochure*, July 2014, and SDOT website at http://www.seattle.gov/transportation/hubRequirements.htm, accessed November 14, 2014.

- Pedestrian Mobility Plan noting how construction methods would comply with Director's Rule 1-2011 by frontage and by phase.
- Confirmation of project information outreach to businesses, residents and stakeholders within a one block radius of the project.
- Confirmation of notification of construction impacts to businesses, residents and stakeholders within a one-block radius of the project at least 72 hours prior to beginning work.

Transportation Management Plan

The Transportation Management Plan (TMP) would be enacted consistent with the City of Seattle's Director's Rule (DPD Director's Rule 27-2015). The goal for this TMP should be to reduce commute trips by employees of the project's office tenants such that no more than 30% of all commute trips are by single-occupant vehicle. This goal would reduce office trips associated with the project and would eliminate parking overspill. It would also reduce vehicle trips generated by the site.

Transportation Mitigation Payment

The City of Seattle has established a transportation mitigation payment system for development in and around the South Lake Union neighborhood. Mitigation payments help fund planned transportation improvements identified in the South Lake Union Transportation Plan. The Plan identifies improvements to automobile infrastructure, bicycle facilities, pedestrian walkways, and transit facilities. The mitigation payment system requests the voluntary payment of a pro-rata fee, based on either the established rates for the proposed land uses, OR, the assignment of project traffic to the future street system with the identified transportation improvement projects in place. The impact fee rates are outlined in the City's Tip #243 (previously identified as *Client Assistance Memorandum (CAM) #243)*.[18]

The mitigation payment rates for this project would be $1.95 per square foot for the proposed office, retail, and restaurant space, minus $1.95 for the existing retail, office and restaurant space. However, due to the location of the proposed site in relation to main commuting travel routes, many of the planned improvements would not be impacted by traffic associated with the Block 38W project. Therefore, the City allows applicants to determine the appropriate fee based on proportionate share calculations for the planned transportation projects. The pro-rata share mitigation calculation spreadsheet developed by the City allocates costs of each transportation project based on the number of project trips generated on those facilities. A pro-rata share for the South Lake Union Streetcar project is not included since the project site is within the Local Improvement District (LID) boundary for that improvement project, and will pay its share of the streetcar through the LID. A summary of the detailed calculations for each project listed by the City for this area is provided in Appendix B.

Table 12 outlines the pro-rata share contributions for the project, which would result in a fee of $64,982.

18 City of Seattle, DPD, Updated October 4, 2012.

Table 12. Block 38W Project – Pro-Rata Share Contributions in South Lake Union

City of Seattle Capital Improvements/Locations	Pro-Rata Share Contribution
Auto Traffic Projects	
Two-Way Mercer/Narrow Valley Concept	$33,088
Mercer/Fairview/I-5 Ramps	$2,872
Thomas St. East of Aurora	$1,315
Two-Way 9th Avenue and Westlake Avenue	$8,464
Signal at Eastlake Ave / Republican St	$7,544
Transit Projects	
Construct SLU Streetcar [a]	$0
Transit Signal Priority (TSP) on Fairview Avenue at Denny Way	$416
TSP at Fairview Avenue at Mercer Street	$308
Install bus shelters	$10,975
Pro-Rata Contribution Total	$64,982

Source: Based on PM peak hour information from the South Lake Union Transportation Study, and The Transpo Group. Data for the Block 38W Project by Heffron Transportation, Inc., 2018.

a. No pro-rate share funds included for the SLU Streetcar since the subject site is located within the Local Improvement District (LID) boundary for that project.

Attachments:
Figure 1 – Vicinity Map
Figure 2 – Site Plan
Figure 3 – Project Trip Assignment (AM and PM Peak Hours)
Figure 4 – Future (2030) Without-Project AM Peak Hour Traffic Volumes
Figure 5 – Future (2030) Without-Project PM Peak Hour Traffic Volumes
Appendix A –Pro-Rata Share Calculations

BLOCK 38W

Figure 1

Vicinity Map

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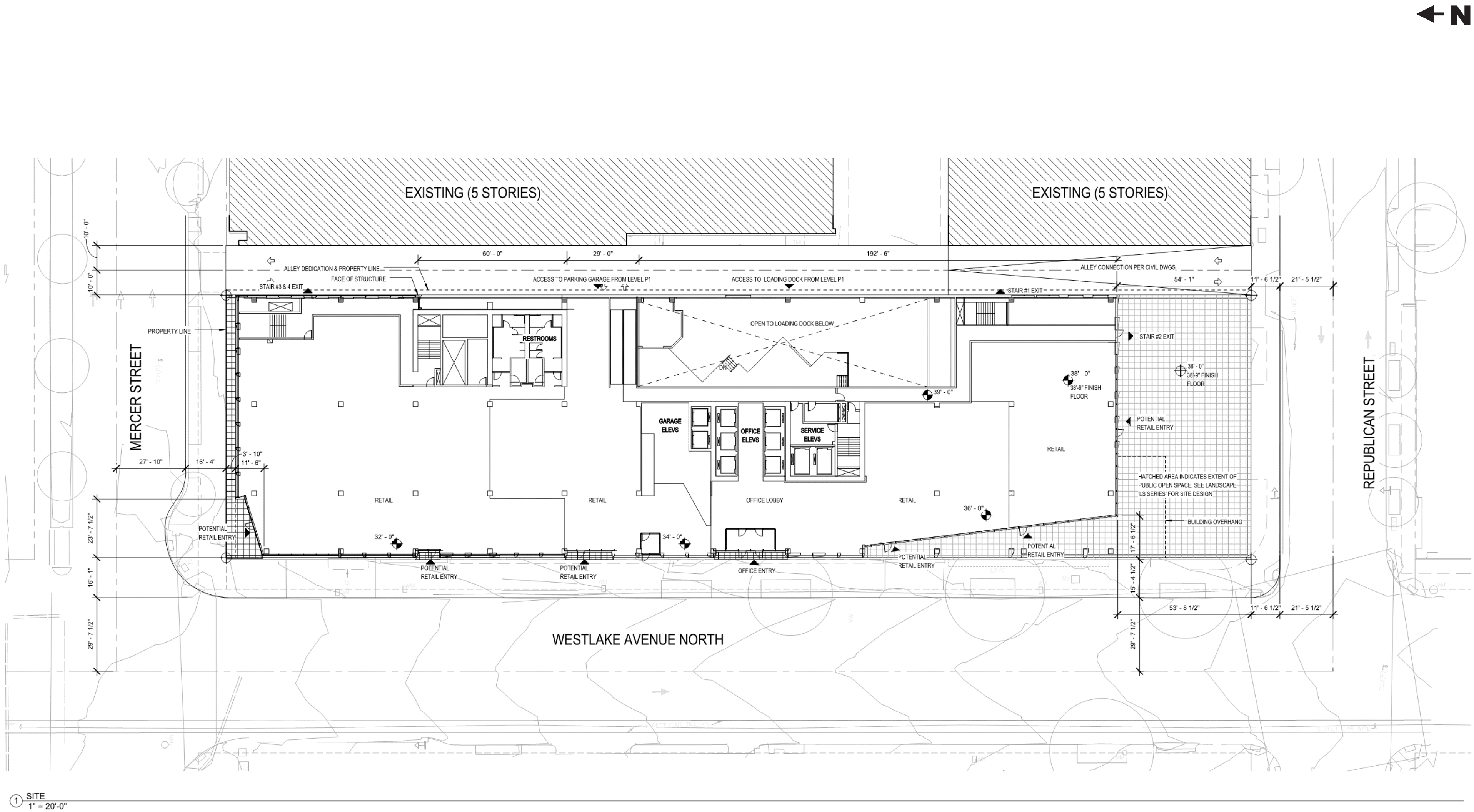


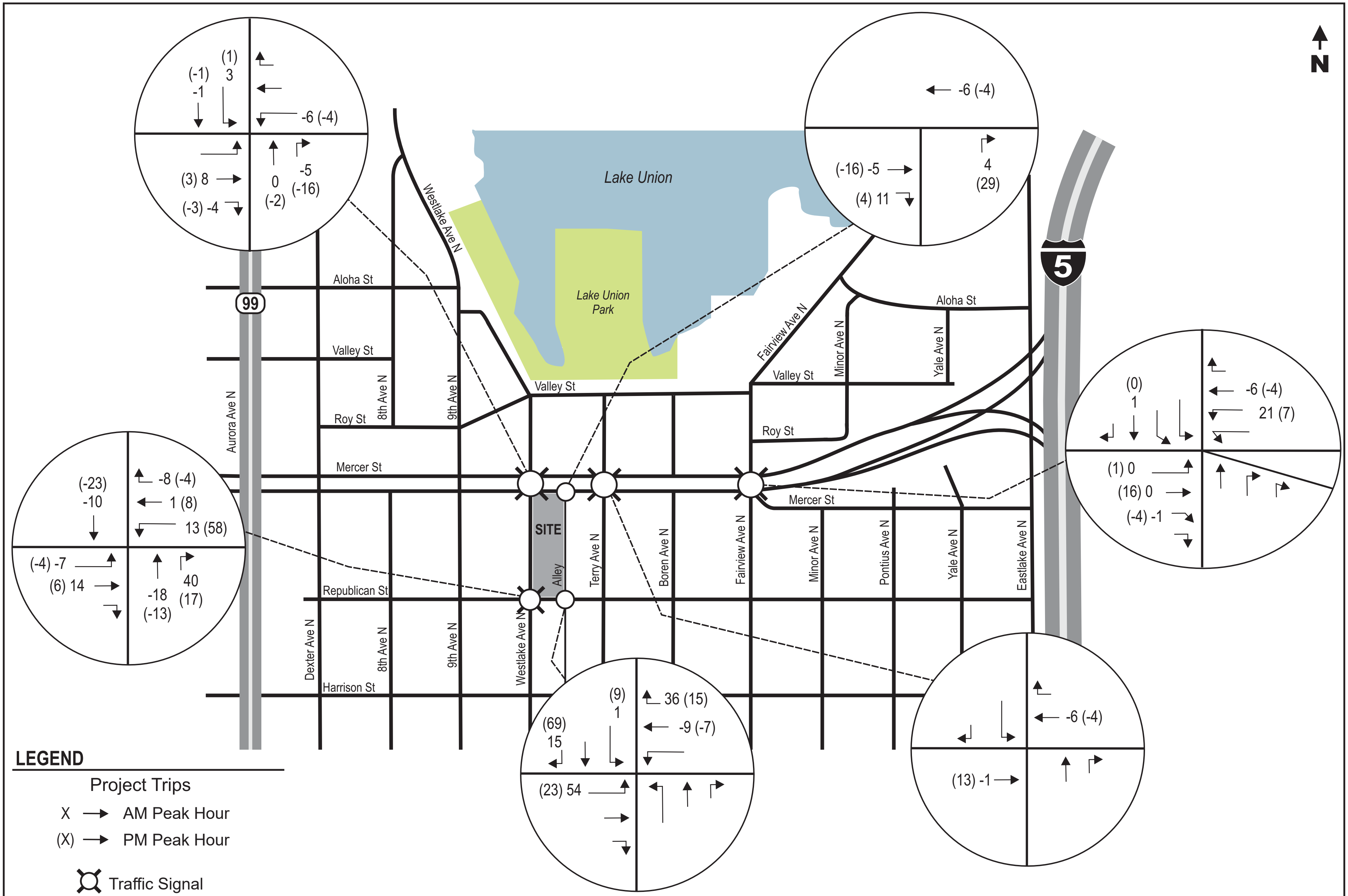
Source: NBBJ, August 2018

BLOCK 38W

Figure 2

Site Plan

heffron transportation inc



BLOCK 38W

Figure 3
Net Project Trip Assignment
AM and PM Peak Hours

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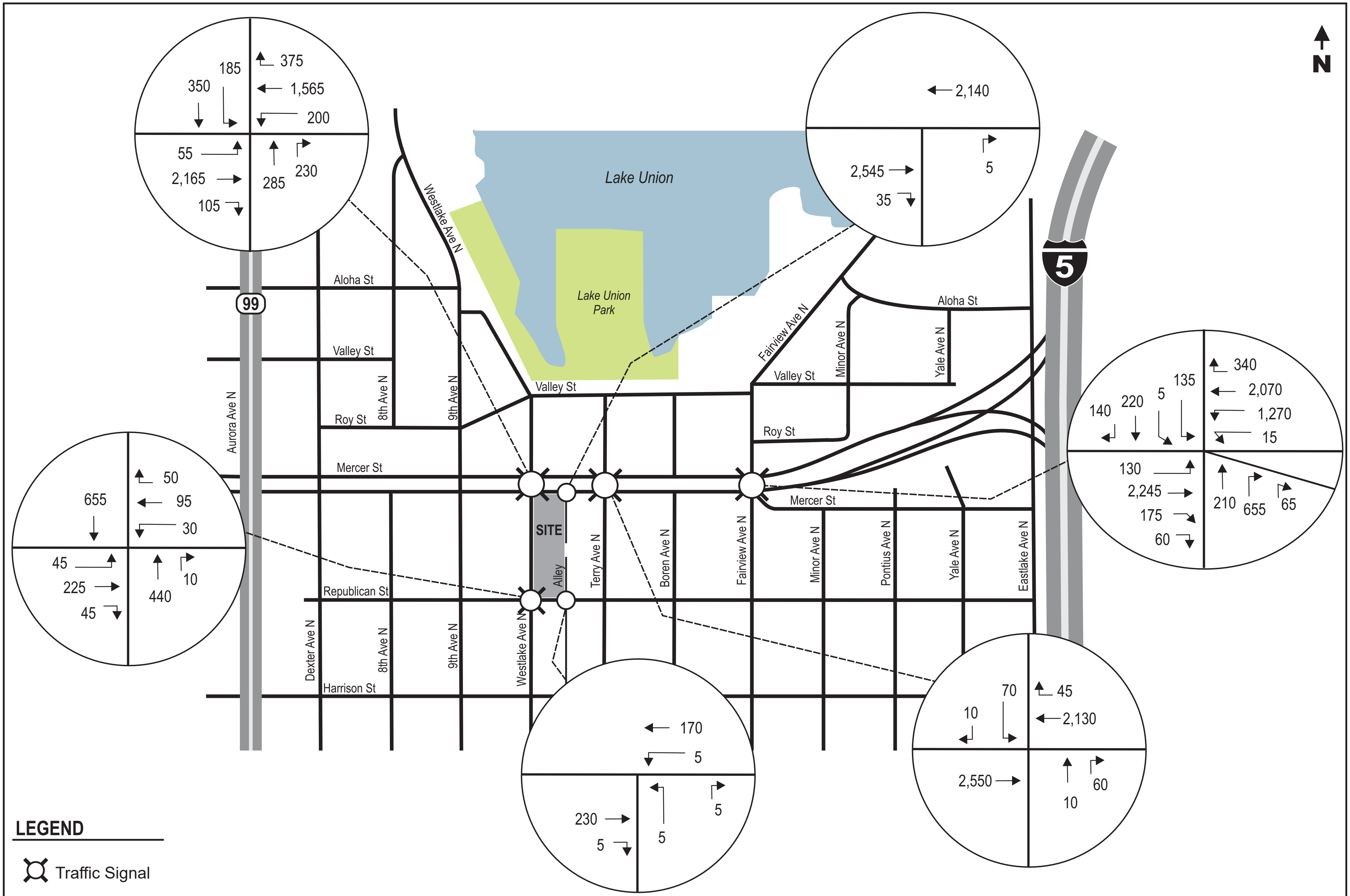

BLOCK 38W

Figure 4

Future (2030) Without-Project Traffic Volumes

AM Peak Hour

heffron transportation inc

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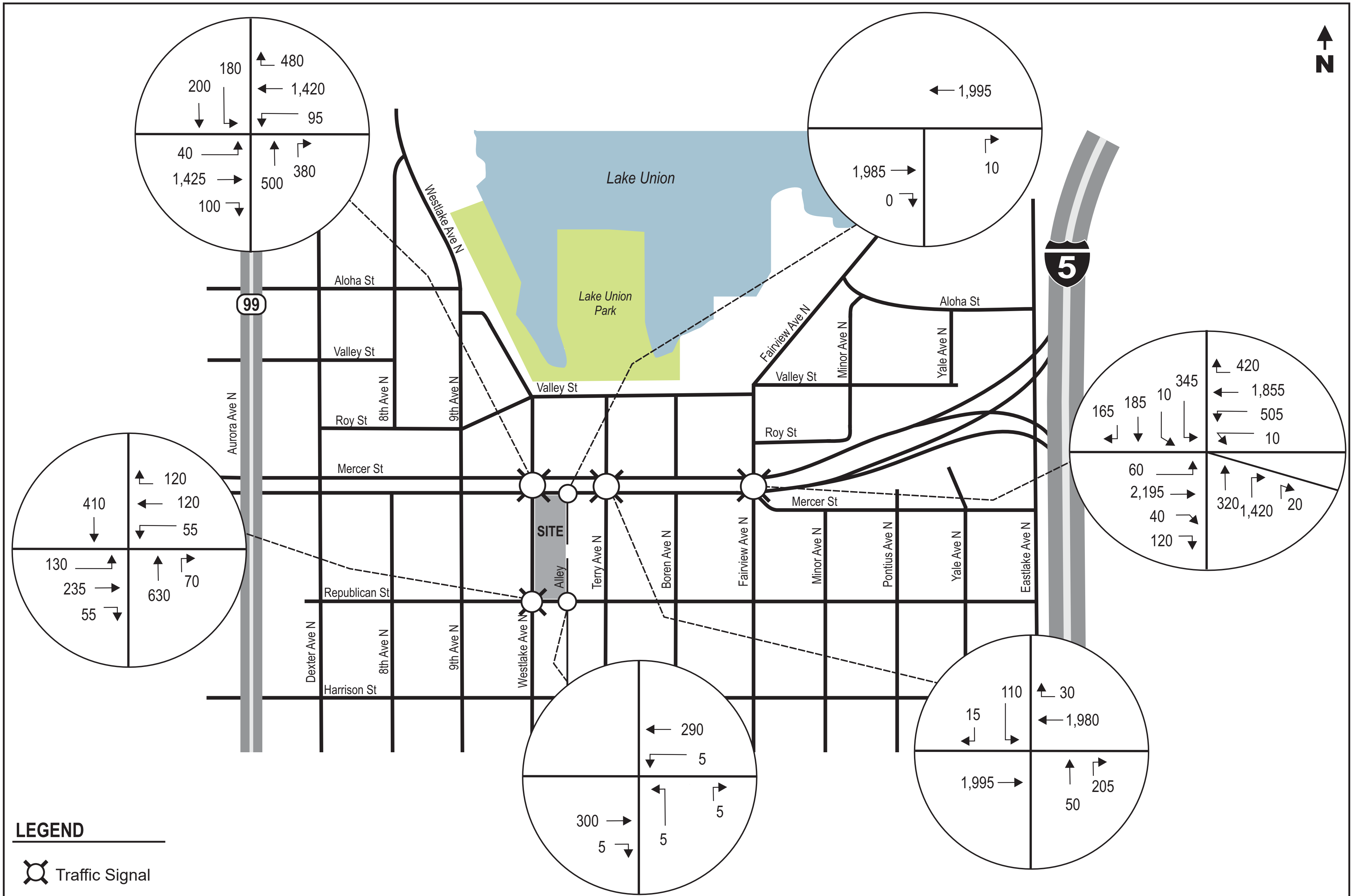

BLOCK 38W

Figure 5
Future (2030) Without-Project Traffic Volumes
PM Peak Hour

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APPENDIX A

PRO-RATA SHARE CALCULATIONS

Proportional Share Estimate

Project Name
Vulcan Block 38W 7/31/2018
SLU Only Growth Impact vs. SLU Only Growth Cost

		PRO-RATA			X	APPLIED PROJECT COST							= PROJECT SHARE
South Lake Union Transportation Study Capital Improvements						Total Costs from Mitigation Program Report (Tables 1-4)(Nov 05)							
Auto Traffic Projects		**2030 Auto Based Impacts**	**Mode Conversion Factor**	**2030 Impacts**		Traffic	Bike	Pedestrian	Transit	Existing Deficiency %	SLU Only Growth Adjustment (Mirai Table 5)(June 05)	**Adjusted Total Cost**	Resulting Contribution
Two-Way Mercer/Narrow Valley Concept													
1+2	Construct 2-way Mercer St/2-lane Valley St	0.90%	100%	**0.90%**		$ 68,200,000				23.0%	23.2%	**$ 3,639,152**	$ 32,742.38
3	Signal @ Dexter/Republican	0.69%	100%	**0.69%**		$ 250,000				86.0%	23.2%	**$ 49,880**	$ 345.38
Mercer/Fairview/I-5 Ramps													
4	Mercer/Fairview Improvements	3.35%	100%	**3.35%**		$ 430,000				86.0%	23.2%	**$ 85,794**	$ 2,872.23
Thomas St. East of Aurora													
5	Thomas from Fairview to 5th	0.88%	100%	**0.88%**		$ 750,000				86.0%	23.2%	**$ 149,640**	$ 1,314.97
Two-way traffic on 9th and Westlake													
6	2-way Westlake and 9th	5.08%	100%	**5.08%**		$ 835,000				86.0%	23.2%	**$ 166,599**	$ 8,463.75
Eastlake Avenue													
7	Allow SB Eastlake left-turns at NB I-5 Express Lanes	0.00%	100%	**0.00%**		$ 250,000				86.0%	23.2%	**$ 49,880**	$ -
8	Signal @ Eastlake/Thomas	0.00%	100%	**0.00%**		$ 250,000				86.0%	23.2%	**$ 49,880**	$ -
9	Signal @ Eastlake/Republican	15.12%	100%	**15.12%**		$ 250,000				86.0%	23.2%	**$ 49,880**	$ 7,543.86
Auto Traffic Project Sub-Total						***$ 71,215,000***				-	23.2%	***$ 4,240,705***	***$ 53,282.58***
Bicycle Projects													
Improve around the lake bike facilities													
10	Fairview bicycle lanes	0.74%	-7.20%	**-0.05%**			$ 275,000			75.0%	46.7%	**$ 96,319**	-
11	Modify Fairview near Eastlake for ped/bike access	0.54%	-7.20%	**-0.04%**			$ 1,200,000			75.0%	46.7%	**$ 420,300**	-
Bike Routes													
12	Sign Lakeview bike route	0.00%	-7.20%	**0.00%**			$ 1,000			75.0%	46.7%	**$ 350**	$ -
13	Sign Eastlake bike route	3.60%	-7.20%	**-0.26%**			$ 2,000			75.0%	46.7%	**$ 701**	-
14	Sign commonly used bike routes	0.98%	-7.20%	**-0.07%**			$ 6,000			75.0%	46.7%	**$ 2,102**	-
Maintain/Improve Dexter as a north/south bicycle corridor		Average Bike Project Impact											
15	Improve Dexter bike corridor	0.00%	-7.20%	**0.00%**			$ 2,000			75.0%	46.7%	**$ 701**	$ -
Bike Project Sub-Total							***$ 1,486,000***			***75.0%***	***46.7%***	***$ 520,472***	***$ -***
Pedestrian Projects													
Cascade Neighborhood Ped Improvements													
16	Add stop signs at Thomas and Harrison intersections	0.00%	-96.00%	**0.00%**				$ 8,000		96.1%	60.5%	**$ 4,651**	$ -
17	Widen sidewalks around Cascade Park	0.00%	-96.00%	**0.00%**				$ 140,000		96.1%	60.5%	**$ 81,397**	$ -
Improve Denny Way Pedestrian Environment & I-5 Crossing													
18	Improve Denny/I-5 crossing	0.00%	-96.00%	**0.00%**				$ 2,750,000		96.1%	60.5%	**$ 1,598,864**	$ -
19	Improve five Denny intersections	0.00%	-96.00%	**0.00%**				$ 580,000		96.1%	60.5%	**$ 337,215**	$ -
Pedestrian Project Sub-Total								***$ 3,478,000***		***96.1%***	***60.5%***	***$ 2,022,127***	***$ -***
Transit Projects													
Create transit emphasis/TSP on Fairview Ave													
20	Transit Signal Priority on Fairview @ Denny	4.51%	99.20%	**4.48%**					$ 110,000	68.6%	12.3%	**$ 9,282**	$ 415.57
21	TSP and queue jump on Fairview @ Harrison	0.00%	99.20%	**0.00%**					$ 110,000	68.6%	12.3%	**$ 9,282**	$ -
22	TSP at Fairview @ Mercer	3.35%	99.20%	**3.32%**					$ 110,000	68.6%	12.3%	**$ 9,282**	$ 308.25
23	TSP on Fairview @ Valley	-0.51%	99.20%	**-0.50%**					$ 110,000	68.6%	12.3%	**$ 9,282**	-
Construct Proposed SLU Streetcar/Trolley Route													
24	Construct streetcar[1]	7.60%	-	**7.60%**					$ 2,500,000	100.0%	50.2%	**$ 1,255,000**	-
25	New rail route from Uptown to N Capitol Hill	0.00%	-	**0.00%**					$ 11,700,000	100.0%	50.2%	**$ 5,873,400**	$ -
Install bus shelters along bus routes in study area													
26	Install nine bus shelters	8.40%	-	**8.40%**					$ 235,000	55.6%	100.0%	**$ 130,660**	$ 10,975.44
Transit Project Sub-total									***$ 14,875,000***	-	-	***$ 7,296,186***	***$ 11,699.25***
Grand Total						**$ 71,215,000**	**$ 1,486,000**	**$ 3,478,000**	**$ 14,875,000**			**$ 14,079,489**	**$ 64,982**
Cost per SF													

Notes
Total project cost does not include negative costs (potential credits) where background traffic volumes have decreased between 2004 and 2030

Unfunded Portion Only

Not enough information about these projects to calculate impacts.

Updated - shows nine in CAM 243 (10-04-12)

1 Note - Block 38W is located within LID boundary for Street Car, so no additional funds from this Transportation Payment System calculation are assumed.

Appendix H

DRAFT CONSTRUCTION MANAGEMENT PLAN

VULCAN

BLOCK 38

CONSTRUCTION MANAGEMENT PLAN
HAUL ROUTE SUPPLEMENTAL PACKAGE

Revision #0
April 17, 2019

BLOCK 38 MUP #3017466

Applicant/Contractor: GLY Construction, Inc.
Contact: Nic Willman, Project Manager
Cell: 206.639.4072
nic.willman@gly.com

CONSTRUCTION MANAGEMENT PLAN

VULCAN BLOCK 38

REVISION #0 | April 11, 2019

TABLE OF CONTENTS

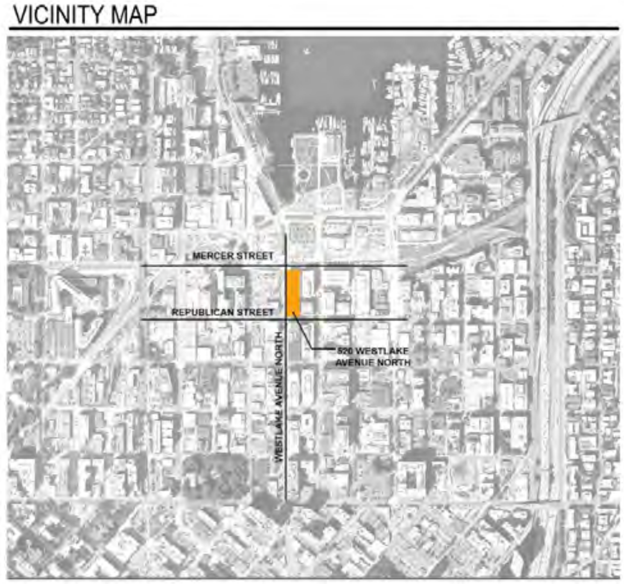
I. INTENT

This Construction Management Plan [CMP] will provide detailed information for how GLY Construction, Inc. will manage vibration, noise and traffic impacts while creating and maintaining a safe work environment for the general public as well as construction workers. We firmly believe that careful planning and clear communication, provided in various easily accessible media, will positively reduce impacts to the neighboring businesses, the public and the City of Seattle. This plan will be coordinated with the Seattle Department of Construction Inspection [SDCI] Noise Abatement Office, Seattle Department of Transportation [SDOT] and King County Metro Transit Division. Implementation and any necessary revisions of this plan is the responsibility of GLY Construction, Inc. and its subcontractors, working with Vulcan Development, SDCI, and the affected community.

II. PROJECT OVERVIEW

The Block 38 (B38) Project is located in the South Lake Union area of Seattle. The site is a half city block bounded by Mercer Street to the north, Westlake Avenue to the west, Republican Street to the south, and an alley to the east. B38 consists of four levels of concrete-framed below grade parking (~170,000 SF) and twelve levels of above grade steel-framed office building (~330,000 SF). Due to the proximity of the Project to Lake Union, garage construction below level P1 is anticipated to be below the water table.

VICINITY MAP



III. CONSTRUCTION COMMUNICATION

There will be a developer / general contractor team approach for distribution of communication to the neighbors. Vulcan Development will have a Community Liaison responsible for delivery of information to the neighbors while GLY Construction will have a Construction Contact responsible for creating documentation for the Community Liaison and be available for immediate responses to concerns or comments.

A. Community Liaison + Construction Contact

1. General Requirements

Vulcan Real Estate will designate an individual to fill the position of “Community Liaison” to the local community. GLY Construction, Inc. will assign a “Construction Contact” to help support the Liaison and be an additional source of information.

2. Core Communication Responsibilities

a) The Community Liaison will:

1) Collect and distribute general information about the projects via a construction bulletin from the Construction Contact.
2) Schedule and attend meetings with neighbors on the Construction Notification List in advance of start of construction and as desired by neighbors during construction. Should the need for periodic neighborhood meetings arise the Community Liaison [or Construction Contact] will coordinate with the City in advance.
3) Assemble contact names and contact information for the Construction Notification List and keep it up to date.
4) Act as a second point of contact for people seeking information about the project.

b) The Construction Contact will:

1) Act as the initial point of contact for general construction information or for non-emergency concerns related to construction.
2) Produce and distribute general progress and schedule-related information to the Community Liaison.
3) Attend meetings with neighbors on the Construction Notification List in advance of start of construction and as desired by neighbors during construction. Should the need for periodic neighborhood meetings arise the Construction Contact [or Community Liaison] will coordinate with the City in advance.
4) Act as the primary point of contact for immediate questions or comments and manage a construction hot line, including logging and responding to calls. The hot line will be answered by a member of the on-site staff during standard working hours and by an answering service after-hours.
5) Prepare and distribute construction bulletins to the Community Liaison for distribution to the Construction Notification List.

B. Communication with Neighbors

1. Construction Bulletins

The Construction Contact will prepare monthly construction bulletins, beginning summer 2019 [approximate pending permitting and owner notice to proceed] and continue at least through completion of the project [estimated June 2021].

Construction bulletins will cover general updates, notices for street and sidewalk closures, noise and work hour variances, safety information, and other construction activities that may affect the surrounding neighborhood. Bulletins will be distributed by the Community Liaison to central contacts identified on the Construction Notification List for posting within buildings and/or delivery within internal distribution networks. The Construction Notification List includes the following neighbors, as well as anyone who requests to be added:

CONSTRUCTION NOTIFICATION LIST

500 & 530 Fairview	Kenmore Air
The Allen Institute	Key Bank
Amazon	Modern Dermatology
Art Marble 21	Museum of History & Industry
Ballard Pizza Company	Public Storage
Bartell Drugs	Residence Inn Seattle
Gregory Phillips Mortgage	SDOT Bicycle Coordinator
Buca di Beppo	Seattle Bike Blog
Cascade Bicycle Club	SeattleFoodTruck.com
Commute Seattle	South Lake Union Chamber of Commerce
Cask & Trotter	South Lake Union Neighborhood Council
Crows Nest Yachts	Specialty’s Café & Bakery
Daniel’s Broiler	Top Pot Doughnuts
Hotel-Staybridge Suites	Tommy Bahama
First Tech Federal Credit Union	Wooden Boat Center
Helm Apartments	Google B25 & B31
Mera Apartments	
King County Metro	

Please see **Exhibit A** for an example construction bulletin.

2. Special Project Updates

The Construction Contact will provide the Community Liaison special project updates to describe unusual construction activity at least 72 hours in advance of such activity. Activities that may be subject to notice include street closures and associated detours, concentrated hauling anticipated to generate higher levels of construction noise, and work hour variances. This notification is in addition to the monthly construction bulletins.

3. 24-Hour Emergency Contact

GLY Construction, Inc. will establish a 24-hour construction hotline, which will serve as the primary access point to the Construction Contact. The call will be answered during standard construction hours by a member of the onsite staff; typically, a response would come within an hour or less. After business hours, the hotline will be staffed by an answering service, so that a live person is available to take the call. The answering service will employ a telephone tree to ensure the construction team can be reached, and the call will be returned, pending importance, within one-half hour of its receipt. The 24-hour construction hotline number will be provided to the Construction Notification List in advance of start of construction and included in the regularly published monthly and special construction bulletins.

The daily on-site GLY point of contact will be:

GLY Superintendent Block:

Fletcher Beall

Fletcher.Beall@GLY.com

mobile: (425) 765-0283

4. Neighborhood Meetings

In advance of start of construction, the Community Liaison will contact members of the Construction Notification List to suggest a face-to-face meeting to preview site logistics and construction working hours. Depending on neighbors' desires and needs, meetings will be scheduled throughout construction either by individual cases or on a reoccurring basis.

IV. CONSTRUCTION HOURS + SENSITIVE RECEIVERS

A. Construction Hours

1. Standard Hours of Construction

The majority of construction activities will be limited to standard construction hours between 7 a.m. and 6 p.m. on non-holiday weekdays. Construction workers may arrive at the site prior to standard start times; however, noisy set-up activity [above 60 dBA] will be expressly prohibited prior to 7 a.m. on weekdays. Any equipment warm-up prior to standard start times shall not exceed 60 dBA measured at the sensitive receiver's property line.

2. Evening + Saturday Construction Hours

Evening work will be limited to smaller crews working between the hours of 6 p.m. to 10 p.m. on non-holiday weekdays and on Saturdays between 9 a.m. and 6 p.m. Work may occur between 6 p.m. to 11 p.m., but will be limited to activities that generate little noise [such as daily cleanup] and are within the 60 dBA limit of the Noise Ordinance.

In addition:

a) Work that is scheduled to take place during evenings and Saturdays will help significantly reduce the overall length of the schedule.

b) Impact types of equipment, such as pavement breakers, pile drivers, jackhammers, sand-blasting tools, and other impulse noise equipment will be prohibited after 5 p.m. weekdays and after 5 p.m. weekends unless a specific noise variance has been obtained.

c) Work is not expected to occur on construction holidays, which are defined as New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, day after Thanksgiving Day, and Christmas Day. Any listed holiday that falls on a Sunday shall be observed as a holiday on the following Monday. If any of the listed holidays falls on a Saturday, the preceding Friday shall be a regular workday.

3. Night Activities

This work will be coordinated with the appropriate City agencies including SDOT and will generally be limited to only those activities that cannot be performed during standard, evening, or Saturday shifts. This would be due to external restrictions or requirements imposed by City or County agencies, such as over-sized load restrictions, work that requires street closures or work that affects public safety. A Special Construction Bulletin would be published to the contact list a minimum of 10 business days prior to the work. If work is proposed that exceeds the limits of the Noise Ordinance, a variance would be sought and would need to approved by SDCI in advance of such work occurring. To ensure that at least seventy-two-hour advance notice can be provided to the Construction Notification List for this type of work, notice will be provided when the variance is sought rather than waiting until the variance is approved.

Night work will be subject to significant noise restrictions, including:

- Use of sound-muffled truck beds
- Quiet loading methods
- Light shields
- Truck-staging systems that limit the number of trucks on site
- Restrictions on loud talking and radio use
- Turning off truck engines whenever practical; and the other noise and vibration restriction methods outlined in this plan.

Night shifts will occur infrequently. Type of work currently anticipated includes:

Occasional night delivery of loads that exceed highway and street limitations. GLY Construction, Inc will attempt to bring oversized loads at night and drop the trailer at the site to be unloaded during the following work day; however, some items may be too large and will need to be offloaded at night. GLY Construction, Inc has established a one-way delivery route on I-5 with ingress from Mercer on ramp onto Fairview South then right on Republican to the site. This way the trucks won't need to back up to make deliveries. Then they can exit the site from Westlake on to Mercer Street then to the freeway. This route still needs to be approved by the City. In addition, small deliveries may begin as early as 5:30 a.m. on weekdays to minimize construction traffic on downtown streets as long as noise does not exceed 60 dBA.

Installing the tower cranes and manlift.
Installation and removal of the tower crane and manlift may occur partially at night or on weekends. Periodically, the manlift will need to be jumped at night to raise it above the structure as it climbs. Crane erection is scheduled for April 2020 and dismantling is scheduled for April of 2021. GLY Construction, Inc. to obtain noise variance as needed.

Façade installation.
To help improve the construction schedule, and therefore minimize neighborhood impacts, the tower crane may operate during some evenings to hang panels on the building exterior. This is quiet work. It would occur approximately between December 2020 and June 2021. There will be no modification of exterior panels after 8 p.m.

Pedestrian protection along Republican Street, Westlake Ave, and Mercer Street of the site.
Placement and removal of pedestrian protection is likely to occur at night to keep surrounding streets operational should it be required. Work will be accomplished as quietly as possible if done during evening or night shift hours. Work includes covered walkways and placement of pedestrian barriers or wayfinding signage.

Street Steel Plate Protection.
Steel street cover placement and removal work is likely to occur at night to keep surrounding streets operational. Work will be accomplished as quietly as possible. All steel plates will have wedges or asphalt placed in gaps between the street surfaces and plates to reduce noise in placement and in deflection when in use.

Plates will be pinned to the street as necessary. Work related to pinning plates will not occur after 5 p.m. under the noise ordinance.

Site Cleaning and Preparation.
There will be workers on site after hours performing silent equipment maintenance, surveying and site preparation functions. Use of leaf blowers and street sweepers will be prohibited after 10 p.m.

B. Construction Noise Requirements

Except as may otherwise be approved through the variance process in the Noise Ordinance, construction activities shall be conducted in such a manner as to conform to the permissible noise levels in the Noise Ordinance and to the construction noise and vibration management measures approved as part of this plan.

C. Known Sensitive Receivers, Activities, and Accommodations to Minimize Noise Impacts

Following is the list of known sensitive receivers. Provisions designed to reduce or prevent noise impacts at these receivers are addressed in Section VI.

Allen Institute - 615 Westlake Ave N

Amazon – Various Addresses

Institute for Systems Biology, 401 Terry Avenue N

NanoString Technologies – 530 Fairview Avenue N

Presage Biosciences – 530 Fairview Avenue N

Seattle Biomedical Research Institute, 307 Westlake Avenue N

UW Medicine Campus, 815 Mercer Street

BioMed Realty Research Center at 500 & 530 Fairview Ave

D. Inadvertent Discovery Protocol

1. Vulcan Development is constructing a mixed use project in the South Lake Union area in the City of Seattle, King County, Washington. Construction activities will include excavation below existing grade. National and state policy is to preserve, for public benefit, historic and prehistoric-period cultural resources such as ruins, sites, buildings, artifacts, fossils, or objects of antiquity that are historically or scientifically significant. Vulcan Development shall provide pre-construction training by a professional archaeologist for construction crews to familiarize them with archaeological resources that might be encountered and the associated IDP implementation requirements. This document serves as the plan for dealing with any unanticipated discoveries of cultural materials or human remains that result from construction related ground disturbing activities. It is also intended to provide guidance to Vulcan Development and their contractors so they can:
    a. Comply with applicable Federal and State laws and regulations, particularly 36 CFR 800 [as amended August 5, 2004] regulations that implement Section 106 of the National Historic Preservation Act [NHPA] of 1966, and Title 27 Revised Codes of Washington Chapter [RCW] 27.44 Indian Graves and Records, Chapter 27.53 Archaeological Sites and Resources, and Title 68 Chapter 60.050 Protection of Historic Graves.

b. Describe to regulatory and review agencies the procedures that will be followed to prepare for and deal with unanticipated discoveries.
c. Provide direction and guidance to project personnel on the proper procedures to be followed should an unanticipated discovery occur.

E. Discovery of Archaeological Material

1. If significant or potentially significant archaeological resources are identified during construction; the Construction Supervisor will halt activity in the area of discovery large enough to ensure the integrity of the find. The Construction Supervisor will notify the City of Seattle [the City].
2. The City will contact the Department of Archaeology and Historic Preservation [DAHP] and the affected tribes within one [1] working day.
3. The City shall consult with the DAHP on treatment, or with DAHP and the affected tribes on treatment if the discovery is Native American. Resumption of work in the area of the discovery will be consistent with the results of the consultation.

F. Discovery of Human Remains

1. All persons shall immediately halt ground-disturbing activities around the discovery and it shall be secured with a perimeter of not less than thirty [30] feet. The Construction Supervisor will immediately notify the City.
2. The City will immediately notify the Seattle Police and the King County Medical Examiner [ME] and request that the ME determine if the remains are Native American or if the site is a crime scene.
3. Contemporaneous with notifying law enforcement, the City shall also notify the DAHP and the Duwamish Tribe, the Snoqualmie Tribe, the Suquamish Tribe, the Muckleshoot Tribe, and the Tulalip Tribes of the discovery.
4. The City will request that law enforcement handle the remains and disturb the site only to the extent needed to determine if the remains are Native American and if the setting is a crime scene.
5. If the human remains are determined to be Native American, then the City shall consult with the Duwamish Tribe, the Snoqualmie Tribe, the Suquamish Tribe, the Muckleshoot Tribe, and the Tulalip Tribes and DAHP to determine treatment and disposition. If the remains are a crime scene, then law enforcement will take charge. If the remains are historic but not Native American nor a crime scene, then the City will consult with DAHP. Resumption of work in the area of the discovery will be consistent with the results of the consultation.

CONTACTS

King County Medical Examiner		206-731-3232
Seattle Police Department		206-625-5011
Office of Archaeology + Historic Preservation	Gretchen Kaehler	360-586-3088
Duwamish Tribe	Chairperson Honorable Cecile Hansen	206-431-1582
Muckleshoot Tribe	Tribal Archaeologist Laura Murphy	253-876-3272
Snoqualmie Tribe	Archeology & Historic Preservation Steven Mullen Moses	425-292-0249 ext 2010
Suquamish Tribe	Tribal Archaeologist Dennis Lewarch	360-394-8529
Tulalip Tribes	Cultural Resources	800-869-8287

V. CONSTRUCTION MILESTONES

Mobilization to the site and construction start is anticipated to begin July 2019. Block 38 shoring, mass excavation and below grade structures will occur simultaneously. Shell and core substantial completion is targeted for June 2021.

TASK	START	COMPLETE
Mobilize	July 2019	
Building Demolition	July 2019	September 2019
Dewatering / Shoring	September 2019	February 2020
Mass Excavation	September 2019	March 2020
Below Grade Structure B38	March 2020	November 2020
Superstructure B38	October 2020	April 2021
Envelope + Interior B38	December 2020	June 2021
Anticipated Completion B38		June 2021

Major construction activities important to this plan are described below.

A. Demolition, Excavation & Shoring

Site demolition is a major activity with taking down two concrete structures to the north. The site also has 2 wood framed structures to the south. Demolition activities and pavement removal will be conducted within the standard construction hours.

The projects are designed with conventional shoring systems consisting of soldier piles with wood lagging and tie-backs. Shoring equipment will be staged within property lines so as to not disrupt pedestrian mobility or traffic.

Mass excavation is required to remove soil in preparation for the underground parking structure. Dirt moving will occur at a depth of twenty five to thirty five feet below grade. Perimeter walls of the excavation will provide natural barriers from excavation equipment noise. As the hole deepens, the walls of the excavation will direct equipment sound upwards. As described within this CMP.

The general noise and vibration control measures outlined in the Construction Noise and Vibration Management section of this plan apply to shoring and excavation efforts. Additional methods specific to these phases of construction include:

1. Mass excavation

During excavation of the site, an excavator will be used. Truck and trailer will be used for mass excavation hauling. The current plan is to use Westlake Avenue as the “loading road”. A street use permit will be in place to close one lane of Westlake throughout construction. Mass excavation will begin at the perimeter and work towards the load out zone to the north. Loaders will move material to a location where haul trucks can be loaded. Anticipated export quantities during mass excavation are 55,000 Truck Cubic Yards (TCY) for Block 38. Hauling is anticipated to occur during non-business / non-commuting hours to relieve traffic pressure. Final coordination to be conducted with SDOT and respective authorities. Intent is to keep trucks on paved surfaces so as to not create track-out onto Westlake Avenue. GLY will be monitoring each truck load to keep “loading road” clean. The earthwork scope of work has not yet been awarded but will be awarded in the coming weeks. Contact information will be emailed out to the City if needed.

2. Off-site recycling

When the rubble from the existing structure and the demolition work is at street level, the demolition contractor will break up the wood and concrete into pieces small enough to be loaded onto trucks and moved off-site for recycling.

3. Restricted use of pneumatic equipment related to demolition

Assuming this equipment exceeds 60 dBA, use of pneumatic equipment will be restricted to between 8 a.m. and 6 p.m. on weekdays, between 9 a.m. and 5 p.m. on Saturdays.

B. Other Major Construction Phases

The general noise and vibration control measures outlined in the Construction Noise and Vibration Management section of this plan apply to the following major construction phases. Additional methods specific to these phases of construction are included in the descriptions of the work.

1. Shoring

Shoring is expected to occur between approximately October 2019 and February 2020. Pile installation may occur between the hours of 7 a.m. to 10 p.m., Monday through Friday, and 9 a.m. to 10 p.m. on Saturday. However, an effort will be made to complete drilling activities by 6 p.m. As the shoring progresses downward with the excavation, tiebacks will be drilled, grouted, and stressed into the earth wall. The equipment required for this process uses compressed air for drilling and will generate more noticeable noise than the excavation equipment or support pile drill rigs [diesel engines], but will not cause any noticeable vibration. The work hours for the tieback drilling will be limited to 7 a.m. to 6 p.m., Monday through Friday, and 9 a.m. to 5 p.m. on Saturday.

2. Concrete Foundation, Below & Above Grade Structure

Concrete will be pumped vertically from a steel pipe riser or pump trucks located on Republican Street & Westlake Avenue [Pending approved traffic control plan / street use permit]. A minimal number of trucks will be staged along these Avenues while the majority of concrete trucks are held at the concrete plant and dispatched by radio. Block 37 may also be used for truck staging if required. For typical concrete pours (elevated slabs) we anticipate 10 trucks per hour. Mat foundation pours will be coordinated with SDOT.

VI. CONSTRUCTION NOISE + VIBRATION MANAGEMENT

A. Noise Control Measures

GLY Construction, Inc will use the following techniques to minimize construction noise and vibration. Techniques that go beyond code requirements are asterisked.

1. Timing Restrictions

a) Activities will be limited to standard construction hours, which are 7 a.m. to 6 p.m. on non-holiday weekdays.

b) Impact types of equipment like auger drilling, pavement breakers, pile drivers, jackhammers, and blasting tools and other impulse noise sources will only be used between 8 a.m. and 5 p.m. weekdays and 9 a.m. and 5 p.m. on Saturday.

c) Efforts will be made to reduce noise and vibration levels from construction activity between 6 p.m. and 10 p.m. weekdays. Potentially intrusive work will be accomplished as much as possible during standard working hours. Quieter work will be performed during the evening shift. Any work occurring between 10 p.m. and 11 p.m. will be limited to activities that generate little noise [such as daily cleanup] and are within the 60 DBA limit of the Noise Ordinance.

2. Noise Reduction Construction Technologies

a) Ambient sensitive "Broadband Alarms" for all hauling trucks will be used. These devices use a motion sensor to activate the backup alarm; otherwise the alarms operate at a much-reduced level.

b) Backup alarms will not be allowed to operate from 10 p.m. to 7a.m. on weekdays and before 9 a.m. on Saturdays.

3. Process Modifications

a) Reduce truck noise and audible backup alarms by using a one-way delivery routes [no backing into the site].

b) Loud talking or other miscellaneous noisy activities are prohibited before 7 a.m. and after 6 p.m. on weekdays and before 9 a.m. and after 6 p.m. on Saturdays.

c) Concrete truck staging will be done off-site to minimize the impact of street-level truck traffic. A concrete supply has not been chosen for this work as of yet.

d) The concrete pumping stations, concrete deliveries and the man lift will be located along Republican Street & Westlake Avenue.

e) A compliance statement for this Construction Management Plan will be included in all subcontracts for this project. GLY Construction, Inc. to be responsible for implementation by all subcontractors.

4. Noise Barriers Near On-Site Sources

a) Use of portable sound barriers around generators, compressors and other noise-producing machinery, as needed.

b) Construction of noise barriers near fixed engines [e.g., cranes], as needed.

c) GLY Construction, Inc. will make every effort to manage the work to avoid noise variances, and any street closures beyond those described in other sections of this plan. However, as is typical for urban construction projects, there will be times when such variances and additional street closures will be required. Neighbors will be notified at least 72 hours in advance of any work requiring noise variances, and street closures beyond those described elsewhere in this plan.

VII. RIGHT OF WAY USE

A. Material Management

The development and construction team recognizes the project location is sensitive for commuters that walk, bike, and use personal vehicles or use public transit. It is our intent to continuously review how construction traffic is impacting general transit and alter plans with SDOT approval to find the least impactful routing for construction hauling. Please see **Exhibit B** for construction haul routing.

1. The preferred method for truck haul routing is to use the I-5 corridor at Mercer. Trucks entering South Lake Union will exit onto Mercer take a left on Fairview then right turn onto Republican St. for offloading or pick-up of materials. Leaving the site trucks will turn right on Mercer Street, back onto I-5 heading north or south.

2. Should traffic congestion prove to be too great with the additional construction traffic GLY will work with SDOT to find alternate routes for leaving the site. With multiple usable trucking routes, our impact to the City may be minimized simply by switching direction on any given day and allow GLY to work with any future events. The alternate proposed truck haul route will be using Highway 99. For trucks needing to go south they will exit site on Westlake Ave. then turn right on Roy St. then a left on 9th Ave. From there they will turn right on to Mercer Street and right again onto Taylor Avenue North then a left on Roy St. then merge onto Highway 99 South. For trucks heading north they will turn on to Westlake Avenue heading north. Then turn left on Roy St. and can merge directly onto Highway 99 North.

3. In the event that loading time for mass excavation truck-and-trailers is taking longer than anticipated, there shall be no staging on side streets or parking areas. Directly west of Block 31 is a Vulcan owned property between Terry and Westlake and Mercer and Valley. This lot can be used to stage trucks until an appropriate time to on-site is needed. The benefit is trucks will continue to move forward and not have to use their back-up alarms. See **Exhibit B-1** for staging location.

4. A certified flagger will be on Republican St. to assist construction traffic onto the site and to facilitate pedestrian flow.

5. A uniformed police officer will be on Republican Street to assist construction traffic out of the site and to facilitate pedestrian flow.

6. Reasonable efforts will be made to avoid delivery of major building components between the hours of 4 p.m. and 6 p.m. on non-holiday weekdays to limit impacts on local streets and freeway access points.

B. Pedestrian Mobility + Street Closures

Mercer street sidewalk is to remain open with overhead structural scaffold protection when the project goes above ground. The alley will be open to pedestrian and vehicular traffic with overhead structural scaffold protection when the project goes above ground. Westlake Avenue sidewalk between Republication Street and Mercer Street will be closed for construction access, starting as early as July. Half of Republication Street sidewalk between Westlake and Terry Avenue will be closed for construction access, starting as early as July. Appropriate traffic control plan and pedestrian wayfinding will be submitted to SDOT prior to construction. Please see **Exhibit C** for site plan relating to pedestrian mobility and safety.

VIII. CONSTRUCTION PARKING MANAGEMENT

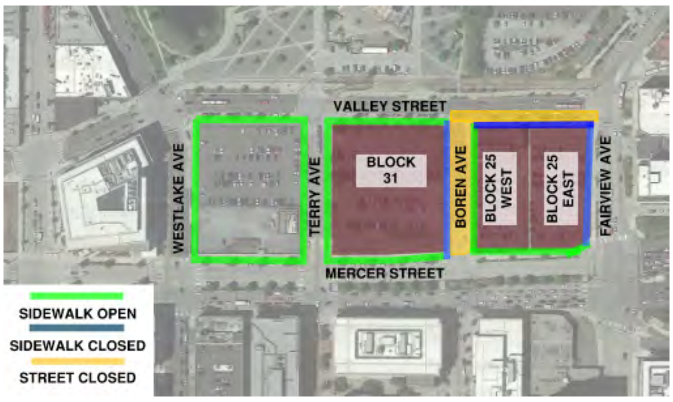
Construction workers will be encouraged to park outside of downtown and use transit service to the project. The site is near most major King County Metro bus routes, as well as routes operated by Sound Transit and Community Transit. Bus information will be made available to construction workers. The South Lake Union line of the Seattle Streetcar has multiple stops within a few blocks of the jobsite. From South Lake Union the streetcar conveniently connects to Seattle's other public transit systems at Westlake Center like Link Light Rail.

To the extent they do drive, construction workers will be encouraged to park their cars at parking garages and lots in South Lake Union. Vulcan Development has committed to reserve paid construction parking at the lot directly west of Block 31. Workers will be asked not to park in on-street spaces. Carpooling and other high-occupancy-vehicle modes of transportation will be encouraged.

Please see attached **Exhibit D** indicating nearby paid parking lots, street parking, and Streetcar routes.

VULCAN BLOCKS 25 + 31

CONSTRUCTION BULLETIN



PROJECT DESCRIPTION

The Lakefront projects consist of three new buildings and stretch from Fairview Avenue North to Terry Avenue North between Mercer and Valley Streets.

The buildings are commonly referred to as Block 25 East, Block 25 West, and garages while Block 31 has one large below grade parking garage. Each building will have above grade retail and office space with Blocks 25 West and Block 31 having additional floors of apartment living.

PROJECT COMPLETION: 2nd Quarter 2019

WHAT'S HAPPENING: April, 2019

BLOCK 25 EAST

- Installing exterior metal panels
- Installing pavers and landscaping on the roof
- Completing window systems
- Building out restrooms
- Street improvements work on Fairview, Mercer and Valley

BLOCK 25 WEST

- Project is complete. Mercer, Boren and Valley sidewalks are open to public. Please be aware that Block 25 East remains under construction.

BLOCK 31

- Sidewalks around Block 31 are open to pedestrians starting 3:30pm
- Metal panels continue to be installed
- Final cleaning of windows

ADDITIONAL NOTICE OF UPCOMING WORK

- Block 25 East Man Lift removal scheduled for April 13th
- Block 25 East Tower Crane removal scheduled for April 27th

FOR YOUR SAFETY

- The construction fencing surrounding the project is for safety and security. Please do not enter the project site at any time for any reason, site(s) have security systems.
- Please be mindful of equipment and truck traffic in the surrounding areas of Block 25 + 31 until project completion.
- Please be aware of truck back up alarms, wide turns, and do not cross in-between trucks and trailers.

CONTACT

24-HOUR CONSTRUCTION HOTLINE

Community members seeking additional information and support or onsite safety or emergency concerns, should contact:
425.451.8877

FOR CONSTRUCTION RELATED QUESTIONS, CONTACT:

GLY Construction
Site Office: 206.826.7422

Block 25E + 25W
Fletcher Beall
Fletcher.Beall@gly.com
Cell: 425.765.0283

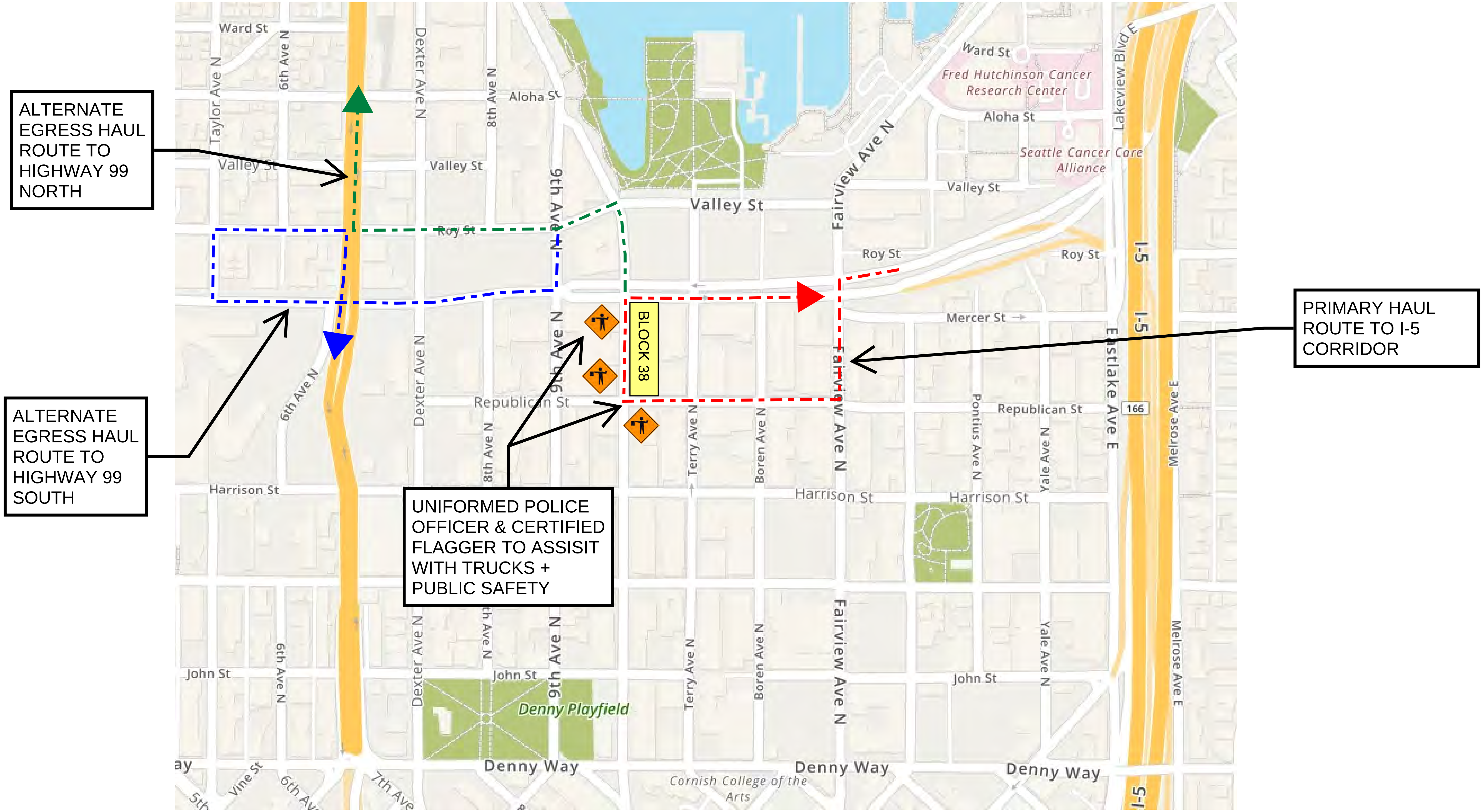
Block 31
Dane Buechler
Dane.Buechler@gly.com
Cell: 425.766.9118

FOR VULCAN REAL ESTATE QUESTIONS, CONTACT:

Raymond Burdick
RaymondB@vulcan.com
206.342.2451

WORK HOURS
Monday - Friday
7:00AM - 5:00PM
Subject to Change

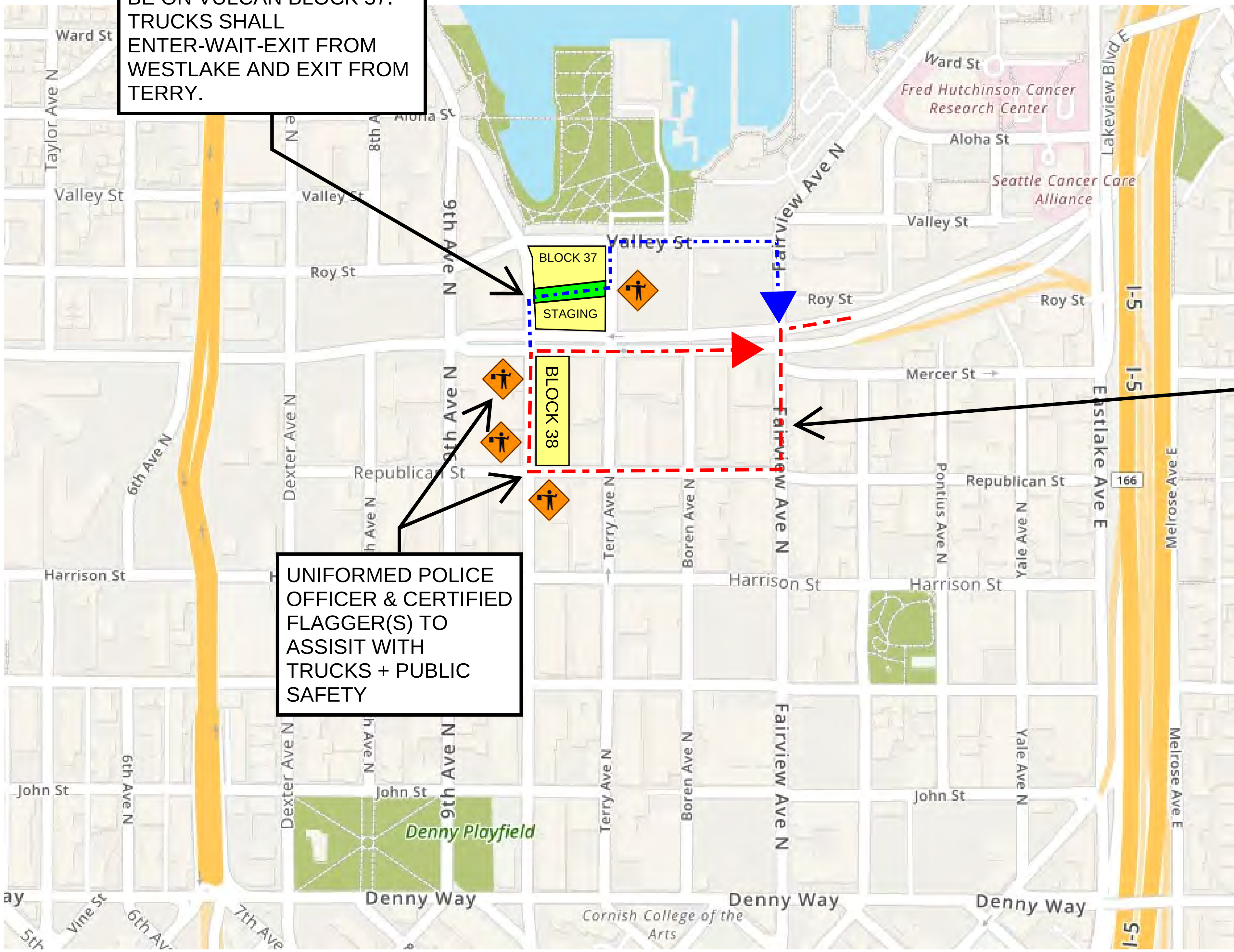
(DRAFT - Proposed Plan)



NOTE:
TRAFFIC CONTROL PLAN WITH APPROPRIATE SIGNAGE TO BE PREPARED WHEN SITEWORK SUBCONTRACT(S) AWARDED.

VULCAN B38 | TRUCK HAUL ROUTE PLAN - EXHIBIT B
APRIL 15, 2019

(DRAFT - Proposed Plan)



IF REQUIRED, MASS EXCAVATION / CONCRETE DELIVERY QUEUING SHALL BE ON VULCAN BLOCK 37. TRUCKS SHALL ENTER-WAIT-EXIT FROM WESTLAKE AND EXIT FROM TERRY.

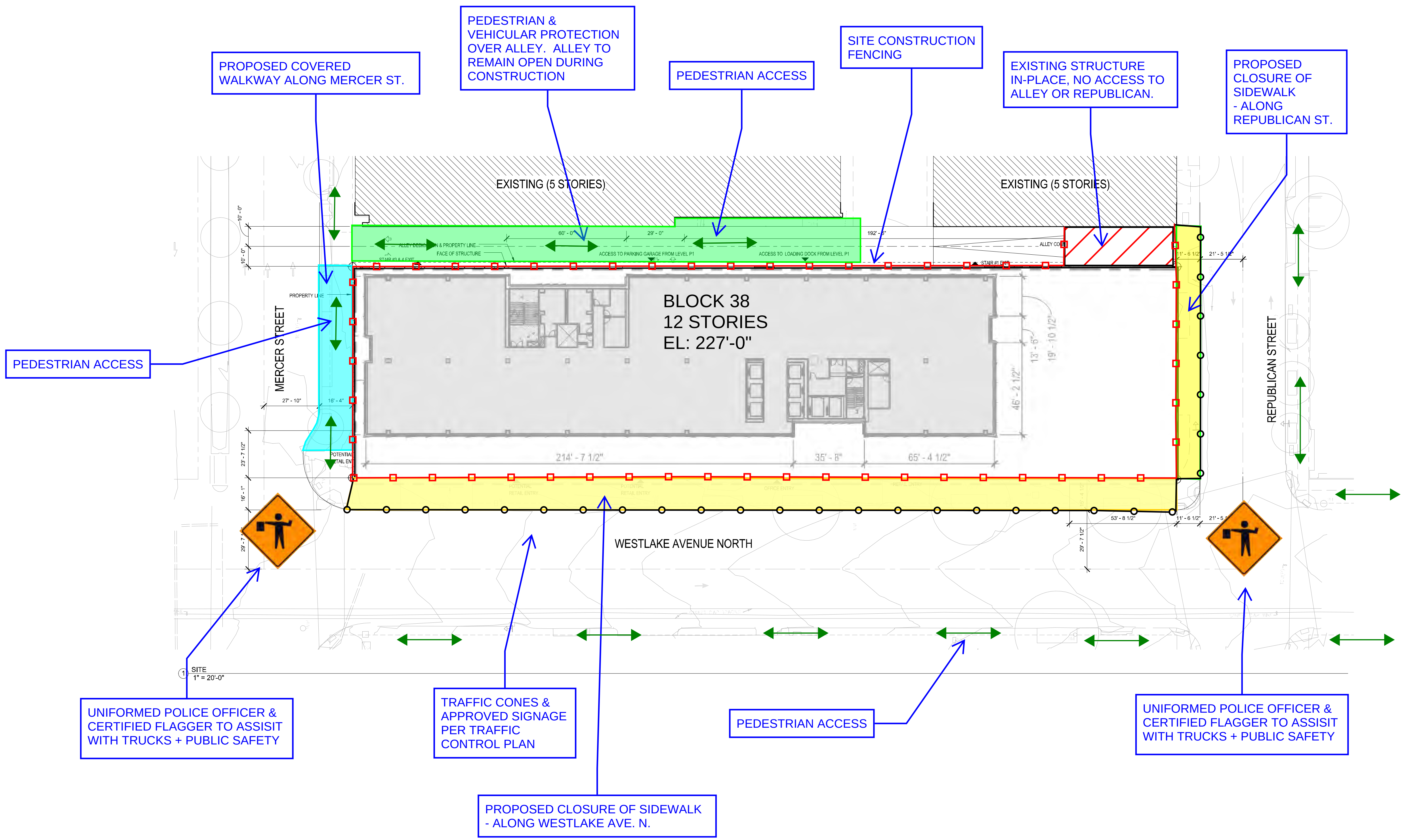
UNIFORMED POLICE OFFICER & CERTIFIED FLAGGER(S) TO ASSISIT WITH TRUCKS + PUBLIC SAFETY

PRIMARY HAUL ROUTE TO I-5 CORRIDOR

NOTE:
TRAFFIC CONTROL PLAN WITH APPROPRIATE SIGNAGE TO BE PREPARED WHEN SITEWORK SUBCONTRACT(S) AWARDED.

VULCAN B38 | TRUCK HAUL ROUTE PLAN - EXHIBIT B-1
APRIL 15, 2019

EXHIBIT C - PEDESTRIAN MOBILITY PLAN



G·L·Y

BLOCK 38

520 Westlake Avenue North, Seattle, WA 98109

City Investors IX LLC
505 5th Avenue South, Suite 900
Seattle, WA 98104

BLOCK 38
EXHIBIT C - PEDESTRIAN MOBILITY PLAN

2/19/2015 3:09:01 PM
C:\Users\wodiay\Documents\RevitLocalFiles\NBBJ_ARCH_BLOCK_38_GRID SHIFT_CENTRAL_SD_wodiay.rvt

965 Valley Street
Type: Surface Parking Lot
Distance from site: 0.1 Walking Miles
Construction Parking Only.

1114 Valley Street
Type: Surface Parking Lot
Distance from site: 0.1 Walking Miles

800 Aloha Street
Type: Surface Parking Lot
Distance from site: 0.3 Walking Miles

320 Westlake Ave.
Type: Underground Garage
Distance from site: 0.3 Walking Miles

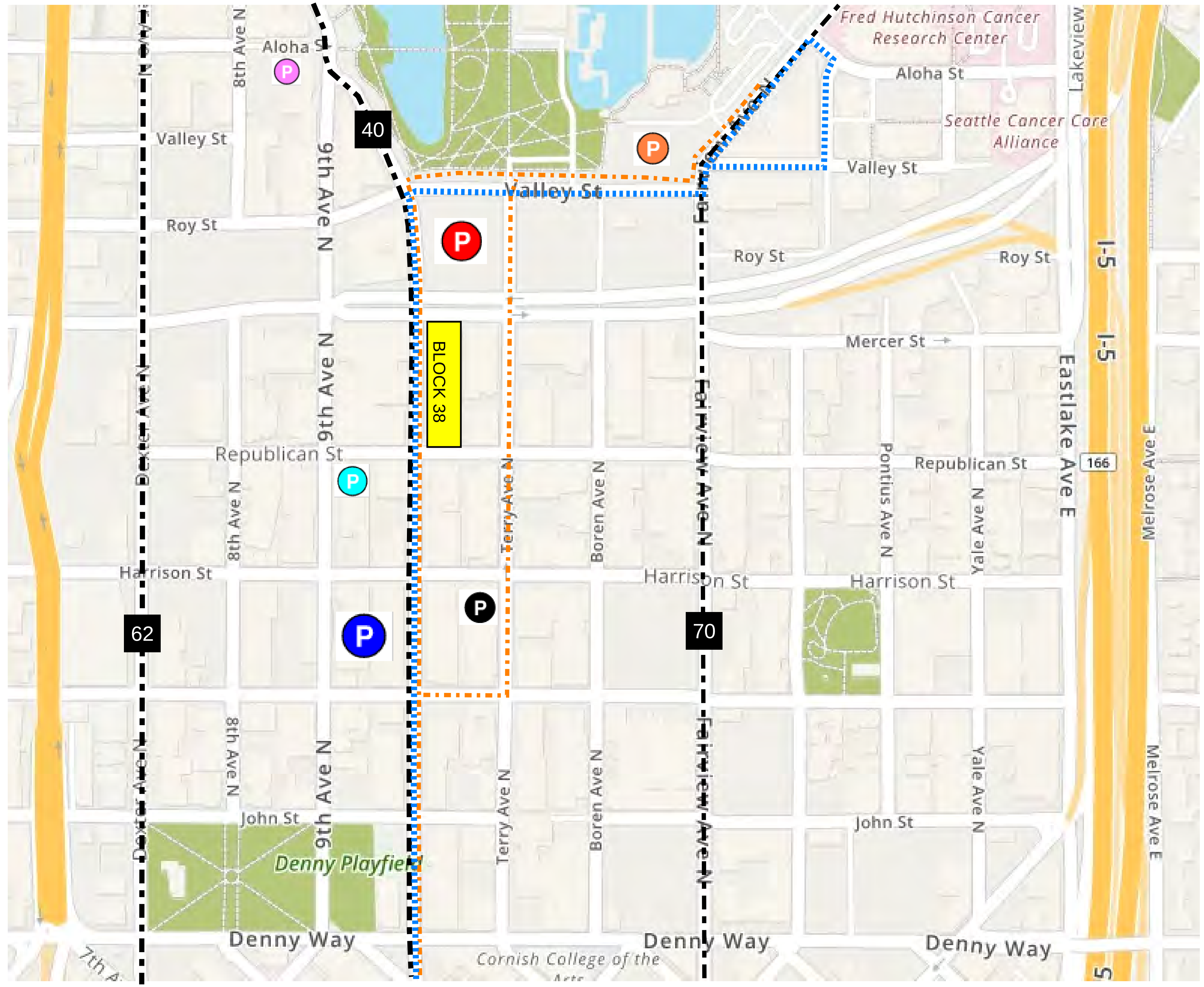
400 9th Ave. North
Type: Parking Garage
Distance from site: 0.1 Walking Miles

321 Terry Ave. North
Type: Parking Garage
Distance from site: 0.3 Walking Miles

SLU Streetcar
King County Metro RapidRide
King County Metro Bus Route

Note: not all bus routes are shown. For additional routes see GLY.

JOBSITE ADDRESS
520 WESTLAKE NORTH



VULCAN B38 | CONSTRUCTION PARKING PLAN
APRIL 15, 2019